

# Buying Commercial Goods and Services

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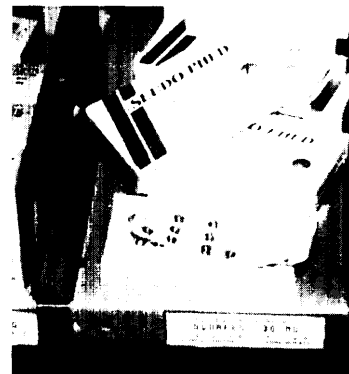
Commercial goods and services have been an essential element of defense procurement since the founding of the Republic. Prior to World War II, the majority of non-weapon defense materiel was purchased commercially. During the war, commercial industry often used civilian facilities and methods for war production. The use of commercial, non-standard products and parts, however, created logistical difficulties. After the war, the military shifted towards the standardization of products built to military specifications and standards. This not only served to streamline logistical support, it also helped open DOD contracts to more bidders.

But, this approach contributed to the segregation of the defense technology and industrial base (DTIB) from the commercial technology and industrial base (CTIB). The segregation was exacerbated by the complex rules developed to protect tax dollars, ensure fairness in contracting, and pursue national socioeconomic goals. The level of separation is now deemed unacceptable, given reduced defense spending and economic change. Greater reliance on commercial products and services and greater use of commercial buying practices are seen as critical elements of reintegration.

This chapter analyzes policies designed to increase the use of commercial goods and services to meet defense needs.

## BACKGROUND

Over the past two decades, studies and commissions have advocated making increased use of commercial products and practices to meet defense needs, resulting in legislative and executive branch efforts to promote their use.



## ■ Congressional Initiatives

Legislative support for the use of commercial products dates back at least to the Competition in Contracting Act (CICA) of 1984.<sup>1</sup> CICA called on federal agencies to “promote the use of commercial products whenever possible.”<sup>2</sup>

That same year, Congress also enacted the Defense Procurement Reform Act, which mandated that DOD use “standard or commercial parts” when developing or acquiring defense-specific products “whenever such use is technically acceptable and cost effective.”<sup>3</sup>

In 1986, Congress instructed DOD to redefine its military requirements so that they could be more easily met with nondevelopmental items (NDIs), a category including both commercial items and previously developed military equipment. Congress directed DOD to undertake market research to determine if available NDIs could meet the anticipated requirements, perhaps with modification.

In 1989, Congress directed DOD to streamline regulations governing commercial products, rescind conflicting and inconsistent regulations, and design and employ a simplified commercial contract. Congress further prescribed that inspection and warranty clauses be consistent with commercial practices.<sup>4</sup> The fiscal year 1993 National Defense Act called for the reduction of federal government barriers to the use of commercial products, processes, and standards.<sup>5</sup>

Legislative initiatives introduced in 1994 (the Federal Acquisition Improvement Act of 1994-

House of Representatives 2238, and the Federal Acquisition Streamlining Act—Senate 1587) contained a number of provisions aimed at increasing the amount of commercial goods and services used by DOD. Congress passed the Federal Acquisition Streamlining Act of 1994 (FASA), incorporating elements of both bills, as this report went to press.

## ■ DOD Programs

Since at least 1976—when the Office of Federal Procurement Policy issued the first of a series of memoranda governing procurement of commercial products—increasing the use of commercial products has been a formal part of DOD policy. Subsequently, in 1978, DOD initiated the Acquisition and Distribution of Commercial Products Program (ADCP), designed to facilitate the acquisition of commercial products by eliminating government specifications and contract clauses that did not reflect commercial practices.<sup>6</sup>

Other DOD efforts include making increased purchases of commercial commodities under the Commercial Commodity Acquisition Program. More recently, the Defense Logistics Agency (DLA) has moved to purchase food from local markets and acquire commercial petroleum products, drugs, and medical instruments. Efforts are being made to purchase commercial equipment that is designed to meet similar defense and non-defense specifications, such as telecommunications gear, computers, light trucks, and sedans,

<sup>1</sup> This discussion draws heavily on the report of the U.S. Department of Defense Advisory Panel on Streamlining and Codifying Acquisition Laws (also known as the 800 Panel, hereafter called the Acquisition Law Advisory Panel), *Streamlining Defense Acquisition Laws, Report of the Acquisition Law Advisory Panel (to the United States Congress)*, chapter 8, Streamlining Defense Acquisition Laws, January 1993.

<sup>2</sup> 10 U.S.C. § 2310 (b)(6).

<sup>3</sup> Acquisition Law Advisory Panel, op. cit., footnote 1, pp. 8-3. The Defense Procurement Reform Act of 1984 is Public Law No. 98-525, § 1202, 98 Stat. 2588 (1984).

<sup>4</sup> Acquisition Law Advisory Panel, op. cit., footnote 1.

<sup>5</sup> Public Law 102-484, § 4211, 106 Stat. 2315, 2662 (1992), *enacting* 10 U.S.C. § 2501(c).

<sup>6</sup> W.T. Kirby, *Expanding the Use of Commercial Products and ‘Commercial-Style’ Acquisition Techniques in Defense Procurement: A Proposed Legal Framework in the President’s Blue Ribbon Commission on Defense Management, Final Report: A Quest for Excellence*, appendix H, 1986.

DOD currently advocates an increase in the purchase of NDIs. Directive 5000.1, for example, requires that the maximum practicable use shall be made of commercial and other nondevelopmental items.

More ambitious programs for commercial items have been proposed. Responding to a fiscal year 1991 congressional authority to conduct pilot programs to determine "the potential for increasing the efficiency and effectiveness of the acquisition process using standard commercial and industrial practices," the Clinton Administration formally nominated seven pilot program candidates.<sup>7</sup> For example, DOD hopes to purchase commercially 85 percent of the Global Positioning System guidance hardware for the Joint Direct Attack Munitions Program.<sup>8</sup>

Among other pilot programs DOD planned to use were: commercially derived Boeing 767 airframes as a platform for AWACS being built for Japan and NATO; commercial engines in the C-17 and other aircraft; commercial training aircraft as its Joint Primary Training Aircraft Trainer; and off-the-shelf computers in the Fire Support Combined Arms Tactical Trainer.<sup>9</sup>

Secretary of Defense William Perry's June 1994 memorandum directing DOD to implement changes in the use of military specifications and standards is the most significant action taken to date.<sup>10</sup> The memorandum included provisions that will positively affect the ability to purchase commercial items. These will be discussed later in this chapter.



Commercial airframes have been used for AWACS, transports, tankers and surveillance aircraft.

To date, however, in the face of persistent obstacles to commercial purchasing, these executive and legislative branch efforts have had only modest success in increasing commercialization. FASA and Mr. Perry's directive can both provide significant support for civil-military integration (CMI).

While purchase of commercial products and services for the bulk of the country's defense needs appears to be the simplest, most straightforward way to integrate the commercial and defense base, concerns over accountability of public funds have inhibited the adoption of this approach. A further hindrance to integration is the fact that most major weapon systems—such as battle tanks, fighter jets, and submarines—and many of

<sup>7</sup>10 USC 2430s, 809 Major Defense Acquisition Pilot Program. The legislative authority for the original six pilot programs terminated September 30, 1992.

<sup>8</sup>John Boatman, "Commercial Buys Key to Acquisition Reform," *Jane's Defence Weekly*, Nov. 6, 1993, p. 14. The Joint Direct-Attack Munition is a new program aimed at developing a guided glide bomb expected to arm most U.S. bombers, fighters, and other aircraft. The competitive first phase of engineering and manufacturing development has been awarded by the U.S. Air Force to Martin Marietta and McDonnell Douglas Aerospace.

<sup>9</sup>Department of Defense, *Acquisition Reform: A Mandate for Change*, Feb. 9, 1994, p. 15. The Federal Acquisition Streamlining Act of 1994 authorized the Secretary of Defense to designate five acquisition programs for participation in the pilot acquisition program: the Fire Support Combined Arms Tactical Trainer, the Joint Direct Attack Munition, the Joint Primary Aircraft Training System, the Commercial-Derivative Aircraft, and the Commercial-Derivative Engine.

<sup>10</sup>Secretary of Defense William J. Perry, *Memorandum for Secretaries of the Military Departments, Subject: Specifications & Standards: A New Way of Doing Business*, June 29, 1994.

the underlying components, subsystems, and services have no commercial market. Therefore, we can expect a separation of some portion of the base to persist. But even here, segregation can be ameliorated if defense purchasing expands into areas where qualified commercial alternatives exist.

### CURRENT AND POTENTIAL USE OF COMMERCIAL GOODS AND SERVICES

OTA obtained some unofficial estimates of the amount of nondevelopmental item and commercial item procurement from the Army, Air Force, and DLA, but was unable, until very late in this assessment, to obtain an official estimate of the total amount of commercial items currently purchased by the government or by defense contractors for use in defense systems. Indeed, prior to April 1993, when the Services were directed by the Secretary of Defense to provide information on commercial purchases, they had no compelling reason for gathering such information and no mechanism for gathering it.

The Army, early in the assessment, provided OTA an unofficial estimate that about 45 percent of its procurement dollars are spent on NDIs, many of which are commercial or have high commercial content, e.g., bulldozers and tactical trucks.<sup>12</sup> Senior Air Force personnel estimated that some 10 to 15 percent of current Air Force procurement is commercial.

Better official estimates became available in March 1994.<sup>13</sup> DOD reported that 6.9 percent of the funds spent on "high dollar value items" (further limited to "major component level of first tier subsystems"), were spent on commercial items. The DLA also estimated that 18.3 percent of its spending went for commercial items.

Distinguishing commercial from noncommercial NDIs has been particularly difficult, as some commercial NDIs are produced to military specifications and standards, e.g., aviation parts.

While direct DOD commercial procurements appear heavily concentrated in the Operations and Maintenance (O&M) account, which provides for much of the day-to-day needs of a military—housing, food, clothing, fuel, general maintenance, and office supplies—commercial defense procurement is spread across the procurement spectrum, particularly in components, parts, and services purchased by defense contractors. This holds true even for militarily unique systems. (See box 4- 1.)

### ■ OTA Estimates

A better understanding of the existing level of integration is essential to policy development. But previous surveys, although useful, examined only portions of the DTIB. Case studies were even more limited. Data from DOD, even in its recent survey, were also selective.

In the absence of good data on the current use of commercial goods and services, OTA developed and tested a survey method for gathering data and making these estimates. The resulting trial survey provided estimates of the current and potential national defense use of commercial goods and services, the levels of process integration, and the size of the segregated base. Because of the limited nature of the trial, **these estimates should be treated with caution. They should be viewed as indicators of general trends, useful for guiding analysis. They should not be construed as definitive answers.** The estimates have been compared with the results of other, more targeted,

<sup>11</sup>DOD reportedly spent \$32 billion on NDIs in fiscal year 1993. However, [the definitions and measurement system used in this tally reportedly do "not take into account the use of commercial items and NDI in support of major systems, such as submarines and bombers. That is, DOD figures look only at direct purchases while ignoring the complexities of the lower tiers. DOD hopes next year to develop a procedure to take a closer look at commercial support items." (Anon.), "Going Commercial," *Defense Daily*, Dec. 13, 1993, p. 369.

<sup>12</sup>Interview with the Senior Acquisition Executive, Army Materiel Command.

<sup>13</sup>R. Noel Longuemare, Principal Deputy Under Secretary of Defense (Acquisition and Technology), *Memorandum for Deputy Secretary of Defense—Subject: Measuring DOD Progress in Acquisition of Commercial and Nondevelopmental Items*, Mar. 4, 1994.

## BOX 4-1: The AMRAAM Part I: Commercial Purchases

The Advanced Medium-Range Air-to-Air Missile or AMRAAM (AIM-120A), was designed to replace the AIM-7 Sparrow as the Navy's and Air Force's medium-range air-to-air missile. Its advantages over the Sparrow include greater speed, increased range, greater maneuverability, all-aspect look-down-shoot-down capability, greater resistance to electronic countermeasures, a terminal seeker, and better maintainability and reliability. The AMRAAM program includes the missile, rail launchers, aircraft interfaces, support equipment, and aircraft modifications for testing.<sup>1</sup> The Hughes Aircraft Co. was awarded the full-scale development contract in 1981 and began low-rate initial production in 1987. The Raytheon Co. was designated a second-source manufacturer.

The AMRAAM incorporates high technology that is military specific.<sup>2</sup> The missile does not incorporate any major commercial components, and it has few identifiable subcomponents and specified materials that are nonmilitary. But a 1990 Institute for Defense Analyses (IDA) study found that foreign sourcing in the AMRAAM increased at the more difficult to track fourth and lower supplier tiers. While IDA lacked the resources to do a complete survey, it is reasonable to assume that the constraints on commercial items were similarly loosened at these levels.

