DEFENCE AND SECURITY INDUSTRIAL STRATEGY

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INDEX

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EXECUTIVE SUMMARY

As regards military security of supply, the domestic defence industry is of vital importance to the Defence Forces. It is essential to guarantee domestic integration and maintenance capacities as well as crisis repair expertise. However, the Defence Forces alone cannot sustain the domestic defence industry. Therefore, specific action and, consequently, a national industrial strategy are required.

If the domestic defence and security industry intends to thrive, it must be able to reshape itself as required, invest in R&D and become more internationalized. In addition to niche expertise, companies must be able to pool their skills into an internationally competitive network of capabilities.

The defence materiel sector is in flux. Very few companies will be able to rely on the domestic market in the future. Successful companies establish themselves internationally and seek growth from new business and services. Along with the traditional defence industry, the new security market (homeland security) is growing and providing new opportunities.

One of the most important challenges for the Defence Forces is to balance tasks and resources. No sizeable defence materiel appropriation increases are in sight. Therefore, defence capabilities must be improved by enabling their flexible use in the execution of the Defence Forces' three main tasks: Military defence, supporting other authorities and international crisis management.

The vision of the Strategy is *"The Finnish defence and security industry is specialized, competitive and networked in the international market. It contributes to security, national and international military capabilities as well as security of supply."*

In order to achieve the Vision and the goals of the Strategy, the capacities and operational preconditions of the domestic industry must be improved. Moreover, the Strategy outlines several near-term measures to achieve these goals. Through cooperation, the public sector and industry jointly implement the Strategy.

The Defence Forces and industry must commit to shared long-term planning in order to improve industrial capacities. Instead of concentrating on production figures, they must strive for competence-based industrial expertise.

The most important measures for improving the operational preconditions of the industry require more precise information on the requirements and strategic plans of the Defence Forces. Furthermore, centres of excellence (Defence Technology Centres) have to be defined and established. The exploitation of industrial collaboration as well as cooperation between the Defence Forces and the defence industry must also be improved.

The Ministry of Defence is responsible for implementing this Strategy. The defence and security industry, for its part, executes the Strategy. This Strategy is a subset of the Materiel Policy Strategy of the Ministry of Defence. It will be reviewed approximately once every four years.

1 INTRODUCTION

As regards military security of supply, the domestic defence industry is of vital importance to the Defence Forces. It is essential that domestic integration and maintenance capacities be guaranteed as well as crisis repair expertise. However, the Defence Forces alone cannot sustain the domestic defence industry. Therefore, specific action and, consequently, a national industrial strategy are required.

Changes during recent decades have created an entirely new environment for the defence industries of different countries. National defence budgets have decreased and competition has become more intense and international. Very few companies will be able to rely on their domestic markets in the future. Successful companies must establish themselves internationally and seek growth from new business and services. However, entry into the international market requires NATO-membership in certain circumstances (e.g. STANAGs and NAMSA). Alongside the traditional defence industry, the new security market (homeland security) is growing and providing new opportunities. Therefore, in this Strategy the industrial sector is called *the defence and security industry*. Nevertheless, the focus is on the defence industry because the emerging Finnish security industry is still very fragmented.

On 29 November 2006, Minister of Defence, Seppo Kääriäinen, appointed a working group to prepare a strategy for securing the future of the defence and security industry. A further motive for appointing the working group was that during the handling of "Government report: Finnish Security and Defence Policy 2004" (VNS 6/2004 vp) the Parliament Defence Committee included the following draft resolution in its report: "*The Parliament requires that the Government take action to make guidelines for a specific strategy on securing the future of the Finnish defence industry and that the Government include a separate item on this matter in the next security and defence policy report*." (Defence Committee Report 1/2004 vp; Draft Resolution 5).

This Strategy has been prepared jointly by different administrative sectors and industries. The chair of the working group was Mr. Henrik Räihä, Deputy Director General, Ministry of Trade and Industry. The vice-chair was Mr. Jari Takanen, Commercial Councellor, Ministry of Defence. The other members of the working group were Ms. Laura Kansikas-Debraise, Head of Unit; Brig.Gen. (Eng.) Jukka Juusti; Ms. Tarja Jaakkola, Senior Governmental Secretary; Colonel Aapo Cederberg; Mr. Jan Koivurinta, President; Mr. Aarne Nieminen, Senior Vice President. Lt.Cdr. Jan Engström and Ms. Tuija Karanko, Ministerial Adviser, also served as secretaries of the working group. Maj Hannu Mattinen from the Ministry of Defence also participated in the work.

The working group convened 11 times and heard the following persons: Mr. Arto Koski, Assistant Director, European Defence Agency; Rear Admiral Juha Rannikko, Deputy Chief of Staff, Logistics and Armaments, Defence Command Finland; Ms. Mari Hjelt, Managing Director, Gaia Consulting Oy; Mr. Hannu Salmi, President, Environics Oy; Mr. Markus Heiskanen, Head of Research and Information Service, The Border and Coast Guard Academy; Mr. Risto Honkonen, Head of Research Unit, The Police

College of Finland and Ms. Tarja Mankkinen, Director, Internal Security Secretariat, Ministry of the Interior.

In addition, some members of the working group discussed the topic with Mr. Peter Lundberg, President and CEO of the Association of Swedish Defence Industries (Försvarsindustriförening, FIF), at a separate function. The draft strategy was also delivered to Defence Command Finland for statement.

The working group tapped into the MOD's report "Improving the operational preconditions of Finnish defence and security industry" from 2006. References are listed in Appendix 3.

The Defence and Security Industrial Strategy will be included in the cluster of the MOD's strategy documents as a subset of the Ministry's Materiel Policy Strategy, adopted in 2007.

