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The Future of Transatlantic Armaments Co-operation

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Introduction: Defence Spending across the Atlantic

Since the end of the Cold War, Western armed forces and their defence technological and industrial bases (DTIBs) have had to adapt to a dramatically changed environment. The research and technology (R&T) and procurement budgets in almost all NATO countries have fallen dramatically. The technical complexity of new equipment and the associated development costs have continued their upward trend. The restructured and smaller armed forces have required equipment in smaller numbers, driving up system prices as the development costs have had to be charged to smaller numbers. In addition with fewer numbers, economies of scale in production have become more and more difficult to realise, again driving up costs. These cost increases in established programmes had a devastating effect on other equipment programmes, either by reducing the number of systems to be procured (again driving up system prices) or in some cases even leading to their cancellation. As a consequence, industry has been confronted with fewer new programmes and with widening time gaps between these programmes. Although these post-Cold War developments have been felt most strongly in Europe (where they have led into almost deadly cost spirals), they also had severe consequences for the structure of the US defence industrial base.

These conflicting budget and cost trends in the R&T and procurement budgets were aggravated by additional cost increases outside the investment part of the defence budget, as 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 increase in personnel expenditures. Thus defence budgets came under a dramatically growing pressure on several fronts simultaneously. Whereas at least the US and UK in the second half of the 1990s were able to stop and finally reverse the downward budget trends and increase their R&T and procurement budgets, continental European governments, due to several political factors, were unable to increase defence expenditures to get their armed forces and DTIBs out of that deadly cost spiral.

In Europe expenditures for military research and development as well as procurement declined considerably since the end of the Cold War. For example, the six European countries with the highest budgets for military R&D (Great Britain, France, Germany, Spain, Italy, and Sweden) spent some 35% less in real terms in 1998 than 1990.[1] With regard to procurement expenditures, a comparable but less dramatic development occurred: the Western European NATO countries in 2000 spent 12% less in real terms on equipment procurement 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 about 0.3% in real terms.[3] Over the same period, US sources calculated that European equipment spending had to increase 3-4% each year (or about US$ 5 to 7.5 billion) 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]

To what degree European industry – 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 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, but in 2001 4.3 times as much. Thus from 1997 to 2001 the US spent US $142.7 billion 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, but in 2001 twice as much as their European allies. Taking current and future budget trends into account, the situation will very likely get worse and the difference between US and European R&D and procurement budgets will grow further. Whereas European R&D and procurement budgets in real terms will almost stay flat (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 is planned to increase about 58% from 2001 to 2007 and the budget for RDT&E by around 39%.[6]

1 See: SIPRI-Yearbook 2001, p. 234.
2 See: SIPRI-Yearbook 2001, pp. 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.
5 See: Military Balance 2002/2003, p. 248.
6 See: Military Balance 2002/2003, p. 241.

I. A spending, technology, and capability "gap"? – Co-operability and interoperability but not gap-closing as the central transatlantic challenge

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 misleading to describe these differences as a gap.

The amount of resources allocated for defence as well as military capabilities in 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 the case. 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 into different equipment requirements.

This is not to argue that European armed forces do not have severe capability gaps and shortfalls, but they have to be analysed with European and not US political goals and associated military ambitions in mind. Also European operational concepts (or better concepts of operation) may be tailored to European experience and force-employment philosophy and may not just result from capability shortfalls or gaps. Simply put: the decisive question is whether European military capabilities are adequate to implement European military strategy. This has two components: European commitments to NATO and European commitments to the European Security & Defence Policy (ESDP) Headline Goal process. The extent to which the two are complementary or in opposition is currently the subject of intense political debate. A 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.

Putting the important question of NATO to one side, Europe has to decide for what kind of military contingencies it wants to be prepared 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. Given the internal and external political prerequisites and special circumstances for the use of military force, it remains to be seen whether implementing the Petersberg tasks – not to speak about a US-like mission spectrum – will not require capabilities very similar to 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 to fly over the target to deliver dumb weapons). It is highly probable that European capabilities on the tactical and at least partially also on the operational level will have to rather closely resemble those the US armed forces are now employing or developing, simply because they are designed to fulfil the same political demands (low casualties, low collateral damage, etc.) that European politicians should be expected to put forward too.

Despite the absence of a discussion about 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 like:

7 Even more, as the tactical and technical requirements for new equipment sometimes strongly reflects and partially are driven by defence industrial considerations, the whole discussion at least partially reflects US defence industrial interests: to impose US „standards" onto the Europeans who may have good reasons to have different requirements than the US armed forces.

- strategic mobility (i.e. aerial refuelling, air transport),
- precision strike munitions,
- electronic warfare,
- power projection (i.e. long range air strikes), and
- C^4ISR.

The necessary level of these capabilities and thus the sustainability of European forces with regard to different missions is of course a case for 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 relevant for 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 ambitious Europe becomes to be 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 would develop this way, but Europeans would fail to develop their force capabilities accordingly, then 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.