For the life of this missile, it is unlikely that many components will be procured commercially. But there are "value engineering" projects ongoing to incorporate some commercial components. It is too early to forecast the results. Subcomponents, such as generic semiconductors, wires, connectors, fasteners, and basic materials, might be bought off-the-shelf. For example, IDA identified numerous electronic subcomponents as commercial in origin, though they were tested to meet military standards.<sup>3</sup>

The potential savings for increased commercial procurement at the lower tiers (tier 3 and below), however, appear to be a very small fraction of program costs, as these tiers—in the overall base—receive less than 10 percent of total DTIB spending. (See chapter 3.) However, while the monetary savings might not be great, the potential exists for increased access to technology that might enhance system performance and indeed preserve a viable defense base. But the incorporation of commercial components raises logistics concerns. A recent Air Force study recommended adopting a modular approach to systems design that might make it easier to use commercial components as long as they contain standard interfaces.<sup>4</sup>

<sup>1</sup> U.S. Government Accounting Office, "Missile Development Advanced Medium Range Air-to-Air Missile (AMRAAM) Certification Issues," GAO-NSIAD-86-124BR, July 1986, p. 6.

<sup>2</sup> This box is the first of a series of three that briefly discuss the AMRAAM technology and industrial base as it relates to the policy issues addressed in chapters 4, 5, and 6.

<sup>3</sup> See Erlend H. Heginbotham et al., *Dependence of U.S. Defense Systems on Foreign Technologies*, IDA Paper P-2326, Institute for Defense Analysis, December 1990, pp. B-III-7 and B-III-10.

<sup>4</sup> U.S. Air Force Joint Command Commercial Off-The-Shelf (COTS) Supportability Working Group (CSWG) Final Report, June 1991.

SOURCE: Office of Technology Assessment, 1994.

surveys and case studies, and more recently with the available DOD data. Box 4-2 outlines how the OTA survey was conducted.

Figure 4-1, on page 8, shows OTA's estimates of current and potential spending on commercial goods and services. About 15 percent of the value added in the private sector portion for national de-

fense is estimated to be spent on commercial goods and services. Note that this estimate includes the commercial purchases by defense contractors and subcontractors of components, parts, and services, as well as direct government purchases. Figure 4-1 presents OTA's estimate of a potential tripling of the value added directed to-

## BOX 4-2: OTA's Industrial Survey

OTA's estimates of current and potential commercial purchases, integration of processes, and levels of segregation in the base are presented in a series of pie charts depicting the portion of the private sector DTIB that might be affected by the policies discussed in the relevant chapter.<sup>1</sup> These estimates also serve as a guide in discussing the possible range of CM I cost savings associated with proposed policy changes.

OTA's estimates of DTIB integration were derived from an informal survey of industrial sectors randomly selected from 541 sectors that sell some national security goods and services. The 20 industrial sectors were selected according to their total value added to national security purchases of goods and services. Because of the method used to select the sectors (selection, with replacement) three of the sectors were selected twice. One was discarded because of a data error. The value added by these sectors accounted for over 40 percent of national security spending in 1992.

OTA interviewed representatives in each sector to learn about the amount of current integration in their respective sectors, the barriers to integration, and their views of the possible impact of selected legislative reform on possible integration in this sector. The data from the interviews were then weighted and merged to form the estimates presented in each chapter. The data were also checked against data from previous case studies, surveys, and Bureau of the Census information.

In analyzing DTIB data, OTA focused on "value added," instead of more easily obtained "(gross sales" figures. Sales data incorrectly attribute the entire value of a product to the industry from which it was purchased, thus ignoring the value of components, parts, services, etc. that came from other industrial sectors. Moreover, the use of gross sales figures would significantly double-count defense spending.

While OTA lacked the resources necessary to conduct a full-scale, formal CMI survey, this trial can serve as a guide as to how a more comprehensive assessment of CM I might be approached. Appendices C and D provide a more detailed discussion of methodology relevant to data gathering.

<sup>1</sup>OTA was limited in its input-output analysis to the private portion of the DTIB. Although this portion is by far the most significant, future estimates should include the public portion of the DTIB. By definition, the public portion of the DTIB is segregated from the CTIB at the facility level.

ward commercial goods and services if the United States were to substantially alter its acquisition policies.

It is this incremental portion of DTIB spending that is most affected by the policies discussed in this chapter, and from which most of the savings and other benefits that accrue from increasing commercial purchases will come.

Some major end-items, such as aircraft engines, transport ships, and transport aircraft, might be purchased commercially—some of these were included in OTA's survey. But the larg-

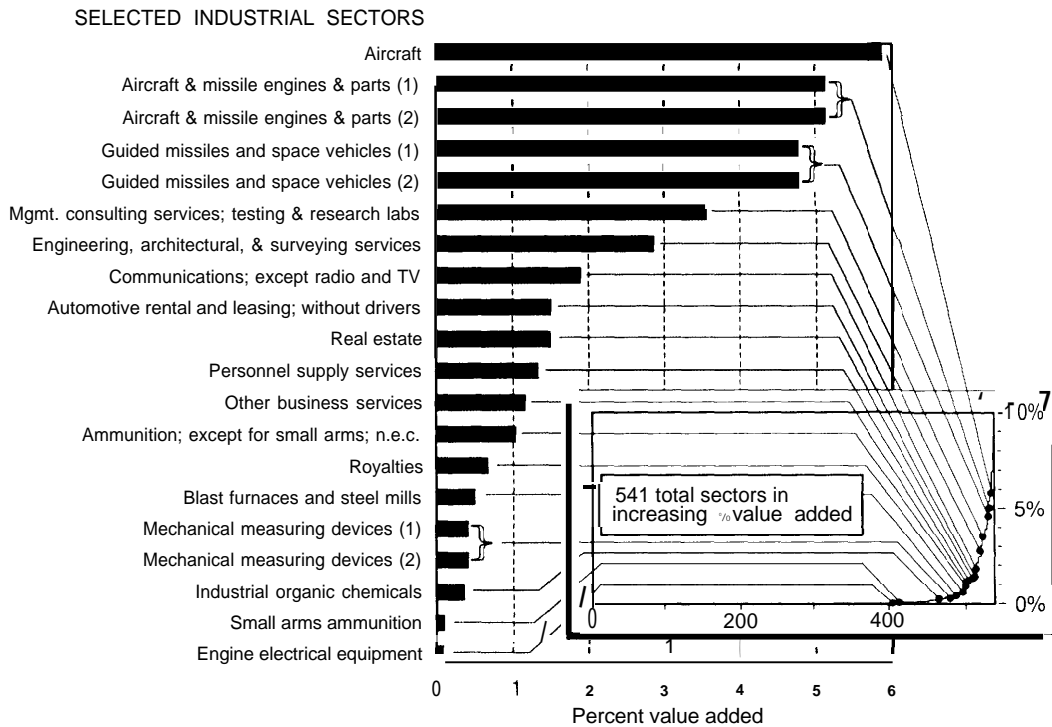
est near-term gains in commercial procurement would probably be derived from purchase of components, commodities, and services from the second and lower tiers.<sup>14</sup>

## POLICY OPTIONS TO INCREASE COMMERCIAL PURCHASES

Previous studies have identified significant barriers to the purchase of commercial goods and services. These barriers were mentioned repeatedly to OTA during the course of this assessment. Bar-

<sup>14</sup>Since spending in the lower tiers and for direct services totaled about 56 percent of private sector total DTIB spending in 1992, the roughly 45 percent estimated increase is possible, but must include a significant portion of prime contracts, too.

**BOX 4-2 continued: OTA's Industrial Survey**



SOURCE Office of Technology Assessment, 1994

riers that appear to have the greatest impact are listed in table 4-1.

If the percentage of goods and services commercially purchased is to be significantly increased, DOD must adopt a number of acquisition policy changes to lower these barriers.

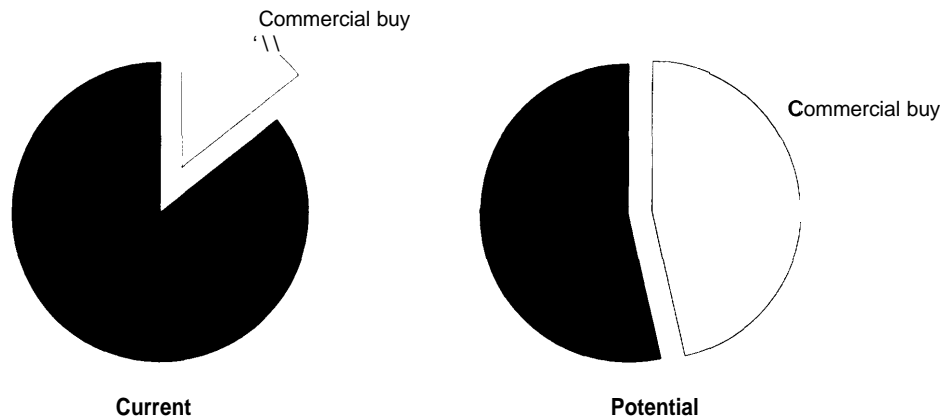
**Definitions of Commercial Goods and Services**

There has been no generally accepted definition of commercial goods and services. Instead, DOD has defined commercial goods and services in a variety of ways. Critics charge that the inconsistent and largely inadequate definitions of commercial items and services have been an important element of the debate over defense acquisition reform.

*The Market's Definition*

A commercial good or service, according to the market, is an item or service that is legally for sale (e.g., it is not a prohibited drug or stolen merchandise). The commercial market contains a wide variety of these products and services: some are expensive and one of a kind (Trump Towers), others are inexpensive and mass produced (Barbie dolls). Similar products can vary in quality and price. Consumers base their choices on whether they need the product (a new car) and whether it meets their requirements (high gas mileage or high acceleration). They also make trade-offs between price and quality. Sellers tout their products with messages that appeal to a combination of characteristics designed to make them desirable. In the give and take of the marketplace, sellers and

**FIGURE 4-1: OTA Estimates of Current and Potential National Defense Spending at All Tiers on Commercial Goods and Services in the Private DTIB**



SOURCE Industrial survey conducted by the Office of Technology Assessment, 1994

buyers have various degrees of power to influence the transactions. Prices for the same or similar products can vary. Donald Trump can specify his requirements—including, say, marble in the restrooms—and negotiate with the builders to lower their price. Consumers can buy their Barbies at a discount store or quit buying them and move on to another product.

Quality cannot be assumed; some products are shoddy. But some companies focus on developing and advertising quality goods. Voluntary boards set standards for specific products. Independent testing agencies, such as Underwriters Laboratories, test products. The government mandates minimum safety standards on many products. Consumers interested in quality can look for products that have been independently tested, or they can test the products themselves before making a purchase.

The give and take of the commercial market assures some degree of quality control (assuming consumers want the best product) and cost regulation (high prices associated with high profits can attract other, lower price sellers into the market). The government hopes to take advantage of these market forces by buying commercial goods and services to help set price and quality in many de-

fense areas. But there are limitations to this tactic. While the private purchaser risks his/her own money, the government purchaser uses public funds and bears responsibility for those funds.

#### *Importance of a Government Definition*

Setting a definition of a commercial good or service for the government is thus not simply an academic exercise. Items meeting the “definition” of commercial will be much easier to obtain under most acquisition reform proposals. As defense R&D funding decreases, DOD access to the fruits of commercial R&D will become even more important. DOD is currently attempting to identify defense-related technologies where the commercial sector leads. Without changes in acquisition policy that encourage commercial purchases, however, DOD may be forced to spend its limited resources to duplicate private sector R&D, and continue to develop separately technologies that are already commercially available. For example, one defense contractor interviewed by OTA claimed the firm was precluded from buying electronic components from a U.S. manufacturer for the valid business reason that the firm refused to comply with DOD cost and pricing requirements.



As a result, the contractor was ultimately compelled to purchase less capable, but adequate, Japanese components.

The choice of definition will limit the impact of reform policies dealing with commercial items and services. **A definition that is too narrow** may result in policies that fail to fully capture the potential savings associated with increased commercial procurement. It may limit commercial purchases to everyday items, such as food and motor oil, while bypassing more sophisticated product areas, such as electronics. Access to rapidly developing commercial technologies may be the most important benefit of commercial purchases, outweighing the cost savings of buying consumables or commodities commercially.

Conversely, **a definition that is too broad** may promote policies that apply commercial buying practices to goods and services that have no viable market other than DOD, and, therefore, are not commercial. Without a viable commercial market, DOD may have difficulty assessing whether it is paying a fair price for an item.

#### *Government Definitions of a Commercial Item or Good*

Several alternative definitions for commercial items have been proposed. The 1989 edition of *The DOD Dictionary of Military and Associated Terms* defines commercial items as:

... articles of supply readily available from established commercial distribution sources, which the Department of Defense inventory managers have designated to be obtained directly or indirectly from such sources.

**This definition tightly limits the range of goods deemed commercial by opening the process only to those goods supplied by established and designated sources.**

**TABLE 4-1: Barriers to Commercial Goods and Services**

- Government cost-accounting requirements
- Procurement process, culture, and skills
- Citation of military specifications and standards.
- Rights in technical data
- Unique contract requirements.

SOURCE Office of Technology Assessment, 1994

The Acquisition Law Advisory Panel proposed a much more expansive definition (see box 4-3), one broad enough to permit the purchase of: 1) new technology, 2) items modified for DOD, 3) commercial items not yet available to the public, and 4) items with a limited commercial market.

