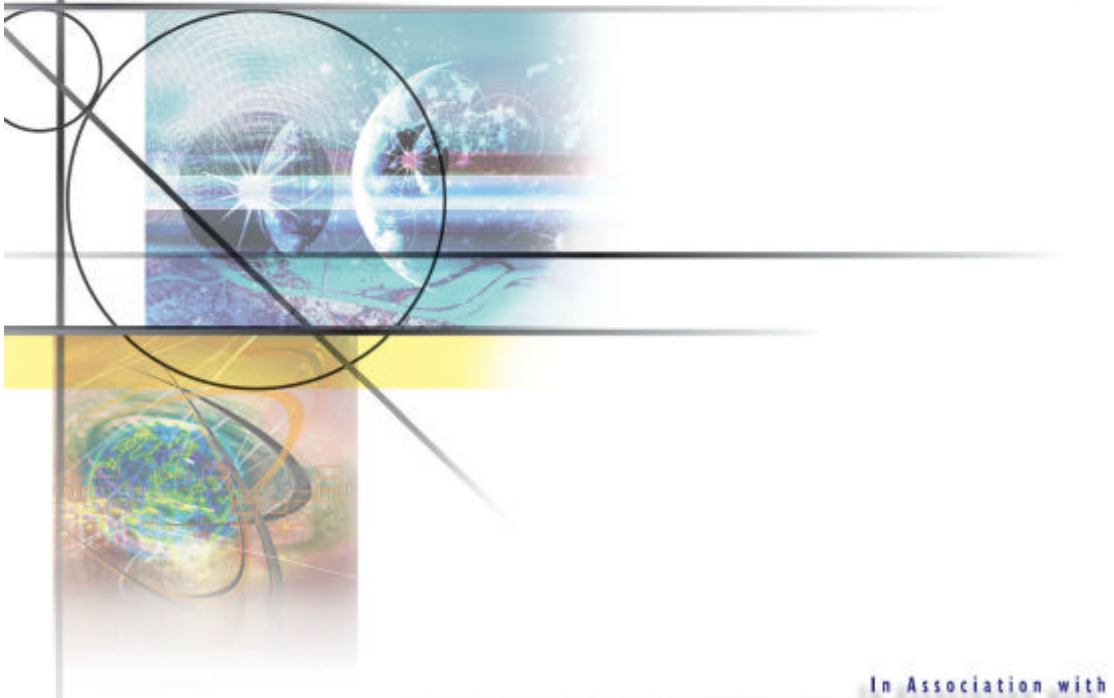
Defence Analysis Institute

Prospects on the European Defence Industry



In Association with

Fondation pour la Recherche Stratégique

German Institute for International and Security Affairs

Defence Analysis Institute

Prospects on the European Defence Industry

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Preface

Introduction The European Defence Industrial Base and ESDP

RESTRUCTURING OF THE EUROPEAN DEFENCE INDUSTRY

PREFACE

This project was assigned to two of the most widely known Institutes in Europe with an excellent reputation in defence and strategic analysis.

The first part on "The European Industrial Base and ESDP", assigned to the Fondation pour la Recherche Stratégique (FRS), has been written by Francois Heisbourg (Project Manager), Jean-Francois Daguzan, Martin Lundmark and Hélène Masson (Project Participants).

The second part on "Transatlantic Gaps and European Armaments Co-operation", assigned to the German Institute for International and Security Affairs [Stiftung Wissenschafft und Politik (SWP)], has been written by Joachim Rohde (Project Leader) and Markus Frenzel (Project Researcher).

This study is part of the Hellenic Presidency's initiatives on the European Defence Industry, Research and Technology potential in the framework of the European Security and Defence Policy.

INTRODUCTION

The new security environment and the need for Europe to assert its role as a global player necessitate the development of an autonomous Security and Defence Policy within the framework of a strategic partnership with NATO and the United States. Addressing the military capabilities shortfalls and ensuring the operational readiness of the Reaction Force in 2003 are the main priorities of the Hellenic Presidency during its 12-month chair, as a result of the Danish opt-out in defence matters.

The issue of defence has initiated a major debate within the Union, with some Member States raising doubts about the necessity and scope of a Security and Defence Policy. Different perspectives, based on the diversity of cultural and historical experiences, should, of course, be respected.

The credibility of the nascent European defence policy relies also heavily on the competitiveness of the European defence industry. Our efforts, both on the government and private sector side, are lagging behind those of our competitors. We spend half as much on defence as the US, four times less than the US on defence related R&D and, moreover, in a fragmented and uncoordinated fashion. European defence industries are continually losing share in the international markets. Only in those areas where a coordinated approach has been adopted (e.g. AIRBUS) has Europe succeeded in taking on the competition. Our efforts should focus on the following:
First, putting in place a European Armaments Policy. Existing organisations are of an intergovernmental nature (OCCAR, LoI). We should take a leap forward and create a pan-European body. Discussions in the Defence Group within the Convention give an impetus to armaments cooperation, especially regarding the establishment of an Armaments Agency. Primary consideration has been given to incorporating provisions in the revised Treaty, with respect to a European armaments policy. Reinforced coordination in procurement throughout Europe is part of a fully-fledged Security and Defence Policy.

Second, bringing closer the European industrial capabilities to foster more efficient cooperation in the field of armaments. Further consolidation of European defence industry involves the introduction of a more coherent regulatory framework as well as restructuring in order to exploit economies of scale and deliver cost effective equipment and services. Cross border mergers, joint development of new products in order to ensure standardisation and interoperability of systems, and preventing dumping and related practices are the main items on this agenda.

Third, harmonising and upgrading defence-related R&D effort in the context of the overall drive to strengthen Europe's industrial and technological base. Taking into account the varying levels of R&D capability, the objective would be to create an interdependent network under the umbrella of the technologically more advanced Member States while encouraging smaller and technologically less advanced Member States to get involved in the process.

The present study is one of the initiatives undertaken by the Hellenic Presidency, in order to promote policies for coordination in the area of the defence industry. The study identifies the main tendencies for consolidation and development of the European defence industry and discusses the implications of an ongoing and increased transatlantic gap in terms of technology and competitiveness.

Building a united Europe with a strong international profile requires a commitment to a common defence policy. That will mark a substantial step towards integration while having a beneficial impact on growth, employment and global competitiveness.

Yannos Papantoniou

Minister of Defence

SUMMARY OF PROPOSALS

ALL-UNION INITIATIVES

✍✍establishment of a European Defence Research Agency (EDRA) to increase the level and efficiency of military R&T spending by the EU countries.

✍✍setting up of a working group to study the possibility of transferring the relevant LoI areas into EU rules and regulations, and the legal modalities of such incorporation, involving security of supply, information security, handling of technical information including IPR.

✍✍establishment of a EU-CNAD, an EU equivalent of NATO's Conference of National Armaments Directors (CNAD), answerable to the EU Council of Defence Ministers (as proposed in the Barnier report).

✍✍setting up of EU-labelled programme management agencies for specific cooperative armaments programmes, along similar lines to NATO practice and procedures.

ENHANCED COOPERATION

✍✍establishment of a EU-OCCAR, to be overseen by the EU Council of Defence Ministers.
✍✍ creation of NATO-style defence infrastructure programmes, with the aim of modernising, rationalising and consolidating publicly-owned test facilities and proving grounds. A study group should be set up under the aegis of the EU Defence Ministers in order to assess possibilities in this field.
✍✍ creation of an integrated management agency for the repair and overhaul activities of a European strategic mobility command (European Air Transport Management Agency).
✍✍ conducting of a scoping study for a European homeland security technical centre. The study would examine the possibilities for standardisation, interoperability and technical/industrial cooperation in the area of homeland security and defence.

CONVERGENCE OBJECTIVES

✍✍ setting a 0.6% of GDP target for defence acquisition spending

✍✍ monitoring organisation

RESTRUCTURING OF THE EUROPEAN DEFENCE INDUSTRY

GENERAL OBJECTIVES

This part focuses on the current status of the restructuring process of the European defence industry and ongoing industrial policies. The analysis is divided into two sections:

✍✍the first section presents an overview of European defence industrial consolidation, which has been largely industry-led;

✍✍ the second section outlines the present-day complex operating environment of the European defence industry, and how the main defence industrial countries of Europe aim to establish a framework for developing concrete and practical measures in order to propel the restructuring process and sustain the activities of new European firms.

THE INDUSTRY-LED RESTRUCTURING PROCESS

Since 1998, numerous important European alliances have been forged or set into motion in the civil and military aerospace and defence sectors. After a first wave of privatisation and national consolidation, large European companies have emerged from a global restructuring process. Despite the barriers to integration at the European level (state ownership, different corporate laws, production cost differences), tough competition from the US defence industry is increasingly driving European companies to seek consolidation. In this process, existing trans-european activities in many fields and joint ventures have acted as a tremendous catalyst. Privatisations as well as the complex system of cross-shareholding are gradually pushing new European firms towards a different logic of financial performance and profitability.

1997-1999: the European defence industry under pressure

The environment in which defence industries were evolving at the end of the 1990s was very different from the one they faced at the beginning of this decade. The convergence of several economic, technological and political factors led the companies in question to restructure and participate in the process of large merger/acquisition that was taking place in all sectors of the economy.

a. Firms seek economies of scale and enlargement of the market

✍✍Structural changes in defence markets

Geostrategic developments had resulted in the considerable decline of military spending by European states and substantial changes in the operational requirements of their armed forces. Between 1992 and 1998, the defence budgets of the 15 EU member states, with the United Kingdom, France and Germany at the forefront, dropped by more than 20%.

Defence expenditures as % of GDP*

	USA	U.K.	France	Germany	Italy	Spain
1992	4.79	3.59	2.45	1.74	1.46	1.11
1993	4.43	3.40	2.41	1.55	1.57	1.26
1994	4.09	3.13	2.36	1.37	1.46	1.08
1995	3.73	2.82	2.16	1.28	1.24	1.11
1996	3.47	2.77	2.07	1.26	1.33	1.04
1997	3.33	2.52	2.04	1.21	0.87	1.01
1998	3.11	2.48	1.87	1.19	0.90	0.94
1999	3.00	2.37	1.84	1.18	0.94	0.93

*Pensions not included.
Source: Annuaire statistique de la défense 2002.

Limited by budgetary constraints, the main countries contributing to research and development (R&D) in Europe, namely the United Kingdom, France, Germany, Sweden and to a lesser extent the Netherlands, Spain and Italy, decided to considerably reduce the public funds allocated to R&D in their equipment budgets. In contrast with this radical change of direction by the Europeans, the financial commitment of the US administration to R&D never wavered. The United States maintained its research effort in order to ensure the technological superiority of its forces, by creating technological breakthroughs in emerging technological sectors. The high level of financing also underlined the determination of the US government to ensure security of supply in all circumstances. The volume of European public funding devoted to defence research is five times smaller than that of the United States.

At the same time, technological trends, which found expression in the development of increasingly complex and sophisticated weapon systems, led to exponential growth in the costs of research, development and production of defence equipment. This increase in the cost of equipment programmes, and consequently the amount to be paid by states, resulted in a decline in the number of programmes, major changes in state orders, and above all, pressure on customer states to try and reduce their armaments costs. The development of these weapon systems requires enormous financial resources, well beyond the capability of European firms.

The defence industries achieved turnover in an environment of markets structured on a more or less protected national basis. Domestic industry, heavily dependent on national government orders, now finds itself facing a contraction of the internal markets, as well as strong competitive pressure in external markets from the offensive strategy of US industry.

✍✍American competitive pressure

At the end of the 1990s, the process of consolidation of the leading US firms stabilised. Eight major industrial players emerged from a first phase of restructuring, begun between 1993 and 1995, against the background of a reduction in the defence budget. In 1999, only four were sharing the majority of military equipment orders placed by the Defense Department (DoD): Boeing, Lockheed Martin, Northrop Grumman and Raytheon.

Rank	Company	1999 Defence Sales (Bn $US)
1.	Lockheed Martin	18.5
2.	Boeing	13.8
3.	Northrop Grumman	8.2
4.	Raytheon	6.3

This number could have been even smaller if the planned restructuring had not come up against anti-trust legislation[1]. The DoD now endeavours to avoid monopolistic situations in order to maintain adequate competition among its principal suppliers. Thus, the Lockheed Martin/Northrop Grumman merger was blocked in 1998 and finally rejected by the US authorities in 2000.

Changes in the number of industrial actors by sector of activity in the United States (1990-1999)

	1990	1999
Munitions	11	3
Combat aircraft	8	3
Helicopters	4	3
Satellites	8	6
Strategic missiles	3	2
Tactical missiles	13	4
Submarines	2	2
Surface vessels	8	3
Tactical vehicles	6	3
Combat vehicles	3	2

Source : US Secretary of Defense for Industrial Affairs,
Annual Industrial Capabilities Report,
Washington, February 2000

The federal state was the principal promoter and architect for the remodelling of the industrial consolidation, the public purse going so far as to pay for a major part of the cost of the most important merger operations. These giants benefit from a domestic market which is the largest defence market in the world. The economies of scale of large orders generate cost reductions which make US products particularly competitive to export.

Against this background of a decline in defence markets and tough competition, European defence industries had to adopt new strategies to survive, under the threat of seeing their accounting and financial equilibrium being rapidly compromised. They did not have the necessary size, nor a sufficiently wide range of products, to enable them to be present and competitive in a large number of market segments.

Even the largest national companies were too small to benefit from the economies of scale enjoyed by US firms. The model of a national enterprise anchored in national territory, and dependent on government orders, was no longer viable. Pressure from the laws of the market was thus felt in a sector which had hitherto been protected against it.

The necessity for an initiative to re-group the major players in the armaments industry was felt as much by industrialists themselves as by the political leaders of the principal arms-producing countries. This consensus between the economic players and the state was a fundamental precondition for the introduction of sweeping changes in an industry considered to be highly strategic for national independence and security.

The urgency of integration was particularly felt in the aerospace and defence electronics sectors, by reason of the highly competitive environment in which the industries in these sectors were developing, the extent of the range of technologies to master, and the size of the investments to be made.

b. State/industry consensus on the need for industrial consolidation

✍✍The declaration of Heads of State and Governments of 9 December 1997.

Thus, on 9 December 1997, the President and the Prime Minister of France, the Chancellor of the Federal Republic of Germany and the Prime Minister of the United Kingdom fired the starting-gun for far-reaching future European consolidation. This was felt to be particularly urgent in the aerospace and defence electronics sectors:
"France, Germany and the United Kingdom share an essential political and economic interest in Europe possessing an effective and competitive aerospace and defence electronic industry. This will enable Europe to improve its commercial position in the world, to reinforce its security and to guarantee that it can play a full role in its own defence.

The Hart-Scott-Rodino anti-trust law company mergers, adopted in 1976 and modified in 2001. See Hart-Scott-Rodino Annual Report to Congress for Fiscal Year 2001, Federal Trade Commission, 2002. 58 pages, p.6.

We are agreed on the urgent necessity of a reorganisation of the aerospace and defence electronics industries. In the aerospace sector this process must include civil as well as military activities, and lead to European integration founded on a balanced partnership[...]"

They invited the principal companies of their countries to "present, by 31 March 1998, a clear plan and a detailed timetable for reorganisation and integration" of the aerospace and defence electronics sectors.

The political authorities of the principal arms-producing countries proposed a framework for discussion to the industries involved. The main outline for consolidation envisaged the parallel creation of two large groups present in the civil and military markets, one in the aeronautical sector, the other in the area of electronics.

This political support clearly demonstrates that the European states view the maintenance of a healthy European defence industrial base (EDIB) as one of the preconditions for a common European security and defence policy (CESDP).

The analyses of the European Commission have also served to alert states and stimulate debate on the importance of finding a common response to the difficulties facing the European defence industry.

✍✍European Commission initiatives

Since the Maastricht Treaty, the implementation of a European armaments policy has been closely associated with the shaping of a Common Foreign and Security Policy (CFSP). In fact, the Treaty specifies that defence issues are an integral part of the Second Pillar of CFSP. This pillar functions according to a method of intergovernmental cooperation, with which the European Commission is only 'associated' and on which the European Parliament can be consulted. Although armaments are not specifically covered in the body of the Maastricht Treaty, reference to the subject is made in an annex to Declaration No. 31 concerning the Western European Union (WEU). The text speaks of "enhanced cooperation in the field of armaments with the aim of creating a European armaments agency". The WEU is designated as the lead institutional forum in armaments matters.

Although armaments issues are excluded from the Community area, the European Commission has, on a number of occasions, proposed initiatives intended to demonstrate the advantages of applying Community rules to the defence equipment market. The interventions of the European Commission are restricted to overseeing mergers and acquisitions in industries involved in armaments, the financing of basic research by means of a Community programme for research and development, plus supervision of exports of dual-use items and technologies specifically for the aeronautical and space sectors, and regional aid for redeployment.

The European Commission intends to exercise its competencies in this sector via industry. In the period 1991-1992, the European Commission's Directorate-General for industry published three studies on the subject[2], which were received with a great deal of reservation by the member states. It followed that a series of questions were raised by the European Commission and by a group of experts of the EU/WEU-WEAG. The general concern was that the armaments industrial sector, confronted to numerous restrictions was an obstacle to implementing the CFSP. To this end, the Council of Ministers of the Union decided to create in 1995, an ad hoc working group within the Second Pillar to tackle these issues. The group formed as POLARM and composed of representatives of the 15 M-S, is in charge of developing recommendations for a European armaments policy. Four years earlier, the EU Council of Ministers had set up the COARM group (Commission on Armaments (ad hoc working group, established in 1998)) to facilitate agreement among member states on issues relating to the export of conventional weapons[3].

2Dual-use industries in Europe, 1991; The costs of non-Europe in Defence procurement, DG-III, 1992; Defence Related Industries in the European Community: Toward Structural Adjustments, 1992.
3Gordon Adams, Christophe Cornu and Andrew D. James, Burkard Schmitt (eds), Between cooperation and competition: the transatlantic defence market, Chaillot Papers, no. 44, January 2001, 156 pages, p.92

Communications:

1. The challenges confronting the defence-related industry contribution with a view to action at a European level, 24 January 1996 [4].
2. Implementing European Union strategy on defence-related industries", 12 November 1997 [5].

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1. The European Union and Space: Fostering applications, markets and industrial competitiveness, 1996 [6].
2. The European Aerospace Industry Meeting the Global Challenge,24 September 1997 [7].
3. Towards a new European shipbuilding policy, October 1997 [8]

In 1996 and 1997, the European Commission launched a broad debate on industrial restructuring by means of two 'horizontal' and three 'sectoral' communications, the drafting of which involved extensive consultation with European industrialists:

In the first communication dated 1996, which was addressed to the European Parliament and the Council, the European Commission presented the outlines of a Union strategy for action, intended to open up markets in Europe in order to facilitate industrial restructuring.

The Commission wrote on the same subject in 1997, the year in which the Treaty of Amsterdam was signed, which marks a step forward for the field of armaments. This field was the subject of a separate article in the body of the Treaty according to which "the progressive framing of a common defence policy will be supported, as Member States consider appropriate, by cooperation between them in the field of armaments" (Article J.7.1). Declaration No. 3 concerning the WEU, annexed to the final act of the Amsterdam Conference, foresees cooperation between the European Union and the WEU on armaments matters:

as the need arises, in the framework of the WEAG [9] , as an instance of European co-operation on armaments matters, of the EU and the WEU "in the context of rationalisation of the European armaments market and the establishment of a European Armaments Agency".

The communication of December 1997 includes the results of POLARM's work and the analytical elements of the three sectoral communications. The European Commission noted that eight European defence companies were needed to achieve sales of 60 billion dollars in 1996, while the three largest US firms earned 90 billion.

Specifically with regard to the aerospace and electronic industries, the rate of concentration appeared very slow to the Commission and parts of the market much more restricted than in the United States.

Numbers of producers in the aerospace and defence electronics sectors in 1997

	Europe	United States
Civil aircraft	6	1
Combat aircraft	6	2
Helicopters	3	3
Missiles	12	4
Electronics	>6	4
Satellites	5	4

Source: COM(97) 466

While officially acknowledging the special characteristics and particularities of the armaments sector, as well as the responsibility of states for restructuring, the Commission considered that a real Community competence existed with regard to industry, given its total integration in the economic system. An action plan provided for 14 areas of intervention for the Union:

4COM (96) 0010.
5COM (97) 583.
6COM (96) 617.
7COM (97) 466.
8COM (97) 470.
9Western European Union Armaments Group, part of the WEU.

1. Simplification of intra-Community transfers
2. European Company Statute
3. Public procurement
4. Research and Technological Development
5. Standardisation
6. Customs duties
7. Innovation, transfer of technology and SMEs
8. Competition policy
9. Exports
10. Structural funds
11. Taxation
12. Principles for market access
13. Benchmarking
14. Enlargement

The objectives of the action plan were:

- to reinforce the competitiveness of European defence-related industry;
- to preserve the defence technological and industrial base;
- to facilitate the integration of the defence technological and industrial base into the economy in order to avoid duplication in the civil and military fields;
- to create the preconditions necessary for the establishment of a European security and defence entity.

The European Commission emphasised that EU member-states should avoid interfering in the shareholdings of companies and accept common export rules. In addition, except in cases where there was a risk of the control of European industries considered to be strategic for the development of the ESDP being taken over by companies from third countries, member-states should no longer improperly invoke Article 296[10] to prevent industrial restructuring.

The European Commission proposed to the EU Council the adoption of a plan for "a common position relative to the elaboration of a European armaments policy".

It covered intra-community transfers, public markets and the common customs regime.

So, in the period 1996-1997, the Heads of State and Governments recognised the importance of engaging in a restructuring of the defence industries. This was to allow states to reconcile security of supply and control of costs, and industrialists to be more competitive in the face of US competition.

However, the emergence of US industrial giants triggered a scramble to consolidate in Europe in an effort to create firms of a size believed to be necessary to compete in the new industrial environment and allow Europe to enter into a relationship of equals with the US giants. Thus, European defence industry consolidation has evolved from joint ventures and alliances towards cross-border mergers[11]. Three large and diversified European firms have emerged from this restructuring process: EADS (European Aeronautic Defence and Space Company), Thales and BAE Systems (British Aerospace Electronics). Each is based on a complex network of cross-border ownership structures and joint ventures.

From international cooperation to transnational integration

The process of 'Europeanisation' of national industries [12] took place in different stages:

- Cooperative programmes
- Common subsidiaries
- Joint ventures
- Privatisation
- Concentration

10. Article 296 (ex-Article 223 of the Treaty of Rome) gives member states the possibility of invoking national security to derogate from the rules of the common market: The provisions of this Treaty shall not preclude the application of the following rules: (a) No Member State shall be obliged to supply information the disclosure of which it considers contrary to the essential interests of its security; (b) Any Member State may take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions and war material; such measures shall not adversely affect the conditions of competition in the common market regarding products which are not intended for specifically military purposes. Source: Treaties Establishing the European Communities (Office for Official Publications of the European Communities: Luxembourg)

11 Axelson Mattias, James Andrew, The Defence Industry & Globalisation, The FIND Programme, Stockholm, FOI, 2000, 67 pages, p.33.

12 Bauer Sibylle, "Defence Industry Restructuring: Negotiations continue", European Security Review, No. 1, July 2000, pp. 4-5, p.4.

a. The first cooperative programmes, common subsidiaries and joint ventures

✍✍1960's-1970's: The first cooperative programmes

Governments were behind the first cooperative programmes beginning in the 1960s. They concerned conventional equipment programmes, e.g. the Franco-German cooperative programmes on the Transall, the Alphajet, the Milan and Hot anti-tank missiles, Franco-British cooperation on the Jaguar, the Martel missile and three types of helicopters (the Lynx, the Puma and the Gazelle) and Franco-Italian collaboration in the area of tactical missiles.

However, these intergovernmental cooperation projects developed on national bases and did not involve rationalisation of cooperation between the industries of the countries concerned.

Protecting the interests of the national industries was one of the principal motivations of the participants.

✍✍80's- mid 90's: Common subsidiaries (GmbH, GIE, GEIE)

In the case of many multilateral programmes, the industrial partners shared the design and manufacture of products among themselves. The range of customer services, marketing, financing associated with sales and after-sales service were grouped within a common subsidiary, whose statute could take the form of a company incorporated under the national laws of one of the participating states, an industrial association of mutual economic interest (GIE) or a similar grouping on a European scale (GEIE- Groupement européen d'intérêt économique) [13].

The GIE (Global Industrial Equipment), which allows industrial and commercial cooperation between companies that retain their own identities, represents an initial form of a cooperative structure.

It is, however, subject to a number of limitations. The separation of commercial and productive functions in the framework of these consortia is the cause of numerous rigidities. The use of the rule of unanimity for all decision-making, the contradictory specifications of the respective staffs, and, above all, the principle of juste retour causes sluggishness and extra costs. Annually assessed programme by programme, the juste retour rule establishes that the percentage of the states' financial contribution must be reflected in the level of participation of its industry. This particularly restrictive principle has resulted, in many cases, in inefficient industrial structures, even duplication and triplication of assembly lines.

✍✍1990's: Joint ventures

A qualitative leap was achieved in the 1990s with the multiplication of associations of 'national champions' in common areas of activity. This resulted in the creation of joint ventures such as Eurocopter, which brings together the helicopter division of the French Aérospatiale and the German DASA, or Matra BAe Dynamics, which resulted from the merger of the missile subsidiaries of the French Matra Défense and the British BAe.

1970	Airbus Industrie GIE	Civil Aircraft	BAe, DASA, Aerospatiale, CASA
1980	Euromissile GIE	Hot, Roland, Milan Tactical Missiles	DASA, Aerospatiale
1986	Eurofighter Jagdflugzeug GmbH	Eurofighter Combat Aircraft	BAe, DASA, Alenia, CASA
1989	Eurosam GIE	Future Surface to air Missiles and Principle Anti-air Missile system (PAAMS)	Thomson CSF, Aerospatiale, Alenia Marconi System

13 Schmitt Burkard, From cooperation to integration: defence and aerospace industries in Europe, Institute for Security Studies of WEU, Chaillot Papers, Paris, July 2000, 104 pages, pp.16-17.

Principal joint ventures by specialisation 1990-1998

Name	Sector	Participants	
1990	Matra Marconi Space	Satellites	Matra, GEC-Marconi
1991	Eurocopter	Helicopters	Dasa, Aerospatiale
1994	Thomson Dasa Armement	Missile Propulsion Wirksystem	Thomson-Brandt Armement (TBA),
1996	Thomson Marconi Sonar	Sonars	Thomson-CSF, GEC-Marconi
1996	Matra BAe Dynamics	Missiles	Matra, BAe
1998	Alenia Marconi Systems	Electronics	Finmeccanica, GEC-Marconi

However, these joint enterprises, created after mergers of divisions or subsidiaries, also faced many difficulties: complex internal structures, organisation around a limited number of projects, duplication, etc.

The launch of true transnational integration came up against differences in capital structures in the defence industries of the arms-producing countries.

b. Privatisation

In the United Kingdom, Conservative governments had privatised the majority of the defence companies since the 1980s, including British Aerospace (BAe), Rolls Royce, Royal Ordnance, Royal Dockyards etc. In Germany, the state took the same direction. DASA subsequently embarked on a major strategy of acquisitions and shareholdings (Messerschmitt-Bölkow-Blohm (MBB), Dornier, Fokker, MTU, AEG), thus federating a major part of the German armaments industry.

In the 1990s, the German and British defence industries presented a picture of highly diversified, privately capitalised industries. Driven by financial logic, these proved very reluctant to merge with companies in which the state held all or part of the capital.
Indeed, one of the first projects for a single integrated European company, the European Aerospace and Defence Company (EADC), bringing together the range of European companies in the aerospace sector (German Daimler Chrysler Aerospace AG-DASA, French Aérospatiale, British Aerospace-BAe, Swedish SAAB, Italian Finmeccanica, and Spanish Construcciones Aeronauticas SA-CASA), failed in 1998 because of a lack of convergence of the different parties on questions of shareholder structure, range of activities and governmental supervision.

Since 1998, the French, Spanish and Italian governments have embarked on a process of privatising state-owned defence groups. This process of privatisation and restructuring is aimed at facilitating European integration.
A number of privatisations also took place in:

- Sweden (Celsius),
- Greece (Elefsis Shipyards, Hellenic Vehicle Ind., Hellenic Shipyards),
- Norway (Raufoss, NFT, Norsk Jetmotor),
- Finland (Patria Industries),
- and the Netherlands (Fokker).

In 1999 the Spanish government put 66% of the capital up for sale of Indra, the principal Spanish defence electronics group.

Spain's state-controlled defence companies in 1997

	Sector	SEPI Share (State)	% Defence	Employees
BAZAN	Shipbuilding	100%	95%	7352
CASA	Aerospace	99.28%	42%	7695
INDRA	Electronics and IT	66.09%	46%	3385
SANTA BARBARA	Vehicles, arms and munitions	100%	100%	1802

Source : SEPI Data 1997

In Italy, since 2000 the government has been progressively withdrawing from the two large state-owned groups - Finmeccanica and

Fincantieri - which jointly account for more than two thirds of total military production in Italy. The process was mainly aimed at selling off a number of high-tech activities. The strategy of the Italian defence industry is to exploit opportunities presented by the process of internationalisation, while preserving the existing domestic industrial structure[14] .

Italy's main state-controlled defence companies in 1997

	Sector	IRI Share (State)	% Defence	Employees
FINMECCANICA	Defence and aerospace	80%	15%	60.010
FINCANTIERI	Shipbuilding	100%	23%	8250

Source : IRI Data 1997

Major privatisations 1990-2001

Year	Country	Company	Share Privatized (%)	Form of privatisation
1990	Norway	Raufoss	47	Public offering
1993	Netherlands	Fokker	51	Private sales
1993	Norway	NFT	49	Public offering
1993	Sweden	Celsius	75	Public offering
1994	Germany	IABG	45	Private sales
1995	Germany	IABG	23	Employee buyout
1997	Greece	Elefsis Shipyards	100%	Private sales
1998	France	Thomson CSF	33	Public offering
1999	France	Aérospatiale	_	Merger
1999	Norway	Norsk Jetmotor	33	Private sales
1999	Spain	Indra	66	Public offering
1999	Sweden	Celsius	25	Private sales
2000	Greece	Hellenic Vehicle Ind.	43	Private sales
2000	Italy	Finmeccanica	38	Public offering
2000	Spain	CASA	_	Merger
2001	Finland	Patria Industries	26.8	Private sales
2001	Greece	Hellenic Shipy ards	100%	Private sales
2001	Italy	Fincantieri	17	Public offering
2001	Spain	Santa Barbara	100	Private sales

Source : SIPRI Yearbook 2001, p.342

While bilateral negotiations were underway between BAe and DASA, in 1998 the French government announced its intention to privatise and group national assets in order to improve the position of French industries in future negotiations.

