Intermodal Transportation Institute
University of Denver

DRAFT

Interim Report to Transportation Working Group Intermodal Task Force

Project TPT 01/2002

Phase II: Needed Skills in Intermodal Transportation

Development of a Pilot Course in Core Competencies Needed for Successful Careers in Intermodal Transportation

Summary of Proposed Modules and Pilot Test

Sponsoring Economy:
Canada
Project Manager: George Tyszewicz

September 1, 2003
Busan, South Korea

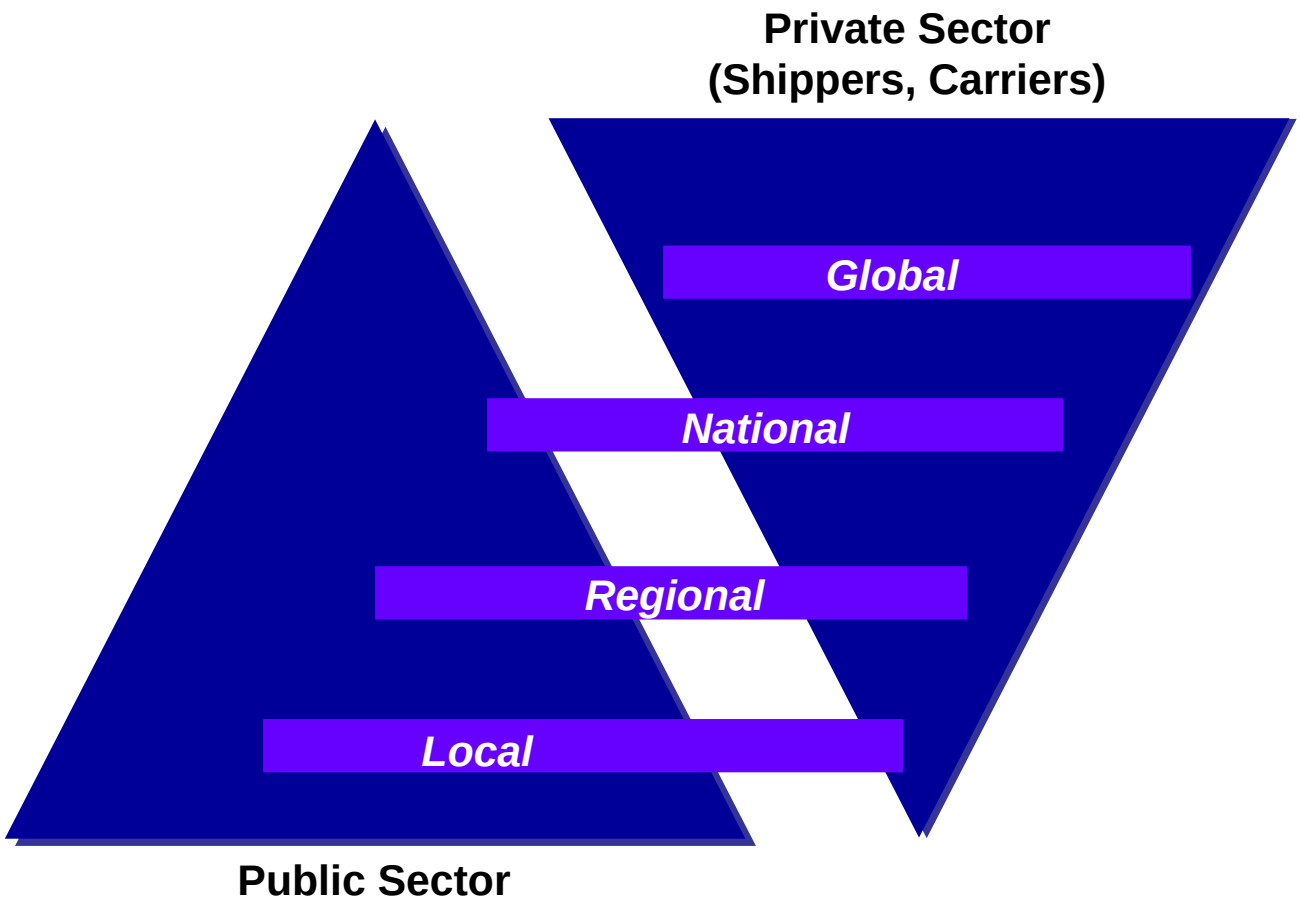
INTRODUCTION

The Intermodal Skills Course concept has grown out of three previous APEC ITF sponsored projects:

