Transportation Security
Other titles in the Series

  ISBN: 978-1-85617-509-8
  Jane Bullock et al.
  ISBN: 978-0-7506-8712-6
  Thomas Phelan
- Biosecurity and Bioterrorism (2008)
  ISBN: 978-0-7506-8489-7
  Jeffrey R. Ryan and Jan F. Glarum
  ISBN: 978-0-12-370859-5
  Michael McNicholas
  ISBN: 978-0-7506-8514-6
  George Haddow et al.
  ISBN: 978-0-7506-7843-8
  Philip P. Purpura
  ISBN: 978-0-12-370503-7
  Paul Erickson

Other related titles of interest:

  Robert J. Fischer, Edward P. Halibozek, and Gion Green
- Background Screening and Investigations (2008)
  W. Barry Nixon and Kim M. Kerr
  Edward P. Halibozek et al.
  ISBN: 978-0-7506-8352-4
  Mary Lynn Garcia
  Mary Lynn Garcia
- Introduction to International Disaster Management (2007)
  ISBN: 978-0-7506-7982-4
  Damon Coppola
  ISBN: 978-0-7506-7922-0
  James F. Broder
  Geoff Craighead
  ISBN: 978-0-7506-7613-7
  Jesús Mena

Visit http://elsevierdirect.com/security for more information on these titles and other resources.
Transportation Security

Clifford R. Bragdon
The book is dedicated to Ronald R. Polillo, a visionary and globally-renowned transportation security expert in anti-terrorism and force protection. He established national leadership in development of the Aviation Security Technology Integration Plan and its subsequent implementation supporting the United States Aviation System. Ron’s contribution is duly recognized by both governmental and business leaders worldwide, and his presence will be sorely missed.

Cliff Bragdon
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the Author</td>
<td>xv</td>
</tr>
<tr>
<td>Contributors</td>
<td>xvii</td>
</tr>
<tr>
<td>Foreword</td>
<td>xxv</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>xxix</td>
</tr>
<tr>
<td><strong>Part I</strong> Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 1 Transportation Security and Its Impact</td>
<td>3</td>
</tr>
<tr>
<td><em>Clifford R. Bragdon, Ph.D., AICP, FASA</em></td>
<td></td>
</tr>
<tr>
<td>Overview</td>
<td>3</td>
</tr>
<tr>
<td>Purpose and Organizational Framework</td>
<td>9</td>
</tr>
<tr>
<td>Section I: Introduction</td>
<td>9</td>
</tr>
<tr>
<td>Section II: Modal Aspects of Transportation Security</td>
<td>10</td>
</tr>
<tr>
<td>Section III: Technology Applications to Transportation Security</td>
<td>10</td>
</tr>
<tr>
<td>Section IV: Transportation Security Solutions</td>
<td>11</td>
</tr>
<tr>
<td>Chapter 2 Transportation Security Through Logistics Transformation</td>
<td>15</td>
</tr>
<tr>
<td><em>Charles P. Nemfakos and Sarah R. James</em></td>
<td></td>
</tr>
<tr>
<td>Chapter Overview</td>
<td>15</td>
</tr>
<tr>
<td>Introduction</td>
<td>16</td>
</tr>
<tr>
<td>The Global Economy and National Security</td>
<td>18</td>
</tr>
<tr>
<td>Economic Security and Enhanced Productivity</td>
<td>21</td>
</tr>
<tr>
<td>Enhanced Productivity and Logistics Transformation</td>
<td>23</td>
</tr>
<tr>
<td>Multiple Scenarios of Logistics Transformation</td>
<td>24</td>
</tr>
<tr>
<td>Defense and Logistics Transformation</td>
<td>26</td>
</tr>
<tr>
<td>Transportation Security Through Logistics Transformation</td>
<td>28</td>
</tr>
<tr>
<td>Transportation Security and National Security</td>
<td>32</td>
</tr>
<tr>
<td>Summary and Conclusions</td>
<td>33</td>
</tr>
</tbody>
</table>
Chapter 3  The Need for a Transportation Systems Approach  35
*Clifford R. Bragdon, Ph.D., AICP, FASA*

**Introduction**  35

**Impediments to an Integrated System of Movement**  37
  - Modal Bias  37
  - Institutional Protectionism and Self-Interest  38
  - Social Conditioning: A Drive-Thru Society  39
  - Dominance of Motor Vehicles in Governmental Planning and Policy  43
  - Spatial Management and Diet Cities  45
  - No Consensus in the Definition of Terms: Intermodal  46
  - Governmental Responsibility Usurping Citizen Responsibility  47
  - Sustainability and Security: Conflicting Goals of Infrastructure Risk?  48

**Transportation System Elements**  49
  - Organizational Framework: Definition  50
  - Transportation-Based Modal Elements  51
  - Transportation Systems Network  52
  - Modeling and Simulation  54
  - Forensic Transportation Logistics Analysis  64

**Summary**  67

Chapter 4  Mobility Security and Human Behavior  71
*Michael Workman, Ph.D.*

**Introduction**  72

**Mobility and Security Theory**  72
  - Deterrence Theory  74
  - Terror Management Theory  75
  - Protection Motivation Theory  76

**Mobility Security Initiatives**  76
  - Expansion of Institutional Initiatives  78
  - Expansion of Commercial Initiatives  81

**Commercial Fear**  84
Chapter 9 Intermodal Transport Security Technology

Robert Sewak, Ph.D.

