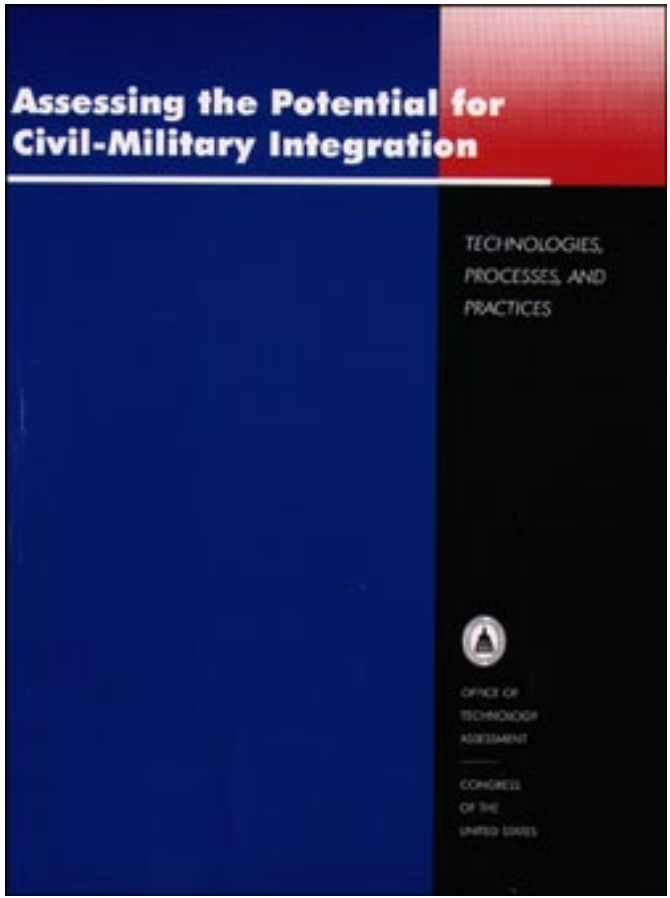
*Assessing the Potential for Civil-Military Integration: Technologies, Processes, and Practices*

September 1994

OTA-ISS-611
NTIS order #PB95-109666
GPO stock #052-003-01394-1



**Recommended Citation:** U.S. Congress, Office of Technology Assessment, Assessing *the Potential for Civil-Military Integration: Technologies, Processes, and Practices, OTA-ISS-611* (Washington, DC: U.S. Government Printing Office, September 1994).

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328
ISBN 0-16-045309-7

# Foreword

America's national security and economic well-being have long rested on its technological and industrial prowess. Over the four-decade-long Cold War, the Nation's defense technology and industrial base became largely isolated from the commercial base, thus losing some of the benefits of the larger base. This isolation raised the cost of many defense goods and services, reduced defense access to fast-moving commercial technologies, and made it difficult for commercial firms to exploit the results of the Nation's large defense science and technology investments.

Government officials and private sector executives have advocated the integration of the defense and commercial sectors (often termed civil-military integration or CMI). The claimed benefits of CM I include cost savings, increased technology transfer, and an increase in the number of potential defense suppliers. A CM I strategy, however, demands extensive modification of acquisition laws and regulations, and concerns over potential costs and risks of such modifications have hindered change. Although several congressional and administration initiatives have been launched to promote integration, to date, much of the defense base remains isolated and the promised benefits of integration remain elusive.

This assessment found that greater CM I is possible. It confirms the potential for cost savings and increased technology transfer, but analysis indicates such savings are likely to be less, and slower to realize, than many previous studies have suggested. Even so, cost savings of even a few percent of total defense technology and industrial spending would amount to billions of dollars in overall savings that might be used to meet other vital defense needs. The most important benefit of increased CMI may be the preservation of a viable defense technology and industrial capability in an increasingly fiscally constrained environment. Increased CMI appears essential if defense is to take advantage of rapidly developing commercial technologies.

This assessment identified no "silver bullet" policies that might easily achieve CM I goals. Some policies can have broad effects, but in most instances the barriers to increased CMI are sufficiently intertwined to demand a comprehensive (and complex) set of policies if the projected benefits are to be achieved.

In undertaking this assessment, OTA sought information and advice from a broad spectrum of knowledgeable individuals and organizations whose contributions are gratefully acknowledged. As with all OTA studies, the content of this report is the sole responsibility of the Office of Technology" Assessment and does not necessarily represent the views of our advisors and reviewers.

**ROGER C. HERDMAN**
Director

# Advisory Panel

**Walter LaBerge, chair**
Consultant

**Robert Calaway**
President
Resource Management International, Inc.

**Gordon Corlew**
Vice President, Engineering and Production
AIL Systems, Inc.

**S.P. Desjardins**
President
Simula, Inc.

**Roger Fountain**
President&CEO
Great Lakes Composites Corp.

**Jacques S. Gansler**
Senior Vice President
The Analytic Sciences Corp.

**Herbert Glazer**
Professor of International Business
Business Department
Kogod College of Business Administration
The American University

