

EQUIPPING TOMORROW'S MILITARY FORCE

Integration of Commercial
and Military
Manufacturing
in 2010 and
Beyond

Committee on Integration of Commercial and
Military Manufacturing in 2010 and Beyond

Board on Manufacturing and Engineering Design

Division on Engineering and Physical Sciences

National Research Council

NATIONAL ACADEMY PRESS
Washington, D.C.

Equipping Tomorrows Military Force Integration Of Commercial And Military Manufacturing In 2010 And Beyond

L Cohen



Equipping Tomorrows Military Force Integration Of Commercial And Military Manufacturing In 2010 And Beyond:

Equipping Tomorrow's Military Force National Research Council, Division on Engineering and Physical Sciences, Board on Manufacturing and Engineering Design, Committee on Integration of Commercial and Military Manufacturing in 2010 and Beyond, 2002-04-01 Owing to the expected nature of combat in 2010 U S military forces face a pressing need to transform themselves for rapid response to an unpredictable threat Rapid advances in commercial technology particularly in electronics coupled with the easy access to commercial technology enjoyed by potential adversaries will compel DOD and defense contractors to excel at integrating commercial technology into defense systems This integration of commercial and military manufacturing ICMM has begun on a small scale By 2010 it needs to increase substantially if U S forces are to retain a technological edge This report assesses the opportunities for increased ICMM in 2010 and beyond identifies barriers and recommends strategies for overcoming them

Equipping Tomorrow's Military Force Committee on Integration of Commercial and Military Manufacturing in 2010 and Beyond, Board on Manufacturing and Engineering Design, Division on Engineering and Physical Sciences, National Research Council, 2002-04-15 Owing to the expected nature of combat in 2010 U S military forces face a pressing need to transform themselves for rapid response to an unpredictable threat Rapid advances in commercial technology particularly in electronics coupled with the easy access to commercial technology enjoyed by potential adversaries will compel DOD and defense contractors to excel at integrating commercial technology into defense systems This integration of commercial and military manufacturing ICMM has begun on a small scale By 2010 it needs to increase substantially if U S forces are to retain a technological edge This report assesses the opportunities for increased ICMM in 2010 and beyond identifies barriers and recommends strategies for overcoming them

Small Business Manufacturing in a Global Market United States. Congress. Senate. Committee on Small Business and

Entrepreneurship, 2004 *Trading with the Enemy* Hugo Meijer, 2016-03-01 In light of the intertwining logics of military competition and economic interdependence at play in US China relations *Trading with the Enemy* examines how the United States has balanced its potentially conflicting national security and economic interests in its relationship with the People's Republic of China PRC

Use of Lightweight Materials in 21st Century Army Trucks National Research Council, Division on Engineering and Physical Sciences, National Materials Advisory Board, Committee on Lightweight Materials for 21st Century Army Trucks, 2003-04-02 In order to achieve the Army's envisioned Objective Force related to deployability transportability and mobility the Committee on Lightweight Materials for the 21st Century Army Trucks was asked to identify research and technology development opportunities related to the introduction of new lightweight structural materials for light medium and heavy Army trucks

Fortifying China Tai Ming Cheung, 2013-02-01 *Fortifying China* explores the titanic struggle to turn China into an aspiring world class military technological power The defense economy is leveraging the country's vibrant

civilian economy and gaining access to foreign sources of technology and know how Drawing on extensive Chinese language sources Tai Ming Cheung explains that this transformation has two key dimensions The defense economy is being reengineered to break down bureaucratic barriers and reduce the role of the state fostering a more competitive and entrepreneurial culture to facilitate the rapid diffusion and absorption of technology and knowledge At the same time the civilian and defense economies are being integrated to form a dual use technological and industrial base In Cheung s view the Chinese authorities believe this strategy will play a key role in supporting long term defense modernization For China s neighbors and the United States understanding China s technological industrial and military capabilities is critical to the formulation of economic and security policies Fortifying China provides crucial insight into the impact of China s dual use technology strategy Cheung s systems of innovation framework considers the structure dynamics and performance of the defense economy from a systems level perspective

Linkages National Research Council, Division on Engineering and Physical Sciences, Board on Manufacturing and Engineering Design, Committee on Manufacturing Trends in Printed Circuit Technology, 2006-01-19 Over the past two decades the Department of Defense has been moving toward commercial military integration for manufacturing while at the same time the printed circuit board industry has been moving steadily offshore Today many in DoD the U S Congress and the federal government lack a clear understanding of the importance of high quality trustworthy printed circuit boards PrCBs for properly functioning weapons and other defense systems and components To help develop this understanding DOD requested the NRC to identify and assess the key issues affecting PrCBs for military use This report presents a discussion of how to ensure DOD s access to reliable printed circuits an assessment of its vulnerability to the global printed circuit supply chain and suggestions about ways to secure the design and manufacture of printed circuits In addition this report offers recommendations to help DoD 1 preserve existing systems capabilities 2 improve the military s access to currently available PrCBs and 3 ensure access to future PrCB technology The recommendations reflect the need to achieve these goals at reasonable cost and in concert with evolving environmental regulations