The definition of commercial items adopted by Congress in the Federal Acquisition Streamlining Act of 1994 (FASA) draws on the Advisory Panel's definition. The new definition appears broad enough to allow for the acquisition of new technology if it evolves from an item of the type generally used by the general public, but is available "through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available. . . in time to satisfy the delivery requirements under a Federal Government solution."<sup>5</sup>

The conference report notes the intent to ensure that commercial products incorporating technological advances are included, while at the same time ensuring that there are sufficient commercial marketplace opportunities to provide for measuring price and product quality.

The Advisory Panel definition was even more broad and might be more difficult to implement. Grey areas would exist for items supposedly developed for the commercial market, but without a market yet, or for items with relatively low com-

<sup>15</sup> Federal Acquisition Streamlining Act of 1994, Section 8001, (a) Definition, (B).

**BOX 4-3: Acquisition Law Advisory Panel Definition of a Commercial Item**

“(A) Property, other than real property, which (i) is sold or licensed to the general public for other than Government purposes, (ii) has not been sold or licensed to the general public, but is developed or is being developed primarily for use for other than Government purposes; or (iii) is comprised of a combination of commercial items, or of services and commercial items, of the type customarily combined and sold in combination to the general public.

(B) The term ‘commercial item’ also includes services used to support items described in subparagraph (A), such as Installation, maintenance, repair and training services, whether such services are procured with the commercial item or under a separate contract; provided such services are or will be offered contemporaneously to the general public under similar terms and conditions and the Government and commercial services are or will be provided by the same work force, plant or equipment,

(C) With respect to a specific solicitation, an item meeting the criteria set forth in subparagraphs (A) or (B) if unmodified will be deemed to be a commercial item when modified for sale to the Government if the modifications required to meet Government requirements (i) are modifications of the type customarily provided in the commercial marketplace or (ii) would not significantly alter the inherent nongovernmental function or purpose of the item in order to meet the requirements or specifications of the procuring agency;

(D) An item meeting the criteria set forth in subparagraphs (A), (B), or (C) need not be deemed other than ‘commercial’ merely because sales of such item to the general public for other than governmental use are a small portion of total sales of that item, and

(E) An item may be considered to meet the criteria in subparagraph (A) even though it is produced in response to a Government drawing or specification; provided, that the item is purchased from a company or business unit which ordinarily uses customer drawings or specifications to produce similar items for the general public using the same work force, plant, or equipment. ”

SOURCE U S Department of Defense Advisory Panel on Streamlining and Codifying Acquisition Laws (also known as the 800 Panel, hereafter called the Acquisition Law Advisory Panel), *Streamlining Defense Acquisition Laws*, Report of the Acquisition Law Advisory Panel to the United States Congress, Chapter 8, Streamlining Defense Acquisition Laws, January 1993, pp 8-17 and 8-18

mercial demand,<sup>16</sup> where market-based pricing and competitive innovation might not exist. Yet the Panel did not intend that its definition bear the entire weight of determining when commercial contracting should be applied—other factors would be considered. The FASA definition appears broad enough to incorporate more new technology. But using a broad definition of commercial items will require greater flexibility in purchasing rules, involving the delegation of authority in making procurement decisions. Absent such changes, a broad definition may not be helpful.

*Definitions of a Commercial Service*

Services account for about one-third of total defense spending (see figure 3-2 in chapter 3), and represented over 30 percent of the direct and indirect purchases for national defense in OTA’s survey of industrial sectors, including: engineering, architectural, and surveying services; personnel supply services; and other business services.

The Advisory Panel decided not to recommend amendments to current law addressing commercial services because it could not identify any legal

<sup>16</sup>For example, subparagraph (D) of the Panel definition would allow vehicles such as the High Mobility Multipurpose wheeled Vehicle and similar systems sold only in small quantities to the public to be considered “commercial items” for acquisition purposes, but it would not require them to be deemed commercial items.

impediment to commercial service contracting other than the Service Contract Act.<sup>17</sup> The Panel reported its conclusion that firms providing services to the government generally were not as constrained by existing acquisition laws as were firms providing manufactured products.<sup>18</sup>

The Advisory Panel, however, concluded that the services used to support commercial goods sold to the government should be considered commercial, provided that such services are, or will be, offered to the general public under comparable conditions and are, or will be, provided by the same workforce, plant, and equipment. FASA includes “installation services, maintenance services, repair services, training services, and other services if such services are procured for support” of a commercial item defined in the bill.<sup>19</sup> Like the Panel, the congressional provisions stipulated that such services had to be offered to the public and employ the same workforce.

But Congress went further and included services offered and sold competitively in substantial quantities, in the commercial marketplace based on established catalogue prices for specific tasks performed and under standard commercial terms and conditions.<sup>20</sup>

While the negative effect of current acquisition laws and regulations are less evident than are the arguments concerning manufacturing, there is some evidence that firms providing services to DOD face acquisition barriers that raise costs and discourage some firms from working with DOD.

OTA found, for example, that although service activities appear more amenable to integration than manufacturing activities, many of the service

firms interviewed report that they currently face special government cost-accounting requirements, audits, and special contract clauses.

While firms providing services on a time-and-material, commercial-style contract would still need to provide an accounting for reimbursement, OTA concluded that integration might be facilitated by a broader definition of commercial services.

The existence of a commercial market from which the government can obtain pricing information—thus avoiding the need to collect cost data separately—is the common thread in the definitions of both commercial items and services offered here.<sup>21</sup>

Even with acceptable definitions of commercial goods and services, however, significant barriers to exploiting commercial products remain. The more salient policy changes that might address some of these barriers follow. These include measures designed to ensure that commercial goods and services reflect true market prices, meet military quality requirements, and will be available in crisis and over the long term.

## ■ Government Cost-Accounting Requirements

Government cost-accounting requirements have been cited repeatedly as a major barrier to expanded commercial procurement. The Acquisition Law Advisory Panel, for example, noted that:

... one of the most expensive and disruptive procurement requirements involves mandatory adherence to cost principles and accounting

<sup>17</sup> 41 U.S.C. §§ 351-358. The Act raises the minimum wage in the service industry.

<sup>18</sup> The Department of Defense Acquisition Law Advisory Panel, *Streamlining Defense Acquisition Laws, Executive Summary: Report of the DOD Acquisition Law Advisory Panel*, Defense Systems Management College, March 1993, p. 15.

<sup>19</sup> Federal Acquisition Streamlining Act of 1994, Section 8001, (a) Definitions, (E).

<sup>20</sup> *Ibid.*, (F).

<sup>21</sup> DOD accounting of commercial goods and services is further confused by the use of the term NDI. Officially, NDIs include commercial goods as a subset, but they are often referred to as separate entities. Formally separating the two might facilitate future discussions of NDIs and commercial goods and services.

## BOX 4-4: Software and Tuna

Special cost and pricing requirements limit the number of enterprises willing to do business with DOD. An example is the General Services Administration's (GSA) recurring problem with major computer software vendors. Last year, a collection of vendors, including some of the largest and most popular—Microsoft, Lotus, and Borland—refused to give GSA all the information it requested as a condition of being listed on the GSA Multiple Award Schedule. The schedule allows government officials to procure small quantities of commercial items at the lowest possible price, while avoiding the paperwork and delay of competitive bids. The vendors felt that GSA requests for information were unreasonable, arguing that they did not collect such information or supply it to other customers. Moreover, if mistakes were made in the information presented to GSA, company officials could be held criminally liable—a risk they never faced in commercial transactions. Eventually, however, the boycott crumbled as competitive pressures in this annual \$100 million market pushed companies to accept GSA conditions.<sup>1</sup> Whether this would have occurred in the face of a more robust commercial market is not clear.

Similarly, to avoid governmental intrusions into its bookkeeping, one of the main domestic suppliers of canned tuna will not sell directly to DOD. Instead, it has established a distributor for military sales, whose books are open to the government.<sup>2</sup> The result, however, is that DOD buys its tuna at the added cost involved in having a middleman,

<sup>1</sup> See John Burgess, "Software Firms Turn on Each Other as Boycott of GSA Unravels," *The Washington Post*, July 10, 1993, pp. F1-2.

<sup>2</sup> Interview with Defense Personnel Support Center staff.

SOURCE: Office of Technology Assessment, 1994.

standards enumerated in statute, in the FAR (Federal Acquisition Regulations), and by the Cost Accounting Standards Board (CASB).<sup>22</sup>

The 1993 Defense Science Board Task Force on Defense Acquisition Reform called the current "cost-based contracting" system, with its unique cost accounting, the single most intrusive element of the process.<sup>23</sup> (See box 4-4.)

Cost accounting affects not only prime contractors. Cost and pricing data requirements flow down from defense prime contractors to their subcontractors, extending the cost accounting barrier to the lower tiers—thereby limiting potential suppliers.

The Truth-in-Negotiations Act (TINA), which requires contractors to provide cost and pricing

data to demonstrate that their prices are fair and reasonable, is cited as a particular problem. Although TINA specifically exempts commercial items from its provisions, the past inadequacy of the definition of commercial item has meant that, in practical terms, companies wishing to sell to the government are often required to provide cost and pricing data.

Commercial firms producing hundreds of thousands of units per year—many of them tailored to meet individual orders—do not routinely collect cost data by individual contract covering an individual item in the manner required by the government. Instead, they examine costs by product line or manufacturing unit. Hence, the detailed cost information required by the DOD program

<sup>22</sup> Acquisition Law Advisory Panel, op. cit., footnote 1, pp. 13-14.

<sup>23</sup> Office of the Under Secretary of Defense for Acquisition, Report of the Defense Science Board Task Force on *Acquisition Reform*, July 1993, p. 4.

office may simply not be available from a commercial accounting system. Further, even if the information were available, companies may be unwilling to accept the inherent risk of either civil or criminal penalties possible as a result of simple errors in such data. The costs of installing a data management system that tracks such information can be prohibitive. OTA ran across several instances in which firms refused to sell to the government because of such requirements.

The government's "most favored customer" provision, requiring the company to offer the government the lowest price paid by any commercial customer, means that all invoices must be checked in order to document the lowest price. In many cases, because of promotional sales, the company may not know the lowest selling price.

The negative effects of such requirements are illustrated in the convoluted purchase of several thousand commercial Global Positioning System (GPS) receivers—cited in box 4-6 as a commercial technological success—in the Persian Gulf War. Faced with an immediate military need, the Army waived all military technical requirements and specifications related to the purchase of commercial GPS receivers. But no responsible procurement official could be found to waive the requirement that the company certify that the government was being offered the lowest available price. Nor would any company official so certify—and risk a felony charge—since the seller could not be sure that this widely sold item was not being offered somewhere at a lower price. In the end, the Japanese government purchased the

receivers without a price certification and donated them to the U.S. Army, subsequently crediting the purchase against the Japanese financial contribution to Desert Storm.<sup>24</sup>

In the current government contracting environment, the disincentives associated with collecting unnecessary cost and pricing data (e.g., higher costs to the government, reduction of potential suppliers) have not been apparent to government contracting personnel, while the costs of not collecting such information (e.g., potential over-billing, second guessing by others) are all too apparent. Therefore, such data are often required, even in procurements judged to be competitive.<sup>25</sup>

While the Acquisition Law Advisory Panel acknowledged a need for a "uniform, specialized accounting system which protects the government from the imposition of unreasonable charges" in the case of "cost plus" or complex incentive contracts, it concluded that applying the same requirements in instances where market information is available incurs unnecessary additional costs and may lead firms to refuse to sell to the government. The results are separation of defense and commercial activities and avoidance of government work. A Center for Strategic and International Studies (CSIS) survey of 206 firms that sell to the government supported these observations. Half of the respondents had established a separate data collection system to provide cost and pricing data. Some 32 percent separated their administration in order to ease reporting requirements.<sup>26</sup> The cost of this separation is passed on to the government in higher prices and increased overhead charges.

<sup>24</sup> U.S. Department of Defense, Acquisition Law Advisory Panel, *Executive Summary*, op. cit., footnote 18, p. 5.

<sup>25</sup> The Aerospace Industries Association reported that a survey of 40 top aerospace contractors estimated that the firms spent approximately \$250 million years supplying such data in competitive procurements.

<sup>26</sup> Debra van Opstal, *Integrating Civilian and Military Technologies: An Industry Survey* (Washington, DC: The Center for Strategic and International Studies, April 1993). Twenty firms separated administration only, three separated R&D as well, nine separated production and administration, and 34 separated R&D, production, and administration. Although these firms were not randomly selected, and therefore the data cannot be generalized to the broader base, they were principally defense manufacturing firms and represent about 13 percent of the total DOD DTIB spending. OTA's own interviews found instances of both separated accounting and of refusal to sell to the government.

### *Eliminate Certain Cost Accounting and Pricing Requirements*

The elimination of special government cost accounting requirements for commercial goods and services is the change in policy most often suggested for lifting this barrier. This would allow market pressures to provide cost control.

The Acquisition Law Advisory Panel, among others, recommended that the threshold for cost and pricing data requirements be stabilized at \$500,000. DOD not only concurred with the Panel recommendations, but has also recommended broadening the exemption to include “commercial products and leading edge commercial technology.”<sup>27</sup> A \$500,000 threshold affects more than 98 percent of DOD contract actions, reducing government oversight costs. The \$500,000 threshold was incorporated in FASA.

