

Appendix B

Techniques and Mechanisms for Cooperation

Security Assistance

The Security Assistance Program

The U.S. Security Assistance Program was established on the principle that the security and economic wellbeing of friendly governments are vital to U.S. interests. This activity provides for military and economic assistance, including: the sale, grant, lease, or loan of equipment; technical assistance; military education; and training. Programs are managed by the Department of Defense and the Department of State. DoD programs are administered by the Defense Security Assistance Agency (DSAA) and include:

- . Foreign Military Sales (FMS)
- . Foreign Military Sales financing; and
- . The International Military Education and Training program.

The programs administered by the Department of State are:

- The Economic Support Fund;
- . Peace-keeping Operations;
- Commercial export sales licensed under the Arms Export Control Act.

Under the FMS program, DoD serves as a contracting authority to foreign governments that wish to buy U.S. equipment. DoD provides information on weapons capabilities, establishes procurement mechanisms, and ensures that the systems, once delivered, can be operated and maintained. The degree of interaction between the U.S. military and technical personnel and their foreign counterparts is substantial. Although the receiving government is responsible financially, significant technical and industrial commitments are made in turn by the United States.

The majority of DoD's technical assistance efforts are coordinated by the DSAA, one of its tasks under the overall U.S. Security Assistance Program.¹ These activities are normally tied to specific weapons or systems and, generally, the objective is to develop in-country capabilities to independently maintain and operate the U. S.-supplied equipment. Accordingly, manufacturing know-how and detailed information on designs and technologies are not involved in the agreements. However, some agreements are long-term and naturally serve to establish country-to-country relationships that may evolve into other forms of cooperation.

Foreign Military Sales Activities

Because of its long-standing legislative backdrop, the Foreign Military Sales program operates under established and well-documented procedures. If a foreign country decides to consider acquiring U.S.-developed equipment through FMS, it requests an initial cost from DSAA, known as Planning and Review (P&R) data. If, based on P&R data, the country wishes to pursue the matter further, it will request Price and Availability (P&A) data. The P&A data should provide enough detail to permit further agreement to proceed. This agreement is embodied in what is called a Letter of Offer and Acceptance (LOA), the document used by DoD formally to offer to sell defense equipment or services to requesting countries. The LOA includes a description of the equipment or services, the estimated costs, the terms and conditions, etc. Rigorous timeframes are generally imposed on the preparation, review, and approval of FMS documents, both to protect the parties involved and to abide by the appropriate legislation.

During the 1960s, FMS was used extensively by our Allies. Today, governments, especially the Europeans, have become more sophisticated in their weapons procurement and often prefer to acquire through commercial arrangements. Purchasing governments must also pay for the cost of FMS services, adding to the cost of the equipment. Finally, using the U.S. Government as the contracting authority eliminates the flexibility associated with negotiating directly with U.S. suppliers. On the positive side, under FMS the U.S. Government is responsible for the contracting and for assuring that the equipment or service meets pm-agreed requirements. If there are contractor problems with delivery or performance, DoD is responsible for their resolution. FMS is still a viable alternative for less advanced countries in the Middle East, the Pacific Rim, and other regions.

Information Exchange

Information exchange takes place informally, through bilateral military, engineering or scientific discussions, Personnel Exchange programs, organized conferences, or through formal bodies such as information exchange groups within NATO's Conference of National Armaments Directors. The bulk of these activities are conducted either through Data Exchange Agreements or Information Exchange Programs. Participants are usually not required to advance into other, more rigorous forms of cooperation, although this occasionally does occur.

¹If technical assistance is provided in conjunction with the FMS sale of U.S. equipment, the receiving government is obligated to pay the cost.

Data Exchange Agreements

Military departments or defense agencies initiate and conduct activities under Data Exchange Agreements (DEAs). DEAs do not require review and approval by the Office of the Secretary of Defense, nor do they require much in the way of funding (e.g., personnel costs, travel, data analysis, and data processing). They can cover nearly any subject, ranging from general categories of warfare and tactical concepts to specific technologies.

DEAs are usually managed by an individual whose specialty lies within the subject area. He may be located at a field command, an R&D center, a Service laboratory, or an operational command. While DEAs are tracked at Service Headquarters, only broad direction is provided at that level. This is not surprising; each Service may have scores of DEAs active at any time. They are considered a normal method for maintaining communications with Allied military counterparts on tactics, requirements, weapons, and technologies.

