MARITIME TRADE AND TRANSPORT

**BENEFITS:** Economic

- Global Dependence on Maritime Industry for:
  - Transportation
  - Trade Exports
  - Energy Delivery
  - Cost-effective Consumer Goods
- Shipping – cheapest, most environmentally friendly transportation
Maritime Trade and Transport

**Benefits: Economic**

- 2000 World Merchandise Export Volume grew by 11.9%
  - 9.9% in developed economies; 15.7% in developing economies
- World Container Port Traffic up 15.4%
  - E.g., U.S. maritime trade volume expected to double by 2020;
    Container traffic alone will triple
- Cruise/Large Passenger Ship Tourism Industry on Rise Globally
  - 8.7M cruise passengers worldwide in 2000; by 2010 projected at 13M

Maritime Trade and Transport

**Benefits: Economic Efficiencies**

- Safe Navigation ➔ Economic Success
- Electronic Navigational Charts ➔ Safer Navigation

Traditional Nautical Charts

STATUS QUO:

• Paper Charts
  • Static, Require Hand Corrections
  • Time Lag in Plotting Courses

• Raster Charts
  • Computer Picture of Paper Chart
  • ‘Dumb’ Data Lacking Advance Warning Capability

• New Technologies Can Vastly Improve Navigation Safety

DEFINITION: What is an ENC?

• Far Superior to Paper/Raster Charts
• Vector Chart Database
• International Standard
• Displays Selected Layers and Features
• ‘Intelligent’ Charts with Electronic Navigation Systems
Electronic Navigational Charts

**ADVANTAGES:** Real-time Data Integration

- Increased Accuracy Demands of DGPS Navigation in 21st Century
- Real-Time Graphic Display of Ship’s Position
- Tides/Water Levels, Weather Data
- Navigation Aids/Hazards Update Capability
- Ship Controls/Systems for National Security

**BENEFITS:** Navigation Safety

- Situational Awareness
- Accident Reduction
- Manage Ship Movements
  - ENCs with Automatic Identification and Port Transponder Control Systems
- Low Visibility Navigation
- Designed to Meet SOLAS Requirements for Chart Carriage

[Image of electronic navigational charts]
**Electronic Navigational Charts**

**BENEFITS:** Environmental Protection

- Grounding/Obstruction Avoidance -- Alarms Sound Near Dangerous Areas
- Precise Coordinates of Sensitive/Protected Areas
- Daily Transports of Oil and Chemicals = Risk
- Should Reduce Catastrophic Spills, Environmental Degradation

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**ADVANTAGES:** Multiple Applications

- ENCs can also be used in Geographic Information Systems for any number of applications, e.g.:
  - Coastal Zone Management
  - Fish Habitat Mapping
  - Emergency Planning
  - Ocean Jurisdictional Mapping
  - Homeland and Port Security
CHALLENGES: Achieving Worldwide Coverage?

- Building ENCs is Complex
- Chart No Better Than Data on Which It Is Based
  - New Hydrographic Surveys = More Accurate ENCs
- Internationally Standardized Data Essential
- Training and Resources Necessary for Worldwide ENC Coverage

FUTURE: Capacity-Building Programs

- IHO Regional Hydrographic Commissions Facilitate Technical Cooperation, Collaboration among Member States
- Partnering with Hydro-Expert Nations
  - Some examples:
    - U.S. Naval Oceanographic Office Hydrographic Cooperative Survey Program
    - 25 International agreements leverage host-nation and U.S. Navy assets
    - UK Hydrographic Office Bilateral Arrangements
    - Japan International Agency
ELECTRONIC NAVIGATIONAL CHARTS: The Next Generation of Navigation Tools

A stronger future begins with greater ENC capacity for all Nations