Other recommended changes include extending the exemption for adequate price competition in TINA to goods purchased from a business that sells the same or similar items commercially, using the same or similar production processes. Exempting contract modifications to those contracts awarded under the expanded definition of adequate price competition or under catalog or market pricing has also been recommended. Such provisions reduce costs for many commodities, reduce government oversight requirements, and ultimately produce savings through elimination of oversight personnel. These provisions were included in FASA.

Many of the benefits of provisions for exemptions have been thwarted in the past by either the failure to use them, or the fact that the contracting officers have had the discretion to ask for cost and pricing data on any contract above \$25,000. Further, critics noted that the attempt to limit the requirement for cost and pricing data on commercial

items (in DFARs subpart 211) was rarely used in its first 18 months and is limited by the lack of a consistent definition of commercial items.

Again, definitions are important. The more constraints included in the definition, the more likely that a particular good or service falling under that definition will have a large enough market to ensure competitive market pricing. For example, if the criterion for a commercial good is that there must be a minimum number of commercial vendors and that the defense purchase would constitute a small percentage of total product sales, then DOD could be reasonably assured of obtaining a true market price. But these conditions will be more difficult with some products, particularly those that are new and have yet to establish a significant market.

Commercial buyers deal with this problem every day. For example, there are many goods and services available only from a limited number of vendors. Examples include commercial aircraft, power generation equipment, and heavy construction equipment. Competition is nonetheless fierce in these areas.

Similarly, commercial customers of one-of-a-kind goods and services avoid price gouging through bargaining, based on an understanding of relative market values. Part of bargaining is a readiness to forego certain purchases if the proposed price exceeds estimated value.

Estimates of the value of a commercial good or service that does not yet have competitive pricing are made using standard price analysis methods. This method is already used for some federal procurements under the FAR to provide DOD with the necessary information to be a smart buyer.<sup>28</sup>

A problem remains. Eliminating cost accounting requirements for some items may place defense contractors—whose products include a mix

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<sup>27</sup>U.S. Department of Defense, Office of the Assistant Secretary of Defense (Public Affairs), News Release, *DOD's Acquisition Reform Recommendations to 800 Panel Report, No. 517-93, Oct. 28, 1993.*

<sup>28</sup>Cost analyses are also done, once DOD has access to cost accounting data. Commercial firms almost never release this cost data to other businesses.

of commercial and defense and thus remain subject to DOD cost accounting rules—at a disadvantage. One way of dealing with this issue is to move to a firm, rather than a product, exemption.

Independent of whether DOD chooses to purchase commercial goods and services according to a narrow or a broad definition, in some cases it may pay more than it would under the current cost accounting regime.

Commercial transactions can be complex. In calculating whether to buy an item commercially, government buyers will need to examine the purchase within a larger context. For example, a supplier of aircraft parts to both defense and nondefense customers may sell individual parts to defense cheaper than it sells such parts to its commercial customers under current contract procedures. Yet this may not be the bargain it appears to be if, for instance, the firms deliver to their commercial customers more rapidly, provide them access to new technology, maintain their parts inventory, and offer maintenance and other services as a part of an overall contract. The commercial customer often buys not only the part, but also a long-term service commitment (often competed every 5 years or so) that eliminates inventory and inventory tracking requirements. Some estimates of total savings to the commercial firms over the total cost to the military customers are on the order of 50 to 80 percent. But achieving such **savings for the government requires a dramatic restructuring of the entire DOD support (e.g., eliminating government depot maintenance and inventory control for the items), as well as its acquisition system.**

Proponents of CM I argue that the current cost accounting system is very expensive and that the **net savings** from commercial procurement would dwarf any instances of higher prices or “waste” due to instances of government buyers not getting the best available price. For example, the two major manufacturers of large aircraft engines, Pratt&

Whitney and General Electric, have estimated the burden of special government accounting rules ranges from \$5 to \$12 million per year, per firm. In that very competitive industrial sector, savings might be expected to be passed back to the government.

Should Congress decide to eliminate cost accounting requirements from the commercial portion of the DTIB, however, it must be prepared to defend the change against the inevitable revelation of price gouging and illegal behavior by one vendor or another. Still, the projected benefits of unleashing a large percentage of the DTIB to commercial procurement appear to be worth the potential risks. These are discussed in more detail later in this chapter.

### ■ Procurement Process, Culture, and Skills

The current acquisition culture, with its special cost accounting, use of military specifications and standards, etc., has been established for over four decades. The experience and skills of procurement officials, few of whom have worked in any other environment, could serve as an obstacle to the acceptance of commercial items and practices. The Grace Commission warned, “the long-standing nature of the problems makes them particularly difficult to remedy, since cultural as well as technical issues are involved.”<sup>29</sup>

Under the current system, acquisition personnel need to know more about how to apply the regulations than about the actual products they buy. One business executive, explaining why his company had ceased to bid on government paint contracts, said that “after 20 years of selling paint to the government, my company dropped bidding on government contracts because the process was nonsensical, costly, and filled with mind boggling hassles.” He was particularly troubled by “\*contract administration officers who know almost

<sup>29</sup>The President’s Private Sector Survey on Cost Control in the Federal Government, *Report of the Office of the Secretary of Defense Task Force*, July 13, 1983, reprinted in U.S. Congress, House, Committee on Armed Service, *Defense Acquisition: Major U.S. Commission Reports (w/)*, 1988, v.01, 1, 100th Congress, 2d Session, Committee Print No. 26 (Washington, DC: U.S. Government Printing Office, No. 1, 1988).

nothing about the paint they are purchasing, since they lack any chemical or engineering background.”<sup>30</sup>

The way in which the defense procurement system operates reinforces this culture. Uniformed officers, for example, are often rotated in and out of acquisition assignments, moving on just as they come to understand the projects they supervise and thus depriving projects of institutional memory. Further, the intensity of congressional and media oversight of the acquisition process can make it appear safer to err on the side of conformity than to take the initiative by using waivers that allow cost-saving even under the current system.

This process has resulted in an acquisition workforce without many of the skills or the inclination to buy commercial products or to operate in a commercial manner. Furthermore, the slowness of the process alone—it takes months or years to get the funds authorized and appropriated, bids let, and proposals evaluated—along with its adversarial nature and the seemingly endless paperwork, have discouraged many commercial firms businesses from even attempting government work.<sup>31</sup>

### *Adopt Commercial Buying Practices*

One change in process and culture said to be essential to taking full advantage of the commercial market is the adoption of commercial buying practices. There is no single definition of buying practices that can be termed “commercial.” The Defense Systems Management College (DSMC), however, has included under this rubric techniques, methods, customs, processes, rules,

guides, and standards normally used by business.<sup>32</sup> Box 4-5 discusses how commercial businesses buy goods and services.

The Advisory Panel on Acquisition Law identified many statutes whose flow-down requirements disrupted normal business patterns. These include creating “a subcontracting obligation that is inconsistent with normal commercial practices, in which subcontracts are arranged well in advance of shipments.”<sup>33</sup> FASA addressed some of these issues, but still has provisions for small and minority-owned business restrictions. Adopting commercial buying practices will affect not only commercial purchases, but will also promote integration of commercial and defense R&D, manufacturing, and maintenance (chapter 5). Management of the militarily unique segment of the base will also be affected (chapter 6).

DOD has launched a number of initiatives aimed at making its purchases more like those of a commercial customer. For example, the Navy has instituted a combined system of best value procurement and vendor preelection. In this process, vendors are interviewed and their past efforts reviewed to form a ranked order of preferred vendors. When a contract is drawn up, the first company on the preelection list is brought in for negotiations. If the negotiations fail, the next vendor is contacted. Each of the Services has also experimented with multiyear procurements, but Congress has been generally unwilling to release this authority to DOD.

Raising the simplified acquisition threshold from \$25,000 to \$100,000 reportedly would lift the burden of the more complex purchasing proce-

<sup>30</sup> H. Peter Tepperma, “Procurement Pains: Why My Company Stopped Bidding on Government Paint Contracts,” *Washington Post*, Sept. 19, 1993. Tepperma is CEO of Seagrams Coating Corp., and Chairman of the Government Paint Suppliers Committee of the National Paint and Coating Association.

<sup>31</sup> DOD’s *Acquisition Reform Recommendations to 800 Panel Report*, op. cit., footnote 27. DOD reported that the average lead-time for contract awards below \$25,000 is 26 days. Above \$25,000, the average lead time is 90 days for simple sealed bids and 210 days for competitively negotiated contracts.

<sup>32</sup> Defense Systems Management College, *Commercial Practices for Defense Acquisition Guidebook*, (Washington, DC: U.S. Government Printing Office, 1992), Summary, p. 1-2.

<sup>33</sup> *Executive Summary: Report of the DOD Acquisition Law Advisory Panel*, op. cit., footnote 18, p. 100.



### BOX 4-5: How Commercial Businesses Buy Goods and Services<sup>1</sup>

Commercial businesses use a number of approaches to buying goods and services, including pricing, price analyses, negotiations, and past relationships. Businesses can buy just like the public. Business purchasers can walk into a store or thumb through a catalog, make a selection of the items on display, and pay the marked price. Commercial services can also be purchased the same way, paying for services according to posted hourly wage rates, or a set fee for completion of a task. A company buyer decides to pay the fixed price if it meets the company's expectations of an acceptable value. What constitutes an acceptable value varies from one company to the next, but includes assessments of need, price relative to other sources, quality relative to other sources, timeliness of delivery, quality of customer service, and location. One advantage businesses often have over the individual consumer is the opportunity to pay less for an item by buying in bulk.

Businesses engage in price negotiation over commercial products. The seller has the advantage of knowing how much money he or she needs to make from the deal. The buyer may or may not have a good idea of the market price for the item, but should have assessed what the product is worth to the company. The less competition, the more important it is for the buyer to conduct price analysis and an internal value assessment. The buyer can seldom be certain of having obtained the best deal, only that the deal was good enough for the company's purposes. This uncertainty is what concerns many critics of government commercial purchases.<sup>2</sup> Businesses must function in this uncertain environment daily, relying on the skills of their buyers to make the best possible transaction.

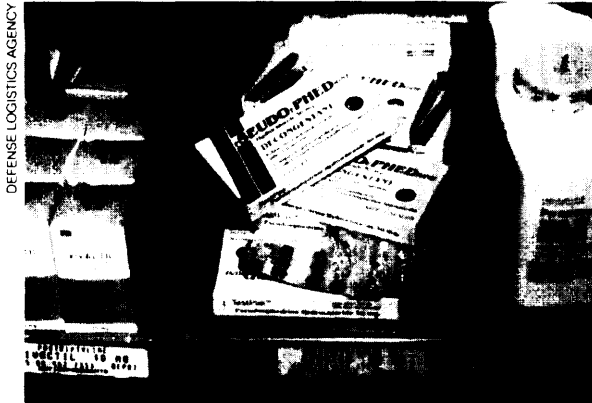
In practical terms, businesses do not shop for the best deal on every purchase. Even the federal government does not do that, giving local buyers discretion over small purchases and limiting competition to a few sources. Businesses often develop long-term relationships or "strategic partnerships" with suppliers and subcontractors that meet their special needs (e.g., quality and timeliness). Even though the price of the product may not always be the lowest available, the buyer believes it constitutes the best available value. In this way, commercial business limits the certainties of the process and tries to get the best available service over the long term. Special relationships in defense procurements, however, have been viewed as undermining free and open competition, although there has been increased willingness to seek the "best value" in contracting.

One trend in the commercial sector is the qualification of a company's supplier base. This selection process allows firms to obtain quality products from companies without having to rely on new bids or market analyses for each purchase. Although different firms use different processes, the basic elements are the same. The buying firm establishes a set of quality standards that suppliers must meet. Some firms inspect their suppliers' facilities and quality control processes, others rely on product testing, quality recognition awards, or periodic reports. In all of these relationships, however, trust is seen as critical. Violations of that trust can result in removal from the approved vendor list.

Finally, commercial buyers avoid many of the problems of owning their own goods by leasing or renting goods from others. This option is seen as especially useful for items that are difficult to maintain overtime (e.g., cars, computers, offices) or when the firm's need for such items fluctuates. Buyers decide if a particular lease is a good value in the same way they decide for purchases, factoring in the depreciated value of the product over the length of the lease.

<sup>1</sup>This discussion is based on OTAS interview of 12 commercial firms.

<sup>2</sup>The term "Commercial purchase" is used rather broadly here to ease the discussion. Business-to-business sales are often referred to as industrial purchases.



Many military needs can be met directly with commercial products

dures from approximately 40,000 contract actions (with a value of about \$2 billion) each year.<sup>34</sup> This change was made in FASA.