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 are not only – and according to US documents not even primarily – driven by technology but by conceptual, structural, and organisational innovations (albeit often being made possible by the introduction of new technologies).[8] To prevent US and European forces from developing different concepts of operation undermining co-operability – and thereby also developing different technical requirements undermining interoperability – common studies, simulations, experiments, and war-games between force-planners etc. will become of 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.

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 pooling resources by international co-operation or by 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*, better *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 execution might be a prerequisite. At the same time, as already said, Europe depends very much on American assets, especially in force-multiplier technologies. There seems to be, therefore, a need for a transatlantic approach as well.

II. The challenge of transatlantic cooperation

There is little doubt that the European defense industry faces considerable challenges in trying to keep pace with developments in the United States. A report by the Assembly of Western European Union in 2000 observed that the gap in military research spending between the United States and Europe meant not only that a technological gap existed but that it would probably widen still further.[9] General Klaus Naumann, the former Chairman of NATO's Military Committee, has argued that even if there are niches in which the Europeans have the lead, they are at least five years behind the United States in the crucial area of C4I

8 See: Joint Vision 2020.

9 The Gap in Defence Research and Technology between Europe and the United States.

(command, control, communications, computers and intelligence).[10] The principal challenge for the European defense industry has been that its principal customers – namely European governments – have been slow to adopt the new transformational technologies and allocate the budgets for procurement and R&D necessary for modernization.

In spite of these considerations, there are undoubtedly situations where European governments will seek to acquire US technologies off-the-shelf. Such arrangements have a long history dating back to the F-16 program and earlier. In the 1980s, the United Kingdom and France both decided to acquire the Boeing E3 AWACS (Airborne Warning and Control System) in recognition of the fact that it was neither technologically feasible nor cost effective to seek to develop a similar capability.[11] In 1995, for similar reasons, France ordered the E2-C Hawkeye airborne early warning/command and control aircraft for the French Navy. More recently, The UK government has made clear its view that the technologies that underpin the RMA "will inevitably be led by the US."[12] Thus, the UK needs to be selective about the technologies it develops nationally or on a European basis, and should be prepared to use US technologies in other areas in order to continue to make a leading contribution to multinational operations. Accordingly, the UK government has selected Raytheon-developed technology to meet its ASTOR airborne ground surveillance requirement; looked to the Canadian subsidiary of General Dynamics for its Bowman communications program; and, is currently evaluating the acquisition of the Cooperative Engagement Capability as the basis for its naval network-centric warfare capability.

However, the acquisition of US technology remains an unattractive option for many European governments. There is a strong feeling in Europe that it is crucially important to the development of the ESDP that Europe establish a strong and competitive defense industrial and technological base. In this view, autonomous crisis-management operations are feasible only if Europeans succeed in narrowing the technological gap that exists between European countries and the United States and Europe must do so either through its own efforts or as an equal partner in transatlantic cooperative programmes.[13] There are many practical challenges to enhancing transatlantic armaments cooperation. Important sections of European policy opinion remains concerned that such co-operation represents a "Trojan Horse" for the US take-over of the European defense industrial base (witness the criticisms leveled against the Joint Strike Fighter programme). European governments are wary of the operational constraints that can emerge from US technology controls and America's closest allies are concerned about the need to retain an independent capability while ensuring coherence with US developments. The challenge for the UK is how to achieve interoperability without being obliged to buy US equipment with all the technology transfer and operational challenges that it entails.[14] A stronger European defense industrial and technological base will allow Europe to engage in transatlantic armaments programs as a more equal partner to the US At the same time, the politics of defense procurement means that politicians will continue to demand local content in exchange for their agreement to spend large sums on defense equipment and – in the current climate of weak electoral support for defense spending in Europe – initiatives that oblige European governments to buy US technology are unlikely to gain much support. Equally, the development of strong capabilities in transformational technologies is seen by European industry as vital to sustain the European defense industrial base and retain Europe's established defense export markets. European companies are also keen to gain a substantial share in the significant growth market for C4ISR, UAVs and so forth.

III. Transatlantic co-operation models and their policy implications

These considerations show, that Europe – due to its foreign and security policy ambitions – 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. Transatlantic armaments co-operation should therefore be balanced and make use of European technological capabilities. Budget pressures, cost increases,

10 Ibid.
11 The U.K. had attempted to do so with its Nimrod AEW program but that was eventually cancelled due to technological difficulties and massive cost overruns.
12 Strategic Defence Review, "Supporting Essay Three, The Impact of Technology", Para. 32.
13 The Gap in Defence Research and Technology between Europe and the United States.
14 Andrew D. James, Delivering Network Enabled Capability: Industrial, Procurement & Policy Challenges for the UK, FIND User Report, FOI, Stockholm (forthcoming).

interoperability requirements among others will make transatlantic armaments co-operation even more urgent but from a political point probably also more difficult to maintain or better to get started again (on the systems level). From a technical point of view co-operation should be easier as key technologies will be dual-use and thus more commonly available, thus making national policies to restrict technology transfer less plausible. In addition, at least in Europe, due to budget realities a competitive DTIB and thus the dependence on industrial support can only be organised on a multilateral level. Therefore there seem to be two development options:

- either Europe "bites the bullet" and develops a true European approach to force, capability, and armament planning, setting free a considerable amount of resources to improve its military capabilities (and the competitiveness of its DTIB) in due time and by so doing establish the basis for a more balanced transatlantic partnership in defence and defence technological and industrial matters; or
- Europe gives up its ESDP ambitions and the European nations bilaterally try to seek their wellbeing as a junior partner of the US.