Introduction 205
History 208
The Threat 208
Container Security Measures 210
Customs–Trade Partnership Against Terrorism (C-TPAT) 210
Container Security Initiative (CSI) 211
The 24-Hour Advance Manifest Rule 211
Automated Targeting System (ATS) 211
The 100% Screening Requirement 212
Secure Freight Initiative (SFI) 212
The Problem Persists 213
Technological Solutions 214
Container Tracking Technologies 216
Maritime Piracy Technology 217
Summary 218
Conclusion 220

Chapter 10 Transportation Security: Applying Military Situational Awareness System Technology to Transportation Applications

William S. Pepper IV

Introduction 225
Situational Awareness 226
Integrated Situational Awareness 226
The Information Challenge 228
Situational Awareness and Decision Support 229
Visualization and Display Tools 234
Access Control Systems 236
<table>
<thead>
<tr>
<th>Video Camera Systems</th>
<th>238</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictive Analysis Tools</td>
<td>241</td>
</tr>
<tr>
<td>Information Sharing</td>
<td>241</td>
</tr>
<tr>
<td>Scalable and Flexible Architecture</td>
<td>241</td>
</tr>
<tr>
<td>Using a Situational Awareness System to Manage an Incident</td>
<td>243</td>
</tr>
<tr>
<td>Situational Awareness System Summary</td>
<td>244</td>
</tr>
<tr>
<td>Communications Network Management for Transportation Security</td>
<td>245</td>
</tr>
<tr>
<td>Network Operations Centers</td>
<td>246</td>
</tr>
<tr>
<td>Network Operations Center (NOC) for Situational Awareness Operations</td>
<td>246</td>
</tr>
<tr>
<td>FCAPS Requirements Summary</td>
<td>250</td>
</tr>
<tr>
<td>Data Fusion and Data Correlation for Transportation Security Situational Awareness Systems</td>
<td>254</td>
</tr>
<tr>
<td>Data Correlation and Control</td>
<td>256</td>
</tr>
<tr>
<td>Operational Example of a Transportation Security Situational Awareness System in a Seaport Scenario</td>
<td>259</td>
</tr>
<tr>
<td>Summary</td>
<td>263</td>
</tr>
</tbody>
</table>

**Part IV Transportation Security Solutions**

**Chapter 11 Automatic Identification and Data Capture (AIDC): The Foundation of Military Logistics**

*Corey A. Cook and Thomas A. Bruno*

| Introduction | 269 |
| Military Logistics Technology | 270 |
| Automated Identification Technology | 270 |
| Logistics Processes | 272 |
| Automated Information Systems Integration with AISs | 292 |
| Summary | 295 |

**Chapter 12 Infrastructure Recovery Initiatives: A Retrospective Assessment**

*Ralph V. Locurcio, Brig. Gen. (Ret.), P.E.*

| Introduction | 297 |
| Recent Examples of Disaster Recovery Operations | 298 |
Regional Transportation Operations: The FIRST Concept 299
   Step 1: Response Cells 299
   Step 2: Response Organizations and Policies 300
   Step 3: Training 301
   Step 4: Simulation 302
   Scientific Background and Approach 303
   Project Management in the Kuwait Recovery Operation 304
Principles of Disaster Recovery Construction 304
   Project Environment and Background 305
   Planning for the Recovery Operation 306
   Organization and Staffing 315
   The Project Management Process 317
   Contracting 320
   Logistics 324
   Budget Control 326
   Political Factors and Partnering with the Host Nation 328
   Leadership and Partnership 331
Lessons Learned 334
Application to Recent Disasters 335
   Planning for the Recovery Operation 336
   Organization and Staffing 338
   Project Management 339
   Contracting 340
   Budget Control 341
   Leadership and Partnership 342
Summary 343

Chapter 13 Immigration and National Security: Best Practices 345
   Jo Ram
   Introduction 345
   Protecting Borders 347
   ICAO Regulations 350
   Evolution of the MRTD 353
   Electronic Passport and ID Solutions 359
   Border Control 364
Clifford R. Bragdon, Ph.D., AICP, FASA

Dr. Bragdon is the associate provost, dean of the University College, and Distinguished Research Professor at Florida Institute of Technology. He is also the director of the Global Center for Preparedness, which is an international think tank focused on natural and human disaster prevention and sustainable planning and management, with public and private sector and nonprofit partners. Prior to this he established and was executive director of the University Consortium for Intermodal Transportation Safety and Security (UCITSS). Endorsed by Congress and signed into law by President Bush, this was a $10 million federally funded center involving 12 public universities, coordinated by the U.S. Department of Transportation (DOT), and based at Florida Atlantic University. It was the largest grant ever awarded to a university by DOT. The consortium dealt with safety and security issues for intermodal transport systems (highways, airports, seaports, rail-transit, utilities, and communications–IT).