The DLA, which has responsibility for purchasing many common Service items, has initiated several programs whose ultimate result, if successful, will be to operate more like a commercial business. These programs include:

- *Best Value Buying*+ evaluates performance and quality factors in addition to price.
- *Long-Term Business Instruments*-considers options for future purchases, indefinite quantity contracts, and multiyear terms.
- *Electronic Commerce*--uses electronic networks to solicit bids, and to evaluate purchase orders.
- *Direct Vendor Delivery*-streamlines the acquisition process, reduces inventory costs.
- *Long-Term Contracting*—provides an increased planning horizon and incentives for manufacturing process investment for future contracts.

Many of the DLA initiatives cut costs by reducing the number of times that items must be handled by the government. Thus, DOD customers

can buy directly from civilian vendors, eliminating depot middlemen. The DLA anticipates that such moves should generate significant savings and quicker response to the needs of the military.

Medical supplies to Alaska, for example, are now being delivered by Federal Express instead of the Military Airlift Command, saving an estimated 50 percent in delivery costs while providing faster service. The use of a commercial delivery service, coupled with better inventory control, ultimately reduces waste. In the past, for example, about 25 percent of the military's stocks of medicine in Alaska expired on the shelf each year.<sup>35</sup> This is no longer the case.

There has been concern over the possibility that the government's drive for efficiency, including long-term contract arrangements and best value buying, might "bundle" several contracts together into a larger single contract and, in the process, eliminate opportunities for small business to participate. While some bid protests were registered early in the DLA restructuring process for precisely these reasons, DLA personnel report that the agency has paid special attention to assuring that small firms are not eliminated. DLA argues that bundling contracts is not an objective and that their procedures have been supported by the General Accounting Office. Nevertheless, these concerns illustrate one potential problem of buying commercial.

#### Change the bid and proposal process

One of the most important steps in adopting more commercial buying practices is changing the current bid and proposal (B&P) process. The traditional B&P process has been characterized by a lengthy series of paperwork hurdles, with the possibility that the contract award will be challenged by a bid protest, thereby lengthening the process further.

<sup>34</sup>DOD's *Acquisition Reform Recommendations to 800 Panel Report*, op. cit., footnote 18.

<sup>35</sup>Briefing from Medical Directorate, Defense Personnel Support Center, DLA, May 25, 1993.



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*Commercial services, such as Federal Express, now provide worldwide services once only available through the military.*

The executive branch provides a mandated 15 days notice before releasing requests for bids and proposals and allows 30 days for companies to respond before a contract is awarded. Many factors can force extensions to this process. Though intended to promote competition and enhance small business opportunities, the process is now an impediment to both. For example, the mandated notice prevents the routine use of electronic bulletin boards to announce new business opportunities and electronic data exchange systems to rapidly receive quotes.

In the future, many of the contract actions might be accomplished electronically, without the currently dictated delays. While the process is more efficient, businesses, especially small businesses, must learn to operate in this new environment and will require some training.<sup>36</sup> FASA's Federal Acquisition Computer Network (FACNET) is designed to help facilitate electronic commerce.

### Increase market analysis/investigation

As DOD gives up many of its traditional buying practices, it will need to develop a better understanding of the commercial market, have the ability to determine whether there are commercial products that can fill defense needs, and be able to set a fair price for those products. FASA directs the use of market research to determine if commercial items are available to meet an identified need.

DOD will have to increase the use of its *market surveillance* and *market investigation techniques*.<sup>37</sup> *Market surveillance* provides buyers the initial information on the general availability of items to fill possible needs. It is an activity conducted by acquisition personnel striving to remain

technically current and aware of market trends in their areas of expertise.

A market investigation, on the other hand, takes place only after a specific need is identified. It determines whether a particular item can satisfy a particular defense use. (See box 4-6.)

Market surveillance and investigation takes time, and requires technical understanding of products and training. Market analysis also requires that DOD gain access to existing commercial databases and help develop and update others in product areas where none exist.

### *Retrain or Replace Procurement Staff*

Almost everyone OTA interviewed agreed with findings of previous studies that adopting commercial buying practices will demand a new set of skills in the defense contract community. A DSMC study of commercial practices for defense acquisition argued, for example, that inadequate acquisition training "is probably the single biggest inhibitor" to government adoption of a commercial approach.<sup>38</sup> The study further noted that:

Acquisition personnel are not usually trained in how to conduct market research, surveys and analyses . . . [and] . . . acquisition managers at all levels are not sensitive to their benefits and do not require them as a matter of course nor as a part of normal acquisition routine.<sup>39</sup>

A lack of training can have many consequences. Contracting officers reportedly require certification of most favored customer price (e.g., lowest cost) because they are not properly trained to conduct proper market research.<sup>40</sup>

An Air Force group studying the use of commercial products also reported potential personnel barriers to reform, noting that "Air Force personnel attempt to fit commercial acquisitions into

<sup>36</sup>DLA's Defense personnel Support Center, for example, conducts training for small firms.

<sup>37</sup>Office of the Assistant Secretary of Defense for Production and Logistics, *Buying ND/: SD-2*, October 1990, pp. 3- I to 3-5.

<sup>38</sup>DSMC, *Commercial Practices for Defense Acquisition Guidebook*, op. cit., footnote 32, p. 2-6.

<sup>39</sup> Ibid.

<sup>40</sup> Jeff Bingaman et al., *Integrating Commercial and Military Technologies for National Security: An Agenda for Change* (Washington, DC: The Center for Strategic and International Studies, 1991 ), p. 35.

### BOX 4-6: Small Lightweight GPS Receiver: A Market Investigation

One of the more frequently cited recent examples of a commercial product successfully filling the needs of soldiers in the field is the small lightweight Global Positioning System (GPS) receiver—termed the SLGR. This success was partly the result of a market investigation.

During the Persian Gulf War, DOD bought several thousand commercial GPS receivers to augment the more expensive and bulky military GPS receivers on hand. These receivers relay geographic position (latitude, longitude, altitude, and velocity) and time information based on data received from the GPS, a constellation of navigation satellites. Given the almost featureless terrain of parts of the Iraqi desert, these devices proved invaluable, enabling ground troops to maneuver in areas that had not been mapped.

The primary technical difference between the commercial and military versions of the GPS receivers is accuracy. DOD sought to share some of the navigational benefits of the system with the rest of the world while keeping certain advantages to itself. Military GPS receivers thus have an accuracy of + 10 to 20 meters. Commercial receivers' accuracy is limited to about + 80 meters. Military receivers are also said to be more rugged than the commercial version used in the Gulf.

The Army launched the SLGR program in 1986 to determine whether lightweight commercial GPS receivers could meet Army requirements.<sup>1</sup> In March 1987, the Army began a market investigation with the goal of procuring a lightweight, preferably hand-held, low-cost, commercially available GPS receiver that could be used by a wide variety of personnel with minimal training.<sup>2</sup> Following a period of research, the market investigation team drafted a list of minimum requirements and additional desired capabilities, and published these in *Commerce Business Daily*. Nine companies responded with 11 products. Three of the 11 products had all the required features. In 1989, Trimble Navigation was declared the contract winner and 1,012 SLGRs were purchased for field trials.

Several thousand commercial receivers were purchased from multiple sources to meet Gulf War needs.<sup>3</sup> While the SLGR represents a technical success, it was not, as noted earlier, a procurement success. Because of the inability to waive the lowest cost certification, many of the devices had to be purchased by the Japanese for the Allies.

<sup>1</sup> Office of the Secretary of Defense DOD Caselette "Nondevelopmental Item Acquisition Abbreviated Case Study Small Lightweight GPS Receiver."

<sup>2</sup> U.S. Army SLGR Market Survey July 31, 1987, P. 2

<sup>3</sup> U.S. Department of Defense, *Conduct of the Persian Gulf War Final Report to Congress*, appendices A-S, April 1992

SOURCE: Office of Technology Assessment, 1994

traditional development processes," rather than adapt to the use of commercial items.<sup>41</sup> The group recommended that a major training effort be initiated, including special courses at the DSMC and the Air Force Institute of Technology.

The amount and nature of training required is likely to differ according to the type of product procured. The Defense Logistics Agency's Defense Personnel Support Center—already practicing commercial purchasing and selected to

<sup>41</sup> *Joint Command Commercial Off-The-Shelf (COTS) Supportability Working Group (CSWG) Final Report*, June 1991.



*Electronic data interchange is already changing the way the military does business. Here, U.S. Marines at Parris Island engage in electronic commerce*

participate in one of DOD's pilot commercial acquisition programs—suggests that acquisition workforce training might best focus on the use of new technological tools, such as Electronic Data Interchange, necessary to implement Electronic Commerce, and new contracting alternatives.<sup>42</sup> Other commands, with more complicated products, might use training to foster an understanding of available product technology. But DOD will have to consider allocating training dollars toward commercial buying practices in any case. Still, new training may not cost additional funds—there is considerable training underway. It will, however, require a different focus.

Replacing the current acquisition workforce with personnel from the commercial sector is another alternative. Such an approach could be used to rapidly create a force of *buyers* trained in commercial business techniques and in the product technology for which they will be responsible. But such an approach would likely be very disruptive. Government organizations interviewed for this assessment argued that the current workforce could be properly retrained. They argued that the problem has been a matter of process, not people.

The existing system provides no incentive to buy commercially and no time on the job to become, or remain, expert in particular areas.

Regardless of the means used to develop the qualified future acquisition workforce, personnel will require better technical training and longer job tenure than in the past. They will need the opportunity to conduct continuous market surveillance, so that they are aware of available products and technology and can make early use of this knowledge in procurement decisions. To allow the rapid procurement of off-the-shelf items, they will need support for conducting market investigations. They will also need the mental agility and technical knowledge to recognize cases when militarily unique products are the best choice. The goal is to maximize the use of commercial goods and services, not to sacrifice military capabilities. (See figure 4-2.) Achieving this goal requires a considerable increase in the responsibility, authority, and initiative of procurement officials.

#### *Develop Incentives for Using Commercial Goods and Services*

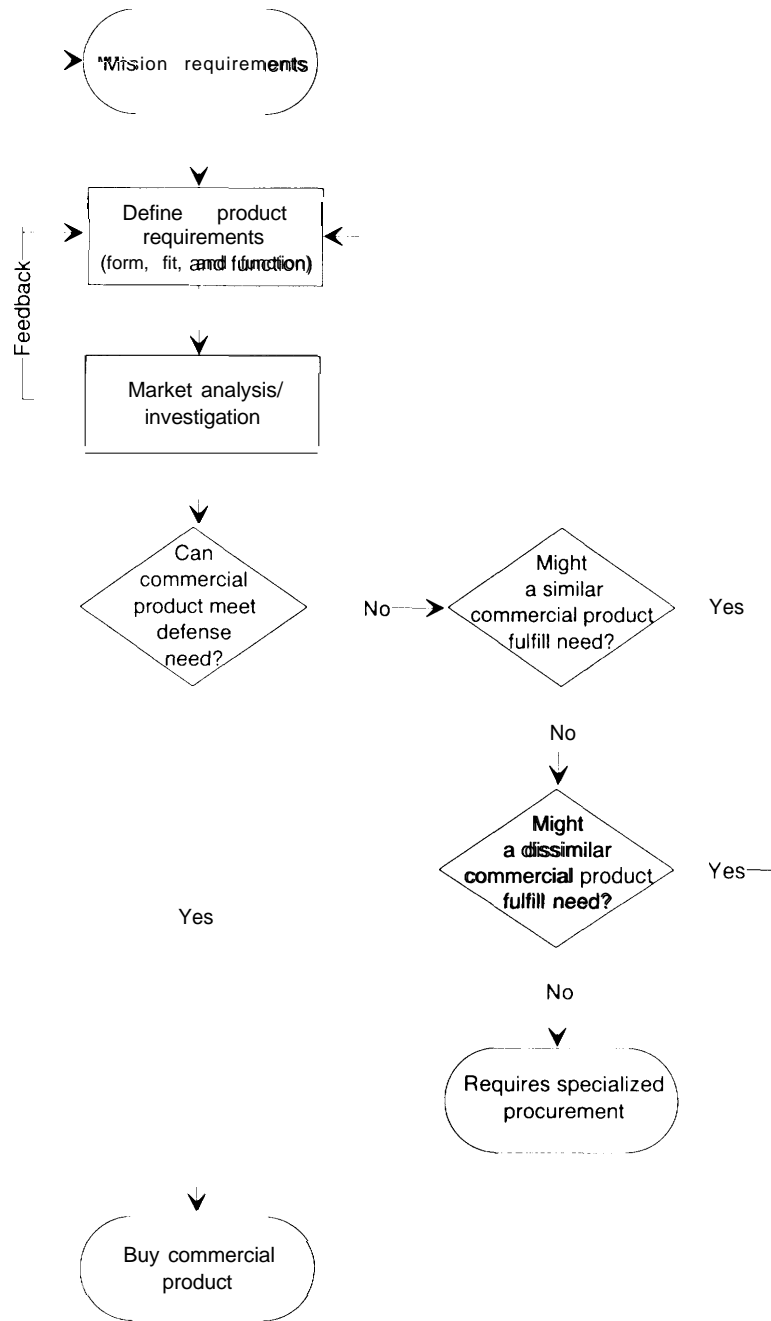
Changing the current procurement culture involves fundamentally altering the incentive structure to promote greater use of commercial goods. Efforts towards this end have already begun. Secretary of Defense Perry has stated “the desire to turn the system on its head.”<sup>43</sup> Secretary Perry's June Memorandum on Military Specifications and Standards is the first step in that process. A program manager who chooses a militarily unique product must justify that choice. But procurement personnel must be made to feel that decisions to procure commercially will not, in and of themselves, bring the system to a halt, or jeopardize their jobs.