The government of Lionel Jospin completed a project for the merger of Aérospatiale and Dassault, begun by the previous government. In the first phase, it decided to transfer its shareholding in Dassault Aviation to the French aeronautical group and, in a second phase, to free the capital in order to allow closer ties with the private group Matra Hautes Technologies (MHT). In June 1999, the contribution of elements of MHT led to the formation of a civil and military aerospace centre to be reckoned with in Europe, Aérospatiale Matra. Although the state accepted to see its share fall below the 50% level, it benefits from a special holding designed to preserve the interests of national defence.

On 14 April 1998, Dassault Electronique and the professional and defence electronic activities of the Alcatel company were brought together within Thomson-CSF. For their part, the satellite activities of Alcatel, Aérospatiale and Thomson-CSF were regrouped under Alcatel Space. Following the privatisation of this new defence electronics group, its capital was divided between the French state, Alcatel, the industrial group Marcel Dassault and floating shares[15]. On account of its double voting rights, the state holds 43% of the voting rights and can veto any transfer of assets considered strategic for national defence.

Thomson-CSF - Distribution of capital

Public Sector	
Thomson SA	32%
Sogepa (100% French State)	0.6%
Industry	
Alcatel	15.8%
Groupe Industriel Marcel Dassault	5.9%
Thomson-CSF	5.8%
Floating shares	39.9%

Following the privatisation process, moves towards restructuring have been undertaken at a national and subsequently European level. The object of this approximation is to benefit from economies of scale or range and avoid duplication of costly investments.

14 Perani Giulio, Italy, CREDIT-METDAC Network Managing European Technology, Defence and Competitiveness Issues, 1998, 18 pages, p.10.
15 Including the shares held by embloyees.

Horizontal concentrations are favoured in the principal armaments-producing countries, particularly France and Germany, while in the United Kingdom the industry favours a strategy of vertical concentration.

c. Concentration

✍✍Thales (France) and BAE Systems (UK): horizontal integration vs. vertical integration

In France, Thomson-CSF, as a centre of excellence in professional and defence electronics, has opted for horizontal integration. This is achieved by the acquisition of firms of the same speciality. The creation of this centre should be the first stage towards a large-scale European alliance.

On 1 January 1999, BAe absorbed the defence electronics assets of the British General Electric Company (GEC)-Marconi, after GEC made known its desire to separate its defence and civil activities. This operation created BAE Systems and put an end to Thomson-CSF's proposals for a European re-organisation. It represented the high point of a strategy of re-centring on the defence sector. In fact, during the 1990s, the British BAe group had moved from an ambitious policy of external growth – aimed at diversifying its portfolio of activities (acquisitions of Royal Ordnance plc, Ballast Nedam NV, Austin Rover, Arlington Securities, Heckler & Koch, Hutchinson Telecommunications UK Ltd, BMARC, Dowty-SEMA) – to a marked re-concentration on its core activities. In the framework of a strategy for the development and marketing of advanced systems and services in the aerospace and defence sectors, BAe absorbed its main competitors and sub-contractors in these areas.

BAE Systems has thus adopted the logic of vertical integration, which rests on the idea that the future lies in an integrated and complete range of products.

In 1999, the creation of this major British group, following vertical consolidation, altered the ambitions of the French Thomson-CSF. In order to acquire an international dimension, the French defence electronics group adopted a 'multi-domestic' strategy which resulted in a major policy of purchases, acquisitions, and shareholdings in armaments companies in its customer countries. The group established itself in South Korea, Singapore and South Africa. The acquisition of the British firms Racal Electronics, Pilkington Optronics and Short Missiles enabled Thomson-CSF, re-named Thales, to establish itself solidly on British soil and to figure as the second defence group behind BAE Systems.

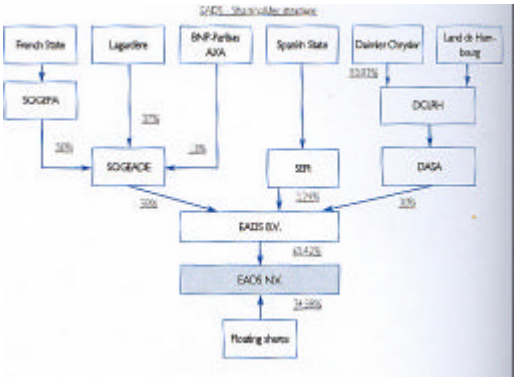
The British choice in favour of a national reorganisation has had repercussions on the European scheme for industrial consolidation in the aeronautical field. In spite of everything, the existence for many years of close collaboration between Aérospatiale-Matra (France), DASA (Germany) and CASA (Spain) has enabled close European ties to be established in spite of the absence of British BAE Systems. They carry out more than two thirds of their activities together, by means of commercial agreements, Joint Ventures (JV), either ad hoc or alliances by specialisation. Their merging has created the first integrated European company.

✍✍EADS or the merging of three "national champions"

Many months of talks led to a major politico-industrial agreement. On 14 October 1999, Jean-Luc Lagardère, President of Aérospatiale Matra, and Jürgen Schrempp, President of Daimler Chrysler, announced the merger of their group in the presence of Prime Minister Lionel Jospin and German Chancellor Gerhard Schroeder. One of the principal stumbling blocks was the French state's stake in the capital of Aérospatiale Matra, a principle which was contrary to the German tradition in matters of mergers. The French state accepted to reduce its capital holding from 47% to 15%. On 8 July 2000, the merger of Aérospatiale Matra, DASA Germany and the aeronautical assets of the Spanish public holding company SEPI [16] (CASA Spain), was finally sealed and gave birth to the European Aeronautics, Defence and Space Company (EADS), number two in the world and the first European enterprise in the field of aeronautics and space. At the time of its creation, EADS had 100,000 employees spread across 70 production sites,

16Sociedad Estatal de Partipaciones Industriales.

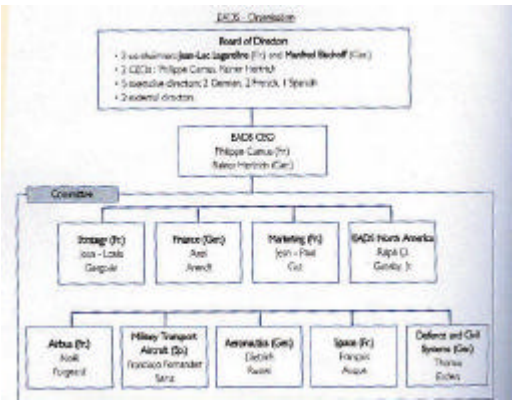
mainly in France, Germany, Spain and the United Kingdom. The French and the Germans hold an equal share of 30.2% of the new group. The Spanish SEPI has a 5.5% interest, and the remaining 34.1% is quoted on the Frankfurt, Madrid and Paris exchanges. The stability of the shareholdings is guaranteed by a shareholders agreement valid until 30 June 2003.



The founders of EADS opted for a statute under the law of Netherlands (N.V.) for fiscal and legal reasons. A fundamental principle governs the internal organisation of the group, that of equality among the founders. Although the head office is integrated, the principal functions are shared between Paris[17] and Munich[18].

Management is shared by French and Germans, and to a lesser extent the Spanish. Five Frenchmen, five Germans and one Spaniard make up the Board and the Executive Committee. The former is co-chaired by Manfred Bischoff and Jean-Luc Lagardère, the latter by two chief executives, Philippe Camus and Rainer Hertrich.

17 Marketing, Strategy, Legal Affairs.
18 Finance, Purchasing and Communications.
19 Hébert Jean-Paul, Naissance de l'Europe de l'armement, Cahier d'Etudes Stratégiques, n°27, Paris, EHESS, 2000, 139 pages, p.33



The movement towards concentration on a world scale is wide-ranging:
0 of the top 50 defence firms in the world in 1990, five were no longer present at the end of 1999 owing to disinvestment in the defence sector (Teledyne, Oerlikon, Panavia aircraft, CAE Inc, and Tenneco), while the other 45 were reorganised into 25 groups,
0 30 of these 45 firms had organised links among themselves and in effect formed nine large groups: Lockheed Martin, Boeing, EADS, BAE Systems, Raytheon, Northrop Grumman, TRW, SAAB and Finmeccanica.

d. Groups with diversified activities

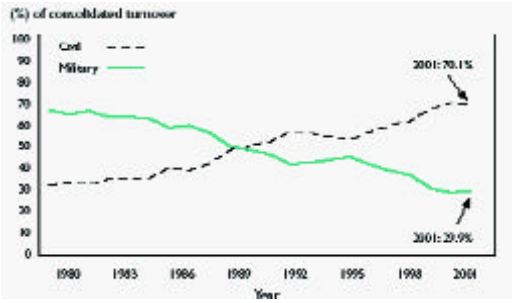
While some firms have left the armaments sector, others have concentrated on their core businesses in the defence field. On the other hand, according to French analyst Jean-Paul Hébert, the armaments industry can be analysed less and less strictly in terms of armaments production in Europe. The development of dual activities is such that the model of a group specialising in military production is no longer the rule. Armaments production increasingly takes place in conglomerates with diversified activities[19].

The integration of components applying technologies used in civil systems has spread throughout the aerospace and electronic sectors. These sectors have experienced major changes on the technological level, with constant progress in information technology and communications increasingly being integrated into weapons systems.

Turnover Civil / Military (%) in Aerospace sector

	Civil	*Military*
1990	*50.8*	*49.2*
1991	*53.0*	*47.0*
1992	*57.4*	*42.6*
1993	*56.9*	*43.1*
1994	*55.4*	*44.6*
1995	*54.1*	*45.9*
1996	*57.7*	*42.3*
1997	*60.6*	*39.4*
1998	*62.6*	*37.4*
1999	*68.6*	*31.4*
2000	*70.9*	*29.1*
2001	*70.1*	*29.9*

Source : AECMA, 2001



These large diversified groups must face increased global competition because they find themselves directly confronted by civil groups (telecommunications, optronics, computers etc.). These transnational entities therefore employ strategies guided by commercial logic.

Hence, EADS, Thales and BAE Systems are involved in numerous fields of activity. In fact they have undergone a double transformation: from producers of platforms to systems integrators, and from providers of products to service providers. [20]

20 Axelson Mattias, Defence Industry Shift – From manufacturing to services, The FIND Programme, FOI, Stockholm, 2001, 53 pages,

EADS and Thales are positioned in both the commercial and defence business, whereas the business of BAE Systems is primarily military-oriented.

- EADS: a company primarily dependent on AIRBUS business and in the defence field, on European programmes

EADS - Key figures

$Millions	2001	2000
Consolidated Sales	30 798	24 208
Defence (% of consolidated sales)	20%	18.3%
Exports (% of consolidated sales)	55	47
Operating profit	1 694	1 399
Net income	1 372	- 909
Order Book	183 256	131 874
R&D	2 046	1 339
Personnel numbers at year end	102 967	88 879

Source: EADS Annual Report 2001

EADS's defence business, including military aircraft and helicopters, military satellites, missiles and defence electronics currently account for about 20% of group revenues. Its overall performance is very dependent on Airbus, which accounts for the bulk of its operating profits. The aeronautics division, primarily encompassing Eurocopter and military fighter activities, also contributes positively to earnings. But the other three divisions (space, military transport aircraft, civil and defence systems) are loss-making.

This dependence on Airbus business is a source of concern, since the events of September 11, 2001, as well as the cyclical nature of civil aeronautics, have severely affected the entire commercial-aerospace sector. The telecommunications industry, which is the largest customer for satellite business, has been similarly affected, with a strong impact on Astrium, EADS satellite company. In the medium term, EADS aims to increase the proportion and importance of its defence activities within its business portfolio (by more than 50%).
In spite of the considerable delay in launching the A400M transport aircraft and Meteor

beyond-visual-range-missile, these programmes represent the two largest prospective contracts for EADS since its creation.

✍✍THALES: balanced growth in both commercial and military markets

Thales – Key figures

$Millions	2001	2000
Consolidated Sales	10 268	8 580
Sales in Defence	5 746	4934
Defence (% of consolidated sales)	56%	58%
Exports (% of consolidated sales)	75%	74%
Operating profit	667	561
Net income	343	241
Order Book	19 744	18 366
R&D	1 900	1 800
Personnel numbers at year end	62 494	57 312

Source: Thales Annual Report 2001

A European leader in electronic systems and industrial electronics, Thales is established in the United Kingdom (where it is now the second largest defence contractor, while the UK is Thales' second largest marketplace), North America, Australia, Asia and South Africa. Its three business areas, Defence, Aerospace, Information Technology and services accounted for 56%, 18% and 26 % respectively of Thales Group consolidated sales in 2001. The percentage of military business in Thales' operations is much higher than in EADS, 56% compared to 20% (2001).

	2002		2001		Total
	%	in $ Millions	%	in $ Millions	change
Defence	61%	6 811	56%	5 746	+18.5%
Aerospace	16%	1 790	18%	1 815	-1.4%
IT & S	22%	2 441	26%	2 620	-6.8%
Others	1%	83	87		
TOTAL	100%	11 125	100%	10 268	+8.3%

Source: Thales, 2003.

In 2002, the defence business contribution to consolidated revenues rose to 61%, compared to 56% in 2001. Total defence revenues, including military aerospace sales, represented over two-thirds of turnover in 2002.

✍✍BAE Systems' business prumarily military-oriented

BAE Systems – Key Figures

Billions £	2001	2000
Consolidated Sales	13.1	12.1
Defence (% of Consolidated Sales)	78	72
Order Book	43.8	41.0
Profit before interest	1.2	0.9
Personnel numbers at year end	70110	85000

Source: BAE Systems Annual Report 2001

BAE Systems designs, manufactures and supports military aircraft, surface ships, submarines, space systems, radar, avionics, communications, electronics, guided weapon systems and a range of other defence products.

As a prime contractor and systems integrator in the air, land, sea, space, and command and control market sectors, BAE Systems is among the largest defence contractors in Europe with defence revenues accounting for 78% of consolidated sales in 2001.

Since 11 September 2001, three-quarters of BAE Systems' business has been military-oriented. The company is expanding its investments in the United States. In fact, by merging with GEC Marconi, BAE Systems has been snapping up properties in the United States, enabling it to gain access to the US defence budget (see data, as follows).
Appraisal by sector of activity

Restructuring does not only concern the German, French, British, Italian, Spanish and Swedish industries. Through the medium of joint ventures and partnerships, European states with more modest industrial capabilities are also directly or indirectly involved. A study by sector shows that the dynamic for concentration is most apparent in the aerospace (aeronautics, space, missiles) and defence electronics sectors. The major groups have consolidated their activities using a sector-by-sector approach.

a. Defence aerospace and electronics: a strategy of segment consolidation

✍✍Aeronautics

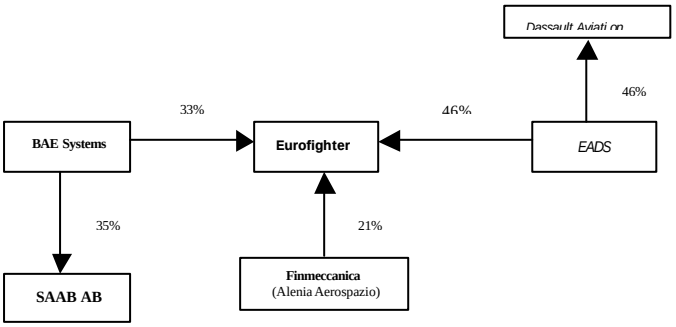
EADS and BAE Systems are the two main companies in Europe. They are the reference points for the other European companies with activities in aeronautics. Located mainly in the United Kingdom, Germany, France, Italy and Sweden, suppliers and equipment manufacturers are also present in Spain, the Netherlands, Greece and Belgium.

In the field of combat aircraft, the European industrial scene is organised around BAE Systems, EADS, French Dassault Aviation, Italian Finmeccanica (Alenia Aerospazio) and Swedish SAAB AB.

Military Combat Aircraft

Company	Country	Products
BAE Systems	United Kingdom	Eurofighter, Gripen, Harrier, Hawk, Tornado
EADS	France/Germany /Spain	Eurofighter, Mirage, Rafale, Tornado
Dassault Aviation	France	Mirage, Rafale
Finmeccanica	Italy	Eurofighter, Tornado
SAAB AB	Sweden	JAS-39 Gripen

It can be seen that these manufacturers are connected by means of joint ventures and equity alliances.



EADS has a 46% stake in the capital of the French aviation company Dassault Aviation, which manufactures the Rafale and the Mirage, and is one of the three industrial partners in the Eurofighter consortium, along with British BAE Systems and Italian Alenia Aerospazio (100% Finmeccanica). BAE Systems is the second largest shareholder in the Swedish firm SAAB AB, manufacturer of the Gripen.

EADS is the European leader in the field of transport aircraft. In the civil sector, Airbus Industries (80% EADS, 20% BAE Systems) has become the largest provider of commercial aircraft in the world. On 23 June 2000, the four industrial partners in Airbus Industries agreed to transform the GIE into an integrated company - AIC (Airbus Integrated Company) - and to launch the A380.

In April 2000, EADS and the Italian Finmeccanica signed a protocol of agreement providing for the creation of a joint company in the field of civil and military aeronautics (European Military Aircraft Company - EMAC). However, negotiations failed because several of Finmeccanica's subsidiaries were heavily oriented toward the United States. Alenia Aerospazio, for example, conducts 80% of its aeronautical business with Boeing.

In the helicopter field, Eurocopter and Agusta-Westland are the two European leaders. Eurocopter, born in 1992 from a merger of the helicopter divisions of Aérospatiale and DASA, is a wholly-owned subsidiary of EADS. During restructuring, organisation based on a two-headed management was abandoned and a legal corporate form with a simplified structure was adopted.

Helicopters

Company	Country	Products
Eurocopter (100% EADS)	France / Germany	Military : AS 532 Cougar MK2, AS 555 Fennec, AS 565 Panther, SA 352 Gazelle, BO 105 CB4, EC 635, NH90, Tiger Commercial : BK 117, BO 105, Dauphin, EC 120, EC 130 B4, EC 135, EC 155, Ecureil, Super Puma
Agusta Westland (50% Finmeccanica, 50% GKN)	UK/Italy	Military : A109M, A129, EH 101, NH 90, AB 412; WAH-64 Apache, Battlefield Lynx, Super Lynx, Sea King Commercial : A119 Koala, A109 Power, A109K2, EH-101, AB412

Propulsion

Company	Country	Products
Rolls-Royce	United Kingdom	Military : EJ200, Sprey, TP400, WR-21, MTR390 Commercial : Trent, AE2100, Model 250, BR 715
SNECMA	France	Military : M88, M53, ATAR, MTR390, RTM322, TP400, Ariane 4/5 Commercial : CFM 56
MTU	Germany	Military : MTR390, EJ200, RB 199, TP400; Ser.396SE; Ser 870
Fiat Avio	Italy	Military : RB199, TP400
Volvo Aero	Sweden	Military : RB199, TP400

Agusta Westland is the result of an alliance between the Italian firm Finmeccanica and the British GKN concluded on 26 July, 2000. The two groups cooperate on the NH-90 European programme within the framework of the consortium NH Industries (30.85% France [Eurocopter], 30.85% Germany [Eurocopter Deutschland], 31,6% Italy/UK [Agusta Westland], 5.5% Netherlands [Stork Fokker] and 1.2% Portugal). The purchase of the NH-90 by Sweden, Finland, Norway and Portugal has allowed industrial partnerships to be established with firms in these customer countries. This strengthening of ties with the Nordic countries led, for example, to an EADS shareholding as high as 26.8% in the Finnish aeronautical and defence group Patria Industries OYJ in February 2001. On its part, Portugal joined the NH-90 consortium in June 2001.

In the area of aerospace equipment suppliers and propulsion, a trend towards concentration began in 2000. In France, the number of equipment manufacturers fell from seven to three. In the United Kingdom, Smiths Group bought TI Group and Hunting sold its defence activities.

The British company Rolls-Royce and the French SNECMA dominate the propulsion sector, ahead of German MTU, Italian Fiat Avio, Swedish Volvo Aero and Spanish ITP.

21In the field of solid propulsion and energy materials for space and defence applications, the French SNECMA and SNPE have combined their efforts within a joint company Herakles.

So far, this sector has not seen major European alliances, although these different companies do co-operate. The SNECMA Group is 97.2% owned by the French state. Its transformation into a holding company in 1999 was aimed at facilitating approximation. Its privatisation had been announced by the Jospin government at the Salon du Bourget in June 2001, but was interrupted because of the impact of the 11 September attacks on the aeronautical sector. SNECMA, like Rolls Royce, has ambitions to federate the European engine industry.

The strategy of segment consolidation adopted by EADS has led to the formation of a European centre in the fields of space, missiles and missile systems.

✍✍Space

Prior to 1998, five leaders were active in the sector:

✍✍The French Aérospatiale,
✍✍Alcatel Space, the space division of the French
✍✍firm Alcatel,
✍✍Alenia Spazio, the result of a merger between the Italian firm Selenia Spazio and the space division of Aeritalia,
✍✍ MATRA Marconi Space (MMS), the result of a merger between the space divisions of Matra, BAe, and GEC Marconi.
✍✍DASA, the result of several mergers in Germany between MBB, Erno, and Dornier;

Following the restructuring of the French aeronautical sector and the creation of EADS, the satellite industry revolved around two centres:

- ASTRIUM, created in May 2000 by EADS. Since 25 July 2002 and the decision of the British group BAE Systems to give up its 25% holding, EADS has 100% control of this subsidiary. ASTRIUM is the leading European manufacturer of satellites.

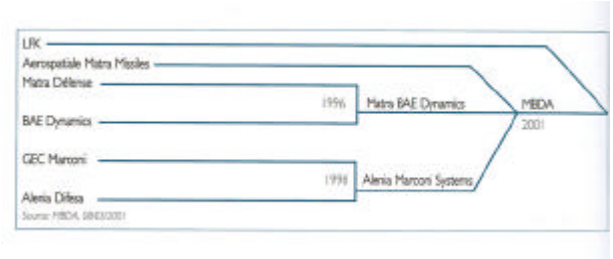
- Alcatel Space Industries (the result of a merger between the French Alcatel Space and the satellite activities of Thomson CSF).

In the area of launchers, EADS Launch Vehicles (ex-Aérospatiale Matra Lanceurs) is the industrial architect of the Ariane programme.

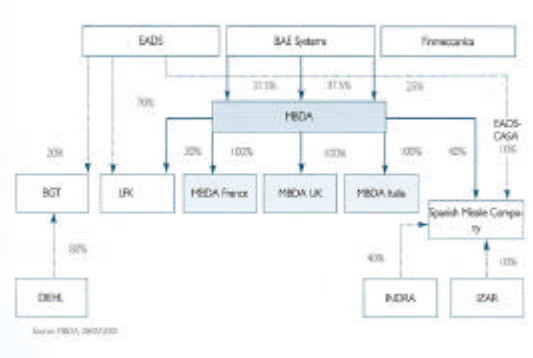
- Missiles

As for ASTRIUM, the EADS strategy led to the formation of a European leader in the field of missiles and missile systems. Matra BAe Dynamics (MBD) came into being in 1996. Three years later, on 20 October 1999, EADS, BAE Systems and Finmeccanica signed an agreement in principle for the merging of their missile interests:

- Matra BAE Dynamics (held jointly by BAE Systems and EADS),
- EADS-Aérospatiale Matra Missiles (AMM, 100% EADS),
- Alenia Marconi Systems (AMS, held jointly by Finmeccanica and BAE Systems).



Finalised on 19 December 2001, this merger resulted in the birth of an integrated European defence company, MBDA. The financial interests of the partners in the new company are divided between BAE Systems and EADS (37.5% each) and Finmeccanica (25%), with joint control rights. MBDA's shareholder agreement foresees, in time, the absorption of LFK, the missile subsidiary of EADS Deutschland, and a strategic alliance with the Spanish missile industry (EADS-CASA, INDRA and IZAR).



The world number two in the sector - after the Raytheon missile concentration and above that of Lockheed Martin - the firm is developing a complete range of missile families for the three services, such as the Meteor air-to-air combat system, the ASTER family of anti-missile missiles and the Storm Shadow/Scalp EG cruise missiles.

In addition to MBDA, Thales is also present in the field. Industrial capabilities remain in Germany with BGT (Diehl), in Sweden with SAAB AB and in Norway with Kongsberg.

✍✍Defence Electronics

Defence electronics features in all areas of defence (land, sea, air and space). Their application favours a cross-sector approach and progressively supplants the traditional role division of various defence systems. This field brings together a large number of activities, more or less dual in nature. Since the acquisition of Marconi, Thales and BAE Systems have been the two European leaders in defence electronics, ahead of EADS (Defence and Civil Systems Division), Alenia Marconi Systems (a joint subsidiary of Finmeccanica and BAE Systems) and SAAB AB. With the privatisation of Celsius, SAAB AB acquired 99% of its capital. This purchase allowed SAAB to diversify its activities by deploying into the defence electronics sector, thereby reducing its dependence on aeronautics.

Defence Electronics – Major European companies

Activities	Company
Optronics	Thales
	BAE Systems
	Sagem
Radars	Thales
	BAE Systems
	Ericsson
	EADS
	Finmeccanica
Electronic Warfare	Thales
	BAE Systems
	EADS
	SAAB
Avionics	Thales Avionics (ex Sextant Avionique)
	BAE Systems
	SAAB
	Smiths Group
Positioning Systems and calculators (GPS, Galileo)	Thales
	Indra
	Sagem
Telecommunications	Thales
	BAE Systems
	EADS
	SAAB
	Sagem

The consolidation of the ground-oriented and naval-oriented segments has been much slower compared to aerospace, missiles and electronics. In many countries, the consolidation has primarily consisted in domestic processes.

b. The land and naval armaments sectors: an industrial scene divided along national lines

The land and naval armaments sectors are clearly less consolidated in Europe than the aerospace and electronics sectors, which have been forced into consolidation by the strong links between military and commercial aerospace. In the case of electronics, it seems to have been driven by the fact that commercial innovation is evidently leading the way. Airbus has been both the role model and the ready example for the military to adapt to. The land and naval armaments sectors have had - and still have - little interaction with the civil sector. The national producers have developed national specialities and have, to a large extent, contributed national sub-systems to European bi- or multi-national projects without really creating any lasting international technological cross-fertilisation. National entities have thus remained largely intact and unduly isolated.

For years there has been lively debate and suggestions for greater harmonisation and collaboration on defence equipment among EU members. However, progress has been painfully slow. There is a lack not only of a common goal but also of a common vision among EU members in these areas. State ownership is a factor which is limiting industry-led consolidation.

✍✍The land armaments sector

The land armaments markets are entirely oriented towards the military sector. This absence of duality weakens the land defence industries, which have seen their order books shrink significantly in the last ten years. The market for main battle tanks is stagnant and the existing fleets too large. The munitions market has fallen by more than 70%. The prospects are more favourable for the medium and light armoured vehicle market, in the context of the need for a force projection capability for the armed forces. About a

hundred participants can be counted in the different areas of activity:

- several dozen for munitions,
- a dozen for armoured vehicles, e.g. Alvis in the United Kingdom, Rheinmetall in Germany, SBS in Spain, GIAT Industries in France, IVECO (FIAT Group) in Italy.
- four centres of expertise in main battle tanks: the Leclerc tank of the French GIAT Industries, the Leopard 2A5 from the German firm Krauss Maffei, the Challenger 2 from the British company Vickers, and the Ariete of the Italian FIAT.

Major European companies

Company	Country
GIAT	France
Rheinmetall De Tec	Germany
Alvis	United Kingdom
KMW	Germany

A first move towards concentration has been made, mainly inspired by German and British firms.

German industry occupies a position at the forefront of the European land armaments scene. It has a capability in the fields of main battle tanks, armoured artillery systems and associated intelligent munitions. A process of consolidation at national level, encouraged by the German government, has enabled the formation of three large groups, which have entered into cross-border alliances:

- Rheinmetall De Tec: acquisition of the Kuka Wehrtechnik and Henschel Wehrtechnik subsidiaries of the German company IWKA, the defence activities of the Swiss group Oerlikon-Bührle, and an increase of its capital holding in STN-Atlas Electronik (from 26% to 51%) held jointly with BAE Systems;
- Krauss Maffei Wegmann (KMW): following the merger of the German companies Wegmann and Krauss Maffei in 1999. The former holds 51% of the new company and the latter 49%;
- Diehl: the conclusion of an alliance with the Scandinavian group Nammo AS, the companies Raufoss, SAAB (Celsius) and Patria Industries.

On the British side, Alvis dominates the sector of light and medium armoured vehicles following the acquisition of the Swedish firm Hägglunds at the end of 1997 and the establishment of ties with its principal British rival GKN in November 1998. In August 2002, it widened its range of heavy and wheeled armoured vehicles with the acquisition of Vickers Defence Systems, in the context of the engine manufacturer Rolls Royce's sale of its land systems activities. BAE Systems RO Defence (ex-Royal Ordnance) and INSYS are the two main actors in the arms and munitions sector. In addition, Alvis, Rheinmetall, Krauss Maffei Wegmann and Stork (Netherlands) are associated in a joint venture aimed at developing and producing the MRAV/GTK [22] troop-carrying armoured vehicle.

At another level, the Herstal group in Belgium, RDM Technology BV in the Netherlands, Steyr-Daimler-Puch Spezialfahrzeug AG in Austria, RUAG in Switzerland, Patria Industries OYJ in Finland, SAAB Bofors Dynamics in Sweden, Otobreda (Finmeccanica group) and Iveco in Italy, are the result of a process of rationalisation at national level and disengagement from the state.

