Key Skills and Competences for defence: Governmental domain

Executive summary

EDA contract reference: 16.ESI.NP1.188

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PR-3145-EDA
July 2017

RAND EUROPE

Executive summary

This study identifies key defence skills within the governmental domain and proposes recommendations for their sustainment

This study was commissioned by the EDA to gather an evidence base and develop recommendations to strengthen the EDA's contribution to the European defence skills agenda. In the context of the EU Council meetings on defence in 2013 and 2015, and the EDA's ongoing work for skills and competences for defence, the EDA has a unique opportunity to ensure that the discussion of skills continues and remains high on the European agenda, as well as those of participating Member States (pMS).

This study builds on the 2015 EDA study on KSC for defence, which focused on skills for the EDTIB. Together with the previous study, the output of this study will be utilised within the follow-up steps of the EU Global Strategy published in June 2016, the European Defence Action Plan (EDAP), and will support the skills element of the EDA Key Strategic Activities and the development of specific EDA/EU actions to maintain key skills and competences across the defence sector.

The purpose of this study is to define KSC for defence in the governmental domain, identify skills gaps and propose recommendations for skills sustainment. It has four main components:

- **Building a taxonomy of skills** in the governmental domain required for defence procurement and identifying critical skills;
- **Mapping current supply and demand** of these core skills, and the implications of any future shifts in supply and demand;
- **Developing an overview of existing initiatives** to build a stronger supply of key skills;
- **Developing recommendations** to sustain KSC for defence in the governmental domain in the future, with evidence-based recommendations for how this could be achieved.

The study team relied on a multi-method approach, which included: literature review; data analysis; stakeholder consultation through telephone and written interviews (involving 13 stakeholders from national governments of EDA pMS, EU and international institutions, covering 9 EU countries); and a stakeholder workshop focused on the supply and demand of key skills and competences for defence.

Within the context of skills and competences for defence in the governmental domain, this study focuses on the KSC required for defence acquisition, with a particular focus on defence procurement.

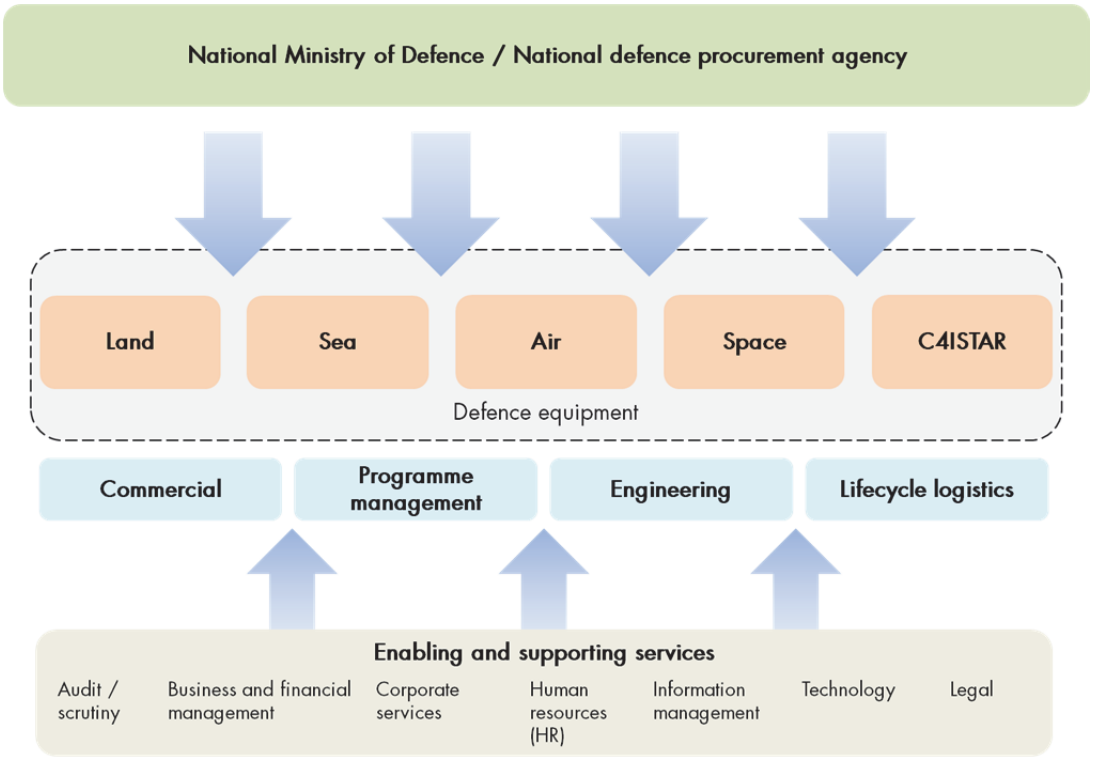
The study team developed a unique taxonomy of skills and competences for the government and identified those which are highly specialised