European rhetoric clearly demands realisation of the first option, European political coherence and budgets may only allow to implement the second option, which given the current bilateral US policy approach also might be perceived to be the preferred US policy option.

Model A: An almost balanced transatlantic partnership

In this model the efficiency gains through improved armaments co-operation through work-sharing and specialisation are in equilibrium with the political costs of mutual transatlantic and European strategic dependencies. Thus the transatlantic defence industrial "system" serves both US and European foreign and security policy ambitions.

Obviously European resources spent on R&T and procurement must be increased by at least spending the available money much more efficiently. In order to be able to do so, Europeans must reduce redundancies, duplications or other inefficiencies which require much closer co-ordination concerning R&T, equipment, and force planning than is currently the case. (Out of question, the relationship would be even more balanced, if Europe would be able to allocate additional resources for defence.) Necessary steps into this direction include:

1. the establishment of a European requirements process,
2. the development of a European defence industrial policy including rules and regulations for the armaments sector, and
3. the inauguration of a European Capability, Armaments, and Strategic Research Agency.

As a first step of 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 made 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 capabilities 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.). This process should be closely linked to the US transformation endeavours and the development and further improvement of the NATO Response Force and supported by the new NATO Allied Command Transformation (ACT). Thus, in November 2002, the NATO Prague Summit adopted a Capabilities Commitment to ensure that NATO will in the future have military capabilities required for the full range of its missions. The new NATO Reaction Force is to act as a catalyst for change and an essential element of NATO's transformation agenda focusing on and promoting improvements in NATO capabilities and the creation of the new NATO post of Supreme Allied Commander for Transformation will give further impetus to the process. In general, NATO's role would be to harmonise requirements as far as possible, develop STANAGs, co-ordinate European and US R&T etc. planning, and identify (in addition to industry) opportunities for co-operation in development and production for military equipment.

As the necessary efficiency gains in European defence could only be realised through work-sharing and specialisation within the European DTIB and thus lead to strategic dependencies between European countries

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 a process 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 if they accept the rules. To facilitate transatlantic armaments co-operation these rules should be informed by new US procurement etc. regulatory developments. This European core market should be open to all EU members, offering considerable advantages also for those countries not participating from the very beginning.

European industry has already gone some way to establishing European solutions to European capability shortfalls. In the area of precision strike, MBDA has developed the Storm Shadow/Scalp EG cruise missile. In C4ISR, France is deploying the Helios series of optical observation satellites and Germany is developing SAR-LUPE. Galileo represents a major extension of European capabilities. A European industry team offered the Stand Off Surveillance and Target Acquisition Radar (SOSTAR) as an alternative to the Northrop Grumman J-STARS for the NATO Air Ground Surveillance (AGS) requirement.[15] Similarly, Europe has programs that span the entire spectrum of UAVs and the French companies Sagem and Dassault Aviation are collaborating to develop an unmanned combat air vehicle (UCAV).[16] With regard to strategic mobility assets, in air-to-air refuelling, the Air Tanker consortium led by EADS is offering the A330 for the United Kingdom's Future Strategic Tanker aircraft program and the A310 Multi Role Tanker Transport aircraft has been ordered by Germany. The Airbus Military Company A400M represents a European industrial response to NATO Europe's strategic airlift needs.

Like their US counterparts, the leading European defense contractors are responding to the new transformational agenda albeit in a way that reflects the realities of European defense budgets and the demands of their customers. BAE Systems is investing considerable effort in the development of a C4ISTAR sector strategy to address key programs in the United States, the United Kingdom and the rest of the world by building on capabilities in BAE North America (not least in the areas of Electronic Warfare and Information Dominance) and focusing across the organization to exploit technological capabilities and market opportunities.[17] As part of this strategy, BAE Systems and Italy's Finmeccanica are to form a new defense electronics partnership to be called Eurosystems that will oversee joint ventures in the areas of systems integration and C4ISR business, communications systems and avionics. BAE Systems is not alone. Thales is re-orientating its communications business group to focus on network-centric warfare and to capitalize on its strong position in the defense electronics business and its place as the largest European supplier of defense communication systems.[18] The European Aeronautic Defense & Space Company (EADS) is seeking to focus on growth areas of the global defense market such as UAVs, C4ISR and avionics. EADS has sought to use acquisitions to overcome the constraints of small defense electronics business and limited global presence outside its home markets of France, Germany and Spain. In July 2001, EADS acquired Cogent Defense & Security Networks from Nortel Networks establishing EADS Telecom as a significant competitor in defense communications. In May 2003, EADS completed the acquisition of the BAE System share in the Astrium space joint venture and with it took full control of Paradigm Secure Communications making EADS the prime contractor for the UK's Skynet 5 programme.

