

Rapports

# Sessions européennes des responsables d'armement

"The scope and role of cooperation  
in an expanding European armament community"





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# SUMMARY

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Is the actual rationalisation of the European Defence Test and Evaluation Base (EDTEB) an aim in itself or a real necessity to optimise resources for the benefit of defence systems?

**VIEWS AND RECOMMENDATIONS EXPRESSED IN THIS DOCUMENT  
ARE THOSE OF THE COMMITTEE'S MEMBERS.**

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## EXECUTIVE SUMMARY

*It is a general perception that the test and evaluation facilities within the European nations have an overcapacity and are fragmented throughout the nations. There are at present about 150 different facilities within different test and evaluation areas in which more than 40 000 people are employed. The investments and running cost of these facilities are considered to be billions of euros. These fragmentation, overcapacity and financial effects on national budgets have resulted in the consideration that the European test and evaluation base (EDTEB) should be rationalised. This rationalisation has already been under discussion for many years but progress has been slow and the results are marginal.*

*The following text is an example of a successful rationalisation in early days: **Provide the customers with a wide spectrum of wind tunnel test and simulation techniques, operated by one organisation, providing the benefits of resource sharing, technology transfer and co-ordinated implementation of research and development results**<sup>(1)</sup>.*

*This committee of SERA 21 was therefore tasked to discuss, assess, motivate, present and make suggestions around the theme "is the actual rationalisation of the EDTEB an aim in itself or a real necessity to optimise resources for the benefit of defence systems?".*

*The conclusion of the committee is that the EDTEB is a possibility and also a necessity. It is however also that the present actions, opportunities, co-ordination and agreements are insufficient to actually realise the rationalisation of the EDTEB. The co-ordination between the different actors is considered low and the progress is slow.*

*The committee is of the opinion that specific actions should be taken and positive guidance given to create a positive momentum to the rationalisation of the EDTEB. These specific actions are centered on:*

- *using a bottom-up approach in combination with the usage of a T&E fund acting as a "carrot" for the T&E stakeholders,*
- *focusing the effort to T&E categories which are expensive but do not have a large effect on operational sovereignty nor criticality,*
- *transferring resources from buyer-producer nations and governmental-industrial facilities,*

<sup>(1)</sup> Objective of the non-profit German/Netherlands wind tunnels (DNW) foundation when it was established in 1976. This foundation has shown to be very successful and is still regarded as a centre of excellence in the area of wind tunnel testing.

- *using EDA as a co-ordinating body for the rationalisation of the EDTEB and acting as the linking pin between the actors in the field of T&E and the conference of NADs.*

*The committee proposes the following roadmap in order to give this positive momentum to the rationalisation of the EDTEB:*

*Step 1: creation of T&E networks and standardisation of T&E procedures.*

*Step 2: assessment of European T&E capabilities.*

*Step 3: rationalisation of the EDTEB in a specific test category.*

## INTRODUCTION

It is a general perception that the test and evaluation facilities within the European nations have an overcapacity and are fragmented throughout the nations. There are at present about 150 different facilities within different test and evaluation areas in which more than 40 000 people are employed. The investments and running cost of these facilities are considered to be billions of euros<sup>(2)</sup>. These fragmentation, overcapacity and financial effects on national budgets have resulted in the consideration that the European test and evaluation base (EDTEB) should be rationalised<sup>(3)</sup>.

This rationalisation of the EDTEB has already been under discussion for many years. In the early days of the Western European Armaments Group (WEAG), several initiatives were undertaken. The results of these initiatives were however marginal and have not become a driver for an actual rationalisation of the EDTEB. Since the foundation of the European Defence Agency (EDA) in 2004, things have been speeding up. In 2005, the Armament directorate organised a Defence Test & Evaluation Base expert forum, after which the "EME (Electro-Magnetic Effects) Embryo Group" was initiated, which is now transformed into the ENTER (European Network on EME T&E capabilities Rationalisation) Category B Project. One of the results of the efforts DTEB expert meetings was the adoption of the "Code of Conduct for mutual Investment in DTEB", the EDA DTEB "Conceptual Guide" in April 2008 and its full integration in the Armament Co-operation Strategy, as well

<sup>(2)</sup> Briefing of Col. Alain Bacchi to SERA 21 on 10th of February 2009

<sup>(3)</sup> Rationalisation: The organization of a business or industry upon scientific principles of management and simplified procedures to obtain greater efficiency of operation (Merriam-Webster Third Edition Dictionary, 1993).

as the agreement on the "General Rules and Procedures for the mutual use of T&E facilities". The "Conceptual Guide" describes the actual situation of the DTEB in Europe, its characteristics and the future demands. The "Differentiated Objectives model" is an agreed collective approach of the DTEB which allows the EDA Member States to create networks of T&E facilities/experts and co-operate in various fields and varying depth (exchange of information, mutual access to T&E facilities, acceptance of T&E procedures, establishment of co-ordinated offers, matching capabilities). This possibility has been taken up by the Electro-Magnetic Effects test community to rationalise their area of expertise but the overall result is considered marginal and progress is slow.

Parallel to the actions of EDA, the Letter of Intent (LoI) countries have taken the initiative to work together under the Test & Evaluation Ad hoc Management group (TEAM) structure in order to rationalise the EDTEB. The common perception of this effort is however that progress is slow. To focus the workload on the European approach, Germany ended its TEAM participation and continued working on rationalisation issues through the EDA initiatives.

This report is structured as follows. The next section presents the observations and results of discussions within the committee regarding the aspects of the test and evaluation area within Europe and the EDTEB. Then the analysis and sub-conclusions of this section are combined, after which the question "is the rationalisation of the EDTEB an aim in itself or a real necessity" is answered. We then explore possibilities and the way ahead to give a positive momentum on the rationalisation of the EDTEB. The last section presents our final conclusion and recommendations.

## **OBSERVATIONS AND DISCUSSION**

This section presents the observations and results of discussions within the committee. We first present the European situation and terminology of Test and Evaluation (T&E). Then the results of a SWOT analysis on the EDTEB carried out by the committee are exposed. The perspectives of the different stakeholders in the EDTEB are addressed next. The final subsection presents additional observations from the committee which are to be taken into account while discussing the rationalisation of the EDTEB.

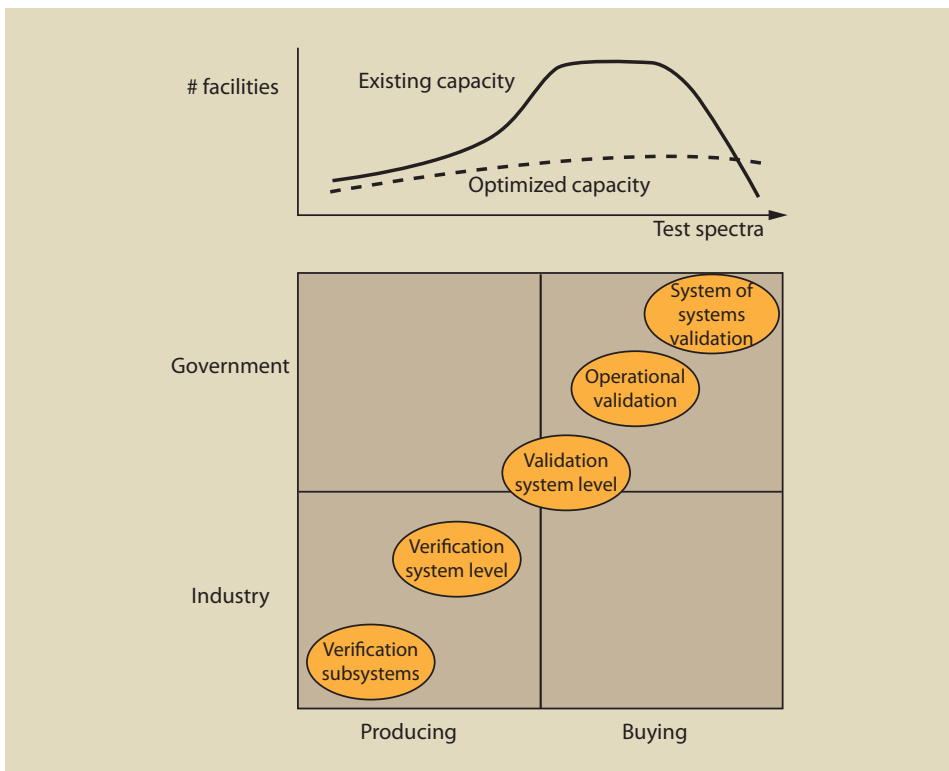
## The European situation and terminology of test and evaluation

Test and evaluation activities can be considered different in purpose, based on the life cycle of the (sub)system, and are performed by both government and industrial resources in the aspects of T&E engineering and T&E production<sup>(4)</sup>. Normally, testing closer to the operational environment is performed by governmental resources and testing closer to engineering skills is performed by industrial resources. The overcapacity within Europe exists almost over the full T&E spectra but is not evenly distributed. Further information about this subject and used terminology within the committee can be found in annex A.

The committee discussed the above mentioned aspects internally as well as with T&E experts and visualised the different aspects in combination with the different T&E spectra. This visualisation is pictured below.

<sup>(4)</sup> T&E engineering consists in the ability to define tests and the desired outcome of tests for a technical solution by defining the accurate requirements on the technical solution, defining necessary tests to verify requirements, defining how the tests will be performed, analysing the results and assessing the compliance.

T&E production consists in the ability to perform the required tests according to the T&E engineering including recording, preserving and delivering the required data.



Despite this overcapacity there are some areas where there is an undercapacity in Europe. Examples are the validation of systems of systems and the test and evaluation facilities necessary for UAV testing.

### ***Identified benefits and obstacles***

In order to structure the thoughts of the members of the committee and to identify the benefits of and obstacles to an EDTEB, a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was carried out. As an input for this SWOT analysis, the information from different presentations during SERA 21 was used as well as the supplied literature and background information with regard to the EDTEB. The main part of the SWOT analysis is however the result of out-of-the-box thinking of the committee members. The result of this SWOT analysis is included in this report as annex B.

### **Main benefits**

Cost savings and cost sharing are amongst the main drivers of the rationalisation of the EDTEB. However, developing mutual trust and understanding among the European states and defence industry with respect to T&E and achieving common transparent knowledge are also keys to the benefits of a rationalised EDTEB.

### **Main obstacles**

National sovereignty and national interest will be some of the main obstacles to overcome. Heavy armament producing nations will find it hard to share knowledge with the nations that primarily buy armament. Another major issue is how and where to rationalise T&E facilities.

While mutual trust and understanding are major opportunities, they are also major obstacles to success. If countries or industry do not trust T&E activities of others, the probability of success is limited.

Based on the outcome of the SWOT analysis, the committee concluded that the benefits of the rationalisation of the EDTEB are very positive. There are however also a number of obstacles which in some instances can be a big burden for the rationalisation to come to a real start. In order to relieve the effect of these obstacles, the committee carried out a risk mitigation exercise with respect to the identified obstacles. The result of this risk mitigation exercise is included as annex C.

### ***Nations perspectives on test and evaluation***

There are different demands on the level of T&E capabilities depending on whether the nation develops/produces defence systems ("producing nation") or mostly buys them ("buying nation")<sup>(5)</sup>. The demand is generally higher for producing nations than for buying nations.

#### **Producing nations perspective**

Two main aspects are considered to play a role for producing nations.

- **Operational sovereignty**

For a number of nations within Europe, operational sovereignty<sup>(6)</sup> is the main driver to act as a producing nation. This is typically the case for defence equipment which has a strategic purpose and when national protection of the knowledge and expertise is of utmost importance. Examples of this are the areas of nuclear defense systems and propulsion, CBRN, submarine and cryptographic knowledge as well as fighter aircraft expertise.

It is clear for the committee that a producing nation can allow other nations to use T&E facilities within these areas but that it will in all circumstances retain these facilities within its national borders. It is therefore a possibility for a producing nation to rationalise the T&E facilities on these defence areas but the criteria will be that it shall at least have T&E facilities available within its own borders.

It is however foreseen by the committee that producing nations may be willing to rationalise T&E facilities and agree with concentrating T&E activities outside the national border if the operational sovereignty is not influenced. The minimum level for a producing nation will however be that the T&E engineering capability be available within the nation for all areas of production of defence materiel.

- **Support of national defense industry**

A second area of interest for producing nations is the support of the national defence industry and the possibility for this industry to make use of governmental

<sup>(5)</sup> The terms "producing" and "buying" relate to the fact that certain equipment is manufactured in-country or not and there could therefore be a difference in one situation (e.g. production of ships by the Netherlands as a producing nation) against another situation (e.g. production of ammunition in which the Netherlands do not play a producing role but have to be regarded as a buying nation).

<sup>(6)</sup> Operational sovereignty is regarded as the ability to produce, modify, test and evaluate defence equipment as well as the ability to develop operational procedures for the effective usage of this defence equipment.

T&E facilities. It is therefore the opinion of the committee that producing nations will be reluctant to rationalise T&E facilities outside national borders if this has a negative effect on the performance and possibilities of that national defense industry.

### Buying nations perspective

Three main aspects are considered to play a role for buying nations.

- Availability of expertise capabilities (human resources)

The committee deems essential for buying nations to have expert capacity available in-country on the T&E engineering level in order to ensure autonomy and independence. This is necessary in order to evaluate products independently and in addition to the certificates or other documents provided by the producer/seller, to establish national requirements for testing of a specific type and group of parameters, to develop and/or verify programs and test procedures of specific parameters, to be able to participate in the testing of the product/group of products that the nation plans to buy and to be able to analyse the results of the testing.

- Sustaining a minimum of national T&E capability

It is important for the buying nations to maintain certain T&E capabilities. They could be limited ones, but concentrated on production that is economically beneficial and produced in large numbers – for example ammunition, clothing, etc. These are products that nations procure on a regular basis. Testing of such products by using national T&E facilities could play a role of "entrance control" for the procured items.

For these activities not only national but also producer's capabilities could be used, but in that case the impartiality of the result could be at stake.

- Using the T&E facilities and test results of other European countries

If a buying nation does not have a national T&E facility available for the required T&E, it is essential that the nation has access to facilities in other nations. For this reason, it is beneficial to establish transparency of the available T&E capabilities at the national, European and international levels. Part of this transparency is the performance of the T&E facilities and it is therefore desirable to have an accreditation system according to the accrediting rules of civil laboratories as well as T&E standards and methods for testing in Europe. Should the EDTEB be well established with

accreditation and T&E standards, buying nations could benefit from T&E activities already carried out by a producing nation and accept the results (after verification) without need for further national testing.

## Industry perspective

The industry is involved in the rationalisation of the EDTEB on two aspects. The first aspect is that industry is partly dependent on T&E facilities owned and/or financed by the government. The second aspect is that industry will be interested to take over T&E facilities if it can be shown that there is a positive business case.

With regard to the first aspect, the committee is of the opinion that industry cannot afford T&E facilities which are rarely used or so complex and expensive that it is uneconomical to operate them. Industry does however need access to these facilities in order to continue R&D work and to test and evaluate new products. The committee is of the opinion that it is not in the industries' interest to make use of national facilities, as long as their IPR are protected, but that financial, lead time and quality aspects are considered more important.

With regard to the second aspect, the committee is of the opinion that industry may be interested in "helping" the national government if there is a positive business case and if enough guarantees can be given to prevent a financial failure. The more the financial gains are considered beneficial, the more industry will be willing to operate or buy out T&E facilities. The committee reviewed different operational concepts with regard to co-operation between national governments and industry<sup>(7)</sup> as well as buying out governmental T&E facilities by industry but each case seems to be specific.

The sub-conclusion of the committee with respect to the industry perspective is that sustainable access to T&E facilities is crucial for industries innovation capability and the design and production of new products. This is especially the case if these T&E facilities are expensive and rarely used. It is however not in the prime interest of industry that these test facilities are within national boundaries as long as the IPR is protected.

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<sup>(7)</sup> Identified operational concepts includes public/private partnership, privately funded initiative and government owned/company operated (GOCCO) concepts.

It is however a possibility for industry to work together with the government; industry would be willing to do so if the business case of co-operation is positive and if enough guarantees are in place to prevent financial failure. The possibilities and areas of co-operation, or buy-out by industry, should be dealt with on a case-by-case basis during which the selection of the operation concept should be discussed.

### ***Perspective of the academic world and knowledge institutes***

It is recognised by the committee that the academic world and knowledge institutes play a role as stakeholders in the rationalisation of the EDTEB. This role is however considered as a role of "follower" in the rationalisation instead of a main player during the "landscaping" of the EDTEB <sup>(8)</sup>. The perspectives of the academic world and the knowledge institutes on the rationalisation of the EDTEB are therefore not taken into account in this study.

### ***Additional observations***

#### **The international dilemmas when closure of test facilities is considered**

When the closure of facilities is considered, this decision is in most instances a single nation's decision based on the expected usage of the facility, the expected cost and the existence of secondary sources, possibly in other nations. If the decision is taken to close the facility based on the fact that there is another source available in one or more nations, this decision can be regarded as a sound decision but the fact that these foreign facilities can also be closed by another nation due to low usage or high operating cost constitutes a risk.

Furthermore, it has to be considered<sup>(9)</sup> that due to foreign defence export laws<sup>(9)</sup>, there may be a possibility that a third party transfer has to be arranged in order to test and evaluate defence equipment in another European nation. There is a possibility that this transfer is not granted and that would leave the nation with only one choice of testing, being the T&E facilities of the foreign nation.

The EDA agreements with respect to the EDTEB do take into account the mutual notification if investments in test facilities are considered. However, they do not take into account the international effect when closure of facilities is considered. This non-existence

<sup>(8)</sup> The committee does also recognize the additional role of these stakeholders in the R&D area and the dependence of this area on the T&E facilities. This role is however also considered a "follower" role.

<sup>(9)</sup> ITAR is an example of these export laws.

of an agreement to inform each other when considering to close down a facility is regarded by the committee as a missing piece of the puzzle. It is therefore recommended to agree on a Code of Conduct when the closure of facilities is considered.

## **THE EDTEB: AN AIM IN ITSELF OR A REAL NECESSITY ?**

Based on the observations and result of the discussions presented in the previous section, the committee agrees on the following analysis.

1. Based on the outcome of the SWOT analysis, the committee concludes that the benefits of the rationalisation of the EDTEB are very positive. There are a number of obstacles but these can be overcome by making clear national choices and inter-governmental agreements.
2. Producing nations will be very reluctant to close down T&E facilities which are important for their national defence industry and are unable to close down test facilities which may affect the operational sovereignty. In other circumstances, they are able and willing to rationalise the EDTEB, even by closing down national facilities and making use of accredited facilities in other European nations.
3. Taking into account that a buying nation retains the availability of T&E engineering and certain national T&E facilities for specific national equipment and/or equipment that nations procure in large quantities, it is necessary for a buying nation to have easy, transparent, standardised and reliable (qualitative and quantitative) access to accredited T&E facilities in other European countries for those T&E areas which are not within its borders. The positive effect for the buying nations is that in these circumstances, less national facilities for T&E production are needed and that the result of T&E from other, accredited, facilities can be relied upon.
4. The industry perspective is that it is crucial to have a sustainable access to expensive and rarely used T&E facilities but industry can be interested to operate T&E facilities if there is a positive business case.

In conclusion, the committee is of the opinion that the EDTEB is a possibility and also a necessity. It is however also its conclusion that the present actions, opportunities, co-ordination and agreements are insufficient to realise the rationalisation of the EDTEB. The co-ordination between the different actors is considered low and the progress is slow.