The French situation is, at present, in a state of flux with the principal player, GIAT Industries, remaining wholly-owned by the state. It is involved with four other French companies; Panhard (a subsidiary of the PSA Peugeot Citroën group), Renault trucks, TDA Armament SAS (a subsidiary of Thales and EADS Deutschland), and the Société Nationale des Poudres et Explosifs (SNPE). Against the background of a reduction in national orders and the absence of export outlets, and despite several extensive reorganisations, GIAT's losses reached 201 million euros in 2001. The creation of a joint company by GIAT Industries and Renault Trucks, named Satory Military Vehicles (SMV), which acts as the industrial leader of the Infantry Armoured Combat Vehicle (VBCI) programme and provides the marketing for wheeled armoured vehicles, represents the beginning of a national consolidation.

21In the field of solid propulsion and energy materials for space and defence applications, the French SNECMA and SNPE have combined their efforts within a joint company Herakles.

Some programmes have been carried out by GIAT with European firms:

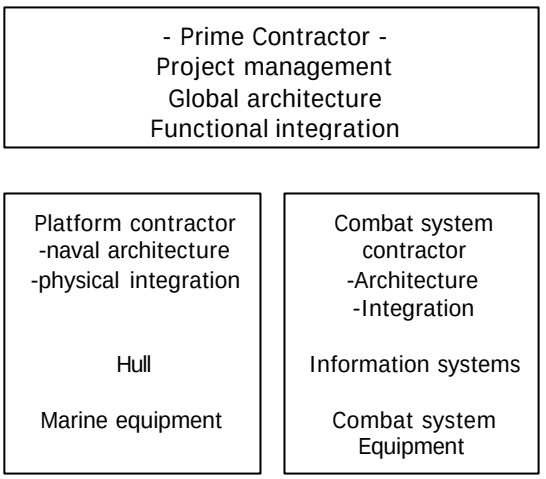
- the Obus 155 Bonus programme with Bofors Defence;
- the telescoping munitions weapons system in the context of the joint subsidiary CTAI with the British BAE Systems RO Defence;
- the Information Terminal System (SIT France) with EADS Systems Defence Electronics;
- the Félin Future Combatant System programme with Thales.

However, the financial situation of GIAT Industries and its status as a public enterprise are two major obstacles to the conclusion of structural alliances with European partners. GIAT Industries has found itself heavily marginalised.

- The naval sector

The picture of the European naval industry is less fragmented than that of land armaments. France, Italy, Germany, the United Kingdom, Spain and to a lesser extent the Netherlands, Sweden, Greece and Portugal have a domestic naval industry. Two types of players are involved: the major naval defence system companies (BAE Systems, and DCN/Thales) and the naval shipyards (HDW, TKM, DCN, Fincantieri, IZAR). The profound technological changes in progress in this sector increase the influence of system and defence electronics suppliers. In the field of naval electronics, weapons and combat systems integrating on-board functions, restructuring is well under way. As for the business of platforms and the integration of ships, the industrial base remains largely national.

Technical Architecture



Source: Bessero Gilles, Gallezot Benjamin, "L'industrie navale de défense européenne à l'heure des restructurations", L'Armement, n°71, octobre 2000, pp.136-143, p.138

Major European companies in the naval sector

United Kingdom	
BAE Systems	Construction, combat systems, equipment
Vosper Thornycroft	Construction, services and equipment
Rolls Royce	Propulsion
Germany	
HDW	Submarines and shipbuilding
Thyssen Werften	Construction, military vessels
STN Atlas Elektronik:	
(Rheinmetall 51% et BAE Systems 49%)	Combat systems, equipment
MTU	Propulsion
MAN	Propulsion
France	
DCN	Construction, combat systems, equipment, maintenance
Thales	Combat systems, electronic equipment (sonar, radar, communication)
Alstom Marine	Military vessels
Constructions mécaniques de normandie (CMN)	Military vessels
Italy	
Fincantieri:	Construction
AMS	
(50% Finmecannica / 50% BAE Systems)	Combat systems, radars, electronics
WASS (Finmecannica)	Underwater weapons
Spain	
IZAR	Construction, combat systems, maintenance
Sweden	
SAAB AB	Combat systems (Celsius Tech Systems) Underwater weapons and submarines (Bofors Underwater Systems)
Kockums (HDW)	Surface vessels, submarines
Netherlands	
Royal Schelde	Construction and maintenance (surface ships)
RDM	Construction and maintenance (submarines, restructuring in progress)
Signaal (Thales)	Combat systems, radars

However, business and commercial agreements are progressively leading to the emergence of some major centres of excellence.

Germany has a capability for complete systems vis-à-vis the naval construction of ships and conventional submarines. Over the years, the shipyards of Howaldtswerke-Deutsche Werft (HDW) and Thyssen-Krupp Werften (TKW) have made Germany a world leader in submarines (70% of the world market). HDW is particularly active in the process of integration of the European naval industry:

- acquisition in 1999 of the Swedish firm Kockums Naval Systems (SAAB/Celsius);
- purchase of Hellenic Shipyards, Skaramanga (Greece);
- establishment of partnerships with the leading Italian firm Fincantieri [23] and the Spanish IZAR.

The major British companies in the military naval sector are BAE Systems, for platforms, systems and equipment manufacturing activities, Vosper Thorneycroft for the construction of medium and small vessels, and Rolls Royce for nuclear and conventional propulsion. Following the absorption of the country's three principal shipbuilders (VSEL, Yarrow and Kvaerner Govan), BAE Systems made the development of its activities in this sector a priority. Its alliance with Finmeccanica in a joint venture with Alenia Marconi Systems (AMS) and its 49% stake in the capital of the German firm STN Atlas, specialising in anti-submarine warfare, illustrate this strategy.

In France, leadership of the principal national armament programmes is provided by Direction des Constructions Navales (DCN), the last state-run European naval shipbuilder, after the privatisations in Italy (Fincantieri and Finmeccanica) and in Spain (IZAR, the result of the merger in 2000 of the publicly-owned Astilleros Espagnoles (AESA) and Bazan naval shipyards). In 2001, the French state introduced a series of reforms aimed at transforming the DCN into a wholly-owned private company by the first quarter of 2003. The strong performance of the systems and equipment manufacturer in the Thales group obliged the French state to gather the expertise of Thales and DCN in order to avoid Franco-French competition. In fact, Thales had never concealed its interest in acquiring a leadership role in military shipping. In addition, its re-acquisition of the shares held by BAE systems in Thomson Marconi Sonar [24] (TMS), made the group one of the world leaders in the field of submarine activities and the chief exporter of sonars and associated systems for naval and air forces. Its partnership policy therefore led it to strengthen these links with the large platform builders.

Thales and DCN were already export partners via two joint subsidiaries, one for submarine combat systems, the other for the development of a combat system for frigates sold to Saudi Arabia. On 4 April 2002, this strategy of approximation was concluded with the signing of an agreement for the creation of a joint company held equally, with the statute of a public company, to be named Armaris. The new company combined leadership and commercial activities in the field of warships and naval combat systems which up to then had been the domain of Thales Naval France and DCN-International (DCN-I)[25]. Armaris provides the management of export and cooperation programmes. This will include management of the Horizon anti-aircraft frigate programme, that of multi-purpose frigates in cooperation with the Italian companies Fincantieri and Finmeccanica, while also building two Scorpène submarines for Malaysia, in co-operation with the Spanish shipyard IZAR. In the area of torpedoes, an agreement between the French and Italian governments has led to the creation of the GIE Eurotorp, which brings together Thales, DCN and Wass, a subsidiary of Finmeccanica.

23 The agreement signed on 29 April 2002 with the Italian shipyard Fincantieri aimed at the creation of a joint venture specialising in the development and marketing of submarines under 700 tons.
24 Thomson Marconi Sonar is a company constituted in 1996 by amalgamating the activities of Thomson CSF and GEC-Marconi in the area of sonar systems. TMS was re-named Thales Underwater Systems SAS (TUS).
25 A publicly capitalised firm set up in 1991 to provide promotional commercial services to the DCN and export contract follow-up.

In the field of nuclear propulsion, in October 2002 DCN and Technicatome, a subsidiary of Areva, announced the formation of a joint company to optimise their cooperation on naval propulsion systems through common management of contracts and marketing of the nuclear or electrical systems of DCN ships. A partnership agreement on conventional propulsion systems with the British firm Rolls Royce is being prepared. It corresponds to three years of cooperation on the British T45 frigates. Regardless of these partnerships cemented in France and Europe, the change in the status of DCN should allow it to develop structural alliances with the three private centres of expertise emerging in Europe: the two large systems manufacturers BAE Systems and Thales Naval, and the German shipyards.

Trends in European defence industrial direct employment [26]

a. Overview

- Consequences of budget constraints, capacity reductions and rationalisation

Budget constraints, capacity reductions and rationalisation among large defence contractors have had a profound impact on direct employment and severe knock-on effects for defence-related suppliers.

The job reductions are the consequences of the following developments:

- elimination of superfluous jobs and relocation of firms or divisions following mergers and acquisitions;
- payroll adjustments to achieve cost-effective targets, in the context of reduced budgets and better cost-control of weapons systems;
- repatriation by prime contractors of some sub-contracting, leading to the closure of many small and medium-sized firms and industries.

26 Direct employment refers to jobs directly dependent on defence, that is, companies providing a product or a service directly to an MOD or for export.

As a consequence, between 1990 and 1999, defence industry employment fell by more than one third in Europe. The reduction in numbers particularly affected the aeronautical, combat aviation and transport aviation sectors, as well as that of land armaments, such as armoured vehicles and artillery. The largest declines were recorded in the period 1992-1998. Private companies, arsenals and state-owned firms were affected by these reductions. In the land sector, numbers were reduced by more than 40%, despite the brakes applied for several years to companies' redundancy plans, notably public sector enterprises, as in France.

From 1998, with the exception of the land sector, the level of employment stabilised and even marked an increase in the aerospace and electronics sectors, largely driven by the upswing in the airliner business at the time. These sectors account for more than 50% of the total workforce of the defence-related industries.

The European aerospace industry (including civil activity)

	Turnover	Employees (Const xbn)
1990	65.8	561 000
1995	48.3	387 000
1996	54.2	382 000
1997	63.5	395 000
1998	66.7	422 000
1999	68.1	427 000
2000	73.2	429 000
2001	80.6	436 000

Source: AECMA, 2001

- Consequences for the regional and local economy

In many countries, firms are concentrated in regions which become very dependent on defence, as in France (Provence-Alpes-Côte d'Azur, Brittany, Normandy, Centre), or in Germany (Lower Saxony, Schleswig-Holstein, Bavaria and Baden-Wurttemburg, and North Rhine-Westphalia). Locally, some firms are the main employer in the region, and a network of sub-contracting small and medium-sized

enterprises forms around them. Depending on the country, the state has intervened to some extent to reduce the effects of industrial restructuring on the job pool.

Today, the defence industries which bid for major contracts set out the job consequences in their offers, both if they succeed in winning the contract and if they fail. This illustrates the stakes involved for each country and each business with respect to the maintenance of jobs in the defence sector.

✍✍European and US defence industrial direct employment in 2001

Direct employment

United States	1, 276,000
1. France	166,000
2. United Kingdom	155,000
3. Germany	90,000
4. Italy	27,000
5. Sweden	14,400
6. Spain	12,100

In 2001, direct employment in France and the United Kingdom represented a significant proportion of the defence sector jobs in Europe: 166,000 in France and 155,000 in the United Kingdom, well ahead of Germany (90,000) and Italy (27,000). In Sweden and Spain, the numbers fell below the 15,000 threshold. The six LoI countries number some 470,000 employees, or 1/3 of the US figure.

Although, the LoI countries account for the majority of industrial capabilities, niches and centres of excellence exist in some WEAG states which are not members of the LoI (Greece, Netherlands, Finland, Norway, Portugal, Denmark, Austria, Belgium, Luxembourg). The level of employment is less than 10,000 in each of these States.

✍✍Summary of employment prospects
In view of the current demand for defence equipment, some comments can be made on future employment prospects by sector:

✍✍the land sector will most likely see further large decreases in jobs against the background of a reduction in demand and present and future restructuring;

✍✍the numbers employed in the naval sector should stabilise at the current figure, the workload of the principal European companies being guaranteed for at least the next 5 years, thanks to maintained demand;

✍✍aeronautics and space are currently suffering from the consequences of the 11 September attacks on air travel, the crisis in the telecommunications sector and the cyclical downturn of the civil aviation business. In the short and medium term the numbers will decline, to reach the levels of the late 1990s.

b. Situation by country

✍✍UNITED STATES

US Defence-related employment (direct and indirect)
(Millions of Employees)

1980	1985	1990	1992	1994	1996	1998	2000	2003
1.990	2.980	3.115	2.840	2.460	2.210	2.180	2.425	3.000

Source: Office of the Under Secretary of Defense, National Defense Budget Estimates for FY 2003, Table 7–6.

In the United States, direct and indirect employment saw a major decline between 1990 and 1998, (over 900,000 jobs). The trend has been upward since 2000, reaching 3 million in 2003, of which half are directly employed.

✍✍FRANCE

Defence industry direct employment

	DGA	Aerospace	Electronics	Mechanics	Naval Consru-Ctions	Nuclear	Chemical & Others	Total
1989	24000	65400	57700	47100	31600	10200	19100	255100
1990	23800	63300	55000	47300	31800	9800	19100	250100
1991	24100	61600	54700	47900	31300	9400	19300	248300
1992	23820	57990	50360	42090	28700	8550	18930	230440
1993	22180	51390	47390	36780	28860	8220	19300	214120
1994	21260	45500	46180	37020	28050	8130	18470	204610
1995	20870	42000	41680	34100	27320	7750	18870	192590
1996	20140	41000	41970	31000	25500	6990	17900	184500
1997	19780	38680	40500	29960	23400	6650	19470	178440
1998 *	18290	37415	42060	29700	21640	6825	19230	175160
1999	17170	39010	41685	28645	20315	6540	17705	171070
2001								166000

Source : Annuaire statistique de la Defense, Octobre 2002. Delegation Generale pour l Armement.

In France, industrial employment in the armaments sector represents a significant proportion of French industrial employment in absolute terms: of the order of 4%, taking only direct employment into account.

Some 310,000 jobs were linked to the defence sector in 1982, 250,100 in 1990 and 166,000 in 2001, which represents a drop of approximately 50% in 20 years. The greatest declines in numbers were recorded in the aeronautical and land armaments sectors.

✍✍UNITED KINGDOM

Defence industry direct/indirect employment

	1980/81	1985/86	1990/91	1995/96	1997/98	1998/99	1999/00	2000/01
Direct	405.000	345.000	295.000	205.000	180.000	165.000	155.000	155.000
Indirect	335.000	280.000	260.000	205.000	190.000	190.000	165.000	150.000
TOTAL	740.000	625.000	555.000	410.000	370.000	355.000	320.000	305.000

Source: DASA, UK Defence Statistics 2002

In the United Kingdom, where the state has adopted a non-interventionist policy, restructuring has had particularly severe consequences on employment. Between 1980 and 2000, the number of directly-employed fell from 405,000 in 1980 to 195,000 in 1990, to reach 155,000 in 2000, or a reduction of 250,000 jobs in 20 years, and 140,000 in the last ten years alone. Aerospace is a significant industry employing 110,389 persons in 2000.

✍✍ GERMANY [27]

As in the United Kingdom, the German defence industry has experienced a very large reduction in the number of directly-employed, from 280,000 in the 1980s to 90,000 in 2001.

✍✍ITALY [28]

In Italy, the level of direct employment has stabilised at around 27,000 employees since 1999.

✍✍SWEDEN

Defence industry direct employment

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
22782	20686	19094	17984	15862	15359	15400	14256	14225	15311	15801	14471

Source: Swedish Defence Industries, Annual Statistics 2002

27 No official database available.
28 No official database available.

In Sweden, the defence industry has seen the number of directly-employed drop by 8,300 over the last ten years. Today, there are just 14,471 directly-employed persons, compared to 22,782 in 1990.

✍✍SPAIN

	1990	1998	1999
Naval	8.364	4.881	4.831
Aerospace	5.921	3.883	3.888
Ground Armaments	4.088	2.052	2.020
Electronics	2.854	1.500	1.544
Others	448	427	520
TOTAL	21.675	12.743	12.083

Source : Ministerio de defensa, La Industria de defensa en Espana 1999

Spain has seen a drop of about 50% in the number of directly-employed in the space of ten years. The entire spectrum of sectors has been affected.

THE OPERATING ENVIRONMENT

European defence industries are evolving in an institutional, economic and legal environment which is neither homogeneous nor unified. Henceforth, the building up of the economic weight of the major European defence groups will depend on the determination of states to create conditions that are favourable to the further development of their activities. For in both the European and world markets they find themselves up against the economic power of the US giants.

TOP 10 Defence Industries in the world (bnUS$)

Rank World	COMPANY	2001 Defence Revenue	2001 Total Revenue	% of Revenue From Defence	2000 Defence Revenue	2000 Total Revenue	% of Revenue From Defence
1	LOCKHEED MARTIN	22,5	23,9	93.8	18,0	25,3	71.1
2	BOEING	19,0	58,2	32.6	17,0	51,3	32.1
3	BAE SYSTEMS	14,4	19,0	76	13,2	18,3	72
4	RAYTHEON	11,9	16,8	71	14,0	16,8	83.1
5	NORTHROP GRUMMAN	9,3	13,5	68.9	5,6	7,6	73.5
6	GENERAL DYNAMICS	7,7	12,1	64	6,5	10,3	63.2
7	THALES	5,5	9,1	61.2	4,2	7,4	57.5
8	EADS	5,4	27,2	19.8	4,5	22,7	20
9	TRW	5,2	16,4	31.7	4,0	17,2	23.3
10	UNITED TECHNOLOGIES	3,7	27,8	13.6	4,1	26,5	15.5

Source: 2002 Defense News Top 100

In 2001, BAE Systems was the European leader of industries active in the defence field, followed by Thales and EADS. These three groups were respectively 3rd, 7th and 8th in the

world rankings. However, the defence revenue of EADS and Thales was only one-third that of BAE Systems and a quarter of Lockheed Martin and Boeing.

TOP 10 European Defence Industries (bnUS$)

Rank EU	Rank World	COMPANY	Country	2001 Defence Revenue	2001 Total Revenue	% of Revenue From Defence
1.	3.	BAE SYSTEMS	United Kingdom	14,4	19,0	76
2.	7.	THALES	France	5,5	9,1	61.2
3.	8.	EADS	France/ Germany/Spain		5,4	27,2
	19.8					
4.	14.	DCN	France	2,6	2,6	100
5.	15.	FINMECCANICA	Italy	2,3	5,9	39.4
6.	18.	ROLLS-ROYCE	United Kingdom	2,0	9,1	22.2
7.	22.	GKN	United Kingdom	1,7	6,3	27.9
8.	27.	RHEINMETALL De Tec	Germany	1,3	4,0	33.1
9.	31.	SAAB AB	Sweden	1,2	1,4	87.3
10.	32	SNECMA	France	1,0	6,0	17.6

Source: 2002 Defense News Top 100

Among the European top 10, British (BAE Systems, Rolls Royce, GKN) and French firms (Thales, DCN and SNECMA) are dominant. Italy is present with its holding company Finmeccanica, which federates a major part of the Italian defence industry, as well as Germany with Rheinmetall De Tec and Sweden with SAAB.

European Defence Industries in the TOP 100 in the world (bn US$)

Rank World	COMPANY	2001 Defence Revenue	2001 Total Revenue	% of Revenue From Defence
FRANCE/GERMANY/SPAIN				
8	EADS	5,4	27,2	19.8
UNITED KINGDOM				
3	BAE SYSTEMS	14,4	19,0	76
18	Rolls-Royce	2,0	9,1	22.2
22	GKN	1,7	6,3	27.9
39	Smiths Industries	0,8	1,9	43.7
41	QinetiQ	0,8	0,9	86.5
58	VT Group	0,4	0,6	70.7
59	Vosper Thornycroft	0,4	0,6	69.9
60	Cobham	0,4	1,0	43.8
91	Vickers Defence Systems	0,2	0,2	100
95	Alvis	0,2	0,2	100
FRANCE				
7	Thales	5,5	9,1	61.2
14	DCN	2,6	2,6	100
32	Snecma	1,0	6,0	17.6
40	Sagem	0,8	2,6	30.6
50	GIAT Industries	0,6	0,7	95
ITALY				
15	Finmeccanica	2,3	5,9	39.4
57	Fincantieri	0,4	1,7	28
GERMANY				
27	Rheinmetall DeTec	1,3	4,0	33.1
52	Krauss-Maffei Wegmann	0,5	0,5	100
53	Diehl	0,5	0,6	88
SWEDEN				
31	SAAB AB	1,2	1,4	87.3
75	Ericsson	0,3	21,9	1.6
SWITZERLAND				
51	Ruag Suisse	0,5	0,5	100
SPAIN				
86	Indra Systemas	0,2	0,6	40

Source: 2002 Defense News Top 100

A total of 42 American firms figure in the world Top 100, compared to 25 European companies from the United Kingdom (10), France (6 with EADS), Germany (4 with EADS), Italy (2) Sweden (2), Switzerland (1) and Spain (2 with EADS).

The permanence of the Europe / United States imbalance

a. Unfavourable conditions

✍✍Legal and fiscal obstacles

Mergers and acquisitions of firms are beset with numerous obstacles connected with a lack of harmonisation of national rules in the following areas:

✍✍company and fiscal law,
✍✍labour and social law,
✍✍national regulations concerning armaments and exports.

Cross-border firms must conform to the national legislation of each member state in which they operate. These firms suffer from the lack of a European company charter which would allow them to apply a single set of rules and a unique management system for their companies.

✍✍The small size of the European defence market

Overall, European defence budgets have been decreasing over the last ten years. Only the United Kingdom and France have taken more ambitious budgetary decisions, the former since 1998 and France since 2002.

The British defence market is the largest in Europe and is likely to be the one which will grow the most in coming years. Under new spending plans (April 2003 - March 2006), the budget allocated to the British MOD sees strong growth, under the heading of the struggle against international terrorism. Of the order of 29.3 billion pounds sterling for the period 2002-2003, it will reach 32.7 billion by 2005-2006, marking an increase of 12%, the largest in 20

years. In France, the new military programme law 2003-2008 sets the target of increasing military spending from 1.8% to 2.2% of GDP. The defence budget for 2003 represents an increase of 6.1% compared to 2002. Capital spending is slated to grow from %12bn to %15bn during the period. In Germany, military spending totals just 1.5% of GDP. In the last two years, the defence budget has remained unchanged at around %24.4 billion. This constrained budgetary environment has encouraged the largest European groups to increase their presence in the US market, the largest defence market in the world. Indeed, the US defence budget for 2003 amounts to $380 billion, or three times the total of the European budgets, and could reach $480 billion in 2007. By comparison, the European market appears to be particularly tight and fragmented.

US Defence Spending

bnUS$	Budget 2002	Budget 2003	2003/2002
RDT&E*	48.4	58.6	21%
Acquisition	61.1	71.6	17%

**RDT&E: Research, Development, Test and Evaluation*

The gap with the United States is even more glaring in the case of resources allocated to research and development (R&D). In 2003, this budget heading marked an increase of 21%, to reach 58.6 billion dollars, or about five times the total of European R&D budgets.
In addition, US companies enjoy an advantage over their competitors in the field of R&D co-financing, with massive support from the state. In aerospace, the sector of the economy in which research is most intense, it is worth noting that about 13% of company turnover is spent on research in Europe. European firms spend on average just over 6.5% of their sales on R&D, an increase of some 20% over the last five years. In the United States, American companies spend only 3% of their turnover on R&D.

R&D: Company / EU Government financed

		R&D Expenditure as % of turnover			R&D Expenditure in bn€		
		2001	2000	1999	2001	2000	1999
Company Financed							
	Civil	4.9	5.2	4.9	4.0	8.4	6.4
	Military	1.7	2.4	1.3	1.4	3.8	1.7
	Total	6.6	7.5	6.2	5.4	12.2	8.2
Financed by EU governments							
	Civil	1.7	4.1	4.2	1.4	6.6	5.5
	Military	4.1	1.6	0.8	3.3	2.6	1.0
	Total	5.8	5.7	5.0	4.7	9.2	6.5
Grand Total		12.5	13.3	11.3	10.0	21.4	14.7

Source: AECMA, 2001

There are many instances of duplication in research and development programmes. For example, the Europeans are simultaneously developing three combat aircraft:

- the Gripen (SAAB AB, BAE Systems),
- the Rafale (Dassault Aviation),
- the Eurofighter (BAE Systems, EADS, Alenia Aerospazio).

- *Lack of visibility: European armaments programmes are difficult to manage and variously supported*

Armaments programmes undertaken jointly have a structural effect on the European industrial scene. The economic weight of the major groups active in defence is considerably strengthened. This is true, for example, in the case of:

- EADS and its industrial partners with the A400M military transport aircraft programme, and the NH-90 or Tigre helicopter programme;
- MBDA with the PAAMS air defence system and the Meteor air intercept missile;
- the manufacturers of light armoured vehicles with the VBCI programme.

The costs and delays of co-operative programmes depend on the respect for and steadfastness of the commitment of the participating states. It is not unusual for a state to unilaterally announce its withdrawal from a project, or change its requirements. Examples here are:

- 0 the British withdrawal from the Trimilsatcom and Horizon projects in 1999;

- the Italian withdrawal from the A400M programme: Italy, whose companies are carrying out an increasing number of activities with American firms, favoured the alternative American proposal, the purchase of 20 C-130J Hercules, instead of ordering the planned 16 A400M;
- the decision of the British government to lease four Boeing C-17 for a period of seven years, in spite of its decision in favour of the A400M;
- the reduction in orders for the A400M and Meteor by Germany, linked to the decrease in its defence budget.

These cancellations and reductions in planned orders by the participating states hamper the industrial launch of these projects and cause an increase in the unit price of equipment.

The instability of the environment for European firms and the fragility of joint initiatives in the field of armaments cooperation leave US companies significant room for manoeuvre in Europe.

b. The US strategy of expansion in Europe

While the US market is difficult for foreign private industry to penetrate, since 1999-2000 US defence companies have adopted an offensive strategy to gain segments of the European market. This US deployment is battering at the idea of a "Fortress Europe".

- In the land armaments and naval sectors

The restructuring underway in the naval and land sectors, the financial difficulties encountered by many European companies as well as the acquiring of shareholdings, provide US firms with considerable opportunities to extend their activities in Europe.

To partnerships and cooperation [29] one must now add acquisitions and shareholdings. Thus, in September 1999, the diesel division of General Motors of Canada Ltd (DDGM), a subsidiary of the General Motors group, purchased the Swiss firm Mowag, a light armoured vehicle specialist. In June 2000, United Defense took over the Bofors Weapon Systems [30] division, sold by the Swedish group SAAB.

General Dynamics has shown itself to be particularly active. The US group has acquired a 25% interest in the capital of the Austrian company Steyr-Daimler-Puch Spezialfahrzeug AG. In Spain, as part of the process of privatisation of state-owned armaments activities under the supervision of the national company SEPI, the Spanish government agreed that General Dynamics could take control of the principal actor in land armaments in Spain, EN Santa Barbara, when the German Krauss Maffei Wegmann (KMW) and Rheinmetall had already made an offer. This purchase led to the signing of an agreement for the protection of technology between KMW and General Dynamics covering the production of the Leopard 2 under licence. With EN Santa Barbara having run up more than %920 million in losses since 1990, the new US owner agreed with the Spanish government to terminate the current programmes, carry out technology transfers, invest in the enterprise and have it fill orders from the United States.

29 In 1999, the creation of a joint venture, Euro Rocket System, specialising among other things in the area of multiple rocket launchers, between the German manufacturer Diehl and Lockheed Martin; a strengthening of Diehl/Raytheon cooperation in the guided missile field; in 2001, the signing of a memorandum of understanding on the creation of a joint enterprise in the field of large-calibre weapons and munitions between the German group Rheinmetall Detec and US Alliant Techsystems; the conclusion of a cooperation agreement for naval combat systems for the American export market between Northrop Grumman and the Dutch subsidiary of Thales; and the partnership in the area of surface ships (the AFCON consortium) between the Spanish IZAR, General Dynamics and Lockheed Martin.
30 Renamed Bofors Defence AB.

Apart from Spain, Germany has also become a preferred target. For the first time, a bankrupt German firm, EWK Eisenwerke, specialising in the construction of fixed, floating and amphibious bridges and pontoons, has become the object of General Dynamics' appetite for conquest. The company has been able to take a share in KMW in the framework of the restructuring of its capital, following Siemens' desire to sell its 49% holding. In the naval sector, the two principal US naval shipyards, General Dynamics Marine Systems and Northrop Grumman, have their eyes on the export possibilities of the two major German naval shipyards, Thyssen-Krupp Werften (TKW) and Howaldtswerke-Deutsche Werft (HDW), controlled since 2000 by the German group Babcock-Borsig. Aware of this US interest, the German Chancellor and the German naval armaments industry agreed, in a joint declaration dated 27 October 2000, on the importance of maintaining their position as leaders and their key competencies. The achievement of this objective should have led to the conclusion of a strategic alliance between the two naval shipyards of the country, which had effectively concluded a cooperation agreement. However, the bankruptcy of the Babcock-Borsig industrial group, in March 2002, put an end to their federation plans. Babcock-Borsig had to relinquish control of HDW to the US investment vehicle One Equity Partner (OEP), a subsidiary of Bank One, the sixth largest US bank.

The transaction caused a major political controversy, even though the German government demanded a certain number of guarantees. It required that 30% of the shares be held by two German companies, Thyssen Krupp Werften (15%) and Ferrostaal (15%), which have pre-emptive rights for the next ten years. For the rest of the capital, the accord states that OEP holds 50% plus one share of HDW, with 20% held by a US investor. Since then Northrop Grumman Ship Systems has made known its intention to get closer to HDW. While waiting for a transfer to it of some of the shares, it signed a cooperation agreement on 23 October 2002 with Kockums, the Swedish subsidiary of HDW, for the joint production of stealth combat vessels.