**General Alfred G. Hansen, USAF (Retired)**
Vice President, C-130 Programs
Lockheed

**Joel W. Marsh**
Director, Government Acquisition Policy
United Technologies

**Thomas L. McNaugher**
Senior Fellow
The Brookings Institution

**Christian L. Midgley**
Division Manager
RayChem Corp.

**F. Whitten Peters**
Partner
Williams and Connolly

**Louis Rosen**
Partner and National Director of Government Contract Services
Ernst and Young

**Martin Rowell**
Director, Technology Planning
Allied Signal Automotive

**Howard Samuel**
Senior Fellow
Council on Competitiveness

**Robert W. Selden**
Los Alamos National Laboratory

**Leonard Sullivan**
Consultant
System Planning Corp.

**James A. Tegnelia**
Vice President, Business Development
Martin Marietta Electronics & Missile Group

**Nicholas Torelli**
Torelli Enterprises

**Admiral Harry Train, USN (Retired)**
Division Manager
Strategic Research and Management Services Division
Science Application International Corp.

**Note:** OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

# Project Staff

**Peter Blair**
Assistant Director, OTA
*Industry, Commerce, & International Security Division*

**Alan Shaw**
Program Manager
*International Security and Space Program*

**PRINCIPAL STAFF**

**Jack Nunn**
Project Director

**Michael Callaham**
Senior Analyst

**Dean Cheng**
Analyst/Congressional Fellow

**James Lamb**
(ComSci Fellow)

**Christopher M. Waychoff**
Senior Analyst

**ADMINISTRATIVE STAFF**

**Jacqueline Robinson-Boykin**
Office Administrator

**Ellis Lewis**
Administrative Secretary

**Linette Cooper**
Secretary

**CONTRACTORS**

**Ewan W. Anderson**
**Brian K. Dickson**
**Gregory D. Foster**
**Donald Fowler**
**Alex Gliksman**
**Madeline N. Gross**
**Ivars Gutmanis**
**Edwin Hullander**
**Leonard E. Johnson**
**Joe F. Jones**
**David P. Leech**
**Joe Raguso**
**Mary Ann Saour**
**Elizabeth Sheley**
**Alfred Skolnick**
**Paul F. Stregevsky**
**Paul E. Taibl**
**Debra van Opstal**
**Frederick C. Williams**

# Preface

Two recent reports by the congressional Office of Technology Assessment (OTA) examined the nature of the defense technology and industrial base (DTIB) necessary to meet future U.S. national security needs.[1] These reports considered future military force structure alternatives, defense technology and industrial needs associated with these forces, characteristics of a DTIB that could fill those needs, and alternative strategies that might be employed to achieve the desirable DTIB characteristics. One alternative recommended by many industry representatives and government officials is the integration of the defense and commercial industrial bases.

Other recent studies have examined the benefits of and barriers to integration of the DTIB and the commercial technology and industrial bases-often termed civil-military integration (CMI).[2] They also recommended a number of possible actions to increase integration. This assessment builds on their recommendations for possible actions to further integration.

This report responds to requests by the Senate and the House Armed Services Committees to investigate the potential for civil-military integration and the implications of such integration. It is divided into six chapters and five appendices. Three of the supporting case studies (Composite Materials, Flat-Panel Display, and Shipbuilding) are being published in a separate background paper.

Chapter 1 summarizes the principal assessment findings and presents policy options for consideration by Congress. Chapter 2 discusses strategies for implementing increased CMI. Chapter 3 provides a general overview of CMI, including a detailed definition and discussion of integration at several levels; reviews the debate on civil-military integration; provides a framework for considering CMI; and outlines OTA's approach to this issue. Chapter 4 addresses the current level of commercial purchases, the potential for purchasing more commercial goods and services, and the policies necessary to support such a strategy. Chapter 5 examines the current level of process integration in R&D, production, and maintenance, and the potential for greater integration in these activities. It also considers the steps needed to implement such integration, as well as the benefits and risks associated with these steps. Chapter 6 examines policies relating to that portion of the DTIB that is likely to remain segregated. It considers CM I policies that might lower costs and increase the potential for technology transfer in the segregated base.

[1] The Office of Technology Assessment's earlier study of the defense technology and industrial base resulted in two reports: *Redesigning Defense: Planning the Transition to (he Future U.S. Defense Industrial Base,* OTA-ISC-500 (Washington, DC: U.S. Government Printing Office), July 1991 and *Building Future Security: Strategies for Restructuring the Defense Technology and Industrial Base,* OTA-ISC-530 (Washington, DC: U.S. Government Printing Office), June 1992, and three background papers: *Adjusting to a New Security Environment: The Defense Technology and Industrial Base Challenge,* BP-ISC-79 (Washington, DC: U.S. Government Printing Office), February 1991; *American Military Power: Future Needs, Future* Choices, BP-ISC-80 (Washington, DC: U.S. Government Printing Office), October 1991; and *Lessons in Restructuring Defense Industry: The French Experience,* BP-ISC-96 (Washington, DC: U.S. Government Printing Office), June 1992.

[2] These studies include *Use of Commercial Components in Military Equipment,* conducted by the Defense Science Board in 1986 and 1989; The Center for Strategic and International Studies' *Report on Integrating the Commercial and Defense Technologies for National Strength,* in 199 l; a report by the DOD Acquisition Law Advisory Panel, *Streamlining Acquisition Laws, 1993;* and a report by the Defense Science Board Task Force on *Defense Acquisition Reform,* in 1993.