Therefore, the committee is of the opinion that specific actions should be taken and positive guidance given to create a positive momentum to the rationalisation of the EDTEB. The suggestions of the committee with respect to these specific actions and positive guidance are worked out in the next section.

## HOW TO GET THE EDTEB STARTED

### How to motivate involved stakeholders to take the initiative

If things need to be changed, there has to be an initiative of stakeholders to start and sustain a change. Discussion and goodwill about a subject will not result in a change by itself, only real action will create the change. If the NADs would like to see a rationalisation of the EDTEB, stakeholders from the European T&E base should be motivated to act. Motivation can come from two extremes: the "stick" or the "carrot". The consequences of using the "stick" or the "carrot" are presented in annex D. The conclusion of the committee is that the "carrot" method should be regarded as the effective method to rationalise the EDTEB and it is therefore recommended to follow a bottom-up approach and to raise a EDTEB fund of which the EDTEB community can benefit if the business case demonstrates its positive effects.

### Where to focus?

It is considered too optimistic to rationalise all areas of the EDTEB in a short timeframe and in the same period. It is therefore necessary to focus the EDTEB rationalisation effort in those areas where the biggest gain can be achieved and where the obstacles are the least. It is the committee's consideration that this area is in the T&E categories as indicated in the figure below <sup>(10)</sup>.

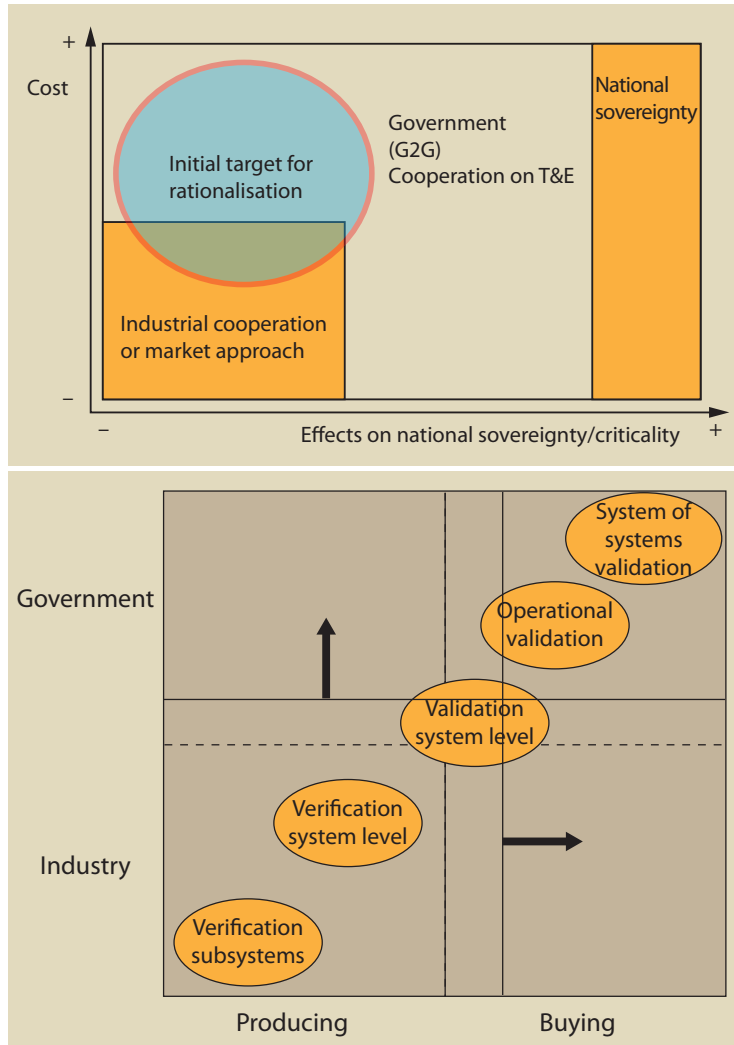
### How can a transfer of resources be achieved?

By trying to change the balance of different T&E resources within Europe, it is the committee's suggestion to focus on two directions. These directions are pictured below and comprise a shift from buyer-producer nations and governmental-industrial resources <sup>(11)</sup>.

<sup>(10)</sup> Examples of these test categories are EMI testing, wind tunnel testing, environmental testing, firing ranges, etc.

<sup>(11)</sup> The workable structure of the cost sharing and the business model will vary on a case by case basis and the agreements of a GOCC, PFI of total industry solution.

Within the shift from buyer-producer nations, it is suggested that nations focus more on the retained capability to carry out T&E engineering and leave the T&E production to a limited number of accredited European T&E facilities whilst using a procedure of easy, transparent, standardised and reliable (qualitative and quantitative) access to these T&E facilities. Within the shift from governmental-industrial, it is suggested to make room for industry initiatives when positive business cases are identified and encourage industry buy-out of government T&E facilities, work on GOCO and other business models, depending on the specific opportunities.



### The role of EDA

Rationalisation of the EDTEB is an integrated process which will have a long timeline. It is therefore foreseen that it will be a stepwise approach with different actors during the different timeframes. Co-ordination of these efforts is necessary as well as having a forum and arena where T&E stakeholders can operate in a formal as well as informal combination.

Based on the suggestions of the committee as detailed in this section, a further role for a co-ordinating body is foreseen, at least for co-ordinating the request for

and decisions about the granting of "carrots" being the T&E fund. Furthermore, this co-ordinating body shall be the linking pin between the actors in the field of T&E and the conference of the NADs.

It is suggested by the committee that the EDA will fulfil this role as a co-ordinating body for the rationalisation of the EDTEB.

## CONCLUSIONS AND RECOMMENDATIONS

The conclusion of the committee is that the EDTEB is a possibility and also a necessity. It is however also that the present actions, opportunities, co-ordination and agreements are insufficient to realise the rationalisation of the EDTEB. The co-ordination between the different actors is considered to be low and the progress is slow.

Therefore, the committee is of the opinion that specific actions should be taken and positive guidance should be given to create a positive momentum to the rationalisation of the EDTEB. These specific actions are centred on:

- the usage of a bottom-up approach in combination with the usage of a T&E fund acting as a "carrot" for the T&E stakeholders,
- focusing the effort to T&E categories which are expensive but do not have a large effect on operational sovereignty nor criticality,
- transfer of resources from buyer-producer nations and governmental-industrial facilities,
- using EDA as a co-ordinating body for the rationalisation of the EDTEB and acting as the linking pin between the actors in the field of T&E and the conference of NADs.

The committee proposes the following roadmap in order to give this positive momentum to the rationalisation of the EDTEB:

Step 1: Creation of T&E networks and standardisation of T&E procedures

Through an Integrated Project Team/network approach of T&E stakeholders, establish a standardisation of T&E procedures in the respective T&E categories.

### Step 2: Assessment of European T&E capabilities

Based on the EDA Capability Development Plan the objectives should be to identify specific areas where the nations have overcapacity and/or undercapacity and to classify (quantitatively and qualitatively) the already existing structures in the participating nations. The results of these investigations, following the comparison with equivalent industrial structures, will have to be presented through the coordination body of EDA to the conference of NADs. The nations will then have all the elements to individualise the areas of overcapacity and/or undercapacity and to decide on those of possible national interest.

### Step 3: Rationalisation of the EDTEB in a specific test category

The cost-effectiveness of the possible choices has to be evaluated as well as the possibilities of the different T&E facilities to act as an accredited T&E facility. It will also be necessary to define cost sharing criteria and possible criteria for the payment of the necessary fees for the use of the services. A further element of analysis is constituted by the comparison among the impacts in terms of cost between the choice to let the industry manage the facilities (outsourcing) or privilege choices like project financing (EDA) or a real partnership with the industry. It is recognised by the committee that part of these decisions are a national decision and can be influenced by the availability and possibility of making use of the T&E fund, acting as a "carrot".

## ANNEX A: THE TERMINOLOGY OF TEST & EVALUATION

When discussing testing and evaluation, it is important that the same language is spoken and that everybody agrees with the wording used for the different test and evaluation aspects. The committee therefore adopted the following terminology during the discussions.

### 1. Purpose of tests

Tests serve as means of proof in the life steps of a system: during planning, research and development, evaluation (of system or component or supplier), production qualification (proof of safety), acceptance, operation (mission, concept).

### 2. Role of tester

Tests are performed by suppliers to prove and qualify a system (verification), by customers to verify performance and for acceptance (validation), by authorities to ensure safety (certification/qualification).

### 3. Means to test

In order to be able to test, the following four means are required:

- a) expertise in the system and its testing
- b) test equipment and tools
- c) infrastructure and facilities
- d) know-how to assess the test results

### 4. Criticality

Important factors are environmental or safety critical tests, test sovereignty with regard to confidentiality, national safety and/or national industry, etc.

### 5. Test categories

Broad test categories:

Mechanical, Climatic, Chemical and Biological, Nuclear and Radiometry/logical, Munition Safety, Electro-Magnetic Effects, Communication, Payload Delivery, Platform Protection, Navigation, Modeling & Simulation, Surveillance, MMI/ergonomics, Software, Material test and Characterisation, Electro-Optics, Other functions.

Remark: the Totalisator List is an overview of the existing T&E capabilities in the EDA Member Nations regarding broad test categories and domains: Land, Sea, Air, Space, Weapons, C4I.

## 6. Test spectra

Verification of components and subsystem level comprises testing of a limited number of complex parameters (while recognising that the tests themselves can be complex) to verify that the specified requirements are met. Producers test.

Verification of system level comprises testing where several components/subsystems together make up a system which increases the complexity of testing whether specified requirements are met. Producers test.

Validation of a system is to validate that a system performs as specified. The buyers test to make sure that the system meets the requirements.

Operational validation of a system is when an operator tests that the system can perform the desired tasks/capabilities.

System of systems validation is when an operator tests more than one system to ensure that they co-operate and function together in the desired way.

## ANNEX B: SWOT ANALYSIS

DTEB	
If DTEB were to be established, which benefits (strengths and opportunities) and obstacles (weaknesses and threats) could be expected to emerge?	
BENEFITS	OBSTACLES
<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>* rationalisation of facilities</li> <li>* cost savings to be obtained</li> <li>* create a common knowledge base</li> <li>* provide a broad picture of pMS and industry T&amp;E facilities</li> <li>* avoid overlapping investments in new T&amp;E facilities</li> <li>* influence from other EDA initiatives will ease implementation</li> <li>* will free resources to be invested in new T&amp;E capabilities</li> <li>* higher usage rates of T&amp;E facilities</li> <li>* if a pMS T&amp;E facility is overbooked, it will be easier to make use of another pMS T&amp;E facility</li> </ul> <p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>* mutual trust and understanding</li> <li>* easy and quick access</li> <li>* cost sharing</li> <li>* environmental impact of fewer test facilities</li> <li>* privatise what is possible without jeopardizing national key areas</li> <li>* interoperability and flexibility within MS will increase</li> <li>* could lead to more cooperation in developing and investments in new equipment</li> <li>* closer cooperation between industry and military</li> <li>* increased possibilities to learn from each other - knowledge transfer between specialists - create networks</li> <li>* due to higher usage rates, business cases w.r.t. investment can be more positive</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>* cost sharing - how to agree upon model?</li> <li>* will pMS release relevant and sufficient data?</li> <li>* slow process through existing channels?</li> <li>* how to implement future needs of defence systems into T&amp;E</li> <li>* are test facilities in a pMS always available for other pMS and what priority will be applied?</li> </ul> <p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>* national sovereignty</li> <li>* interest of national industry (safeguard jobs, etc.)</li> <li>* cultural differences among nations</li> <li>* IPR - OEM</li> <li>* ITAR - TAA, etc. With reference to US products</li> <li>* national legislation</li> <li>* who is going to decide - Forum: NADs, NATO, EDA, etc.</li> <li>* standards and procedures are different among sMS</li> <li>* difference between countries with heavy arms production and those who are mostly buying</li> </ul>

### Main benefits

Obviously cost savings and cost sharing are vital in the economic environment we are facing today and naturally amongst the main drivers. Cost savings mean increased funding for new investments in key areas for the European Defence sector.

However we see other valuable opportunities. Developing mutual trust and understanding among the European member states and defence industry, taking national sovereignty into the equation, is a huge task. Here the DTEB can take advantage of other EDA alternatives and the general change in the threat picture which now is a war against terror.

Furthermore the creation of a common transparent knowledge base will in the long run create an environment of interoperability and flexibility that will be beneficial to all aspects of T&E, also in deployed (ex. NATO) scenarios.

## **Main Obstacles**

Even though benefits mentioned above and in annex A seem obvious, relevant and necessary there are major obstacles that have to be dealt with.

National sovereignty and national interest will be some of the main obstacles to overcome. The heavy arms producing countries will find it hard to share knowledge with the countries that primarily buy arms. This will impact the way ahead and which areas of co-operation that have the highest probability of success, and that is why the "arms producing" club of countries already work together in another forum. The first successful steps may be taken in this club, in a new "club of buying nations" or maybe more likely bilaterally.

Another major issue is how and where to rationalise T&E facilities. When the general picture of T&E facilities has been generated, it has to be decided where T&E activities must be performed in the future. A forum of NADs and industry must have the authority to decide up to a certain (decided) level, whereas major areas must be agreed upon in the EU Parliament or NATO. EDA may not be that forum.

While mutual trust and understanding are major opportunities, they are also major obstacles to success. If countries or industry do not trust T&E activities of others, the probability of success is limited. The extent and scale of T&E is without a doubt too high today, stemming from long traditions of national norms without questioning the necessity or re-evaluating the tests done by OEMs or others.

## ANNEX C: RISK MITIGATION TO OBSTACLES IDENTIFIED DURING THE SWOT ANALYSIS

Identified obstacles	Recommended action to mitigate risk
1. Cost sharing – how to agree on a model	General and/or fixed cost sharing models are difficult to push through. The aim should be to have a number of formats of processes to come to sharing of cost on a bi- or multilateral basis. This is already taken into account in the EDA guidance document.
2. Will pMS release relevant and sufficient data	Depends upon "trust" in each other backed up of the necessary NDAs, etc. Again, bi-lateral agreements will be the way forward. pMS can exclude certain areas of T&E to secure and protect national interest. Art. 296 is often used in a protectionistic way and a more market-oriented and more spelled out and specified article would make things easier.
3. National sovereignty	Will be a lengthy process to "lower the guards". When a T&E area is defined by nations as "not sharable", other parts of T&E can be worked on. See the final section in our report.
4. National legislation	Has to be considered and respected. Obstacles may be overcome within EU or by assistance of EDA.
5. Interest of national industry – safeguard jobs etc.	After the process of identifying areas of overcapacity in pMS and classification of existing structures and capabilities across nations (both governmental and industry), EDA could serve as a co-ordinator providing a basis for decisions for NADs or other relevant forum. Again a new, not so restrictive art. 296 would be relevant.
6. Are test facilities in a pMS always available for other pMS and what priority will be applied	One major concern, especially for the buying nations. The "system" has to prove itself step by step, together with mutual trust building between pMS. Some areas might be better outsourced to industry, where outsourcing conditions has to include among others availability.
7. Difference between countries with major arms production and those who are mostly buying	The major arms producing nations are organised in Lol. A similar organisation or a sub-group Lol consisting of the mainly buying nations, could be beneficial. Concentrating on issues of importance for this group of countries. Co-operation of T&E issues across Lol, NORDAC and nations outside these groups is necessary if rationalisation of T&E facilities in Europe is to succeed.

## ANNEX D: STICK OR CARROT

### *Using "the stick"*

The rationalisation of the EDTEB can be a result of a top-down approach where an inter-governmental body directs and co-ordinates the rationalisation of the EDTEB. Under the direction of this inter-governmental body, business cases can be developed and final results can be reported to a board which will decide about the suggested co-operation, close-out or other actions with positive effects on lead times and possibilities for quick wins. Motivation for the EDTEB community to work together with this inter-governmental body will be a result of the dilemma "eat or be eaten" and will be characterised by a defensive approach of the EDTEB community. Furthermore, it is envisaged that this top-down approach does not give enough consideration to the different perspectives of producing and buying nations as well as to the industry perspective.

Our committee does not regard "the stick" method as an effective method to rationalise the EDTEB.

### *Using "the carrot"*

The rationalisation of the EDTEB can be a result of a bottom-up approach where the EDTEB community is motivated to rationalise in order for themselves to become bigger, better or more active in their respective competence areas. In order to become bigger, better or more active in a competence area with a globally diminishing request for test and evaluation support, co-operation with other test and evaluation sites is necessary. This co-operation shall thereby be centred around discussions about sharing of the workflow, competitive and lower in-service costs, higher utilisation of assets but also about opportunities to modernise and to becoming a centre of excellence. Motivation for the EDTEB community to work together will be a result of the dilemma "choice" although it can be expected that the progress for rationalisation of the EDTEB is moderate.

This choice of the EDTEB community can be stimulated if they can make use of financial assets which are made available if co-operating parties are able to demonstrate a positive effect on the rationalisation. It is therefore suggested by the committee to raise a EDTEB fund of which the EDTEB community can benefit if the business case demonstrates its positive effects.

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Towards a more integrated armament function between European actors such as EDA, EUMC, Lol, OCCAR: a realistic goal?

**VIEWS AND RECOMMENDATIONS EXPRESSED IN THIS DOCUMENT  
ARE THOSE OF THE COMMITTEE'S MEMBERS.**

**IN ANY CASE, THIS CONTENT REFLECTS  
NEITHER NATIONAL POLICIES OF ANY SERA NATION,  
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## EXECUTIVE SUMMARY

*There is a growing need for European Nations to co-operate in a fully integrated way if they are to achieve their ambitions for new defence equipment. This report looks at whether this is possible given the growing complexity of armament systems, the disparate procurement and approval processes, the different operational requirements and motivations, and a changing industrial base.*

*After examining what drives nations to acquire military capability and what influences the achievement of full integration, the committee concludes that it is not possible unless there is a fully harmonised political and management approach via a single unified political entity. Such a body would set the requirements, rules and oversee the process under a single European defence policy.*

*It is recognised that this is very unlikely to ever happen as issues such as little or no empowerment, industrial protectionism and differing political agendas will continue. The conclusion was that effort should focus on driving out a realistic set of improvements against the current political backdrop, and ten changes were identified. The most important ones were harmonised into the following recommendations:*

- create greater political and strategic alignment, reaching clear agreement on the collective European defence and industrial policy;*
- within that policy, strengthen the authority and autonomy of the existing armament groups (EUMC, EDA, Lol and OCCAR), and give consideration to better defining collective in-service support (e.g. expand OCCAR's role in covering this need);*
- look to remove rigid workshare, or apply it across as broad a spectrum of collaborative activity as possible;*
- promote more manageable collaborations.*

## ISSUE

There is a growing need for European nations to co-operate in a fully integrated way if they are to achieve their ambitions for new defence equipment. Is this possible given the growing complexity of armament systems, the disparate procurement and approval processes, the different operational requirements and motivations, and a changing industrial base?

## INTRODUCTION

To determine what is feasible in terms of moving towards an integrated European armament function it is important to understand nations' motivations and constraints, and the effect of a changing international and industrial environment.

### Drivers

Each nation has its own reasons for acquiring military capability. These vary enormously, but the primary ones are:

- self-defence;
- honouring international agreements;
- maintaining or protecting areas of national interest;
- acquiring and/or maintaining technology.