For the skills and competences required for defence in the governmental domain in relation to defence procurement, the study team has **developed a taxonomy of skills and competences**, which is illustrated in Figure 0.2. The taxonomy has been structured into three descending layers:

- **Functional competence group**: the overarching function performed by staff (the broad career field);
- **Occupation**: the technological, management and engineering occupations which make up each functional competence group;
- **Specialisation**: the degree of specialisation to the defence sector, as assessed by an expert advisory group according to a scale originally developed for the 2015 KSC study and illustrated in Table 0.1.

In addition to the key functional competence groups listed in the graphic below, the taxonomy assumes the existence of several functional competence groups that are not necessarily unique to defence, but which enable and support defence acquisition as a whole, as illustrated in Figure 0.1.

Figure 0.1 Overview of enabling, supporting and key functional groups in defence procurement



Source: RAND Europe

Figure 0.2 High-level taxonomy of skills and competences for defence in the governmental domain

Table 0.1 Key to the assessment of the uniqueness of skills and competences

LOW	Commonly available and used in defence; this is a skill/competence that is widely used in the defence and other sectors; it is fully transferable
MEDIUM	Widely used in defence; this skill/competence is used widely in defence and to an extent in the civil sector
MED/HIGH	Specialised for defence; this is a skill/competence that is used in the defence sector and requires an extensive background in defence engineering
HIGH	Unique to defence; this is a skill/competence that is only used in the defence sector

Source: RAND Europe

The study has produced a number of key findings relating to KSC for defence in the governmental domain

Based on desk research, literature review and consultation with a range of EDA pMS and European institution representatives, the study team identified six key findings in relation to the supply and demand of key skills and competences for defence in the governmental domain. These findings are interlinked and should be read and interpreted together to ensure a comprehensive understanding of the nature of the demand and supply of KSC for European defence.

1. **The national defence context and defence expenditure drive the demand for KSC in the governmental domain,** particularly in relation to the organisation of the national defence procurement system and its associated procurement strategy (e.g. focus on development, joint procurement or Commercial Off the Shelf (COTS) and Military Off the Shelf (MOTS) solutions), as well as the level of defence expenditure as a percentage of GDP. Larger defence procurement systems with a focus on development will not only have a higher demand for KSC for defence but also demand a different type of KSC, especially in relation to technical engineering and design skills. The demand for KSC is further influenced by wider trends, such as the climate of austerity leading to reductions in defence budgets, the increasing complexity and cost of major procurements, the extended intervals between new programmes, and the accompanying practice of life extensions for existing defence equipment.
2. **The supply of KSC is shaped by diverse factors, only a few of which governments can influence**. While there are several routes into defence work within the governmental domain, defence procurement agencies have to operate within the constraints of the available supply of skills and in competition with defence industry and other actors.
3. **KSC for defence in the governmental domain are not necessarily unique to defence** but pMS highlighted the importance of the contextual dimension of defence procurement-related skills and competences. While many occupations in this study's taxonomy exist both within and outside of defence procurement, the performance of several key occupations is dependent on a deep understanding of the defence context and how to operate within it. The defence context may also result in negative perceptions of the defence sector and defence procurement, which can make ministries of defence (MODs) or defence procurement agencies less attractive to graduates and employees transitioning from the civilian domain.
4. **There is a lack of a strategic approach to skills and competences for defence procurement** across most pMS, industry and the education sector, resulting in little coherence in skills planning, demand and supply. The identification of skills requirements is challenging and the practice of deriving skills requirements from internal organisational structures – rather than on a portfolio or programme level – may leave some pMS unable to proactively meet changes in skills demand. Stakeholder consultation nevertheless identified more strategic models for skills identification and sustainment, such as the models found in France and Sweden, which could inspire further national-level action among other pMS. The importance of skills anticipation and identification tools and models were also emphasised by the review of national and private sector initiatives in support of skills and competences, as illustrated in Chapter 5. The study