While in New York, Dr. Bragdon was dean and vice president of the National Aviation and Transportation (NAT) Center at Dowling College. He was the first dean in the United States for a school of aviation and transportation devoted to the integration of all modes of transport by air, land, and sea. At the NAT Center he invented the first intermodal transportation simulation system (ITSS) for performing virtual simulation using all transportation modes. The ITSS was invented by Dr. Bragdon and patented by the U.S. government. It was rated the ninth most important new U.S. invention for the next 100 years by Newsday in 2000. Previous to this Dr. Bragdon served as professor, associate dean, and associate vice president at Georgia Institute of Technology, Atlanta, GA. While at Georgia Tech he was also the executive director of AMCEE, a consortium of engineering-based universities involved in distance learning, including MIT, Stanford University, Purdue University, University of Florida, and Arizona State University, among others. Dr. Bragdon also taught for 13 years at Emory University’s College of Medicine, and the School of Public Health.

Dr. Bragdon’s specialty is the field of transportation, land use–space use, simulation, environmental planning, sustainability, and safety and security. He has published five books as well as over 100 articles. He has lectured widely on these general subjects throughout the world and been an invited lecturer and distinguished speaker at over 70 universities (including Harvard, MIT, Columbia University, University of Pennsylvania, University of North Carolina, Moscow State University, Peking University, and Tianjin University). The United Nations and their United Nations Development Program (UNDP) invited him three times to participate as distinguished speaker in Turkey, Singapore, and
Egypt regarding sustainable environments and strategic envisioning; similar invitations have come from the mayor of Moscow and the Chinese National Academy of Science.

A distinguished professor and researcher, Dr. Bragdon has been a principal investigator in over $60 million of funded contract research, as well as a consultant to over 150 governmental agencies, governors, the U.S. Congress, the Office of the President, the United Nations, NATO, and major global corporations. Dr. Bragdon has been invited to the Office of the President twice due to his international reputation in intermodal transport safety and security. He also was a consultant to the Office of the Mayor, New York City, and developed a real-time 3-D computer simulation and analysis of the World Trade Center incident. A national transportation and land use planning and security expert on television and radio networks, Dr. Bragdon has appeared on NBC, CBS, ABC, FOX, CNN, Cablevision, National Public Radio, and WNYC. Print media activity has included the New York Times, Newsday, the New York Daily News, USA Today, the New York Post, Traffic World, and Commerce Business Daily.

Dr. Bragdon is also a Fellow in the Acoustical Society of America (FASA) and a charter member of the American Institute of Certified Planners (AICP), the American Planning Association (APA), and the Association of Energy Engineers (AEE). He has been honored with the Engineer Achievement Award of the Year for New York by 11 professional societies and by the Federal Aviation Administration (FAA) for Excellence in Education. He has been given the Citation for Technological Excellence by both Suffolk County and Nassau County, New York, as well by the governor of Georgia. He is listed in Who's Who in the World, Who's Who in America, Who's Who in Science and Engineering, Who's Who in Finance and Industry, Who's Who in Environment and Energy, and Who's Who in American Education. Dr. Bragdon serves on SOLE - The International Society of Logistics advisory board for Humanitarian and Disaster Relief Logistics and the National Academy of Science transportation research board. He has recently been appointed Managing Editor for the Journal for Global Preparedness, published by Elsevier, Amsterdam.

Academically, Dr. Bragdon holds an A.B. degree in political science and sociology from Westminster College. His master's degree (M.S. in urban planning) was obtained at Michigan State University, while his Ph.D. in city planning was completed at the University of Pennsylvania, Philadelphia, PA. Prior to his academic career, Dr. Bragdon was a captain, United States Army, Medical Service Corps.
Contributors

John C.W. Bennett, J.D.
Dr. Bennett is currently chief executive officer of Marine Protective Services, a provider of ISPS Code–MTSA consulting services and training (certified by the U.S. and UK governments). In 2004 he established Asset Tracking Logistics and Security, LLC, to enter the field of supply-chain security and visibility with technologies allowing real-time tracking and condition monitoring worldwide. While on active duty as a career officer in the U.S. Navy he completed three deployments in support of the U.S. Antarctic Research Program and obtained an LL.M. in Law and Marine Affairs from the University of Washington (1981). He served 6 years at the Pentagon, where Dr. Bennett became head of the Law of the Sea and Law of Air and Space branches of the Office of the (Navy) Judge Advocate General, including 3 years as an oceans policy planner on the Joint Staff, and participated as a representative of the U.S. at several international treaty negotiations, nongovernmental organization conferences, and bilateral talks. While assigned to a NATO command, a U.S. combatant command, a Navy fleet headquarters, and a submarine force staff, he became proficient in U.S. and NATO rules of engagement (ROE) and participated in numerous war games, counterterrorism and similar exercises, and nuclear incident response drills. He negotiated revisions to the NATO ROE on behalf of the Supreme Allied Commander, Atlantic.

