Technical Annex: Methodologies

Annex to report: Vision on defence related skills for Europe today and tomorrow

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Defence-related skills:
Building evidence on skills shortages, gaps and mismatches and defining the sector’s strategy on skills
EASME/COSME/2017/014

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This technical annex was prepared to provide a detailed description of the methodologies used to produce the *Vision on defence related skills for Europe today and tomorrow* report. This annex contains methods used to conduct the project and support the main report. This annex also contains the long list of identified relevant defence related skills programmes and initiatives and a defence related skills taxonomy.

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Annex A. Methodologies

To establish a comprehensive and detailed understanding of the defence-related skills landscapes in Europe, the project team used a variety of methods involving both the review of existing literature and the gathering and analysis of primary data. The following sections provide a detailed summary of the methods used.

A.1. Skills relationship map

The supply and demand model used in this project was developed on the basis of a similar model previously established by RAND Europe in the area of defence skills. In particular, the present model builds on the analysis of supply and demand for key defence industrial skills conducted employing a mixed methodology approach over the course of two research studies undertaken for the European Defence Agency. The resulting relationship map depicts complex and interdependent relations and dynamics linking a variety of factors and drivers with direct and indirect influence on defence industrial skills.

A.1.1. Previous research efforts

Retter et al (2015) first conceptualised a model for defence skills supply and demand by exploring the broad area of engineering professions and employment as well as at the more limited defence sector-specific context. To develop a defence skills demand and supply model, the team conducted:

- **A document and literature review** focusing on previous studies examining defence skills, technologies and industrial dependencies and skills gaps in Science, Technology, Engineering and Maths (STEM);

- **A review of the EU defence companies’ annual reports, websites** and other publically available materials to understand the demographic profile of the defence industrial workforce and strategies in place to help sustain defence skills;

- **A review of publically available information on current and future defence procurement programmes and exports** produced in Europe to use as one of key indicators of demand for skills;

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A review of websites and published materials by universities, colleges and vocational education centres to identify an indicative list of courses and/or modules relevant for training of skills and competences for defence.

Stakeholder and expert consultation and validation activities with the defence industry, government, the education sector and other stakeholders involved in specific skills initiatives. These activities included a total of 51 interviews, covering 18 EU countries, and a workshop with participants from the rotary wing industry, experts from the education sector, the European Defence Agency and wider RAND Europe expert group.

Silfersten et al (2017) subsequently refined the defence skills demand and supply model by taking into account the skills and competences for defence required within the governmental domain and with a particular focus on those skills necessary to perform procurement of defence equipment and services. To refine the demand and supply model for defence skills, the project team undertook the following research activities:

Desk research and literature review and analysis of evidence collected throughout the study, as well as of publicly available information on recent, current and future defence procurement programmes in Europe;

Stakeholder and expert consultation and validation activities with representatives from European Union Member States and other stakeholder organisations. These activities comprised of a total of 13 interviews, covering 11 EU countries, as well as the European Commission and the Organisation Conjointe de Coopération en matière d'Armement (OCCAR). Further, a validation workshop with participants from EDA, EDA participant Member States and the study team was held.

A.1.2. Current project approach and methodology

Building on the results and efforts of previous research on key skills for defence in the industrial and governmental domains, the research team employed a mixed methodology approach to further refine and validate the defence industrial skills supply and demand model. In particular, the following activities were conducted during WP1 of the project:

Expert consultation and validation activities. During the first phases of the project, RAND Europe and FGB conducted two internal validation workshops with a total of nine senior defence, employment, skills and education experts. The purpose of these engagements was to critically re-assess the existing defence skills supply and demand model to identify areas for its restructuring and updating, to fulfil consideration and requirements of the present project. A first half-day internal workshop was held in Cambridge (UK) on 9 May 2018. A second half-day workshop was held in Cambridge (UK) on 7 June 2018.

Desk research and literature review. Following the first internal workshop, a targeted review of existing research and literature was made to facilitate the process of revision and refinement of the demand and supply model. Further revisions to the model were informed by ongoing, parallel research activities being conducted by the project team, particularly stocktaking skills initiatives across selected European Union Member States and companies.
• **Survey among defence industry representatives.** The survey complements the findings concerning the state-of-play in the area of defence-related skills gaps in Europe. The survey was designed to build an understanding of the gaps and shortages as experienced and perceived by the key players of the European defence industry, both for today and for the future. It also aimed to identify existing and potential future challenges for defence-related skills, posed by new and emerging technologies. The project team has obtained 81 survey responses, covering six domains: land, naval, air, space, cyber, and complex weapons. As a basis for the survey, the project team refined the initial defence industrial skills taxonomy developed for the 2015 project on Key Skills and Competences for Defence, updating this in light of industry feedback and more recent developments, for the purpose of differentiating between skills that are cross-cutting and specialised for each defence domain.

• **Expert interviews.** To augment the desk research and literature review, the project team conducted 51 expert interviews with some of the key stakeholders in the defence industry and skills and employment areas across the European Member States. All interviewee data is presented in an anonymised way and is not attributed to individual interviewees. The purpose of the stakeholder interviews was to: (1) obtain country expert and stakeholder views on existing skills initiatives and perceived skills gaps; (2) complement, triangulate and add depth to the secondary data analysis; (3) engage a broader network of stakeholders for enriching the proposals for supporting actions.

• **External experts and stakeholder validation workshop.** Finally, following the second internal workshop, the project team engaged with external experts and stakeholders through a validation activity which was run as part of the event and conference organised to launch the European Defence Skills Partnership (EDSP). During the first EDSP workshop, the project team presented a detailed overview of the revised demand-supply model, with experts providing their views on the accurateness of the model and suggesting areas for further development, reconfiguration or expansion. An expert **Steering Committee (SC)** has also been established to support the development of the sectoral skills strategy. Comprising five independent senior experts across academia, industry and associations, the SC guides the work of the project team and provides additional expert advice. The feedback and guidance of the SC members has been taken on board in the process of finalising this report.