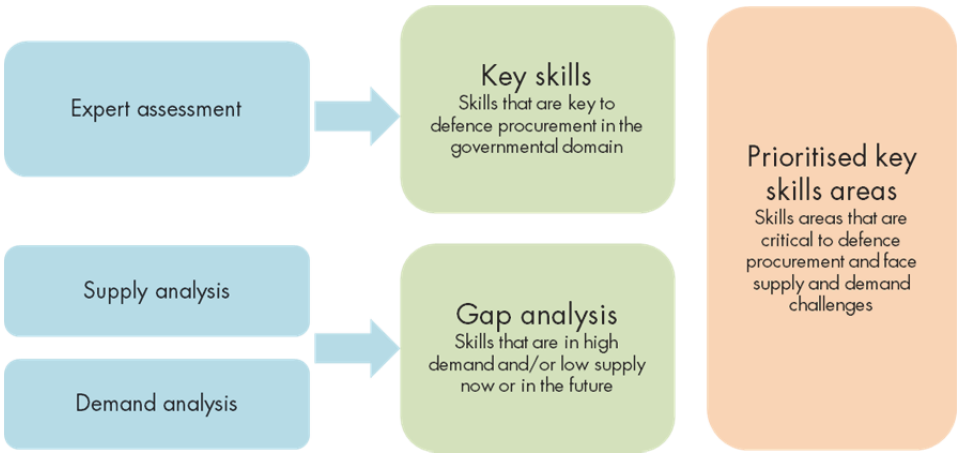
also found that joint approaches may be hindered by national sensitivities and security concerns, as well as the lack of common competency frameworks, which complicate transferability, pooling and sharing of KSC and related education and training initiatives.

5. **Effective recruitment and retention strategies are key for skills maintenance in areas where MODs and defence procurement agencies are disadvantaged by demographic trends or fierce competition.** These trends also highlight opportunities for alternative strategies to meet demand in highly competitive skills areas such as strategic partnerships or joint programmes. The importance of flexible and effective approaches to skills and competences was further demonstrated by the review of existing initiatives in support of skills, which highlighted several cases where targeted efforts have been developed in support of a particular prioritised skills area.
6. **There are a number of KSC, as well prioritised skills areas, for defence in the governmental domain.** The study identified several occupations as key to defence in the governmental domain, including requirements manager, design validation engineer, operational safety (worthiness) engineer, whole systems integration engineer, domain specialist engineer, and lifecycle logistics manager. Consultation with pMS also identified several prioritised skills areas (e.g. areas that were identified as at least moderately unique to defence and in which pMS face supply or demand challenges). These include national and EU defence procurement management and legal expertise, as well as a number of technical skills areas such as military aviation and air worthiness, cybersecurity, military weapons systems, and chemical and biological warfare.

Prioritisation of skills and competences for defence in the governmental domain

Following the identification of skills and competences for defence in the governmental domain and the analysis of the supply and demand of those KSC, the study team conducted a systematic analysis to identify prioritised skills areas, as outlined in Figure 0.3.

Figure 0.3 Schematic representation of the approach used to identify prioritised key skills areas



Source: RAND Europe

By comparing the skills identified as key for defence in the governmental domain in the preceding sections with the skills areas of concern as highlighted by pMS, it is possible to discern a number of prioritised skills areas. These prioritised skills areas are occupations within the taxonomy that were considered to be key and to a high degree unique to defence (i.e. assessed as medium/high or higher), and in which pMS emphasised particular supply and demand challenges.

Based on our analysis, the prioritised skills areas include:

- **Requirements management**
- **Operational safety (worthiness)**
- **Whole systems engineering and integration**
- **Domain specialists** (e.g. in military aviation and air worthiness, cybersecurity, military weapons systems, and chemical and biological warfare).

However, most of these skills (beyond domain specialists) are not unique to defence. Rather, what make them unique are the specific aspects of the defence requirements or context, which cannot be found on the general labour market. In other words, the operational nature of defence can lead to requirements that are not readily found in other settings or requirements that go beyond those found in the civilian domain. In relation to the identified prioritised skills areas, an example of this can be seen in air safety, which shares features across the military and civil sector, but where the performance requirements in defence are more exacting and therefore require more challenging safety cases than would be necessary in the civil domain. Similarly, integrating systems that are underpinned by these defence sector-specific requirements means that whole systems engineering and integration needs a deeper context that is a level beyond traditional systems engineering techniques as applied generally in the civilian domain.