Many European countries are currently studying and undertaking network related/network centric warfare developments and there is considerable opportunity to share research, leverage experimentation and build coalition capability.[19] The UK government has made it clear that it is willing to consider international collaboration in the development of such capabilities. In the case of FIST (the UK's future soldier technology program), the Defense Procurement Agency notes that many NATO and Partnership for Peace nations are pursuing similar programs and the FIST Assessment Phase is looking carefully at collaborative opportunities. The French government has also ex-

15 SOSTAR is being developed by Thales, the Dornier unit of EADS, Alenia Difesa's FIAR and the Dutch government-owned Technisch Natuurwetenschappelyk (Luke Hill, "NATO considers merging ags", Jane's Defence Weekly, June 13, 2001, p. 3).
16 John Brosky, "French flying fast to win share in UCAV market", Defense News, April 29–May 5, 2002, p. 8.

17 BAE Systems presentation by John Weston, Chief Executive at the CSFB/Aviation Week Aerospace Finance Conference, New York, 15 May 2001 downloaded April 24, 2003 from http//:www.production.investis.com/baesystems/bae_irpresentations/ csfbwebcast/2.pdf.
18 Gopal Ratnam and Amy Svitak, "How Europe can close the gap", Defense News, August 5–11, 2002, pp. 1–4.
19 Network Enabled Capability: The UK's programme to enhance military capability by better exploitation of information, downloaded April 24, 2003 from http://www.mod.uk/issues/nec/.

pressed its desire to increase its cooperative R&D effort and has argued that across a range of transformational technology areas from space to C4ISR there are strong arguments for European solutions.[20]

European governments are seeking to make progress and to observers of European armaments cooperation recent political developments have been nothing short of remarkable. The idea of a European armaments agency, after having languished for more than a decade, has reemerged on the political agenda and European governments appear serious about developing closer cooperation in the field of armaments. The Anglo-French Le Touquet Declaration, the draft Constitutional Treaty produced by the Convention on the Future of Europe and the conclusions of the Thessaloniki European Council all suggest the emergence of a new political dynamic to the process that seemed inconceivable only a few years ago. In the Autumn of 2003, the detail of the Agency was the subject of considerable discussion but the draft Constitutional Treaty included a proposal to establish an intergovernmental European Armaments, Research and Military Capabilities Agency that would identify operational requirements, put forward measures to satisfy those requirements, contribute to identifying and implementing measures needed to strengthen the European defense industrial and technological base, participate in defining a European capabilities and armaments policy, and assist the Council in evaluating the improvement of military capabilities.[21] In October 2003, European defense ministers agreed to further and substantially harmonize their armed forces by the end of the decade. Meeting informally in Rome, ministers agreed to significantly increase their interoperability by 2010, pooling resources, doctrines and equipment to ensure they are able to "work seamlessly together and with key strategic partners".[22] The agreement sets a new deadline for military cooperation just months before the end of the 2003 deadline for the Helsinki goals.

The political attention being given to armaments cooperation is encouraging but reflection on the history of European armaments cooperation reminds us that we have been down this road before only for it to end with little in the way of concrete developments. The character of European armaments cooperation has been determined by the desire of national governments to protect national sovereignty and control over armaments issues combined with the unbridgeable gap between the interests of large and small European countries. Those European countries with large defense industrial bases have favored intergovernmental coalitions of the willing such as OCCAR and the Framework Agreement as a means of achieving some progress on armaments cooperation issues. Turning the grand political statements of support for a European armaments agency into real progress may prove to be far from straightforward and the road ahead may be a rocky one. Indeed, the history of European armaments cooperation has been one of often torturous negotiations over the minutiae of implementation that have had the effect of eroding the dynamic created by high-level political initiatives. Important issues still have to be addressed: the integration of existing armaments cooperation organizations; the membership of the Agency and the possibility of enhanced cooperation; the responsibilities of the Agency and the willingness of national governments to provide it with the necessary executive powers; concerns about European preference; and, the role of the European Commission.

At the same time, European policy makers must make sure that this latest round of institution-building does not lead them to lose sight of the bigger picture. The Agency should not be seen as end in itself and success will be measured not by the establishment of the institution (we have had plenty of those in the last three decades) but by the difference that it makes to European capabilities in support of the ESDP. In this regard, the Agency can be regarded as a necessary but not a sufficient condition for progress towards meeting Europe's aspirations. The political will to address the capabilities issue expressed in the ECAP process and now in thinking about the Agency is encouraging. Ultimately, however, it will only deliver results if it is supported by the will to increase European defense procurement spending to a level that ensures that European military forces can meet the political aspirations of the ESDP.