**A.1.3. The defence industrial labour market**

This section provides an overview of the relationship map, based on the defence skills demand and supply model employed by the project team to conceptualise and visualise the defence industrial skills market. The model depicts in a simplified and schematic manner the complex and interdependent relations and dynamics linking a variety of factors and drivers with direct and indirect influence on defence industrial skills. The model enables researchers, experts and practitioners active in areas relevant to this project to investigate and research pathways through which defence skills are identified, generated, sustained, and

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transferred, as well as which factors could hinder or boost the availability of such skills. The relationship map presented below will be used as a reference for framing discussions around the common vision for defence skills and to frame recommendations put forward by the project.

*Understanding the defence labour market*

The matching of demand and supply for defence industrial skills occurs in a dynamic and inter-connected labour market. Figure A.1 below provides a visual overview of the key phenomena, factors and forces at play. This graph is then discussed in greater detail throughout subsequent sections which provide specific examples of initiatives, factors and dynamics at play in the defence labour market. To conclude, at the end of this Annex, Figure A.1 presents an expanded and more granular visual overview of the demand-supply model, inclusive of examples and factors discussed throughout the Annex.
Figure A.1 High-level process map depicting the supply and demand sides of the defence industrial skills market

Source: RAND Europe analysis
Demand for defence industrial skills and competences

The demand for defence industrial skills and competences is primarily driven by equipment requirements; these determine the extent of demand for specialised skills and competences, as well as the level of capacity required for each throughout different products’ lifecycle stages of design, manufacturing, maintenance and disposal. In order to design, manufacture, maintain and dispose of equipment, different skills in varying volumes will be required. The translation of equipment requirements into specific skills requirements is carried out by defence industrial actors who identify which skills are needed to design, produce and support different products. In particular, skills and competences requirements at different lifecycle stages are influenced by:

- **Current equipment in use** by national armed forces, which determine skills and competences requirements for equipment support and maintenance;
- **Planned equipment programmes** which set procurement skills requirements; and
- **Export programmes** which may broaden existing skills and competences requirements or set further ones.

These factors are accounted for in the project’s model. This project is concerned with those defence skills and competences that reside within industry. However, it should be noted that activities in support of equipment at different stages of the lifecycle may also be require for certain skills and competences to be available within the armed forces or broader defence establishment of a given nation.4

Labour market factors and processes directly influencing defence industrial skills demand

In addition to defence-specific drivers and dynamics, a number of labour market factors and processes also have an impact on the demand for defence skills and competences. In particular, the following phenomena should be considered and are accounted for in the project’s model:

- **Labour turnover rates** which can be taken as indications of the ease or difficulty of hiring and retaining staff with required skills and competences;
- **Labour market regulations** which may incentives or otherwise affect the ability to hire and retain skilled staff; and
- **Demand for workforce replacement** which could stimulate the demand for skills and competences development.

Factors and processes that indirectly influence demand for defence skills and competences

In addition to requirements set by equipment in use, planned or exported, the demand for defence skills and competences can also be indirectly influenced by a variety of external factors, drivers and processes. A non-exhaustive number of factors, dynamics and drivers are included in the project’s model, including:

- **Wider political contexts and development**, which may affect defence procurement and export activities, boosting or hindering as a consequence the demand for defence industrial skills;
- **Joint procurement programmes**, which may affect both the number of skilled people required by industry and the geographical distribution of skills for the execution of a given joint programme;

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• **Competition from non-European suppliers**, which can act as a stimulus to encourage European companies to remain globally competitive, but that may also lead to having a negative effect on the volume and type of defence industrial skills requested in light of greater outsourcing;

• **Technological change**, which may affect the type and quality of skills required in the future;

• **Budget restrictions**, which can reduce the long-term demand for skills due to the reduced number of equipment programmes, but may also increase the demand for in-service support skills needed to maintain existing equipment.

**Supply of defence industrial skills and competences**

Existing research indicates that defence-specific skills and competences required by the European defence industry are often not developed or fostered through the education sector. Only a handful of defence academies providing specialist defence-related technical courses exist and institution in the broader education sector tend to offer curricula and courses focusing primarily on general training and education in science, technology, engineering and manufacturing.\(^5\)

In this context, the supply of defence industrial skills and competences tends to be directly influenced and sustained by a range of labour market factors and processes discussed in the paragraphs below and included in the project’s model. Further, as in the case of demand, a wide array of factors and processes have an indirect influence on skills supply.

**Labour market factors and processes directly influencing defence industrial skills supply**

Defence-specific skills and competences are often developed by individuals through practical work and the application of a skill during their work for a defence company. The development of highly specialised skills can be a long process requiring several years of learning, training and practice. As a result, to foster skills and ensure their retention and transfer to new employees, a wide array of **early- and mid-career development initiatives** exist. These initiatives often take the form of **industry-led initiatives**, but may also be the result of broader governments’ and local authorities’ investment programmes in skills development, or of **joint civilian and military development initiatives**.

First, to retain skills, companies may set up **mentoring schemes** linking experts with younger employees through a ‘master-apprenticeship’ type of relationship. Such initiatives are designed to ensure that existing skills are passed onto younger employees and do not disappear with the retirement of older generations of workers. Defence companies may also provide other **in-house training initiatives**, offering development and upskilling opportunities to new and existing employees, as well as opportunities for retraining previously fostered skills.