The OTA assessment team was informed in several interviews that the threat of a bid protest—and the subsequent suspension of work—was enough to make some contracting officers shift a

<sup>42</sup>Discussions with DPSC personnel.

<sup>43</sup>Lucy Reilly, “MILSPECs in Perry's Sights at Pentagon,” *Washington Technology*, 3, May 6, 1993, p. 8.

**FIGURE 4-2: Notional Smart Buyer Decision Process**



procurement decision away from commercial specifications. The impact of the recent DOD military specifications and standards decision on this behavior remains to be seen. But many recommend that the current system be changed to promote more responsible protests.

Additional incentives for change must be created. Firms considering the use of commercial components deserve financial incentives to do so. Government acquisition personnel need a new structure in which lowering system cost is weighed against projected performance of militarily unique items.

The Grace Commission<sup>44</sup> argued that contractors were in the best position to appreciate the cost impacts of specifications. It recommended that DOD should authorize the use of financial incentives to encourage contractors to challenge unimportant or irrelevant standard requirements when responding to an RFP. These incentives might consist of cash payments.<sup>45</sup> The current approach to incorporation in systems involves the “value engineering” clause of FAR. Its use is reported to be limited and to vary by program.

### ■ Citation of Military Specifications and Standards

During the past four decades, many studies have identified the excessive and, at times, inappropriate citation of military specifications and standards as a particularly formidable barrier to the use of commercial products. Critics have argued that military standards and specifications often differ from commercial standards and specifications so dramatically that they effectively prevent the use of equivalent or even higher quality commercial goods and services. Shipbuilders, for example, have argued that this is the case for the

future Navy sealift ships. Often the cited specifications and standards were seen as simply unnecessary—sometimes merely copies of old documents. Certainly there is little reason to have detailed military specifications for off-the-shelf consumables. Mr. Perry’s initiative on military specifications and standards, if properly implemented, should change this.

Specifications and standards have also differed from Service to Service. A contractor producing similar items for more than one Service may need to comply with different standards for each. In addition, some military specifications and standards have been updated too infrequently, falling behind best commercial practices, forcing companies to use obsolete processes.

A recent Office of the Secretary of Defense publication noted that:

The problem for a commercial company, as with government-unique accounting principles, is that compliance with government standards often requires a departure from commercial practices, not to mention the company’s own processes which have led to commercially successful products.\*

Such departures from established processes can raise costs, reduce quality, and convince a commercial firm not to undertake DOD business.

Military specifications and standards, however, often serve a valid purpose, (See box 4-7.) Indeed, the 1983 Grace Commission argued that “MILSPECS have long been a target of misdirected criticism.” The proper target, the authors maintained, should be procurement officials who are not sufficiently selective in citing military specifications requirements in contracts. Misapplication of military specifications and standards has been the primary problem.

<sup>44</sup>The Office of the Secretary of Defense Task Force of the President Private Sector Survey on Cost Control in the Federal Government.

<sup>45</sup>*Report of the Office Of the Security of Defense Task Force*, op. cit., footnote 29, pp. 778-779.

<sup>46</sup>Department of Defense, Office of the Assistant Secretary of Defense (Public Affairs), *News Release*, “DOD’S Acquisition Reform Recommendations to 800 Panel Report,” Oct. 28, 1993.



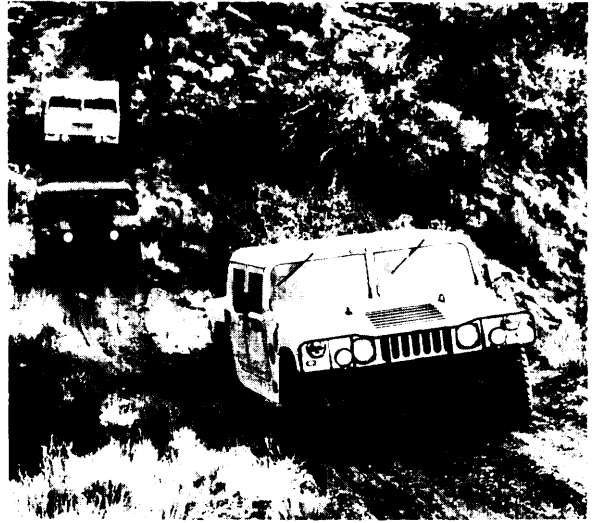
The DOD-chartered Process Action Team (PAT) for Specifications and Standards, whose November 1993 report formed the basis for Secretary Perry's June Memorandum on specifications and standards, developed a strategy to decrease reliance on military specifications and standards. The Secretary "wholeheartedly" accepted the report and approved the recommendations "to use performance and commercial specifications and standards in lieu of military specifications and standards, unless no practical alternative exists to meet the user's needs."<sup>47</sup>

The PAT report specifically recommended that: performance specifications be the preferred method of buying new systems, modifications, and NDI, including commercial products; manufacturing and management standards be canceled or converted to performance or nongovernment standards; new proposals and contracts be flexible, providing incentives for a contractor to submit alternative solutions to military specifications and standards; the use of military specifications and standards be restricted; and oversight using process control and nongovernment standards be promoted.<sup>48</sup>

The program of change outlined by PAT and endorsed by the Secretary of Defense calls for heavy involvement by senior DOD leadership, extensive training, and long-term commitment to change if the overuse of military specifications and standards is to be eliminated.

### *Make Performance Specifications the Preferred Method of Buying*

Moving to performance specifications would have a great impact on integrating processes as well as easing the purchase of commercial items. The initial impact will be observed in the purchase of commodities—food, personal items, etc., that are continually purchased. Over time, as new systems are procured, greater benefits will accrue.



Commercial Hummers (front and rear) were developed from the militarily specified Hummer (center)

Studies indicate that such a move would reduce the need for government oversight and ease the problem of technical obsolescence since new items might be retrofitted into military platforms. PAT estimated that adopting performance specifications might save \$550 million over the next two years. Though this estimate appears optimistic, significant savings appear possible.

There is reason to believe that performance specifications will promote the transfer of technology into the defense arena. But the use of performance specifications increases prospects that those defense firms continuing to develop militarily unique products and retaining engineering and design capabilities will prove noncompetitive for newly defined commercial products. To the extent that such firms restructure or are replaced by commercial firms with those capabilities, this problem might be managed. But care must be taken to ensure that the design and engineering talent essential to develop and build new systems—held to be the core of the U.S. defense base—is retained.

<sup>47</sup>Secretary William Perry, memorandum, Op. cit., footnote 10.

<sup>48</sup> Process Action Team for Specifications and Standards, *Final Report: Briefing*, Nov. 19, 1993.

## BOX 4-7: Light Tactical Vehicles

The U.S. Army—and the other Services to a lesser extent—employ large numbers of light tactical vehicles in a wide variety of roles. Two vehicles—the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the Command Utility Cargo Vehicle (CUCV)—accounted for 85 percent of the military's light tactical vehicles in fiscal year (FY) 1992. This share was projected to rise to 97 percent in FY 1993.<sup>1</sup> The two vehicles are a successful example of using commercial items where appropriate, and military specifications where needed.

The M-988-series HMMWV, more commonly called the Hummer, is a lightweight, diesel-powered, four-wheel-drive vehicle built by the AM General Corp. in Mishawaka, Indiana. It was designed specifically for the military. It is used by the three Services in a number of configurations (cargo/troop carrier, ambulance armament carrier, TOW missile carrier, and shelter carrier), all constructed on a common 1¼-ton chassis.

The Hummer is an example of a military product whose manufacturer is looking to expand into the commercial market.<sup>2</sup> The vehicle's main selling point is extreme ruggedness. As of June 1994, more than 1,000 Hummers have been sold commercially. To compete head-to-head with other commercial 4 x 4s, each commercial Hummer comes with a 36-month/36,000 miles bumper-to-bumper warranty. In July 1993, AM General also introduced a lower cost commercial model to meet the market demand for a basic work truck. An important market for the commercial vehicle may be organizations such as the Forest Service, or mining and petroleum firms requiring reliable transportation across difficult terrain.

Somewhat surprisingly, the early commercial variant of the Hummer costs \$10,000 to \$15,000 more than its military counterpart. This price differential arises from the need to meet Department of Transportation safety laws, Environmental Protection Agency emission laws, and market expectations for comfort. To meet highway safety standards, for example, the commercial Hummer required a new door design Addition-

<sup>1</sup> U.S. Army, Tank-Automotive Command, Fleet Planning Office, *U.S. Army Tactical Vehicle Fleetbook*, January 1993, p. 117

<sup>2</sup> AM General may get competition from an unusual source, the Ulianovsk Automobile Plant. As part of a new joint venture, this Russian plant has announced plans to sell its version of a military all-terrain vehicle on the American and Canadian commercial markets. Like its American counterparts, the jeep-like UAZ will need to be modified to meet U.S. safety and environmental regulations. Early models are expected to compete primarily on their exceedingly low price tag of about \$10,000. See James H. Rubin, "Russians Roll in U.S. Jeep Market: Boxy UAZ Vehicle is Called Pride of the Russian Military," *The Washington Post*, July 9, 1993, p. C1.

### *Cancel Military and Adopt Commercial*

This is at the heart of the Secretary's June 1994 Memorandum. It can largely be accomplished within the current acquisition structure. Indeed, DOD already had a number of initiatives to permit greater exploitation of commercial electronics components prior to Perry's memorandum.

The Assistant Secretary of Defense for Acquisition Reform reported in October 1993, for example, that DOD had "increased the number of adopted non-government standards from 3,279 to

5,617 (a 51 percent increase)" and that "the number of commercial items descriptions had increased from 1,973 to 4,857 (a 146 percent increase over the past seven years)."<sup>49</sup> But while forward movement has been evident, it has been slow. The Secretary's communication should speed the process. Further, while the cancellation of these military specifications and standards appears to be a straightforward task, the entrenched nature of the bureaucracy could make it Herculean. Successful reform is far from assured, as the

<sup>49</sup> News Release, op. cit., footnote 46.

## BOX 4-7 continued: Light Tactical Vehicles

ally, high volume buys can lower the per unit vehicle price to the military. Military prices are affected by the sophistication of the variant purchased. For example, a basic cargo/troop carrier is less expensive than an ambulance.

AM General has realized some savings in the commercial Hummer, but the savings/penalty equation is complex. For example, components for the 12-volt commercial electrical system are cheaper and easier to obtain than the less standard 24-volt system required by the military, but the entire electrical system must be different from the military type. And while the commercial Hummer is constructed on the same manufacturing line using many of the same components, interior outfitting and exterior painting occur in a separate building.

AM General purchases about 65 to 70 percent of the cost of a military HMMWV from lower tier vendors. Three of the major subsystems are modified commercial off-the-shelf products: the engine, the transmission, and the T-case. Many of the individual components and fasteners are also procured commercially. The rest of the vehicle, however, is manufactured to military specifications and standards, including most of the chassis, the radiator, the axles, and the tires—although the tires have since been added to the Goodyear catalog—and by some criteria may now be considered commercial.

The 1¼-ton CUCV, on the other hand, is a commercially designed, 4x4 light tactical utility and cargo vehicle built by General Motors in Flint, Michigan from 1983 to 1986. The CUCV is closely related to the Chevrolet C/K series full-sized pickup and Blazer. Like the Hummer, it has an automatic transmission and a diesel engine. It was built in five configurations: cargo, utility, ambulance, shelter carrier, and chassis only. Some of the shelter carriers have been modified with dual rear wheels.

Both the Hummer and the CUCV were procured on fixed-price contracts, as nondevelopmental items built to performance specifications. The CUCV was not intended as a front-line vehicle. Military modifications include camouflage paint, lifting eyes, blackout marker lights, and slave cable receptacles. A subcontractor fabricated and installed specialized ambulance items.

During the Persian Gulf War, the CUCV was used more widely in the field than anticipated. It proved insufficiently rugged for off-the-road field operations. It has since been slated for Corps-level and higher operations that require little off-road driving. At division level and below, Hummers are replacing the CUCV.

SOURCE: Office of Technology Assessment 1994.

meager results of no less than seven major initiatives intended to decrease reliance on militarily unique specifications and standards have shown.<sup>50</sup>

It is difficult to identify a risk to canceling inappropriate and outdated specifications and standards. Though there will be costs associated with reviewing the standards, such review will have to be undertaken in any event. Indeed, the current problem arises in part from an earlier unwillingness to pay the costs (in time and money) to sys-

tematically review and update specifications and standards.

#### *Adopt New Methods of Quality Control*

Market forces help to ensure quality within the commercial base. Given a reasonable degree of competition, firms with poor quality control will find it difficult to stay in business. Conversely, companies known for consistent high quality will often attract new customers. Thus, it is in a ven-

<sup>50</sup> Ibid.