Summary of recommendations

The dynamics of the defence labour market are strongly influenced by the specific actions taken by relevant players (EU institutions, national governments, defence industry, education institutions), as well as by local, national and regional circumstances, policies and strategies. When developing our recommendations for the EDA, we have endeavoured to focus on areas where the EDA can take action and achieve impact. On the following pages, we briefly outline the context and content of four specific recommendations:

- **Recommendation 1:** The EDA should act as an 'honest broker' for national governments, defence industry and the education sector to share good practice, coordinate initiatives and encourage pooling and sharing of initiatives to address skills gaps, while being particularly mindful of the unique requirements posed by smaller pMS.
- **Recommendation 2:** The EDA should take the initiative to maximise the skills impacts of EDA joint procurement programmes and aim to further the skills dialogue with OCCAR and other procurement organisations. This should also extend to maximising the skills impact of EDAP and the European Defence Fund, and any associated capability programmes that they generate.

- **Recommendation 3:** The EDA should actively work with the European Commission to assist in the implementation of the Blueprint for Sectoral Cooperation on Skills for defence and help facilitate pMS access to the Commission's instruments with relevance to KSC for defence in the governmental domain.
- **Recommendation 4:** The EDA should support the sharing of knowledge and information to enhance the attractiveness of defence in light of the highlighted difficulties for governments in competing in a strengthening or recovering economy.

Recommendation 1: The EDA should act as an 'honest broker' to share good practice, coordinate initiatives and encourage pooling and sharing of initiatives for KSC for defence

The EDA should act as an 'honest broker' to facilitate coordination and cooperation between national governments, defence industry and the education sector. Intergovernmental bodies such as the EDA can, in the right circumstances, enjoy a position of trust and impartiality between different actors, enabling them to leverage their position to bring together different actors in mutually beneficial collaborative ways of working. As an honest broker, the EDA could act as a central coordinating hub for initiatives supporting the development of KSC for defence in the governmental domain at the national or EU level by pMS, defence industry and educational institutions, acting individually or together. The EDA could thus act as a conduit between practitioners, researchers, decision makers and research end-users to facilitate knowledge translation between them, which can be an arduous process. As an honest broker, there are several initiatives that the EDA could consider:

- The EDA could launch an initiative to develop a **European defence procurement portal or framework,** similar to the UK Systems Acquisition Guidance. Through this portal the EDA could gather and share best practice on defence procurement practice and organisation, as well as contributing to standardisation across Europe. Many of the initiatives presented below could also be incorporated under such a portal.
- The EDA could assist pMS in accessing available training and education in the area of KSC for defence by **facilitating access to information and coordinating supply and demand** of particular training offerings. This could be achieved by having a dedicated section on the EDA website with information on available training opportunities open for international participation.
- The EDA could seek to further European **collaboration, pooling and sharing initiatives in the area of education and training for KSC for defence in the governmental domain**. This could be done through the development of EDA training programmes with the support of pMS experts, the sharing of national procurement experts across different pMS, or the deployment of mobile training teams coordinated by the EDA but staffed with pMS experts. The EDA could also seek to develop an online training resource that could be used to deliver e-learning or online training modules to pMS or make available existing training content developed by pMS.

- The EDA should engage in **initiatives to assist pMS in the identification of skills requirements** by commissioning further research into best practice in predicting and forecasting requirements and demand for KSC for defence in the governmental domain. The EDA could also develop training in this area or develop a European tool to assist pMS in calculating skills requirements.
- The EDA should also seek to **increase appreciation of the importance of the wider contextual understanding of defence for KSC** in the governmental domain by examining in more detail how that wider understanding influences the supply and demand of KSC.

Recommendation 2: The EDA should take the initiative to maximise the skills impacts of EDA joint procurement programmes and seek to increase coordination with OCCAR

As highlighted in the 2015 KSC report and in this report, procurements are an important driver of skills demand and also essential to the refinement and maintenance of critical skills and competences for defence procurement. The EDA initiates and occasionally manages joint procurement programmes that provide the Agency with the opportunity to develop best practice on skills integration and retention in procurement programmes, and share this knowledge with pMS. While many pMS consulted as part of this study noted that a significant proportion of defence procurement-related skills and competences are acquired by working with joint procurement programmes, it was less clear whether or how individual pMS worked systematically to engage in this type of skills support and development as part of their procurement programmes. The EDA therefore has an opportunity to lead by example and present pMS with practical examples and business cases demonstrating how this could be achieved.