Main transatlantic mergers/acquisitions 1998-2001

	Buyer Company	Acquired Company	Seller Country
Transatlantic by USA			
2000	General Dynamics	Santa Barbara	Spain
2000	United Defense	Bofors Weapons Systems	Sweden
2001	Carlyle Group	Unit of BAE Systems	United Kingdon
2001	FLIR Systems	Unit of SAAB Tech Elecs	Sweden
2002	OEP	HDW	Germany
Transatlantic by Europe			
1998	GEC (UK)	Tracor	USA
2000	BAE Systems (UK)	Lockheed Martin Control Systems	USA
2000	BAE Systems (UK)	Sanders (Lockheed Martin)	USA
2001	THALES (FR)	Magellan Corp.	USA
2001	ASML (NET)	Silicon Valley Group	USA
2001	GKN (UK)	Unit of Boeing	USA

Source: SIPRI 2001, p.329

✍✍What Americans gain from acquisitions in Europe and the consequences for Europe

Market access, access to programmes, become part of national networks, get around protectionist barriers: By owning a domestic company, they are in a better position to become part of domestic or intra-European programmes to which they would otherwise have difficulty gaining access. They also get a clearer link to the local networks. However, industry representatives have stated that the transition to US ownership has in some cases made these companies less 'in-house' in domestic procurement. Domestic procurement officials are said to be worried about technology leaks to Europe

Access to technology: They can gain access to and interact with certain interesting technologies and create synergies between their own and the European counterpart's technology (as in the case of United Defence/Bofors).

Multilateral character: Teaming up with certain foreign companies can be seen as an advantage by some US decision-makers. At the same time, however, it can be viewed as a disadvantage by other interest groups. This is therefore a double-edged aspect.

Consequences for Europe: Firstly, European consolidation is no longer solely a European concern. This does not mean, however, that US companies cannot agree to be part of European consolidation. Secondly, after September 11 2001, the gap has become more apparent and quantitatively larger. US development is

travelling in a faster lane, at least when it comes to resources committed to defence. Thirdly, the different relations between the European countries and the US have changed, and there is at present substantial disagreement among European states regarding on the one hand the 'war' against terrorism and, on the other, a possible attack against Iraq. However, industrial incentives for cooperation are not based on political standpoints. Industry aims to achieve orders and concentrate its efforts where money is spent and where it stands a chance of participating.

In the recent years, increasing activity of US companies in Europe has a steady effect on the prospects of forging a European-wide industrial group (landscape). It primarily relates to establishing a European basis for procurement planning and centres of excellence. To achieve division of capacities among Member states will require that US regulations and interests operating in European defence industries are taken into consideration, when the need arises.

✍✍The different treatment of European enterprises in the US market

Transatlantic integration at the highest level cannot proceed further in the foreseeable future through mergers and acquisitions; the political obstacles are too great. It is also clear that such mergers and acquisitions would entail immense problems of integrating activities and traditions; this also makes such mergers less attractive. Prime companies integrate transatlantically through collaboration and production systems that are a compromise between political restrictions and general industrial incentives for achieving economies of scope and scale. Collaboration in most cases leads to production agreements, but true integration is limited.

In general, European companies have had very limited success in penetrating and establishing a clear presence in the US market. BAE Systems is the biggest exception, although its substantial US presence is still largely kept outside the management control of BAE managers in the UK by the use of proxy boards and Special Security Arrangements (SSA). Smiths is another British company which, over a long period of time, has created a strong US presence, in a fashion that resembles the Thales strategy of growth by acquisition in Europe.

Transatlantic consolidation (through ownership and programmes), as well as within Europe, mostly occurs within the aerospace and electronics sectors. The land armaments and especially the naval sector are still not as internationally connected.

BAE Systems: a substantial supplier in the US defence market

The British group benefits from the privileged relations between the British and American governments. BAE Systems is treated differently from its principal European competitors. Hence, in February 2000, a declaration in principle on an improvement in defence co-operation was signed by the two governments. Since then, the rules concerning the protection of advanced technologies and the procedures for granting export licences have been simplified.

By merging with GEC Marconi, BAE Systems has been snapping up properties in the United States, enabling it to get access to the US defence budget. Mainly sought after in its capacity as an equipment maker, the British-based group aspires to achieve the status of 'prime contractor' in the US. To this end, it seeks to grow through external acquisitions. By buying three important US firms, the company has made itself acceptable to the Pentagon. It has acquired Tracor and two other defence companies, Lockheed Martin Control Systems and Sanders, sold by Lockheed to reduce its debts. In 2002, its proposal to take over TRW failed. TRW, involved in highly strategic defence contracts - including the Ballistic Missile Defence project and surveillance satellites - was eventually bought by Northrop Grumman.

BAE Systems - sales destinations (Bn£)

	2001	2000
United States and Canada	4 248	3 166
Europe	2 737	2 914
Middle East	2 594	2 579
United Kingdom	2 275	2 135
Australia and Pacific	335	536
Others	949	855

Source: Annual Report BAE Systems 2001

Since then, BAE Systems has figured among the six principal suppliers to the Pentagon, which has become its leading customer, ahead of the

British MOD. In 2001, BAE achieved a turnover of 4.2 billion pounds in the US, against 5 billion in Europe. The aim of BAE Systems is to increase the US share from 30% to 50% of its defence turnover. All projects involving European alliances will be judged on the basis of whether they facilitate or at least do not impede alliances with the United States. While benefiting from its role in the Joint Strike Fighter (F-35) programme, BAE Systems has not (at least not yet) achieved recognition by the US DOD as a first-tier prime contractor.

On the basis of the model of relations established with the United Kingdom, the United States is considering the creation of a favourable regulatory framework with the Netherlands and Germany. Norway has already signed such a regulatory framework and Sweden is currently negotiating the final terms.

And the others...

Using a different strategy, Thales and EADS are attempting - more or less successfully - to penetrate the US market.

Despite conditions which hardly favour the acquisition of European equipment, the Thales group is attempting to double its transatlantic turnover within 5 years. Its defence branch, which has 3,000 employees in the United States and Canada, made 344 million dollars in sales in 2001. One of its subsidiaries, Thales Communications Inc, acquired through the purchase of Racal, won a large contract as part of a consortium led by Boeing for the provision of a new generation tactical radio system for the US Army, Air Force and Marine Corps. Thales is also the driving force behind a major structural alliance with Raytheon.

The two groups have created an equal joint venture in the field of command and control systems for military air operations. The creation of a new company, Thales Raytheon Systems, was announced at the end of 2000 and began operating in May 2001. It is presented by the two governments as an example of industrial cooperation between Europe and the United States. This government support was formalised in the form of a joint declaration by the US and French Ministers of Defence in January 2001, as well as by the creation of a governmental support group charged with establishing the rules to be applied concerning security of supply, commercial practices, export controls and technology transfer.

Thales – Defence Activities

€millions	2000	2001
Total Revenues	5 846	5 026
Consolidated Revenues	5 746	4 934
France	1 467	1 361
Rest of Europe	1 074	1 028
Middle East	1 068	1 050
United Kingdom	713	505
North America	323	169
Asia	947	695
Rest of the World	154	126

Source: Rapport annuel Thales 2001

Because of the size of the US market, Philippe Camus considers that EADS cannot stand aloof from it, since it would risk eventually losing its technological and economic positions. Up to now, EADS has signed some limited accords involving specific products with Northrop-Grumman, Lockheed Martin and Boeing, without going as far as major industrial cooperation [31]. The objective of EADS is to achieve 10% of its turnover in the United States. The EADS strategy is not to break into the US market by buying US companies, since issues of regulation, security and technology transfer would prevent it from extracting the required synergies. It prefers to bid for individual contracts on a case-by-case basis, often in tandem with a US partner.

First initiatives aimed at creating a favourable environment for European defence industries

The work of the POLARM group and the initiatives of the European Commission, beginning in 1997, were not the object of any real coordination and did not lead to any significant progress [32], due to a lack of consensus among the member states. Concrete

31 EADS is associated with Northrop Grumman for the radar equipment of the A400M and for an observation drone project, Eurohawk, derived from the American Global Hawk. Recently EADS, as a member of the Integrated Coast Guard Systems (ICGS) led by Lockheed Martin and Northrop Grumman, won the Deep Water contract for equipment for the American Coastguard, whose value is estimated at 11 billion dollars over 20 years and 17 billion over 30 years. EADS' share in this programme is of the order of 10% of the total cost.

32 Proposition de résolution sur les industries de défense, proposed by Elmar Brok in the name of the Committee for foreign affairs, human rights, common security and defence policy of the European Parliament, 12 December 2001, 3 pages.

proposals were formulated on rules for the control of dual use exports and harmonisation in the area of technical standards.

Given the failure of an EU-15 institutional strategy in the armaments field, the principal states with a defence industry decided on the creation in 1998 of ad hoc bodies in order to structure demand and harmonise national regulations, with the goal of supporting and deepening European restructuring.

a. Creation of ad hoc structures by the principal armaments producing countries (Germany, United Kingdom, France, Italy, Spain and Sweden)

✍✍OCCAR: rationalising the joint management of armaments programmes

In 1993, France and Germany agreed on the importance of initiating a dialogue to determine objectives and common operating principles, with the ultimate aim of creating a common armaments structure. Three years later, the United Kingdom and Italy joined the initiative. This effort at dialogue finally resulted, on 9 September 1998, in Germany, France, Italy and the United Kingdom signing a convention on the creation of the Joint Armaments Co-operation Organisation (OCCAR).

The founding states decided that coordination and management of allocated armaments programmes will be jointly conducted by the executive body of the organisation. In addition, they decided to initiate joint activities in view of launching future programmes. In January 2001, OCCAR acquired legal status and was able to accept multi-annual commitments on behalf of states and to conclude contracts with companies in their names.

The operating principles of OCCAR are aimed at reducing costs and avoiding duplication of industrial investment. Hence, the new organisation favours the formation of integrated international programme teams. In some cases, decisions are taken by reinforced qualified majority. In contrast with previous cooperative efforts, the international agency practises systematic competition in all European countries and the spreading of industrial fair return over several programmes and several years. The organisation is open to other European states provided they accept the rules and operating principles. The creation of OCCAR signalled the first concrete initiative aimed at structuring demand and making cooperative programmes more efficient and cost-effective.

OCCAR Programmes

Programme	Country
Roland Missile	Ger, Fr
Tiger Helicopter	Ger, Fr
Counter Battery Radar COBRA	Ger, Fr, UK
FSAF - surface-to-air anti-missile system family	Fr, It
BOXER - family of armoured utility vehicles	Ger, UK, N
A400M - tactical and strategic airlifter	Ger, Bel, Sp, Fr, Lux, UK, Port, Tur

Source: OCCAR

✍✍The LoI: to facilitate the functioning of international enterprises and industrial restructuring

In parallel, and stemming directly from ideas discussed in the WEAG, the defence ministers of four OCCAR founding members, as well as of Spain and Sweden, decided to harmonise conditions for the application of national regulations, in order to reduce obstacles to the smooth functioning of the international defence groups formed in the latest round of European industrial consolidation.

This was the object of the signing at Farnborough on 6 July 1998 of a Letter of Intent (LoI), followed on 27 July 2000 by a legally binding framework agreement with the status of an international treaty. The LoI provides a common political and legal framework for establishing a favourable environment for building a more competitive defence industry and an integrated European market. Six domains are involved:

1. Security of supply
2. Transfers and export procedures
3. Security of classified information
4. Defence R&T
5. Handling of technical information
6. Harmonisation of military requirements

The participating states acknowledged that industrial restructuring leads to the creation of "Trans-national Defence Companies" (TDC) and therefore to the acceptance of reciprocal dependence. According to the agreement, although the TDCs are free to use their commercial judgement to share industrial capabilities as a function of economic logic, the states can express their desire to safeguard certain activities, essential strategic assets and installations on national territory for reasons of national security. This accord did not give rise to the creation of a new organisation, merely an executive committee charged with supervising the conversion of these proposals into actual implementation. The LoI is thus more a structure of thought in the industrial field rather than a common structure for managing programmes, such as OCCAR.

✍✍A progressive opening of national armaments markets

The creation of international companies, mergers of national markets

The object of restructuring and concentration at European level, apart from avoiding duplication, pooling R&D resources, increasing the range of products and reaching an adequate critical size, is also to gain greater access to the markets. As emphasised by Sandra Mezzadri, "by becoming international, firms merge their domestic markets by themselves and thus create a new international market" [33]. So, the large European groups take shares in or buy up the defence industries of the small European armaments-producing countries. For these countries, such operations are seen as a means of gaining access to the most advanced military technology and a source of essential finance for the maintenance of their defence industrial base (SIPRI) (Stockholm International Peace Research Institute). This is the strategy adopted by Greece, Finland, Norway and Portugal.

States, industries and access to domestic markets

In the context of privatisations, the disengagement of the state in the last few years in no way means that states remain passive. In several countries, the state limits foreign participation in the capital structure. More generally, purchasing policy becomes one of the principal levers of action of the state.

In contrast with the situation in Germany, the British state holds a "golden share" in the most strategic companies. This enables it to limit the participation of foreign capital, use a veto in the case of modification of certain articles of the company's constitution, verify that the board directors are of British nationality and participate, albeit without a vote, in board meetings. The ceiling for foreign investors was progressively relaxed in Rolls Royce and BAE Systems, from 29.5% to 49.5%, before being finally eliminated in October 2002. The British government retains its golden share and maintains a ceiling of 15% for an individual investor, with the aim of avoiding a foreign take-over. For the British Ministry of Defence (MOD), the removal of the admissible limit on foreign shareholdings aims to make the British firms concerned more attractive and leave them free to enter into future international alliances, while still preserving British national security interests.

In France, the maintenance of a national industry has always constituted a pillar of defence policy. While accepting operations to open up public firms to private industrial shareholders, the French state remains a principal player in the armament industry. It still holds 33.4% of Thales, 15% of EADS, 97% of SNECMA, 99% of SNPE [34], 100% of GIAT Industries and 100% of DCN. In the case of the two large aeronautical and defence electronics

33 Mezzadri Sandra, "L'Ouverture des marchés de la défense: enjeux et modalités", Publications Occasionnelles, Institut d'études de Sécurité de l'UEO, février 2000, p.33.

34 Specialising in energetic materials and chemicals.

groups (EADS and Thales), special shares give it a right of veto in the case of assets that are considered strategic for national defence.

In Italy, the state holds 30% of the capital of Finmeccanica. It retains a golden share and authorisation must be given by the finance minister if a shareholder other than the state plans to hold more than 3% of the capital.

For the main armaments-producing states, the maintenance of their domestic industrial base, and thus their national source of supply, is frequently the argument presented to justify a limited opening to international competition in the context of major requests for bids. For the European states, small- or non-producers of armaments, the problem is not so great. Requests for bids are de facto open to foreign producers.

The reduction in the number of systems producers at the European level, in some cases with only a single prime contractor on national territory (BAE Systems in the United Kingdom, for example) has led to a progressive development in relations between the client-state and its suppliers. This is expressed by a shift of responsibility to companies which must commit themselves on delays and costs. We are gradually seeing a reorientation of national procurement strategies towards a wider opening to international competition. In putting this strategy into practice, significant disparities exist between the main armaments-producing states. The United Kingdom, in the context of its policy of 'best value for money', has since 1998 decided to have recourse to systematic competition at the international level for its national equipment programmes, outside areas deemed particularly sensitive [35] (terrorism, nuclear, defence against radiological and bacteriological attacks).

As a result of the acquisition of Racal, Thales doubled its share of the United Kingdom defence market in 2001 from 789 million euros to 1.8 million euros. Thales is competing for numerous British programmes including the AVES (Armoured Vehicle Effects System), the FSTA (Future Strategic Tanker) GBAD (Ground Based Air Defence) the Minder Mine Neutralisation System, the Soothsayer Electronic Warfare System, and the Watchkeeper UAV programme. However the award to BAE Systems of the largest naval contract in British history, involving the construction of the two future aircraft carriers for the Royal Navy, is indicative of the obstacles and constraints encountered by the MOD in the application of its new procurement policy. BAE Systems was able to play on the perception among public opinion of the foreign nationality of its rival Thales, French as it happens. To counter this tactic, the Minister of Defence, Geoff Hoon, went so far as to question the British nationality of BAE Systems, since more than 50% of its capital is in foreign hands. Under pressure from the unions and the press, the government finally decided on 30 January 2003 to award the major prime contractor role to BAE Systems, while associating Thales by entrusting it with the general architecture of the project.

While a major part of the contracts involving armaments programmes in France were notified without competitive bidding, in the last three years the Ministry of Defence has applied the principle of selecting a prime contractor after a competitive bidding phase.

The systematisation of international competitive bidding is a first step towards a progressive opening up of the principal armaments contracts in Europe. The six states which signed the LoI represent 90% of armaments production in Europe. However, the non-member states of OCCAR and the LoI constitute 45% of the European defence equipment market. The absence of the involvement of nine member states of the Union is increasingly becoming a problem in the context of the industrial consolidation carried out since the end of the 1990s. These states have niches of excellence and are turning increasingly towards American suppliers for reasons of cost. A Europe enlarged to 25 in 2004 also represents a further challenge.

35 Ministry of Defence Policy Papers, Defence Industrial Policy, Paper No.5, Ministry of Defence UK, October 2002, 22 pages.

In 1999, the European Councils of Cologne and Helsinki relaunched the idea of an EU-15 armaments policy in a strictly inter-governmental context (Second Pillar). Since then, the states have appeared relatively keen to launch joint initiatives in this area, such as the capability dialogue. The existence of a competitive industrial and technological base in Europe has become a major issue, particularly in the context of building a common European security and defence policy (CESDP).

b. First steps towards an institutional strategy for the EU in the field of armaments

✍✍The capability dialogue

At the European Council of Cologne on 3-4 June 1999, the fifteen EU member states declared their wish to see a common European Security and Defence Policy (CESDP) made a reality. Aware of the imbalance with the United States in the equipment field, the states committed themselves to make "sustained efforts to reinforce the defence industrial and technological base" and to "further improve the harmonisation of military requirements as well as the programming and procurement of armaments, in such ways as the member states deem appropriate".

On 10-11 December 1999, at the time of the European Council of Helsinki, the member states committed themselves to acquiring military capabilities enabling the deployment, by 2003, of a force of 50,000 to 60,000 men within 60 days, and their support for one year. New political and military structures placed under the authority of the Council were to provide the political guidance and strategic direction for these operations. These are the Political and Security Committee, the Military Committee and the EU Military Staff.

Work on identifying the military capabilities necessary for the achievement of the objective set at Helsinki, plus a census of existing forces and resources, revealed major gaps in Europe in about fifty areas, including strategic fields such as:

✍✍space and aerial intelligence (UAVs) (Unmanned Aerial Vehicles),
✍✍strategic air transport,
✍✍in-flight refuelling,
✍✍anti-missile defence.

In order to remedy these shortcomings, the fifteen National Armaments Directors (NAD) and defence planning officials met for the first time on 7 November 2001 and proposed a methodology aimed at filling the gaps. This methodology forms the backbone of the "European Capability Action Plan" (ECAP), accepted by the ministries of defence of the '15' on 19 November 2001. For each gap identified, a 'capability group' made up of experts and run by one or more member states is charged with proposing solutions. This work is done on the basis of voluntary contributions by states and respect for national decisions.

The success in Europe of the American F-35 (JSF) combat aircraft illustrates the urgency of this capability dialogue being transformed into concrete action.

✍✍ETAP/SCAFE vs US F-35

Indeed, the launch of the American F-35 combat aircraft programme constitutes a real challenge for European industry, given that the United Kingdom, the Netherlands, Denmark, Norway and Italy have agreed to participate to varying degrees in the development of this programme for a single-engine stealth aircraft, a major future competitor to the French Rafale combat aircraft from Dassault Aviation, the European Typhoon Eurofighter from BAE Systems, EADS and Alenia Aerospazio, and the Gripen from SAAB and BAE Systems. These participating states clearly appear to be potential buyers of the aircraft. More than 4 billion dollars from European states will be used to finance the F-35, or about 18% of the total development cost.

European partners in the development of the American F-35

Country	Level	Finance	MoU
United Kingdom	1	$2bn	January 2001
Italy	2	$1bn	24 June 2002
Netherlands	2	$800m	10 June 2002
Turkey	3	$175m	11 July 2002
Denmark	3	$125m	28 May 2002
Norway	3	$125m	20 June 2002

Meanwhile, in November 2001, the defence ministers of the six LoI countries agreed on the importance of working together in certain key areas. In this spirit, they decided to launch a first 'European Technology and Acquisition Programme (ETAP)' in order to jointly develop - with the support of European companies - the future air combat system (SCAFE). In their declaration, the six governments agreed to schedule the necessary industrial and state finance. But how can the future of this R&T programme, which is intended to lay the foundations for future European air combat systems, realistically be envisaged, after the United Kingdom and Italy have joined the JSF programme?

✍✍The involvement of the European Commission

Despite a lack of concrete action in response to the action plan proposed by the European Commission in 1997, the Commission continues to contribute to the debate on the competitiveness of European defence industries.

STAR 21

To this end, European Commission officials and representatives of the major industries formed a high-level working group on the future of the aeronautical sector. On 16 July 2002, with the presentation of their report, STAR 21 (Strategic Aerospace Review for 21st century), to Commission President Romano Prodi, the group made five recommendations aimed at helping the aerospace industry maintain its competitiveness:

1. Opening of markets with a single set of competition rules and a relaxation of the "Buy American Act";
2. Development of a coordinated research policy in order to secure _ 100bn of R&D finance over 20 years;
3. Creation of a 'single sky', with the EU as the decision-making and control authority in all areas of civil aviation;
4. Harmonisation of operational requirements, equipment and defence budgets, reduction of capability deficits;
5. Development of a coherent space policy along with the necessary funding, based on the Galileo and GMES projects (Global Monitoring for Environment and Security).

The European Commission is directly involved in programmes with implications in the armaments field. Space policy provides a good example. The Commission plays a dynamic role both in the formulation of European space policy and in its implementation with projects such as Galileo.

Societas Europaea

Finally, the formal adoption by the Council of Ministers of the European Union, on 8 October 2001, of the regulation aimed at establishing a 'European company' statute (proposed by the Commission in 1970) should enable firms working in defence - and operating in several member states - to develop in a more homogeneous legal environment. This regulation gives them the possibility of being incorporated as companies under European law ("Societas Europaea") and thus to evolve as a single operator throughout the Union and subject to a single set of rules.

ALL-UNION INITIATIVES, ENHANCED COOPERATION AND CONVERGENCE OBJECTIVES

GENERAL OBJECTIVES

The general objective of this part of the study is to examine the manner in which the European Union's Security and Defence Policy (ESDP) can contribute to the competence and competitivity of a healthy European defence industrial base (EDIB), holding its own in terms of cooperability as well competitivity with its non European counterparts.

Before examining these measures, the underlined words are defined below:

- ESDP covers (1) the full range of policies officially designated as "Common European Security and Defence Policy" (CESDP) in the European Council decisions of 1999 (Helsinki), (2) all subsequent defence-related initiatives and policies undertaken in the framework of EU executive institutions (Council, Commission), (3) future defence-related initiatives and policies which may be undertaken by the EU executive institutions in the aftermath of the Convention;

- Competence is the technical and industrial ability to design, develop, produce and market state-of-the-art defence industrial goods and services, of a standard similar to current best practice;

- Competitivity is the ability to produce defence goods and services at costs similar to those of current best practice, and to put them on the market at a price comparable to that of other sellers, independently of political or regulatory asymmetries;

- Cooperability is the characteristic of a system (industrial and military in the present case) which enables it to operate technically, procedurally and organisationally in an efficient manner with partners equipped with similar or different systems. Cooperability covers related categories such as interoperability and intraoperability. Cooperability is a quality which will apply to producers of systems (the defence industry) as well as to the users of such systems (the armed forces).

In order to fulfil the objectives defined above in the framework of ESDP, three categories of initiatives will be examined below:

- all-Union initiatives, i.e. institutions and policies which assume the involvement of the EU as a whole;

- enhanced cooperation, or the functional equivalent thereof ("flexibility", to use the vocabulary of the Barnier report to the Convention). Enhanced cooperation will be considered here to be open-ended, i.e. not excluding in principle any members of the EU. Similarly, as in the case of the Euro or Schengen, enhanced cooperation will be considered as committing the EU as a whole, even those countries which are not initially part of all aspects of such cooperation. Although the EU's Nice Treaty specifically excludes enhanced cooperation in the field of defence, it is not clear that the Constitutional Treaty will confirm such a blanket rejection. Furthermore, the Nice Treaty has not yet entered into force;

- convergence objectives, in the area of defence spending, which can either be all-Union, or function as enhanced cooperation or as the ad hoc initiative of a number of EU members.

ALL-UNION INITIATIVES

The Barnier report indicates that a consensus has emerged among the members of the Working Group of the Convention on Defence in favour of the establishment of a European 'Armaments Agency', otherwise referred to as a 'Capabilities Agency' or 'European Armaments and Strategic Research Agency'. Therefore, it is possible that a similar consensus may be reflected in the draft Constitutional Treaty currently being prepared.

However, it will be argued here that there are limits to what such an agency may achieve in the defence industrial area: (1) it is unlikely that it could function as a fully-fledged Procurement Executive on an all-Union basis; (2) it is

possible to establish a defence research programme or agency on an all-Union basis, and some elements of the LoI (Letter Of Intent) process or of OCCAR can be extended to the Union as a whole. This possibility is mentioned in the report.

Obstacles to the establishment of a European Armaments Agency (EAA) as a Procurement Executive for the entire range of defence requirements of the EU as a whole

The concept of an EAA is not novel, indeed such a proposal was annexed to the European Union's Maastricht Treaty in the form of a separate declaration by the ten member states of the Western European Union. However, the establishment of such a body is unlikely both in view of the empirical evidence and the actual principles involved.

At the empirical level, no European state has accepted the devolution of procurement functions to an international body except in the case of cooperative programmes. In the case of such cooperative programmes, organisations with more or less extensive contracting powers have been set up, whether in NATO (e.g. the NATO Management Agencies) or in ad hoc structures. OCCAR comes closest to having fully-fledged supranational contracting responsibility – which is however currently limited to multinational programmes. But in the case of national programmes, there has been no such transfer to non-national bodies, even among a limited number of countries enjoying a long tradition of armaments cooperation, for instance France and Germany.

In terms of principles, a European Procurement Executive would entail the transfer of the bidding process from individual member states to the EU level. This could come about through two basic mechanisms:

- in the first case, the OCCAR Treaty could be extended to the Union level, along with the necessary modifications (notably the decision that all procurement, not simply cooperative programmes) would be included. This would in effect imply the setting up of a stand-alone agency, that would be independent of the Commission and ultimately answerable to the member state as such (for instance, via the Council). This massive devolution of sovereignty from the states to the Union would not simply represent a giant political leap; it would also challenge the interests of numerous EU countries in terms of industrial juste retour. One of the main reasons why the OCCAR Treaty has not yet been observed by a significant number of countries is precisely because of its radical departure from industrial juste retour; the latter having been replaced by financial juste retour, on a multi-programme and pluri-annual basis. This observation also applies to the option analysed below.

- in the second option, the Commission could become the body ultimately responsible for armaments procurement, with the EAA as an integral part of the Commission. Article 296 of the Treaty on European Union would be abolished and competitive bidding in defence organised along the lines applicable to all other forms of public bidding in the EU. This would mean attainment of the goals pursued from time to time by the Commission during the nineties, most notably under the impetus of Martin Bangemann. The federalisation of armaments acquisitions would be complete. In practical terms, formulae could be devised so that arms procurement would not be subject to World Trade Organization (WTO) rules, with the EU in effect adopting a procurement process similar to that of the United States and Defence having its own non-WTO Federal Acquisition Rules. The political likelihood of anything like this actually happening is probably close to zero.

Prospects for all-Union initiatives short of fully-fledged procurement functions

In examining alternatives short of a fully-fledged procurement agency, this study adopts a functional approach, focussing on (a) research and development, (b) improving the industry-government procurement interface; (c) programme management.

Institutional alternatives for each of these functions are examined while bearing in mind

proposals currently under consideration by various governments – such as the French-British proposal for an intergovernmental agency for the development and acquisition of defence capabilities (see the Le Touquet Declaration of 4 February 2003), or the EPASERETE (European Union Cooperation Programme for Advanced Security Research and Technology) proposal put forward by Greece.

a. Research and development

European defence R&D is plagued both by the limited expenditure involved -at close to % 10 bn, the defence R&D of the EU member states represents less than one-fifth of the $ 58 bn US effort (in FY 2003)– as well as by the overlapping and duplication resulting from its essentially national character. What applies to R&D generally also characterises R&T: the EU members spend close to five times less (some % 2 bn) than the US ($ 10 bn). Therefore, initiatives to raise the level and efficiency of European spending in this field are necessary. In contrast with the situation prevailing in the area of weapons production, R&D – and even more so R&T – does not involve major industrial juste retour issues, and the related impediments to the establishment of a fully-fledged armaments agency do not necessarily apply in the field of R&D. In putting forward proposals in this field, we are able to take into account the experience of recent decades, which can be summarised in one sentence: purely intergovernmental approaches to military R&D cooperation or pooling simply do not deliver the goods, either quantitatively or qualitatively. Notwithstanding otherwise excellent work by WEAG and WEAO, the fact is that EUCLID - Europe's premier R&T cooperation programme - involves a mere % 70 M annually (approximately 3 % of the 19 WEAG countries total R&T spending), thirteen years after the EUCLID MOU was signed.

EUCLID's innovative bidding mechanism known as EUROFINDER has elicited a good response since its creation in 1996, but the annual total of EUROFINDER proposals has not allowed EUCLID to breach the symbolic % 100 M a year threshold. Nor has EUCLID served to bring about any change in trends in terms of national budget expenditures devoted to R&T.

If European military R&T spending is to be achieved, a substantially higher level of efficiency, more than 3 % of R&T funding will need to be covered by an EU R&T initiative. And if new R&T (or R&D) spending is not readily forthcoming from national budgets, Community funding could be sought as in the case of civil or dual technology R&D. At the same time, given the ties between R&D and national acquisition processes which remain essentially national, or intergovernmental, a purely Community (Commission-based) approach to European military R&T is hardly imaginable. R&T lends itself more readily than R&D, broadly defined, to Europeanization: R&T is less directly linked to specific national weapons programmes; at the same time, it is often less directly military and more dual in nature, thus reducing its exposure to objections concerning the use of Community civil R&D spending on military projects.