Buying Commercial: Gaining the Cost/Schedule Benefits for Defense Systems, 2009-11 Offers important considerations for the DoD for acquisition of commercial systems Purchasing commercial or other government off the shelf and commercial or foreign derivative systems presents a significant opportunity to DoD The challenge is to reap the advantages such as predictable and lower costs short realization schedules low risk and demonstrated performance without the missed benefits than previous attempts have experienced This study cites a number of issues related to the certification and qualification of commercial technologies to meet military requirements The report makes recommendation to address these issues in the areas of acquisition practices experience educ communication organization and leadership

Retooling Manufacturing National Research Council, Division on Engineering and Physical Sciences, National Materials Advisory Board, Board on Manufacturing and Engineering Design, Committee on Bridging Design and Manufacturing, 2004-09-30 As the

Department of Defense continues development of the future warrior system the difficulty of moving rapidly from design to manufacturing for complex technologies is becoming a major concern In particular there are communication gaps between design and manufacturing that hinder rapid development of new products important for these future military developments To help address those concerns DOD asked the NRC to develop a framework for bridging these gaps through data management modeling and simulation This report presents the results of this study It provides a framework for virtual design and manufacturing and an assessment of the necessary tools an analysis of the economic dimensions an examination of barriers to virtual design and manufacturing in the DOD acquisition process and a series of recommendations and research needs

Component Reliability for Electronic Systems Titu I. Băjenescu, Marius I. Băzu, 2010 The main reason for the premature breakdown of today's electronic products computers cars tools appliances etc is the failure of the components used to build these products Today professionals are looking for effective ways to minimize the degradation of electronic components to help ensure longer lasting more technically sound products and systems This practical book offers engineers specific guidance on how to design more reliable components and build more reliable electronic systems Professionals learn how to optimize a virtual component prototype accurately monitor product reliability during the entire production process and add the burn in and selection procedures that are the most appropriate for the intended applications Moreover the book helps system designers ensure that all components are correctly applied margins are adequate wear out failure modes are prevented during the expected duration of life and system interfaces cannot lead to failure

Strategic Long-Term Participation by DoD in Its Manufacturing USA Institutes National Academies of Sciences, Engineering, and Medicine, Division on Engineering and Physical Sciences, National Materials and Manufacturing Board, Committee on Strategic Long-Term Participation by DoD in Its Manufacturing Innovation Institutes, 2019-08-01 To effectively mature and transition DoD manufacturing science and technology advances into production DoD must have access to a robust and responsive U S industrial base which is often driven by advanced manufacturing technologies The Manufacturing USA institutes are considered crucial and game changing catalysts that are bringing together innovative ecosystems in various technology and market sectors critical to DoD and the nation Since 2012 DoD has invested 600 million directly in its Manufacturing USA institutes with the understanding that the initial federal investment included 1 core funding and 2 one time start up funding to establish the institutes within a period of 5 to 7 years As the institutes now begin to reach year five DoD is evaluating the effectiveness of the institutes in fulfilling their goals and the best on going roles for the federal government including on going funding options to ensure optimal benefit to U S competitiveness This report reviews the role of DoD's investment to date in establishing its eight institutes as public private partnerships and its engagement with each institute after it has matured beyond the start up period

Opportunities in Protection Materials Science and Technology for Future Army Applications National Research Council, Division on Engineering and Physical Sciences, Board on Army

Science and Technology, National Materials Advisory Board, Committee on Opportunities in Protection Materials Science and Technology for Future Army Applications, 2011-08-27 Armor plays a significant role in the protection of warriors During the course of history the introduction of new materials and improvements in the materials already used to construct armor has led to better protection and a reduction in the weight of the armor But even with such advances in materials the weight of the armor required to manage threats of ever increasing destructive capability presents a huge challenge Opportunities in Protection Materials Science and Technology for Future Army Applications explores the current theoretical and experimental understanding of the key issues surrounding protection materials identifies the major challenges and technical gaps for developing the future generation of lightweight protection materials and recommends a path forward for their development It examines multiscale shockwave energy transfer mechanisms and experimental approaches for their characterization over short timescales as well as multiscale modeling techniques to predict mechanisms for dissipating energy The report also considers exemplary threats and design philosophy for the three key applications of armor systems 1 personnel protection including body armor and helmets 2 vehicle armor and 3 transparent armor Opportunities in Protection Materials Science and Technology for Future Army Applications recommends that the Department of Defense DoD establish a defense initiative for protection materials by design PMD with associated funding lines for basic and applied research The PMD initiative should include a combination of computational experimental and materials testing characterization and processing research conducted by government industry and academia

Documentary annex, report to Congress of the U.S.-China Security Review Commission U.S.-China Security Review Commission, 2002 **Books In Print 2004-2005** Ed Bowker Staff, Staff Bowker, Ed, 2004 **Subject Guide to Books in Print**, 1991 Beyond Spinoff John A. Alic, 1992 In a rapidly changing world there needs to be a critical reappraisal of traditional military industry relationships This book packed with data industry specific case studies and sophisticated analysis is such an appraisal It will be required reading for technology managers and policymakers in industry and government as well as those concerned with technological and economic competitiveness Beyond Spinoff Harvard Business Review Staff, 1992-04 In a rapidly changing world there needs to be a critical reappraisal of traditional military industry relationships This book packed with data industry specific case studies sophisticated analysis is such an appraisal It will be required reading for technology managers policymakers in industry government as well as those concerned with technological economic competitiveness **Beyond Spinoff**, 1992

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