He graduated from Swarthmore College with a B.A. (with high honors) in economics in 1970 and obtained a J.D. degree in 1973 from Georgetown University Law Center, where he was an editor of the Law Journal, following a year spent clerking for a federal appeals court judge. Dr. Bennett received certifications as CSO, SSO, and PFSO from Maine Maritime Academy in 2004. In 2006, he was appointed a Distinguished Visiting Research Professor at the University College, Florida Institute of Technology. He is a member of the American Bar Association, American Society of International Law, the U.S. Naval Institute, and the Military Officers Association.

Thomas A. Bruno
Mr. Thomas A. Bruno is president and founder of Bruno Associates Incorporated (BAI) since 1994 and has over 35 years of commercial, military, and medical logistics support experience. His firm specializes in microcircuit technology in support of logistics applications consisting of bar code technology, optical memory cards (OMCs), contact memory buttons (CMBs), radio frequency identification (RFID), and biometric and wireless communications. BAI provides consulting service, technical evaluation of RFID systems, independent validation and verification, and system integration for the Department of Defense (Battelle and Oak Ridge) and for commercial industry.
One of the original coauthors and editor of the U.S. Army’s Logistics after-action report after the Gulf War, Mr. Bruno also was one of the concept developers for implementing radio frequency identification technology (RFID) within the Department of Defense (DOD). He wrote the Army’s initial automatic identification and data capture (AIDC) and automated identification technology (AIT) strategies for the Army’s deputy chief of staff for logistics. Mr. Bruno developed the concept of operations for the Defense Logistics Agency (DLA) and Defense Advanced Research Projects Agency (DARPA) to evaluate radio frequency identification “intelligent labels.” Bruno Associates wrote the executive summary, developed the funding, and programmed the RFID intelligent label project for the U.S. Department of Defense, entitled “Advanced HAZMAT Rapid Identification Sorting and Tracking (AHRIST).” He was the principal writer of the concept of operations (CONOPS) and test criteria for electronic article surveillance tags and the RFID passive intelligent labels. Mr. Bruno also was a member of the White House antiterrorist technology advisory group in 1998 with Oak Ridge National Laboratory.

Corey A. Cook, LTC (Ret.)
Corey A. Cook currently serves as the program manager of Theater Opening and Sustainment for Lockheed Martin. Formerly a lieutenant commander in the U.S. Navy, he enlisted as a senior electronics technician until his selection to Officer Candidate School, where he received his commission as a naval supply officer. His introduction to radio frequency identification (RFID) and automatic identification technology first came during a 2-year special assignment with the U.S. Army, when he served as naval liaison and action officer for South American and Pacific operations, assisting in the integration of RFID asset tracking for material transport.

LCDR Cook later served as the director of operations for the Navy Expeditionary Medical Support Command, responsible for humanitarian assistance and natural disaster and wartime medical response. He oversaw the deployment, activation, administration, procurement, assembly, and logistical support of eight 500-bed fleet hospitals worldwide, multiple rapid-deployment expeditionary medical facilities, and numerous forward-deployable preventative medical units responsible for disease and contagion detection. A staunch advocate of RFID and AIT technology, he actively oversaw their integration into medical asset identification and packaging, biomedical equipment maintenance, civil engineering fleet management, medical warehouse real-time location systems, and iridium tracking for pharmaceutical transportation. During his tenure, he directed command disaster relief response and humanitarian assistance service for Hurricane Ivan, the Indonesian tsunami, Hurricane Katrina, and the Pakistan earthquake. Mr. Cook received his bachelor of science degree in business from Christopher Newport University, followed by a master’s degree in logistics from Florida Institute of Technology.

Sarah R. James
Ms. Sarah R. James, Executive Director of SOLE - The International Society of Logististics has actively promoted the development, advancement, and recognition of logisticians since 1983. As a member of SOLE’s board of directors, as chair of the Society’s awards board, as the Society’s Vice President of Finance, and as its President, she has nationally, as well as internationally, provided leadership for logistics excellence and development of incentive programs supporting recognition of logisticians. Her efforts were recognized by the Quartermaster of the U.S. Army when Ms. James was awarded the
Distinguished Order of St. Martin for her long-term service for and on behalf of the Army’s logisticians. This unique recognition to an individual outside the U.S. Army is matched through the awarding of SOLE’s Distinguished Service Medal, which recognized—among other things—the broad international footprint she has developed, for both SOLE and herself. While in government Ms. James was the recipient of many honors and awards, including the Commander’s Award for Civil Service, the Meritorious Civilian Service Medal, and the Superior Civilian Service Award. She is currently working with defense and other government officials, industry leaders, and a broad spectrum of academe—both internationally and in the United States—to develop graduate curricula and models for development of whole-life–life-cycle logisticians and humanitarian and disaster relief logisticians. Through her efforts, SOLE’s professional certifications (Certified Professional Logistician, Certified Master Logistician) are recognized and used for both career promotion and assignment consideration, by both governments and the private sector. Florida Institute of Technology has appointed Ms. James a University College Fellow. This is first time Florida Tech has had a formal association with an individual recognized nationally and internationally for logistics excellence.