The EDA should also explore how to extend coordination and collaboration with OCCAR in relation to the identification, maintenance and sustainment of skills and competences. As an international organisation that works with the through-life management of cooperative defence equipment programmes, OCCAR also has relevant expertise in defence procurement, as well as experience in identifying, developing and supporting skills and competences. There are further opportunities for the EDA and OCCAR to share their experiences and best practice for the benefit of EU Member States.

Finally, the EDA should be cognisant of ongoing European policy developments in relation to the European Defence Action Plan, the European Defence Fund and any associated capability programmes that they generate. The EDA should seek to facilitate a strategic discussion on skills in such capability programmes and aim to maximise their skills impact in relation to KSC for defence.

Recommendation 3: The EDA should actively work with the European Commission and facilitate access to European funds for skills and competences

The European Commission has in recent years launched a number of initiatives related to skills and competences, some of which are targeted specifically at defence. The EDA should work closely with the Commission in relation to the implementation of these initiatives, particularly the Blueprint for Sectoral Cooperation on Skills for defence, and ensure that pMS are kept up to date with relevant developments. The EDA should also seek to involve pMS in the ESCO tool in order to promote the importance of a competence framework for defence, including KSC for defence in the governmental domain. The

development of a common competence framework for defence-related work that could be shared between defence industry and pMS could enhance the transferability of defence-related skills and competences, as well as facilitating ongoing work on skills identification, development and sustainment.

Besides the Commission initiatives outlined above, there are also a number of EU-level funding mechanisms available to pMS that could be leveraged for the development and sustainment of KSC for defence in the governmental domain. Since 2013 the EDA has been raising awareness on such opportunities and most recently launched the European Structural and Investment Funds (ESIF) web-platform[1] to facilitate access to information about EU structural funds,[2] and the Access to the European Social Fund for Key Skills and Competencies for Defence (ESF4KS) initiative to support access to European Social Fund (ESF) funding for projects on KSC for defence.[3] The EDA should continue to coordinate and facilitate access to information for pMS on how to best make use of European funding for the development and sustainment of KSC for defence in the governmental domain.

The EDA should also proactively work with the Commission in relation to its future objectives, particularly in relation to use and development of the ESCO tool for defence and the participation of defence industry in the EU Skills Panorama. It is crucial that efforts at the European level targeted at the defence sector, whether industrial or governmental, are coordinated and informed by both defence industry and national governments (and also the defence education sector where applicable) in order to avoid fragmentation of initiatives and unnecessary duplication of efforts.

Recommendation 4: The EDA should support knowledge and information sharing to enhance the attractiveness of defence in a strengthening or recovering economy

Similar to the 2015 KSC study, several stakeholders consulted by this study expressed concerns about the attractiveness of the defence field, particularly in relation to defence procurement, which could impede national governments' ability to recruit and retain the right skills and competences from the labour market. As highlighted in the 2015 KSC report, the EDA could, either individually or in coordination with the European Commission, engage in a focused perceptions survey, such as a Eurobarometer survey. This could provide a greater understanding of specific negative perceptions of the defence sector amongst prospective employees across Europe in order to assist pMS and defence industry in understanding and addressing those perceptions.

The image of defence is one of the key factors to reflect on when considering the sector's ability to attract, recruit and retain the required skills and competences, and is of increasing importance in relation to the

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[1] European Defence Agency. 2017. *EDA launches "ESF4KSC": Access to the European Social Fund for Key Skills and Competencies for Defence.* As of 4 August 2017: https://www.eda.europa.eu/info-hub/press-centre/latest-news/2017/05/23/eda-launches-esf4ksc-access-to-the-european-social-fund-for-key-skills-and-competencies-for-defence

[2] The European Regional and Development Fund (ERDF) and the European Social Fund (ESF) are commonly referred to as the Structural Funds.

[3] European Defence Agency. 2017. *EDA launches its 'ESIF web-platform'.* As of 4 August 2017: https://www.eda.europa.eu/info-hub/press-centre/latest-news/2017/06/19/eda-launches-its-esif-web-platform

economic strengthening and recovery that has taken place in Europe following the 2008 financial crisis. Increased public and private investment is seen not only in defence but in a wide range of sectors. Since many of the skills and competences for defence in the governmental domain are also used elsewhere, or related to dual-use technologies, a negative perception of defence work may significantly impede governments' ability to compete within the available talent pool. Considering the skills gaps discussed in this study, a focused perceptions survey and associated mitigation activities could target prospective employees in areas with prioritised skills gaps, with the ultimate goal of attracting STEM students to defence, and specifically to defence procurement.