2 THE PRESENT SITUATION IN THE DEFENCE AND SECURITY INDUSTRY, FUTURE TRENDS AND CHALLENGES

2.1 Starting point – the present situation in the industry

The term defence and security industry refers to companies which provide defence materiel and systems as well as related overhaul, maintenance and other services to the armed forces and/or security authorities of different countries.

The Defence Forces' annual R&D budget has been approximately EUR 30 million for the past five years. Most of the funds (ca. 90%) are used for research commissioned from industry and research institutes as well as for the development of prototypes. According to estimates, R&D has saved at least EUR 500 million in defence procurement expenditures over the past ten years. The intention is to earmark approximately 5% of the procurement budget for R&D during 2009-2020. The industry's own R&D input varies sector by sector, averaging between 2-11%.

Traditional defence industry employs approximately 5 000 personnel in Finland and its annual turnover is approximately EUR 600 million. From the local perspective, defence companies are major employers. The largest defence clusters are situated around the cities of Tampere and Oulu. Most companies are nationally owned and the majority belong to the Association of Finnish Defence and Aerospace Industries (AFDA).

Finnish defence industry has largely concentrated on the small domestic market, producing "traditional" defence materiel. The strong internationalization of the defence sector is relatively new for Finland. Finland is – in absolute and relative terms - one of the biggest European importers of defence materiel. In the European perspective, the Finnish market is exceptionally open.

Only a small percentage of Finnish defence and security companies are large conglomerates, whose sales, or predominant share of production involve domestic or foreign defence forces or security authorities. Even though they are relatively large companies for Finland, on the European scale they are small or medium-sized, at most. This industrial sector also includes various high-tech Small and Medium-sized Enterprises (SME).

2.2 Future trends and challenges

The defence materiel sector is in flux. The common foreign and security policy (CFSP) of the European Union, increasingly complex weapon systems, competition with the U.S. defence industry and growing pressures on defence procurement budgets prod the member states of the EU towards mutual collaboration. Even though nations are still independent actors, their influence is waning and the significance of transnational coalitions is growing.

In addition to these factors, Finnish foreign and security policy, potential changes in our defence system as well as spending limits directly influence the domestic defence and security industry.

2.2.1 The development of the European Union and Finnish Defence Forces. Effects on military security of supply

The European Union is streamlining its military capabilities in order to respond to future threat scenarios. Due to the nature of future operations, the European Defence Agency (EDA) has outlined a Future Capability Profile for each of the six main capability domains: Command, Inform, Engage, Protect, Deploy and Sustain. Crisis management activities and international cooperation highlight interoperability requirements. NATO interoperability is essential.

The intensifying European collaboration makes it possible to tap into the resources of the European Union and its member states as regards security of supply. European interdependency improves the security of supply. However, active policies and tangible measures are also needed.

The defence industry operates in a niche market. A situation where the normal laws of supply and demand fully prevail is nowhere in sight. Nevertheless, the European Union is taking gradual, cautious steps towards a better functioning and more open defence market. Different countries' defence systems are becoming more versatile but are still integrated into legacy infrastructure. Nations' procurement decisions are increasingly influenced by factors other than strictly technical merits. These include, for example, national policies or European Capability Requirements.

Finland's defence capabilities are primarily developed from the perspective of national defence. In addition, supporting other authorities and international military crisis management are taken into account. Defence development focuses on the army, navy and air force; command, control, communications, intelligence, surveillance and reconnaissance (C3ISR) and logistics as well as joint operations.

One of the most important challenges for the Defence Forces is to balance tasks and resources. No sizeable defence materiel appropriation increases are in sight. Therefore, defence capabilities must be improved by enabling their flexible use for the Defence Forces' three main tasks: Military defence, supporting other authorities and international crisis management.

The Defence Forces are becoming increasingly integrated into society and are using more resources from the private sector and the rest of society. The Defence Forces concentrate on core functions and outsource support functions from industry or other partners. With regard to industrial capacities, maintenance expertise and systems engineering skills constitute an integral element of national defence.

Military-industrial collaboration is exemplified by a strategic partnership. Strategic partnerships create long-term military-industrial relationships, manifested by continuity, mutual trust, and open exchange of information, shared goals as well as mutual benefits and burden sharing. Collaborative relationships and modi operandi that function in all phases of raising the military readiness are established under the

umbrella of strategic partnerships. Economically implemented functions generate significant savings for the Defence Forces.

The Defence Forces and the scientific community shall establish centres of excellence for key industrial capabilities. They are to operate alongside strategic partnerships or as integrated entities within partnerships. Centres of excellence do not only facilitate industrial networking, they also promote networking between the Defence Forces and the scientific community.

CHALLENGES:

- Business success can only be maintained by continuously increasing internationalization, due to the constantly shrinking relative share of the domestic market.

- Widespread protectionism in Europe or tax-free arrangements among NATO member states may slow down the opening up of the European market.

- The significance of transnational coalitions is on the rise. The industries of NATO member states have the edge in international competitive bidding because they have access to some NATO documents and standards which are not available to NATO PfP Partners. They also receive advance information of NATO capabilities requirements.

- The price of defence materiel vis-à-vis appropriations. Due to advances in technology, the price of defence materiel grows much faster (6-7%) than consumer price indices.

- Overhaul and maintenance capabilities must be secured also in exceptional conditions.

- Finnish society is becoming increasingly dependent on other countries, especially the EU member states and Nordic countries. It is no longer possible to guarantee security of supply via national means alone. Instead, international framework agreements and structures are required.

2.2.2 The significance of research and product development

The share and significance of rapidly developing and advancing civil research is growing. More and more, civil research projects and an increasing segment of the innovation environment can be exploited in the defence and security sector. Research and product development aim to improve the rate of conversion from innovation to product. The shrinking gap between military and civil technologies also improves the entry of innovative, niche-oriented SMEs into the market.

CHALLENGES:

- Prospects from civil research, the innovation environment and research funding must be fully exploited.