The capability portfolio of a nation is defined (or constrained) by various parameters:

- political will;
- affordability considerations;
- the size of the nation;
- the degree of affinity and obligations to international organisations (NATO, EU, EDA, Lol), are leading to more joint operations and act as drivers for more commonality of equipment, infrastructure and tactics.

In summary, each nation has its specific range of armament programmes, stemming from the capability needs which are for their part derived from national politics.

Some of the above has encouraged nations to seek collaborations to maximise value for money, to increase operational capability (or get an operational capability that one nation cannot get alone) and to increase the degree of commonality with potential coalition partners. The common programme goals have to be fully agreed, otherwise this will result in a set of contradictory demands and drawbacks within the participating nations, such as:

- loss of full control;
- having to compromise;
- industrial capability and key technology ownership issues.

This in turn has led to a set of agreements and control mechanisms to protect the above and still deliver on the main reasons for collaborating in the first place. This has made international co-operation on armament programmes extremely complicated, in particular in terms of decision making, which leads to delays (and hence cost increases) and further increases the level of complexity.

## Co-operating

In the past nations were able to be flexible and creative in finding partners, be it bilaterally, multilaterally or within organisations. However, with an enlarging European armament community and the bringing together of political structures (ESDP) this has also become more complex. Europe has tried to bring about greater order and effectiveness to the process by moving some way towards harmonisation of defence structures, building on NATO linkages, gathering common staff targets through EUMS, political linking through EDA and Lol, and through the creation of a specialist procurement organisation in the form of OCCAR.

The diagram on the next page illustrates the current structural groups and their roles.

## EFFECTORS

From the above it could be envisaged that Europe is already moving towards a fully integrated process through the formation of organisations such as EDA, Lol and OCCAR. However there are "effectors" that can influence the degree to which full integration is possible.

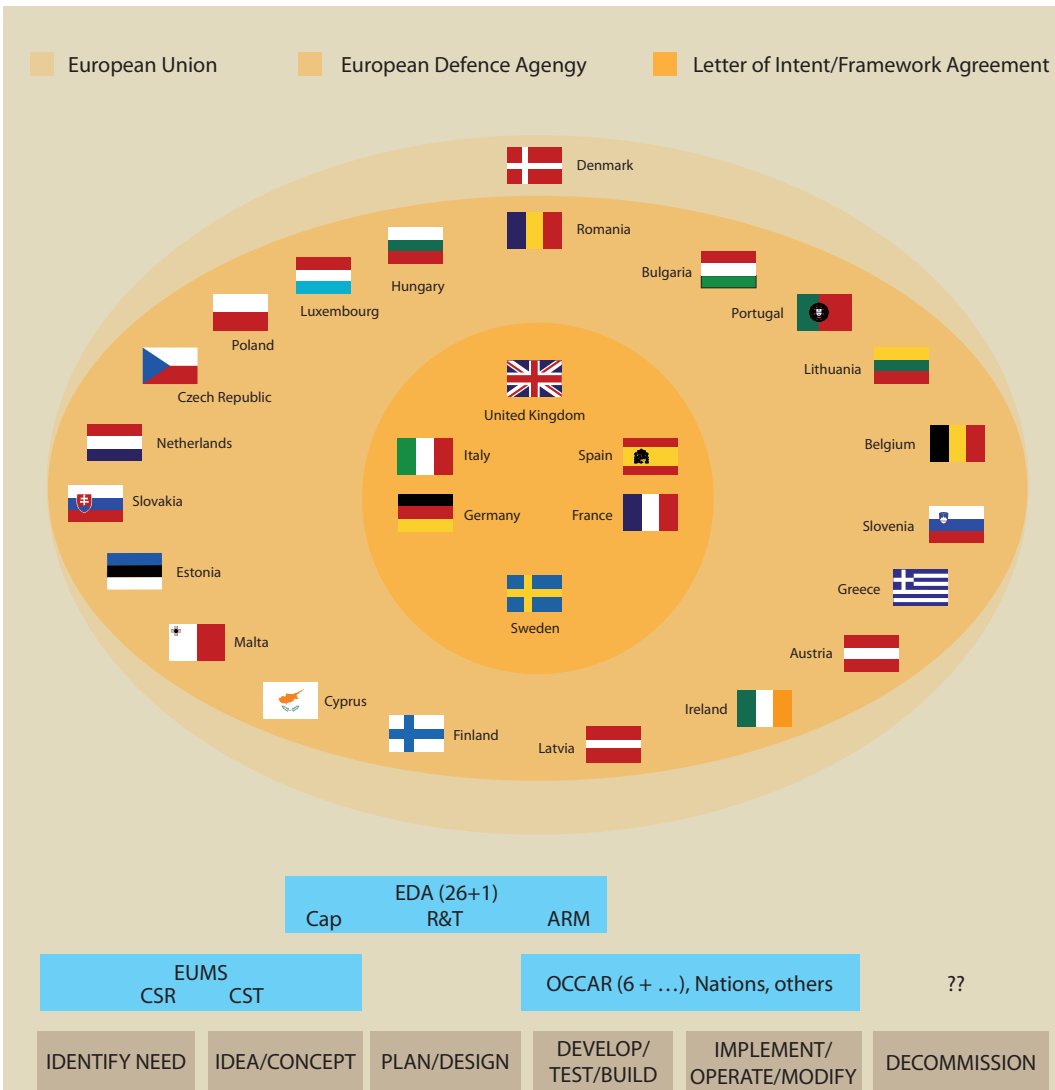
### Direct Policy Effectors

The direct policy effectors are:

- **Other commitments**, for example to NATO, which act as requirement drivers, set standards, require budgetary contributions;
- **Industrial changes** - European harmonisation is effected by industrial globalisation;
- **Differing political agendas** – giving a different outlook on the world;
- **Differing operational or functional requirements** – resulting in several versions and variants of the products and requirement creep;
- **Legal issues** - IPR, environmental protection, claims of protectionism;
- **Workshare demands** - the need for offsets and juste retour;

– Differing national support organisations with different requirements – meaning each nation supports the commonly produced equipment themselves, discarding the advantage and synergy of undertaking in-service support in a common way.

Looking at two primary effectors, which often form the basis for political decision making as they influence economics and employment in the participating nations:



## Industry

Europe has experienced a polarisation of defence expertise in a diminishing number of specialist groups and companies, some outside the direct control of the European nations. There is also globalisation and a changing defence industry.

To go ahead with a more integrated armament function at a European level, governments and industry are faced with some paradoxical and complex issues mainly due to national past investment to preserve national sovereignty and national industry accordingly, which have led to an industrial overcapacity.

At the same time, the costs and complexities of defence systems have continued to grow whilst national defence budgets have continued to shrink, and this has had a large impact on industry's investment capabilities and nations' ability to continue to finance innovation in their diverse industrial supply chain.

## Workshare

Nations often invest a large proportion of their domestic budgets into defence acquisition and therefore wish to have a large say on where that money is to be spent, wanting to see as a minimum an equivalent amount re-invested into their industry via programme workshare. Sometimes they will accept a lower level of return in monetary terms providing that it is reasonably high "value" technology work. However, it is often very difficult to reconcile as nations' perception of the value of the work streams within a programme vary, with inter-nation competition occurring for the more attractive (usually high technology) work. This can make the programme highly politicised.

Unfortunately, defence equipment and service provision do not break down into conventional sections which allow workshare to be distributed in accordance with the demands or cost share contributions of the participating nations. This leads to a sub-optimal allocation of development/production activity amongst the participating industries. The consequences are:

- increasing costs as:
  - there is an increased number of interfaces,
  - assembly is undertaken in a more dispersed way;

- increasing risk, as some delicate equipment undertakes additional journeys that are purely driven by workshare demands;
- longer assembly timescales and transportation effects can use up the allocated equipment life.

Maintaining that balance is extremely difficult, especially if there is a nation joining late or changing its involvement, including leaving the programme. It is hard to satisfy the workshare demand in small, single programs. Rigid workshare demands increase the difficulty and hence the timescales for introducing changes, as it could necessitate some rebalancing amongst extant work agreements, with the difficulties increasing with the passage of time.

## Indirect Effectors

There also exist indirect effectors resulting from the imposition of procedures and changing circumstances. Examples of these include:

- **Programme Management** – Nations mostly maintain national programme management structures even if a multinational programme is given to a European body, like OCCAR. This results in the necessity to create several international decision making bodies (Working Groups, Steering Committees, Boards of Directors and NAD level engagements) to feed similar hierarchies within the nations. This leads to significant management complexity, duplication of effort and procedures and the national retention of the decision making authority. This in turn can impact decision making, and even worse, can hamper decision making. All this creates programme delays and cost increases, which then encourages nations to impose greater controls, or to negotiate directly with industry themselves, leading to more confusion and delay – a vicious downward spiral.
- **Budget approval procedures** – Nothing can be achieved without due budgetary approval. The budgetary approval processes in each nation are different, and each nation is affected differently by fluctuations in the world economy and subject to their own internal economic circumstances. This means that it is very difficult to get common budgetary approval in time, resulting in the need for significant harmonisation effort. This is compounded by the fact that different "overseers" are involved in each nation (for example the German Parliament

has to be engaged for commitments over 25 M€, whereas in the UK the approval ceiling is significantly higher). This also places differing demands on the provision of information, leading to a complex and effort-intensive reporting system. Also, there can be an expectation of a differing sequence of signatures (in some nations the expectation is that industry will sign first, in others it is the government), which can lead to overly complex workarounds.

- **Industrial Arrangements** – There is pressure on industry to enter into consortiums or other teaming arrangements to give participating nations influence in determining or delivering the project goals. Recent industrial harmonisation has helped to negate this to a degree; however, where there is no single industrial body with a footprint within each nation's boundaries, these demands are still evident. This has caused internal tension and led to the creation of some sub-optimum working practises and work allocations. In addition, the question of state ownership can affect the degree to which industry and governments are willing to collaborate.
- **Exports** – The continuing reduction in defence budgets means that nations increasingly look at export sales as a way to maximise the effectiveness of their available budgets and/or lever additional funds into the programme. The benefits are either through a direct cash return in the form of levies or by offsets. This leads them to be less passive in promoting exports. However, as exports can improve industry's stability, promote growth, generate national income and trigger very strong moral debates, they often have a high profile and are seen as political issues in most nations. This has led those nations to generate strict controls that protect their interests, and because these interests vary from nation to nation this has resulted in a disparate set of rules and regulations. These can act as a risk or a constraint on what the programme is able to achieve, with the most stringent rules setting the agenda and determining the pace in which things progress.
- **Expansion** – Expanding the European armaments community makes bigger co-operations more likely. This increases the complexity and the impact of the effectors above, especially if a decision can only be taken with unanimous agreement. At best the effect of this is likely to be a linear growth of complexity, but more likely more than that.

## ISSUES NOT COVERED BY CURRENT EUROPEAN BODIES

One of the primary areas where Europe has yet to move to establish a collective and harmonised group is in-service support. To date OCCAR is the collective body which acts furthest down the standard project life-cycle phases, though at present it is still immature in terms of in-service support. Although it is primarily focused on development it has participated in establishing some in-service support arrangements. Agencies such as NAMSAs could deliver in-service support for European programmes too. However, there is no dedicated group looking to harmonise the differing national support organisations with their different requirements.

On a similar theme, and with increasing commonality of equipment, increasing complexity of components and more stringent environmental protection laws, it would make sense if the participating nations in any venture also jointly considered how they might achieve disposal cost-effectively.

These areas are likely to be subject to the same effectors as listed above.

## DISCUSSION

### Utopia

Most of the issues described above result from having nations participating in the process with different drivers, goals, agendas, expectations, rules and history. Therefore, if there is to be a fully integrated armament function, with all the benefits that would arise, there has to be a fully harmonised political and management approach via a single unified political entity that sets the requirements, rules and oversees the process under a single European defence policy (e.g. the "United States of Europe"). This would overcome the differences that currently beset fully effective collaboration. However, it is recognised that although this would be utopia in terms of collaboration it is very unlikely to ever happen. Until that time effort should focus on driving out a realistic set of improvements against the current political backdrop.

### A Realistic Construct

The main players in the armament process are the nations. They will need to be represented throughout the whole life cycle of the project by well-run and efficient

organisations which they trust to fully empower them to manage the process without interference. Those organisations should be fully able to make decisions and be free of approval and budgetary cyclic effects; that is, agencies constituted by the nations, acting on behalf of the nations and with complete authority to manage the programme in an efficient way and within budget. Ideally, this would be one agency covering the programme from inception to disposal, which would be able to make appropriate and cost-effective decisions taking into consideration the impact across the whole project life cycle.

Therefore, apart from in-service support where there is no dedicated multinational agency (as described above), in terms of functions the whole project life cycle is adequately covered by the existing groups:

- EUMS for requirement setting;
- EDA and Lol for aligning those requirements with a strategy and commercial considerations (the role and alignment between EDA and Lol will need to be resolved if full pan-European integration is to be achieved);
- OCCAR to deliver a whole life cycle service.

Within these groupings there must remain full freedom of choice as to which programmes nations can join. However, to avoid the consequential reduction in effectiveness and benefit that results from having too many partners (the definition of too many depends on the value, complexity and political profile of the programme) there is a need to solve the challenges associated with increasing the number of partners. That is, unless the delivery authority is autonomous and fully empowered with the appropriate resources, i.e. free of multi-partner effects.

## **Process and Authority**

It is insufficient just to create organisations. To aid the full integration of the European armament function there also needs to be effective processes, both within organisations and across the interfaces, all operated by fully empowered authorities.

The ideal solution would be for the delivery groups to receive clear, high level rules on their purpose, boundaries and statutory requirements. They should then be left to their own devices to work out their internal organisation (recruiting personnel on the basis of merit), processes and vision. Resources for the programme should be

guaranteed in accordance with the agreed plan, governance requirements should be kept to the minimum and decision making left (within the original statutory requirements) to the delivery organisation(s).

One key tenet to successful delivery is the approach to workshare. Nations should ideally waive all workshare demands, with work awarded to the most capable group (the EU was set up for collaboration and improvement – workshare operates against this principle). However, it is recognised that there will be a need to satisfy the internal national "return on investment" demands, particularly as some nations can base their decision to join a programme on workshare considerations. In these cases those nations should recognise that they may need to pay a premium to ensure their workshare demands.

A nation should also pay a premium whenever it demands something unique that affects the efficiency of the programme; for example, protectionism of a national technology and industrial base, or non-aligned export controls (where this increases bureaucracy, creates time delays or denies a potential programme income stream). This would act as a deterrent to their inclusion. Unique requirements should be identified and "priced" at the start of the programme.

## **Route to Effective Collaboration**

### ***Political Goals***

Effective collaboration will start with a harmonisation of the nations' political goals with regard to defence. As the utopia solution of a single political entity is not yet feasible, then collaboration can only be effective when the political aims of the participating nations are in alignment. Should nations enter into any collaboration with a different agenda, the programme will suffer from tensions throughout its existence. It is proposed that each nation confirm the motivations and intentions of the other partners before deciding to collaborate.

### ***Capability Goals***

The start point for any collaborative programme is the harmonisation of the capability goals, and throughout the programme avoid requirements creep. This is not simple given the nations' differing operational outlook on the world. It would appear that EUMS and Lol, with the involvement of EDA, is the proper forum to

harmonise these requirements to correctly launch a programme. However, these bodies must be allowed to do so freely and without preconceived ideas on what the solution should look like.

### ***Technology and Industrial Base***

A subset of this is the creation of an underpinning technology and industrial base able to deliver on these identified defence needs. In creating this it is important to ensure that there is a capability approach (rather than preconceived solutions), good supplier competence and a competitive industry. A strong defence industry needs competition and investment. To achieve these aims requires some critical activity from the nations, especially clarifying capability priorities (both in the short and long term), consolidating demand and targeting investment.

Nations will need to think carefully about their willingness to create a European defence equipment market and the degree to which they wish to open their markets to non-European contractors, including at sub-contractor level. In making such decisions account has to be taken of issues like ensuring that protectionism does not lead to an over-protected and inefficient European industrial base versus the degree to which products from non-European contractors will limit Partner nations sovereignty and freedom (for example, the willingness to be subjected to potential restrictive US International Traffic in Arms Regulations).

There is also a need to determine what kind of relationship is desirable with that industry, a relationship that will need to balance competitive procedures with ensuring security of supply. The most viable approach that has shown some success is the creation of a partnership between a nation and its industry. This involves more open sharing of information and joint activity to advance the aims of both the partnership and the affected programmes. However, that partnership needs not to become too "cosy" as the incentive to continually improve needs to be retained. Perhaps it might be possible to expand the national partnership model to the wider European stage, with European preferred suppliers who are in partnership with EDA or OCCAR and who operate effective European competition at the sub-contractor level. Those preferred suppliers would need an incentive to show continual improvement against a baseline and retain a strong competitive edge in the world market (e.g. use of off-the-shelf products and dual technology enabling leverage of civil investments and involvement of universities for R&T and R&D support), with the threat that any drop in

position would remove their preferred supplier status. They should be able to increase their worldwide competitiveness with a strong European market behind them, and have sufficient funds and insight of the forward needs to help assure effective and correctly targeted technology investment.

The associated procurement strategy is also important; from the size and number of phases, how the project will transit from one phase to the other (what evidence is required), determining at what levels competition will occur, the pricing mechanism, the incentivisation/penalty arrangements, etc. This will depend to a large degree on how the European delivery organisations are arranged; for example, if OCCAR will take on the responsibility for in-service support provision then it might be possible to have a single through life contract (all phases in one), with a unique budget. This should allow an optimisation of the procurement costs, e.g. a secured global price for the whole life cycle.

### ***In-Service Collaboration***

The question of post-delivery support needs careful consideration. There are advantages from undertaking support collectively on what is common equipment; through the sharing of Post Design Service activities, common and hence reduced spares pools and shared enhancement/mid-life update activity. However, some of the effectors described earlier will also have an influence on the degree to which this is done and how effective it is. There needs to be effort in looking at pan-European in-service support policy (sharing test and training facilities, rationalising storage and/or maintenance depots, collective configuration control and inter-changeability, etc.). It is only from that work that the need, shape and purpose of any in-service support groups will become apparent. It may even prove sensible for OCCAR to take on the role of in-service support provider (and perhaps in-service support policy owner), seeing a programme through from concept to disposal.

### ***Overseeing***

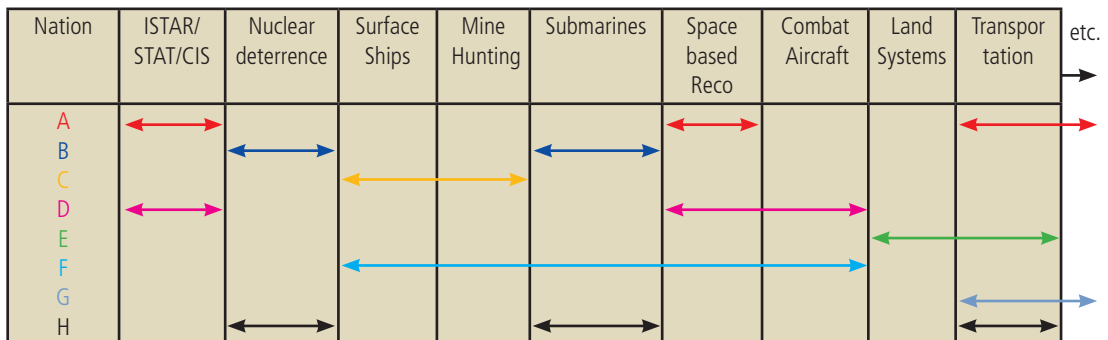
EDA would have a key role in facilitating these pan-nation agreements and ensuring proper tasking and resourcing. The actual delivery groups should then be left to ensure delivery; free of interference, with a minimum reporting burden and with workshare either fully waived or at least balanced globally across their entire catalogue of programmes. To ensure the approach is fully integrated there needs to be a form of formal tasking and handover from one group to another – perhaps

EDA could act as the regulatory/governance group that assures the smooth running of a programme from concept to disposal, overseeing and tasking OCCAR and any in-service support groups<sup>(12)</sup>. If OCCAR were to take on the in-service role then the risks across the interface would be reduced.