A further pressing need is for requirements harmonization. The need for European governments to make their intent and requirements more definitive is critical for many reasons but two in particular will be noted here. First, through requirements harmonization, European governments would indicate to indus-

20 Rapport fait au nom de la Commission de la Défense Nationale et des Forces Armées sur le projet de loi (no.187) relative à la programmation militaire pour les années 2003 à 2008, M. Guy Teissier, le 25 novembre 2002, Assembleé Nationale (Paris).
21 Draft Constitution, Volume I, CONV 724/03, Secretariat of the European Convention, Brussels, May 26, 2003.
22 Statement by Javier Solana, Rome, October 3–4, 2003, http://ue.eu.int/newsroom/newmain.asp?LANG=1

try where investment is needed over the longer term. That its turn would encourage further consolidation, alliance building and increased R&D investment as companies gained confidence with regard to where business opportunities will emerge. As one commentator has put it: "Industry sorely needs clearer EU-wide policies: only the aerospace industry has achieved noticeable consolidation; land and naval systems manufacturers await a better sense of what capabilities will be sought in the future".[23] Another critical reason for requirements harmonization is that it would make cooperative European C4I programs more feasible. C4I presents particularly difficult challenges for European armaments cooperation. C4I is intimately linked to doctrine and goes to the heart of how European armed forces fight. It is also critical to interoperability. At present, NATO provides the only institutional mechanism for promoting cooperative C4I programs. Requirements harmonization within Europe is critical to ensure closer interoperability between European armed forces.

However, the pace of technological developments in the United States combined with constraints on European defense R&D and procurement budgets mean that Europe will only meet its capabilities needs through a combination of European developments complemented by transatlantic armaments cooperation. The CSIS Commission on Transatlantic Security and Industrial Cooperation in the Twenty-First Century argues convincingly that: "Both NATO and the European Union should make an effort to coordinate on defining priority defense requirements and equipment needs that could be met by consortia or partnerships among industrial suppliers and technology companies across the Atlantic".[24] Cooperation on missile defense and unmanned aerial vehicles are two significant areas where coordination could avoid redundant spending and there are benefits for both sides: "US military capabilities could take advantage of technologies that are being developed in Europe, while the Europeans could achieve more effective technological pooling with US defense capabilities, reinforcing progress towards coalition interoperability".[25] The outcome could well be NATO-owned and operated assets such as NATO AWACS or capabilities that could be adopted by individual member states. Such arrangements offer the prospect of reducing problems of interoperability and enhancing NATO military capabilities.

Currently, the degree of cooperative engagement in armaments development and production is extremely low. Significantly, there is virtually no meaningful cooperative engagement in key US transformation programs – from UAVs to military space to information dominance – or in the other areas that are relevant to closing the capability gap or enhancing interoperability. JSF, and potentially missile defense, are by and large not related to coalition force improvements in interoperability or capability, but undertaken for reasons of affordability (JSF) and geopolitics (missile defense).[26] Of course, the record of transatlantic armaments cooperation has been patchy. There have been some success stories. The long term and evolving multi-national Sea Sparrow and ESSM procurement program could be cited as an example of how joint cooperative programs could be put together to allow for both commonality and economic participation.[27] The JTIDS/MIDS, Link 16 program has promoted tactical information exchange and enhanced interoperability between NATO combat aircraft. However, the story of NATO AGS is a sobering reminder of the challenge of turning warm words into concrete action. The AGS project has been beset by political and industrial difficulties. US proposals based around its Multi-Platform Radar Technology Insertion Program (MP-RTIP) initially proved problematic because key areas of classified technology were offered on a "black-box" basis. At the political level, 2001 saw France, Germany, Italy, Spain and the Netherlands attempting to secure their own technology base by supporting a research program dubbed Stand-Off Surveillance and Target Acquisition Radar (Sostar) to develop an active-phased array SAR/MTI radar. Northrop Grumman is the US prime on MP-RTIP, while EADS is a major partner in Sostar. However, both companies are also exploring a number of areas of transatlantic collaboration, which has given rise to the Transatlantic Industrial Proposal Solution (TIPS) to meet the NATO AGS, while also aiming to placate political concerns in both Europe and the US[28] Joint Strike Fighter – for many a model for

23 Charles L. Barry, "Coordinating with NATO", in Hans Binnendijk (ed.) Transforming America's Military, National Defense University Press, 2002 (Washington DC).
24 The Future of the Transatlantic Defense Community, p. ix.
25 The Future of the Transatlantic Defense Community, p. 11.
26 Ibid.
27 Trans-Atlantic Defence Industrial Cooperation, A report by the NATO Industrial Advisory Group to the Conference of National Armaments Directors, Spring 2002, Brussels.
28 Douglas Barrie and Michael A. Taverna, "Prague Summit Could Provide Springboard for NATO AGS", Aviation Week & Space Technology, July 8 2002, Vol. 157 (2), p. 31.

the future of transatlantic armaments cooperation – has struggled to overcome the challenges of US arms export and technology transfer regulations.