Further, in recent years defence industry and the education sector have developed a range of programmes, initiatives and schemes designed to sustain defence industrial skills supply, these include:\(^6\)

• Defence industry **sponsorship of doctoral programmes, lectures and seminars** to contribute to the shaping of university curricula and programmes;

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\(^6\) Retter et al (2015)
• Defence industry sponsorship of competitions and initiatives promoting STEM skills in primary and secondary schools, these may include a range of outreach activities (e.g. workshops, seminars, awards) designed to stimulate curiosity and interest in subjects and works related to STEM skills;

• Collaboration between defence industry, schools and technical colleges to offer internships, apprenticeship programmes, and work placements opportunities

Factors and processes that indirectly influence supply of defence skills and competences
In addition to strategies, courses, programmes and initiatives designed to stimulate and sustain the supply of defence industrial skills and competences; this may also be indirectly influenced by a variety of external factors, drivers and processes. A non-exhaustive number of factors, dynamics and drivers are included in the project’s model, including:

• Demographics, which determine the overall size and composition of the pool of workforce that may be targeted and trained to developed the skills required by defence industry;

• Defence-specific dynamics stemming from historical and socio-political factors, which may result in a potentially heightened or lowered attractiveness and palatability of a career in defence for the general workforce within certain countries and regions;

• Competition from non-European suppliers, which may result in in a reduced volume of work for industry and in weaker incentives to foster new skills and ensure the retention of existing ones; and

• Incentives for education and training in defence, which may stimulate or encourage the development of defence industrial skills beyond levels that market dynamics would otherwise be able to sustain.

Matching defence industrial skills supply and demand
Finally, the demand-supply model employed in the project emphasises that the matching of defence skills supply and demand occurs in a continuous fashion and through a variety of dynamics and trends. These are in turn influenced by a variety of factors, such as those discussed in the sections above, and by tools and initiatives that different actors can adopt in an effort to align demand and supply. For example, these can include structured campaigns and the use of financial rewards and incentives by governmental institutions to avoid market failure and ensure the retention of skills that market forces alone would be otherwise unable to sustain.
Figure A.2 Detailed process map depicting the supply and demand sides of the defence industrial skills market

Source: RAND Europe analysis
A.2. Desk research and literature review

A.2.1. Research on EU member states’ capability demand trends

The project team carried out a literature review of openly available defence strategies and capability and armaments plans of a selection of EU MS. The purpose of this task was to develop an understanding of the trends of defence capability demand by the EU MS governments and establish a knowledge basis of the types of defence capability areas that the EU MS are interested to invest today and in future. Thus, the review aimed at answering the following questions:

- What are the capabilities that are being developed currently and in the short-term investments (2017-2025) by the EU MS?
- What are the capabilities that are to be developed in the medium-term (2025-2035) by the EU MS?
- What are the capabilities that the EU MS plans to invest in the long-term (2035+)?

The list of reviewed countries was based on the original project request for tender. It includes a representative selection of ten countries from the top fifteen EU MS with the highest defence budget in real terms.7 Box A.1 shows the countries included in the defence capability programme and plan review.

Box A.1 EU member states covered in the review of EU MS defence capability demand trends

<table>
<thead>
<tr>
<th>Denmark (DK)</th>
<th>Netherlands (NL)</th>
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<tbody>
<tr>
<td>Finland (FI)</td>
<td>Poland (PL)</td>
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<tr>
<td>France (FR)</td>
<td>Spain (ES)</td>
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<tr>
<td>Germany (DE)</td>
<td>Sweden (SE)</td>
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<tr>
<td>Italy (IT)</td>
<td>United Kingdom (UK)</td>
</tr>
</tbody>
</table>

The review of the defence capability plans and programmes of these selected EU MS based on desk-based research, specifically a review of openly available (unclassified) national government and MOD-level strategies, policies and plans, such as national security strategies, policies and white papers, defence strategies, strategies for the development of defence domains, defence armaments plans, strategic concepts of defence, government reports on defence industry, security and industrial strategies. Considering the sensitivity of the question, where openly available information was not found, the research was supplemented with information from:

- Defence-specific databases, such as the IISS Military Balance and IHS Jane’s;
- Reports by research organisations that specialise on strategic studies, such as SWP and the Spanish Institute for Strategic Studies, ETH Zurich Center for Strategic Studies;

7 RAND Europe analysis of IISS (2018)
Vision on defence related skills for Europe today and tomorrow

- Respectable news sources, such as DefenseNews, DW and Defense-Aerospace;
- Defence industry association reports

Furthermore, in order to supplement the analysis of the defence capabilities that may be needed by the EU MS in the long-term, the project team reviewed RAND Europe’s project developed in support of the European Defence Agency’s review of the long-term strand of its Capability Development Plan.⁸

The outputs of the research on EU member states’ capability demand trends underpins Chapter 2 of the report *Vision on defence related skills for Europe today and tomorrow.*

### A.2.2. Research on defence-related skills programmes in EU member states

In order to develop a better understanding of the supply of defence-related skills in Europe, a structured supply and demand analysis was undertaken by the research team. The project team pursued a two-tiered approach to the analysis, by first, examining the drivers and strategic requirements for defence-related skills and second, gathering evidence on existing defence-related skills programmes and initiatives that seek to develop the supply of defence-related skills in Europe. Critically, the supply and demand analysis allowed the project team to assess and acquire a nuanced understanding of:

- **Availability and character of defence-related skills programmes** across Europe;
- **Gaps and shortages** in the supply of defence-related skills against the European defence industry’s skills requirements;
- **Balance of supply across competency areas** for defence-related skills in Europe;
- **Metrics and availability of evidence of effectiveness** of defence-related skills programmes;
- **Limitations to the effectiveness** of defence-related skills programmes;
- **Lessons learnt and indications of good practice** for defence-related skills programmes;
- **Sources of funding** for defence-related skills programmes;
- **Distribution of effort** across focus EU member states and stakeholder groups: government, industry, academic and other skills programmes providers.
- **Linkages and existing collaborations** across skills programmes.