- Commonalities between the security industry and the traditional defence sector must be exploited.

- Civil technology sectors that are easily utilized by the defence and security industry must be identified.

2.2.3 Future trends in the defence and security industry

International defence materiel competition is intensifying and, more often than not, is conducted on the terms of multinational industrial giants. New systems require bigger R&D investments, which lead to accelerated networking and industrial consolidation.

Defence industry consolidation continues within the European Union and through transatlantic collaborative arrangements. The technologically advanced and competitive Finnish defence industry is able to operate as a prominent partner with the European defence industry or as an independent actor in areas in which it possesses specific competence. Having the command of niche markets also requires the capability of entering into international partner agreements. However, in order to succeed in the international arena, a company must first prove itself in its domestic defence market.

Industrial Participation (IP) requirements are becoming more accentuated and important in the development of critical technologies and wartime repair capabilities. This creates openings for the networked Finnish industry as a system integrator.

New threats greatly influence the overall development of the defence and security industry. They affect defence materiel requirements as well as the intensification of inter-authority cooperation. Armed forces are increasingly using civil high-tech solutions, especially software-driven command and battlespace management systems.

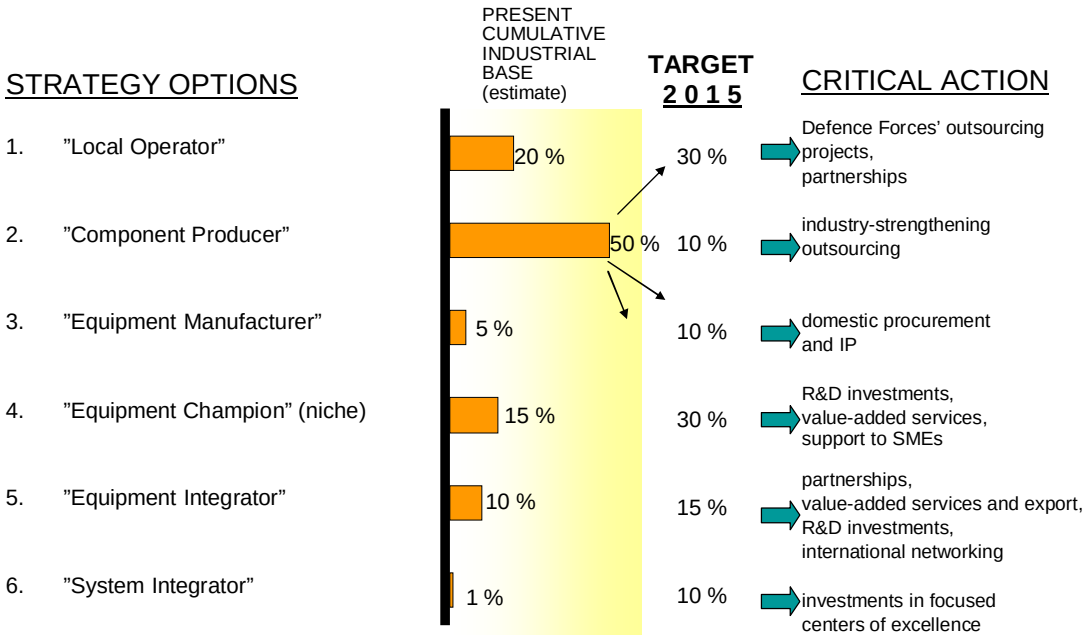
The new defence and security market is still immature so there is a great deal of room for product innovation. Many countries' armed forces are opting for progressively more MOTS/COTS materiel. This highlights the significance of having thorough systems engineering expertise and integration skills as well as guaranteeing product availability through international logistics networks and prime vendors.

The competitiveness of the domestic industry entails a transformation from that of being a component producer to that of an equipment and service manufacturer. This calls for internationally competitive products as well as strategic cooperation with the defence establishment[1].

Figure 1
The building blocks of Finnish industrial competitiveness

[1] Ministry of Defence, the Defence Forces and the Construction Establishment of Defence Administration

THE BUILDING BLOCKS OF FINNISH INDUSTRIAL COMPETITIVENESS



Structual changes require commitment from all parties

Association of Finnish Defence and Aerospace Industries

CHALLENGES:

- Coping in a market dominated by European actors. SMEs can only maintain their standing by offering well-engineered products and by networking within subcontractor chains.
- Executing structural change in a business environment that has been focused on a small domestic market and in which the Defence Forces have been the system integrator or an industrial actor.
- Implementing industry’s transformation from the role of component producer to that of collaboration partner with the Defence Forces.

3 INTERNATIONAL COMPARISON

The security environment in which European armed forces operate has fundamentally changed within the past 15 years. Traditional confrontation has been replaced by new, complex threats that require new roles, operating principles and equipment. The number of personnel has diminished and armed forces have become professional.

Correspondingly, the defence and security industry has faced its own transformation. On the one hand, companies have to balance between novel competition and productivity and, on the other hand, between traditional domestic security of supply and its requirements.

Irrespective of altered threat scenarios and the significantly reduced tension in Europe, all countries possessing traditional defence and security industries have attempted to retain expertise and production. Various mechanisms have been used to accomplish this, such as protectionist regulation or direct export subsidies. In the beginning of the 21st century most European countries recognized the need to create defence industrial strategies. In most cases they were unclassified, aiming to steer the competition.

According to the strategies of the countries studied, states have several different instruments at their disposal for improving the competitiveness of their national industries. These include:

- Investments, such as R&D funding,
- Creating and sustaining favourable business conditions, such as removing trade barriers or providing direct export subsidies to their domestic industry,
- Being the main customer, and
- Acting as the practical designer and including industry in the design process.