Transformation-orientated cooperative armaments programs (or European participation in ongoing US programs) may provide a means of closing the capabilities gap. Equally, deep and balanced transatlantic links between defense research agencies in the United States and Europe could help so long as they go beyond the current exchange of information to incorporate joint projects.[29] To facilitate such common programs requires common agreement on operational requirements, and new and more efficient ways of managing projects collaboratively. NATO members also need to coordinate acquisition purchases to achieve economies of scale. Such cooperation needs to recognize the technological capabilities of European partners as well as the political imperative for balanced cooperative arrangements and can only be built on a willingness to draw on component technologies from participating nations in a fair manner. This means paying more attention to operational requirements, willingness to invest, capabilities, and efficiency than national origin and offset arrangements.[30]

Creating the conditions for transatlantic armaments cooperation places responsibilities on both Europe and the United States, Europe needs to take the capabilities gap seriously and ensure that it reallocates scarce defense budgets to address NATO capabilities requirements. The US government needs to play its part in the modernization of NATO Europe's capabilities, not least by offering technology and joint programs to support European transformation and enabling this process through changes to technology transfer regulations. There are signs of some progress. In Autumn 2002, the State Department began a review of the current policy guiding conventional arms transfers in a move that may lead to the relaxation of export regulations and that may facilitate armaments and industrial cooperation.[31] Equally, reports that the US government is prepared to export the Predator UAV to Italy suggest that the Bush administration may be willing to adapt policy in a bid to close the capabilities gap.[32] However, the climate is hardly helped by Congressional support for strengthened "Buy American" provisions.

The reform of US export and technology transfer controls is critical. A critical challenge for the European defense industry has been how to enter into effective collaborative ventures to acquire US technology. In large part this is a function of the difficulties posed by US export controls and technology transfer regulations. Time and again, these security regulations have made transatlantic collaboration difficult and – in some cases – they have driven European companies to deliberately design-out components and subsystems from European programs. The history of the Medium Extended Air Defense System (MEADS) program highlights the sensitivity of technology transfer issues in transatlantic industrial relationships as well as the often limited political commitment to these kinds of government-to-government collaborative programs on the part of the US Congress. The United States insisted on having the right to conduct on-site security inspections of German and Italian facilities, and at the same time proposed the use of 'black boxes' to protect US technology. Such proposals were rejected by the German government, which saw MEADS as a test case for US willingness to share technology with its allies. A stalemate ensued which was only broken after eight months of sometimes tense negotiations.[33]

The US-U.K. "Declaration of Principles", signed in February 2000, provides a bilateral model for the management of transatlantic relationships covering the harmonization of military requirements; export procedures, information and technology-related security as well as joint research programs. The US Defense Trade Security Initiative (DTSI), announced in May 2000, represents a potentially significant change in US rules on export controls, promising to streamline the license approval process and to provide licensing exemptions for unclassified items for qualified firms – provided that there is an agreement between the United States and the country in question. Spain and Sweden are now pursuing a Declaration of Principles but the U.K. experience has been that tangible progress can be slow – it took two years before the United Kingdom introduced the first legislation. Such initiatives under the Clinton administration provided hope for closer transatlantic cooperation. Under the Bush administration, the Declaration of Principles/DTSI

29 The Gap in Defence Research and Technology between Europe and the United States

30 The Future of the Transatlantic Defense Community, p. x.

31 Jason Sherman, "Reviewing U.S. export rules", *Defense News*, July 22–28, 2002, p. 8.

32 Amy Svitak, "New U.S. policy paves way for Predator sale to Italy", Defense News, April 15–21, 2002, pp. 1–4.

33 Andrew D. James, "The prospects for the future", in Burkard Schmitt (ed.) Between Cooperation and Competition: the Transatlantic Relationship, Chaillot Paper 44, 2001, Paris.

process has increasingly become a source of frustration and disillusionment for advocates of closer transatlantic ties. Unsurprisingly, since September 11th, the Administration has been totally preoccupied with "The War on Terrorism". The US defense industry – buoyed by a rising defense procurement budget – is losing interest in transatlantic defense markets. Congressional support for strengthened "Buy American" provisions does not auger well for any future initiatives to promote transatlantic cooperation.

This is a huge problem because for NATO transformation to be effective, the United States must be willing to trust its European partners by sharing advanced technology, such as stealth and command-and-control systems. Moreover, the US government will likely need to relax export controls if it wishes allies to have comparable capabilities.[34] The United States needs to offer technology and joint programs to support European transformation and promote common, joint programs to strengthen the NATO defense technological and industrial bases.[35] The United States also has to learn to trust its allies. Cooperative Engagement Capability is a good illustration of the difficulties. The US has agreed to release CEC to the United Kingdom but given the clear advantages of the system, particularly in the interoperability arena, extending CEC across the whole of NATO would seem to be a highly desirable step with Norway and Spain having acquired Aegis-based naval air defense systems, they would be the obvious next recipients of CEC. What remains to be seen is how long they will have to wait for it. CEC gives the US a quantum leap in its ability to achieve `full spectrum dominance' in any theatre of war and the Pentagon is reluctant to see it proliferate elsewhere. It is this aspect of CEC that makes it a curiously paradoxical programme. On the one hand, it clearly represents the strongest emergent technology around for removing barriers to full trans-Atlantic interoperability. Yet, on the other, it is too sensitive, too great a leap forward, to be given an unequivocal export release.[36] Against this background, it is little wonder that Thales has called on the French government to fund a naval net-centric system demonstrator as the basis for a European alternative to CEC. Such a development would lead to yet further duplication and stretch already over-committed European defense budgets – but it would be completely understandable nonetheless.