DEAs have occasionally evolved into cooperative R&D programs, but this is not their stated purpose. They are mainly a means for military-to-military cooperation and are usually confined to the military departments with little or no interactions with industry. They are also personality dependent, with some DEA managers working aggressively with their Allied counterparts and some less demanding—and the results are correspondingly greater or less. When DEA managers are transferred, the work can come to a virtual stop until someone with sufficient interest and motivation is assigned. This is a significant weakness, due largely to the bottom-up nature of most information exchange.

Coproduction/Dual-Production

Next to FMS the most widely used forms of government-to-government equipment cooperation are coproduction or dual-production agreements. Unlike security assistance, which is highly structured, these agreements are flexible and are tailored to each situation. In some arrangements (e.g., the F-16 European coproduction program), provisions are made for dual-production lines for subassemblies, components, and final assembly. Components manufactured by one partner may find their way into the final system of another, and no one partner may make all components. Manufacturing specialization may also be achieved. For example, in the case of Airbus and Tornado, one partner manufactures a particular component or sub-assembly for all the partners, providing economies of scale.

For dual-production or coassembly variants, the entire manufacturing process (for all components and subassemblies) and/or final assembly may be conducted at different locations. Dual-production/coassembly schemes eliminate the benefits of economies of scale (i.e., a single,

high-volume production line), but provide for alternate sources for international competitive procurements. The Sidewinder and Stinger production programs are examples of dual production; the missiles were manufactured both in Europe and the United States.

Sizable political and financial commitments by the participating governments are required for successful coproduction agreements. If the item to be produced is U.S. designed, complete data packages (*including* design data and manufacturing know-how) must be transferred to the receiving countries and their industries. Manufacturing, system integration, and final assembly will be performed outside of the United States and the foreign participants must ultimately know the system almost as well as their U.S. counterparts. Although advanced technology does not necessarily transfer under coproduction agreements, a general improvement is likely in Allied competence in related design practices and technologies. While the transfer of these capabilities may raise security or competitiveness issues, there are positive effects as well. As foreign governments and industries become more familiar with the features of the item being coproduced, improvements may evolve that can flow back into the United States, thus improving U. S.-produced equipment or systems.

Memoranda of Understanding

The principle mechanism for U.S./allied coproduction is through a Memorandum of Understanding (MOU), signed by all participating nations. MOUs are also used for most other collaborative efforts that involve a financial commitment by the participants. There are general MOUs that promote defense trade between the United States and individual nations, and there are program-specific MOUs that may cover different phases within a single program. For example, an MOU may be executed to conduct concept formulation studies for a major new weapon system. Once completed, a new MOU will be executed for project definition or engineering development, and a subsequent MOU would cover coproduction activities. New partners may join at any stage, or others may drop out.

Negotiating and concluding Memoranda of Understanding is a complex process in DoD. The Undersecretary of Defense for Policy has the responsibility (under DoD Directive 5530.3) to oversee the entire international negotiating process, and DoD negotiators (usually in the military departments) are delegated the authority to conduct negotiations, with a separate authority to reach agreements. Coordination is also required on MOUs with the Department of State and often with the National Security Council. Additionally, as the economic implications of armaments cooperation have become more important, consultation with the Department of Com-

merce and the U.S. Trade Representative has been initiated.

Negotiating and concluding an MOU for coproduction (or codevelopment) is becoming a major task for Service program managers. Not only must they balance U.S. and foreign interests, but they must find a way to resolve the various concerns and interests within the U.S. Government.

Codevelopment and Program Packages

The most difficult and intense form of cooperation is codevelopment. Close associations are needed, often requiring the formation of integrated, multinational design teams and a significant transfer of technology and know-how among partners. As with coproduction, codevelopment programs can take on different characters, depending on the nature of the design tasks and the government-to-government agreements. For example, if a codevelopment program can be subdivided so that design teams can work independently, different nations (or companies) may take full responsibility for developing different portions of the system. But this can only be effective if clear interfaces can be defined between subelements, and there is mutual confidence in the design abilities of the partners. It also means that each partner will have to transfer a total design package to other partners at a later stage if coproduction is to take place. A variant of this design specialization could be that subsystem interfaces are fixed, allowing different design teams to develop interchangeable (but different) modules, thus establishing qualified dual sources for future competitions.