Tom Jensen
Mr. Tom Jensen is the chief executive officer and chairman of the board of the National Safe Skies Alliance and National Safe Waterways & Seaports Alliance, headquartered in Alcoa, TN. In 1997 Mr. Jensen was instrumental in founding National Safe Skies Alliance as a nonprofit organization in cooperation with the U.S. Federal Aviation Administration (FAA). Under his leadership the organization administers a multimillion dollar annual grant from the Transportation Security Administration (TSA) to conduct operational testing and evaluation projects in airports nationwide. In 2003 he founded National Safe Waterways & Seaports Alliance to address the security concerns of our nation’s waterways, ports, dams, and locks.

To date, Safe Skies has conducted over 100 operational testing and evaluation projects at more than 35 civil aviation airports nationwide. These projects are in the areas of passenger security checkpoint, checked baggage and cargo access control, biometrics, and perimeter. In addition, Safe Skies preoperationally performs tests and evaluations at its Alcoa, TN, facility. Safe Skies also conducts special projects and applied research, such as site surveys and vulnerability assessments. It also has hosted an annual conference with several federal agencies in Washington, D.C., addressing airports and security systems, technology, and related issues. Presentations have been made by airport and aviation safety and security experts from throughout the world.

Mr. Jensen was a member of the Tennessee House of Representatives from 1966–1978 and served as minority leader for 8 years. He was responsible for passage of 85% of the legislation introduced on behalf of Governor Winfield Dunn. In 1977 Mr. Jensen served as president of the National Conference of State Legislatures, representing the nation’s 8,000 state legislators. For 15 years he served on the board of commissioners of the Metropolitan Knoxville Airport Authority.

Ralph V. Locurcio, Brig. Gen. (Ret.)
Brigadier General (retired) Ralph V. Locurcio is a professor of Civil Engineering and director of the Undergraduate and Graduate Construction Management Program in the College of Engineering at Florida Institute of Technology. He is a professional engineer
Charles P. Nemfakos

Mr. Nemfakos, newly elected Fellow of the National Academy of Public Administration, was the former Deputy Under Secretary, Department of the Navy. He was responsible for the formulation, presentation, and execution of the U.S. Navy's budget; directing the department's base closure process; providing executive-level continuity for the department in areas of institutional management and strategic planning; and supporting privatization initiatives, incentive structures, and right-sizing efforts. Finally, Mr. Nemfakos was the department's Chief Financial Officer. During the last decade of his career he played a central role in the transformation of the department after the cold war.

Following this federal career phase Mr. Nemfakos was an executive with Lockheed Martin Corporation, Naval Electronics and Surveillance Systems, directing efforts aimed at rationalizing product lines and providing program focus to enhance competitive strategies. He also led Nemfakos Partners, LLC for a period of 4 years.

A member of various professional associations, Mr. Nemfakos has lectured at the Naval Postgraduate School on public policy in resource allocation, at Georgetown University on national security issues, at Indiana University on public administration policy, and at the Defense Acquisition University on public–private entity relationships. He has served as a Senior Fellow at the Center for Naval Analyses and an adjunct at the National Defense University; and he currently is the Chair of the Humanitarian and Disaster Relief Logistics Board of Advisors of SOLE - The International Society of Logistics.

He has been recognized by presidents of the United States with both the Presidential Rank Award of Meritorious Civilian Executive (two awards), and the Presidential Rank Award of Distinguished Civilian Executive (two awards). He was selected by American University to receive the Roger W. Jones Award for Executive Leadership for 2000. In 2004, the Secretary of Defense honored Mr. Nemfakos as one of only nine Career Civilian Exemplars in the 228-year history of the U.S. Armed Forces.
William S. Pepper IV

Bill Pepper is the project manager and system architect for the Harris SafeGuard™ situational awareness command and control system. Mr. Pepper initially joined Harris in 1990 after successfully performing engineering management and systems architectural duties for the Operations and Control and Communications subsystems on the Grumman Joint-STARS aircraft. Mr. Pepper has been responsible for SafeGuard™ product marketing, demand generation, and business development activities. He has developed several conceptual designs for CBRNE-Cyber protection in support of the Department of Homeland Security’s Science & Technology Directorate.