Onsite inspections are one method of ensuring quality but (here are alternatives

dor's self-interest to maintain quality. This is accomplished through product tests, employee quality programs (e.g., total quality management), and statistical process control. Firms may underscore their commitment to quality through product warranties.

In the past, the requirement for quality testing often arose in areas in which defense technology was on the leading edge and manufacturing techniques were uncertain. Now the commercial sector leads in many key areas, particularly electronics. In these areas, accepting commercial quality standards can increase commercial purchases while preserving high quality.

The Under Secretary of Defense for Acquisition and Technology has authorized the use of American National Standards Institute/American Society for Quality Control and the International Organization of Standardization quality standards in place of MIL-Q-9858A and MIL-I-45208A in defense acquisition programs. This new policy will be incorporated in the next update of DOD Instruction 5000.2.<sup>51</sup>

For many goods and services, market surveillance might provide sufficient information on which to base a purchase decision. In some markets, DOD could follow the lead of commercial customers and conduct plant visits to inspect quality control mechanisms. Other goods and services, especially those with less competition or with more product uncertainty, might warrant internal DOD testing.

### *Participate in Commercial Standards Bodies and Consortia*

If DOD is to place greater reliance on commercial products and standards, it will need to become even more involved with the standards bodies and industry consortia that set industrial specifications and standards. Industry will adopt rules that provide tangible benefits rather than meet DOD desires.<sup>52</sup> But DOD involvement may help steer industry in desired directions. For example, DOD might help create commercial standards for a "ruggedized" product, thus increasing the chance that DOD could rely on ruggedized commercial products and thereby allow greater exploitation of the commercial sector.

DOD participation in standards development is not cost free, and there is an inherent risk that excessive DOD involvement in developing commercial standards might negatively affect U.S. industrial competitiveness. But given the diminished role of DOD in overall purchases, the potential of this occurring appears small, and the risk is certainly manageable.

### ■ Technical Data Rights

Government demand for rights in technical data has been a contentious issue. There are two facets to this problem. The first concerns the kind of data the government will receive and in what format. The second is with what rights the data will be delivered.

<sup>51</sup>Under Secretary of Defense John M. Deutch, *Memorandum for Secretaries of the Military Departments and Directors of Defense Agencies on the Use of Commercial Quality System Standards in the Department of Defense (DOD)*, Feb. 14, 1994.

<sup>52</sup>The ADA computer language is an example of a military standard that industry has been unwilling to accept.

Data requirements are defined by data item descriptions (DID)—a kind of military specification—in the technical package of the contract. In many cases, the government will specify the data needed to operate, maintain, or repair the item; train its personnel; or reproduce the item. The last tends to be particularly contentious, since for many companies manufacturing process data is treated as sensitive proprietary information.

To complicate matters further, DOD often requires that data be presented in a militarily unique format that can increase costs. For example, in one purchase of a commercial vehicle, the government waived cost and pricing requirements, but then insisted upon a data item description for the manual. This required the company to rewrite its commercial vehicle manual, without financial compensation—since the vehicle’s price was set in the commercial marketplace.

The use to which the government puts the data it receives (e.g., its rights) is another problem area. Government use of data falls under one of three categories of data rights: limited rights that obligate the government to protect all data received under a contract; government-purpose rights, which permit the government to share the information with any number of other contractors under assurances that it be used only for specified government applications; and unlimited rights, which grant the government license to disseminate the data in any way it chooses,

The last is particularly contentious. Sometimes, the government requests unlimited rights simply to ensure that the product will be available if the original supplier goes out of business. At other times, the purpose is to generate competition through a second source—without having to pay twice for the same development—to reduce, or at least hold down, costs. From the government’s point of view, being tied to a single supplier for the

decades that the system may be in service can pose a significant and undesirable financial burden.

While it is difficult to quantify the costs of such a policy, it is clear there are negative effects. Many firms have refused to compete for government contract money for R&D, to sell products to DOD that incorporate commercially developed components, or both.

The implications can be serious. The most innovative firms are protective of their R&D and manufacturing processes. By demanding unnecessary rights in technical data, DOD may deprive itself of access to the most advanced and innovative technologies and processes. As a result, DOD may be decreasing the number of firms willing to do business with the military, further eroding competition.

To address these problems, DOD needs to alter its approach to technical data rights. In place of demands for expansive access to technical data with unlimited rights to that data, it should exempt most purchases from technical data rights clauses and focus its energies on the limited set of technologies and processes for which such data are vital. These objectives might be met through license or escrow agreements.<sup>53</sup>

### *Exempt*

To maximize commercial purchases, DOD might pursue technical data rights only in cases where there is a genuine need. Products that are deemed both critical and not easily replaceable would likely fall into this special category. A procurement officer could be required to demonstrate that the need for technical data rights is compelling before demanding the data.

This exemption should also extend to contract evaluation. For example, some companies have reportedly had to “release technical data rights to

<sup>53</sup>Under FASA commercial items “shall be presumed to be developed at private expense unless shown otherwise.”

win a contract even when providing it is not legally required.”<sup>54</sup>

### *License*

Presumably, increased commercialization should reduce the numbers of unique items and processes and obviate the need for data rights in many cases. But the DOD mission and some of the unique performance characteristics and logistical requirements will continue to necessitate rights in technical data in some instances.

In these cases, the increased use of licensing arrangements would be appropriate. Licenses might resolve issues of proprietary R&D and access to innovation, thus allaying the concerns of vendors that granting government access risks a loss of technology and a lack of sufficient compensation.

### *Escrow*

An alternative solution would be to limit access to technical data rights to dire events, such as mobilization and war, or when the firm has gone out of business. Placing relevant technical data rights in escrow is one way to accomplish this. The firm could thus protect commercially valuable technologies except in extraordinary circumstances.

## ■ Unique Contract Requirements

The myriad of contract requirements is another set of barriers to buying commercially. These include source preferences policies such as the Buy America Act and the requirement to use American shipping. In addition to these two, source preferences and mandates in seven other critical areas were noted by firms in the CSIS study:

- domestic specialty metals,
- jewel bearings,
- certain domestic commodities,

- miniature and instrument ball bearings,
- precision components for mechanical time devices,
- high-carbon ferrochrome, and
- high purity silicon.<sup>55</sup>

Affirmative action and socioeconomic directives, such as set-asides for minority-owned business and other special groups, constitute another set of unique contract requirements. Socioeconomic contract provisions cited in the CSIS report include those requiring use of:

- small business concerns,
- women-owned small businesses,
- labor surplus area concerns,
- affirmative action for special disabled and Vietnam-era veterans, and
- affirmative action for handicapped workers.<sup>56</sup>

Imposition of source preferences and socioeconomic contract conditions disrupts normal commercial business practices in picking vendors, and requires certification and training to ensure compliance. Inefficiency is the byproduct.

Such regulations also hinder DOD efforts to exploit the international market. Ironically, this international market includes many U.S. firms with global operations. For example, one of the largest producers of canned fruits and vegetables, Dole, has been unable to sell its canned pineapple to DOD because it procures overseas the bulk of its pineapple for canning. Instead, DOD pays a premium to buy canned pineapple from the few domestic canners still in business.

Limiting purchases to domestic sources often raises the overall cost of DOD goods and services. Buy America legislation, for example, while protecting American firms vital to U.S. defense production, has at times required the purchase of domestic products that could be bought more cheaply abroad. Thus, for years DOD purchased coal in the United States and shipped it at a pre-

<sup>54</sup> U.S. Congress, Office of Technology Assessment, *Building Future Security: Strategies for Restructuring the Defense Technology and Industrial Base*, OTA-ISC-520 (Washington, DC: U.S. Government Printing Office, June 1992), p. 94.

<sup>55</sup> Jeff Bingaman et al., *Integrating Commercial and Military Technologies for National Strength*, op. cit., footnote 40, p. 66.

<sup>56</sup> Ibid., p. 67.

mium to U.S. troops in Germany. The indiscriminate nature of this legislation may render it less effective in protecting vital U.S. sources of supply than other approaches, such as that available under Title III of the Defense Production Act.

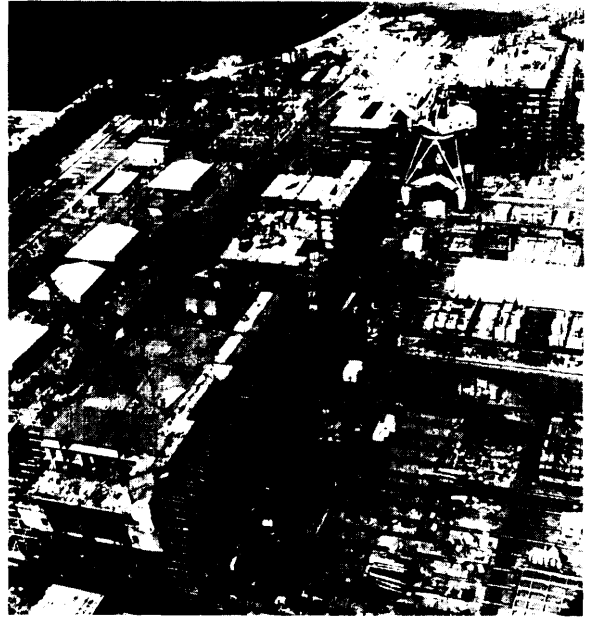
The Acquisition Law Advisory Panel reported that the problem with these requirements is not in any one specific contract requirement but in the overall system. Firms are reluctant to deal with a DOD that applies “a combination of frequently changing requirements—some inconsistent with others, most requiring audit and the generation of reports, and all inconsistent with commercial practice.”<sup>57</sup>

The Acquisition Law Advisory Panel reviewed 114 socioeconomic statutes, either separate sections of the U.S. Code or specific sections of various public laws. The Panel found that the defense contracting officers themselves are hard pressed to keep up with changing federal procurement policy and procedures, including these socioeconomic statutes. While many defense firms have become adept at negotiating the tangle of laws and regulations, commercial firms with only a small potential defense market are less likely to bother.

FASA raised the Simplified Acquisition Threshold to \$100,000. This will permit “99 percent of DOD’s contract actions . . . to be accomplished using simplified procurement procedures,”<sup>58</sup> and exempts such purchases from many unique contract requirements.

FASA directs that the Federal Acquisition Regulation include a list of provisions of the law that are inapplicable to contracts or subcontracts under the threshold. These changes should greatly facilitate the contract process for the vast majority of contract actions.

Still, unique clauses remain an issue for the contract actions that account for the bulk of the



Legislation requires U S Navy warships to be constructed in U S shipyards

DOD budget (e.g., those above \$100,000). Here additional actions might be considered.

#### *Eliminate Clauses and Rely on Civil Law*

Some of the special contract clauses and requirements involve social goals, such as nondiscrimination in employment practices, that largely parallel coverage in general federal law. Where federal law exists, many observers argue that it—rather than a special contract clause—should be used.

In other cases, such as small business, there is no parallel coverage. In those cases some observers argue that the social goals might be met in a different way than through contract clauses—perhaps becoming a factor in some selections or considered as a part of a “best value” selection. Advocates of such an approach argue that the problem is the contract-by-contract application of

<sup>57</sup> Acquisition Law Advisory Panel, *Executive Summary*, op. cit., footnote 18, p. 28.

<sup>58</sup> *News Release*, op. cit., footnote 46.

such requirements. There should be other ways, such as best value selection, to guide firms to adopt pro-social-goal strategies.

In either case, the idea of change is not to ignore the social goals of each of these programs, but to achieve the goals in a less disruptive manner.

### *Identify and Support Critical Technologies and Sectors*

A primary justification given for the continuation of Buy America provisions is the need to retain a core of technologies and capabilities within the American DTIB. While such considerations would presumably be reduced by greater integration, support is likely to continue to be required in some technologies and sectors.

Critics of “Buy America” provisions argue that the government could be more selective in choosing technologies and industries that are vital to American defense. DOD currently has an effort aimed at identifying the vital technologies and industrial sectors it might support in the future.

### *Subsidize Parties Directly*

Finally, a variety of mechanisms (e.g., tax exemptions, grants, or programs through the Commerce Department) could promote the current beneficiaries of unique contract requirements, such as small business, disabled veterans, and the U.S. specialty metals industry, without involving the DOD acquisition process directly. This would eliminate much of the paperwork that undermines expanding DOD’s commercial supplier base. It would not preclude these firms from effectively competing for defense contracts.

## **BENEFITS AND RISKS OF POLICIES**

Past studies, along with the surveys and interviews conducted for this report, confirm that a number of obstacles within DOD’s acquisition structure discourage the use of commercial prod-

ucts, services, and practices. The policies outlined in this chapter can reduce these barriers. This section briefly summarizes some of the potential benefits and risks of increased use of commercial products and services.

### **■ Benefits of Policies**

Projections of savings from increased commercial purchases vary. The Grace Commission estimated that: 1) eliminating the requirement for contractors to comply with military specifications would save 1 percent on weapon acquisition; and 2) increased use of commercial hardware and equipment and industry standards (in lieu of military ones) would save 0.5 percent.<sup>59</sup>

The case studies in support of the Acquisition Law Advisory Panel cite savings ranging from 30 to 50 percent on particular items if commercial items are used in lieu of militarily specified items. The DLA estimated the savings on medicine in Alaska (cited above) as up to 25 percent a year. DOD has estimated average savings of about 10 percent for commercial purchases based on its experience with the ADCP Program in the late 1970s. Some savings have been even more spectacular.