A universal feature in the strategies is emphasis on the importance of national defence and the security industries in order to guarantee production in exceptional conditions. Furthermore, all of the strategies studied exhibit the increasing tendency to migrate towards COTS/MOTS solutions. In addition, industry is increasingly expected to commit to lifecycle maintenance and modernization of military equipment. Even though the significance of international cooperation is recognized, direct subsidies in improving international competitiveness are accepted and national interests are highlighted.

The European Defence Agency's strategy "A Strategy for the European Defence Technological and Industrial Base", 14 May 2007, presents the following key actions, through which governments should promote the competitiveness of the European industry:

- Clarifying priorities: prioritizing capability needs, identifying key technologies and key industrial capabilities,
- Consolidating demand and shared programmes,
- Increasing investments, especially, for R&D funding,
- Ensuring Security of Supply by European Framework Agreements, and
- Increasing competition and cooperation.

Various countries' defence industrial strategies are featured in Appendix 1.

4 THE VISION AND DESIRED END STATE

THE VISION:
The Finnish defence and security industry is specialized, competitive and networked in the international market. It contributes to security, national and international military capabilities as well as security of supply.

The desired end state

The national defence and security industry is an integral element of Finnish defence and security of supply and international defence industrial cooperation. The public sector and industry collaborate in implementing the Defence and Security Industrial Strategy.

Regardless of ownership, a defence and security industry operating in Finland has the same status as Finnish-owned industry. When it comes to critical capabilities, national ownership and the needs of the Defence Forces are secured.

Critical industrial capabilities are identified and periodically reviewed to correspond to the needs of the Defence Forces. As regards the defence of Finland, the defence establishment promotes the domestic industrial production and development of strategic and critical capacities. For its part, it also creates favourable operating preconditions for the future of the industry sector.

The industrial transformation from production-oriented activities to competence-based business has been achieved, creating progressively more robust capabilities. Industrial expertise has been broadened and its capability to develop and leverage components and modules in an increasingly important network and systems environment has improved. Industry is an internationally networked, major service provider. Finnish companies have reached a solid position in the European defence and security sector with their focused, critical industrial capabilities.

The Defence Forces and industry collaborate in a transparent manner. This collaboration is based on open dialogue as well as on common analyses and actions, implemented in line with defence requirements. The division of duties augments the execution of the Defence Forces' main tasks as well as industry's ability to assume responsibility over domestic industrial activities more comprehensively.

Finland is active in international defence materiel cooperation and participates in European defence materiel development from the national perspective, i.e. the perspective of the Defence Forces and the defence and security industry.

5 IMPLEMENTING THE STRATEGY

The defence and security industry will be actively developed in order to achieve systems engineering expertise. It is of the utmost importance to industrial development that advances in technology be leveraged and the requirements of different administrative sectors be harmonized. As the industry is being developed, international business practices and the importance of retaining domestic product development will be taken into account.

The defence establishment advances R&D activities for its own purpose. Purely civil R&D must obtain funding elsewhere. Industry also actively seeks and exploits such funding sources.

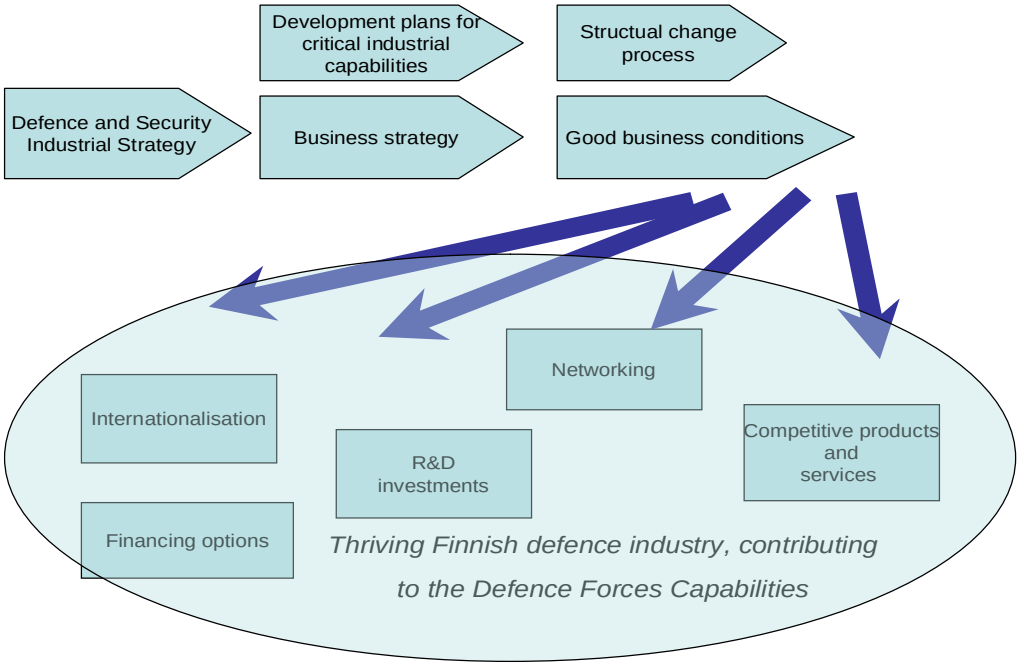
The special nature of the defence and security industry calls for specific national action. The Ministry of Defence must assume even greater responsibility over the Defence and Security Industrial Strategy. In line with international practice, the Defence Establishment should be provided with adequate resources for export promotion as well as for testing and demonstration.

Support through public policy measures should be directed to companies that already have the prerequisites for international business as well as to companies possessing industrial capabilities which are directly linked to the key capabilities of the Defence Forces. Individually tailored special arrangements are directed to critical industrial capacities (see Chapter 4.1) and, particularly, to those capable of performing system integration.

Industrial business plans should be prepared to support the implementation of this Strategy. Plans are to detail the select technologies and industrial capacities which augment the capabilities of the Defence Forces. It is essential to create a business environment which supports internationalization and enables the development of competitive products and services. This requires investments, for example, in marketing, product development, long-term financing and transforming industrial structures.