34 Robert Hunter et al., New Capabilities.

35 Jeffrey P. Bialos, "Thoughts before yet another NATO Summit – Will Prague 'Visions' of coalition warfighting capabilities translate into armaments realities?", mimeo, The Johns Hopkins SAIS Center for Transatlantic Relations, Washington DC (September 2002).

36 Cook, "Network-centric warfare".

Model B: Strong US dominance

Considerations here assume that European governments will be unable and unwilling to develop a true European defence industrial base through transnational restructuring, because such a step inevitably encompasses cross-border industrial specialisation and work-sharing and thus potentially far reaching political dependencies. Instead, European governments will continue to concentrate on the national level. But even if European governments would develop the political will to support such a step, to implement it may take enough time to allow the US government and industry to strengthen its dominant position and undermine the European process altogether. It is reasonable to assume the US government will continue to negotiate bilateral arrangements with some selected European allies thereby undermining a European approach to force armaments, and R&T planning and execution. For their own reasons, US companies could do the same and prevent the creation of additional European industrial heavyweights in the land system and naval sector.

Certain parts of the US policy community question whether autonomous European development and acquisition efforts are necessarily the most effective means of utilizing scarce European defense spending. In the eyes of some US commentators, the European defense industry has rather little to offer in closing the capabilities gap. European governments are not seen as seriously addressing the transatlantic capabilities gap nor is the European defense industrial base seen as capable of delivering needed capabilities. In this view, the US drive towards transformation along with its increasing defense spending, has given US industry an already unassailable technological lead. Not only that, but the United States is said to have stronger commercial information industries than Europe and successful acquisition reform is allowing the Department of Defense to gain access to those commercial technologies through a growing use of standard off-the-shelf products.[37] Such commentators argue that European programs that lead to a duplica-

37 Gompert et al., Mind the Gap.

tion of development efforts are costly and wasteful in the context of European spending constraints. The A400M and Galileo programs have been singled out for particular US criticism. The naysayers concede that, selectively, the Europeans may have some excellent defense and information technologies; but overall they are lagging and will fall even further behind as US industry responds to the demands of the Department of Defense's transformational agenda.[38] The United States can offer operational capabilities, whilst European projects are in many cases still on the drawing board. European collaborative efforts to catch-up with the United States – the naysayers continue – are likely to be more costly and quite possibly technologically inferior to buying off-the-shelf from the United States.

Under these circumstances of strong US dominance, European governments have several options in directing their future procurement, armaments, and defence industrial policies, although it is very doubtful that broad and competent national DTIBs can be maintained (even in France and the United Kingdom). They will probably shrink further and governments will have to accept implicitly or explicitly the transformation to one of the three following models. Any option would ultimately change the manner, the scope, and the content of Intra-European as well as transatlantic arms co-operation.

1. 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 US industry for security of supply, undermining the rhetoric of a European defence identity and French ambitions for national or European autonomy. It might, nevertheless, have some political appeal because it allows the Europeans to present the image of being able to field complete weapon systems either on a national, binational, or multinational level, the last two via "classical" arms co-operation. Platform integration could rarely generate efficient scale, but sub-contractors could be selected through global competition. It offers moderate economic benefits in the way of employment, but importing most of the sub-systems and components involves significant foreign exchange costs.
   From a transatlantic armaments co-operation point of view it would either require changes in the US technology transfer and export regulation, or put European platform exports under US regulation and control via end-user certificates for all components, or force European platform companies to buy elsewhere.
2. 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, especially the US. 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 on the US. As many states and probably all potential military partners would use platforms procured from the US, interoperability would be enhanced and economies of scale could be realised. For Europe the economic benefits of employment and foreign exchange would be very moderate at best.
   This model would nevertheless require dramatic changes in US policy. It is a plausible option only if the US changes its buy-American policy and European suppliers are treated fairly by US system companies. It will only survive if Europe gets the status Canada had in the past. Export and technology transfer would be less of a problem, as Europe would primarily buy complete systems for their own armed services and end-user certificates would be no problem.
3. 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 be able to match US sophistication. This approach facilitates security of supply but interoperability with US forces would be difficult to achieve, not only in a technical but also in a tactical and operational sense. But it would allow a state to maintain the facade of military industrial capability, a source of political value, and defence spending would continue to generate industrial employment.

Although each of these models for the future development of national DTIBs in Europe would undermine Europe's security, foreign and defence policy ambi-

38 Paul Mann, "Technology gap called NATO's salient issue", Aviation Week & Space Technology, June 17, 1995; David C. Gompert et al., note 2.

tions (autonomy as well as equal partnership), this is especially true for option two. If European governments want to maintain a technologically and financially vital European defence industrial base that will be able to implement European military requirements and at the same time fulfil technological and industrial policy ends which again are at least partially related to security policy considerations, namely security of supply in crisis and war, they will have to assure the long-term survival of European system companies.