- The Congestion Points Study
- The Identification of Needed Skills and Available Training Programs
- The Intermodal Skills Workshop

Freight Transportation Perspectives

Private sector focus is increasingly national and global



Intermodal Training within the Transportation Industry

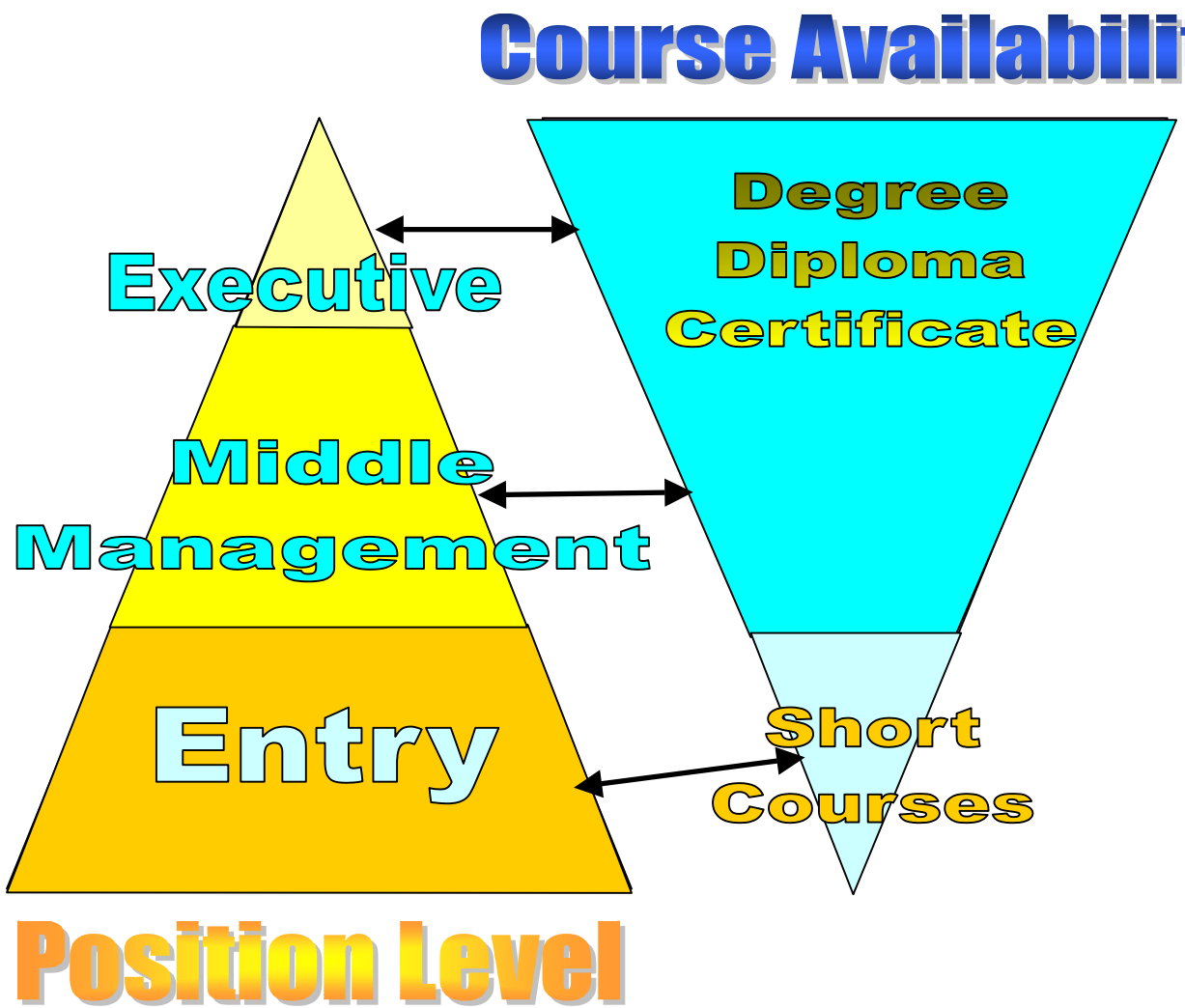
Priority Skill Areas

FOUNDATIONAL KNOWLEDGE:
- Government Regulations & Policies
- Available Transport Technology
- Global Business Environment
- General Business Environment
- Labor Relations
- Various Transportation Modes
- How Modes Interface
- Understanding of Legal Issues