The following figure details the key actions required for the implementation of this Strategy.

Figure 2
Implementation of the Strategy in industry



5.1 Key capability requirements and how to strengthen critical industrial capacities

If the domestic defence and security industry intends to thrive, it must be able to reshape itself when necessary, make sufficient R&D investments and become more internationalised. In addition to high-tech niche expertise, companies must pool and network their capacities in a manner which creates international competitiveness.

From the perspective of the *Defence Forces*, the following core capabilities must be improved and available in all situations:

- Command, Control, Communication, Intelligence, Surveillance and Reconnaissance,
- Measured effect, and
- Mobility and protection.

These capabilities call for integration, maintenance and crisis repair expertise from the domestic industry.

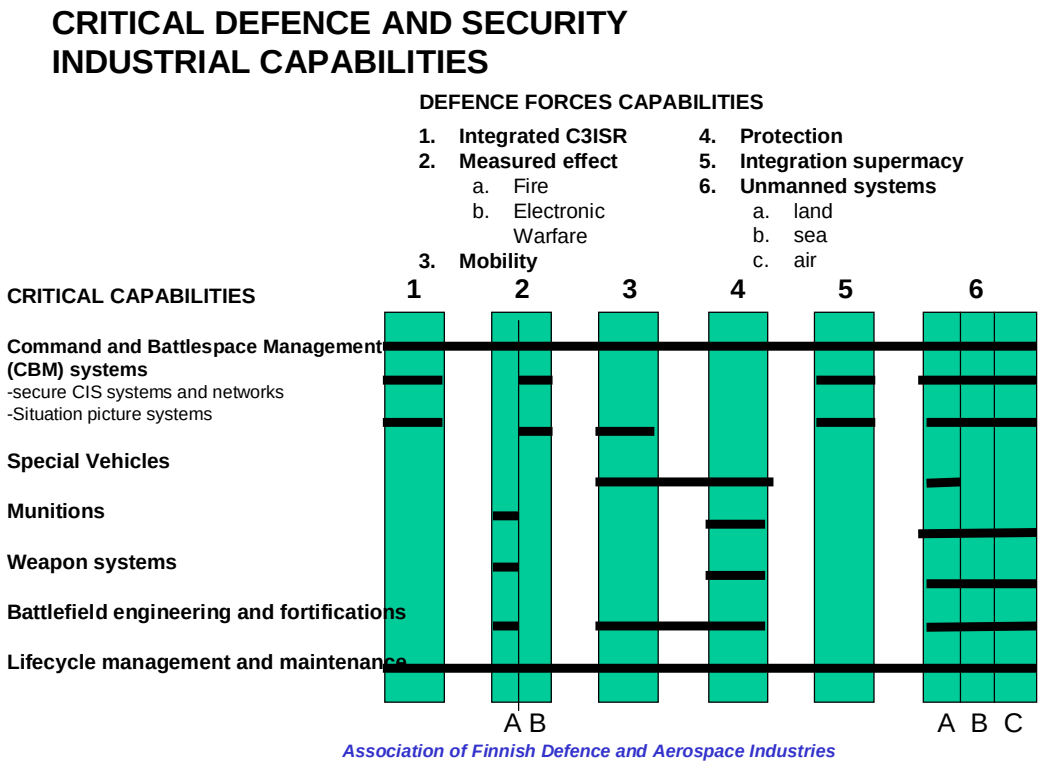
Industry aims to meet defence requirements with its own capacities:

- Command and Battlespace Management (CBM) systems,
  - Secure CIS systems and networks,
  - Situation picture systems,
- Special vehicles,
- Munitions,
- Weapon systems,
- Battlefield engineering and fortifications, and
- Lifecycle management and maintenance.

As systems engineering requirements grow, industry's state-of-the art niche expertise is also highlighted. This is required because the usable life of legacy systems is increased through various mid-life updates.

The following figure explains how critical industrial capacities meet the requirements of the Defence Forces.

Figure 3
The critical capacities of the defence and security industry



The critical capacities of the domestic defence and security industry and Defence Forces' requirements do not necessarily meet. In order to operate in the international market, companies also have to develop industrial expertise that the domestic customer does not necessarily require. This kind of industrial competence, however, is an important part of this Strategy. A solid position in a given niche market may increase international interdependency and, thus, improve Finland's security of supply.

The key defence and security industrial capabilities must be defined to meet domestic defence requirements. These capacities must be improved and used to establish centres of excellence. Instead of production, one must concentrate on competence-based business. This requires joint planning and long-term commitment from industry and the Defence Forces. By doing so, the capacities ensure a strong position for Finland in the future European Defence Technological and Industrial Base.

Action items:

- Develop and improve the resources and coordination of research. This must be done in a manner that takes the entire central government, other security actors and the security industry into account along with the Defence Forces and the traditional defence industry.

- As regards international activity, direct sufficient R&D resources from the defence establishment and from other administrative sectors to critical industrial capabilities.

- Establish the necessary centres of excellence for the key industrial capabilities.

- Continue and further develop the defence technology programme.

- Maintain the Defence Forces' R&D funding at the present level, at minimum.

- Exploit industrial cooperation deliberately and in line with this Strategy.

5.2 Improvement of operational preconditions

Active measures from the public sector are required to retain the domestic industry and to improve its competitiveness.

The Defence Forces' requirements and strategic guidelines must be clearly defined and predictable. Critical capacities expected of the defence and security industry must be defined. Development plans must be prepared for these capacities in line with the Defence Forces' long-term planning.

The Defence Forces, the defence and security industry as well as the research and scientific community must jointly determine the capacities for which individual Defence Technology Centres are to be established. The centres must meet the needs of the Defence Forces and be established in cooperation with industry and the scientific community.