## More Radical Possible Approaches

### Strategic Co-operation

Even the larger European defence nations can no longer afford to participate across the full range of required defence capabilities. Therefore, harmonisation of the armament function should look beyond sharing operational goals on individual collaborative programmes and investigate whether operational needs could be met in a more strategic way. One way is for nations not only to receive capability just in those areas in which they are directly participating, but by taking a European strategic view and pooling the developed items and skills needed to maintain, or get, a defence capability across the whole defence spectrum. This means making one nation (perhaps with others) responsible for providing a particular capability to all European nations and in return they receive from the "collective" commensurate capability in the other areas of defence, giving them a full portfolio of defence capability. This is illustrated below.



Each nation either receives the capability directly to operate or is protected by the use of that capability by one or more other nations (e.g. nuclear deterrence)

<sup>(12)</sup> On Monday, the 18<sup>th</sup> May 2009, Mr Javier Solana, Head of the European Defence Agency, announced the upcoming negotiations on the Administrative Arrangement between EDA and OCCAR and the recommendation for the conclusion of a Security Agreement between EU and OCCAR. These are steps forward in the recognition of OCCAR on the European political level and in the formalisation of the existing working relationship between OCCAR and EDA.

Having nations and their industry focus on areas where they have specialist experience (for example the Netherlands for mine hunting, Spain for communications, etc.) and leaving them alone to deliver would free the process of collaboration from the oversight and lack of empowerment issues that have hindered successful collaboration in the past and which have led to delay and cost increases. However, the achievement of balance across the spectrum would require a fully agreed pan-European strategic plan with the acceptance of high mutual dependence and that their own nations' industrial skills will be concentrated into specialist areas. In these circumstances EDA would become more like a facilitator and refereeing service, as well as an "ensurer" of full networking capability between the differently sourced capabilities. This latter point would need to be on the back of a common operational doctrine and mission profiles (created by EUMS).

### ***Mergers***

Merging industry and/or defence forces will drive greater harmonisation. There has already been some concentration of defence industry at the European level, as a result of increasing programme costs and equipment complexity and as a consequence of the creation of collective European budgets. This has resulted in some movement for larger industry to become system integrators/facilitators, rather than direct manufacturers. This trend could be encouraged by a group such as OCCAR via its selection of a procurement strategy.

The advantages of industrial mergers are already apparent in some particular areas such as weapons, where there is effectively one single European missile provider, with a footprint in many European nations. This has enabled increased commonality in products and made collaboration simpler as there is a single prime, which the participating nations see as their own, rather than a consortium or specially created "letterbox" company that suffers from internal tensions and a lack of real control of all the contributing industrial groups (which in some cases are much larger than the programme design authority). This needs to be balanced by an effective competitive market at sub-supplier level.

Collaborative programmes have suffered from the different demands on what the equipment needs to do for the different end customers. This has led to sub-optimal compromises and affected decision making timescales. If there was a single European Defence Force there would be much greater clarity on purpose and end

customer needs. However, a complete merger of the participating nations defence forces is recognised as not realistic yet, but any move towards achieving common operational aims would greatly benefit collaborative armament development. EUMS should play a large part in this.

Mid- and long-term evolutions like the mergers described above will in turn consolidate the processes described earlier and will therefore generate a momentum for more co-operation programmes.

## **HEALTH WARNINGS**

A co-operative programme only bears a cost saving potential if the cost reduction for each stakeholder via cost sharing is larger than the additional programme costs created by a more complex managing procedure and a more complex technical solution in order to satisfy all the needs (e.g. more versions).

Any effort to limit the dynamic process of the nations and to try to "Europeanise" the armament function in order to maximise co-operation will meet resistance in the short term and reduce the effectiveness collaborations can potentially offer. Therefore, the change from the current situation to a more integrated armament function must be progressive and not restrictive in the short term.

Co-operation needs to be balanced from the start with all foreign policy relationships.

## **CONCLUSIONS**

A more integrated armament function is "a realistic goal". Utopia would be to replace collaboration with a single European political entity directing and funding defence acquisition and support without the constraints of work allocation, budget frames and burdensome control mechanisms. However, this is not realistic yet and issues such as little or no empowerment, industrial protectionism and differing political agendas will continue. This means that for the foreseeable future it will only be possible to bring about limited improvement by undertaking some or all of the ten changes listed below:

- The existing available European groupings (EUMS, EDA, LoI, OCCAR, NAMSA) are sufficient to support the aim of a more integrated armament function. Their authority and autonomy requires strengthening. Removing or reducing the mirroring of activity and oversight within the participating nations is a good way of beginning the transition to this state.
- Nations need to improve their approval and budget procedures with regard to collaborative programmes, especially assuring money flow and allowing borrowing to balance bank accounts.
- Nations should provide greater empowerment and, where they cannot, speed up decision making.
- Rigid workshares should be avoided and global balance applied – the wider the application of balance the better.
- Smaller, more manageable collaborations should be promoted.
- Nations also need to achieve greater strategic alignment, ensuring clear agreement is reached between all participants early with regard to the purpose and expectations of the programme, and there should be a common set of rules and regulations.
- A nation should pay a premium whenever it demands something unique that affects the efficiency of the programme.
- Nations need to decide on their collective industrial strategy – do they wish to see the emergence of European super-primes and a concentrated European industry, what sort of relationship do they want with their industry (is there a competition/protectionism balance?), at what level does competition apply (is it sub-contractor level?) It would appear that a partnering arrangement between the participating nations and the principal industrial body is best, one that is not too "cosy" and still is an incentive for continuous improvement.
- Export is an area where a more proactive collective approach will achieve significant benefit. Consideration should be given to establishing an "EU Foreign Military Sales" type process in order to better co-ordinate export licensing.

- Nations need to consider the whole life cycle of the proposed collaborative equipment at the start of the programme. In-service support is an area where collaboration could offer greater benefit. Collaboration in this area should be managed by the group responsible for the equipment and/or service provision.

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Sharing R&T effort  
or preserving national autonomy:  
Where is the border?

**VIEWS AND RECOMMENDATIONS EXPRESSED IN THIS DOCUMENT  
ARE THOSE OF THE COMMITTEE'S MEMBERS.**

**IN ANY CASE, THIS CONTENT REFLECTS  
NEITHER NATIONAL POLICIES OF ANY SERA NATION,  
NOR POSITIONS OF ANY COMPANY.**

## EXECUTIVE SUMMARY

*The overall question is too broad to answer as not all R&T really affects national autonomy. So the committee narrowed it down to focus on government-influenced, sensitive R&T in Europe.*

*Compared to the USA, the European defence R&T effort is fragmented and significantly smaller. Should Europe wish to keep track with the USA somehow, a more efficient use of research and technology has to be aimed at.*

*The present European picture regarding sharing of R&T effort, R&T goals and objectives reveals that there will always be borders playing a crucial role in sharing R&T. Borders have different roots such as politics, economy or mentality. Borders can be influenced and changed.*

*Topics not too sensitive should be shared to increase efficiency and reduce fragmentation of our European R&T environment. Sharing R&T effort is not self-running. Strong support of all European nations is necessary to improve the sharing: a new "win-win situation" for European nations and industry has to be created.*

*The committee recommends specific actions to assist European nations successfully increasing their sharing of R&T effort. The recommendations include:*

- the process to derive common R&T effort from common requirements,*
- the role of EDA as a facilitator,*
- the need to stimulate and reward shared R&T effort, and*
- the necessity for a new tool in defence co-operation similar to the European Union Framework Programme functioning at least as well as in the civil domain.*

## TASK

The question to be discussed – "Sharing R&T effort or preserving national autonomy – where is the border?" – seems straightforward at a first glance. Sharing R&T effort in this context could mean, however, sharing among interested parties in different European nations of:

- common efforts,
- common funding or
- achieved R&T results.

The question originally posed is much too broad. Imagine e.g. a single researcher working on a specific research topic – does his or her sharing or withholding of findings really affect national autonomy? Consider much of the commercial R&T efforts done in lots of countries, e.g. concerning the next detergent generation. Sharing such R&T results will most likely not affect the national autonomy.

In real life voluntary and involuntary sharing of R&T effort coexist – involuntary sharing meaning e.g. espionage – a topic the committee decided not to cover since we can hardly influence it.

Given these conditions this report focuses on:

- government-funded defence-related R&T,
- the European landscape and
- voluntary sharing.

This narrows the original question meaningfully down to:

"Sharing government-influenced (e.g. funded), sensitive R&T effort or preserving national autonomy – where is the border?"

## METHODOLOGY

The committee divided the work into three main phases.

1. The goals of the **initial phase** were understanding the task, narrowing it down to be treated meaningfully within the SERA 21 period and at the same time covering the intentions of the SERA 21 general theme.

2. The contents of the **analysis phase** were:

- analysing the present status of R&T sharing in the European environment, the involved parties and their objectives, the constraints on sharing and
- investigating borders effective in R&T sharing.

To support this approach the following questions were discussed:

- How much R&T effort is currently shared?
- Which types of R&T co-operation exist today?

- Why is R&T effort shared or not shared?
- What is the experience of sharing R&T effort today?
- Which level of autonomy do governments require or expect in sharing R&T effort?
- How is the influence of global competition driving R&T effort sharing?
- How does potential market exploitation influence co-operation in R&T?
- Which parties are involved and what is their approach concerning R&T effort sharing?

3. In the final **outlook phase** we investigated, via specific questions, how sharing the R&T effort could be improved and which borders will remain effective in the future too:

- What could be done to increase the level of R&T effort sharing?
- Which parties involved could contribute most significantly?
- Are there any specific competencies predestining for R&T effort sharing?
- Which obstacles for R&T effort sharing could be coped with and how?

As our focus of interest lies on government-influenced R&T, our recommendations concentrate on what can be done, on the governmental level, mainly to improve and increase R&T sharing among European nations in the future.

## **ANALYSIS OF THE ACTUAL EUROPEAN R&T EFFORT**

This chapter describes committee findings concerning the present situation, scopes and roles in R&T effort sharing across Europe.

### **Background**

Traditionally European national governments and their militaries opted for complete autonomy and, consequently, built up and maintained strong national defence capacities to secure supply and, as seems common understanding until today, thus guaranteeing national security against any threats. National governments still perceive this to be among the principal responsibilities with respect to their nations. As a consequence, almost all R&T effort was carried purely nationally.

Nowadays, this view is starting to change due to the acting forces of globalisation, broader and deeper European integration, a change in the national threat mix, the arrival of new common threats and, especially, due to the shrinking defence budgets.

Today it is becoming more and more common wisdom that no European nation can afford complete national self-sufficiency and autonomy in military supply over the whole defence and armament spectrum any longer – no European nation has the financial capacity to develop, produce, implement and operate fighters, missiles, ships and complex surveillance infrastructure countering all modern threats completely on its own. In Europe all large military development and procurement programmes turned multinational or international for this reason (e.g. Eurofighter, A-400M, BOXER). Co-operation in military development and procurement is widely formalised and established in Europe now (e.g. OCCAR – Organisation Conjointe de Coopération en matière d'Armement).

**Nevertheless political will to share R&T effort in sensitive military areas is not yet well established in the nations of Europe.**

European defence industry, however, has traditionally been organised on a national basis with direct state ownership in many nations. Today we observe a defence industry consolidation process across Europe which has been ongoing for some years wiping out national defence companies in favour of internationally structured defence companies.

Sharing R&T effort is self-evident for such international companies as long as sharing under the company roof is concerned. Increasing competition normally reduces willingness of such companies to share with the "outside world" as potential market exploitation may be at risk.

In the future, however, nations will not have to consider the European competition only. New competing countries like India and China will enter the defence market. European companies will have to fight hard given social and labour costs in India or China.

So, further sharing of the R&T effort in Europe as a basis for new common and more cost-effective products seems to be a reasonable way to support the European

defence industry position, to increase European competence in defence technology and keep respective development and production within Europe.

On the European level the Union started off activities employing their framework programme concept to lever additional R&T effort sharing. The latter, by the way, is strictly focused on civil research and applications. Nevertheless, these EU efforts do indeed foster the general way of thinking in favour of increased sharing of the R&T effort and to make better use out of scarce European military research funds (an example for the civil R&T effort on the EU level is given in the annex).

Willingness to share R&T effort in the military domain depends on decision levels within national defence ministries and nations concerned. Defence technology is sometimes seen as the most sensitive research area within a nation. Consequently, nations are quite reluctant to share national military research findings, especially when military applications are due.

Many nations do invest in military R&T effort, some substantially, even though not all of them run defence industries in their countries. Perception quite often is to run the preparation for tomorrow. Some nations even wish to cover all military technology areas in pursuit of avoiding dependencies, keeping autonomy as well as full power of judgement and security of supply in national hands.

Expressions of interest in sharing R&T effort are often voiced in European nations; reality is, however, telling a rather different story. The true political willingness to share sensitive R&T information is developed very unevenly among European nations.

As a result, the European military R&T budget in total is much smaller and fragmented to a higher degree than in the USA. For USA companies searching for profitable market opportunities for their product portfolio, the EU is perceived as a market of "natural choice". Competition with USA defence companies and products will remain very tough from the European perspective given the much larger defence spending in the US and fragmentation in Europe.

Increased co-operation of European forces in military missions abroad puts increased pressure on interoperability and compatibility of military equipment to

ensure requested force performance levels. Nowadays, interoperability is not close to perfect – sharing of the R&T effort could lead to standardisation in earlier phases of military development and possibly result in common or at least better interoperable equipment.

## Scope

In our report the scope of R&T effort sharing is focused on sensitive defence R&T. This includes technology, logistics and even capability studies. Government-funded national R&T effort and at the European level EDA (European Defence Agency) R&T effort are considered.

### **Competence areas**

The European Defence Agency has formulated a capability development plan (CDP) and has recently deduced an R&T strategy identifying in which technologies to invest and how deep. Furthermore, EDA has identified competence areas necessary to be mastered independently by Europe. These areas allow for a European focus on technologies to build and maintain a solid independent European defence capability base complying with the aims of the European Security and Defence Policy in force.

The following key areas have, among others, been identified by the EDA nations: NEC (network-enabled capabilities), Counter IED (improvised explosive devices), Helicopters, Mine Countermeasures, Medical and Logistic Support, ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) Architecture, CBRN (chemical, biological, radiological and nuclear) detection, Intelligence.

These key areas could in principle be covered nationally or in a shared approach. EDA's activities support the shared approach in dealing with these topics. Even if sharing R&T effort increases overall project costs somehow, the sharing benefit lies at least in nations learning from each other and about their respective needs, deeper co-operation, exploitation of synergies where relevant and joint exploration of new R&T areas impossible for individual countries alone.

National approaches often produce less further leading ideas and spur nations to go for more rigorous, progress adverse stiff protection of intellectual property rights.

Most important probably, carrying R&T effort purely nationally typically drives costs up for the seeking nation and, at the same time, reduces the number of possible areas of national competence given the limitations in national budget.

Nevertheless, European nations may also identify key areas where they decide to step forward alone, either because they dislike outside influence on key national policies, capabilities or capacities, or because they wish to protect national interests concerning industrial or other public goals. Examples for such nationally sensitive topics might include:

- Safety – Medicine and equipment to be patented or licensed,
- Energy – Technology to improve energy production or efficiency,
- Transportation – Equipment or systems to trace and identify goods in closed transportation units,
- Protection – Technology and systems to be patented or licensed in security or surveillance,
- Communication – Certified products, software, cryptology.

### ***Capacities and volumes***

Most countries invest R&T effort either in civil national facilities like R&T institutes and universities, or in military R&T facilities like labs and military research institutes.

Europe actually spends 90% of its accumulated defence R&T budget nationally. European R&T investment is therefore still very fragmented.

EDA's mission is to improve this unpleasant situation in Europe. In 2006 EDA initiated the Defence R&T Joint Investment Programme Force Protection (FP). 20 European nations participate and spend some € 55 million together. The next foreseen Joint Investment Programme ICET (Innovative Concepts and Emerging Technologies) has started off and strong efforts have been undertaken to establish additional programmes even with the participation of less nations.

### ***R&T sharing experiences***

Sharing R&T effort is a time-consuming and energy-absorbing process – consortia have to be built and rules of sharing have to be defined. Sharing R&T effort is also an uncertain process since it inherently allows for failures or may miss goals as is normal with all research activities.

On the other hand, results of shared R&T effort can sometimes be utmost surprising and trigger more and better sharing between participants. In success cases everybody wants to play or have a share.

Sharing R&T effort becomes likely if there is a positive trigger involved. For instance, common needs or requirements identified as well as common exploitation opportunities of new and promising areas or markets pinpointed can function as such positive triggers.

A positive example of sharing R&T between governments is ANNCP (Anglo-Netherlands-Norway Co-operation Program), a trilateral co-operation agreement between the Netherlands, United Kingdom and Norway, which covers different topics and is well appreciated by all participating nations.

## **Roles**

### ***The individual researcher***

For individual researchers the most profitable initial behaviour, subsequent to new insights due to research efforts, is to avoid sharing his/her usually narrow specialised new findings or newly gained know-how in public. Once patents have been granted, researchers are willing to publish results and enjoy praise and reputation related. Sharing R&T effort will therefore be supported by individual researchers as long as individual claims have been secured and satisfied.

### ***Industry***

#### **National**

National industries usually try to get their R&T activities funded either from national or international research funding sources. In the case of international funding this normally means international co-operation in R&T effort and thus international sharing of results. In the case of nationally funded projects results will normally stay within the funding nation.

National industries are usually less open to share R&T results, either with (other) SMEs (small or medium sized enterprises) or third parties because they normally depend too critically on their leading edge generated over competition by means of R&T effort.

In addition, industries run R&T activities out of their own pockets. In such cases results or even topics concerned remain company secrets as companies want to

protect their know-how to successfully exploit markets from a leading position. Such R&T results are not shared under normal conditions.

### **International**

International companies share R&T results between national daughter companies excluding dedicated R&T efforts funded by national customers insisting that results remain inside the funding nation.

International companies sometimes prefer central R&T facilities near headquarters for budget efficiency reasons causing international sharing inside the companies. Usually international companies are not prepared to share their R&T effort with the outside world as they are the leading companies in their fields and interested to protect their know-how.

### **SMEs**

Private SMEs are usually narrowly specialised and flexible in filling gaps between big national and large international companies' R&T domains. They tend to contract with research bodies or institutions in the frame of national or international R&T projects and they are more open minded for R&T sharing. Normally they are not big enough for self-funded research, external R&T funding and co-operation is therefore welcome.

### ***Research institutions***

Research institutions often serve as technology transfer centres, thus greatly supporting R&T efforts sharing and co-operation. They often work for SMEs or national industries without dedicated research centres. Usually they are experienced with national and international research project management and advise national industries and SMEs offering their R&T core competence.