ANALYTICAL SKILLS:
- Environ Impact Analysis
- Economic & Financial Analysis
- Policy Analysis
- Strategic Planning
- Forecasting Skills
- Futures Analysis
- Systems Analysis
- Ethical Analysis

INTERPERSONAL SKILLS:
- General Managerial Skills
- Customer Service Skills
- Communications Skills
- Listening Skills
- Sales Skills
- Coalition Building Skills
- Teambuilding Skills
- Conflict Management & Negotiation
- Leadership Skills

TECHNICAL SKILLS:
- Computer Applications
- Technology Management
- Modeling Skills
- Logistics & Supply Chain Processes
- Data Gathering, Analysis & Manipulation
- Marketing Skills
- Transportation Experience


Course Availability
Executive
Middle Management
Entry
Degree
Diploma
Certificate
Short Courses
Position Level

Recommendations from First Study

- **Develop an Assessment Framework on Training**
- **Apply the Assessment Framework**
- **Analyze Delivery Mechanisms**
- **Create Educational Partnerships**
- **Skill Development in the APEC Economies**
- **Long Term Development of Intermodal Curricular Materials**

Intermodal Skills Workshop

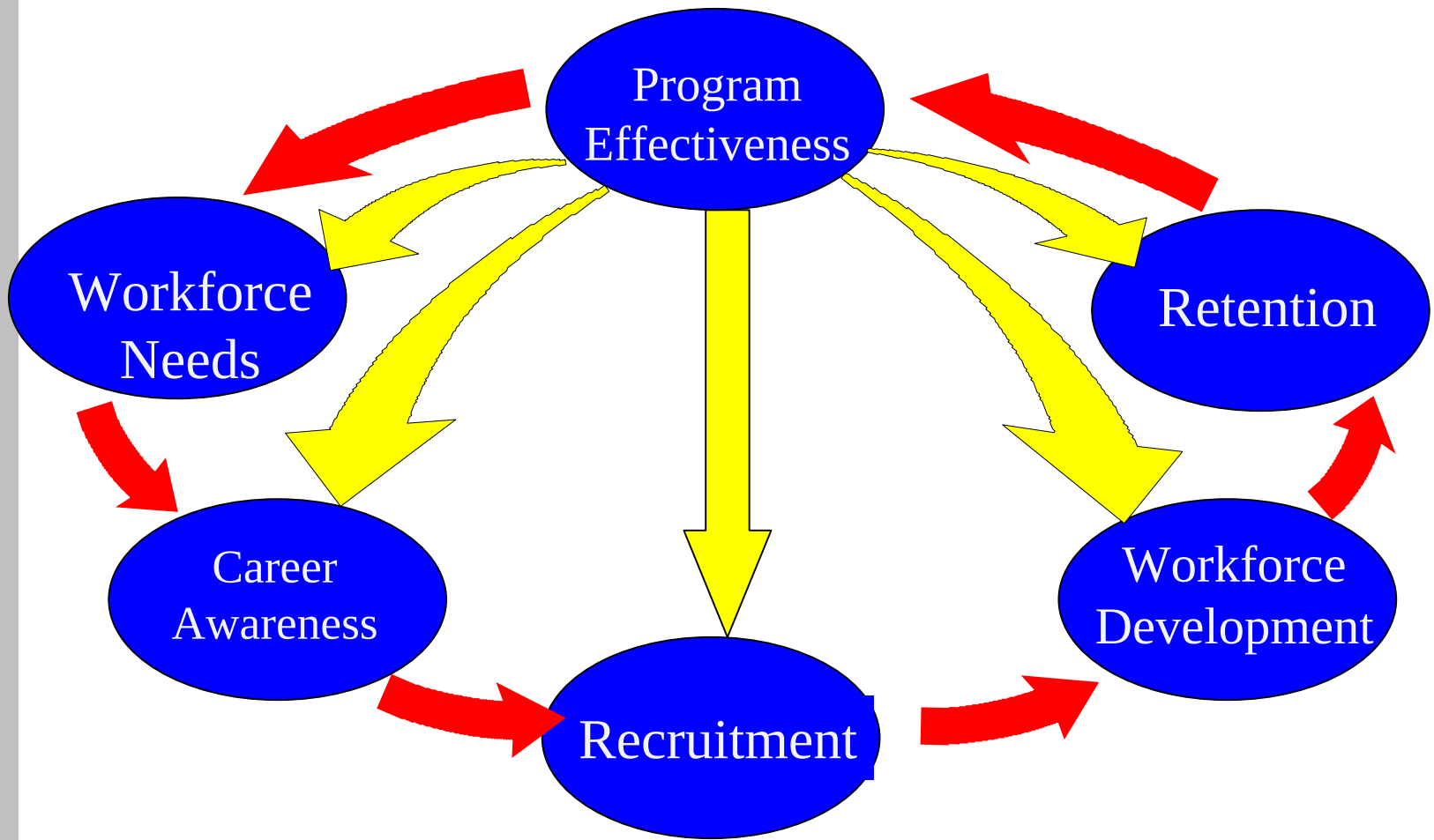
Manila TPT WG 20

- This workshop focused on the presentation of new information and best practices in the intermodal transportation industry
- Limited discussion of transportation security issues
- An extensive case study was utilized
- Feedback was positive

US DOT Recognizes the Skills Problem

- US suffer from the same problems as all other economies
- Recognizes the challenge of skills shortages
- Attempting to address the issues of workforce development
- Studying how to ensure the availability of adequate human resources for intermodal transportation
- Beginning to develop a framework for studying workforce development issues

A Framework for Studying Workforce Development Issues



APEC ITF CONTRIBUTION

Many dimensions to the problem…

- Work of the APEC ITF provides an important step to begin to deal with one dimension
- From basic to middle management