The best possible industrial cooperation must be guaranteed in order to satisfy domestic defence requirements and to advance the defence and security industry. Special attention has to be paid to key capabilities requirements.

Dialogue between the Defence Forces and industry must be improved. The central government must assist industry in obtaining information from foreign countries and on the international market.

The MOD's Materiel Policy Strategy and its sub-strategies, particularly the Project and Procurement Strategy[2], are used in the implementation of this Strategy.

Action items:

[2] The Project and Procurement Strategy mainly deals with IP, international materiel interoperability, European cooperation, lifecycle management and the requirements of imported defence materiel.

- Utilize the international contacts of the administrative sector and industry, the intensifying NATO and EDA cooperation, and international agreements (e.g. the MoU network).

- Allow the defence and security industry to use venture capital instruments in future projects without imposing public sector restraints.

- Determine the ownership of intellectual properties. As a rule, they are owned by industry and thus available for commerce.

- Use direct export promotion actively (presentations, military exercises, and industrial seminars).

- Engage the defence establishment in supporting and participating in testing and evaluation.

5.3 Near-term action

Measures from the public sector and the defence and security industry are required to achieve the goals of the Strategy. Some of the measures necessitate a change in established routines and call for more efficiently focused resources.

1. Industrial Participation (IP)
    a. The IP steering group is to coordinate the requirements of industrial participation and support the procuring units by 2008.
    b. Industry is to coordinate its activities by 2008. The goal is to enable improved and better-organized project participation from companies.
    c. Direct IP is primarily focused on critical industrial capacities and technologies.

2. Together with the defence establishment, industry will define the critical industrial capabilities by 2009. These development plans take into account:
    a. The definition and founding of centres of excellence and how to create sufficient operational preconditions for them,
    b. The Defence Forces' long-term plans,
    c. Partnerships and strategic partnership programmes,
    d. The Defence Forces' procurement plans and Authorities to Order (ATO), and
    e. Technology programmes.

    Industrial business plans shall comply with these development plans.

3. By the beginning of 2008, the Defence Forces will issue directives for cooperation with industry and establish effective practices (Defence Command Materiel Division order).

4. Research coordination will have been improved throughout the entire process by 2010.

5. When it comes to international cooperation, interaction between the Defence Forces and industry shall be seamless and the established goals unambiguous.

a. Export promotion measures will be improved, practices will be efficient and export promotion guidelines issued for the defence establishment and industry by 2009.
b. An international Defence Materiel Cooperation Strategy and practices will be established by 2009. The goals and requirements of the defence and security industry and the Defence Forces will be taken into account in international defence cooperation.
c. An export promotion evaluation method will be developed by 2009. The defence establishment shall conduct annual evaluations.

6. Directives for measures required due to intellectual property right changes will be issued by the end of 2007. They are to be implemented by the end of 2008.

7. Technology programmes will be secured by guaranteeing the required resources by 2009.

8. An unclassified version of the Defence Forces' Long-term Plan will be tailored to industry by 2010.

9. The role and tasks of the Cooperative Board of the Defence Establishment and the Defence and Security Industry will be formalized by 2008.

10. The participation of defence attachés and Foreign Service officials in international defence cooperation shall be improved. This topic is to be included in their advanced training by 2009.

11. In 2009, the defence establishment and industry shall jointly evaluate the implementation and effectiveness of this Strategy.

6 STRATEGY MONITORING AND REVIEWS

The Ministry of Defence is responsible for implementing this Strategy. The defence and security industry, for its part, executes the Strategy. This Strategy is a subset of the Materiel Policy Strategy of the Ministry of Defence. It will be reviewed approximately once every four years. Reviews shall take into account the policies adopted in Government Defence White Papers, Defence Strategic Plans and other analogous documents.

The Ministry of Defence shall issue relevant directives to Defence Command for the implementation of this Strategy as well as to introduce the Strategy to other administrative sectors. The goals of the Strategy are executed and monitored in the MOD's operating and financial plan process.

Defence Command shall include the guidelines of this Strategy and relevant MOD directives into its own planning process and routines.

The Materiel Policy Steering Board, the Commercial Board of the Defence Establishment as well as the Cooperative Board of the Defence Establishment and the Defence and Security Industry implement and monitor the execution of this Strategy.

APPENDIX 1

INTERNATIONAL COMPARISON – THE STRATEGIES OF SELECT COUNTRIES

The United Kingdom

The Defence Industrial Strategy (DIS) 2005 of the United Kingdom is an extremely detailed report, describing future procurement projects and the development of the British armed forces' capabilities. The desire to "provide the Armed Forces with the equipment which they require, on time, and at the best value for the money of the taxpayer" spawned the strategy. On the other hand, the document also highlights the self-interested desire to retain sufficient defence and security competence and the means of production in the UK. One of the aims of the strategy is to ensure that the domestic defence and security industry is familiar with defence requirements and is able to meet them.

There are three parts to the strategy. The first section, *Strategic Overview*, gives an overall description of the prevailing security environment as well as the present status of the armed forces and the defence and security industry. The second section, *Review by Industrial Sector and Cross-cutting Capabilities*, carefully analyses medium term defence requirements as well as the kind of capabilities which are needed in the future. The last section explains how the Defence Industrial Strategy will be implemented.

The Defence Industrial Strategy is clearly an expression of purpose from the British armed forces to industry. The strategy explains the armed forces' R&D and procurement processes in detail. As regards the present situation and the operational future of each capability, clear descriptions on quantities and types of equipment are provided. Furthermore, equipment life cycles are given as well as what is expected of industry in return.

The DIS also recognizes the challenges generated by increasingly open defence materiel markets and the decreasing domestic security of supply. The strategy also lists the following mechanisms by which the central government and the defence establishment can help retain critical capabilities in the UK:

- Maintain a stable macro-economic and political environment,
- Support the education and science base,
- Maintain a highly-skilled workforce,
- Promote an overall business environment which is attractive to defence companies and investors,
- Encourage trust, openness, transparency and communication, and
- Identify key industrial capabilities.