The project team assembled a multilingual sub-research team to conduct the data extraction across 16 EU countries. The search was undertaken in both English and each country’s national language in order to enable the team to capture initiatives in the selected countries. The 16 EU member states covered in the data sample are listed in

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Box A.2.
The searches of supply-side initiatives covered publically available sources such as company, government (ministries of defence, ministries of education, innovation organisations, EU institutions), educational institution (public and private universities and technical and vocational colleges), professional and trade associations web pages, programme brochures, human resource strategies and annual reports.

The outputs of the research on defence-related skills programmes in EU member states underpin Chapter 4 of the report Vision on defence related skills for Europe today and tomorrow, and the list of relevant identified programmes is presented in Annex B below.

For each programme, the research team captured data on the governance of the programme such as the country in which the programme is held, the owner of the initiative, the type of managing entity, the beneficiaries, funding sources, the type of collaboration (public, private, or public/private), and the members of partnerships.

Next, the research team gathered information on the skills supplied or addressed by the programme – particularly with regard to the specificity of the targeted skills to defence, the presence of an organisational skills strategy, the relevance of the skills developed to defence and non-defence-specific skills, a focus on cross-domain tech applications, the life-cycle stage in the taxonomy addressed by the skills developed through the programme, examples of skill group (based on the skills taxonomy) that the skills developed by the programme apply to, the alignment of the programme with specific government objectives on defence skills, and the future key demand sources addressed by the programme.

The research team then assembled evidence on the effectiveness of the programmes. This included information on the existence of benchmarking mechanisms and evaluations, the qualitative and quantitative indicators used to measure effectiveness, the analyst’s assessment of indicators, and any information on lessons learned.

The research team conducted a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the programmes identified. For the SWOT analysis, the definitions used for ‘Strengths,’ ‘Weaknesses,’ ‘Opportunities’ and ‘Threats’ are shown in Figure A.3.
The SWOT analysis was conducted in three stages: first, each research analyst evaluated each programme individually; second, a high-level SWOT analysis across the research team was conducted to draw out the key SWOT messages that exhibited the strongest signals in the data extracted; and third, the SWOT analysis key messages were challenged and validated by a panel of RAND’s internal team of defence skills experts, whose experience and expertise span across the defence, innovation and science and technology areas and who cumulatively cover expertise on each of the domain-specific areas land, air, naval and cyber.

The outputs of the SWOT analysis can be found in Chapter 4, Section 4.4 of the report Vision on defence related skills for Europe today and tomorrow.

A.2.3. Scope and limitations of the research approach

There are some important limitations that should be considered by the reader when approaching the findings of the research conducted into EU member states’ defence-related skills programmes:

- Limited resources and time constraints meant that the project team prioritised initiatives by government, major defence companies, academic institutions and some SMEs. Moreover, there are a vast number of relevant non-defence-specific programmes that could not be taken into consideration.
- The data gathered is a snapshot in time of defence-related skills programmes, and is not intended to be a comprehensive list of all existing programmes.
- The research team’s language capabilities were able to conduct national language sources for all the focus EU member states, however, not all research analysts were mother tongue speakers in their country allocations’ national language.
- There was limited availability of evaluation, monitoring and benchmarking mechanisms through the search of publically available sources.

A.3. Expert interviews

A.3.1. Purpose

Expert and stakeholder interviews are a valuable data collection method due to their ability to illuminate meaning, capture nuance and validate the emerging insights of a project. In this stage of the research, interviews were used to establish a more detailed understanding of the differing views across different
Member States, institutions and defence domains when it comes to evaluating the effectiveness of current skills programmes and the factors that determine their success, as well as variations in understandings of the current defence skills context across Europe.

The purpose of the stakeholder interviews in this phase of the project was to complement, triangulate and add depth to the information gathered through the desk research and literature review as well as closing any remaining research gaps. Stakeholder interviews were a particularly key data-gathering method in this research phase due to the granularity of much the required information, which can be difficult to obtain through desk-based research alone. The use of interviews enhanced RAND Europe’s data collection and information gathering by a) directing the research team towards information that may not be easy to locate or that of which they were unaware, and b) providing supplementary information that is not publically available.

A.3.2. Protocol design

The research team used a pre-developed interview protocol to facilitate a semi-structured interview format. This allowed for continuity in questions and a standardised approach that would enable easier subsequent analysis of the interview data, while also providing interviewers with flexibility to ask follow-on questions and draw out more detailed information on certain areas if required.
Defence Related Skills
A RAND Europe Project for the EASME/European Commission

Interview Format

Introduction

RAND Europe, in cooperation with Fondazione Giacomo Brodolini, has been commissioned by the European Commission to carry out the project ‘Defence-related skills: Building evidence on skills shortages, gaps and mismatches and defining the sector’s strategy on skill.’ RAND Europe is a not-for-profit research organisation that helps to improve policy and decision making through research and analysis. Our findings and recommendations are based on rigorously peer-reviewed research and analysis. We aim to benefit the public interest through the impact and wide dissemination of our work.

The aim of the project is to complete the evidence base on skills, set up European Defence Skills Partnership, and deliver a sectoral skills strategy, agreed and validated by stakeholders. As part of our data collection to complete the evidence base on defence industrial skills in Europe, we are conducting interviews with key stakeholders across the EU. We are interviewing representatives from the industrial, education, research and public authorities.