Most often, codevelopment programs require integrated design teams that include engineering and technical representatives from all participating nations. This increases the need to transfer personnel and to accommodate different design practices, skills, and languages.

With either separate or integrated design teams, codevelopment is the most difficult of all forms of cooperation to carry out. The benefits, however, can be substantial. Although total R&D costs may be greater because of the inefficiencies of collaboration, the cost to individual participants is less, often making codevelopment the only affordable means to acquire advanced weapons. Also, each nation acquires technology and know-how from the partners, adding to its overall defense technology base. A greater understanding of the requirements usually results, increasing the likelihood of equipment standardization, interoperability, and common logistics. Follow-on coproduction agreements can be more easily established and should be more efficient.

Nunn-Roth-Warner Amendment

Since 1986, the principal means available to DoD to encourage international codevelopment has been the Nunn-Roth-Warner Amendment to the fiscal year 1986 Defense Authorization Act, and its subsequent annual reauthorizations.

The amendment:

- authorized a specific level of DoD funding exclusively for NATO cooperative R&D projects,
- authorized expenditures of additional funds for side-by-side testing of Allied and U.S. systems and
- directed that DoD identify and consider cooperative developments or existing Allied systems as alternatives to U.S. development programs or systems at every step of the acquisition process.²

One important provision of the Nunn Amendment required that the appropriated R&D funds be spent in the United States. The intent of this provision was to encourage Allied governments to contribute financially to cooperative programs; therefore, the U.S. money could not be obligated without a formal government-to-government agreement that would lead to a mutual commitment of funds. While European partners were required to make equitable contributions to the program, they were not required to match U.S. contributions.

The list of Nunn Programs began with an initial group of seven candidates, agreed at a February 1986 special meeting at NATO Headquarters. It has now grown to 28 programs under contract, with 8 more awaiting contract action and 11 in negotiation. Establishing a separate R&D budget line item was a powerful incentive for DoD and U.S. industry to look for opportunities for cooperation with NATO Allies.³

As with many top-down initiatives, there were some difficulties encountered when DoD began to implement the Nunn Amendment. There were, for example, no agreed guidelines on how candidate programs were to be selected by the Services and approved by the Office of the Secretary of Defense (OSD). The rules are now being established. Funds were initially divided equally among the Services and defense agencies, but now there is a single, OSD-controlled budget for which the Services must compete. How and when to negotiate with potential partners was also unclear, with each initial Nunn program handled somewhat differently. Now a rather rigorous procedure has been established for requesting authority from OSD to negotiate and to contract.

One of the main criticisms of the Nunn Amendment has been that the Services view it as a means to fund projects that do not have sufficient priority within their own

²In subsequent authorizations, Nunn amendment programs have been extended to our allies in the Western Pacific.

³Nunn amendment Cooperative R&D Funding for fiscal years: 1986-100M; 1987-\$ 145M; 1988-\$ 150M; 1989-\$ 154M; 1990-\$ 117M.

budgets, and that they will not support Nunn programs after the Nunn funding runs out (nominally after 2 years). While some Nunn programs may have been ill-advised, there are others that clearly hold high priorities, and which are now (or will be) supported fully by Service money.⁴

Several Nunn programs have encountered budget problems. For example, the Air Force dropped out of the Modular Stand-Off Weapon, and the United Kingdom has pulled out of the Advanced Sea Mine and the NATO Anti-Air Warfare System. All in all, however, there remains a much higher level of R&D cooperation now than before the Nunn Amendment was enacted for fiscal year 1986.

Program Packages

Informal schemes have also been used to encourage codevelopment by governments, including program packages and a variant called the Family of Weapons.

The program package concept brings together a variety of possible collaborative efforts, and usually several partners. A package may include coproduction as well as codevelopment. In recent years there has been considerable interest in Europe in package deals, especially because of their potential to provide a fair return (or *Juste Retour*) in terms of development and production work which in turn provides domestic income and employment. Packages have been organized around a single major program that had either a planned evolution so that participation can vary at successive stages, or has included a number of different (but related) systems, such as the Family of Weapons.