Prior to this he developed the biometric-based Passenger Authentication Security System (PASS) and supported the Airport Access Control Pilot Program. As the product manager for the STAT Neutralizer™ Intrusion Prevention computer security product, he led all design and development efforts and was directly responsible for successful certification of the STAT Scanner by the U.S. Army. He is the author of numerous technical papers and has made numerous presentations contained in the proceedings of national conferences related to security. These technical articles cover a host of themes related to situational awareness associated with various transportation modes (e.g., airport and maritime ports), communications interoperability, and biometrics, as well as other software engineering subjects related to security. A veteran of the United States Air Force, Mr. Pepper is an active member of the Safe Skies Alliance, the Association of Naval Aviation, the IEEE, and the National Defense Industrial Association. He performed undergraduate studies at the Wichita State University, University of Arizona, and State University of New York, and graduate studies at the Wichita State University and holds a master’s degree in computer resources and information management and computer science from Webster University.

Peter V. Radatti, Ph.D.

Dr. Peter Radatti is the president and CEO of CyberSoft Operating Corporation, which he established in Conshohocken, PA, in 1998. He wrote the first Unix antivirus software adopted in the industry (i.e., military and civilian) and has 21 patents pending or issued in the computer industry. With an academic and professional background in chemistry, electronics, and astrophysics, Dr. Radatti worked at General Electric Space in its military programs department for 13 years designing and developing early fiber-optic computer networks. His work in the computer security field is now a standard utilized in both Unix and Linux applications primarily used by the U.S. Department of Defense and all branches of the service. Due to this unique intellectual property and diverse working experience involving secure information technology–based environments, he is a national and international consultant to the United States government. As a major area of interest, Dr. Radatti is detecting and preventing targeted hostile software in homeland security. He is now developing a new wave anti-virus product for Mcintosh, which is unusual in its simplicity for the computer user. His interest and competencies are diverse, as evidenced by the invention of the world’s first all dietary fiber bake mix; it utilizes no grains or carbohydrates, which can be a significant assistance to people with medical issues that are treatable with dietary fiber. Currently Dr. Radatti has also been appointed as Distinguished Visiting Research Professor at Florida Institute of Technology, Melbourne, FL.
Ms. Jo Ram
Ms. Jo Ram is chief operating officer and vice president of Indusa Global, headquartered in Atlanta, GA. She joined the company in 2000 and has focused all of Indusa's technical and financial resources on developing tourism and national security solutions for clients worldwide. Ms. Ram was an integral part in implementing the first fully biometric-based ePassport with facial scans and fingerprints in the Americas for the government of the Bahamas. This contract with the Bahamas Ministry of Foreign Affairs began December 22, 2006. Beside ePassports, it has included machine-readable visas, eIDs, and a deportation and border management system for 38 locations. Indusa Global is also working for the Bahamian Ministries of Tourism and Labour & Immigration, as well as other countries (e.g., Jamaica, Singapore, India, and the United States). She is responsible for increasing Indusa’s revenues from $250,000 to over $10 million in 7 years.

As an independent management consultant, Ms. Ram also had large corporate and governmental clients. Her engagements include developing quality control management software for Ritz Carlton and Hilton Hotels; strategy and financial consulting for development funds for the United Nations Development Program (UNDP); and a business plan for the Caribbean Institute of Technology (CIT) in partnership with Indusa in Montego Bay, Jamaica. Before Indusa she had over 10 years of consulting, financial, and accounting experience. At MCI Worldcom she was involved in setting up financial processes for all of MCI’s international operating units. Ms. Ram has also worked at Accenture (formerly known as Andersen Consulting) on the Symphony Alliance engagement, a partnership. Ms. Ram graduated in 1995 from the University of Georgia in Business Administration, majoring in Accounting.

Dr. Robert Sewak
Dr. Robert Sewak is the managing director of Viasat Systems, LLC, located in Delray Beach, FL. Prior to this he served as executive vice president and director of Education and Special Projects for AEGIS Technology Companies, Deerfield Beach, FL. His primary focus has been organizing and developing for AEGIS maritime and intermodal cargo security, tracking, surveillance, and monitoring. This has included instituting the PILOT, performance, integration, logistics, and operations test, which represented one of the first comprehensive field trials of end-to-end 24/7 tracking and monitoring of intermodal cargo performed on a real-time basis. This technology is now being utilized for multiple transportation modes as part of safety and security protocols to prevent transportation-related terrorism.

Dr. Sewak has also directed the activities of the Neuro Acoustic Research Centre, where he is responsible for the discovery, creation, and development of a unique audio modality to aid in the betterment of the human condition. He has written two books, contributed chapters to four other books, published 22 professional articles, and participated in many national conferences related to transportation safety and security. Dr. Sewak holds the title of Distinguished Research Professor, in the University College at Florida Institute of Technology. His Ph.D. was completed at the University of Memphis.

L. David Shen, Ph.D.
Dr. L. David Shen is a professor of civil engineering and director of the Lehman Center for Transportation Research Engineering (LCTRE) at Florida International University.
He is also a senior technical advisor to the United Nations Development Programme (UNDP). Dr. Shen is a member of three national committees of the American Society of Civil Engineers (ASCE) and the university representative for the Transportation Research Board (TRB). He is a registered professional engineer in Florida, Maryland, and California. He has extensive industrial experience, which includes current consulting to international and Florida transportation firms. His former position was with the District of Columbia Department of Transportation. He is also a senior technical advisor to the Beijing University of Technology (BJUT) in China.