The objective of this interview is to identify the various defence skills development and education programmes, as well as competence frameworks and other policy initiatives in support of defence skills. This includes internal company approaches and programmes. We want to learn about your views and your organisational experience on what makes such programmes, policies and strategies successful. We are also looking for comparable activities conducted by other organisations and countries. The intent is to build a picture of the current context and practice in order to inform the project.

You will be asked questions about programmes and/or policies and strategies depending on your experience and background. We will be taking notes during the interview. With your permission, we would like to record this interview to be transcribed for the qualitative analysis. Both the recording and the notes of the interview will be treated as confidential. We have also prepared a data privacy form in compliance with the EU’s General Data Protection Regulation (GDPR), and will contact you directly for permission should we wish to attribute any of your statements in the research output.
Questions

PART 1 - Skills programmes

1) What skills programmes does your organisation/members of your organisation/your country currently have in place or recently completed [programme title, year, implementing organisation]?

ABOUT THE PROGRAMME

2) How would you describe the aims and objectives of the programme?
   a. What kind of skills does it target?
   b. Are they defence-specific or dual-use/general/cross-domain?
   c. What were the reasons for focusing on these specific skills [e.g. skills gaps, high priority skills, other reasons?]
   d. How does it fit with your organisation’s objectives or wider skills strategy?

3) Is it an internal company, industry/sector, regional, national or EU-level programme?
   a. If internal company: Does the programme contribute to re-skilling/upskilling employees for their transferability between civil and defence production lines?
   b. If not internal: Does the programme consider enhancing the mobility of employees/beneficiaries between organisations and sectors?

4) Is it a collaborative programme? If so, who are the cooperation partners? What do they contribute to the programme?

ESTABLISHMENT, MANAGEMENT, FUNDING

5) How was the programme established? Who incentivised the programme?
6) Who lead and manged the programme? What is its duration?
7) How was the programme funded? [e.g.: national/ regional/local government funding, industry association or internal organisation funding, combination of funds.]

PROGRAMME PARTICIPANTS

8) Who were the beneficiaries of the programme (e.g. employees [i.e. technical staff, graduate staff, management, other], new company entrants, students, early career professionals, school leaders, other)?
9) How many people have participated?
   a) If not company internal, how many graduates of the programme went on to work in the defence industry or the broader defence sector?
INSIGHTS

10) What were the strengths of the programme?

11) Have you identified any challenges of the programme?

12) What were the opportunities that the programme was able to capitalise on?

13) How do you publicise the programme (if at all) and to whom?

14) How do you monitor/benchmark the programme (if at all)?
   a. What kind of qualitative or quantitative indicators of success do you use?

15) Can you please share any ‘lessons learned’ from implementing the programme and/or cooperating with partners?

16) Are you aware of any future/potential skills initiatives that your company is planning to introduce?

PART 2 - Skills policies and strategies

17) In your opinion, what are the key national, regional and EU-level policies and strategies for skills in the defence sector?

18) How would you describe the aims and objectives of the identified policy/strategy?
   a. Does the policy focus on e.g. increasing the skills pool, improving link between education, training, and employment, improving transferability of skills between civil and defence sectors, mobility etc.?
   b. What kind of skills does it target?
   c. Are they defence-specific or dual-use/general/cross-domain?

19) Does the policy try to address a specific skills gap?
   [E.g.: technological developments, demand from employers]

20) Were employers in the defence sector involved in the development of the strategy/policy?

21) Is there on-going cooperation with employers (e.g. defence industry)?

22) Is there an evaluation mechanism that is part of the policy/strategy?
   a. Is it internal or external evaluation?
   b. What is your view on the strategy and do you think it is achieving its aims?
   c. Can you identify any challenges that the strategy is or will be facing?

23) Are there formal skill classification and certifications systems to support the policy/strategy?

24) How does it fit in with other policies/strategies [e.g. national strategies, regional development strategies, strategies in creating jobs and growth, digitalisation]?
A.3.3. Identification of interviewees

In order to ensure that the data collected was as comprehensive and meaningful as possible, the research team aimed to conduct a minimum of 50 interviews comprising at least five representatives from each focus country, as well as at least one representative from each other Member State, ensuring even representation of government, industry and academia. Industry representatives were drawn from organisations across the defence domains and covered the major prime contractors, specialised Tier 2 companies and SMEs.

Initial interviewees were drawn from the candidate list of EDSP members. The research team then broadened the search by employing a ‘snowballing’ approach which involved asking interviewees to recommend other relevant stakeholders from their own networks to ensure sufficient representation across sectors. This approach was also complimented by desk-based research to identify additional interviewees. Taking into account the risk of a lower anticipated response rate of approximately 20% during the summer months, the team reached out to a total of over 100 individuals to ensure that the target interview figures were met.

A.3.4. Stakeholder engagement and conduct of interviews

After selecting candidates for interview, the team then approached the individuals by email and telephone. The stakeholders were each sent a copy of the interview protocol and a privacy notice setting out the privacy and data protection conditions that RAND Europe would ensure in line with GDPR, guaranteeing interviewees the right to review and audit their contributions should they wish. The majority of interviews were conducted by telephone to minimise travel costs, and were recorded with the permission of interviewees for transcription purposes. The data gathered at interviews was compiled into a standardised data extraction template to facilitate effective consolidation and analysis following the completion of interviews.

A.4. Survey

The project team developed a survey to develop an understanding of the state-of-play in skills in European defence industry. The survey aimed to identify skills gaps in European defence industry today and as anticipated in the future and identify the gaps in skills related with new technologies used in the defence industry today and in future.

The survey was designed to answer the following two thematic groups of questions:

- **Defence skills challenges today and in the future**
  - What are the cross-cutting and domain-specific skills areas that pose a difficult to defence industry today, in 5 and 10 years?
  - How important are the problematic skills for the defence industry?
  - What are the likely reasons for skills gaps?
  - What are the likely effects of these skills gaps on the defence industry?