Given these considerations and constraints, what is suggested here is the establishment of a European Defence Research Agency (EDRA).

PROPOSAL: EUROPEAN DEFENCE RESEARCH AGENCY (EDRA)

✍✍*Objective:*

To increase the level and efficiency of military R&T spending by the EU countries.

✍✍*Governance:*

The members and stakeholders of EDRA would be:

✍✍*the European Commission (50 %)*

✍✍*The member-states would be represented by a European Conference of National Armaments* Directors (EU-CNAD), which is discussed in a subsequent section.

The management of EDRA could be under the joint supervision of these two categories of stakeholders. In this respect, EDRA would closely emulate the joint undertaking between the Commission and the European Space Agency in the framework of dual technology

*projects such as the Galileo and GMES *. Indeed, the Commission could use the same assets for EDRA as it does for its joint space activities with ESA, not least because of the elements of commonality between space research and dual/military R&T.*

EDRA would thus be both Community and intergovernmental in nature, reflecting the Convention's work in abolishing the Maastricht legacy of separate institutional 'pillars'.

✍✍*Funding:*

EDRA would be equally and jointly funded by governments and the Commission, with Community funds matching national contributions. Thus, if all national R&T spending (some % 2 bn a year) were pooled into EDRA, Community funds of %2 bn would be earmarked for EDRA. An annual total amount of %4 bn would double Europe's R&T spending, lifting it to 40% of the corresponding US outlay, a percentage which should give the EU some hope of te chnologically competence vis-à-vis defence developments in the US.

Such a level of effort is worth comparing to the current (civil) Framework Programme for Research and Development (FPRD) undertaken by the Commission, with a total %17.5 bn from 2002 to 2006, i.e. close to %4 bn a year.

No doubt, not all national R&T would be earmarked for EDRA. The incentive to do so would however be high, since each national euro would be matched by an EU euro. In order to reduce the distortions between states with comparatively high levels of R&T spending (the six LoI countries represent substantially more than 90 % of the EU total), a 'super-matching' (of % 2 from the Union for every % 1 from governments) could be envisaged for those states with currently low R&T spending who would be prepared to increase their national effort.

The matching approach suggested here is akin to that planned for the development phase of the Galileo programme, with %1.1 bn being equally split between the intergovernmental ESA (European Space Agency) and the EU. The example is particularly relevant to EDRA given the dual nature of Galileo. EDRA could include cooperative R&T ventures, such as the 6-nation ETAP (European Technology Acquisition Programme on future air combat systems).

⁇ *Global Monitoring for Environment and Security.*

b. Improving the industry government interface

This function covers more or less the same ground as the LoI process and particularly the Farnborough Framework Agreement of 27 July 2000. Although it is unlikely that all the LoI objectives can be adopted on an all-Union basis, clearly some can.

This possibility of extending LoI to the other EU countries was incorporated ab initio in the process by the six member states.

Although LoI is at present exclusively intergovernmental in nature, some of its measures could be administered in conjunction with the Commission.
The function would be excluded from any all-Union initiative on export procedures. In the absence of a broad-based, viable and consistent common foreign and security policy, it is highly unlikely that all EU member states could agree on export policies and procedures, as well as on the totally free movement of all defence goods between member states.

Conversely, it is at least feasible to consider extending the following on an all-EU basis:

- ✍✍security of supply,
- ✍✍information security,
- ✍✍processing of technical information, including respect for Intellectual Property Rights (IPR).

PROPOSAL:

The EU presidency could propose setting up a working group to study the possibility of transferring the relevant LoI areas into EU rules and regulations, as well as the legal modalities of such incorporation, involving security of supply, information security, handling of technical information including IPR.

R&T is another area covered by the LoI, which is the object of a specific proposal in this study (see previous section).

Finally, the harmonisation of operational requirements is another area in which the LoI process could be integrated in the EU body of institutions and policies. This could be achieved as follows.

PROPOSAL: EU - CNAD

The EU equivalent of NATO's Conference of National Armaments Directors (CNAD) could be established. Answerable to the EU Council of Defence Ministers (the creation of this EU-CNAD is suggested in the Barnier report). This would cover the full spectrum of CNAD-like activities (including the programme management aspects and the harmonisation of requirements).

Such an approach would also be consistent with the suggestions made concerning the governance of a European Defence Research Agency and European management agencies.

c. Programme management

Cooperative armament programmes could be given an all-EU management label even when they directly involve, by choice or because of their nature, only a limited number of EU members. Such labelling, mentioned in the Barnier report with respect to OCCAR and LoI, would not only cover programmes coming under OCCAR. The model here would be that of NATO and its management agencies over the decades with programmes as different as the Hawk SAM, the Atlantic MPA, the Tornado MRCA, etc. However, there would be a real risk here of useless political and bureaucratic duplication between NATO and the EU. A rough rule of thumb would be for all programmes exclusively conducted by EU members to come under the EU, via EU-CNAD, while placing transatlantic programmes under NATO, via CNAD.

Here, the logic, as in NATO, could be exclusively intergovernmental, not least because specific programmes would be run entirely and directly between the defence ministries.

Unlike enhanced cooperation, which is a priori long term and open to all, these initiatives would be limited in time and number. It is the political and bureaucratic cover which would be EU.

Such a scheme would encounter a number of limitations:

- non-NATO countries may have some difficulty with an EU endorsement of strictly military ventures not designated as collective EU ventures (such as the Rapid Reaction Force);
- EU programme specific management agencies would operate under the same constraints as those nested within NATO (i.e. with traditional approaches to juste retour). This would run counter to the approach of the OCCAR countries concerning their cooperative programmes.

PROPOSAL:

EU-labelled programme management agencies could be set up for specific cooperative armaments programmes, along similar lines to NATO practice. Programmes of particular relevance to the 'force catalogue' of the European Rapid Reaction Force would be prime candidates for such an approach, under the overall supervision of the EU Council of Defence Ministers and EU-CNAD. This would occur without prejudice to the labelling programmes run by OCCAR, whether or not this becomes an instance of enhanced cooperation.

ENHANCED COOPERATION

Two categories of enhanced cooperation will be considered: those directly related to the European Defence Industrial Base (EDIB) and those that may be undertaken in the framework of the ESDP's military initiatives, but which would have a material impact on the EDIB. Naturally, this section presupposes that the Constitutional Treaty does not expressly prohibit the adoption of open enhanced cooperation or of instruments of flexibility with similar characteristics.

EDIB related enhanced cooperation

The suggestions made here will encompass both generic programme management and specific spending programmes.

a. Programme management

PROPOSAL: EU-OCCAR

OCCAR and its treaty would be incorporated in the EU, with this EU-OCCAR coming under the general supervision of the EU Council of Defence Ministers to be established. Representatives of the OCCAR states would be directly in charge along the lines of the Euro Council in the monetary area. For the reasons explained above, the machinery would be entirely intergovernmental. The countries directly involved would not be precluded from transferring national procurement programmes – and not just cooperative ventures – to the EU-OCCAR.

b. The creation of NATO-style defence infrastructure programmes

NATO has long had infrastructure programmes, funded by the member states in areas such as air defence, in which pooling of hardware assets is essential for the performance of the missions involved. Thus, during the seventies and the eighties, France – although not an integrated member of NATO – has contributed to the funding of NADGE (NATO Air Defence Ground Environment) and ACCS (Air Command and Control System (NATO system concept)). Similar infrastructure projects could be undertaken by ESDP countries in sectors not covered by NATO and where joint funding could yield substantial improvements in mission and cost performance.

PROPOSAL: AN EU APPOROACH TO THE RATIONALISATION OF TEST FACILITIES

One area directly relevant to Europe's defence industrial base would be an infrastructure programme aimed at modernising, rationalising and consolidating publicly-owned test facilities and proving grounds. A study group should be set up under the aegis of the EU Defence Ministers in order to assess possibilities in this field.

ESDP related enhanced cooperation with EDIB consequences

The proposals here derive either from measures which have been put forward (but not decided upon) in the framework of ESDP, or from homeland security related suggestions building on the Convention's discussions concerning an EU solidarity clause, as well as on the references made to weapons of mass destruction at the Laeken (December 2001) and Seville (June 2002) European Councils. Conversely, we have not retained the initially envisaged suggestion to establish an integrated logistics management agency for the European Rapid Reaction Force (ERRF). The non-standing nature of ERRF (the acronym is used for convenience; it does not officially exist since there is no such permanent force or force structure) precludes the establishment of a logistics agency. There is no indication that the nature of the ERRF is likely to change.

a. Strategic lift

PROPOSAL: INTEGRATED MANAGEMENT OF THE REPAIR AND OVERHAUL ACTIVITIES OF A EUROPEAN STRATEGIC MOBILITY COMMAND (EUROPEAN AIR TRANSPORT MANAGEMENT AGENCY)

The creation of a European strategic mobility command was raised at the December 1999 Helsinki European Council and mentioned in the conclusions of the Finnish Presidency, but no firm decision was taken. As the A-400M programme moves toward completion with the seven countries involved, the political conditions for re-launching this proposal may have eased. The implementation of several aspects of a strategic mobility command could require DIB related enhanced cooperation, although this would presumably not apply to the acquisition of the corresponding air and maritime transport assets (their procurement would by reasonable assumption continue to be the responsibility of national procurement executives and OCCAR). However, acquisition costs represent only a fraction of life cycle costs (as a rule of thumb, the operating costs of transport aircraft represent about 10 % of the acquisition cost – with thirty-plus year lifetimes being typical). Thus, significant budget savings and industrial

(as well as operational) benefits would accrue from the integrated management of repair, maintenance and overhaul.
In view of existing NATO competencies (relating in particular to the C-130 Hercules transport aircraft of a number of member states) a European Air Transport Management agency would apply a priori to aircraft not already part of the NATO management system.

The activities of such an agency would have significant industrial and employment benefits for the country or countries in which the key facilities are hosted: repair, maintenance and overhaul are a labour-intensive segment of the aerospace industry.

A similar, albeit more tentative approach can be made vis-à-vis the maritime component of a strategic mobility command. According to a recent Finnish study*, the sealift for an ERRF (European Rapid Reaction Force) sized force would require up to six government-controlled Roll-On Roll-Off cargo ships, complementing the use of chartered civil sector sealift. Although comparatively modest in relation to the management of air transport, the repair, overhaul and spares activity of such dedicated maritime assets could also be handled by a specific agency.

For both air and sealift, enhanced cooperation would no doubt be the rule, simply because not all countries possess air or sea transport assets. Given the national nature of the assets, all funding would be intergovernmental (no Community funding), using either a system similar to that of NATO's infrastructure tranches to determine the percentage paid by each participating country, or a system linking spending to the strategic lift assets each country contributes to the strategic mobility command.

If proven politically sustainable, operationally useful and economically fruitful, the management agency approach for a strategic mobility command could be extended to prospective ESDP advances towards other integrated command functions (e.g. in the C4ISR (Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance) area for instance). But strategic mobility, because of its comparatively low political sensitivity (given its limited exposure to military risk) on the one hand, and its high operational importance and major economic implications on the other, is the natural place to begin in a manner which is both realistic and substantial.

b. Homeland defence

Although ESDP does not currently encompass homeland security and defence, there are likely to be developments in light of statements by the European Council* and debate within the Convention on a terrorism solidarity clause. Before examining the DIB aspects of homeland defence, it may be worth outlining what the scope of EU involvement in homeland defence could be.

The EU could provide a collective military contribution, in the face of a threat of mass destruction through a terrorist attack, in the event that the domestic forces are considered to be insufficient by the country (countries) threatened:

- to protect facilities which intelligence sources have determined may be targets of an impending terrorist attack,
- to limit the consequences of a terrorist attack which has either already taken place or is in progress (such as an ongoing biological attack).

The likelihood of the need for the commitment of collective forces would be high in the case of the use of weapons of mass destruction or the

** « Strategic Sea Lift Capacity in the Common European Security and Defence Policy », John von Weissenberg, National Defence College, Helsinki, 2002 (series 1, n°20) (in particular pages 70-71).*
?See in particular the Seville European Council, June 2002 : « Priority action for the European Union, including in the field of CFSP and ESDP should focus on [...] developing common evaluation of the terrorist threat [...] including the threat posed by terrorist use of weapons of mass destruction ».

threat of their use. Protective military missions could require the use of light infantry, SOF and (extended) air defences to assist national governments with:

- air defence against aircraft and unmanned air vehicles,
- military assistance to civil authorities (maintenance of law and order),
- surveillance, intelligence, observation.

Consequence management could involve:

- support for maintaining law and order (as in the French government's anti-terrorism plan 'Vigipirate Renforcé'),
- the control of external borders and points of entry (airports, ports…),
- in the event of a biological attack, the effective quarantining of areas in which 'ring vaccination' will be conducted to treat the affected population without further risk of an epidemic spreading.

Such measures would go beyond the use of the military in current counter-terrorism operations (e.g. the role of the French military in 'Vigipirate Renforcé' or of the British Army in counter-IRA operations).

The scale of such mobilisation would be contingent upon the virulence of an attack and could well involve a substantial portion of armed forces. General purpose forces would be involved no less than specialist forces.

Collective EU police, civil defence and military (ERRF) assets could be dispatched especially to those areas in which national capabilities are insufficient, i.e. notably in some of the smaller states but more generally the most exposed areas in terms of points of entry and transit routes. In this respect, it may be useful – in addition to the standing ERRF capabilities – to develop reserve forces, in effect an EU-style 'National Guard' or Territorial Army.

The DIB implications would be limited to the extent that the manpower and materiel used would be essentially that which is already in place or in the process of acquisition in existing European military and paramilitary forces.

However, a number of tools would be homeland defence specific. Notably:

- specialised detection and identification equipment,
- protective gear,
- decontamination equipment.

With the emergence of mass destruction terrorism, the requirements in these areas take on an entirely new dimension. There is a rapidly growing need for efficient mobile detection and identification equipment for use in case of a chemical, radiological, biological or nuclear (CRBN (Chemical, Radiological, Biological, Nuclear)) attack as well as for pre-positioned monitoring installations in locations considered to be vulnerable to such attacks. This has an impact on R&T / R&D as well as in terms of production. The same also applies to protective and consequence management material. Indeed, R&T for homeland defence is one of the areas on which a prospective European Defence Research Agency could focus.

Although homeland security as a mission remains financially less important than traditional defence expenditure, the evolution of US efforts demonstrates that this is already a significant area also in DIB terms. Thus, some $ 44 bn has been allocated in the US for the homeland defence function at the Federal level in FY 2003. This is equivalent to approximately 15 % of the US defence budget. It also exceeds the defence expenditure of any EU country. US figures do not include local (city) and state funding.

PROPOSAL: STUDY FOR A EUROPEAN HOMELAND SECURITY TECHNICAL CENTRE

It is therefore suggested here that the EU launch a scoping study for a homeland security technical centre. This study, possibly conducted at the joint request of the Council (ESDP and Justice/Home Affairs Group) and the Commission (RELEX and civil protection?) would examine the possibilities for standardisation, interoperability and technical/industrial cooperation in the area of homeland security and defence. Given that this is virtually virgin territory, this upstream scoping exercise would be a necessary first step, before examining

downstream options (such as a specific counter-CRBN equipment management agency or other formulae).

CONVERGENCE OBJECTIVES

'Convergence objectives' constitute the third and final major category of initiatives being examined here. Whereas the preceding initiatives were output oriented, convergence objectives focus on inputs, with the aim of providing the budgetary wherewithal necessary for securing the outputs.

This description also explains the use of the phrase 'convergence objectives' rather than 'convergence criteria', which refers to the conditions for eligibility to join the Euro. In the case of defence, there is no such 'door opening' (or 'door closing') target.

The Barnier report indicates that:

"a range of convergence objectives might be considered, which would evaluate:

- the proportion of defence budget in relation to GNP and in particular the proportion of equipment expenditure in the defence budget,
- force preparedness,
- force deployment capabilities,
- interoperability.

An evaluation and monitoring function should therefore be created in order to ensure compliance with these various commitments." Only the first category is a true input objective and will be dealt with here specifically, whereas the other three categories have a more indirect, feedback effect on the DIB. They will be considered essentially from the standpoint of the monitoring function alluded to in the Barnier Report.

Monitoring implementation

For DIB related objectives – as well as for those which concern output in terms of capabilities and interoperability, as mentioned in the Barnier report – there will be a need for serious monitoring of efforts. This task can naturally be carried out to a significant extent by peer review among member states: in the present case, this implies the setting up of an EU Council of Defence Ministers, with meetings at regular intervals of their deputies (military and civil, including the suggested EU-CNAD). However, as comparing defence expenditure in NATO proves to be difficult, it may also be useful to use non-governmental sources of expertise for this purpose. This could be done on a contractual basis by a consortium of European defence think tanks, which most countries have, including the smaller ones. (This body would in its turn interact with the Council of Defence Ministers).

PROPOSAL: MONITORING

To initiate regular meetings of defence department specialists or deputies, under the authority of the EU Council of Defence Ministers to be established, in order to review the implementation of convergence objectives.

To entrust the independent monitoring of convergence objectives to a consortium of European defence think tanks, answerable to the EU Council of Defence Ministers.

Input objectives

The input objectives examined here deal with acquisition expenditure, not defence budgets overall. From a DIB perspective, what is important is acquisition spending, not the general level of defence spending. However, there are several ways in which convergence objectives can be set, above and beyond the one suggested by the Barnier Report (the proportion of equipment expenditure in the defence budget, which is examined first).

a. Equipment expenditure as a share of defence spending

The proposal set out in the Barnier report takes equipment as a whole. This is appropriate since methodologically it would simply be too complicated and empirically wrong to set specific R&T / R&D / sub-objectives. Not only would this run into major definitional problems, it would also equate the situation of countries which can assemble a critical mass of R&D

spending across a fairly broad spectrum with that of countries which are simply not in a position to do so.

The use of 'equipment' or 'acquisition' spending as an indivisible category is the approach which will also be adopted for the various options examined here. 'Equipment' or 'Acquisition as used here. This includes R&D plus procurement. No attempts have been made to integrate data on the 10 candidate countries which are slated to joint the EU, given the difficulties in securing the relevant information.

On the face of it, the Barnier group's objective looks reasonable. The table below provides a snapshot of the current state of divergence between EU members in terms of equipment as a share of defence spending in 2001.

	EU 15 (2001 defence budget)	Acquisition, as % of defence spending
Highest:	Sweden	55.5 %*
	Finland	46.4 %
	Greece	43.6 %
	UK	38.6 %
	France	35.4 %
	Portugal	29.8 %
Median:	Austria	22.0 %
	Spain	18.7 %
	Italy	17.4 %
	Belgium	10.9 %
	Denmark	8.7 %
	Luxembourg	6.7 %
Lowest:	Ireland	6.6 %

source: "The Military Balance 2002",IISS, London, 2001
Divergence ratio between highest and lowest 8.4:1

However, the proposal poses significant problems in terms of assessing performance, since it is based on two variables (defence spending, equipment spending) each of which is subject to important definitional problems. There are several definitions of defence spending: NATO has one (but it includes military pensions...),

**Griper purchase.*

IISS has another, and each country has its own, and sometimes several (e.g. France's defence budget is sometimes presented net of the cost of the non-military missions of the gendarmerie). Equipment spending is subject to similar uncertainties (the R&D component is in particular subject to national discrepancies, but there are significant problems with other components: some countries (e.g. France) enter under equipment spending items which others enter under O&M or infrastructure. These difficulties can no doubt be ironed out, but it is better to limit them by ensuring that at least one of the two variables is not subject to substantial debate.

b. Convergence objective: defence equipment expenditure as a percentage of GDP

Since there is a reasonable amount of agreement on the definition of GDP, e.g. by the OECD, a percentage of GDP could be an effective convergence objective. This corresponds to the suggestion made by Alain Richard as French Defence Minister in the spring 2000 meeting of EU Defence Ministers in Feira, who proposed that a level of 0.7 % of GDP could constitute a target for defence equipment expenditure. On the basis of IISS data for 2001, the EU scorecard would look as follows.

	EU 15 (2001 figures)	Acquisition as % of GDP
Highest:	Greece	1.23 %
	Sweden	1.06 %
	UK	0.90 %
0.7 %		
	France	0.66 %
0.6 %		
	Finland	0.50 %
	Netherlands	0.37 %
Median:	Portugal	0.33 %
	Germany	0.27 %
	Italy	0.23 %
	Spain	0.21 %
	Austria	0.17 %
	Denmark	0.14 %
	Belgium	0.10 %
	Ireland	0.04 %
Lowest:	Luxembourg	0.03 %

source: IISS, op.cit.
Ratio between highest and lowest 41.0:1

This target has the political advantage of not discriminating against low GDP countries. However, as will be examined further, the 0.7% level may pose budget structure problems.

c. Convergence objective: defence equipment expenditure per capita

This is a symmetrical mirror image of the previous objective. Given the reliability of demographic data, this convergence objective is one on which the scope any disagreement on the facts would be limited to the definition of equipment expenditure:

	EU 15 (2001 figures)	Per capita defence acquisition spending ($)
Highest:	Sweden*	454.2
	UK	211.5
	France	144.5
	Greece	132.5
	Finland	120.4
	Netherlands	88.4
	Germany	58.2
Median:	Italy	44.9
	Denmark	42.4
	Austria	39.9
	Portugal	37.0
	Spain	31.0
		22.7
	Belgium	13.6
	Luxembourg	13.2
Lowest:	Ireland	

Source: IISS data
Ratio between highest and lowest 34.4:1

d. Convergence objective: defence equipment expenditure per military person

This objective would serve as a means of measuring the 'productivity' (or at least the equipment intensity) of each individual soldier. This is a good indicator in terms of measuring input for force structures geared for projection operations (in which firepower and force multipliers are at a premium in comparison to manpower levels).

This objective puts countries with conscript forces and territorial defence priorities at a disadvantage. It also gives a premium to countries which shrink force structure rather than sustaining acquisition expenditure. Furthermore, assessing the number of military personnel is not as straightforward a task as it may appear: a number of countries (France, Italy) have paramilitary forces paid from the defence budget, while other countries (notably the UK) have outsourced a number of specialities in their defence structure to civil firms and individuals.

	EU 15 (2001 figures)	Acquisition spending per soldier* ($)
Highest:	UK	59 522
	Sweden	33 744
	France	31 437
	Netherlands	27 897
	Finland	19 381
	Germany	15 483
	Italy	11 207
Median:	Denmark	10 514
	Austria	9 335
	Greece	8 819
	Spain	8 613
	Portugal	8 486
	Luxembourg	6 666
	Belgium	5 939
Lowest:	Ireland	4 762

source: IISS, op.cit.
Ratio between highest and lowest 12.5:1

In conclusion

Given the need to limit the number of convergence objectives (there are only four criteria for the Euro) and taking into account that the Barnier report sets a number of non DIB related convergence objectives, it would probably be wise to limit DIB relevant convergence criteria to only one. The one selected needs to be reasonably uncontroversial in terms of assessing the relevant data, and not skewed against countries with a lower GDP than the EU average.

*Griper purchase.
*(excluding paramilitary forces).

PROPOSAL:

A convergence objective of defence acquisition expenditure as a percentage of GDP should be set at 0.6 % of GDP.

This is a good measure of the effort of each country in sustaining defence acquisition. Given the comparatively low share of such expenditure in relation to GDP and in view of existing levels (with a median of 0.33 %), the period during which the objective would be met could be set at a decade for the current member states.

Given their usually lower starting points, plus the existence in many cases of substantial levels of legacy equipment from the former USSR, some of the new member states could benefit from a somewhat longer period.

If the objective were set at 0.7% of GDP as initially suggested by France, total acquisition expenditure by the EU15, on the basis of 2001 figures and exchange ratio, would rise from $36.63 bn (actual) to $54.99 bn (0.7%). This total would represent some 44.8% of EU15 defence spending, a figure higher than current Greek (43.6%), British (38.6%), French (35.4%) and US (34.8%) outlay. The consequence in practice is that the objective would require too high a share of defence spending even in the 'best performing' (in terms of overall defence expenditure) countries. Hence, the 0.6% of GDP proposal, which would lead to $ 47.13bn expenditure or 38.4% of overall defence spending by the EU15.

CONCLUDING REMARKS

As this study shows, substantial transformation has already occurred within the European defence industry. However, these reforms will bear fruit only if a number of institutional and strategic conditions are met.

In institutional terms, major steps forward are necessary to increase the efficiency of European defence spending. The key decisions involved here are of a constitutional nature: will the Constitutional Treaty allow for a substantial measure of flexibility, with enhanced cooperation? What will be the scope of the solidarity clause? The answer to the first question will have a direct and material bearing on the ability of like-minded states to open the way for greater military and defence industrial pooling of interests, much as in the case of the Euro and Schengen in other key areas of sovereignty. And the extent of the solidarity clause will determine the scope of initiatives which can involve all EU member states. The downstream institutional proposals made in this study, such as a European Defence Research Agency, or a European CNAD, are heavily contingent on the constitutional process.

Strategic decisions will be both industrial and governmental in nature, with a significant degree of interaction between the two. At the industrial level, Europe's prime contractors have an increasingly difficult compromise to strike between the desire to preserve their privileged market access in the Old World - but that market is subject to persistent budget stringency – and the desire to gain even a small share on a subcontractor basis of the booming American defence market with US acquisition spending in FY 2003 standing at $ 122 bn (three times the European figure). BAE Systems' position is archetypal in this respect. The manner in which this compromise is reached will depend to a crucial extent on the attitude of governments on both sides of the Atlantic. On the European side, the prospect of a more unified and efficient European defence market, along with higher levels of acquisition spending will obviously reduce the incentive to 'jump' from the European ship. The creation of a European Defence Research Agency would be of some importance in this respect, notably in the face of US attempts to secure scarce European R&D funding in support of the F-35 Joint Strike Fighter. However, high US barriers impeding access by foreign firms to the US defence market remain the strongest deterrent against the exercise of an 'American option' by European defence firms. This is particularly true for countries such as France or Germany whose companies are not on America's 'A' list, as opposed to British firms. However, by offering upstream access to a 'structuring' programme such as the F-35, the US has demonstrated that the slightest easing of Americans restrictions will meet with an enthusiastic response from both the countries and companies involved. At

the time of writing, six WEAG members have committed more than $ 4 bn to the funding of the development of the F-35. In other words, a more proactive US policy in terms of providing market access to European companies could lead to a rapid dismantling of key elements of a cash-starved European defence industrial base.

This leads to the final point. Budgetary initiatives are essential if Europe is to preserve the competence, competitivity and cooperability of its DIB. In particular, military R&D has to be given a substantially greater share of defence spending through EU initiatives as within national defence budgets. In this respect, EU institutional initiatives such as those discussed in the Barnier Report or in this study will also help by improving the efficiency of defence spending. But they will serve their full purpose only if substantially greater efforts are made at the national level, notably by those countries whose defence spending is low, both in general and with regard to the acquisition component. Therefore, particular importance should be attached to the convergence objective of spending 0.6 % (or more) of GDP on acquisition. Defence spending overall will also have to increase: between FY 1997 and FY 2003, Europe's defence spending has dropped from just over 50 % to around 35 % of US expenditure.

Transatlantic Gaps and European Armaments Co-operation

Introduction

Since the end of the Cold War, European armed forces and their defence technological and industrial bases (DTIBs) had to adapt to a dramatically changing environment. Not only were the R&T and procurement budgets in almost all European countries reduced dramatically. The technical complexity of new equipment and the associated development costs maintained their upward trend. And the restructured and smaller armed forces required equipment in smaller numbers, driving up system prices as the development costs had to be charged to smaller numbers. In addition to fewer numbers, economies of scale in production could be realised increasingly less, again driving up costs. These cost increases in established programmes had a devastating effect on other equipment programmes, in many cases even leading to their cancellation. Thus the armed forces had to pay a higher price for their equipment with an increasingly smaller budget. As they tried to maintain a balanced force structure incorporating all relevant capabilities needed to implement their tasks, they could not accept the cancel-lation of programme after programme and instead favoured a further reduction in numbers, starting the deadly cost spiral again.
At the same time more money had to be spent on operations and maintenance due to the much more frequent use of the armed forces and personnel expenditures also went up. Thus defence budgets came under dramatically growing pressure on several fronts simultaneously. But due to several political factors, European governments were unable to increase defence expenditures to get their armed forces and DTIBs out of the cost spiral. The situation became even more critical when European rhetoric – supposedly in the name of developing a European Security and Defence Identity and later Policy with some autonomous military capabilities - fell to pieces in the Balkans. While the significant capability gaps and inefficiencies of European armed forces became obvious even to the point of undermining the credibility of any European security and defence ambition, the US military and its DTIB demonstrated its outstanding supremacy in conflicts ranging from the Gulf War of 1991 to the operations in Afghanistan in 2002. The pressure on European governments and industry to dramatically increase their competitiveness in technological as well as economic terms will increase further as the US government and Congress have reacted to the September 2001 terrorist attack by shifting considerable funds to improve US defence capabilities even further.
Under these conditions, Europe appears to have only two options: either to give up its ESDP ambitions or to 'bite the bullet' and develop a true European approach to force, capability, and armaments planning, releasing a considerable amount of resources to improve its military capabilities (and the competitiveness of its DTIB) in due time. This type of Europeanisation would also be a prerequisite for a more balanced transatlantic partnership in defence and defence technological and industrial matters.

What should be done to develop such a European approach?