- The current project will produce and test a one-week long seminar that introduces basic skills and concepts in intermodal transportation

Proposed

Intermodal Skills Course Content

DEVELOPMENT TEAM

Interdisciplinary Project Team is Comprised of representatives from several economies:

- Mr. George Tyszewicz – Canada
- Professor Joseph Szyliowicz - USA
- Professor Anthony Perl - Canada
- Professor Patrick Sherry – USA
- Professor Tony Eastham – Hong Kong
- Professor Piotr Olszewski – Singapore
- Professor Timothy Vowles – New Zealand
- Professor Andrew Goetz – USA
- Dr. Karen Philbrick - USA
- Mr. John McDonald – Canada
- Mr. Paul Caemyn – Australia

Course Format

Each Module

- Integrated into the overall course concept
- Accompanied by background readings
- A case study, which was tested in Manila TPT – WG 20, will serve as a means of integrating the diverse topics across modules
- The modules are being developed with the intent to be both practical and useful for the rich variety of APEC economies
- An integrating mechanism for evaluating each module as well as the entire course

Course Overview

Module Topics

1. Understanding Ethical Principles
2. Systems Analysis Skills
3. Managerial Skills
4. Environmental Analysis
5. Knowledge of Computer Applications
6. Knowledge of Technologies
7. Communications Skills
8. Knowledge of Modes of Transportation
9. Knowledge of Planning
10. Knowledge of Security Operations

1. Understanding Ethical Principles

Module Objectives:

- Role of ethics in intermodal transportation
- Moral principles and ethical guidelines
- Principles for decision making and planning
- Ethical transportation organization

Developed by: Dr. Karen Philbrick

Professor Joseph Szyliowicz

University of Denver

1. Understanding Ethical Principles

- **COURSE TOPICS:**
  - Intermodalism and ethics
  - Components of ethical principles
  - Nature of ethical decision making and its relevance to transportation
  - Use of foundational ethical principles in intermodal research, planning, and organization
  - Ethical dilemmas in specific work settings