Research institutions are effective in sharing R&T results as long as they receive public recognition for their R&T achievements. Research institutions and individual researchers are both keen on knowing the pace of research ongoing in their respective competence areas. They are interested in enhanced research transparency: knowledge about finished and ongoing research at other sites important for their own research activities is appreciated.

## **Government**

In Europe 90% of R&T defence budgets are national and only 1% of defence budgets is dedicated to military R&T efforts.

Defence R&T is traditionally the most sensitive research area. In the name of sovereignty and autonomy nearly every European state has established a national body defining research priorities and related process management. The nuclear sector is one example of high sensitivity R&T research. Sound reasons for nations doing R&T nationally are market opportunities, protection of confidentiality or simply struggle for employment in the countries.

Government can influence how R&T output is shared with others. Some nations do encourage their defence establishments to share R&T when not in conflict with national autonomy or part of classified (multinational) projects.

### ***European intergovernmental level – EDA before the Lisbon Treaty***

Before the creation of EDA, other European co-operations had already been established. The six nations' Letter of Intent organisation (LoI) or the Western European Armament Group (WEAG) were already actively establishing common R&T projects.

Created by the European Union Council of Ministers in 2004, the European Defence Agency (EDA) is responsible to support member states and the Union Council in their efforts to improve the ability of the European defence in the field of crisis management and to push European defence and security policy. Among others the Agency is to promote defence and co-operative R&T and to strengthen the European market place. More integrative development of capacities can contribute to better focus on future partnership needs. Intensified collaboration, new industrial initiatives and global scale technical advantages are needed to be competitive with the USA.

In 2007 EDA proposed why and how national governments should invest in key technologies that have to be preserved or newly developed in Europe. EDA runs a 32 million € (2008) budget. 24 million € are spent for EDA operating cost, 8 million € are invested in shared R&T studies. They cannot support shared R&T substantially by funding shared studies, EDA's main challenge remains to convince

EDA nations to invest more money on common EDA activities. Participation in EDA projects is voluntary and based upon case by case decisions of participating countries.

In the civil area European, R&T co-operation is well established. The EU 7<sup>th</sup> framework programme for common R&T has been approved for the years 2007 to 2013 within a budget frame of 50 billion €. The co-operation rules are clearly stated, widely known and accepted. All EU nations support this civil sharing of R&T effort. This civil R&T co-operation could serve as a blueprint for similar procedures for future shared defence R&T.

### ***European Union level – EDA under the Lisbon Treaty***

The Lisbon Treaty includes statements about EDA covering EDA's mission, role and function for the future European defence level (see annex). The Lisbon Treaty once in force will transform the existing intergovernmental EDA into a supranational EDA operating for the European Union level and at the same time for the benefit of all EU member nations in the defence area.

After completion of the ratification process in all EU member countries, EDA will change status: it will no longer remain an agency based upon mere voluntary participation of willing European countries only, EDA will be part of the EU and one of her numerous agencies.

In addition, the Lisbon Treaty obliges participating Member States (pMS) to improve their national military capabilities. This may also boost harmonisation of military requirements since improvement has to be undertaken in all participating Member States. This will definitely lead to intensified identification of common requirements and thus to more shared military R&T effort.

## **BORDERS**

Historically European governments favoured independent, strong and modern national defence capabilities and capacities. This meant that nearly all R&T and developmental efforts had to be carried nationally.

The view is changing now due to globalisation (more common and less bi- or multinational threats) and decreasing defence budgets. Countries are thus forced

into intensified co-operation. They have to work together while governments have to facilitate this process.

The future may see borders altering but as a matter of principle there will always be borders for sharing of R&T effort. Views of the different pMS on what should and what should not be shared and with whom may differ. Such differences depend on factors like cultural and historical experience, economical and political strength and political borders.

### **Natural borders**

Some borders are defined by facts of life that cannot easily be influenced by the nations: due to demography, mentality and education, the availability of researchers per technology area always remains limited and tends to become more crucial as specialisation progresses.

### **Mental borders**

As in the past, sharing of R&T effort will depend on decisions taken by national governments that themselves represent a selection of individuals coined by national beliefs, habits and perceptions, either rooted in the history of their countries or designed by modern methods of mass media influence. Thresholds for e.g. secrecy will differ from country to country due to mental preoccupations. However, the frame of the European Union allows a successful development of generally acceptable standards minimising effects of mental borders compatible with the existing mental differences of European people.

### **Economic borders**

Nations will still remain reluctant to share R&T effort when political determination exists to lead a certain technology area or when advantages in e.g. time to market or competence have to be defended. Rationally arguable or irrational economic fears may also drive nations to establish borders hindering economic flows, e.g. customs regulations, taxation or intellectual property rights legislation.

National budgets, especially defence budgets, represent an omnipresent economic border. This border may drive nations to opt for procurement off the shelf, cutting off potentially shareable national R&T effort at all!

## Political borders

There are also borders of a political type where nations do not really have a choice in sharing R&T: once globally organised production lines have been established or global business models implemented, national work share distribution becomes a political issue and sharing of R&T effort can thus be restricted for such reasons.

Export restrictions may also have severe implications on sharing or non-sharing of R&T effort. Even though today and tomorrow borders and limitations in sharing of R&T effort shall exist, the committee strongly believes in increasing R&T collaboration opportunities and the real chance to overcome some of the major borders and limitations. The basis of such development is a real interest in co-operation successfully coping with complex challenges and a need to reduce or even eliminate global risks and threats for Europe.

In general we state that sharing R&T effort in Europe will only materialise in "win-win situations". Nations tend to strive for better military capabilities as well as interoperability at the lowest possible cost. Industries want to protect e.g. their IPR (intellectual property rights), their market chances and do not want to face additional bureaucratic burden or additional cost. The overarching goal for the European societies and legislation is therefore to modify the framing conditions to shift borders "to the outside" and thus to enhance flexibility – being well aware that borders continue to exist.

## RECOMMENDATIONS

The key objective for Europe in the area of defence and security is to stay innovative, keep track with and – where possible, reasonable and desired – go along or beyond the USA security and defence technology. Consequently, a more effective and efficient use of R&T budgets is needed in Europe.

National autonomy does not necessarily imply to do everything on one's own. Especially, no nation can fund all developments to meet requirements independently. The committee is convinced a modified definition of R&T autonomy is needed: Autonomy in R&T is the freedom to choose

- which R&T topics to handle,

- which topics to handle only nationally and which to share with international partners, and
- free choice of partners willing to co-operate.

The committee believes choosing this R&T autonomy definition is advantageous. Sharing R&T is not only a problem of national borders and economic interests. Non-sharing of R&T effort does not — contrary to expectation — foster autonomy, especially not as national defence budgets are restricted and thus fewer topics can be researched by the respective nations.

Ratification of the Lisbon treaty will change the status of EDA and can improve the sharing of R&T effort. However, as the treaty has not been ratified yet and may take some more time to be ratified by all European nations, a set of recommendations is proposed to improve before ratification the sharing of R&T effort and to shift the borders in the direction of enhanced co-operation in Europe.

### **1. Focus on capabilities**

The European states need to focus on developing common capabilities. Starting with common definitions and harmonisation of requirements in contents and time scales should then lead towards intensified common R&T effort.

### **2. Political support by nations**

Political support by every single European nation is needed to improve sharing of R&T effort in Europe. Such support is indispensable to develop opportunities, create incentives for sharing R&T (e.g. tax models) and encourage nations to participate. As, under normal circumstances, the sponsor is to decide about sharing of results, the sponsoring government can push for common R&T efforts, considering rights and claims of the industry and institutes.

### **3. EDA as facilitator**

EDA needs to facilitate and push the nations for more shared R&T. New EDA R&T programmes, identification and agreements on common R&T areas should start with the willing nations. Furthermore increasing EDA budget for "Shared R&T effort" seems most promising.

#### 4. Civil and military R&T co-operation

Co-operation in civil European R&T is successful and well established. Thus, further exchange between civil and military R&T should be achieved. The EU 7<sup>th</sup> Framework Programme (FP7) could have a successor opening up for defence too. A European long term goal could be deeper integration of civil and military research and technology effort and the establishment of a **European Defence and Security Research Agency ("EDESERA")** as a new common European civil and military R&T pillar. A short term goal should be to stimulate many new dual-use projects for civil and military applications and to keep Security Research a major programme in FP8 after 2013.

#### 5. European competence centres

"Work share" of competencies and key technologies in Europe should be discussed starting on the political level. One single strategy for all 27 nations is not realistic. However, agreed distribution of responsibilities for the R&T and defence effort within Europe would change the competition matrix, reduce fragmentation and have a potentially large influence on sharing of the R&T results in the future Europe.

#### 6. Transparency

The process of R&T sharing and R&T results are not always known in industry and research institutes. EDA could take the role to collect R&T data from nations to improve transparency (WWW (World Wide Web) to share information). Transparency, predictability and reliability in shared R&T planning and execution will increase the will of all parties to participate.

#### 7. Simplify processes

Improve and simplify R&T sharing processes and shorten the planning processes for common topics especially inside EDA. Reliability of the planning processes has to be improved too. At present effort and bureaucracy for participants seem too high (IPR, public relations, consortia rules, contracts...).

#### 8. Prepare for an EDA supranational role

Ratification of the European Treaty by all European Union member countries will change the focus of EDA and widen its scope. Once the treaty is accepted a new formalised relationship between EU R&T directorate and EDA will result in closer co-operation. Start to improve and intensify the relationship EU-EDA as soon as possible.

## CONCLUSION

Compared to the USA the European defence R&T effort is fragmented and significantly smaller. Should Europe wish to keep track with the US, a more efficient use of research and technology has to be aimed at.

The present European picture regarding sharing of R&T effort, goals and objectives reveals that borders most often play a crucial role and that some topics will never be shared at all.

Borders have different roots such as politics, economy or mentality. Borders can be influenced and shifted. Topics not too sensitive should be shared in order to increase efficiency and reduce fragmentation of our European R&T environment.

Sharing R&T effort is not self-running. Strong support of all European nations is necessary to improve the current situation. A new "win-win situation" for European nations and industry has to be created. This committee recommends specific actions for the European nations to successfully increase their sharing of R&T effort.

The suggested recommendations include:

- the process to derive common R&T effort from common requirements,
- the role of EDA as a facilitator,
- the need to stimulate and reward shared R&T effort, and
- the necessity for a new tool in defence co-operation similar to the European Union Framework Programme, functioning at least as well as in the civil domain.

## ANNEX

### Extract from the Lisbon Treaty:

- Article 28A, paragraph 3

"...Member States shall undertake progressively to improve their military capabilities. The Agency in the field of defence capabilities development, research, acquisition and armaments (hereinafter referred to as "the European Defence Agency") shall identify operational requirements, shall promote measures to satisfy those requirements, shall contribute to identifying and, where appropriate, implementing any measure needed to strengthen the industrial and technological base of the defence sector, shall participate in defining a European capabilities and armaments policy, and shall assist the Council in evaluating the improvement of military capabilities."

- Article 28 D

1. The European Defence Agency referred to in Article 28 A (3), subject to the authority of the Council, shall have as its task to:

(a) contribute to identifying the Member States' military capability objectives and evaluating observance of the capability commitments given by the Member States;

(b) promote harmonisation of operational needs and adoption of effective, compatible procurement methods;

(c) propose multilateral projects to fulfil the objectives in terms of military capabilities, ensure co-ordination of the programmes implemented by the Member States and management of specific co-operation programmes;

(d) support defence technology research, and co-ordinate and plan joint research activities and the study of technical solutions meeting future operational needs;

(e) contribute to identifying and, if necessary, implementing any useful measure for strengthening the industrial and technological base of the defence sector and for improving the effectiveness of military expenditure.

2. The European Defence Agency shall be open to all Member States wishing to be part of it. The Council, acting by a qualified majority, shall adopt a decision defining the Agency's statute, seat and operational rules. That decision should take account of the level of effective participation in the Agency's activities. Specific groups shall be set up within the Agency bringing together Member States engaged

in joint projects. The Agency shall carry out its tasks in liaison with the Commission where necessary.

## **EXAMPLE OF EU SHARING CIVILIAN R&T PROGRAM**

The European civilian level has a budget of 50 billion € for 2007 to 2013. The seventh framework program for research and technological development is named FP7. This program confirms the EC priority in the field of European research. Indeed, FP7 is a key tool dedicated to fulfil the needs of Europe for employment and competition and to confirm EU first position in global economy of knowledge. This money will be used in the form of grant agreements and funding for EU research projects and elsewhere (associated member states) to finance projects, demonstrators and technological exhibitions. The grants are the object of a high competitive process and are attributed after competitive calls and independent expertise agreements. Those projects make a real added value in addition to national research programs and are the international side of many actions. Research projects are built by consortia involving participants from different European countries (and other associated member states). This support needs mobility beyond national limits. Numerous projects make research challenges (for example, nuclear fusion process, and so on) and are so complex than they can only be studied at the European scale. PCRD helps to realise two major strategic objectives: Strengthening the scientific and technological European industry advantage and promote its competitive promoting national research in EU. In all EU member and associated states, national contact points have been established in order to offer personalised advices and to assist researchers and organisations foreseeing to participate to the program.

The Framework covers five thematic areas: Co-operation, Ideas, People, Capacities, Research and Nuclear research.

### **Co-operation**

This program of 32 billion € represents two thirds of the total budget. It fosters collaborative research throughout Europe and others countries owing projects led by international consortia gathering business and academia. The research applies ten areas including nanosciences, nanotechnology, materials and new production technologies, energy, transportation (including aeronautic), space and homeland security. Defence R&T would have interest to be closer to some of these civilian themes, particularly homeland security and dual R&T.

## Ideas

The program of 7.5 billion € supports research on the basis of excellence in science. Research can be piloted in all fields of science or technology, including engineering, economics and social sciences. Unlike co-operation programs, international partnerships are not necessary. The projects are implemented by individual teams around a research leader. The program is managed by the new European Council of research. Here again, defence R&T would have its place while keeping the confidentiality of its most sensitive themes.

## Persons

This program of 4.7 billion € supports the mobility and the career development of researchers, both inside the EU and at the international level. Established through a series of actions called Marie Curie, the program provides scholarships and puts in place measures to help researchers to develop their skills and abilities throughout their careers (academic background-partnerships and bridges between business and academic-financing programs for mobile career intra and extra EU). Defence R&T could be positioned between the gap of known technologies or beyond EU in states such as the USA, Japan, China, India and Brazil.

## Abilities

This program of 4 billion € strengthens the ability of researchers needed by Europe to become one growing economy of knowledge. It covers the following areas: research infrastructures, research for the benefit of SMEs, regions of knowledge, research capabilities, science in society, international co-operation specified activities. Defence R&T could integrate this effort in the aim to obtain a return on investment as civilian R&T.

## Nuclear research

This program of 1.7 billion € (excluding the Euratom program, i.e. 3 billion € over 5 years) covers nuclear research area and the linked training activities (research, technological development, co-operation, dissemination of information under technical activities, operation, and training). Two specific programs are foreseen. The first includes research on fusion energy (including ITER) and nuclear fission and protection against radiation. The second covers the activities of the Joint Research Centre (JRC) in the field of nuclear energy, including the management of nuclear waste and its impact on the surroundings and the nuclear safety area. In addition

to these direct actions, JRC is in charge of supplying scientific assistance to the elaboration of European policies.

Under the reserve of international treaties and non dissemination obligation, Defence R&T and particularly its high sensitive nuclear weapon forces in UK and France could find interest to promote the transition to the civilian sector of some military process. However, in such a controlled area, the gain would probably be limited. We are without doubt in the heart of the most significant Defence R&T process.

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How to increase the common part  
of European nations military requirements?

**VIEWS AND RECOMMENDATIONS EXPRESSED IN THIS DOCUMENT  
ARE THOSE OF THE COMMITTEE'S MEMBERS.**

**IN ANY CASE, THIS CONTENT REFLECTS  
NEITHER NATIONAL POLICIES OF ANY SERA NATION,  
NOR POSITIONS OF ANY COMPANY.**

## EXECUTIVE SUMMARY

*To investigate the question, we found it necessary to first analyse why it would be beneficial for European countries to increase the common part of military requirements. We reviewed the current global economic recession, the pressure on governments to decrease defence budgets and the ongoing need to provide capabilities for different types of EU, NATO, UN and other operations as the main driving forces to seek more co-operation and harmonisation of requirements. We found that the main benefits from harmonisation of requirements relate to more interoperable national capabilities, better value for money and effectiveness and security of supply.*

*We also looked at the existing frameworks in place (LoI, OCCAR, EDA, Nordic co-operation) and pointed out some of the challenges that the ESDP faces today. Although we concluded that all countries have something to gain from closer co-operation, there are different motivations and perspectives between the different countries.*

*At the end of our deliberations we made the following recommendations:*

- 1) In order to move towards a common military requirement, there must be a reduction of the specific national needs and a consequent focus on European needs. The recommended approach is for each nation to sub-divide their requirements into a common European one and a national unique one.*
- 2) A secondary approach to raising commonality of requirements could come through a nation's willingness to share its capabilities, for example small countries should specialise in providing niche-capabilities.*
- 3) An important prerequisite for these proposals would be the enhancement of standardisation, not only in platforms but also in procedures and planning cycles.*
- 4) These recommendations have to be driven at the highest political level in the European Community. A change in conceptual thinking regarding security threats is needed. Nations need to look beyond traditional thinking of security as a national concern and develop a new paradigm in a European context.*
- 5) There should be a clearer division of tasks between the EU and NATO.*

## INTRODUCTION

Today Europe is living through unprecedented times. The current economic crisis is the worst since the Great Depression of 1929 and there is pressure on governments to scrutinise spending in all areas, including defence, to fund economic stimulation packages. Public opinion is generally supportive of military engagement in the war against terrorism but Participating Member States (pMS) defence budgets are expected to decline, new projects are likely to be put on hold and existing projects are likely to be subject to cost saving measures. In addition there is still no evidence of either a national or international cohesive funding plan for security and resilience projects. The situation is further exacerbated by the increasing emphasis on environmental standards which will influence procurement and the operational use of military equipment resulting in higher budget needs compared with the past.

In this climate there will be inevitable pressure for pMS to review their military capabilities, ensuring that where possible they meet not only their national needs but their international obligations under NATO and the European Security and Defence Policy (ESDP). This will highlight the need for European military co-operation and common requirements. It will also highlight the need for a clear distinction of roles between NATO and the ESDP.

There are a number of areas that need to be addressed before there can be consensus on common military needs of the European nations. Some of the key issues are:

- What should the relationship be between NATO and ESDP and under what circumstances should the nations act as either members of NATO or Europe?
- What will it take to encourage individual member states to act as one within Europe and utilise the EU Battle Group in a military operation?
- Would it be possible to reduce military equipment and industrial duplication without commonality of national requirements in Europe?

## NECESSITY FOR AND BENEFITS OF HARMONISATION OF COMMON REQUIREMENTS

The Petersberg Tasks (1992) have now translated into Western and European military strategy and missions following the end of the Cold War. The Defence

Missions have evolved from defending homeland territories in Europe to humanitarian missions and crisis management in Europe as well as in foreign territories. In today's world, military operations are typically referred to as Peacekeeping Operations, rather than invasions and war fighting operations to protect national territories. Current operations are no longer purely military and the line between warfare and reconstruction is becoming invisible.