In the Family of Weapons concept, complementary mission deficiencies are identified, and one or more participating nations agree to pursue solutions to each under separate programs (e.g., one group of nations designs a long-range air-to-air missile and another group designs a short-range missile). The participating nations make tentative agreements to buy or produce the resulting systems, and refrain from duplicating the R&D. The family concept has been used repeatedly in Europe, but it has had a difficult time in the United States due in part to fears that U.S. industry will be cut out of key technology areas for a generation and the U.S. military will be stuck with second-class weapons. Central to the concept is the belief that some of the shortcomings of single-system collaboration can be overcome by collaboration that encompasses several systems in a specified functional or technological area. Only one transatlantic family continues today, the Air-to-Air Family comprised of Advanced Medium-Range Air-to-Air Missile and Advanced Short-Range Air-to-Air Missile (the latter now in trouble in Europe).

A package can also encompass different types of contributions from participating nations. An example was the 1983 U.S.-West German deal for the Patriot/Roland air defense network. The United States purchased Patriot surface-to-air missiles (designed and manufactured in the United States) and provided them to the West German Government. In return, Germany purchased Franco-German Roland units for the United States and provided operations and maintenance for both the Roland and Patriot units at U.S. bases in Germany. Germany acquired additional Roland units for its use and committed funds to other air defense efforts. The United States deferred R&D recoupment charges on the Patriot.

Direct Commercial Sales

Background

Although normally viewed as strictly a commercial operation, direct sales often result from agreements between the United States and Allied governments. Under the Arms Export Control Act, U.S. companies must obtain an export license to sell defense equipment, to provide technical assistance, or to support the training and logistics operations of foreign governments. License approval is an implied commitment by the U.S. Government to the deal, and a tacit agreement that it is in the best interests of the United States. In cases where U.S./Allied discussions have taken place and agreements reached on equipment parameters, implying that a foreign policy determination has been made favorable to the transaction, gaining approval for the necessary export licenses is usually straightforward. If, however, the commercial sale was not preceded by government-to-government deliberations, the licensing process can become extended and contentious. As Allied governments move away from dependence on FMS and toward commercial transactions, direct sales will become a more important aspect of collaboration in defense technology and weapons. The bilateral defense trade MOUs are a recognition of this trend.

Bilateral Defense Trade MOUs

Since the mid-1970s, the United States has entered into reciprocal bilateral trade Memoranda of Understanding with nearly every NATO country and others including Australia, Egypt, Israel, Pakistan, and South Korea. While varying in scope and coverage and in the degree of reciprocity required, the agreements waive buy-national preferences in procurement of defense equipment. Numerous annexes were also negotiated between the United States and individual signatory countries, augmenting the MOUs. Agreements have been reached, for example, for accepting one another's cost accounting standards, quality assurance standards, test and evaluation procedures, and selected design standards. These agreements should

⁴For example, the Multifunctional Information Distribution System and the NATO Anti-Air Warfare System.

make it easier to conduct armaments cooperation programs, including cooperative R&D.

DoD monitors activities under these bilateral MOUs and through annual meetings with signatory country officials assesses whether problems exist and, if so, what to do about them. This is the basic means to police the bilateral MOU process.

DoD Programs for Testing Foreign Weapons

Two schemes that have expanded Allied industrial sales to DoD are the Foreign Weapons Evaluation (FWE) and the NATO Comparative Test (NCT) programs. The FWE program has been underway since the early 1980s and NCT resulted from a provision of the Nunn-Roth-Warner Amendment to the fiscal year 1986 Defense Authorization Act. The intent of both programs is to test foreign-developed weapons and systems that have the potential for meeting U.S. requirements—thus eliminating the need to develop equivalent systems using DoD funds. Test candidates are proposed annually by the military departments, which solicit candidate nomination proposals from their subordinate component commands. After a preliminary screen at systems commands and a final screen at service Headquarters, candidates are forwarded to the Office of the Secretary of Defense, which reviews each proposal and selects those that are most promising.

Offsets

Commercial defense sales activities must increasingly take into account the need to provide offsets. Offsets are direct or indirect conditions of purchase of foreign defense equipment enacted by a purchaser. Offsets aim to increase economic development benefits and reduce the net balance-of-payments costs of such a purchase. Purchasers may require as **direct offsets** the purchase or production in their country of subsystems or components of the purchased system. **Indirect offsets** include the purchase of unrelated goods, services, or supplies. Most major security partners demand an offset as a condition of their purchasing a U.S.-designed system. While a complicating factor, the trends are for more rather than fewer offset demands. Since 1978, DoD's offset policy has been straightforward: offsets are the responsibility of selling companies. DoD has refrained from negotiating or guaranteeing offsets except under extraordinary circumstances, leaving it up to individual U.S. companies to negotiate agreements.