- **Defence skills challenges related to new technologies**
What are the new technologies that defence industry is currently working on or plans to work on in future (5-10 years)?
What are the anticipated skills challenges in relation to these technologies?

The survey\(^9\) was structured in two parts to echo the questions:

- **Part 1: Understanding skills gaps, criticalities and landscape.** The first part of the survey asked for the respondents’ views on general defence industry skills gaps today and as anticipated by you in future, the criticality of specific defence skills for your organisation and issues with filling vacancies for these skills and the effects of having these skills gaps on your organisation. Furthermore, this part of survey also asked for their views on a similar set of questions on domain-specific skills based on your area of expertise as indicated by you in the introductory part of the survey.

- **Part 2: New technologies and skills.** The second part of the survey asked for the respondents’ views on skills associated to new technologies and related current and potential future skills gaps.

Prior to distribution, the survey was validated by an internal team that included survey and research methodology experts and experts of defence skills and industry. The survey was also validated by the European Commission project officer.

The survey was conducted online via the social cooperating system anthropOS (aOS) platform provided by PumpCo Ltd.\(^{10}\) An example of the final survey distributed to respondents is provided below.

The survey was distributed electronically by the project team to over 450 representatives of the defence industry and defence industry associations, as well as the members of the European Defence Skills Partnership (EDSP). Out of the people contacted, 81 contributed towards the project by submitting a reply to the questionnaire. Error! Reference source not found., and Figure A4 illustrate the break-down of the survey respondents by country, size and annual revenue of organisation and the represented defence domain.

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\(^9\) Please see pp. 35 - 46 for survey questions.

\(^{10}\) PumpCo. 2018. AnthropOS – social cooperating system. As of 24 July 2018: http://pumpco.uk/platform
Vision on defence related skills for Europe today and tomorrow

Figure A.5 Types of organisations who responded to the survey

- Defence industry: 50
- Professional organisation: 5
- Technical research: 11
- Defence industry association: 4
- Academia: 5
- Non-government defence research: 2
- Ministry of defence: 1
- Think tank: 1

Figure A.6 Further breakdown of survey respondents

<table>
<thead>
<tr>
<th>Respondents by company size [no. of employees]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>250 or less (SMEs)</td>
<td>35</td>
</tr>
<tr>
<td>250-10,000</td>
<td>31</td>
</tr>
<tr>
<td>10,000-100,000</td>
<td>8</td>
</tr>
<tr>
<td>100,000 and more</td>
<td>2</td>
</tr>
</tbody>
</table>

Respondents by country

- Poland: 14
- Denmark: 12
- Germany: 9
- Belgium: 8
- Netherlands: 6
- Spain: 6
- France: 5
- Luxembourg: 5
- Lithuania: 4
- United Kingdom: 3
- Greece: 2
- Italy: 2
- Finland: 1
- Bulgaria: 1
- Cyprus: 1
- Latvia: 1
- Austria: 1

27
Data gathered from the survey was analysed by the project team to answer the above questions. This report includes a first-level of presentation and analysis of the data, while further more detailed analysis be performed during WP2 of the project thus contributing to the development of the final outputs of the project. The survey was supplemented by stakeholder and expert interviews focusing on the defence skills supply initiatives in place in the EU member states (see main report).
Vision on defence related skills for Europe today and tomorrow

SURVEY

Defence-related skills

Building evidence on skills shortages, gaps and mismatches and defining the sector’s strategy on skills [EASME/COSME/2017/014]

Thank you for your time and engagement with this ongoing project, led by RAND Europe, a non-profit research organisation, in cooperation with Fondazione Giacomo Brodolini, for the European Commission. The project is funded through the EU COSME programme.

The aim of the project is to build the existing evidence base on defence-related skills, introduce an industry-led European Defence Skills Partnership (EDSP) and deliver a common EU SECTORAL SKILLS STRATEGY for defence, agreed and validated by stakeholders. The project was launched in March 2018 and will be completed in March 2019.

This industry survey is a key element of the data collection phase of the project. The aim of the survey is to inform the project’s assessment of the current skills situation across the European defence industry.

More specifically, the aim of this survey is to:

- identify occupations that will be difficult to resource with trained/competent staff;
- identify skill areas needed by European defence industry now and in the future.

The survey has two parts – the first part asks you to identify skills gaps and shortages, and the second part asks about the impact of new technology on skills.

We understand that our request requires your time. Participation is strictly voluntary. However, obtaining reliable data from European defence industry is critical to drafting SECTORAL SKILLS STRATEGY that best addresses European industry’s needs. Within industry, we believe strategy leads with domain knowledge are best placed to complete the survey, with input from HR directors. We anticipate that the survey will require approximately one hour to complete.

Data gathered through this survey will be anonymised and aggregated, to present a general view of the defence-related skills in the European defence technological and industrial base. We will associate your account with responses to analyse data by subgroups, for example SMEs and companies in specific domains. At all times, final analysis presented to the European Commission will contain only aggregated data and no individual company’s data will be presented.

The information gathered through this survey will be used only for the purposes of this particular project. Your personal and organisational information and defence skills responses will be solely held by RAND Europe, and processed by our data collection partner, AntropOS. RANDE Europe will not publicise or disclose your information or responses to any third parties, including the European Commission.