We recommend to first establish
1. a European requirements process, to then develop
2. a European defe nce industrial policy including rules and regulations for the armaments sector, and then to inaugurate
3. a European Capability, Armaments, and Strategic Research Agency.
As a first step in such a process, multilateral working groups should be established that will focus on the development of common threat perspectives and a common definition of military task. Building on the experience being acquired in the ECAP process and transferring this process to a permanent although rearranged structure, other working groups may tackle specific capability areas like strategic deployment, mobility, strike, or C4ISR. The idea here would be to discuss and co-ordinate the development of new capa-bilities early in the process, before national positions are fixed, providing more flexibility for co-operation further down the process. The capability working groups could also discuss lessons learned from past international operations. They

should have a certain budget at their own disposal to verify their conceptual ideas for new equipment items via simulations or even technology demonstrators and for the development of common support tools (simulation models etc.).
A Council of Defence Ministers and regular meetings of the National Armament Directors should be established to discuss key issues of a European armaments and defence industrial policy addressing for instance security of supply considerations. Their task would be to work out general policy guidelines to be implemented by the European Capability, Armaments, and Strategic Research Agency. It would incorporate the working groups described above and translate them into a departmental structure as part of its capability planning and requirements branch. The strategic, operational and doctrinal guidance for their work may either be developed within NATO or may become the task of the Political and Security or the Military Committee of the EU Council. The agency itself should also be involved in R&T planning and management in close co-operation with the EU Commission (with regard to dual-use technologies), and serve as the procurement office for most of the European armament programmes. It would have its own budget supporting the requirements process and concept development, for the R&T programmes as well as for the development and procurement of military equipment items.

What is the most promising way to achieve Europeanisation?

The necessary efficiency gains in European defence can only be realised through work-sharing and specialisation within the European DTIB, thus leading to strategic interdependencies among European countries. Counter-balanced by security of supply obligations, such a system has to be based on confidence between those member-states participating.

It would therefore probably be easier to start such Europeanisation within a smaller group of countries. Such a core solution would also facilitate negotiations on the many rules and regulations under which such a core would operate. But the group should be open to new members provided they accept the rules. This European core market should be open to all EU members, offering considerable advantages also for those countries not participating from the outset.

The spending, capability and technology gap and the European defence technological and industrial base

?n Europe, expenditures for military research and development as well as procurement have declined considerably since the end of the Cold War. The six European countries with the highest budgets for military R&D (Great Britain, France, Germany, Spain, Italy, and Sweden) for example in 1998 spent some 35% less in real terms than in 1990.[1] With regard to procurement expenditures, a comparable but less dramatic development occurred. The Western European NATO countries in 2000 spent 12% less on equipment procurement in real terms than in 1991.[2]
Even in the last five years, despite all the identified and agreed upon European capability shortfalls, European NATO countries reduced their procurement budgets by about 0.3% in real terms.[3] For the same timeframe, US sources calculated that European equipment spending would have to increase by 3-4% each year (or about 5 to 7.5 billion US$) in order to implement NATO`s Defence Capability Initiative that is to eliminate the listed capability shortfalls and provide for force projection capabilities, half the size of the US.[4]

The degree to which European industries – in comparison to their US competitors – suffered under these recent budget trends becomes even more obvious if these trends are compared with those in the US over the last couple of years. From 1997 to 2001 the US

1 see: SIPRI-Yearbook 2001, p. 234
2 see: SIPRI-Yearbook 2001, p. 292-295
3 see: Military Balance 2000/2001, p. 35
4 see Michael O`Hanlon of the Brookings Institution in Washington confronting a committee of NATO_s Parliamentary Assembly in February 2000, cited due to: NATO Parliamentary Assembly, Interim Report: The Defence Capabilities Initiative and NATO`s Strategic Concept, Committee on Defence and Security, November 2000, para. 18

spent four times as much on military R&D as all their Western European NATO allies together, with the difference growing from year to year: in 1997 the US spent 3.6 times as much, in 2001 4.3 times as much. Thus from 1997 to 2001 the US spent 142.7 billion US $ in real terms more on military R&D than Western European NATO countries. A comparable but less dramatic development could be seen with regard to procurement outlays: in 1997 the US spent 1.5 times as much, and in 2001 twice as much as their European allies. Taking current and future budget trends into account, the situation will very likely worsen and the difference between US and European R&D and procurement budgets will grow further. While European R&D and procurement budgets in real terms will remain at virtually the same levels (with few exceptions, one being Great Britain with a planned annual real growth of 1.2% between 2002 and 2005/6 [5]), the planned US DoD budget for procurement in nominal terms will increase by about 58% between 2001 and 2007, while the budget for RDT&E by around 39%. [6]

Are different spending levels across the Atlantic creating a "gap"?

These differences in military R&D and procurement spending are often referred to as the transatlantic spending gap, resulting in a capability as well as a technology gap. But it is probably misleading to describe these differences in terms of a 'gap'.

The amount of resources allocated for defence as well as military capabilities in terms of quantity and quality are the direct result of political objectives and priorities. Political objectives are the major driving force for military strategy which itself defines the tasks of the armed forces and their associated capabilities.

Capability requirements then translate into tactical and technical requirements for the development of new equipment. Therefore the term capability gap assumes a discrepancy or mismatch between political objectives and military capabilities, the term technology gap a mismatch between capability requirements and the available technological capabilities in the defence technological and industrial base to implement the required capabilities through the development and production of new equipment. Thus the way both terms – capability and technology gap – are currently used in the transatlantic context assumes that European forces prepare for the same missions with the same geographic focus and the same strategic, operational and tactical concepts translating into the same tactical and technical requirements for new equipment as the US armed forces.[7] This is obviously not the case and probably never has been. Even during the Cold War with its more or less common political, strategic, and operational concepts, NATO members had different tactical concepts (for instance for tank warfare) resulting in different equipment requirements.

This is not to say that European armed forces do not have severe capability gaps and shortfalls, but they should be analysed with EU - not US political goals and associated military ambitions - in mind. In addition, European operational concepts (or rather concepts of operation) may be tailored to European experience and force-employment philosophy and not just result from capability shortfalls or gaps. In a word, the crucial question is whether European military capabilities are adequate for implementing European military strategy. The problem here is that Europe ,despite the Headline Goal process, has not yet developed a military strategy nor is there a debate about how military means are related to political objectives. Therefore it is very difficult to decide whether differences between US and European spending represent a gap or simply different political and military (strategic) concepts.

Europe has to decide what kind of military contingencies it wants to be prepared for and in what way. In the absence of indigenous European strategic guidance, US military requirements for many European countries will remain a sensible way of judging their own long-term military requirements. And given the internal and external political prerequisites and special circumstances for using military force, it

5 see: Military Balance 2002/2003, p. 248
6 see: Military Balance 2002/2003, p. 241
7 Moreover, as the tactical and technical requirements for new equipment sometimes strongly reflect and are partly driven by defence industrial considerations, the entire debate at least partly reflects US defence industrial interests: to impose US 'standards' on the Europeans who may have good reasons to have different requirements than the US armed forces.

remains to be seen whether implementing the Petersberg tasks – not to speak of a US-type mission spectrum – will not require capabilities very similar to those of US forces, at least for the higher end of the Petersberg spectrum (i.e. peace enforcement operations). It also remains to be seen whether it is acceptable for European policy makers to have European forces working around certain capability shortfalls by adopting operational concepts that put their soldiers at higher risks (for instance low-level penetration of enemy air space without any electronic combat support or fighter escorts and the necessity of flying over the target to deliver dumb weapons). It is highly probable that European capabilities on the tactical and also at least partly on the operational level will have to rather closely resemble those now being practised or developed by the US armed forces, simply because they are designed to meet the same political demands (low casualties, low collateral damage, etc.) that European politicians should be expected to put forward too.

Capability shortfalls of European armed forces

Despite a lack of debate on Europe`s future military strategy, Europeans are aware of certain capability shortfalls. Measured against their ambitions on the European level (Petersberg tasks) there is widespread agreement that EU members face capability gaps in fields such as:

- strategic mobility (i.e. aerial refuelling, air transport),
- precision strike munitions,
- electronic warfare,
- power projection (i.e. long range air strikes), and
- C4ISR

The necessary level of these capabilities and thus the sustainability of European forces with regard to different missions is of course open to discussion. In addition, some European countries may on a national basis also wish to be part of coalitions of the willing, performing missions even beyond the Petersberg mission spectrum. Those ambitions would drive individual European nations to have at least limited or certain niche capabilities compatible with and completely interoperable with US forces even for high intensity large-scale warfare.

But even on the European level, European military ambitions in the mid- to long-term may develop beyond the Petersberg tasks. The more Europe aspires to become a global military player alongside the US, the more European capabilities will have to resemble those of their US partner in quantity and quality. Assuming European military ambitions develop this way, but Europeans fail to develop their force capabilities accordingly, it would be appropriate to talk about a widening capability gap that should be closed to avoid losing credibility. But for the time being this is not the case.

Co-operability and interoperability but not gap-closing as the central transatlantic challenge

Today the systematic introduction of certain new technologies together with innovative organisational and structural reforms will probably lead to completely different tactical concepts, concepts of operation, and probably even military strategies. This may result in insurmountable co-operability and interoperability problems between US and European armed forces if the military partners on both sides of the Atlantic follow different paths. The central transatlantic problem therefore is not primarily that European armed forces lack certain capabilities but that they will plan, organise and equip for a different 'Kriegsbild' (concept of war) than US forces.

US capabilities and especially the transformation of US forces is not only – and according to US documents not even primarily – driven by technology but by conceptual, structural, and organisational innovations (albeit often made possible by the introduction of new technologies).[8] To prevent US and European forces developing different concepts of operation that undermine co-operability – and thus also developing different technical requirements that undermine interoperability – joint studies, simulations, experiments, and war-games between force-planners etc. will become of the utmost importance. Therefore, measures to somehow link US and European force planning, as well as the development of military strategy and concepts of operations are decisive to avoid the development or increase of transatlantic co-operability problems.

But this is not to say that the technological dimension should or could be neglected. Europe should avoid a situation where a mismatch between the capability requirements of its armed forces and the technological skills of its DTIB develops and a technology gap is born. In general there is little evidence that this is already the case. But especially in those areas where for many years European armed forces have not developed any equipment requirement, European industry has no or only limited R&D and manufacturing capability. [9] In addition there are many other areas where US industry, supported by government R&D spending, experimented at the forefront of technological innovation and after some trial and error even fielded certain sophisticated technological solutions far ahead of their European competitors. But with a certain time lag, European companies are able to develop and field comparable systems by avoiding the expensive trial and error phase for new technologies or at least reducing their development risks. In this way, Europeans in many cases end up developing and manufacturing equipment one or even only half a generation behind the latest US weaponry but nevertheless capable of meeting their requirements (and cheap enough to suit their purse!).

By introducing US subsystems or components, this time lag may be even shorter.

Past experience also shows that even being at the spearhead of technological advancement does not automatically translate into higher competitiveness. Quite the opposite may be true. Competitiveness in an economic sense depends on the market potential of the products a company offers and on the efficiency with which the product is developed and manufactured. Many latest generation US platforms for example, due to their technological complexity and associated high costs, can – at least in large numbers – only be sold to US forces. Many domestic observers of for instance the US aerospace industry have therefore argued that US industry is catapulting itself out of the export markets and to them it is no surprise that US export success is mostly based on relatively old designs like the F-16.

On the other hand, however, even latest generation US equipment might cost less than its less capable equivalents from European competitors. That is not the fault of European companies but the result of the political framework in which European companies must operate and in which armaments development and production takes place in Europe. Therefore Europe should focus on how it could spend its scarce resources more efficiently by improving the European armaments process.[10]

In addition, transatlantic armaments co-operation (ranging from buying US systems to co-development and co-production of common equipment) has been and will be important for developing certain systems for European armed forces, not to mention the economic reasons, given that it will sometimes be cheaper to buy US developed items.

Furthermore, the current capability shortfalls of European forces in implementing the Petersberg tasks or of national forces in co-operating with US forces over the whole mission spectrum, will

8 see: Joint Vision 2020

9 A recent CSIS report concluded that even compared with the US, there is in general no gap at the basic technology level, but at the level of integrating these technologies into military hardware. See: Jean-Paul Bechat and Felix G. Rohatyn, The future of the transatlantic defense community – Final report of the CSIS Commission on transatlantic security and industrial co-operation in the twenty -first century, Washington D.C., 2003, p. x

10 A study for the European Commission (commissioned in 1992 with only its summary published in 1994) concluded, for instance, that the introduction of cross-border compe-tition in European defence markets would result in savings of between 6.5 to 9.3 billion ECU a year. See: Keith Hartley and A. Cox, The Cost of Non-Europe in Defence Procurement, cited in: Pierre de Vestel, Defence Markets and Industries in Europe. Time for Political Decisions?, Institute for Security Studies of the Western European Union, Chaillot Paper 21, Paris 1995, p. 93. With such savings European military capabilities could be improved much faster

require the use of certain US assets for a considerable time. Therefore, US and European forces will have to co-operate and be able to do so in technical as well as conceptual terms. This also provides a rationale for supporting some sort of armaments co-operation.

At present, transatlantic armaments co-operation is conducted on different levels involving different players and different motives.

✍✍ Firstly, there is increasing co-operation between major system companies across the Atlantic. Some have formed strategic partnerships and the main motivation is to gain access to the partner's home market. But on the industrial level there are also long-established supplier relationships for components and even subsystems working in both directions.
As the recent consolidation process in Europe has - at least in some branches - created global players like BAe Systems, EADS, or Thales, these system companies may enter more equal partnerships with US industry. Both sides will profit using teaming arrangements to gain access to the technologies of the respective partner on the other side of the Atlantic. US companies are pursuing this strategy in Europe, as illustrated by the partnership between Lockheed Martin and BAe Systems and Rolls Royce for the Joint Strike Fighter. This partnership continues the relationship between McDonnell Douglas and British Aerospace established to gain access to British vertical take-off and landing technology. The co-operative agreement between Northrop Grumman and Germany`s How-aldtswerke Deutsche Werft (HDW) is another recent example, as it allows the US company to gain access to Kockums naval stealth technology.[11]
Although European companies also try to get access to US technology via industrial partnerships, the US export control system severely constrains such attempts.
US and European companies are also establishing partnerships to bring together complementary technological capabilities. Examples are the Northrop Grumman – EADS Transatlantic Industrial Proposed Solution or the Bazan – Lockheed Martin AFCON frigate consortium. All these examples support the thesis that European defence companies do not lack the technological capabilities of their U.S. counterparts but that their governments prevent European technology from being fielded due to scarce procurement budgets.

✍✍ Secondly, there are co-operation programmes in research and technology initiated and supported by the governments involved.

✍✍ 0 And thirdly, there are several co-operative development and procurement programmes like MEADS, the medium extended air defence system, again initiated and supported by the governments involved.

Since European defence budgets will not allow an increase in R&D and procurement spending, European governments will have to find effective mechanisms to field certain modern equipment for European armed forces through transatlantic armaments co-operation. This co-operation must be balanced and make use of European technological capabilities. The central issue will be whether the US is willing to support European force modernisation and offer technology to strengthen the European DTIB through transatlantic armaments co-operation in transformation-oriented fields. For the time being, there is virtually no co-operation with regard to key US transformation programmes. Another issue will be US export and security controls, which will have to be relaxed if such a technology transfer is to take place. At the same time, European countries will have to improve safeguards to ensure these technologies are not proliferated. Another way for governments across the Atlantic to promote transatlantic armaments co-operation is to support transatlantic defence industrial linkages to develop common products for common requirements.

But there is little room for optimism that such a development will actually occur. US government

11 see: Andrew D. James, Closing the NATO capabilities gap: The challenges for the European defence industry, Paper presented at the Atlantic Council of the United States conference on Transforming NATO Forces: European Perspectives, Washington DC, 18 October 2002, p. 4

policies have always created major obstacles to transatlantic co-operation. The US Department of Defence prefers to buy US defence technologies and protect US defence technological leadership; it therefore carefully restricts European access to US technological know-how. This is accompanied by tight controls on direct foreign investments by defence companies in R&D and production facilities in the US. In addition, the US State Department and Congress take a very conservative view of the technology transfer and export issue, strictly limiting the availability of US technology for European companies[12]..

Although defence trade policy reform has been on the agenda of US President George Bush since his campaign in 2000, efforts were sidelined by the attack on the World Trade Centre. But at the NATO summit in Prague, the Bush administration announced a review of US defence trade policy. The idea again seems to be to introduce a less restrictive technology transfer regime in order to improve the military capabilities of allies. But many in the administration and especially in Congress perceive any change to the current technology transfer or export control system as opening up a Pandora's Box and it remains to be seen whether the Bush administration will be more successful than the Clinton government in convincing Congress to the contrary.[13] The latest dissonance between some European countries and the US concerning military operations against Iraq and the recent action of the US government concerning technology transfers for the time being appear to make such a development even less likely.

If individual European countries want to match US capabilities or bring in their own capabilities to US operations, the related capabilities gap has to be addressed. Otherwise coalition warfare would become increasingly difficult if not impossible for all but a few European countries.

12 see: Gordon Adams, Transatlantic Defense-Industrial Cooperation and American Policy, Paper prepared for the IISS/CEPS European Security Forum, Brussels, 25 Nov. 2002
13 see: David Landes, Equipment capability gap frustrates allies, in: The Financial Times, 9 Jan. 2003, p. 4

The result would be a capability gap between European forces which invested in transformational and network-centric capabilities and those that did not.

If European states, on the other hand, focus almost exclusively on the low intensity peacekeeping missions envisaged by the European Headline Goal, the consequences for the European DTIB would be considerable. Equipment for those missions would be less technologically demanding and would not facilitate high growth. As a reaction, European system companies might shift their focus to the US market via mergers and acquisitions, possibly even concentrating their R&T efforts in the US.

The political relevance of a European defence technological and industrial base (DTIB)

The easiest way to avoid any co-operability and interoperability problem would be to buy US equipment and use US concepts – as many European countries did in the 1960s. In the meantime, European nations not only built up their own defence industrial capabilities, but also developed political aspirations that are no longer compatible with total dependence on US DTIB capabilities. Today, it is common sense that if Europe wants to have a certain amount of autonomy in acting militarily, it also needs a certain level of its own DTIB capabilities. The reason is that the interdependence between foreign, security, and defence policy on the one hand, and industry on the other is manifold. From a security policy point of view, the need to develop, maintain, and foster defence technological and industrial capabilities results from their defence policy functions. The focus here is to equip the armed forces with whatever item is required. This function or role includes military research and technology, development, production, maintenance, adaptation and modernisation of all kinds of military equipment. In general, equipment could of course be bought on the global market, but there are several reasons why European nations or Europe as a whole should have their or its own defence technological and industrial base:

- Concept development of the armed forces – and thus the policy options associated with this instrument – are strongly influenced by technological developments and future equipment options. To be able to decide the direction of research and development in a timely fashion and to provide equipment optimised for one's own requirements demands know-how, which is primarily to be found in the DTIB.
- Buying foreign equipment could mean procuring systems optimised for different tactical and operational concepts.
- In other cases, access to the latest technologies may not be granted as governments or companies - for political or competitive considerations - will refuse to export their most advanced systems.
- Technological knowledge of the demand side – which is necessary, for instance, in order to evaluate technical and financial risks of offered technical solutions (products) – is based on a continuous exchange with industry and government research facilities. Under the normal restrictions applicable to transnational technology transfers, such an exchange will be very difficult if not impossible to organise with companies outside Europe.
- The much discussed potential for rationalising or outsourcing certain support, maintenance, or logistic functions depends on the availability of certain industrial capabilities for the armed forces, particularly in crisis or wartime conditions.
- In addition, armed forces will become more dependent on industrial capabilities for in-service support at least in high-intensity operations. This covers maintenance, delivery of spares and bulk expendables, or modifications to adapt available equipment to the theatre of operations or enemy capabilities. Thus, at least with regard to high-intensity operations, the use of military forces may in certain cases depend upon the timely and adequate availability of defence industrial capabilities.
- The defence industry also provides the assets with which to shape defence industrial restructuring in Europe or across the Atlantic, including the accompanying balance of defence industrial dependencies between European countries or between Europe and the US.
- To participate in armaments co-operation, the national procurement entities depend on the availability of industrial capabilities, otherwise they will be unable to take part.
- The DTIB also constitutes an element of threat assessment by providing the know-how to analyse other countries' technological and defence industrial capabilities.

In addition to these defence policy roles, the DTIB serves as a foreign policy instrument by providing the equipment to support friends and allies and to shape regional balances of power.

But beside these primary roles, the DTIB fulfils secondary roles which in a given situation may be of comparable importance. In some countries, the respective DTIB is an instrument of foreign trade policy insofar as defence exports (sometimes in conjunction with security guarantees) are used to pave the way for further civilian/commercial exports. It is also an instrument of technology and industrial policy through the spending of procurement money in underdeveloped regions or in support of key industries or by providing significant financial (and, of lesser impor-tance, technological) spillover or cross-subsidising from defence-related to civilian industries and thus improving the commercial competitiveness of a country`s industrial base in general. Furthermore, the future integration of defence into commercial industry as a result of the growing military relevance of certain commercial technologies offers hitherto unknown economies of scope and scale and opportunities for cross-subsidising. And finally, the DTIB serves as an instrument of economic policy by improving or assuring employment, and by improving the balance of payments via the export of military equipment. These ends can be realised by national development and production at different levels (subcontractor and/or system supplier) and by offset or local content arrangements in the case of the purchase of a foreign product. In Europe the importance of these secondary roles varies from country to country.

These political roles translate into what is often referred to as the specificity of the defence

industry, namely the specific nature of the market with states and their armed forces as the primary customer, the specific nature of the products requiring state permission for their transport, transit, or export, and the specific nature of certain activities between the market participants requiring security classification.

Interdependence between governments and industry

On the other side, a government has several instruments at hand to shape defence industrial developments.

- As the major and sometimes only customer, by determining military requirements it determines product designs, the capabilities of the related product lines and the production runs. By so doing and in conjunction with its role as regulator, it decides on the structure of its defence industrial base and its capabilities. By signing or not signing specific contracts, it controls national industrial alliance-building as well as the viability of transnational joint ventures, although it may not be able to force the initiation of such processes.
- As regulator, it determines market size (through export-regulations) and the regulatory framework in which the defence industry operates (i.e. cartel law) as well as the degree of integration of the DTIB into the civilian high-tech industry and the amount of technology transfers between both sectors (through procurement procedures and specifications).
- As the supporter of its own industry, it helps industry gain access to new markets and partially finances industrial restructuring.
- As the operator or major shareholder (of state-controlled or state-owned companies), it makes or influences the industrial decisions of individual companies directly controlling defence industrial processes.
- Thus, security and defence policy options open to governments are strongly influenced by the available DTIB capabilities, while at the same time governments have a strong influence on the options open to industry. While some governments in Europe are aware of this interdependency (i.e. the UK) and others even conceptualise it strategically (i.e. France) it is almost not recognised by others. Accordingly, national defence industrial policies in Europe vary to a large degree. [14]

This has a profound impact on armaments co-operation in Europe. The specifics of the different national defence industrial policies, that is, the different attitudes toward or definition of these roles and different priorities concerning the instruments to be used define the kind of arms co-operation that is possible within the current European political framework. In general, it could be said that without a common definition of these roles, arms co-operation will only be possible on an ad hoc basis and be decided on a case-by-case basis. These considerations show that Europe – due to its foreign and security policy aspirations – should maintain its own competitive DTIB to be able to support its armed forces and that it should therefore focus on how to spend its scarce defence resources more efficiently.

Spending scarce defence budgets more efficiently by deepening European armaments co-operation

Procurement and most aspects of armament policy and defence industrial policy still remain under almost exclusive national control, a transfer of sovereignty to European institutions has not taken place. In addition there is no systematic co-ordination of defence, defence industrial, or armaments policy at a European level.

This is even more of a problem as armament processes and thus to a certain degree also defence industries are strongly influenced by the (already described) multifaceted political framework in which they operate. These political frameworks in Europe are shaped rather differently and there is an urgent need for either a very close co-ordination or even the development of a common political framework for industry in Europe.

14 In general there is no big difference between the major and the smaller arms producing countries. The greatest variance can be observed between the major arms producing countries themselves.

The demand for the development, maintenance and strengthening of a common European DTIB had been proclaimed and often reiterated in the past. But only with the Treaty of Amsterdam in 1999 (the essential paragraph is integrated in the Nice Treaty) did the EU receive a genuine role through Article 17. This article states that "The progressive framing of a common defence policy will be supported, as Member States consider appropriate, by co-operation between them in the field of armaments."
On a European level the development of a defence industrial policy remains difficult, as Article 296 TEC [15] allows EU countries to develop their own legal framework for military equipment distinct from the regulation of the EU`s internal market.

Characteristics of the "European armaments system" undermining competitiveness

In line with this national orientation, defence procurement and industries in Europe are still primarily characterised by:

- fragmentation into national markets,
- redundant research and industrial capacities,
- 0 the splintering of resources into too many defence programmes,
- relatively small production series and,
- outstanding differences in military requirements.

Since to date all the larger European nations have attempted to build up and maintain their own development and production capacities in as many technologically interesting and defence-relevant fields as possible, there are multiple producers in Europe for all the important weapon systems.

As a result of these structures, duplication and multiple replication is common. For example, in 1993 there were four main battle tank programmes (USA: 1), 16 programmes for armoured combat vehicles (USA: 3) and seven programmes for diesel-engined submarines (USA: 0). The list could be continued ad infinitum[16]. Even in research and development, the work is for the most part carried out simultaneously in various European nations, although in at least a few sectors, such as aeronautics and space research, a transnational division of labour (or rather a co-ordinated distribution of certain R&T tasks) in the non-military field is being initiated. Moreover, in view of the lack of a European division of labour, individual nations attempt to maintain a very broad spectrum of indigenous technology capacities. As the shrinking funds then have to be spread over such a large number of sectors, the individual projects are less and less likely to be adequately funded to compete technologically in the international arena, particularly given the rising costs of development. Fragmentation prevents further competition among the redundant industrial capabilities and impedes further reduction of costs and prices. At the same time individual European states only need relatively small production volumes, given the size of their military forces, so that often a new piece of equipment can or will only be produced in a very limited series. Since the growing development costs are thus incorporated into increasingly fewer systems, the price per European weapon system is generally far higher than that of a comparable American system produced in higher numbers.

15 Article 296 TEC (ex Article 223)
"1. The provisions of this Treaty shall not preclude the application of the following rules:
(a) no Member State shall be obliged to supply information the disclosure of which it considers contrary to the essential interests of its security;
(b) any Member State may take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions and war material; such measures shall not adversely affect the conditions of competition in the common market regarding products which are not intended for specifically military purposes.
2. The Council may, acting unanimously on a proposal from the Commission, make changes to the list, which it drew up on 15 April 1958, of the products to which the provisions of paragraph 1(b) apply."
16 See Pierre De Vestel, Defence Markets and Industries in Europe. cited above, p. 17

Without exports, fragmentation into rapidly shrinking national markets would have already forced industry to reduce its development and production capacities and to restructure. In some national markets, export successes are responsible for the maintenance of redundant industrial capabilities and for restructuring (rationalisation) not being undertaken or remaining incomplete (i.e. the land warfare systems and naval industry). In other words, for those companies (and countries) with no or only limited access to export markets, the development of modern weapon systems is becoming increasingly expensive and the national production ever less economical.[17] In parallel with and strengthening this trend, the funding for investment in these systems in defence budgets is declining. The result can be foreseen. At present (and taking into account Europe's small chances of gaining a larger share of the global export market), no European state is likely to be in a position to maintain its own R&D or production capacities over the full spectrum of relevant technologies. Indeed, it must be expected that without

- overcoming the fragmentation into national markets,
- a much improved co-ordination if not work-sharing across European industry and probably even research establishments,
- a closely co-ordinated if not common approach to R&T planning and funding,
- a harmonised if not common procurement policy leading to higher production runs which in itself again requires the closely co-ordinated if not common development of tactical and technical requirements for new equipment,
- and – accompanying this – without the transnational restructuring or concentration of European defence industrial capabilities, the European industry will no longer be competitive and substantial technological and industrial capabilities will be lost altogether in Europe.

But intensifying European armaments co-operation along these lines requires that each partner gives up certain DTIB capabilities and accepts dependencies on the respective European partner country. These dependencies must be accompanied by binding arrangements, for instance for secu-rity of su pply and a common export policy. Only a harmonised political framework for all partners involved will form the basis for successful armaments co-operation beyond the programme co-operation which still prevails.

This binational or multinational co-operation on individual armament programmes, the form of defence co-operation which has been dominant in Europe, has contributed quite substantially to the critical situation described. It is oriented toward the interests of the national technology and industrial policies and the maintenance or construction and expansion of the broadest possible defence technological and industrial capacities. The co-operation partners vary from project to project and the division of labour is undertaken in such a way that all the participating nations or firms are included in work on all the technologically interesting components. Although each nation's proportion of the costs of such co-operation programmes was considerably lower than the costs would have been, had each nation developed its own programme, the industrial policy goals of the programmes led not only to wildly cost-inflating interface arrangements, but also to additional over-capacities and redundant structures, further fragmentation and small production series, at least at the system level because the final assembly took place in all the participant nations. As an instrument of national and therefore often conflicting foreign, defence, technology, industrial and economic policies, this kind of European arms co-operation incorporates many inefficiencies.
Due to the only limited success in developing an adequate political and legal framework on the supranational European level, defence and defence industrial issues between European states are tackled in a number of bi- and multi-lateral bodies.

17 But exports could be used to produce higher volumes and thus to reduce the price for the national procurement of the respective equipment. Therefore, European national industries and their supporting governments engage in tough competition against one another in regional or global arms markets. Their success depends not only on the technical and price performance of their products but also on political factors, especially credible political commitment and associated arms export support policies. Different national arms export policies therefore translate into competitive disadvantages (or advantages) and thus a harmonisation of European arms export policies is not in the interest of those countries which benefit from existing differences.

- In the Framework Agreement of July 2000 (following the Letter of Intent [LoI] of 1998), six EU Member-States (France, Germany, Great Britain, Italy, Sweden, Spain), accounting for more than 90% of European defence industrial capabilities endeavoured to achieve distinct improvements in the operational framework for transnational defence companies through legally binding agreements. These cover the harmonisation of military requirements, security of supply, export guidelines and procedures, security of information, research and technology, as well as the treatment of technical information. After the successful conclusion of the ratification process and the implementation phase, any EU country could become a party to the agreement, subject to the consent of the founding members.
- The organisation for joint armament co-operation OCCAR (Organisation Conjointe de Coopération en Matière d' Armement) constitutes another important structural element. OCCAR was founded in 1996 by France, Germany, Great Britain, and Italy as a quadrilateral management organisation for co-operative armaments programmes. The objective is to increase efficiency and cost-effectiveness. Therefore the statutes of OCCAR provide for a programme-overlapping or global 'juste retour' approach [18]. Such an approach provides increased flexibility in order to merge national defence industrial objectives with more transnational competition and streamlined decision procedures. But this move toward global 'juste retour' has not yet been made, partly because of the lack of new programmes coming under the auspices of OCCAR. Despite this shortcoming – or to be more realistic, because of it - other nations have considered joining OCCAR since it acquired legal personality in January 2001.