Sweden

The working group used the Swedish Defence Inquiry of 2005 *Organization of command and authorities within the Swedish Armed Forces,* its defence and security industry chapter *Materiel related processes* as well as the Swedish Armed Forces Production and Supply Strategy as reference material.

The Swedish Defence Materiel Administration (Försvarets Materielverk, FMV), plays a key part in procuring new materiel and in cooperating with the defence and security industry. The Swedish Armed Forces are the FMV's main customer. The armed forces determine the required capabilities or needed materiel as well as the funds available for a project. The FMV conducts preliminary technical and commercial planning, negotiates with industry and carries out the procurement. Industry delivers the new materiel to the FMV which, in turn, hands it over to the armed forces.

At times, industry regards the two-tiered procurement system problematic. The Armed Forces Headquarters determine capability requirements. However, the materiel is delivered to the customer, i.e. the FMV. The actual end user is not involved in the process at all.

Sweden has recognized shortcomings in procurement planning and R&D coordination. Consequently, the Swedish defence administration[3] shall publish a Research and Development Strategy in 2007.

The inquiry's final conclusions propose improvements in the procurement process. The volume of internally developed materiel should decrease, non-standard requirements should be avoided and fully developed equipment should be prioritized for procurement.

The model for the new procurement strategy presents goals where:

1. Existing materiel should be used or improved.
2. If there is a need to procure new materiel, fully developed systems already on the market should be located or, if necessary, modified to comply with the requirements needed.
3. Only if the necessary capabilities cannot be achieved through the abovementioned means, can new projects be started with industry.

This model and the abovementioned goals are clearly expressed in the 2007 procurement strategy. The strategy's key goals highlight cost-effectiveness throughout the procurement process and putting more emphasis on lifecycle management issues. The tasks, goals and emphases issued to the Swedish Armed Forces in the Inquiry dominate the entire procurement process.

As for the execution of the strategy, the following procedures are defined:

- Cost-effectiveness and freedom of action must guide procurement.
- The possibility of using materiel already developed must be carefully evaluated in the procurement process.
- International materiel cooperation must always be one of the main options and international collaboration must be maximally exploited.

[3] The Swedish Armed Forces and the joint total defence authorities (sg: Summary, En effektiv förvaltning för insatsförsvaret)

- Procurement and R&D must go hand in hand.
- The total number of systems must be reduced.

When it comes to security of supply, Sweden should establish long-term bilateral relations and sign agreements which guarantee the availability of critical materiel during crises. The EDIR/FA community (European Defence Industry Restructuring, Framework Agreement), the United States and the Nordic countries are specifically mentioned as cooperation partners.

True to its title, the Swedish Armed Forces Procurement Strategy guides the armed forces' procurement instead of being a paper written from the industrial perspective. Sweden has taken a decision to start preparing a dedicated industrial strategy in 2007. The defence and security industry is not included in the project.

Sweden, as well, expects a longer life cycle for materiel. The defence and security industry plays an increasingly prominent role as it is expected to fully commit to life cycle maintenance and modifications. Industry is given the complete systems maintenance responsibility. As per the Inquiry, the relationship between the authorities and industry, as well as the division of duties, shall be redefined by the beginning of 2008.

Germany

Germany published the *Position Paper on safeguarding the interests of the German Defence Industry in Europe* in 2005. The document is not an official statement from the Federal Government. Instead, it presents the standpoint of the German Defence Industries Committee.

The basic premise is that the German defence and security industry has a high level of competence in defence equipment, and that it should be retained. The defence and security industry is seen as an invaluable strategic asset and an important instrument of foreign policy. Even though European integration is acknowledged, the promotion of German interests is regarded as vital. The preconditions for this are a shared approach within the German defence industry and political support for the industry.

The German defence and security industry believes that it does not enjoy the same preconditions as industries in comparable EU states. First and foremost, German industry considers present export policies too restrictive. Industry calls for closer cooperation between the private sector and government. Although no one is asking the public sector to create business entities, government support in the form of a favourable business environment is expected.

Switzerland

The Swiss industrial strategy (*Principes du Conceil fédéral en matière de politique d'armement du DDPS)* was published in 2002. The strategy defines materiel policy objectives and, among other things, emphasises the importance of international cooperation and the need for interoperability – within the limits of neutrality. Much weight is given to guaranteeing the international competitiveness of the Swiss defence and security industry.

The strategy states that Switzerland is dependent on international materiel suppliers, but it must be possible to produce certain key materiel (e.g. basic munitions) within the country. Furthermore, the maintenance and modification of imported materiel should be carried out as independently as possible.

The Swiss defence and security industry was privatised in 1999. However, the state is the major shareholder in defence companies. The state sets production goals, emphasising the national defence capability. Offset deals are vigorously used in advancing international competitiveness.

The following table provides a comparison between recently published European defence industrial strategies. The countries selected are the United Kingdom, Germany, Sweden, Norway and Switzerland.

The comparison does not include the United States. The US defence industry became strongly consolidated in the 1990s and, hence, the newly established American industrial giants dominate the world market. Furthermore, the US government punctiliously regulates defence technology transfers on a country-by-country basis.