## **NATO operations**

At the NATO summit of Strasbourg-Kehl, the role and insertion of NATO in all international and regional organisations was the main subject of debate and the current operation in Afghanistan raised many co-operation issues. In this context, the Declaration on Alliance Security introduces objectives to improve the Alliance's comprehensive approach. These objectives are:

1. Develop a more coherent application of the crisis management instrument
2. Conduct military capabilities while recognising civilian infrastructure needs
3. Develop a database of national experts in reconstruction and civil stabilisation to advise NATO and involve selected international organisations as appropriate.

In this framework various operations have different objectives, magnitudes, reach, and participating nations. Several examples can help highlight that complexity:

- The UN-mandated International Security Assistance Force (ISAF) in Afghanistan, together with the US-led Operation Enduring Freedom (OEF), is the biggest ever NATO led operation and is conducted outside of NATO territories. The objectives of the ISAF are stability and peacekeeping to encourage democracy and country reconstruction. In this case, NATO is able to justify its global security objective and actions based on its common interest in fighting a terrorist threat that concerns the entire western world. NATO has agreed to establish a NATO-training mission within ISAF to oversee the training of the Afghan National Army and training and mentoring of the Afghan National Police, alongside the European Union police mission in Afghanistan.
- NATO operations are not always appropriate in all conflict areas. In Gaza, for example, NATO was seen as US-led with a pro-Israel stance. A NATO operation

would be difficult to agree on and difficult to command and operate on the ground. Hence the mandate given by the United Nations to use UN-led Peacekeeping Operations Forces in Lebanon or Gaza (FINUL).

- In Chad and Darfur the nature of the conflicts has imposed a different solution: Darfur is an ethnic conflict which goes beyond national borders and which requires large scale humanitarian aid to the population. There is no single solution in such a complex environment, which is exemplified by the complementary operations currently in progress: Initial Operation EUFOR in Chad, led by the EU and now transferred to the UN. Darfur's priorities are to protect civilians under the UN mandate (UNAMID). Training of local police is under the EU umbrella.

These examples support the argument for a European Defence Policy which can act when a NATO led operation is not appropriate.

## **ESDP**

In 1999 the then fifteen member states of the European Union launched the European Security and Defence Policy, ESDP. The aim was to implement an effective policy for managing external crises. From the beginning the crisis management function has had both civilian and military dimensions. The ESDP has since enlarged its scope of action and now covers armaments co-operation, co-operation in the field of security, human rights, counter-terrorism, natural disasters and space. The rapid reaction capability European Union Battle Group (EUBG) is an integral part of the ESDP.

## **Importance of Common Requirements**

Common requirements contribute to:

- effective crisis management operations and interoperable national capabilities;
- value for money and effectiveness;
- security of supply.

In order for any crisis management operation to function, it is essential that all the capabilities needed in an operation are available. Likewise it is essential that the participating member states can work together with interoperable equipment.

Common requirements will lead to a need for a common capability and contribute to interoperability and thus ensure better co-operation.

Economic interests bring nations together even in the armaments sector. Major development programmes are simply too expensive for nations to fund by themselves. Society demands greater value for money from the military in a time of declining budgets. Common European capability-building and co-operation in research and armaments can answer that demand. Working together in these fields promotes effectiveness but requires common requirements.

From a national point of view interoperability is crucial for security of supply. In the time of crisis, equipment, spare parts, ammunition, maintenance help etc. is better and more securely available if countries use either interoperable or same type of materiel and equipment.

## WHAT EXISTS TODAY

The Helsinki, Feira and Nice Councils established the fundamental principles of the relationship between EU and NATO: consultation, co-operation and transparency. This co-operation takes place on matters of common interest in the field of military crisis management. It allows the choice of the most appropriate military response to a crisis fully respecting each organisation's decision-making autonomy. The "strategic partnership in crisis management" between the EU and NATO rests on the so-called "Berlin Plus" arrangement adopted in December 2002, under which NATO collective assets and capabilities are available to the EU for operations in which the Alliance as such is not involved.

"Berlin Plus" establishes:

- guaranteed access for the EU to NATO planning capabilities for planning its own operations,
- presumption of the availability to the EU of NATO collective capabilities and assets. These collective assets, belonging to NATO itself and thus different from the capabilities nations make available to it, mainly include the command and control structures (C2) and an Airborne Warning and Command System (AWACS) fleet,

- identification of European command options which recognise a special role for NATO Deputy Supreme Allied Commander Europe (DSACEUR).

These arrangements were first implemented in March 2003 for "Operation Concordia" in FYROM. Another example in the "Berlin Plus" framework is Bosnia where the EU took over from NATO SFOR in December 2004 (Operation Althea). The handover phases between NATO and EU in those operations were satisfactory taking into consideration the lack of EU experience.

## **Examples of co-operation between EU and NATO**

The main body of co-operation between EU and NATO in the armaments field is the NATO-EU Capability Group. The pillars of the co-operation are considered to be capability improvements. Its focus is the avoidance of duplication and the establishment of a reasonable exchange of information between programs developed in parallel by NATO and EU such as helicopter shortfall programs for the Afghanistan and Chad operations, countering improvised explosive devices and explosive ordnance disposal and the Airworthiness working group. These initiatives demonstrate that the basic requirements and the vision of NATO and ESDP are very similar. However the co-operation between the two organisations is still at the co-ordination level and no common working group has been established yet to meet a common shortfall e.g. the shortfall in helicopters.

NATO activities are based mainly on the existence of two permanent commands, Allied Command Transformation (ACT) and Allied Command Operations (ACO), daily activities in air surveillance and patrolling and on a force coalition based on "Articles 4 and 5" obligations. EU has no such permanent command and its focus is mainly on the capability to carry out limited civilian and military small and medium operations with limited deployment of forces at Battle Group level. NATO has this capability embedded within its Rapid Response Force.

## **Other entities and actors: Lol, Nordic Co-operation**

The Letter of Intent (Lol) signed in 1998 by the six European Countries (France, Germany, Italy, Spain, Sweden and UK) was the first recognition of the importance of establishing joint equipment programmes for their nations. Lol maintains a

strong co-operation with the European Defence Agency (EDA), in particular on Security and Supply, Harmonisation of Military Requirements and Group of Research Directors activities. Lol is considering a move in two main directions: the creation of a "strategic forum" for the six nations' defence market and the establishment of an area of exchange of military supplies to facilitate integration of the defence companies. It must however take into consideration that these six nations are the main weapon producers and their policy is therefore sometimes influenced by an industrial vision.

EDA and Lol initiatives converge to develop a European approach in rationalisation of the supply and demand of European Defence procurement in the framework defined by ESDP. These activities are essential for a closer co-operation with NATO. EU policy is still fragmented and there is no common EU / NATO strategy.

The aim of Nordic Defence Co-operation is to maintain the level of defence capabilities in the Nordic countries through close co-operation and sharing of the technological, financial and industrial burden of this effort. The co-operation is very practical and supplements the Nordic countries' commitments within NATO and the EU.

## **Vision for the future**

As discussed previously the ESDP has enlarged its scope and it has become clear that for it to fulfil its purpose and develop further, some major shortfalls need to be addressed. These shortfalls can roughly be divided in two and described as follows: first, the military forces and capabilities currently available for EU operations are not sufficient; and second, there is a lack of harmonised military requirements and common priorities that would strengthen a European dimension in member states' national capability development.

## **Increasing the availability of forces**

In an attempt to address this shortfall and increase the availability of high-readiness forces deployable to crisis situations, the concept of the EUBG was launched and achieved full operational capacity in January 2007. The EUBGs are high-readiness units consisting of at least 1500 soldiers (often consisting of multi-national contributions) and are designed to deal with crisis management as well as

peacekeeping operations, as identified in the Petersberg tasks and European Security Strategy. To date, however, no EUBG has yet been sent to any military operation – Member States have not reached an agreement on any particular mission where the EUBGs could be used. This has resulted in frustration among several pMS providing troops for the EUBGs, as the training and upkeep of the EUBGs are quite expensive. The EUBGs are not suitable for all EU missions, but they constitute an existing well-prepared capability that has not been used. Some believe that the future and the credibility of the ESDP are at stake if pMS fail to deploy any EUBGs in the near future.

The problem with the use of EUBG exemplifies the political consensus issue. All EU members first have to agree "in principle" on the possible use of EUBGs for a particular mission, and then the participating nations of the particular EUBG have to give their consent. In reality this can be hard to achieve, because countries have different views historically and culturally of the operational area concerned and hence have a different level of motivation to participate.

For example, at the beginning of 2008, when the conflict in Chad had escalated, the possibility of deploying the Nordic Battlegroup (NBG) was discussed in EU corridors. No consensus was achieved and one of the most concrete opportunities for putting a battle group into action was therefore missed. This demonstrates that it is not easy to find sufficient reasons to justify the use of EUBGs on a voluntary basis.

Even if something were to happen on EU territory itself, there is no commitment similar to NATO's article V that would commit other members to come to a nation's assistance. The EU Lisbon Treaty, not yet ratified by all countries, includes mutual assistance and solidarity clauses, but until the EU is able to demonstrate enough political unity as well as sufficient military might, it remains doubtful whether these clauses could work in practise e.g. military operations. Most European countries, especially those dependent on others for their national security, still consider NATO as their primary security guarantor and this is not very likely to change in the near future.

Another crucial point to keep in mind regarding the availability of forces is that neither the EU nor NATO possess their own military forces, i.e. military forces are a national asset only. The nations are requested by these organisations to allocate military assets (soldiers as well as equipment) on force generation exercises.

In addition, a nation may allocate the same forces to both organisations, which means that the forces cannot be used at the same time. We assume, however, that nations are more willing to allocate forces if the tasks between different organisations are clear, i.e. there is no "competition" between them.

## **Harmonising requirements perspectives of small and big countries**

With respect to harmonising requirements and identifying common priorities for capability development, the EDA was tasked with establishing a comprehensive Capability Development Plan (CDP). This was presented in July 2008. The CDP provides an analysis of capability needs, capability trends and potential capability shortfalls up to 2025 and a database of national plans and priorities, which should help pMS to identify and exploit areas of common interest and to gain best value from their investment. While the CDP is clearly a significant step forward, the real utility of the document remains to be seen. It offers opportunities for participating nations to co-ordinate national plans and capability development, but the CDP does not commit them to concrete actions and is hence dependent on nations' will and finances.

Nations have different views with regards to the harmonisation and co-operation in the field of military requirements. In today's EU of 27 members, nearly half of the member states, including the newer member countries, can be considered small or very small. Their perspective, as described below, can be quite different from that of the bigger countries.

Both the EU and NATO have agreed to certain common requirements and expect all member states to contribute. While trying to correspond to the common requirements of these organisations as well as their national requirements, some small countries have only a single set of forces available. That in turn means that even if they see the need for certain requirements to carry out certain military operations in the same way as bigger countries, they cannot offer as many capabilities and military equipment to those common tasks.

The same challenge – limited capabilities and equipment - also applies to the national requirements of small countries. Small(er) countries usually rely on alliances

for their national security, as it is virtually impossible for them to develop the entire range of combat capabilities on their own. Since commonly defined requirements also imply shared responsibility and collective action against commonly identified threats, smaller countries in Europe have a direct interest in increasing the common part of capability development. In other words, rather than trying to do everything on their own, some small countries rely on their allies for providing certain capabilities as part of the mutual defence commitment. In return, those small states allocate their resources on specific capabilities and are generally quite willing to contribute them to international operations – in order to avoid being seen as "security consumers" only.

Such dependence of small countries for certain capabilities can however pose problems for both sides. Those European countries possessing the majority of military capabilities may feel an unfair burden on them to provide for the security of others and would like them to assume more responsibility of their own. Small countries on the other hand may argue that if their national requirements are not covered by common arrangements, they would need to direct their resources there, even if that does not help solve any capability shortage on the European level.

## RECOMMENDATIONS

### Industrial Dimension

In support of a common European military requirement, industry is already adapting its business models from equipment supply to supply of capabilities. These include:

- third-party contracting, which is an easy way for a country to share defined and implemented capabilities. This is a pragmatic "pay as you use" model;
- service contracting, which focuses on the provision of operational capabilities. This focuses on the effect rather than the technology. It is military user and military requirements oriented. Technological intellectual property can be separated from military requirement thus preserving strategic and autonomy goals of a nation;
- bespoke contracts, which can be set up for a given operation or coalition. They provide the fastest way to interoperability between nations. For example the future Capability Development Programmes could lead to common ammunition.

Nations have the added benefit of gaining access to the latest technology knowing that industry is focusing on the right technology for the mission. Industry also has a role to play in helping different nations to talk to each other to assess potential common requirements. For example, specialised vehicles were developed for Afghanistan – VHM FRA/GBR, Bushmaster GBR/NLD/AUS, etc. Industry also fosters international research investment for example, ESSOR for the Software Defined Radio.

## **Recommendation for harmonisation of requirements**

The use of European capability to undertake military requirements clearly lacks a strong political will. Military requirements of the European Nations are driven by their specific operational needs which are based on national politics in conjunction with the ESDP. Together this results in a multi-coloured picture which is contrary to a common military requirement for all pMS. In this respect there needs to be a clear division of tasks between the EU and NATO, seeing ESDP as complementary to NATO and the UN.

### ***Seeing beyond national need***

In order to move towards a common military requirement there must be a reduction of the specific national needs and a consequent focus on European needs. This may come about through agreements in the fields of strategy, tactics and operational planning. The recommended approach is for each nation to subdivide their requirements into a common European one and a national unique one. Following a thorough analysis in this field, it is expected that the majority of the requirements would be common and that capability gaps could be met by specific national assets. This process will be a lengthy one and issues will arise with the renewal of a national asset. It is hoped that the national solution would also meet a European need. For example if a new communication system was met by the Software Defined Radio (SDR), this would, by its nature, be interoperable with other nations' equipment and would automatically ensure a higher degree of commonality and harmonisation in the future. In addition it is envisaged that a subset of nations could provide a required capability, as in the case of the Nordic Defence Co-operation. Other examples include the sharing of the UK RoRo and Future Strategic Tanker Aircraft, NATO SatcomPost2000, NATO ISAF "Full Operational Capability plus" Communication and Information System and Strategic Airlift Capability. For

the EU to be seen as a credible force it must make use of its existing capabilities, such as the Battle Groups.

### ***Sharing pMS capabilities***

A secondary approach to raising commonality of requirements could come through a nation's willingness to share its capabilities; for example, small countries could specialise in providing niche-capabilities like the explosive ordnance disposal teams in Estonia. An example of dependence on other nations' assets is the Netherlands giving up their naval aerial reconnaissance and becoming reliant on other nations' assets. The pros and cons of this process will have to be thoroughly evaluated, but with declining military budgets this may be the only way for some countries to meet their defence needs. A by-product of this is that there will be fewer national capabilities which will result in improved interoperability and co-operation.

### ***Standardisation***

An important prerequisite for these proposals would be the enhancement of standardisation, not only in platforms but also in procedures and planning cycles, in the field of technology as well as in the financial area.

### ***Partnership with industry***

Nations can benefit from a closer partnership with industry thereby making use of the industrial contracting concepts, standards, technology maturation and the harnessing of SME and civil industrial innovations.

### ***Political support***

These recommendations have to be driven at the highest political level in the European Community. A change in conceptual thinking regarding security threats is needed. Nations need to look beyond traditional thinking of security as a national concern and develop a new paradigm in a European context.

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The role of SME in the EDTIB:  
self-organisation or European co-ordination?

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NOR POSITIONS OF ANY COMPANY.**

## EXECUTIVE SUMMARY

*To address the question on how Small and Medium Enterprises (SMEs) should best be organised to ensure the greatest contribution to EDTIB (European Defence Technological Industrial Base), the committee first reviews the role of SME for EDTIB: why do we care about SMEs? A fundamental reason to focus on SMEs is their reputation for innovation and flexibility. Further justification to consider SMEs in defence is that they represent a very large part of the EDTIB; they provide necessary competition in the sector and are relied upon by many large companies in the delivery of equipment projects.*

*The "barriers" are then analysed from different perspectives. On the one side, the barriers perceived by SMEs wanting to address the defence market; on the other side the barriers that governments and prime contractors perceive to prevent them from relying on SMEs. The analysis clearly indicates that an improved dialog between SMEs, primes and governments could reduce the misunderstanding between SMEs and their clients as well as facilitate the development by government of SMEs friendly regulation and practice toward a more transparent and efficient European Defence Equipment Market (EDEM).*

*The analysis continues with consideration of how SMEs are currently organised to network with each other and to engage with governments and primes. Measures already taken by governments and the EU (European Union) to help SMEs are also addressed. It is concluded that, although there is clearly not yet a recognised representative of the "voice(s) of the defence SMEs" at the EU level (nor in most members states), SMEs are increasingly organising themselves, either in associations dedicated to defence SMEs or as subgroup of the large and more established associations representing the wider defence and aerospace industry. Governments and the EDA are also trying to improve the dialogue with SMEs (mainly through Internet portals) and since 2004 have taken several initiatives to help SMEs. Their initiatives have not yet fully achieved their goal and there are still difficulties to overcome. It must also be noted that there is not always consensus on the way forward (e.g. whether Article 296 is favourable or not to SMEs).*

*The committee finally concludes that the EU has a key role to play for SMEs: by co-ordinating and harmonising its Members States' regulations and practices in favour of SMEs; by establishing the framework for a transparent market on a level playing field; by reducing administrative burdens and encouraging strongly prime contractors to work more closely with SMEs and by promoting the involvement of SMEs in the calls for tenders directly in the different MoDs.*

*In answer to the "master question", the committee assesses that the strategy of EU and EDA towards SMEs should not be to facilitate directly their co-ordination at an EU-level but to actively support SMEs to enter the defence market and expand their existing activities.*

*Looking to the future, it is important to all actors (EDA, Member States, industry, SMEs... ) that recognised representative of SMEs (the "voices" of the SMEs which don't yet exist) should emerge and that they should be encouraged. Those "voices" will inevitably appear through self-co-ordination and co-operation between the SMEs, progress that will happen automatically and will be driven by project specific needs and the inherent market forces.*

## DEFINITIONS

### SME

On 6 May 2003 the European Commission (EC) adopted a new Recommendation 2003/361/EC regarding the SMEs definition which replaced Recommendation 96/280/EC with effect from 1 January 2005. This Recommendation concerns all EU policies applied within the European Economic Area in favour of SMEs and is addressed to the MS, the European Investment Bank and the European Investment Fund. There is no distinction or differentiation between SMEs in the defence sector of the wider business sector.

The term SME encompasses enterprises which employ fewer than 250 people and which have an annual turnover not exceeding € 50 million, and/or an annual balance sheet total not exceeding € 43 million.

An enterprise is any entity engaged in an economic activity, irrespective of its legal form. This includes, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity.

Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 people and whose annual turnover and/or annual balance sheet total does not exceed € 10 million. A micro-enterprise is defined as an enterprise which employs fewer than 10 people and whose annual turnover

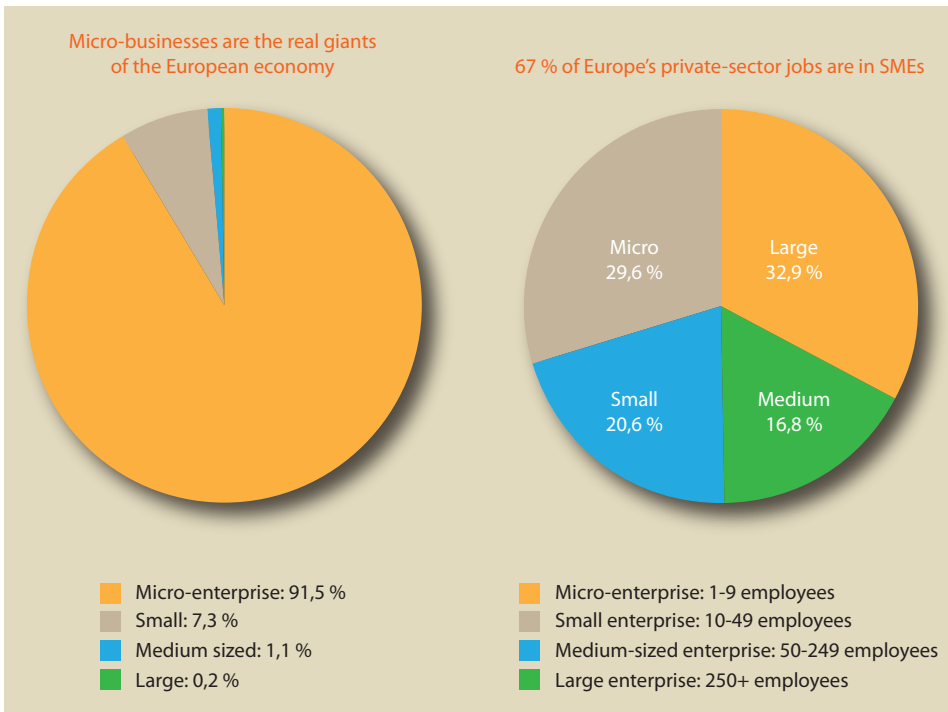
and/or annual balance sheet total does not exceed € 2 million. Furthermore, Recommendation 2003/361/EC defines types of enterprises taken into consideration in calculating staff numbers and financial amounts as "autonomous enterprises", "partner enterprises" and "linked enterprises". The data to apply to the headcount of staff and the financial amounts are those relating to the latest approved accounting period and calculated on an annual basis. They are taken into account from the date of closure of the accounts. The amount selected for the turnover is calculated excluding value added tax (VAT) and other indirect taxes.

## **EDTIB**

Within the EDA the Industry & Market Directorate aims to support the strengthening of the EDTIB. This work is based on the "Strategy for the EDTIB" launched by a ministerial meeting of the EDA Steering Board on 14 May 2007. In this context the EDTIB comprises the defence industrial and technological base of the 26 EU Member States participating in the EDA. EDA is working closely with participating Member States (pMS), the EC and the defence industry. Through its dialogue with these stakeholders, the Directorate aims to strike the right balance between industrial development and competitive market issues. The National Armaments Directors (NADs) have agreed that the EDTIB needs to be capability-driven, competent and competitive.

## **THE ROLE OF SMEs IN EUROPE**

SMEs have become increasingly important in our society as providers of employment opportunities and key players for local and regional communities. European SMEs represent 99,8% of all European enterprises and 67% of Europe's private sector jobs. In sectors such as the manufacture of metal products, construction and furniture it is more than 80%. In absolute figures this means there are over 23 million SMEs in the EU, but only 41,000 large companies. Therefore the Small Business Act for Europe (SBA), adopted in June 2008, reflects the EC's political will to recognise the central role of SMEs in the EU economy and puts into place a comprehensive SME policy framework for the EU and its MS. Facts show that the economic development of innovation and employment relies on the growth of SMEs.



Moreover, in a society moving toward a knowledge-based economy, the future prosperity of Europe relies more than ever on the growth and innovation potential of SMEs. Accordingly the EU has firmly placed the needs of SMEs at the heart of the Lisbon Growth and Jobs Strategy.

The emphasis put on SMEs for the economic prosperity applies also to the defence market as SMEs are clearly part of the EDTIB:

- in some countries EDTIB consists only of SMEs;
- though the tendency from MoDs is to contract with a reduced number of large companies<sup>(13)</sup>, especially for the complex military systems, those large integrator companies are relying on SMEs as they are increasingly outsourcing manufacturing and services to the supply chain, while they concentrate on the management of programmes and systems integration. In the UK aerospace

<sup>(13)</sup> UK MoD used to deal with over 2 500 suppliers directly, most of whom would have been SMEs and has now moved to a position where it has direct dealings with around only 25 or so Industrial Prime Vendors.

sector alone, for example, it is estimated that the top five prime contractors rely on the contribution of some 1 500 SMEs each.

As an example, the French EDTIB includes ~4000 small enterprises. Some of those SMEs are mostly dependent of the defence market whereas others have dual activities. Statistics available on the Swedish EDTIB indicate an overall military turnover share of 25-50%, where the lower figure represents SMEs and the higher larger companies.

Moreover, there are a few defence-specific reasons to care about SMEs providing technologies or small equipments<sup>(14)</sup> :

- The defence material market is to a great extent subject to market imperfections, i.e. price/performance is not the only governing factor. From a market perspective it is therefore even more important to compensate by stimulating competition among a multitude of players. On a market where elements of the defence sector are diminishing, this multitude can only be maintained by smaller companies.
- Although statistical evidence is scarce, it is reasonable to believe that SMEs are more innovative than large companies, in relation to their size. This is of particular interest to the defence sector in times of reducing funding. In France, for example, defence SMEs spend 24,5% of their turnover for R&D compared to 7% for large companies. Similar figures are common across Europe.
- SMEs may have, due to their inherent flexibility, a potential to more rapidly fulfil Urgent Operational Requirements (UOR) which is becoming an increasingly important regime used by Defence procurement agencies to fulfil military requirements: UOR are frequently for modification of equipment rather than large systems with required innovation and reactivity from the industry.

## Conclusion

It is therefore concluded that SMEs are very important to Europe in general and to the European defence market in particular.

<sup>(14)</sup> Defence does also rely on SME providing services or consultancies but the challenges identified are less salient in such business areas.

## THE BARRIERS TO EMPLOYING SMES AND PERCEPTION OF RISK

### SME perspective

Most SMEs face great barriers/problems to their full and effective participation in the defence market. Among others, the issues identified include:

- **Access to information:** SMEs lack visibility of mid- and long-term defence strategy and objectives. They also lack direct access to MoD staff (decision makers but not only), MoD events, MoD training courses... They experience difficulties in obtaining direct information from MoD on contracts (usually, access to information will be through a prime contractor). They have difficulties in coping with changing legislation framework (at EU level, national level and sometime at regional level). Timely access to information on RFI/RFQs, including translations, is a crucial limitation. They also face difficulties accessing standards – international standards, draft standards – that are of importance so that their products are competitive on international markets.
- **Complexity of public procurement and regulations:** A lot of the problems faced by SMEs are due to laws, rules, practices and a lack of transparency – the "level playing field", at national and regional level. Administrative burden must be reduced and it has to be ensured that all new legislation affecting business is SME friendly. Among the main difficulties are:
  - . Export/import regulations (weapons and dual use regime), End Users Certificates;
  - . Length of the public procurement cycle;
  - . Offsets/Juste Retour demands/Industrial participation.
- **Increased requirements from Primes:** The tendency for primes to reduce the number of accredited subcontractors, the risk transfer from prime to SME (associated with penalties) as well as the length of delay for payment complicate relation with primes.
- **Financial aspects:** SMEs face difficulties related to access to bank credit, protection from late payments, access to bank guarantee, availability of funds, taxation policy, cost for setting up, investment policy.

- **Increased difficulty for SME to have access to MoD procurement:** as project management resources are decreasing in the procurement offices there is an increased need of one-stop-shopping.
- **General reluctance for Government (not only MoDs) to engage with SMEs:** Government as well as primes have difficulties to understand the SME way of operating and are reluctant to take any risks.

## Governments and primes perspective

From the Governments' and primes' perspectives, though it is generally accepted that the SMEs are innovative and flexible, relying on them is also seen as a risk. We list here some of the characteristics of small organisations that can be seen as weaknesses by primes/governments who may therefore be reluctant to contract with SMEs:

- **Risks in successfully managing a contract:** management risks due to the difficulties in defining responsibility boundaries between contracting parties (vs. one-stop-shopping); financial risks due to financial resources - especially in projects with long spans; volume risks due to cost efficiency in material purchasing and project ramp-up capacity; business risks due to availability of material; sustainability and ownership issues due to stability of management in SMEs and buy-out; serviceability risks due to difficulties of support in theatre; political risks due to difficulties e.g. in handling export licensing and Intellectual Property Rights issues.
- **Personnel risks:** Skill coverage, competencies availability, succession plan. Impacts on the capacity to answer all criteria to have access to public market and on the durability of activities.
- **Lack of long-term vision:** SMEs are inclined to focus on short/medium term objectives with limited strategic vision at medium to long terms, to secure their market position, to develop and maintain their technology advantage, to improve their performance, to be efficient, to take into account shareholders' strategy.

## Conclusions

It is concluded that many of the governmental barriers faced by SMEs and the reluctance of government/primes to rely on SMEs result from a lack of mutual understanding and could be mitigated by increased dialogue between SMEs, primes and government.

Market visibility is a key issue for SMEs. The first and most difficult barrier for an SME is to enter the defence market. MoD/primes rarely contract with an SME they don't already know - they may even not be aware of the existence of the SME or may question its added value and ability to perform correctly the job.

An improved channel of communication between both sides would facilitate the development of SME-friendly regulation and practice.

## CURRENT ORGANISATIONS OF SMES FOR NETWORKING AND DIALOG WITH GOVERNEMENT AND PRIMES

### Association/syndicates of SMEs

In most EU members states there are associations representing SMEs as a whole (e.g. in France the "Confédération Générale des Petites et Moyennes Entreprises"). Many SMEs also work under different chambers of commerce or industrial employers' organisations where they are able to increase their relative strength in information gathering, networking, etc.

At the EU level there is a SME Union which is the "Small and medium entrepreneurs union of the EPP<sup>(15)</sup>". EPP organises individuals, not companies. The SME Union has several working groups, of which one is related to aerospace defence and security.

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<sup>(15)</sup> European People's Party

## Associations/syndicates of SMEs dedicated to Defence

Very few associations of SME dedicated to the Defence sector can currently be identified in the EU. In Sweden, SME-D, the Swedish Association of Small and Medium Size Defence Enterprises, was founded recently (2003) and comprises 22 companies (~600 employees). SME-D is the EDA correspondent when EDA looks for the SME point of view. In France, DGA's main correspondent for SMEs is the "Comité Richelieu" which is an association of innovative SMEs with around 100 members, a third of which have their activity mainly in the defence sector. Moreover there are also regional associations of SMEs focused on Defence and Security, e.g. in Denmark and France.

## Associations of Defence industries

Associations dedicated to sector activities in relation or dedicated to defence usually include activities/groups dedicated to SMEs.

In many states, there is a defence business organisation that encompasses both big companies and SMEs. Of course this type of organisation also serves a similar purpose as an SME department within a chamber of commerce regarding joint activities (exhibitions, brochures to find offset opportunities, etc.) which can be beneficial for SMEs as they are able to "ride" on the success or information of bigger companies. In such cases it is of course important how the balance in the organisational service is divided between the big companies and the SMEs.

Examples of associations in defence and aerospace industry:

- . At the EU level, ASD<sup>(16)</sup> has an Equipment/SME commission;
- . In Austria, ARGE Sicherheit & Wirtschaft within the Austrian Chamber of Commerce;
- . In Belgium, the BSDI (Belgian Security & Defence Industries) is part of AGORIA, representing companies in the technology industry, and has been founded to respond to the wishes of the authorities and the sector's industries. The BSDI member companies account for ~85% of the sector's activities;
- . In Denmark, FAD, The Danish Defence and Aerospace Associations;

<sup>(16)</sup> Aerospace and Defence Industries Association of Europe

- . In Finland, AFDA;
- . In France, GIFAS, GICAN<sup>(17)</sup> and GICAT, which are the association of Defence industries respectively for the Aerospace, Maritime and Land sectors, all have structures or projects related to the promotion of SMEs;
- . In Greece, SEKPY, the Hellenic Manufacturers of Defence Materiel Association;
- . In Sweden, Swedish Security and Defence Industry, which organises 45 companies including the large ones (SAAB, Hägglunds/BAE, etc): out of these 45, 35 are SMEs according to EU definitions;
- . In Switzerland, SWISSMEM;
- . In the UK, SBAC<sup>(18)</sup> has a committee whose goal is to determine, co-ordinate and represent the views of the aerospace members, in particular the SMEs.

## Governmental SME portal

At both national and EU levels, there are numerous governmental portals dedicated to SMEs. In the absence of SME self-organisation, this becomes a means of structuring relations with SMEs.

## Conclusion

Associations of Defence industries, both at national and EU level, provide a framework for SMEs to network and to develop their relation with prime contractors. These associations of defence industries have SME-related activities and have many SME members.

Conversely, there seem to be very few associations dedicated specifically to SMEs involved in Defence. The cost of establishing and running such associations as well as the apparent lack of unity between SMEs may explain this. Nevertheless, there seems to be a willingness and impetus to expand the number of associations.

Consequently, both the EU in general and EDA in particular currently lack a predominant representative of the "voice of the defence SMEs". For now, this may limit EDA's ability to address correctly SMEs issues in defence.

<sup>(17)</sup> 40% of GICAN members are SMEs.

<sup>(18)</sup> SBAC represents companies supplying civil air transport, aerospace defence, security & space.

## EXISTING EU-LEVEL ACTIVITIES TO SUPPORT SMEs

### The new perspectives

2004 can be seen as a turning point. The EC published a Green Paper on defence equipment to contribute to the gradual creation of an European defence equipment market more transparent and open between MS.

The centrepiece of this effort is the EDA's new Intergovernmental Regime in Defence Procurement – operating within the "guide to the EDA's new European Defence Equipment Market – designed primarily to open up public procurement to cross-border competition.

Focusing on a few initiatives and analysis of the impact of Article 296 of the EU Treaty:

### The EDA Code of Conduct on Defence Procurement

EDA's Intergovernmental Regime in Defence Procurement and its associated Code of Conduct came into force on 1 July 2006 and apply to all defence contracts where the provisions of Article 296 of the EC Treaty are applicable.

The Code of Conduct is not legally binding since pMS voluntarily choose to align their policies and practices on a reciprocal basis. However, regular reports by the EDA will help to show whether the Code is being interpreted and implemented on a uniform basis.

Analysis of Article 296 : is Article 296 favourable to SMEs or not ?

MS have often interpreted Article 296 as a general and automatic exemption of defence material from the application of the Treaty. An ongoing debate suggests that this use of Article 296 has constrained the achievement of an optimum EDTIB and may have denied both the customer and industry the benefits of competition, and consequently also hindered the necessary cross-border integration of the EDTIB. In that sense, Article 296 is not pro-SME as it limits their full access to the EU defence market.

Conversely, it is arguable that Article 296 enables governments to help SMEs that are considered vital to their national economies and security.

The EC has seen the clarification of the existing legal framework as a necessary step towards greater openness in EDEM and has adopted an interpretative communication to prevent misinterpretation or misuse of art. 296. It stated that the communication can neither give an interpretation of security interests nor determine ex ante to which contracts the exemption under Article 296 applies or not.

Recognising MS responsibility to define and protect its security interests, it underlines that Contracting Authorities have to evaluate the following: which essential security interest is concerned? What is the connection between this security interest and the specific procurement decision? Why is the non application of public procurement directive necessary for the protection of this essential security interests?

Therefore, considering four options for the future of Article 296 (abolishing it, amending it, leaving it or adjusting its interpretation) MS have stressed that it is in their prerogatives to define essential security interests.

Conclusion:

The EDA Code of Conduct was, in part, intended to resolve the issues relating to Article 296. However, as the MS and EC have, so far, been unable to achieve a satisfactory outcome, further progress will depend on higher-level action within the EC.

## **The Code of Best Practice in the Supply Chain**

Lower-tier suppliers, especially SMEs, play an important role in the defence supply chain and, furthermore, are a source of the innovative defence technologies that Europe will need in the future. The benefits of a single defence market must accrue to the smaller suppliers by encouraging value to flow up the supply chain. This means adopting good practice within the supply chain itself.

For this reason, in May 2006 the EDA and the Council of the Aerospace and Defence Industries Association of Europe (ASD) jointly agreed a "Code of Best Practice in the Supply Chain" as an integral element of the Agency's procurement defence regime. It complements the Code of Conduct by promoting opportunities in the supply chain for those who may not have the resources or capacity to bid as a prime contractor for contracts directly, but who could still act as subcontractors.

The objectives are to deliver improvements in quality, efficiency, timeliness and consistency in supply chain relationships in defence acquisition business.

## Conclusion

Several initiatives have been undertaken by EU (EDA and Commission) and governments directly to support SMEs and also to grant transparency and equal chances throughout Europe. However, those initiatives have clearly been constrained, and Article 296 is a clear example that gives both government and industry an opportunity to circumvent pro-SME policy. The MS and Commission have been unable to find a consensus way of addressing Article 296.

Non binding code of conduct seems to be currently a way of progressing smoothly towards a more transparent EDEM. Binding regulations will have difficulties making their way as long as there is no unified approach to EDEM and EDTIB. SME related issues are not exceptions in that prospect.

## RECOMMENDATIONS

How can current and future SMEs best be organised, to ensure the greatest contribution to and utilisation of the EDTIB? What are the alternatives in order to grant transparency and equal chances throughout Europe for SMEs?

Empirically it is assessed that self-organisation and co-operation between the SMEs will happen automatically based on the project specific needs and the inherent market forces. There are many ways for this to happen: regional initiative, action by chambers of commerce/associations of defence and aerospace industries. It is of interest to all actors (MS, EC, EDA, industries, SMEs...) that recognised representative of the "voices" of the SMEs emerge.

Besides the development of self-organisation, the EU clearly has a key role to play in supporting SMEs in shaping a more SME-friendly, transparent and efficient framework for the EDTIB. This will be a benefit both for the prime contractor and for the tendering member state. The following proposals could support progress:

- Definition of binding and openly accessible standards and harmonisation of national quality and technological standards.
- Reduction of trade barriers such as import duty, import and export licenses, import quotas, non-tariff barriers to trade.
- Reduction of administrative work and simplification of the process related to the application, preparation, tendering and performance of defence contracts.
- Reduction of the threshold for publication obligation on the European Bulletin Board (EBB).
- Foundation of a European Office for Defence SME (within EDA) where SMEs can display their detailed company profile, monitor ongoing tenders and apply for participations. Further this office shall be the mediation body for SMEs having problems with large prime contractors (payments, complex contracts, etc.).
- Action to achieve more binding application of the Code of Conduct/Small Business Act.
- Publication of all tenders in English as a second language beside the language of the country procuring the products.
- Relevant and binding restrictions of Article 296 in order to increase transparency.
- Empowerment of the role of EDA.
- Policy to request/demand that primes make greater use of SMEs.

Although some of these proposals are already acknowledged and there is progress towards implementation, it should be recognised that there are still conflicting views and a lack of consensus on others.

In providing policy and direction to Member States, the EU should continue its traditional role of co-ordination and harmonisation.

In their relationship with SMEs, the goal of EU or EDA should be to support for SMEs to enter the defence market or expand their existing activities. A higher European co-ordination would be likely to present SMEs with an even more extensive set of regulations and acquisition processes, all of which would be inevitably highly bureaucratic and long in duration. The flexibility of SMEs may not be improved by such regulations and application processes. The EU has to do more to give SMEs a "kick off" to make their business life easier and to facilitate their rapprochement with MOD and primes. This can be done either through strongly encouraging prime

contractors to work more closely with SMEs or promoting the involvement of SMEs in the calls for tenders directly from the different MoDs.