18 'Juste retour' means that the industrial work-share matches the financial contributions each partner puts into a specific co-operative programme. The objective of a global 'juste retour' is to calculate the work-share over a number of different programmes and a number of years, thereby allowing more flexibility and thus higher efficiency.

- The central European forum for armaments co-operation is still the Western European Armaments Group (WEAG). Its objectives include the establishment of a European armaments market by supporting common procurements, co-ordinated research and technology, as well as drafting the appropriate legal and procedural framework. The idea of establishing a European Armaments Agency (EAA) also reflects these objectives. A first step in this direction was taken when the WEAG countries in 1996 founded the Western European Armaments Organisation (WEAO). Although its 'Research Cell' was limited to research and technology tasks, it could in some respects be seen as a 'precursor' to an EAA. The creation of OCCAR is generally perceived as being a further step in this direction.
- But Europe still lacks an institution that systematically co-ordinates or even plans the political dimensions of armaments (see above), given that
- current activities in the framework of WEAG are limited to a certain type of co-ordination of indigenous national R&T planning and decisions,
- OCCAR remains preoccupied with the management of the bi- and multi-lateral co-operation programmes transferred to it and even here has been unable to realise its potential for flexibility and improved efficiency as laid down in its statutes, and
- the Framework Agreement is limited to solving technical or procedural problems in the day-to-day business of transnational European companies.

This political framework in Europe resulted in a quite bizarre situation of bi- and multi-lateral R&T co-operation, which simply aggravates the problem of spending national R&T resources in a co-ordinated and focussed manner. For up to now, on a European level, it has been possible only for 'service providers' to be established,

simply offering services with regard to the negotiation, signing and implementation of R&T agreements. These service providers, including the WEAG research cell and OCCAR, were a mere substitute for the hoped-for agreement on the content of a European R&T programme which Europe would probably only be able to develop after coherent working structures were established and European R&T targets formulated. But this would require the development of European capability requirements as guidelines for future equipment planning.

To sum up:

- Armaments co-operation not only offers the advantage of reducing the technical and financial risks associated with new programmes, it also provides an opportunity to reduce costs through higher economies of scale. These cost savings are today almost entirely eliminated by very rigid interpretations of 'juste retour', or by considerations concerning security of supply etc. They lead to the establishment of production lines in every partner country – at least for final assembly – creating redundant manufacturing structures which do not provide sufficient economies of scale. In addition, the management and decision structures of many co-operative programmes are too cumbersome and time-consuming.
- This national focus has also dominated the transnational co-operation in the European industry to date, although a number of transnational financial ties between individual European defence enterprises,[19] numerous joint ventures in certain fields or defence programmes [20] and the handful of transnational mergers include some kind of transnational industrial consolidation. However, apart from the few albeit very important mergers, the companies forming for instance joint ventures remain independent; in other words, management, production and development are seldom rationalised. This allows only for very limited technological synergies and economies of scale. Thus, the difficult but vital task of labour specialisation and consolidation of transnational European defence industries still needs to be undertaken. This will involve a lengthy transformation period during which further challenges will arise, re-quiring adaptations in the developing European defence industrial base and the associated defence industrial policies.

19 See the chart in Defence News, 12-18 May 1997, p. 6
20 See the chart in ibid., p. 10

Trends

In addition to these policy-related shortcomings of the armaments and defence industrial domain in Europe, there are additional trends that necessitate change and a drastically improved European armaments and defence industrial 'system'.

Since the early 1990s, the defence technology and industrial bases in the United States and Europe have been confronted with a dilemma: on the one hand, the national demands for new military equipment and procurement budgets are drastically shrinking as is the global export market, while on the other, technological complexity and with it development costs of modern military equipment continue to increase, to some extent exponentially. These contrary budgetary and cost developments have already resulted in the cancellation or prolonging of many procurement programmes. The resulting decline in orders has been aggravated by the outlook that increasingly fewer new armament programmes will be initiated and gaps between successive programmes will become wider. The focus of future procurement and upgrading will be on force-multiplier technologies (such as C3I) and their respective countermeasure technologies. These technologies are expensive to develop and therefore require the pooling of resources by means of international co-operation or other strategies.

Parallel to these equipment trends, Western countries are in the process of adapting their force structures to new strategic and budgetary circumstances. It seems likely that the creation of multilateral forces or pooling will be the only way to maintain militarily effective structures. But these forces can only be effective if they use interoperable, indeed standardised, and even better common equipment. To provide the multilateral forces with standardised or common equipment, a much deeper integration and rationalisation of European defence companies

and of European armaments and procurement planning, as well as implementation, may be a prerequisite. At the same time, Europe depends very much on American assets, especially in force-multiplier technologies. There seems to be, therefore, a need for a transatlantic approach also.

Furthermore, two technological trends will influence future arms co-operation in Europe: the growing complexity in the design of modern weapon systems (with the related growth in development costs) and the increasing application of commercial technologies in modern weapon systems (spin-in). It is highly unlikely that the complexity of modern weapon systems will decrease. Moreover, future cost increases are difficult to anticipate. The increased utilisation of commercial technologies, components or subsystems might very well reduce further growth in the development costs of complex systems. However, even moderate cost increases add to the pressure to reduce costs by spreading the R&D burden via international co-operation.

Today, key technologies like sensors, materials, computers or electronics in general are as relevant to the efficiency of modern weapon systems as they are to the international competitiveness of companies in commercial markets. This has two consequences: first, in those areas of technology where the commercial sector is more innovative than the military, the latter will no longer be the technology-driving sector; and second, because high-tech commercial markets are fast becoming global markets with transnational division of labour and specialisation, the growing utilisation of commercial technologies, components or subsystems in modern military equipment will automatically increase dependencies on foreign suppliers. Such commercial dependencies might make protective national defence industrial policies seem pointless and in effect lead to the internationalisation of military procurement outside the classical arms co-operation schemes. Three trends concerning the specificity of the defence sector as well as industrial and technological developments require special attention:

Increasing dependence on the Defence Industrial Base

Larger military operations like the Gulf War in 1991 have always seen considerable industrial support in the building-up of forces and their preparation for combat. Due to budgetary pressures, armed forces will in the future increasingly rely on industrial support (at least at the higher end of the mission spectrum) and they must therefore develop a more partnership-oriented relationship with 'their' industry.

Industrial support can be sub-divided into five areas: enhanced maintenance, surge production, accelerated procurement of planned programmes, modifications, and the development and production of new systems. Dependencies on industrial support with regard to maintenance and surge can hardly be reduced by integrating European logistic operations, because this requires common equipment or standardised subsystems, components and munitions. With respect to logistic support (maintenance, spares, modifications) arising from sudden operational requirements or unforeseen equipment deficiencies relating to enemy systems and tactics, dependencies on timely defence industrial support in general cannot be reduced, although sometimes sudden demand will be fulfilled by buying components/systems off the shelf from foreign companies. But this is not an option under the control of the national military and may not always be available at a time of urgent need.

The experience of the Gulf war, with regard to defence industrial support in the preparation of military operations, would suggest a need for setting up standing contingency plans with industry for future emergencies. This could perhaps be limited to first and second tier defence contractors, plus some specialist firms, to cover special communication arrangements between forces and industry for the preparation of campaigns and the triggering of spares, repair and production status reviews for critical items.

It should also address the issue of providing industrial specialist teams that may be needed in the theatre of operations /deployment, for instance to perform urgent weapon modifications. [21] At the industrial or company level, this will include continuously reviewing stocks, spares and repair status, at least for potentially critical items. Such a policy will require active co-operation and support from both the company's own workforce and its supplier base. This alone might require identifying and selecting those suppliers which are able to reliably fulfil maintenance, surge and/or modification requirements in an emergency. Such an evaluation can only result from a longstanding working relationship with the respective company, potentially forming the basis for a trend towards exclusive relations between the forces and a number of reliable companies.

These security of supply and industrial support considerations may have important implications for European defence industrial co-operation and restructuring. But if faced with the choice to either maintain a weak and fragmented but national defence industry or a healthy and technologically competent but transnational European one, at least some governments might be willing to accept certain inter-European dependencies. Apart from the threat of losing key capabilities in the defence industry by not establishing trans-European work-sharing, the mere fact that European forces in most contingencies already operate in a multinational framework, in which forces establish/practise operational work-sharing, might also ease the problem of accepting industrial dependencies.

And if the European Union and the respective national governments want to develop a certain set of military options independent of US support, the same arguments made above for maintaining national DTIBs in Europe can be made for developing and maintaining a competitive transnational European DTIB.

21 see: Implementation of Lessons Learned from Operation Granby, Defence Committee Fifth Report (DefCom), House of Commons, London, 1994, p. 83

Increasing relevance of system companies

Beginning already in the late 1980s, national governments pushed or provided support for defence system companies to create 'national champions'. In Germany for instance, a strong pole in the aerospace industry developed around DASA. The same was true in the UK, where new 'big players' came into being, initially with two industry poles around British Aerospace and General Electric-Marconi, and subsequently the mega-merger of the two into BAe Systems (later even integrating the Swedish Saab). But outside aerospace, developments were much slower. For instance, it was years before two strong industry poles could be formed in the German land armaments sector with Krauss-Maffei-Wegmann and Rheinmetall. In the framework of the state structure of the French market, strong state-owned industry poles have existed for many years (GIAT, DCN, etc.). To date, there have been no definite plans to privatise these companies, although national defence planners regularly demand precisely this. Nevertheless, electronic heavyweights like Thomson-CSF were privatised, subsequently resulting - with the conversion to Thales - in the largest French defence company. At all events, by the late 1990s the newly created industry poles were trying to consolidate their recently acquired strength. As a consequence, the main defence markets have today all spawned 'national champions' which dominate their home markets.

But during the 1990s, some essential restructuring decisions were also taken at a European level. In addition to those European defence markets already consisting of purely private companies (i.e. Germany; UK; Sweden), major arms producers such as France, Spain and Italy privatised their aerospace and defence electronic companies in the second half of the 1990s in order to prepare their industry for participation in transnational mergers as a major step towards European transnational consolidation. But trans-national consolidation has been mainly limited to aerospace, missiles

and electronics. Neither land armaments nor naval shipbuilding has been greatly affected by cross border mergers.

The process of European consolidation resulted in three giant system integrators (BAe Systems; EADS; Thales) which encompass all major areas of defence business, although they are mainly perceived as aerospace or electronic companies. But EADS is already the largest land armaments company in the German market and the former purely electronics enterprise Thales competed for the new British aircraft carrier contract.

The already dominant position of the large system integration companies will be consolidated in the future as governments and the military increasingly look for complete system or even system-of-system solutions. The financial and technological resources required to develop such complex system architectures in general favour larger companies. [22] The growing complexity of military equipment and the system-of-system approach associated with network centric warfare ideas are already leading system companies to broaden and deepen their in-house capabilities.

At the supplier level and consequently with regard to small- and medium-sized enterprises (SMEs) three developments can be seen:

- as the survival of a competitive supplier base is of utmost importance for the survival of system companies, the ongoing consolidation on the supplier level - resulting in ever fewer suppliers for defence specific components – is leading to increased vertical concentration of system companies, if they have to take over suppliers of key components who will otherwise run out of business in order to keep the know-how relevant for their own products or to block access to this know-how for competitors.
- if the customer continues to require financial participation of the system company in the development of new equipment, the system companies (as for instance in the automobile industry) will ask their suppliers to also assume a considerable part of this financial burden. Such a development will bring about - probably even on a transnational level - consolidation on the supplier level as in the commercial aerospace industry. In such a process, supplier cartels will be established which, due to their market power, will become real partners for the system companies.
- 0 exclusive relationships develop between individual system companies and a number of preferred suppliers which are characterised by a very close co-operation and risk sharing. In this case the suppliers or SMEs group around a system company and both sides develop a type of symbiotic relationship. Such exclusive relationships could be broken up only on a case-by-case basis for a few individual programmes: when a foreign government via offsets, local content etc. brings in its own SMEs for that specific business.
- Therefore national small- and medium-sized enterprises/suppliers in the mid to long term will only survive
- either through a very close working relationship with national system companies or national development and production facilities of transnational system companies,
- or by repositioning themselves on the international market through transnational consolidation with other suppliers in conjunction with specialisation and work-sharing, establishing supplier cartels that may serve as a partner for several system companies.
- For SMEs from countries without large system integrators, only the second option is available. The first option is profitable for a government who wants to buy via negotiated offsets, local content, or programme related fair return. However, this

22 But with regard to development, in some cases they may be substituted or supplemented by certain highly innovative engineering offices.

option does not improve the establishment of long term partnerships with foreign system companies, which is necessary for the long term survival of these SMEs.

Increasing demand for cutting the response time of the DTIB and the procurement system

Since World War II, it has been an essential prerequisite for Western societies to maintain superiority in military technology in order to be able to use military force. Fielding superior forces with the rationale of dramatically reducing losses and collateral damage has been a leitmotiv of western military strategy. Equally important for the political acceptance of putting military power to work for political objectives other than national defence is the capability to act quickly and fight a short and decisive war. As in the past, technologically superior equipment engineered to provide superior mission performance will be critical to the success of forces. Improvements in information technology and the fusion of all-source intelligence with the fluid integration of sensor systems, weapons platforms, command-and-control-centres and the logistic support infrastructure (network centric warfare) will allow operational tasks to be performed much faster. Forces harnessing these capabilities will gain dominant battlespace awareness, which will decrease response time and make the battlespace considerably more transparent to those who achieve it. In this future battlespace, information superiority will thus be the prerequisite of operational success. [23]
A competent adversary will be able to use commercially available technology to rapidly improve its military capabilities. Military advantage will therefore go to the nation which has the best cycle time to capture commercially available technologies, incorporate them into weapon systems and field new operational capabilities. [24]

23 Information superiority means "the capability to collect, process, and dis-seminate an uninterrupted flow of informa-tion while exploiting or denying an adver-sary's ability to do the same." Joint Chiefs of Staff, Joint Vision 2010, p. 16
24 see: Paul G. Kaminski, Undersecretary of Defence for Acquisition and Technology, FY 1997 DoD Acquisition and Technology Program, Statement before the Subcommittee on Acquisition and Technology of the Senate Committee on Armed Services, 20 March 1996

With operational success in most contingencies being dependent on information superiority, maintaining the qualitative edge in information, computation, sensor etc. technologies – under conditions of global availability of high technology – requires a very innovative industrial base. In an era of declining defence budgets, this can only mean leaning on the innovation rate and high volume production in the civilian industry wherever possible.
Civil-military industrial integration is therefore driven by the objective of leveraging the commercial sector in order to be able to field advanced weapon systems both more quickly and more affordably. Instead of developing weapon systems over a 10-20 year period and then fielding the systems for the following decades (until the next modernisation cycle), future military demands as described above will require continuously improving arsenals with systems designed and deployed in a two- to four-year period. Such short cycle times are increasingly common in the commercial world and will be a necessity in future defence-related industries in order to maintain technological superiority.
Thus the need to stay ahead techno-logically requires a shift from separate industrial sectors for defence and commercial goods to an integrated industrial base. The rationale for civil-military industrial integration is first to ensure that the military will always stay ahead of technological developments resulting from the high innovation and short modernisation cycles within the commercial industry and second, by supporting an early commercial application of new technologies, to profit from high volume production in order to reduce prices and make new technologies more affordable for the defence community. In doing so, the military becomes dependent on the commercial industry. Maintaining military superiority therefore demands sustaining or creating competitive advantages as well as commercial opportunities for the national or European high-tech industry, not only to maintain or achieve superiority, but also to be able to profit from it against its international competitors.
Thus, funding of defence-related science and technology urgently needs to be included in European research programmes, from which they have been almost entirely absent to date.

Thus, in the case of nanotechnology for instance, the EU plans to spend _ 1.3 billion under the 6th Framework Programme (2002-2006). The FP6 covers a broad variety of applications of nanoscience ranging from the engineering of new materials to production and processing technologies, but does not provide for defence applications. Comparing European with US nanoresearch programmes, the European deficiencies become particularly obvious. According to the US National Nanotechnology Initiative (NNI), the second largest contribution in the period 2000-2002 comes from the US Department of Defense (DoD). In Fiscal Year 2002, the DoD contribution ($ 180 million) was almost as high as that of the National Science Foundation ($ 199 million). Ignoring the need for defence technology research in EU programmes excludes the defence industry from participating in first-hand R&D, which makes technological innovation in the defence sector in EU countries unnecessarily time-consuming, costly and inefficient.

The growing relevance of dual-use industry for defence would not only facilitate the abolition of Article 296 and the integration of the defence market into the internal market under the auspices of the EU, but would also demand a very efficient European procurement system.

To sum up:

- the specificity of the defence sector, which in this case is the growing dependence of the armed forces on timely and adequate industrial support, translates into urgently developing a common European DTIB to drastically improve its competitiveness;
- transnational restructuring should focus on the system company level, but also on the second and third tier level of the DTIB;
- the European DTIB should be integrated into the commercial high-tech industry and its response time be cut considerably. Such short modernisation cycle times have to be made possible by developing a highly efficient European procurement system.

European procurement reform: issues to be considered

Europe must improve its collective ability to develop and produce state-of-the-art military equipment efficiently. This requires reform on the European demand side including the requirement process, procurement systems and programme management, but also reform of market and industrial structures. The fundamental problem is to reconcile efficiency with political factors. Although there are formally structured dialogues among European armed forces about their equipment needs, there are many deficiencies in the process of formulating requirements and setting specifications. [25]

Reforming the requirements process:

Formulating requirements is a complex, iterative process driven by strategic considerations, force doctrines, budgetary plans and financial constraints, equipment design preferences, technological assessment and industrial considerations. It takes place within a complex administrative hierarchy encompassing a large number of political, military and technical actors where judgement is not always based on objective criteria. It must find a compromise between a range of political, service-branch, functional, technological and industrial interests. It starts with the determining of security policy or military strategy objectives and is followed by the determining of the tasks of the armed forces and the related force capabilities. On this basis, specific operational requirements are developed, supported by technical analyses of what is possible and matched against what is affordable. As long as there is no common or very closely co-ordinated European approach to the development of military equipment requirements by or through a common European organisation, there will always be ample room for major differences of opinion about how to equip the armed forces of Europe even without taking into account national industrial interests and preferences.

Thus, regardless of how the market and industry are structured, common military equipment will only be possible if the customers have the same or at least complementary military requirements. Key issues include performance, life-cycle costs, maintainability and reliability.

25 See: Keith Hayward, Towards a European Weapons Procurement Process, Chaillot Paper 27, Paris 1997, p. 5

National assessments about what is the appropriate mix of characteristics of a military equipment item emerge very early in the requirements process. By the time a project reaches the stage where internationalisation might be considered, a draft operational requirement will already be based on a negotiated consensus. In some cases, the concept might have been subject to technical evaluation by national research establishments. Internationalisation must therefore occur at an early stage and be backed by the appropriate range of specialists and experienced procurement officials. It is also essential that the military input is internationalised as soon as possible. It will also need a means of advertising emerging concepts to guide a transnational industrial input.

The requirements process is likely to anticipate national technological and industrial interests by stressing those attributes in the proposed weapon system most suited to the capabilities of domestic arms manufacturers. This may become a cumulative process in which national doctrinal preferences help to determine the scope and direction of public and private R&D investments, which in turn reinforces national military habits.

Military doctrinal differences

National doctrinal preferences and military (combat etc.) experiences have profound implications for the formulation of common requirements. (This is what makes harmonisation so difficult for the time being, but also offers the hope that if European armed forces gain more experience in combined operations with each other, the chances of them coming up with more coherent demands will increase over time.)

The core issue for harmonising equipment requirements or developing common ones is to amalgamate or at least closely co-ordinate the conceptual thinking that underpins views of what a certain system (i.e. a tank or aircraft) should do and how it should do it. Increasingly frequent common military operations and especially direct testing in combat conditions will in the long run facilitate further harmonisation. However, without a conscious effort to harmonise or commonly develop conceptual thinking, national views of weapon characteristics may vary considerably due to different geographical positions and aspirations (global or regional), political sensitivities, legacy of traditions from national or parochial service perspective, military experience etc.[26]

However, many smaller European countries without a large national DTIB are less likely than the core military states of France, Britain, Germany and Italy to hold strong doctrinal views about weapons characteristics. They are mostly unfamiliar with the process of drawing up requirements with a view to development and production.

Replacement schedules

Harmonising in-service dates among several states is an important prerequisite for any arms co-operation programme but has always been difficult to achieve. Some states can and will wait for a weapon, while others have a much more pressing need to replace ageing or obsolete equipment, whose service life could no longer be prolonged. Due to economic pressure, some military requirements have to be postponed or cancelled. The tendency of states to act unilaterally in this respect can play havoc with a co-operative programme, undermining programme stability and consequently costs and procurement schedules.

As more systems are designed with mid-life updates in mind, there will be more scope for different replacement schedules to be orchestrated in a way which is more acceptable to all members. But there will be many situations where states or their armed forces will be less flexible. With the capability gaps of their armed forces in mind and the high probability that they will nevertheless have to send their forces into crisis management or combat operations, many European governments may be very reluctant to be caught with inadequately equipped forces. Thus if they are economically able to fill a capability gap, they are probably less willing to wait too long for others to join in.

26 The development of Western European tank designs during the Cold War provides a good example: although analysis of tank engagements during the Arab-Israeli wars (especially that of 1973) led to some convergence within NATO, national prefer-ences continued to affect allied thinking on tank design and the determination of requirements for main battle tanks.

Harmonising budget cycles and procurement philosophies

In the past, one of the main attractions of co-operative arms programmes was thought to be their stability. However, while international status may give some protection, it did not prevent many co-operative programmes experiencing budget cuts or cancellation whenever European states unilaterally cut defence spending.
France and Germany bilaterally tried to improve the budgetary stability of large programmes. The December 1996 Franco-German summit appeared to have established a framework agreement covering the funding of all major weapons programmes. This was to have included financial penalties if either government changed its commitment to production numbers or delivery dates. [27] But even between these two countries the attempt at budgetary co-operation failed, undermining any optimism that it might work well between more European states. As a consequence, it seems to be essential to establish a supranational institution able to impose sanctions on member states not willing to fulfil their obligations.
With regard to procurement processes, there are major differences in procedures, style and approaches between European countries. Some states establish long-term, relatively stable plans covering up to 10 years while others work on an annual cycle, making it difficult to orchestrate co-operation. There is also some convergence on the wider principles of industrial competition. However, there is still some tension between the two main European industrial and techno-logical powers on procurement practice, especially with regard to European preference.
Establishing a common procurement process - in order to ensure a smooth translation of common operational requirements into defined programmes and fully optimise European defence resources - in any case requires further consultation and strategic planning of defence budgets.

27 See: De Briganti, Franco-German Rift Narrows, in: Defense News, 16 December 1996, p. 4
28 Concerning the shifting of tasks from the national to the European level, there have been numerous proposals during recent months. The three most essential ones are the joint Franco-German proposal, the final report of Working Group VIII of the European Convention and a Franco-British proposal. see: Franco-German comments on the prelimi-nary draft final report of Working Group VIII (WD 022), Brussels, 4 December 2002;
Final report of Working Group VIII – Defence, Brussels, 16 December 2002; Strengthening European Cooperation in Secu-rity and Defence. Le Touquet, 4 February 2003

European armament / defence industrial future

European governments have several options in directing their future procurement, armaments, and defence industrial policies in order to cope with these trends. Firstly, they could continue to concentrate these policies at the national level or, secondly, they could make the shift to the European level. [28] The following three scenarios discuss potential development options and the necessary steps to make them a reality.

Scenario I: Fragmented Europe

General description

The first scenario assumes that in the armaments field European governments are unwilling to give up sovereignty. Therefore security and foreign policies as well as defence, defence industry, and procurement policies remain exclusively under national control. As national governments want to safeguard their capability to act autonomously in the field of foreign and security affairs, its DTIB has to be able to support its security, foreign and defence policy aspirations. As there is no common force, capability, and equipment planning, redundancy will characterise the structure of the armed forces and the DTIB in Europe.
On the other hand, governments will start to co-ordinate their armament and especially their requirement policies more closely, thus creating more opportunities for arms co-operation. As is the case today, co-operation will be focused on individual armaments pro-grammes and based on redundant industrial structures. It will still be an instrument of primarily national defence, economic, industrial or technological policies and – due to 'juste retour' demands and security of supply considerations – it will offer only limited opportunities for cost efficiency through work sharing and economies of scale. Nevertheless a common procurement structure (i.e. OCCAR) managing a number of co-operative programmes may lead to greater

efficiency in managing programmes on the demand side. And in some cases the existence of transnational defence companies – albeit operating in national markets and thus a fragmented market place – may allow more efficient work-share arrangements. To support this, the governments of Europe`s transnational industry provide a common legal framework to harmonise certain procedures in order to ease the day-to-day operations of these transnational companies (FA-LoI6).
But these steps only offer marginal efficiency improvements and - as a result of almost flat R&D and procurement budgets - the national DTIBs will shrink in an almost uncontrolled way as governments will have only limited opportunities to guide the process via new programmes. On a European scale, this industrial shrinkage and restructuring takes place in an uncoordinated fashion. Therefore, these uncoordinated processes will - in combination with the only loosely co-ordinated national requirement processes and the fragmented European marketplace - undermine the competitiveness of the defence technological and industrial base in Europe.

Key features on the demand side

In the context of the prevailing national focus, each national government undertakes its own force planning, decides autonomously regarding its own military capabilities, and as far as possible avoids depending on foreign military and – due to security of supply considerations – defence industrial support. As a consequence of a lack of confidence in the reliability of their European partners (in terms of budgetary and thus programme stability, but sometimes also in political terms), governments are not willing to abandon national DTIB capabilities through work-sharing and specialisation.
But given the demands placed on their armed forces resulting from a multitude of international operations, the need to fill important capability gaps through the development and procurement of new equipment items, plus ongoing budget pressures, governments begin to co-ordinate their requirements processes in a way that gives rise to more opportunities for co-operation on individual programmes.

On a European level, this could take place for instance under the auspices of the Military Committee. Working groups could be established that focus on the development of common threat perspectives and a common definition of military task. Building on the experience being acquired in the ECAP process and transferring this process into a permanent although rearranged structure, other working groups may tackle specific capability areas like strategic deployment, mobility, strike, or C4ISR. The idea here would be to discuss and co-ordinate the development of new capa-bilities early in the process, before national positions are fixed, thus providing more flexibility for co-operation further down the process. Therefore the working groups should encompass the same people from the military, the procurement branches, the research communities and industry who are also engaged in determining the respective national requirements in the early phases of these processes. The capability working groups could also discuss lessons learned from past international operations, thereby establishing multilateral fora for the development of common or at least of very similar concepts and doctrines for the use of force. Although these working groups entail no further obligations, they would allow national representatives to exchange initial ideas about how certain equipment needs may be satisfied and may therefore lead to an increase in the number of individual programmes on which nations are willing to co-operate.
At the same time, national governments will try to streamline national procurement procedures by new approaches in order to save money and field new technology more rapidly. Some of the new approaches start with a functional requirement early in the process that will be specified by different equipment concepts in later phases. Such a flexible approach - if opened up early in the process to people from the military, the procurement branches, the research communities and industry of partner countries - may dramatically improve possibilities for new co-operative programmes, as it will be much easier to find a compromise on military and technical specifications and in-service dates. The above-mentioned working groups placed under the EU's Military Committee may provide the ideal basis for such a multilateral requirement specification. If these

groups have a certain budget at their own disposal to verify their conceptual ideas for new equipment items via simulations or even technology demonstrators, as well as for the development of common support tools (simulation models etc.), this would create a further incentive for a multilateral approach to specifying national functional requirements. Associated with this and based also on some agreement regarding future equipment needs, a joint budget for military R&T seems possible (in addition to national budgets). This is the approach proposed by the Greek government.

Key market and DTIB features

Although considerable improvements in the development of harmonised or common equipment requirements and in-service dates may be possible, creating a basis for increased co-operation, this co-operation will still be based on industrial redundancies in Europe as most national governments for a variety of reasons, including security of supply considerations, try to maintain national DTIBs as broad in scope as possible. Therefore, European arms producing countries will try to safeguard at least the key capabilities across all different defence sectors (land armaments-; naval-; aerospace-; electronics-industry). Their ability to do this and consequently the degree of redundancy in Europe`s defence industrial base will only be limited by the scarcity of national R&T and procurement resources. Under such conditions, common funding for defence R&T inherits the risk, that just another European mechanism for redistributing already scarce resources is developed, where countries use common research budgets to implement national policy objectives and by so doing further enlarge the inefficient structures in the DTIBs of Europe.

29 This has been the focus of the Framework Agreement between the LoI6 countries (and the associated MoUs) mentioned above.

On the other hand, this scarcity leads European governments to support industries' drive for transnational restructuring and to support those processes through the development of a legal framework that provides for some harmonised procedures to allow more efficiency in the day-to-day work of trans-national defence companies. [29] But as these companies still operate from and in national markets, they are still perceived as an instrument for the different national policies described in the first chapter. Thus, the possibility of them rationalising their internal (but cross-border) operations by re-structuring and closing facilities remains rather limited as national customers require some return on investment within their own borders. It would be a major step forward if at least the major arms producing countries in Europe no longer required the principle of 'juste retour' to be implemented for each individual co-operative programme and instead agreed on a global approach, allowing a balance between individual government expenditures and industrial work-share over a number of different programmes and a longer timeframe. This would give programme managers and industry much more flexibility in negotiating work-share arrangements that also improve efficiency. Such a step would be of special advantage for transnational defence companies, as it would allow them to stream-line their own processes and even establish work-sharing within their company but across national borders. This could bring about measurable cost savings for arms production.