RAND Europe takes issues of data protection very seriously in planning and executing projects by handling and storing the collected data appropriately. Please find our privacy policy here: https://www.rand.org/randeurope/privacy.html

Please complete the survey in as much detail as possible and submit by 30 August, 2018. If there is a reason why you are not able to submit the online survey and you need a word-based copy or if you have questions about the survey, please contact the RAND Europe project team members Katerina Galai (kgalai@rand.org) or Marta Kepe (mkepe@rand.org).
ABOUT YOU AND YOUR ORGANISATION

This section includes questions about you and your organisation.

Please fill in the fields that are applicable to your organisation:

<table>
<thead>
<tr>
<th>Organisation name*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Job title of person completing the questionnaire*</td>
<td></td>
</tr>
<tr>
<td>Type of organisation (select one)*</td>
<td>Defence industry/Defence industry association or cluster/Professional organisation/Government defence research/Non-government defence research/Technical research/Ministry of Defence and defence policy/Academia/Think tank/Consultancy/Education &amp; training/Other</td>
</tr>
<tr>
<td>HQ country (please select one)*</td>
<td>Select countries: drop-down menu</td>
</tr>
<tr>
<td>Other EU countries where you operate</td>
<td>Select countries: drop-down menu</td>
</tr>
<tr>
<td>Non-EU countries where you operate</td>
<td>Please insert</td>
</tr>
<tr>
<td>Exports</td>
<td>We export to countries in the EU ☐ We export to countries outside of the EU ☐</td>
</tr>
</tbody>
</table>
| Please indicate the % of your organisation’s defence activities and civil activities | Defence activities %  
Civil activities % |
| Organisation size by full-time employees in the EU (select range, including wholly-owned subsidiaries, but NOT parent company) | <250 ☐ 250-500 ☐ 500-1k ☐ 1k-3k ☐ 3k-6k ☐ 6k-10k ☐ 10k-20k ☐ 20k-40k ☐ 40k-60k ☐ 60k-100k ☐ 100k-150k ☐ 150k-200k ☐ >200k ☐ |
| Organisation size by annual revenue in EUR millions (select range, indicate global revenue, including wholly-owned subsidiaries, but NOT parent company) | <50 ☐ 50-100 ☐ 100-200 ☐ 200-500 ☐ 500-1k ☐ 1k-3k ☐ 3k-6k ☐ 6k-10k ☐ 10k-20k ☐ >20k |
| Government involvement | Government has a minor stake in the company ☐ government has majority stake in the company ☐ government has full control ☐ |
| Please select one or more domain in which you have expertise* |  |
PART I: Understanding skills gaps, criticalities and landscape

PART IA: Cross-cutting skills

In this section you will be asked about the current defence skills situation, based on your expert opinion and experience within your company. This section asks you about crosscutting skills. In this context, we mean those skills which are not specific to a single domain but may be present across the military domains (e.g. air, land, sea). You can also add relevant crosscutting skills that are not already listed below. You will have the opportunity to comment on domain-specific skills in the following section.

Please select one or more relevant option(s) based on your experience, expertise, and role in the organisation. For example, if you have a geographic responsibility (e.g. German market), please answer based on this perspective. If you DO NOT work for defence industry, please select one or more option based on your knowledge or understanding of defence industrial skills:

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today, it is difficult for employers to fill the requirement for this skill area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Today, it is difficult for employers to fill the requirement for this skill area quickly enough</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In 5 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In 10 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I do not have knowledge in this area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

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Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting

Insert cross-cutting skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
Please let us know if we have missed any crosscutting skill areas in which you are experiencing gaps or shortages. Please insert these below and let us know what the challenge is by selecting one or more options.

<table>
<thead>
<tr>
<th></th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills</strong></td>
<td>Today, it is difficult for employers to fill the requirement for this skill area</td>
<td>Today, it is difficult for employers to fill the requirement for this skill area quickly enough</td>
<td>In 5 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td>In 10 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td>I do not have knowledge in this area</td>
</tr>
<tr>
<td>Respondent to insert</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Respondent to insert</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Respondent to insert</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Respondent to insert</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Respondent to insert</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Currently, how important are the skills you selected above to the functioning of your organisation? Please indicate importance on a scale of 1-5 for each skill area. If you DO NOT work for defence industry, please select one or more option based on your knowledge or understanding of defence industrial skills:

[NOTE: The respondent will now see only the skill areas where he/she has indicated gaps and inserted additional skills in the module above: if there are any ‘ticks’ in columns 1-4 in module 1.1, these skill areas should ‘filter into’ the ‘skills’ selection here]

<table>
<thead>
<tr>
<th></th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills</strong></td>
<td>How important is this skill area to the current functioning of your organisation?</td>
<td>How important is this skill area to the future functioning of your organisation</td>
<td>In the past 12 months did you have vacancies that are difficult to fill in this skill area?</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No &lt;please set default answer to No&gt;</td>
</tr>
</tbody>
</table>
### Vision on defence related skills for Europe today and tomorrow

<table>
<thead>
<tr>
<th>Determined by selections in module 1.1</th>
<th>1-5 scale</th>
<th>1-5 scale</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
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<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
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<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

**What do you think are the reasons for the gaps you identified?**

[NOTE: The respondent will now see only the skill areas where he/she has provided answers in Column 1 or 2 in module 1.1]

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 0</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
<th>Column 6</th>
<th>Column 7</th>
<th>Column 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The required talent pool finds non-defence sectors more attractive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>&lt;Open text response&gt;</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>&lt;Open text response&gt;</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>&lt;Open text response&gt;</td>
</tr>
</tbody>
</table>

33
What do you think are the effects on your organisation of the skills gaps you identified? Please select one or more option.