The case studies in the final report of the Defense Science Board’s 1986 study on the use of commercial components in military equipment were the most carefully controlled and well-documented comparisons of military and commercial product costs that the OTA assessment team reviewed. The DSB identified several commercial and militarily specified systems with essentially the same functional requirements. It found:

... the cost of military equipment can be from 2 to 10 times more expensive. Acquisition time can be much longer, and reliability may be no better—indeed in two cases it was much worse. In several cases, the size of the militarized equipment is significantly smaller, reflecting weight and volume constraints in weapon sys-

<sup>59</sup>The President’s Private Sector Survey, *Report of the Office of the Secretary of Defense Task Force*, *op. cit.*, footnote 29, p. 790. OTA was unable to find the studies on which these estimates were said to be based.



tems. The continuing trend of miniaturization in commercial electronics should lessen the need to repackage to meet military needs.

We believe this data indicates the range of cost and schedule savings possible, without sacrifice of reliability when DOD can fulfill system and subsystem needs with commercial products.<sup>60</sup>

OTA did not attempt to calculate a precise amount of savings that might accrue from policy changes that increased commercial purchases. We did, however, attempt to outline a range of possible savings based on the OTA industrial sector survey and the savings suggested from the case studies in order to give policy makers a better understanding of the potential returns from implementing policies of the type discussed in this chapter.

The estimated range of savings shown in table 4-2 are based solely on the private sector DTIB and on the assumption that benefits are principally derived from activities that change categories—e.g., move from either process integration or segregation to commercial purchases.

The table indicates that, while expanded commercial purchases in specific cases might yield substantial savings, resultant net DTIB savings might remain relatively small. For example, even if DOD saved 30 percent on every new commercial purchase, DOD would still only achieve a 10 percent overall savings from funds going to the private sector.

A total savings of 10 or even 15 percent applied to the sizable private sector DTIB budget would be significant, but nowhere near the often implied savings of 30 to 50 percent. Further, such savings will not be immediately available.

Savings associated with the purchase of consumables (e. g., food and clothing) might begin immediately, but savings related to more expen-

**TABLE 4-2: Budgetary Impact of Increased Commercial Purchases<sup>a</sup>**

Estimated average savings	Impact on total private DTIB budget
0%	0%
5 %	2 %
10"/0	3%
15"/0	5%
20 "/0	60/0
250/o	80/0
30 "/0	10"/0

<sup>a</sup>Based on OTAS industrial sector survey estimate that about 32 percent of private DTIB spending is changed as a result of chapter 4 policy options. Only includes the impact on the private sector at the facility level. SOURCE: Office of Technology Assessment, 1994.

sive spare parts and new systems might not occur for several years. Given that the development of new defense systems that take advantage of commercial parts is likely to be slow in a potentially fiscally constrained environment, savings will be even slower in appearing. The 1993 Report of the DSB Task Force on Acquisition Reform recognized this delay and projected its savings would occur over a 5-year period. Even that time frame appears optimistic, however, not only because it will take time to incorporate or retrofit commercial items in defense systems, but also because defense spending is likely to be lower than the DSB considered.<sup>61</sup>

Achieving additional significant savings will probably demand more change than simply modifying rules so that items can be purchased from a catalogue. For example, in the civilian sector, firms operating similar equipment, such as airlines, achieve savings not only by negotiating lower prices on individual spare parts, but through contracted arrangements that may include rela-

<sup>60</sup> Office of the Under Secretary of Defense for Acquisition, Report of the Defense Science Board, *Use of Commercial Components in Military Equipment*, June 1987, p. 32.

<sup>61</sup> Report of the Defense Science Board Task Force on *Defense Acquisition Reform*, op. cit., footnote 23, p. C-3.

tively long term (3 to 5 years) maintenance and inventory control services as a part of the overall purchases. These firms save money not only on a particular part, but also eliminate the need for the airline to maintain and track an inventory. The service agreement may also include upgrades to the system. The firm providing the parts and services may assume configuration control over its parts. Such an approach would require major restructuring in the DTIB.

Significant savings, however, might accrue from the elimination of activities (e.g., parts stockage and inventory tracking) in the public sector DTIB and from reductions in government contracting and oversight personnel associated with current acquisition practices. A 10 percent reduction in the public sector DTIB might translate into a \$2.2 billion/year savings. This too, would take several years to be fully realized.

Savings, of course, constitute only one of the benefits of greater commercial purchases. Greater access to new technologies, reduced acquisition times, and a larger mobilization base are also important. These benefits are most likely to accrue if a broad definition of commercial goods and services is adopted.

Commercial purchases should provide DOD greater access to state-of-the-art commercial goods and services, particularly in rapidly developing technical areas, such as electronics, telecommunications, and computers. Though these changes will have some effect among prime contractors, it is at lower tiers that commercial purchases are most likely to occur. Here the increased "dual-use" purchase of components might also enhance commercial competitiveness and preserve the DTIB.

Improved access to technology would not be limited to so-called "high-tech" items. Past efforts at commercialization indicate that the availability and quality of products improved in almost all cases where commercial substitution occurred. Evidence from interviews and DLA programs in-

dicates that purchasing commercial goods and services reduces the time needed to acquire both advanced technology items and more basic goods and services.

We cannot point to concrete evidence that increased commercial purchases promote American global economy competitiveness. To the extent that DOD embraces commercial purchasing, however, fewer government dollars will be wasted on redundant capabilities and paperwork, and a greater share of DTIB dollars might go towards strengthening the CTIB.

### ■ Costs and Risks of Policies

There are costs and risks associated with the increased use of commercial goods and services. These fall into two major categories: 1) short-to-medium-term costs and risks associated with the immediate transition, and 2) longer term costs and risks associated with the future viability of the DTIB and the ability to meet future defense needs.

Shifting to more commercial goods and services entails some upfront costs in retraining of government personnel, changing and eliminating inappropriate military specifications and standards, and increasing the use of market surveys and analyses,

Reductions in oversight personnel might initially entail additional personnel costs (e.g., retirement packages). Some of the policies allowing the greater use of commercial goods and services (e.g., raising the commercial acquisition threshold) may result in greater opportunities for waste, fraud, and abuse. Indeed, it has been suggested that "raising the commercial acquisition threshold is likely to last only 'until somebody embezzles money with one of those simplified procurement processes, and then you will see the regulations come back.'"<sup>62</sup>

It is unclear how large this risk might be. While GAO has reported that DCAA identified almost \$3 billion in "defective pricing" charges to the

<sup>62</sup>David A. Fulghum, "Congress Lowers Goals for Acquisition Reform," *Aviation Week & Space Technology*, May 9, 1994, p. 78.

government between 1987 and 1992, the actual amount of funds finally identified as fraudulently claimed are far smaller. For example, testimony at congressional hearings indicated that only about \$1 million of a total of almost \$2 billion originally identified as fraudulently claimed was finally levied against firms.<sup>63</sup>

Even if there is no increase in misuse of government funds, in the event of more widespread use of commercial products and services, some firms may make higher profits on defense contracts. This may be viewed as a form of unfair profiteering.

Critics argue that pursuit of a policy of best-value buying may exclude smaller or newer firms in favor of larger, more established ones. The Small Business Administration is reported to have expressed concern that the increase in the small-purchase threshold from \$25,000 to \$100,000 would “undercut small vendors’ ability to compete on contracts.”<sup>64</sup>

Expanded commercialization may therefore put smaller defense-dependent businesses at risk in favor of larger firms—including foreign firms—that are better able to demonstrate qualifications to perform on time. This may be exacerbated by some of the tools of market analysis and surveillance. As the more limited number of acquisition personnel do their market surveys their findings may be skewed towards larger firms—effectively limiting suppliers to larger, better-known brands and firms.

Currently integrated defense firms making both commercial and defense items may also be threatened by the increased use of commercial products and services. Managers interviewed

pointed out that elimination of government accounting requirements for individual contracts will work against companies with other defense business involving militarily unique equipment, still requiring government cost accounting.

There are also some longer term risks associated with increased commercial purchases. One concern is over increased foreign dependence for critical items. The commercial base appears to be much more internationally intertwined than is the current DTIB. Further, the current foreign content in U.S. defense systems appears to be greater at the lower tiers—the tiers most amenable to commercial purchasing. A 1992 Department of Commerce study of three Navy systems (the Harm missile, Verdin communications, and the MK-48 torpedo), for example, found the greatest foreign sourcing occurring at lower tiers; about 5 percent of the purchases at tiers 2 and 3 were supplied by foreign sources.<sup>65</sup>

Greater dependence on foreign suppliers is a situation that is bound to concern policy makers. Reports, for example, that spare parts from overseas suppliers were delayed during the Gulf War aroused significant discussion in the United States after the war. Concern about the reliability of supply from abroad will persist, absent legislation in key supplier nations allowing preemption of commercial customers.

Compatibility of components and services provided under expanded commercialization is a further concern. The use of commercial parts and services raises the specter of interoperability problems. Some suggest that, even with “form, fit, and function” requirements, there may be situations in

<sup>63</sup>*Inside the Pentagon*, “Defense Contractors Still Abusing Overhead Cost Guidelines,” Oct. 12, 1993. According to House staff, however, this situation may be due to the unwarranted dismissal of fraudulent claims. Specifically, some congressional staffers “speculate that in practice the DCAA presents questionable claims to the contracting officer who, confused about allowable claims, may just split the expenses down the middle and assess no penalties against the contractor.”

<sup>64</sup>Joyce Endoso, “SBA Battles Pentagon’s Attempt to Raise Small Purchase Threshold,” *Government Computer News*, Aug. 2, 1993, p. 8. The resulting legislation increased the threshold, but reserved contracts under \$100,000 for small business unless no small business can be found to do the work.

<sup>65</sup>US Department of Commerce, Bureau of Export Administration, *National Security Assessment of the Domestic and Foreign Sub-Contractors: A Study of Three Navy Weapons Systems*, March 1992, pp. ii-iii.

which subcomponents are not interchangeable, particularly in field maintenance.

Finally, some observers fear that the increased use of commercial products and practices will lead to reduced system performance. There is, however, no inherent reason why this has to be the case. Personnel interviewed by OTA all argued that commercial specifications and standards were only appropriate if they met the military performance requirements.

### **BENEFITS OUTWEIGH THE COSTS**

Despite the difficulty of quantifying the results, the benefits of increased use of commercial products, services, and practices appear to outweigh any costs or risks associated with their increase. Many of the actual cost savings will occur over time as new products and services are purchased. Possibly even more important than cost savings, however, may be access to the new technology embedded in commercial products and services. Without such access the United States may be unable to maintain a leading-edge DTIB.

### **SUMMARY**

Many of the actions discussed in this chapter can be taken by the executive branch alone. But congressional support for such changes will still be essential. Changes in specifications and standards, for example, are likely to prompt concerns among small defense-dependent firms, some of which may require major internal changes to compete with more efficient commercial firms. Congress will have to consider whether the potential gains from the preservation of the DTIB outweigh the potential negative effects on these individual firms.

DOD can also begin retraining its acquisition workforce to make maximum use of commercial goods and services. But congressional funding support is key to such training. Congressional backing is also important in implementing the system of market surveillance and analysis that is necessary if the United States is to take full advantage of the commercial marketplace.

Other changes, however, depend on congressional actions. One of the most important issues involves defining what constitutes commercial goods and services for defense procurement. FASA addresses this issue. As noted earlier, broadening the definition of commercial goods and services to allow the purchase of items not yet in the commercial sector, or that maybe purchased by only a few commercial customers, could promote the use of new technologies by the defense sector, but at the risk of insufficient commercial market to assure competitive pricing. A narrow definition might ensure that purchases are backed by adequate pricing data, but leave military purchasers vulnerable to losing out on new technology.

Eliminating the requirement for special government accounting for small contracts will reduce the expense of maintaining special cost accounting systems and lower the price of some products purchased by DOD, but it could increase instances of profit-taking at the government's expense. Yet it appears that the potential overall savings far exceed any additional costs.

Commercial purchases, however, might result in a greater percentage of foreign purchases. On the other hand, global competition may lower prices and improve U.S. quality. DOD will need to monitor the trends and the potential for technology vulnerability.

Eliminating the unique contract requirements that support socioeconomic goals may negatively affect some national socioeconomic goals. Some argue that the contract clauses are redundant, since many of these provisions are also embedded in U.S. law. Others hold that maintaining special DOD provisions remains important because it is easier to assure compliance using government-controlled defense spending. At the same time, many firms have come to view these special provisions as their avenue to economic growth. Congress will want to consider these alternatives.

Ultimately, the increased purchase of commercial goods and services can help achieve the integration goals of saving money and increasing

access to technology. Its most important contribution, however, may be to help preserve a future defense technology and industrial capability. The

ability to achieve these objectives will depend on the degree to which changes such as those outlined in this chapter are implemented.