But getting rid of programme-related 'juste retour' means national governments will have to accept that certain national development or production facilities may be closed. The less governments intervene with this internal restructuring of transnational companies, the less they can control their own future dependencies on defence industrial facilities in other countries. Therefore, even this step requires confidence that the partner countries are able and willing to maintain those industrial capabilities to a degree necessary for supporting not only the respective domestic

demand but also every other customer becoming dependent on that company. Such a step therefore necessitates transparency of financial and procurement planning between the co-operating states, which is currently unknown. In any case, abandoning programme-related 'juste retour' could only be possible for new joint procurement programmes. Existing ones have already been apportioned and it is highly unlikely that they would be modified. Thus, getting rid of programme-related 'juste retour' requires a number of new co-operative programmes of comparable size to start almost in parallel. Therefore, such an improvement will be a very long-term endeavour.

To permit a higher degree of competi-tiveness, the European Council has to think about strictly limiting the application of Article 296 TEC. [30] Such a step or even the abolition of this Article would have its greatest merit in this scenario, as procurement by national offices would dominate and common rules applied by all states involved (in combination with cross-border competition between European defence companies) would greatly improve the competitiveness of Europe`s DTIB. But in this scenario, national governments would not develop the necessary confidence in one another to accept the far-reaching consequences which a strict limitation of the application or even the abolition of Article 296 would provoke. The greatest step imaginable in this scenario would be a code of conduct for a more limited use of the article. For instance Article 296 would no longer be invoked for all dual-use items or for contracts below a certain volume, for example excluding only major projects. This would bring national political practice in Europe more closely in line with the very narrow interpretation of Article 296 by the European Court of Justice. Arms exports as well as arms export procedures will also be largely unharmonised and governed by national policies and national law.

30 The Final Report of Working Group VIII of the Convention considers _the scope of Art. 296TEC to be specified with due regard for experience acquired in Community matters" for which the Head of an eventual Armaments Agency should be responsible. see: Final report, p. 23
31 In reality, there will always be a mixture across different branches of the defence industry.

Advantages

There are nearly no advantages with respect to the actual situation. A minimum change has to be the abolition of the principle of programme-related 'juste retour'. This would make armament programmes slightly more efficient because the industrial side could realise some rationalisation effects. As a consequence, the European industry landscape would become slightly more stable and defence firms a little more competitive. However, with only a small number of large future programmes, even this would not bring about any profound amelioration. Overall, because the modifications are too marginal, the changes would not result in any major advantages for the national procurement processes.

Consequences

Despite some cost savings on the customer side, procurement procedures do not change significantly. 'Juste retour' will remain an axiom for common procurement projects, even if 'programme-related juste retour' is abandoned. The supply side will further profit from national protectionism vis-à-vis foreign European defence firms, but at the same time will also safeguard redundant and non-efficient structures. Correspondingly, competitiveness amongst European companies will not be realised, nor will the rationalisation of arms production.

But armaments co-operation programmes will allow some pooling of resources or cost sharing and will offer some economies of scale by single-sourcing on the component level. But it remains very doubtful whether broad and competent national DTIBs can be maintained. They will probably shrink further and govern-ments will have to accept - implicitly or explicitly - the transformation to one of the following three theoretical models. [31]

- In the system integrator model, national firms will maintain capabilities and know how in system integration for major platforms but will increasingly rely on imports from the US or elsewhere for important sub-systems and components. This model leaves governments and their armed forces dependent on, for example, US industry for security of supply, un-dermining the rhetoric of an autonomous European defence policy. It might, nevertheless, have some political appeal because it allows the Europeans to present an image of being able to field complete weapon systems. Platform integration would rarely generate efficient scale, but sub-contractors could be selected on a single source basis through global competition.
- In the supplier model, a state tries to match its defence imports with defence exports by concentrating on the production of sub-systems and major components. These are then sent to system integrator companies in other countries. Although such an approach would probably not undermine security of supply, its wider national political appeal would be rather limited because it would involve broad and highly visible strategic dependencies.
- In the second-class-industry model – the third option – a state aims to develop and produce both the platforms/systems and most of the major sub-systems and components. But with limited resources available, the equipment would not match US sophisti-cation.

Each of these models for the future development of national DTIBs in Europe will undermine national and European security, foreign and defence policy aspirations. European countries will be engaged in a very competitive process, as they would all like to see their system companies form the core of the new European structure and thereby have their partners carry the economic burden of restructuring and accept the related defence industrial dependencies. As a consequence, the majority of the national markets in Southern, Eastern, and Northern Europe will be dominated by US companies, which will also have a very strong position in the central European markets.

All things considered, the national approach makes the long-term development of an ESDP highly unlikely. As the benefits of the national streamlining processes are too marginal, there will be no financial margin for sustainable European or even national solutions.

Decisions to be taken

- rejection of the principle of "programme-related juste retour"
- establishment of working groups to facilitate the development of common requirements
- eventual amendment of Article 296 TEC

Scenario II: Core Europe

General description

The second scenario assumes that some or all of the major European arms producing countries (which are already closely co-operating in defence policy as well as in armaments and force planning via NATO and other multi- or bilateral structures) form a core within which they are willing to share some aspects of their sovereignty with regard to forces and the DTIB. [32] Therefore, security and foreign policies as well as defence, defence industry, and procurement policies are partly placed under multilateral and some aspects probably even under supranational control. This has to be done in a way that allows the participating governments to join coalitions outside EU-15 and does not require that every country participates in every military operation of the group so as not to undermine the group's capability to act militarily. Thus the states involved will have to maintain certain national force capabilities and the common capabilities have to include some sort of redundancies that allow an opting out.

32 The idea of a core European solution is mentioned in the Final Report of Working Group VIII (Defence) of the Convention as a "specific form of cooperation" or "defence Euro zone" as well as in the Franco-German contribution.

But besides this, force, capability, and equipment planning within the core will be carried out on a multilateral, intergovernmental European basis and redundancy in the structure of the armed forces will be limited to those areas, specifically required to maintain certain national military options including opting out. Redundancy in the DTIB as far as it can be maintained will enable competitive tendering and will thus foster the competitiveness of European defence companies.

In general, European countries willing to constitute such a core, with a common market guided by common rules and regulations, have two options to link that approach to the EU and by so doing use EU institutions for management and control:

- they could either –in a manner similar to that for the Euro - establish their group in a protocol annexed to the European Treaty. This step can only be taken and changes implemented on the occasion of the Intergovernmental Conferences. The next opportunity would be the IGC in 2004. This protocol solution would be easier to negotiate as any number of countries could develop the necessary market rules and regulations free of interference from others. It would also be the more binding solution as the rules and regulations would become primary law via the protocol to the treaty and thus legally binding on the members of the core.
- or they could establish their group as a form of 'enhanced co-operation' according to Article 43 – 46 of the TEU. [33] This could be achieved and changed at any time and does not depend on the IGC schedules. Although this would also allow the members to negotiate the rules and regulations on the basis of their own considerations, to start a process of enhanced co-operation today requires several modifications to the acquis: first, the option of enhanced co-operation has to be made available for the European Defence and Security Policy; second, the minimum number of states necessary for enhanced co-operation has to be reduced (from the present eight to six); and third, it would probably be helpful if the decision of the EU Council to allow such a core to develop no longer requires unanimity but a qualified majority.

In both cases, the members would develop 'their' common market according to their own considerations but may delegate the supervision or control concerning the adherence of individual members to the market rules, or of certain specific aspects like merger control, to the Commission. In such a case, the European Court of Justice could also come into play by deciding on intra-core European conflicts. Both solutions would not only provide a common market, but also a mechanism for resolving conflicts.

Co-operation between states in the armaments sector will focus on the development of common policies governing the defence industry but no longer on individual programmes. Arms co-operation therefore is no longer an instrument of national policies but rather focused on the development of a common policy. The DTIB within this core Europe operates within one common market under harmo-nised or common regulations and procedures allowing fair competition within the core. Where competition is no option due to market size, a common policy towards monopolists will be developed.

Common requirements and a competitive market place will allow synergies and economies of scale to develop unhampered and thereby vastly improve the competitiveness of the DTIB. Depending on which countries may form this core, between 80-90% of European armaments development and production will be covered. With the most important European DTIBs and defence markets forming a highly competitive core, European products would be cost efficient even compared to the products of their US competitors. Thus they could far better compete with US companies on the international armaments market, including the markets of those European countries not part of the core.

33 The Franco-German proposal calls for enhanced co-operation to be "included in the Treaty for ESDP" Moreover, enhanced co-operation is seen as the instrument for integrating into the EU the special obligations which some member states have under-taken in the framework of WEU.

As the core and non-core European countries will work together closely in all political dimensions impacting upon armaments (foreign, defence, economics etc.) the disadvantage of not being part of the armaments core from its very beginning will be rather limited. Especially in view of the fact that the small defence companies in the non-core countries would be operating from a protected marketplace but would have free access to the core market. Thus, governments of non-core countries could protect their defence firms until they feel the time is right to join the 'club'. On the other hand, as the core European states will not accept to redistribute eventual common R&T budgets from the core to the non-core countries, the survival of these companies would depend on their limited home market and national budgets. Therefore in the mid- to long-term, the European core market would become irresistibly attractive for other European countries to join.

Key features on the demand side

In the framework of sharing sovereignty, capability and force planning for the members of the European core will be carried out on the EU level, but supported and executed on the national level. Planning on the EU level provides general guidelines for the capabilities and contributions of the respective national armed forces and is closely co-ordinated with NATO. It may be focused primarily on the Petersberg tasks. National contributions for coalitions outside the core would have to be planned on the national level but in close co-operation with the EU planning staffs.

The armed forces of the core countries would see a considerable amount of work-sharing and role specialisation, pool-building or other kinds of close co-operation in order to develop efficient structures. To foster such a development, some sort of military convergence criteria would have to be developed, so that member states willing to join the "club" would have to adapt their budgets (RT&D, procurement) to a certain standard. The establishment of such binding criteria for national contributions has to be accompanied by increased transparency with regard to national budgets in order to build confidence among the core European countries that each party will honour its obligations. Role specialisation and work-sharing and the associated dependencies on one another at the armed forces level would overcome most of the security of supply considerations which currently prevent (core) European wide specialisation in the DTIB. [34] As the armed forces require defence technological and industrial support, a European defence industrial policy addressing – inter alia - security of supply considerations would have to be developed and implemented.

This could be one of the tasks of a European Capability, Armaments, and Strategic Research Agency. [35] It could incorporate the working groups described in scenario one and translate them into a departmental structure as part of its capability planning and requirements branch. The strategic, operational and doctrinal guidance for their work may either be developed within NATO or become the task of the Political and Security Committee or the Military Committee of the EU Council. The agency itself should also be involved in R&T planning and management in close co-operation with the EU Commission (with regard to dual-use technologies), and serve as the procurement office for most of the armament programmes of the European core countries. It would have its own budget for supporting the requirement process and concept development, for R&T programmes as well as for the development and procurement of military equipment items. As the RT&D and procurement office, it would co-ordinate and provide guidance for the existing national offices. It would also have to co-ordinate security of supply arrangements between the countries and industries forming the European core.

34 The Franco-German contribution proposes "the pooling of capabilities and resources as well as role specialisation". 35 Nearly all recent political proposals call for a certain form of an Armaments Agency. see: Franco-German, Franco-British proposals, as well as Final Report of Working Group VIII; see: UK set to spurn plan for EU defence procurement, in: Financial Times, 9 December 2002, p. 2

Key market and DTIB features

Depending on how the European market is developed – through a multilateral approach or the abolition of Article 296 – the framework in which European industry must operate will vary. If defence is integrated into the internal market of the EU by abolishing Article 296, industry will operate under common public procurement principles established on the basis of the long-term experience of the EU Commission. In addition, the Commission would be responsible for merger control, cartel issues etc., limiting the influence and power of national governments on European defence industrial developments beyond their role as customers. If those governments establishing the European core prefer to keep Article 296, they will have to work out a code of conduct on the use and application of Article 296 amongst themselves, which – inter alia - facilitates transnational restructuring of their DTIB, ensures access to national defence markets and non-discrimination for all qualified companies of the core states, while also guaranteeing security of supply. In addition, SMEs of other EU member countries should have free access to the core market. Moreover, if Article 296 is maintained, related national legislation, rules and practices would need to be revised and harmonised including obstacles to foreign ownership in defence companies or measures to control subsidising practices for exports and restructuring. Other issues are being already tackled by the Framework Agree-ment of the LoI-6 countries but need further development, including export licence procedures and policies or security of supply.

Protective national markets will disappear, and along with this also one major rationale for cross-border joint ventures (= gaining access to protected markets). National companies will become involved in tough and intense competition in the core-European defence market. Only the strongest defence firms or essential niche companies will survive. But this does not mean that only the present-day European (national) champions will survive. Undoubtedly, the increased competition would result in various mergers driven by strategic considerations, which would create global players for the world market (the situation could be compared to the process of restructuring in the US in the early 1990s). Supported by common requirements in a much larger marketplace and a closely co-ordinated R&T policy, these companies could take full advantage of economies of scale and dramatically improve their competitiveness. In addition, integrated procurement would also mean more planning security for industry, as armament programmes become more stable. In the core European armaments market, arms orders would be more transparent and the defence market would become more stimulated. However, such a decision would trigger a quite profound restructuring of the European defence market. It is obvious that the smaller niche firms would have to withstand the pressure of an open defence market, which would not be easy. On the other hand however, in many branches redundant industry structures on the system level would disappear, allowing for competition only on a transatlantic scale.

Advantages

Synergy effects and higher productivity would dramatically improve the competitiveness of Europe`s DTIB, which would in turn be able to manage more sophisticated and modern armaments programmes. Against this background, the 'new' converged (core) European companies would be able to invest more in R&T, as to would their governments, which would place a considerable proportion of their R&T budgets in common R&T programmes. Work-sharing and specialisation within the core European DTIB would allow European defence firms to produce cheaper, better and standardised military equipment. Correspondingly, European forces would become more interoperable. In addition, the consolidation of the European defence industry would strengthen this industry sector as a whole, thereby creating a strong industry pole in the EU, able to compete with US defence firms on a global level.

As the result of rudimentary forms of co-operation in the first forms of integration, the degree of confidence amongst national governments is growing. National administrations are ready to become dependent on their European partners. Regular consultations are creating closer links between administrations. It is clear that the further this

scenario develops, the more effi-cient the results for arms production in a core EU would become. [36] And as a consequence, more member states would be attracted by the highly integrated "Mini-EU" and willing to join the core.

Consequences

The core-Europe concept could serve as the testing field for highly integrated solutions. However, even in this scenario different levels of multilateral decision-making would develop. This concept would offer some advantages for each EU member state. The large countries would profit from a highly inter-linked defence procurement. They would reap the cost savings of common solutions. At the same time, the small- and medium-size countries, and their respective respective defence industries, would profit from the opportunity to deliver military equipment items to the core-Europe states. Meanwhile, they could continue protecting their defence firms as they would not belong to the 'club'. So those member states could direct their defence contracts as before exclusively to their homemarket firms, thus guaranteeing their survival. In addition, the enterprises could become competitive by participating in the core European market, open to every defence firm within the EU. As a consequence, the mostly niche firms could be prepared for greater competitiveness and when they have attained a certain level, the respective governments could join the 'club'.

In every case, the different steps in this scenario would also have to be decided in an evolutionary process. Accordingly, this scenario offers two principal options for the future development of Europe`s DTIB

- The transnational consolidation into business overlapping system companies (package merger), combined with a policy of European preference would be the first option. In the long run this option is not attractive because European companies would probably lose their competitiveness without US competitors in their own markets. From a military point of view, the major problem with this model is that only with massive financial efforts would European industry be able to satisfy the entire spectrum of military requirements, including the closure of those gaps where Europe now imports complete systems from the US. Because the financial prerequisites for such an industrial strong-man act are ab-sent due to current budget pressures, a strict policy of European preference would leave Europe's armed forces with serious equipment and consequently capability gaps.
- Another option is provided by transnational consolidation into system companies encompassing all major businesses (full merger), combined with a strictly time-limited policy of European preference that exclusively serves as a shield against hostile take-overs and so on during the con-solidation phase itself. In the mid to long term, the European DTIB would be open to transatlantic competition and consequently also to the concept of having transatlantic industrial groups and alliances competing for European or US procurement contracts. But before such transatlantic alliances can be forged with US industrial giants, European companies must amalgamate into larger entities.

Both options would maintain national R&D and production capabilities and therefore industrial identities under the roof of integrated transnational syste m companies. They would combine economies of scope and scale with proximity to procurement markets and national customers, which is decisive for securing the required financial support for new programmes. A comparable and equally motivated decentralised Standort policy can be observed within the large US defence conglomerates. Option two should definitely be preferable for security and economic reasons. It would avoid the defence industrial splitting of the transatlantic alliance and would establish Europea n industrial structures that are competitive even in the long term and without state subsidies.

36 So the Franco-German concept of a European Security and Defence Union (ESDU) could be seen as one of the longest ranging geographically restricted perspectives for the integration in defence matters.

European transnational restructuring follows option two and the governments of the major European arms producing countries have begun to create the necessary legal and procedural framework to support this kind of restructuring. However, the full implementation of option two across all branches of the defence industrial base, along with the creation of an adequately harmonised political framework for industry to operate in and the development of a European 'customer' is still a long way off.

Decisions to be taken

- development of common requirements planning among Member-States
- development of a common defence industrial policy in a European armaments agency
- decision on whether to abolish Article 296 entirely or how to amend the article
- common budget for R&T
- establishment of the European Commission as a supranational 'referee'
- convergence objectives for enhanced cooperation in ESDP

Scenario III: A Vision – Integrated Europe

General description

The third scenario constitutes a rather futuristic vision of a highly developed EU.[37] The ESDP process would ideally end in an integrated, sophisticated policy system at the top level of the Union, possessing all the competencies necessary for a coherent foreign policy. This level is characterised by a variety of interdependent policy units. Hence European foreign policy would be exclusively formulated and realised on the supranational level. The essential analytical and planning staff would be grouped around the executive branch, in effect a type of fusion between the European Commission and the EU Council, while both institutions should be founded on federal structures [38]. Consequently the end result would be something comparable to a federal state, combined with some highly innovative decision structures. In this way, the EU would be combining a dual approach on foreign policy with an executive branch consequently divided into two 'autonomous' entities. The Commission being responsible for crisis and conflict prevention and the EU Council having the authority for military missions, which would be decided on an exclusively European level. As a consequence, all high-ranking member state military services would be reoriented to less important tasks.

Consequently, armies would be highly interdependent and integrated. Redundant structures would be abolished, interdependence and confidence amongst national militaries would reach a high level. Military missions would be carried out through common flexible headquarters (i.e. SFOR-; ISAF-missions) and no longer exclusively limited to the Petersberg tasks. In the course of becoming a major political player, the EU is preparing for a broader spectrum of military missions which now include worldwide high-intensity operations. Even large combat scenarios have become a planning guideline for an EU capability headline goal.

Defence planning would take place within the EU Council under the responsibility of a joint EU military staff – a fusion of the national military staffs. Such a visionary scenario would not become reality from one day to the next. It could however be realised either by continuing the step-by-step approach to integration for all EU states, in the hope of one day arriving at a coherent solution. In the armaments field, a first step would be to develop a common requirements process. But even this first step will become more complicated when in 2004 the EU welcomes 10 new members within its structures.

Alternatively, it could be brought about by a 'big bang'. For this to happen, the heads of state or government have to agree on wide-ranging commitments covering all aspects of an integrated ESDP. At first glance, this solution would appear to be quite unrealistic. But bearing in mind current budget constraints and national inefficiencies, governments eager to develop a credible ESDP might press for a European solution, if a competitive DTIB in Europe cannot otherwise be maintained.

37 With the exception of the Franco-German proposal to integrate Article V of the WEU treaty in the TEU, scenario III goes beyond the proposals already generated by recent debate and therefore puts forward a number of additional ideas.
38 See the propositions of the President of the Convention, Valéry Giscard d'Estaing.

Key features on the demand side

A European Security Council would be the top decision-making level for the European Union. When the European Council does not find a political solution to a given issue, the Security Council would be the final authority for decision-making. The vote of the Security Council – comprising the President of the Commission, the President of the European Council, the High Representative for Defence, the High Representative for Foreign Affairs, the competent commissioners and the chairpersons of the Council of defence ministers and the other key Councils of the EU – would be the highest decision-making level for the entire Union, binding on all member states.
Parallel to this, the European Council would continue to embody the Medusan approach of EU security structures (conflict prevention plus military missions). There, EU foreign policy decision-makers would come together to decide on the global orientations of the ESDP. For the day-to-day work in defence-related affairs, a council of defence ministers would be established. This council assisted by a High Representative for Defence, directly answerable to the European Council. In consequence, he should head a sort of lean European Ministry of Defence. The Ministry could integrate an armaments section (headed by an under-secretary for armaments affairs), where armaments and R&T policies could be developed and their implementation controlled for the entire EU.
The European Capability and Procurement Agency, responsible for the management of common procurement projects, would be under its control. As the agency would be funding most European armaments projects, national ministries would continue to finance only minor programmes. Other aspects of the defence industry, such as merger control and cartel issues, would be tackled by the Commission.

Key market and DTIB features

European integration in armament issues requires as a first step the creation of an integrated armaments policy and a competitive DTIB. Such an integrated armaments policy and competitive industry would comprise two levels:

First, the industry side would have to be sized for the European level. Market restrictions would have to be abolished. The internal defence market would have to be liberalised by abolishing export licences, while external armaments trade would require standardised export procedures. A major step towards a common armaments market would be the abolition of Article 296 TEC. This would confer responsibility for armaments issues to the Commission, which would then be responsible for ensuring fair market conditions for all armaments firms involved (fair competition vis-à-vis subsidiary national procurement procedures; standardisation of defence goods etc.). The possibility of equipping all national armed forces would generate a highly competitive defence market. But rationalising European defence industrial capabilities would have to stop at some point. It would make no sense if the process of rationalisation created monopolies in the different defence sectors. It is obvious that in every sector (land armaments; naval; aerospace; electronics) there would have to be several 'big players' in order to ensure a truly competitive environment. Only then would the positive consequences entail lower costs for defence products, a higher technological standard and more competitive defence firms on the world markets.

Advantages

The European solution has the advantage of giving the European Union more political weight, as well as of increasing efficiency. Coherent procurement planning would replaces redundant structures among the EU states. Common institutional structures would help downsize the former national bodies. But lean management would also be the first challenge for the new European institutions. Common procurement planning would facilitate common and thus more efficient operational capabilities. With procurement planning carried out on a European level, programme and thus planning stability for industry would be a major advantage, reducing costs. R&T spending by the European capabilities agency but also by industry would be much more focused, providing the necessary resources to enhance the technological competitiveness of European

defence companies. Under these circumstances, the European defence industry would be able to ensure its autonomy vis-à-vis US industry. Thus, highly innovative and competitive European defence firms could provide European armed forces with cost efficient equipment and industrial support. As a secure source of supply, they would provide the basis for an autonomous ESDP.

Consequences

The advantages of the integrated scenario for the demand side are numerous. Not only cost efficiency, but also a streamlined procurement process and more weight in negotiations with more and larger defence firms are a few of the core features. Besides these more obvious advantages, there would be numerous subtle changes in the political framework, generated by the common approach. With the Commission becoming powerful in armaments affairs, a strong, united defence pole for the EU would be created. The Europeans would thus develop a much stronger standing vis-à-vis the US. Consequently, even an opening up of the US armaments market could be envisaged as part of a European policy of reciprocity in market access. Thus, even transatlantic arms co-operation on an intergovernmental as well as on a purely industrial level would have a real chance of taking off.
In addition, common procurement would bring about common standards and arms.
Accordingly, the European forces would be founded on an interoperable and highly-interlinked basis, including common training facilities etc.
Decisions to be taken

- common military and operational planning
- common procurement planning
- rejection of the principle of global "juste retour"
- abolition of Article 296 TEC
- common EU arms export regime
- EU procurement office (top ministerial level)
- EU procurement agency
- common R&T (outside the agricultural budget)
- correspondingly common R&T budget
- more efficient common R&T procedures
- closer linking of the two foreign policy branches of the EU (Commission and European Council)

Concluding remarks:
The specificity of the defence sector and European competitiveness

It is generally agreed today that there is a gap between European military aspirations and current European military capabilities. These gaps have been identified and agreed upon, although Europe lacks a military strategy with criteria that could provide guidance for such an assessment. There is also general agreement that the European defence technological and industrial base has the technological capabilities to deliver whatever equipment may be required by European armed forces. In some areas however, it would be much cheaper to buy US equipment instead of developing and producing a European system. But to close the various European capability gaps by buying equipment off-the-shelf in the US is no general solution. Various political considerations require a competitive European DTIB to support European armed forces. Therefore, existing resources for the armed forces and for the development and procurement of military equipment in Europe have to be spent much more efficiently than European nations do today. Restructuring of the armed forces as well as role specialisation between or pooling of forces is one option. Improving the way European countries spend their scarce resources for RT&D, production, and in-service support is another.
The various political roles which the defence technological and industrial base has played in national policies and politics in the past has constituted the main stumbling block to more cost efficiency in European arms development and procurement and thus a major factor undermining the competitiveness of the DTIBs in Europe. If European countries continue to focus defence and defence industrial policies on an exclusively national level, there is only very limited room for improving this situation (see Scenario I). But the political roles of the DTIBs and thus the specificity of the defence sector separating it from commercial products and the common commercial market is no excuse for

national egoism and no reason for the chronic inefficiencies in European defence. That is because the DTIB in all its specificity could be organised on a European level with some individual national options for military action being preserved (see Scenarios II).

Furthermore, in all these policy fields a European solution would have considerable advantages without entailing incalculable risks.

- Security of supply (and thus the potential dependencies of the armed forces on timely and adequate industrial support which in certain critical situations could be a prerequisite for the capability of a state to act militarily) will be strengthened: A European solution would create a more robust and competitive DTIB with high long-term survivability. The same is not true for the national DTIBs in Europe operating in a fragmented market place. A European marketplace and the associated work-sharing and specialisation within the European DTIB would create a European-wide system of more or less balanced dependencies offering a high possibility that obligations to support each other in a crisis will be met. With European armed forces pooling their equipment and establishing more role specialisation, comparable dependencies will develop anyway. A European Capability, Armaments, and Strategic Research Agency could also be responsible for logistics and handle long-term support contracts with industry for maintenance and spare parts, even including some capabilities for industrial surge in times of crisis. That would give European nations a level of security of supply that they could not achieve on a national level. Such an approach would of course be facilitated by common equipment.
- The other defence policy roles of the DTIB would also be strengthened by a European solution. A more robust and technologically more advanced (due to more efficient spending of R&T budgets) DTIB would provide more innovative ideas for concept development and the requirements process, ensuring that equipment is optimised for European demand. It will also ensure that European armed forces have access to the latest technologies if need be and that the European military and the procurement authorities can retain their technological knowledge in order to remain an intelligent customer. In the future all this can only be partly ensured on a national level.
- The resulting more robust, technologically more advanced and innovative, as well as much more competitive European DTIB is also a precondition for providing equipment that European governments can export in pursuit of foreign or security objectives.
- And finally, the economic, industrial and technological policy objectives of individual governments or regions in general could also be better served by competitive industrial structures, although in some cases regions may suffer from restructuring and may need some 'conversion funds'. But it remains doubtful whether these same regions would not suffer anyway if the national approach prevails and na-tional defence budgets have to be adjusted to the budget pressures described in the introduction of this paper.

Therefore, a common European solution for the armaments sector does take into consideration any specificity which may characterise defence, but requires political decision-making on a European level in order to bring about considerable efficiency gains and thus improve European competitiveness.

Because the necessary efficiency gains require work-sharing and specialisation and thus lead to dependencies counter-balanced by security of supply obligations, such a system has to be based on confidence between those states participating. Thus, it is probably easier to start such Europeanisation within a smaller group of countries (Scenario II). Such a core solution would also facilitate negotiations on the many rules and regulations under which such a core would operate. But the group should be open to new members provided they accept the rules. This European core market should be open to all EU members, offering considerable advantages also for those countries not participating from the outset.

With regard to transatlantic armaments co-operation, a European solution would also lead to drastic improvements. Whereas the national options in a fragmented European marketplace (Scenario I) will eventually lead to US dominance in most of the national markets in Europe and to a very strong position in the rest (probably except for France), Europeanisation

(Scenario II and III) offers a greater possibility that Europe's foreign and security policy aspirations could be supported by a competitive defence technological and industrial base and its military capability gaps closed in due time. Firstly, European defence companies would become equal players with their US competitors, creating better conditions for balanced transatlantic industrial partnerships. In addition, the European demand side would become a real counterweight to the US procurement institutions, creating a fair chance for negotiating market access, technology transfer regulations or security of supply on an equal footing and therefore to the satisfaction of both sides. Such a development would also allow a balanced transatlantic partnership in defence to evolve.

ABBREVIATIONS

ACCS	Air Command and Control System
BAE Systems	British Aerospace Electronics
C4ISR	Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance
COARM	Commission on Armaments
CRBN	Chemical, Radiological, Biological, Nuclear
EADS	European Aeronautic Defence and Space Company
ECAP	European Capabilities Action Plan
EDIB	European Defence Industrial Base
EDRA	European Defence Research Agency
ERRF	European Rapid Reaction Force
ESA	European Space Agency
ETAP	European Technology and Acquisition Programme
EUMC	Military Committee
EUMS	Military Staff
EU-CNAD	Conference of National Armaments Directors
FPRD	Framework Programme for Research and Development
GEIE / EEIG	Groupement européen d'intérêt économique / European Economic Interest Grouping
GIE	Global Industrial Equipment
GmbH	Gessellshcaft mit beschraenkter Haftung
GMES	Global Monitoring for Environment and Security
LoI	Letter of Intent
NAD	National Armaments Directors
NADGE	NATO Air Defence Ground Environment
OCCAR	Organisation Conjointe de Coopération en matière d'Armement / Joint Armaments Co-operation Organisation
POLARM	Policy on Armaments
PSC	Political and Security Committee
SIPRI	Stockholm International Peace Research Institute
STAR 21	Strategic Aerospace Review for 21st century
TDC	Transnational Defence Companies
UAVs	Unmanned Aerial Vehicles