[NOTE: The respondent will now see only the skill areas where he/she has provided answers in Column 1 and Column 2 of module 1.1]

<table>
<thead>
<tr>
<th>Skills</th>
<th>Gap or shortage is affecting current production</th>
<th>Gap or shortage is affecting ability to meet orders</th>
<th>Gap or shortage is affecting research &amp; development progress</th>
<th>Gap or shortage is affecting business planning</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Determined by selections in module 1.1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
PART IB: Domain-specific skills

[NOTE: Domain-specific skills will branch out and be presented to the respondent based on the respondent's selection of domains that he/she represents in the introduction of the survey.]

This section asks you about skills that are specific to a military domain (e.g. air, land, sea). This section is based on the answers you gave in the introductory section. You can also add relevant domain-specific skills that are not already listed below.

Please select one or more relevant options based on your experience, expertise, and role in the organisation. For example, if you have a geographic responsibility (e.g. German market), please answer based on this perspective. If you DO NOT work for defence industry, please select one or more option based on your knowledge or understanding of defence industrial skills:

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today, it is difficult for employers to fill the requirement for this skill area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In 5 years, it will be difficult for employers to fill the requirement for this skill area quickly enough</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In 10 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I do not have knowledge in this area</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills here | ☐ | ☐ | ☐ | ☐ | ☐ |
| Insert domain-specific skills | ☐ | ☐ | ☐ | ☐ | ☐ |

35
Please let us know if we have missed any domain-specific skill areas in which you are experiencing gaps or shortages. Please insert these below and let us know what the challenge is by selecting one or more options.

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today, it is difficult for employers to fill the requirement for this skill area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In 5 years, it will be difficult for employers to fill the requirement for this skill area quickly enough</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In 10 years, it will be difficult for employers to fill the requirement for this skill area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not have knowledge in this area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Currently, how important are the skills you selected above to the functioning of your organisation? Please indicate importance on a scale of 1-5 for each skill area. If you DO NOT work for defence industry, please select one or more option based on your knowledge or understanding of defence industrial skills:

[NOTE: The respondent will now see only the skill areas where he/she has indicated gaps and inserted additional skills in the module above: if there are any ‘ticks’ in columns 1-4 in module 2.1, these skill areas should ‘filter into’ the ‘skills’ selection here]

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>How important is this skill area to the current functioning of your organisation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is this skill area to the future functioning of your organisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the past 12 months did you have vacancies that are difficult to fill in this skill area?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Vision on defence related skills for Europe today and tomorrow

<table>
<thead>
<tr>
<th>Determined by selections in module 2.1</th>
<th>1-5 scale</th>
<th>1-5 scale</th>
<th>Yes/No &lt;please set default answer to No&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by selections in module 2.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 2.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 2.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 2.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Determined by selections in module 2.1</td>
<td>1-5 scale</td>
<td>1-5 scale</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

What do you think are the reasons for the gaps you identified?

[NOTE: The respondent will now see only the skill areas where he/she has provided answers in Column 1 or 2 in module 2.1]

<table>
<thead>
<tr>
<th>Skills</th>
<th>Column 0</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
<th>Column 6</th>
<th>Column 7</th>
<th>Column 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The required talent pool finds non-defence sectors more attractive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>The required talent pool finds non-EU markets more attractive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Education and training institutions are not providing enough of the skills required</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Education and training institutions are not providing the type of skills required</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Not enough defence demand (domestic or exports) to sustain skills</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Existing talent pool is retiring and is difficult to replace</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Wage competitiveness from employers in non-defence or civil sector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
<tr>
<td>Wage competitiveness from other employers in the defence sector</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Open text response</td>
</tr>
</tbody>
</table>

37
What do you think are the effects on your organisation of the skills gaps you identified? Please select one or more option.

[NOTE: The respondent will now see only the skill areas where he/she has provided answers in Column 1 and Column 2 of module 2.1]
Vision on defence related skills for Europe today and tomorrow

<table>
<thead>
<tr>
<th>Determined by selections in module 2.1</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>&lt;Open text response&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by selections in module 2.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determined by selections in module 2.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART II: New technologies and skills**

In this section you will be asked to indicate general technology areas on which your organisation is working or planning to work. The research team will then analyse the skills implications for the European defence industry on a general level. Please base your answers on your expert opinion and experience within your organisation.

Please select one or more options based on your knowledge of your organisation’s activity and plans:

<table>
<thead>
<tr>
<th>Technology group</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Does your organisation plan to work on developing commercial applications of this technology in the next 5-10 years?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert technology area here</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insert technology area here</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insert technology area here</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insert technology area here</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insert technology area here</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please let us know if we have missed any technology groups relevant for your organisation. Please insert these below and let us about your organisation’s activity and plans:

<table>
<thead>
<tr>
<th>Technology Group</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Does your organisation plan to work on developing commercial applications of this technology in the next 5-10 years?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39
Please let us know if you anticipate challenges in securing the skills needed for each technology area you selected above. Please select one or more options:

**[NOTE: The respondent will now see only the technology areas in which they have identified challenges above]**

<table>
<thead>
<tr>
<th>Technology group</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determined by selections in module 3.1</td>
<td>☐</td>
<td>☐</td>
<td>Yes/No/Only partly</td>
<td>Yes/No/Only partly</td>
</tr>
<tr>
<td>Determined by selections in module 3.1</td>
<td>☐</td>
<td>☐</td>
<td>Yes/No/Only partly</td>
<td>Yes/No/Only partly</td>
</tr>
<tr>
<td>Determined by selections in module 3.1</td>
<td>☐</td>
<td>☐</td>
<td>Yes/No/Only partly</td>
<td>Yes/No/Only partly</td>
</tr>
<tr>
<td>Determined by selections in module 3.1</td>
<td>☐</td>
<td>☐</td>
<td>Yes/No/Only partly</td>
<td>Yes/No/Only partly</td>
</tr>
</tbody>
</table>

This concludes the survey

THANK YOU