Developed by: Dr. Karen Philbrick

Professor Joseph Szyliowicz

University of Denver

2. Systems Analysis Skills

Module Objectives:

- **Basic concepts of transport systems and their components**
- **Analysis of systems operation in terms of capacity, costs and performance**
- **Understanding the technical and operational issues of intermodal connections**
- **Basic techniques of solving routing and scheduling problems**
- **Principles of total logistics cost analysis**

Developed by: Professor Piotr Oleszki

Nanyang Technological University, Singapore

2. Systems Analysis Skills

- **COURSE TOPICS:**
  - **Transportation system components: infrastructure, vehicles, operators, users**
  - **Transportation systems operation: schedules, flows, capacity, costs, level-of-service**
  - **Transportation networks: links, modes, terminals, configuration**
  - **Intermodal connections: technical and operational issues**
  - **Analysis of systems operations: capacity, supply-demand equilibrium, peaking, performance measurement**
  - **Management of systems operations: routing and scheduling problems, optimization**
  - **Logistics management: inventory and freight costs, just-in-time systems, trade-off analysis**

Developed by: Professor Piotr Oleszki

Nanyang Technological University, Singapore

3. Managerial Skills

Module Objectives:

- **Personal and interpersonal concepts of management**
- **Leadership and motivation concepts**
- **Teamwork and productivity theories**
- **Coaching and development strategies**

Developed by: Professor Patrick Sherry
Dr. Karen Philbrick
University of Denver

3. Managerial Skills

- **COURSE TOPICS:**
  - **Organization and Structural Concepts**
  - **Design of Organization**
  - **Strategic Competitiveness**
  - **Human Resource Management**
  - **Health and Safety Regulations**

Developed by: Professor Patrick Sherry
Dr. Karen Philbrick
University of Denver

4. Environmental Analysis

Module Objectives:

- **Principles of sustainable development as they apply to transportation**
- **How concerns about local and global pollution from transportation are assessed and dealt with**
- **How Intermodal transportation options will be shown to offer potential solutions that allow systems to offer more mobility with less negative environmental impacts**
- **Advantages of integrating self-assessment of environmental issues into intermodal designing and planning efforts**
- **How to introduce, or advance, intermodal options to address disputes over the environmental effects of transportation activities**
- **Incorporating key components of different cultural motifs into communication style**

Developed by: Professor Anthony Perl
University of Calgary, Canada

4. Environmental Analysis

- **COURSE TOPICS:**
  - **What Makes Intermodal Transportation a Sustainable Approach to Mobility?**
  - **Measuring the Opportunities to Reduce Mobility's Environmental Impacts Through Intermodal Transportation**
  - **Mitigating Negative Impacts Through Intermodal Redevelopment of Existing Transportation Systems**
  - **Preventing Future Environmental Problems By Introducing New Intermodal Facilities and Services**
  - **Integrating Environmental Awareness and Effectiveness Into Intermodal Design, Planning, and Operations Techniques**
  - **Presenting Intermodal Options as a Solution to Conflicts Over Transportation's Environmental Effects**

Developed by: Professor Anthony Perl
University of Calgary, Canada

5. Knowledge of Computer Applications

Module Objectives:

- **Role of computers in the intermodal transport system**
- **Various uses of computer software in the assurance and enhancement of intermodal efficiencies**
- **Examples of leading software in the international intermodal transport field**
- **Examples of Leading Software in the Intermodal Field**

Developed by: Mr. John McDonald

Ottawa, Canada

5. Knowledge of Computer Applications

- **COURSE TOPICS:**
  - **Role of Computers in Intermodal Transport**
  - **Contribution of Computerization to the International Supply Chain**
  - **Requirements of Computer Applications in Transportation**
  - **Requirements of Computer Applications in Terminal Operations**
  - **Requirements of Computer Applications in Communications**
  - **Examples of Leading Software in the Intermodal Field**

Developed by: Mr. John McDonald

Ottawa, Canada

6. Knowledge of Technologies

Module Objectives:

- **Role of technology in intermodal transportation**
- **Applications of technology to the various elements of the international supply chain**
- **Use of various technologies can enhance productivity and efficiency in intermodal operations**
- **Of the challenges posed by the development of electronic commerce**