	United Kingdom	Germany	Sweden	Norway	Switzerland
The document and the year of publication	Defence Industrial Strategy (2005)	Position Paper on safeguarding the interests of the German Defence Industry in Europe (2005) (German Defence Industries Committee)	Strategi för försvarsmaktens materielförsörjning (2007)	Naeringspolitiske aspekter ved forsvarets anskaffelser (2007)	Principes du Conceil fédéral en matière de politique d'armement du DDPS (2002)
National emphases	Large independent production base. MOTS products and independent R&D.	High level of technological competence.	Domestic COTS/MOTS. Modernization of old materiel. New procurements only if the two previous rules do not suffice.	Telecommunications technology, naval expertise, anti-ship mine and ASW sensors, missile technology.	International COTS/MOTS.
Government support/export promotion	Open market. Good international competitiveness. Government creates operational preconditions and acts as a customer.	No existing structures. The need is recognised.	Strong export promotion. Includes, for instance, a dedicated export promotion budget.	Offsets are used and they are considered of vital importance to competitiveness.	Industrial competitiveness and position actively supported and strengthened.
Capabilities to be retained in country	Intention to retain widespread indigenous production (except fighter aircraft)	Aims to retain expertise in traditional capacities. High-level competence. Core Defence Capabilities	Aims to retain expertise in traditional capacities	C3I systems, optronics, fire control systems, missile technology, munitions, underwater technology.	Mostly dependent on international suppliers. Production of critical materiel (e.g. munitions) and independent maintenance capabilities retained within country.
Ownership of domestic defence industry	Government (MOD) is a major shareholder in large companies. Ca. 25% (2005) of industry is in foreign ownership. The UK MOD imports ca. 32% of its equipment, mostly from USA.	Industry is a strategic asset and an important instrument of foreign policy. A mixture of German and multinational ownership.	High level of foreign ownership. Intention to retain industrial operation in Sweden. Not categorized by ownership.		Domestic industry perceived as an important segment of security policy. Industry privatized as of 1999. However, the state is the major shareholder.
R&D funding and research activities	Total £2.3 billion in defence R&D (2003). Approximately 0.2% of GDP.		Own R&D strategy 2007. Closely linked to materiel strategy. Ca. 0.18% of GDP.	The Norwegian Defence Research Establishment conducts most of the armed forces research activities. Industrial R&D is actively supported.	

Forms of cooperation between armed forces and industry		The government should create favourable business conditions. Need for closer cooperation between the public sector and industry. The development programme of the Bundeswehr should provide guidance.	Strong state participation in industrial activities through the Swedish Defence Materiel Administration (FMV).	The state is the main customer, playing a strong part in R&D funding as well as in improving international competitiveness.	Industry is tightly controlled and owned by the state.
Industrial Participation	On a case-to-case basis and when applicable.	N/A	100% obligation on projects exceeding SEK 100 million. Priority to armed forces' strategic programmes.	Directives issued in 1999. 100% obligation on projects exceeding NOK 75 million. 50% offset required on projects which benefit the armed forces and the defence industry.	The aim is to always include offset in projects.
International cooperation	Specifically with USA and NATO. Also some bilateral projects.	The need for international cooperation is highlighted whilst considering German interests. European projects valued.	Aims at close cooperation, specifically, with the EDIR/FA community, USA and Nordic countries.	NATO is clearly the most important entity. However, cooperation with Sweden is also emphasized.	The need for international cooperation is emphasized within the constraints of neutrality. Special importance on bilateral relationships.

APPENDIX 2

GLOSSARY

C3ISR	Integrated Command, Control, Communication, Intelligence, Surveillance and Reconnaissance (system)
CIS	Communication and Information Systems
COTS/MOTS	Commercial off The Shelf / Military off The Shelf
EDA	European Defence Agency
EDIR/FA	European Defence Industry Restructuring, Framework Agreement
EU	European Union
FMV	Försvarets Materielverk (Swedish Defence Materiel Administration)
IP	Industrial Participation (offset deals)
MOD	Ministry of Defence
MoU	Memorandum of Understanding
NAMSA	NATO Maintenance and Supply Agency
NATO	North Atlantic Treaty Organization
NICHE	A focused portion (subset) of a market sector or product
OFFSET(S)	Offset deal(s)
PfP	NATO Partnership for Peace Programme
AFDA	Association of Finnish Defence and Aerospace Industries
Defence and security industry	Companies which produce and provide defence materiel and systems as well as related maintenance, overhaul and other services to the armed forces and/or security authorities in different countries
SME	Small and Medium-sized Enterprise
STANAG	Standardization Agreement (NATO)
Strategic partnership	A long-term customer-vendor relationship. Exemplified by mutual preparedness and the improvement of processes during peacetime so as to be able to efficiently operate during the raising of readiness, wartime and in warfighting
R&D	Research and Development

APPENDIX 3

REFERENCES

European Defence Agency (2006), An Initial Long-Term Vision for European Defence Capability and Capacity Needs, Belgium

European Defence Agency (2007), A Strategy for the European Defence Technological and Industrial Base, Belgium

Försvarsdepartement, försvarsförvaltningsutredningen (2005) En effektiv förvaltning för insatsförsvaret, Statens offentliga utredningar SOU 2005:96, Sweden

Försvarsmakten och Försvarets Materielverk (FMV) (2007), Strategi för försvarsmaktens materielförsörjning, Sweden

Gaia Consulting Oy (2006), Suomalaisen puolustus- ja turvallisuusteollisuuden tulevaisuuden toimintaedellytysten kehittäminen, puolustusmateriaalipolitiikan tutkimus- ja arviointihankkeen loppuraportti, Finland

German Defence Industries Committee (2005), Position Paper on safeguarding the interests of the German Defence Industry in Europe, Germany

Pääesikunta (2005), Kotimaisen teollisuuden osaaminen ja kilpailukyky vuonna 2025 verkottuneessa eurooppalaisessa toimintaympäristössä. Ylivertaiset (Towers of Excellence) osaamisalueet vuonna 2025. Kriittisten teknologia-alueiden määrittäminen 2025 tilanteessa. Finland

Schweizerischen Bundesrates (Verteidigung-Bevölkerungsschutz-Sport) (2002), Principes du Conceil fédéral en matière de politique d'armement du DDPS, Switzerland

Secretary of State for Defence (2005), Defence Industrial Strategy, Defence White Paper, United Kingdom