Offset demands on U.S. companies have grown enormously and meeting them is not an easy task. Special offset programs must be set up that often encompass more than a single program, making indirect offsets a major

element of U.S. companies' export strategies. Some critics argue that to meet offset commitments, U.S. prime contractors are tempted to tilt their subcontracting methods in favor of foreign subcontractors to the detriment of domestic second- and third-tier companies. Foreign-government-imposed offsets have also become more formalized, with U.S. companies forced to accept legal offset commitment, instead of the earlier "best-efforts" arrangements.⁵

NATO Methods and Procedures

Under the Conference of National Armament Directors (CNAD), NATO has some potentially powerful tools for expanding Allied armaments cooperation. The CNAD has traditionally provided for information exchange through, for example, the Service main armament groups. Additionally, procedures have been in force since 1979 which have introduced a degree of rigor and logic into the review and selection of candidate programs for NATO cooperation. Three such procedures now exist.

NATO Armaments Planning Review

The first is the NATO Armaments Planning Review (NAPR), aimed at giving greater coherence and structure to early cooperative efforts. NAPR provided for a periodic review of the equipment replacement plans of all NATO nations, in order to identify where replacement schedules for similar equipment are sufficiently close to allow nations to consider joint R&D and procurement efforts. Attention is focused on opportunities for achieving NATO standardization and interoperability and on identifying where reasonable compromises can be made in national plans. NAPR seeks to inhibit a divergence of national plans that might prevent any possibilities for cooperation. NAPR data submitted periodically by nations is also compared with priorities for achieving standardization and interoperability established by the NATO Military Authorities.

Phased Armaments Programming System

NAPR was initially developed by the Independent European Programme Group and adapted for NATO use. One of its limitations is that the national data represent a mature stage of national planning, and attempts to collaborate are much more difficult at that stage. To overcome this difficulty, NATO instituted the Phased Armaments Programming System (PAPS), which focused on reaching multinational agreements at specific milestones of the life-cycle of an acquisition program. The overall objective of PAPS is to provide a systematic framework for promoting cooperative programs based on harmonized military requirements.

⁵U.S. Office of Management and Budget, "Offsets in Defense-Related Exports: A Summary of the First Three Annual Reports," December 1987.

Conventional Armaments Planning System

The newly introduced Conventional Armaments Planning System (CAPS) focuses on defining national military requirements at the earliest possible stage (i.e., before national commitments are made) with a goal of reaching agreements on the needs and timeframes through a formal NATO process. The concept calls for a continuous dialogue in which the Alliance keeps nations informed of its requirements and the nations keep the Alliance informed about the degree to which those needs will be met. The expectation is that this top-down approach will disclose shortfalls in meeting NATO's requirements and highlight opportunities for cooperation. CAPS is intended to:

- identify priority armaments requirements;
- report and correlate national activities, plans, and programs;
- highlight instances of duplication, gaps between requirements and national activities and opportunities for cooperation; and
- measure the performance of nations, individually and collectively.

CAPS has just undergone a 2-year test and NATO has agreed in principle to implement it.

NATO Infrastructure Program

One final tool available within NATO for pursuing armaments cooperation is the NATO Infrastructure Pro-

gram. Infrastructure was initially conceived 40 years ago as a means to obtain, through common funding, the facilities necessary to support wartime operations for NATO's forces. Requirements come from proposals developed by the NATO Military Authorities and are staffed by the NATO Military Committee and reviewed by civilian bodies (i.e., the NATO Infrastructure Committee). After a rigorous process of program definition and justification, common funding is approved for procurement.

Starting in the 1960s, a significant portion of the Infrastructure Program was dedicated toward acquiring communications, command and control, and information processing systems. While the Infrastructure procurement rules are antiquated, especially for sophisticated equipment acquisition programs, NATO has succeeded in acquiring a number of complex and state-of-the-art systems. There are several advantages to this process: the programs are always closely tied to military requirements, multinational industrial teams always bid competitively, common funding is available, and significant technology and know-how are transferred among the winning contractors and to the staffs of the host nation. Some of NATO's largest and most successful cooperative programs have been funded by the NATO Infrastructure budget, for example, the NATO Air Defense Ground Environment, the NATO Integrated Communications System, and the on-going Air Command and Control System.