The reason is that the already dominant position of the large system integration companies will be consolidated in the future as government and their 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.[39] The growing complexity of military equipment and the system-of-system approach associated with network centric warfare ideas already lead system companies to broaden and deepen their in-house capabilities.

On the supplier level and thus with regard to small and medium sized enterprises (SMEs) three developments can be observed:

1. as the survival of a competitive supplier base is of utmost importance for the survival of system companies, the on-going consolidation on the supplier level resulting in ever fewer suppliers for defence specific components leads 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.
2. if the customer continues to require financial participation of the system company in the development of new equipment, the system companies (like for instance in the automobile industry) will ask their suppliers to also take over a considerable part of this financial burden. Such a development will bring about - probably even on a transnational level - consolidation on the supplier level like 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.
3. 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 kind of symbiotic relationship. Such exclusive relationships could be broken up only on a case-by-case basis for 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 last option is available. Exercising option one could be done for an individual programme its government wants to buy via negotiated offsets, local content, or programme-related fair return, but rarely will it create long-term partnerships with foreign system companies necessary for the long term survival of these SMEs.

Thus only options one and three offer a long-term perspective. However, the shrinking national markets in Europe are too small for system companies of adequate size - that is of adequate technological scope and financial robustness - to survive. European arms industries either have to get access to other national markets in Europe at the expense of US or other European industries or they have to restructure on a transnational scale in order to create a common market for new transnational companies. Their only real option for survival given the reductions in national procurement spending is to gain a larger portion of a shrinking export market. That approach requires competitive products which over a mid- to long-term perspective necessitates competitive companies. Competition with a consolidated US defence industrial base can only be realised if transnational European restructuring takes place. Otherwise the European industries will be forced to retreat into niche markets which over

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

the long term will make them suppliers to US system integrators, an option that due to the above mentioned developments offers no long term survival.

Today European governments seem to be engaged in a very competitive process. They all want to make sure that 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.

Summary: Which Model to Prefer and What to Do

Implementing any of these models will require political action especially on the US side. But there is only limited room for optimism for such a development. US government policies have always created major obstacles to transatlantic co-operation. The US Department of Defence prefers to buy US defence technologies and to protect US defence technological leadership and thus carefully restricts European access to US technological know-how. This is accompanied by tough controls regarding direct foreign investments by defence companies in R&D and production facilities in the US. In addition the US State Department and Congress also take a very conservative view on the technology transfer and export issue, strictly limiting the availability of US technology for European companies.[40]

Although defence trade policy reform has been on the agenda of US President 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 to disaster and it remains to be seen whether the Bush administration is more successful in convincing Congress of the opposite, than the Clinton government.[41] The latest dissonance between some European countries and the US concerning military operations against Iraq and the latest action of the US government concerning technology transfers for the time being seem to make such a development even less likely.

If individual European countries would like 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. The result would be a capabilities gap between European forces who invested in transformational and network centric capabilities and those who did not.

There is a growing recognition, within NATO and in the European Union that the shortfall in European capabilities is in danger of making European political and military aspirations untenable. There is also a widespread recognition of the need to broaden and deepen armaments cooperation, both within Europe and across the Atlantic, if European governments are to meet these capabilities shortfalls. The European defence industry has already undergone a dramatic consolidation but recent political developments suggest that, at last, European governments appear serious about developing closer cooperation among themselves in the field of armaments. The Anglo-French Le Touquet Declaration, the draft Constitutional Treaty produced by the Convention on the Future of Europe and the conclusions of the Thessaloniki European Council all suggest the emergence of a new political dynamic to the process that seemed inconceivable only a few years ago. Such a reform of the demand side is important and long overdue because it will help Europe procure more cost-effective, technologically-advanced and timely defence equipment. However, the pace of technological developments in the United States combined with constraints on European defence R&D and procurement budgets mean that Europe will only meet its capabilities needs through a combination of European developments complemented by transatlantic armaments cooperation. Transatlantic cooperation needs to recognize the technological capabilities of European partners as well as the political imperative for balanced cooperative arrangements. Creating the conditions for such collaboration places responsibilities on both Europe and the United States. Europe needs to take the capabilities gap seriously and ensure that it reallocates scarce defence budgets to address NATO capabilities requirements. The US government needs to play its part in the modernization of NATO Europe's capabilities, not

40 see: Gordon Adams, Transatlantic Defense-Industrial Cooperation and American Policy, Paper prepared for the IISS/CEPS European Security Forum, Brussels, 25 Nov. 2002

41 see: David Landes, Equipment capability gap frustrates allies, in: The Financial Times, 9 Jan. 2003, p. 4

least by offering technology and joint programs to support European transformation and enabling this process through changes to technology transfer regulations. Without such policy initiatives, Europe's capability shortfalls are going to make its political and military aspirations increasingly meaningless. Within NATO, the capabilities gap is likely to lead to an ever greater divergence of doctrines between NATO Europe and the United States, making coalition warfare increasingly difficult if not impossible for all but a few European militaries. Within the European Union, the consequence could well be the emergence of a capabilities gap between those European countries who have invested in transformational and network centric capabilities (in particular the United Kingdom and France) and the rest.