Dr. Shen is the principal investigator and project director of two U.S. Federal Transit Administration–sponsored research projects. His recent research projects have been the examination of factors influencing successful implementation of intermodal guideway public transit systems and the impact of technological and demographic trends on future transportation system efficiency. Dr. Shen has an extensive list of publications and numerous papers in various journals. He is the author or coauthor of over 130 papers, books, and articles. He has received several distinguished awards for excellence in research scholarship. Dr. Shen teaches in the areas of highway planning and design, transportation and land development, highway capacity and control systems, mass transit planning, and airport planning and design. Currently he is also the FIU coordinator for the University Consortium for Intermodal Transportation Safety and Security. He received his Ph.D. in civil engineering from Clemson University.

Michael Workman, Ph.D.

Dr. Michael Workman received his Ph.D. in organizational development from Georgia State University. Following a distinguished 22-year career in the computer industry working in network applications and international security for Bank of America and Telecom/Equant, Dr. Workman began an academic career. Initially he was an assistant professor in information science at Florida State University, and more recently he came to Florida Institute of Technology as an associate professor in the College of Business. His academic and research focus is examining how human perceptions and technologies interact and affect performance, particularly in team-based work. Currently he is the director of the Center for Immigration and National Security, as well as of the Security Policy Institute. He has served as a national security advisor on biometric passports to foreign governments. Dr. Workman has 30 publications, including three books, and has made presentations at 16 international conferences with proceedings and published reports. A scholarly reviewed journal, *Journal of Global Security and Preparedness,* is being developed jointly with Elsevier. He will serve as senior editor of this Florida Tech–based journal. His most recent research focus is the issue of mobility-based security, technological applications, and the relationship to human behavior (i.e., both individual and group dynamics). Dr. Workman is co-principal investigator on the Army Research Laboratory’s $2 million grant, Biologically Inspired Security for Mobile Ad Hoc Networks. He will also be initiating a professional development series on visual semantic communication, beginning this year.
Transportation Security represents a refreshing and interdisciplinary approach to understanding and addressing global preparedness from a transportation perspective. The authors have very capably set the table to understand the essential interrelationship among natural disasters, human disasters, and sustainable infrastructure that must be collectively addressed if we are going develop effective solutions to this worldwide problem.

Dr. Bragdon has introduced extremely important concepts that fill voids in this complex subject while offering breakthrough insights. First of all he has properly defined intermodal or integrated transportation as it should be: the safe, secure, sustainable, and efficient movement of people, goods, and information by air, land, sea, and space. Second, transportation has not been narrowly defined as dealing with just physical modes of movement, but also the electronic communication of information, which addresses interoperability. On this basis, he has introduced the concept of “transcommunication” as a bridge between the physical and electronic world of mobility, which the UN identified at one time, but has lain fallow since Habitat. Third, mobility, which has a cultural lifeline to civilization, appears to have both a genetic, as well as psychosocial basis. This means that the concept of movement is a fundamental component of the human species and its operative functioning system. If movement becomes impaired from a human perspective, there is a reduction in comfort, enjoyment, and biophysical functioning, including the potential onset of stress, and suboptimization. This is a profound observation that Dr. Bragdon hypothesizes, and it should be rigorously explored.

Dr. Bragdon has very capably dealt with many of the historical and institutional impediments that have resulted in a stovepipe approach to the subject of security that requires systems integration. Initially institutional biases were advanced by individual modal advocates, at the exclusion of a holistic and integrated transportation model. This laid the foundation for a piecemeal and disjointed problem-solving management approach.

Personal private transportation (the private car) historically was advocated by Robert Moses in New York as a national model, with no role for public transit. The consortium of General Motors, Standard Oil, and Firestone, through their “National City Lines” company, discouraged rail-based transit, substituting GM buses through the predatory purchasing of municipal trolley and street car systems (over 400). This was followed by the establishment of Highway Departments for planning, designing, and managing road systems at state and local government levels and the development of a federal highway system as the primary means of national mobility. It was only much later that there were attempts at having a more diversified approach, or as Dr. Bragdon states,
a “total modal approach.” Now with Departments of Transportation in play, followed by legislation using highway trust funds beyond merely supporting road systems (pavement), a more balanced transportation system has begun to appear. The book also discusses the fallacy that the federal government alone is the most effective manager for addressing natural and manmade disasters. It examines the important tri-part teaming of government with business and nonprofits.

Clearly one of the most provocative discussions involves Dr. Bragdon’s forecasting that energy-based reliance on fossil fuel for personal transportation will become a nonissue by 2020. “Carhenge” will now become liberated from a petroleum-based fuel supply, potentially reducing the threat of terrorism. The next formidable hurdle will be the growth and size of transportation systems, which could put a squeeze on the finite space available for human habitation. This means we should institute a spatial management, “diet cities” approach, to optimize urban space three-dimensionally, rather than using two-dimensional “land use” planning as our urbanized world expands to 10 billion persons before 2050. Super-sizing our infrastructure, a drive-thru society dominated by SUVs, crossovers, and trucks, matched with larger homes (“McMansions”) and personal appetites is the wrong formula, even without the necessity of fossil fuel. Spatial gridlock and restricted access will impair needed transportation response to any disaster and will make urban society assets more vulnerable.