The importance of SMEs for the European market and also for an EDTIB is undoubted. Nevertheless the major European prime contractors will play a major role together with the SMEs in creating a strong EDTIB, but the major players can easier handle and influence EU regulations and therefore should carry such burdens. The advantage will be for all the parties, the SMEs with easier access through primes, the primes will use and improve their technical abilities from flexible partners and for the pMS who receive the best product for the best price also preserving jobs in their different regions.

Though there seems to be consensus on this statement, the disputes on whether a code of conduct is sufficient or a regulation is needed characterise different views on how to achieve this. EDA could be an appropriate platform to improve dialogue and hence reduce the gap between those conflicting parties.

## ANNEXES

### The EU consultative bodies

The European Economic and Social Committee adopted an opinion on the SBA on 14 January 2009.

The Committee of Regions adopted an opinion on the SBA on 12 February 2009.

### References

- Comité Richelieu public statement "A defence view on a French small business act"
- 2006 Defence internal report on "innovative SMEs for Defence" (from a scientific advisory board)
- December 2007 MoD public Statement on "improved SME access to MoD public procurement"
- December 2008 public audition of SMEs representatives by the Defence commission of the French Parliament

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How can European nations foster co-operation on major armament programmes, whilst preserving their sovereignty, and what could be EDA's role?

**VIEWS AND RECOMMENDATIONS EXPRESSED IN THIS DOCUMENT  
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## EXECUTIVE SUMMARY

- *Employment issues, military capability needs, cost and risk sharing all encourage nations to co-operate.*
- *Intellectual property rights, lack of mutual confidence and national autonomy can all work against co-operation.*
- *The concept of sovereignty is changing, as fewer nations have the luxury of being able to run purely national programmes and the level of interdependence between nations increases due to cost and technology developments.*
- *The EDA needs to improve the harmonisation of military requirements, improve mutual confidence between nations, maintain interoperability in technical and operational frameworks, facilitate technology sharing, ease transfer of materiel between nations and subsume Lol.*

## METHODOLOGY USED TO ADDRESS THE QUESTION

There are three distinct parts to the question:

- how can European nations foster co-operation,
- preserving their sovereignty,
- what could be EDA's role.

To answer the first question on fostering co-operation we determined in the first place who, or which entities, were the major stakeholders in armaments co-operation. This gave us a list of stakeholders which we analysed in order to determine which of them were most important taking account of their interest and influence.

We also devised a list of key factors that are of importance for each of the stakeholders, i.e. a list of reasons why certain stakeholders would come to a co-operation or on the contrary would not want to co-operate.

We then developed a matrix putting the stakeholders in relation with the key factors. In the matrix we evaluated the importance each stakeholder would give to each key factor with a value from 1 to 3. Negative values in the matrix mean that the stakeholder is against co-operation for that key factor.

From the analysis of the stakeholders we concluded that some stakeholders were more important than others because of more influence and more interest. These stakeholders were given a higher weight in the matrix (3 against 1 for the rest). The important stakeholders are: member states, MoD & armed forces as well as the industry.

From the matrix we could conclude which key factors could have the biggest influence on the tendency towards co-operation. This means that to foster co-operation we should find measures to positively influence these key factors since there are disabling and enabling key factors. We also investigated in what way the key factors have an influence on each other.

Regarding the second topic, which is sovereignty, we went through a discussion on what is sovereignty based on definitions and descriptions found in different texts, documents, etc. Out of this we came up with a definition, or rather a description of what is meant by sovereignty, since a clear definition does not exist and there is no universal agreement.

By looking at this description and the possible measures to foster co-operation we were able to make some conclusions regarding sovereignty and its preservation whilst fostering co-operation.

We then looked in what way EDA can be of help to influence the right key factors in the right direction. This gave us an answer on the third aspect about EDA's role.

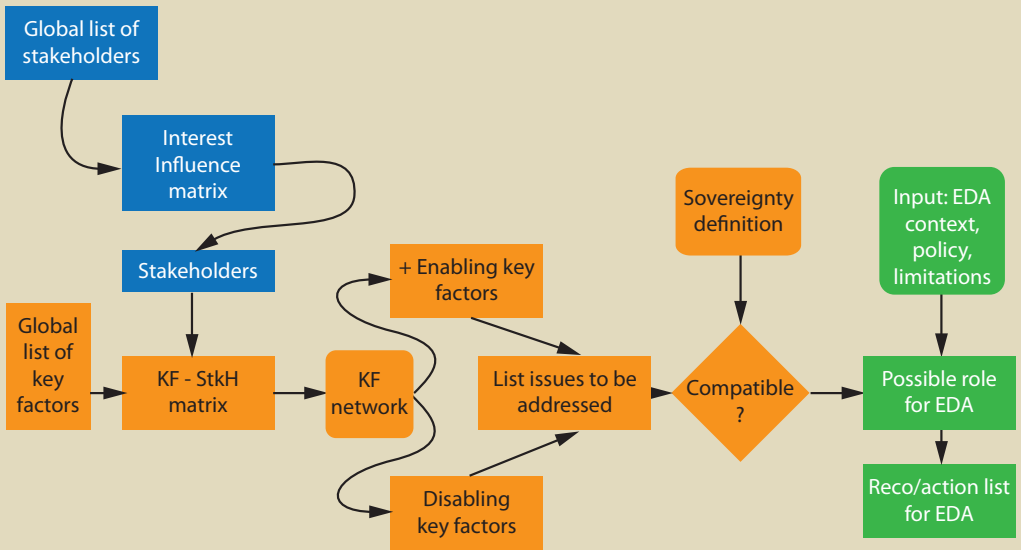
We used this analysis to provide recommendations and conclusions.

The whole process is summarised in the following diagram next page.

## **FOSTERING CO-OPERATION**

### **Stakeholders**

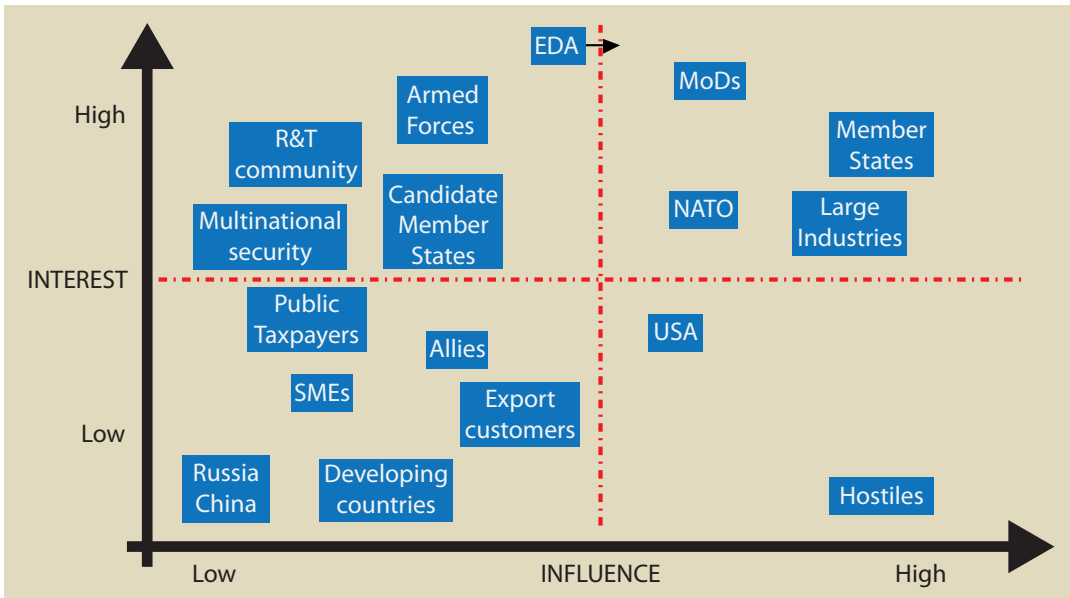
The stakeholders of a project are all those who have an interest in it. They are individuals and organisations either actively involved in the project, or whose interests may be affected as a result of project execution or project completion. They may also exert influence over the objectives and outcomes of the project.



We identified the following list of armament co-operation stakeholders:

- member states, including ministries and governments
- candidate member states
- allies (e.g. Switzerland)
- big players: USA, Russia, China
- hostile nations outside EU
- developing countries
- MODs
- armed forces
- NATO
- OCCAR
- EDA
- large industrial groups, industry associations (e.g. ASD)
- SMEs
- export customers/partners outside Europe (Saudi Arabia, UAE, Australia, etc.)
- R&T community, EDA CapTechs, NATO/RTA
- taxpayers and general public
- multinational security bodies (e.g. Interpol)

This large number of stakeholders shows the complexity of the problem. In order to reduce this complexity we devised groups of stakeholders by analysing their relative interest and influence. The following chart shows the committee's assessment for all stakeholders.



We used this analysis to weigh the stakeholders in the Key Factors matrix (see next section) and also to regroup some stakeholders together to reduce the complexity of the task.

After grouping and weighing we concluded that the following could be grouped together:

- armed forces & MoDs
- industries & industry associations
- member states & ministers.

These have been given higher weightings than the other stakeholders as they are considered to be most influential.

## Key factors

The key factors were identified by brainstorming and assessed according to whether they have a positive or negative influence on armaments co-operation.

Key factors with positive influence are:

- cost reduction: cost of the material and associated operations and maintenance, through operational life;
- common security policy as a European regulation;
- Interoperability: plug and operate with no pre-requisite the means of other countries;
- risk in terms of time, costs and performance;
- technological know-how to maintain a minimal industrial defence basis, and adequate Technology Readiness Level. Could be to acquire new technologies through co-operation;
- image inner/outer (i.e. organisation); national/international. Reputation, need for flagships, co-operation as such;
- capability: possibility to act/react in a proper way;
- political influence – could be largely connected to co-operation, especially for large countries.

Key factors with negative influence are:

- mutual confidence and trustworthiness – reverse factor of mutual dependence which is covered by autonomy;
- autonomy is the ability to do it alone. Induces very small or fully controlled dependencies;
- security of supply: freedom to buy what we want, when we want and to use it for what we want, where we want. Partially covered by Autonomy;
- intellectual property rights;
- employment;
- export rules: regulations for selling defence goods on the world market. Regulations also apply inside Europe for confidential data/assets exchanges.

## Stakeholders - Key factors matrix analysis

The following table shows the interaction between the stakeholders and key factors. Positive numbers indicate that a stakeholder is influenced to co-operate by

a key factor whereas negative numbers indicate that a key factor presents a barrier to co-operation to a stakeholder. The first three columns have a weighting that is 3 times that of the others, which reflects that these stakeholders have both high interest and high influence. Green denotes enablers and red denotes disablers.

Stakeholders Key factors	Member states + ministries	MOD + armed forces	Industry + Industry associations	R&T Community	OCCAR	EDA	Taxpayers + Public opinion	Allies	Export partners	Total
Cost	2	3	2	1	2	1	3	1	2	31
Political influence	2	2	1	1	3	3	1	1	1	25
Security	2	3	1	1	1	2	1	1	1	25
Sustainability Security of Supply	1	2	2	1	2	3	1	2	2	26
Mutual confi- dence, dependence	-1	-1	1	1	1	2	1	1	1	4
Image	1	1	2	2	3	3	1	1	1	23
Technological know-how	2	2	2	2	1	2	1	1	2	27
EU autonomy	2	1	1	1	3	3	2	-1	1	21
Employment	3	1	3	2	2	3	3	-1	-1	29
Interoperability	1	2	1	1	2	3	1	3	2	24
Capability (quality & quan- tity)	2	3	1	3	1	3	1	3	2	31
Risk potential	2	3	2	3	3	3	2	1	1	34
Export rules (more or less flexibility in law)	1	2	3	1	2	2	1	1	3	28
Qualification	1	2	3	3	2	1	1	1	2	28
IPR (Intellectual Property Rights)	1	1	-3	-3	1	1	1	1	-2	-4
National auto- nomy/sovereignty	-3	-2	1	1	1	3	-1	1	1	-6
<b>Total</b>	<b>19</b>	<b>25</b>	<b>23</b>	<b>21</b>	<b>30</b>	<b>38</b>	<b>20</b>	<b>17</b>	<b>19</b>	



Autonomy (in terms of military independence) influences employment, since the more autonomous/independent a state, the more materiel it has to produce by itself to counter as many threats as possible. That in turn means that the military budget has to be raised. Also the costs of the materiel raise because of higher granularity, a smaller number of items and a higher effort for logistics and maintenance. But higher costs are an incentive for more co-operation. And if a member state co-operates intensively it will give up a part of its autonomy.

So this causal cycle is self-regulating: a higher degree of autonomy will cause higher incentives for co-operation, but a higher degree of co-operation will lower the degree of autonomy. This cycle is triggered by mutual confidence: mutual confidence means that the member states trust each other and rely on each other. This in turn leads them to reduce their autonomy.

Purple cycle: interoperability → capability → costs → foster co-operation → interoperability

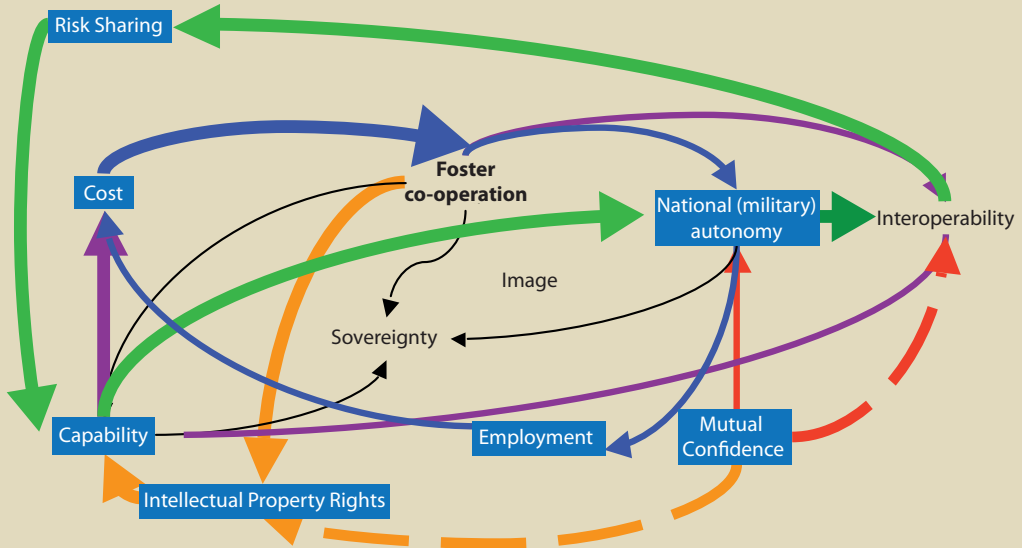
Higher interoperability allows more capabilities for a state: it facilitates specialisation, exchange of information, equipment, spare parts and burden sharing, therefore it saves expenses. On the other hand, capability demands investments in new materiel, training and logistics. Therefore increased capabilities cause higher costs. Higher costs encourage the states to co-operate more intensively. And tighter co-operation in turn fosters interoperability.

That means this is a self-energising cycle like an oscillating circuit in resonance. Once excited it needs low supply of energy to keep it working.

This cycle is also triggered by mutual confidence: the higher the mutual confidence, the higher the probability that the states trust each other and can rely on materiel, information and spare parts from other states.

Red/green/blue cycle: Mutual confidence → Interoperability → Risk sharing → Capability → Military autonomy → interoperability

Through confidence-building measures within the European States, the degree of interoperability could be increased. An increase in interoperability encourages



transparency and facilitates mutual access to materiel, information, spare parts. This lowers the threat perception in the population. In the long term, the decline in the perceived threat reduces the military capabilities, because they become more difficult to justify to decision making bodies, e.g. Parliament. The decline in military capabilities will lead to a reduction of (military) autonomy leading to increased standardisation of processes and systems.

So increased interoperability leads to a decreasing need for co-operation if the degree of perceived threat in the population can not be sustained.

Orange cycle: Mutual confidence → technological know-how → capability → life cycle costs → foster co-operation → technological know-how

Through confidence-building measures the possibility for countries to participate in high level technological projects could be increased. This leads to an increase in the quality of the military capabilities but results in higher life cycle costs which encourages co-operation. This allows further access to the technological know-

how of the partner countries. If Partner Nations trust each other enough to share technological know-how, co-operation will be enhanced further. Through this cycle, increased interoperability leads to a need for increased co-operation.

## CO-OPERATION AND SOVEREIGNTY

Sovereignty is a cause for confusion and debate and there are as many definitions as there are countries. The definitions of Sovereignty are constantly changing, influenced by external factors such as globalisation and pragmatic considerations such as financial constraints. For the purposes of this report, sovereignty encompasses the freedom to act unilaterally, without the need for agreement from other nations.

Some of our findings are against the classical definition of sovereignty, especially the need by inter-dependence. Co-operation and sovereignty are not particularly compatible and are often in competition. If co-operation is to be fostered and enhanced, it will be necessary to pool part of national sovereignty. National sovereignty is not a stable concept and is bound to vanish; it should give birth to a European Sovereignty.

## CONCLUSIONS

- Co-operation is a very complex process. No simple recipe, cannot be decided a priori. It can only be fostered.
- Co-operation starts with a common interest in a capability
- Cost is not the strongest key factor
- Mutual confidence is a strong non natural enabler
- Interoperability is a strong enabler as long as a common perception of threat is present
- Technology know-how sharing is a strong non natural enabler
- Classified Information & materiel management and sharing could be an instantaneous disabler.
- There are big players (the 6 of Lol) and regular ones (21).

## RECOMMENDATIONS

We need a natural forum to harmonise military requirements and propose co-operations in capabilities. There should not be any other place to do so.

EDA could develop tools and practices to ease mutual confidence (already done in the text). Showing the reciprocal existing dependencies could be the basis. Remove the negative aspect of mutual dependence.

EDA should develop and maintain the interoperability technical and operational frameworks.

EDA should ease technology sharing; multinational groups and laboratory networks are key tools and assets to use.

A common end user certificate could ease transfer between EU allies. EDA should be empowered for weapons exchange rules (intra community). This would be a strong sign to develop mutual confidence.

Lol has to be subsumed by EDA.

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## LIST OF ACRONYMS

ASD	Aerospace and Defence industries association of Europe
DGA	Délégation Générale pour l'Armement
EBB	European Bulletin Board
EC	European Commission
EDA	European Defence Agency
EDEM	European Defence Equipment Market
EDTEB	European Defence Test and Evaluation Base
EDTIB	European Defence Technological and Industrial Base
ESDP	European Security and Defence Policy
EU	European Union
EUBG	European Union Battle Group
IPR	Intellectual Property Rights
ITAR	International Traffic in Arms Regulations
LoI	Letter of Intent
MoD	Ministry of Defence
MS	Member States of the EU
NAD	National Armaments Director
OCCAR	Organisation Conjointe de Coopération en matière d'Armement
pMS	participating Member States of the EU
RFI	Request for Information
RFQ	Request for Quotation
SME	Small and Medium Enterprises
SME-D	Swedish Association of Small and Medium Size Enterprises in Defence
SBA	Small Business Act for Europe
SWOT	Strengths, Weaknesses, Opportunities and Threats
UAV	Unmanned Aerial Vehicle
UOR	Urgent Operational Requirement
WEAG	Western European Armaments Group





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