Developed by: Mr. John McDonald

Ottawa, Canada

6. Knowledge of Technologies

- **COURSE TOPICS:**
  - **History of Intermodal Development**
  - **Role of Technology in the Supply Chain**
  - **Technology and Productivity Improvements**
  - **Technology Applications in Transport and Logistics**
  - **Technology Applications in Terminal Design and Operations**
  - **Technology in International Shipping**
  - **Technology in Information Communications**
  - **The Challenge of Electronic Commerce**

Developed by: Mr. John McDonald

Ottawa, Canada

7. Communication Skills

Module Objectives:

- **Importance of effective communication in transportation situations**
- **Identify effective communication techniques**
- **Identify different styles of conflict resolution**
- **Incorporate the key components of different cultural motifs into their communication style**

Developed by: Professor Patrick Sherry

Dr. Karen Philbrick

University of Denver

7. Communication Skills

- **COURSE TOPICS :**
  - **Role of Culture in Communication**
  - **Communication Styles**
  - **Verbal & Non Verbal Communication Issues**
  - **Active Listening Techniques**
  - **Group Communication Techniques**
  - **Conflict Resolution Communication Techniques**
  - **Essentials of Bargaining and Negotiation**
  - **Interest Based Bargaining**

Developed by: Professor Patrick Sherry

Dr. Karen Philbrick

University of Denver

8. Knowledge of Modes of Transportation

Module Objectives:

- **Modal options for transportation**
- **Techno-economic attributes and operating characteristics**
- **Factors that should be considered in making choices**
- **Social (user) considerations**
- **A systems perspective**

Developed by: Professor Tony Eastham

Hong Kong University of Science & Technology

8. Knowledge of Modes of Transportation

- **COURSE TOPICS :**
  - **Seeing the big picture and asking the right questions; what are we trying to achieve?**
  - **Moving people, moving freight**
  - **What is most important and why; cost, energy, efficiency, speed, frequency, safety, reliability, maintenance requirements, jobs, industrial development?**
  - **Life cycle costing**
  - **Modal options; appropriate technology**
  - **Short term vs long term; evolutionary trends**
  - **Intermodality; towards system optimization**

9. Planning for Intermodal Transportation

Module Objectives:

- **Learn about the importance of planning in the development of the intermodal transportation system**
- **Learn about the purposes and processes of public sector infrastructure planning across a range of different scales and international contexts.**
- **Learn about the key elements and effectiveness of strategic planning in private and public sector decision-making.**
- **Learn about planning practices in both the public and private sector through several case studies**

Developed by: Professor Andy Goetz – University of Denver

Professor Timothy Vowles – Victoria University at Wellington, New Zealand

9. Planning for Intermodal Transportation

- **COURSE TOPICS:**
  - **General Planning Concepts**
    - **Public sector (governmental) planning**
    - **Private sector (firm) planning**
  - **Intermodal Transportation**
    - **Freight intermodalism**
    - **Passenger intermodalism**
  - **Public Sector Planning**
    - **Strategic Planning**
    - **Case Studies**

Developed by: Professor Andy Goetz – University of Denver

Professor Timothy Vowles – Victoria University at Wellington, New Zealand

10. Transportation Security

Module Objectives:

- Why intermodal security is a critical issue
- Vulnerabilities of intermodal transportation
- Potential threats it is facing
- Problems involved in securing intermodalism
- Planning principles that can be used to enhance security

Developed by: Professor Joseph Szyliowicz

University of Denver

10. Transportation Security

COURSE TOPICS:

- Introduction: Intermodalism and Security
- Nature of terrorism and its relevance to transportation
- Components of system security
- Methods of attack
- Role of telecommunications
- Promise of technology
- U.S. experience
- Planning for intermodal security

Developed by: Professor Joseph Szyliowicz

University of Denver

NEXT STEPS

1. Identification of host economies for pilot testing and refinement
   - Venue
   - Support Services (e.g., registration of participants)
   - Refreshments
   - Access to supplies and copies
   - Registration fee will cover costs of training course
2. First delivery of pilot course
3. Evaluation of pilot course
4. Review and refinement of content
5. Subsequent deliveries & improvements
6. Dissemination to member economies