The magnitude of impact of all these disasters is outlined, and the economic consequences, especially in terms of the world’s GDP, are profound and, according to Dr. Bragdon, equal to 5%. The financial cost of 9/11, estimated at $2 trillion, and Katrina at $800 million are at a magnitude no economy can support on a long-term basis. The frequency of both manmade and natural disasters is growing, and the author recognizes the financial escalation as our civilization becomes increasingly urbanized, with greater infrastructure and valued assets located in vulnerable coastline locations.

Organizationally, Transportation Security follows a logical sequence. The first section of the book addresses the importance of transportation, the need for a security systems approach (that is presently missing in transportation), the importance of logistics, and then security behaviors (which to date have received little attention). These modal discussions are especially helpful to gain an understanding of several role players (i.e., aviation, maritime, and roadways). The second section then describes the primary modal elements of security, followed by the various technologies currently available. There is an excellent discussion of applied modal container tracking technology as well as command and control. This section investigates interoperability and the situational awareness the military has experienced, and their applicability to civilian counterpart operational centers, including cyber security.

The reader is not left in limbo about solutions and case studies that outline best professional practices, including future approaches. The third section of Transportation Security discusses ways in which transportation is now addressed. Automatic Identification Technology (AIT) is being used extensively by the military and is described in detail, with applicability to civilian logistics as well. It is important to note that much of the AIT and related tracking systems were first applied in the military, and subsequently have been used in other governmental and commercial markets. The important case study of rebuilding Kuwait is presented to demonstrate the complex but organized approach that was used by the U.S. Army Corps of Engineers following the Gulf War. This critical path methodology is now being employed as “lessons learned” to assist the post Katrina
Hurricane rebuild. One of the most topical chapters addresses immigration and national security, including the newest multifaceted technologies that are being incorporated into passports. Protecting borders with biometrics, RFID implants, surveillance measures, and national identification systems are being examined by every country. This chapter presents secure technologies that just have been implemented in the Caribbean, and specifically, the Bahamas.

In the concluding chapter, Dr. Bragdon builds on the Army experience in discussing the Fast Integrated Response Systems Technology (FIRST) and how that could be used in emergency response and recovery incidents that cover a large geo-political, multistate area. Humanitarian disaster relief logistics is in its infancy and must grow in sophistication and applicability to meet the logistical challenges. Whatever approach is used, the author encourages that an integrated approach take place, with stakeholders from civilian, military, business, and nonprofits utilizing an effective interoperable system that is cyber secure. Dr. Bragdon makes an important case for establishing a global systems approach, and he outlines the Global Center for Preparedness (GCP) and the multiple missions that need to be in place to be more effective worldwide. The GCP already is attracting interest among businesses, governments, and academia as we must focus on global preventative solutions.

The contributing authors have written complementary chapters that make this book an excellent one-stop primer for practicing professionals who are actively involved in preparedness activities at public and private sector levels. Their backgrounds are diverse, and these chapters address essential components to understanding and applying solutions to this problem impacting most nations of the world. The book also has an important place in college and university curriculums that deal with homeland security, national preparedness, and disaster response and recovery.

Dr. Jay Stein, FAICP
Provost and Vice President of Academic Affairs
SUNY Plattsburgh, New York
Former Dean, College of Construction, Planning, and Architecture
University of Florida
Acknowledgments

I would like to thank several individuals who have contributed to the development and preparation of Transportation Security. Mary Dyer, my Administrative Assistant at Florida Tech, has assisted me throughout this manuscript process. Her devotion to organizational detail, administrative coordination, the necessity of meeting important deadlines throughout this process, and most importantly, her positive attitude, provided important motivation to complete any task at hand.

Another major contributor was my wife Sarah Bragdon, who was actively involved in examining the chapters that I prepared, providing review and recommendations. This important perspective gave me thoughtful and helpful feedback from a person whose area of competency includes English composition as a former teacher.

An important mentor who planted the seed for Transportation Security was Major General Mike Sumrall, Assistant to the Chairman of the Joint Chiefs of Staff for National Guard Matters. Mike inspired me to address the problem of national preparedness, recognizing there is no easy answer but a compelling need to protect this country and the ideals and traditions for which it stands.

My entire family gave me encouragement to pursue the book to the entire end, knowing the task was formidable but rewarding. All three daughters, Katherine Bragdon, Rachel Rose, and Elizabeth Hole, along with my sister, Peggy Shepley, thoughtfully listened and made suggestions.

Lastly, I want to thank all the authors who contributed chapters for their hard work and their important insights into the subject covered by this book. It was truly a team effort.

Clifford R. Bragdon, Ph.D.