

2006 Summer Meeting
AASHTO Subcommittee on
Highway Construction

Computers and Technology
Session

Wednesday, August 8, 2006

Environmental Management &
Environmental Information
Management Systems



AASHTO
Center for
Environmental
Excellence



Presentation Objectives

- Introduce the AASHTO Center for Environmental Excellence Services
- Describe the AASHTO/FHWA Environmental Management System Technical Assistance Program
- Describe the NCHRP 25-23(2) Project-Environmental Information Management & Decision Support System Software Development

AASHTO Center for Environmental Excellence

- **MISSION: PROMOTE ENVIRONMENTAL EXCELLENCE IN THE EFFICIENT DELIVERY OF TRANSPORTATION SERVICES.**
- **VISION: MEMBER ORGANIZATIONS HAVE THE TOOLS AND AWARENESS NECESSARY TO BE EXCELLENT STEWARDS OF THE ENVIRONMENT IN CARRYING OUT THEIR MISSIONS**

Center for Environmental Excellence Customer Service Areas

**Information
Sharing**

Training

**Technical
Assistance**



AASHTO Center for Environmental Excellence

One Stop Source of Environmental Information for Transportation Professionals

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Environmental Issues

- NEW** Air Quality
 - Construction & Maintenance Practices
 - Context Sensitive Solutions
 - Environmental Enhancements
- NEW** Environmental Justice
 - Environmental Management Systems
 - Historic Preservation/Cultural Resources
- NEW** Invasive Species
 - Land Use/Smart Growth
- NEW** NEPA Process
- NEW** Project Delivery/Streamlining
 - Secondary/Indirect & Cumulative Impacts
- NEW** Tribal Consultation
- NEW** Waste Management/Recycling/Brownfields
- NEW** Water Quality/Wetlands
 - Wildlife and Ecosystems

Resources

- NEW** Federal Agencies
- State Agencies
- Photo Gallery
- Research News
- Meetings & Events
- Other Web Links

The Center

- About The Center
- Technical Assistance Program
- Products & Programs
- AASHTO Web Links
- FHWA Web Links

Transportation/Environment Alert

- Highlights
- Subscribe Now!



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Center For Environmental Excellence
Technical Assistance Program Call for
Experts

[Call for Experts](#)
[Expert Application Review Criteria](#)
[Expert Application](#)

About The Center

The American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence has been developed in cooperation with the Federal Highway Administration to promote environmental stewardship and to encourage innovative ways to streamline the transportation delivery process. The Center is designed to serve as a resource for transportation professionals seeking technical assistance, training, information exchange, partnership-building opportunities, and quick and easy access to environmental tools.

[Learn More about The Center »](#)

Technical Assistance Program

The AASHTO Center for Environmental Excellence Technical Assistance Program offers a team of highly qualified and experienced experts on-call and ready to assist transportation and environmental agency officials in improving environmental performance and program delivery. The team members individually or as a team supply strategic environmental analysis and focused environmental management technical advice through short-term assignments.

[Learn More about the Technical Assistance Program »](#)

Center Products & Programs

- » [2006 National Competition for Best Practices in Context Sensitive Solutions \(CSS\)](#)
- » [2005 Context-Sensitive Solutions Competition](#)
- » [2004 Smart Growth Competition](#)
- » [2003 Best Practices in Environmental Stewardship Competition](#)
- » [2002 Smart Growth Competition](#)
- » [DOT-Funded Positions Report](#)
- » [Environmental Management Systems Products](#)

Center Technical Assistance

- Experts available to provide states with strategic advice on improving environmental performance and program delivery
- FHWA/AASHTO Environmental Management System (EMS) Technical Assistance Program

AASHTO-FHWA EMS Technical Assistance Program

Vision: Environmental considerations are systematically integrated into all transportation program delivery processes & decisions

Goal: To enhance transportation program delivery and environmental stewardship through the application of EMS plan > do > check > act concepts

Objectives: 1) To greatly increase the awareness & understanding of EMS concepts & sound business reasons for applying them & 2) To promote EMS technology transfer through technical assistance, networking, mentoring, & training

EMS Technical Assistance Program Service Areas

- On-Site EMS Orientation
- On-Site EMS Training Sessions
- On-Site EMS Work Plan Development
- EMS Development & Operation Mentoring

AASHTO/FHWA EMS Technical Assistance Application Process

Step 1-State DOT Completes On-Line
Application for Technical Assistance

Step 2-AASHTO & FHWA EMS Work Group
Evaluates, Scores, & Approves Application

Step 3-AASHTO & State DOT Develop
Technical & Cost Proposal for Technical
Assistance

Step 4-AASHTO & State DOT Execute a
Technical Assistance Agreement

Potential Construction EMS Focus Areas

- Incorporation of environmental commitments from planning & design
- Constructability of environmental measures in preliminary & final design plans
- Clarity of construction contract language covering environmental measures
- Constructability of environmental permit conditions

Potential Construction EMS Focus Areas-Continued

- Contractor pre-qualification requirements for environmental measures
- Construction inspection pre-qualification requirements for environmental measures
- Pre-bid conference coverage of environmental measures
- Pre-construction conference coverage of environmental measures

Potential Construction EMS Focus Areas-Continued

- Partnering agreements environmental measures
- Construction work plan & schedule environmental measures
- Utility relocation plan environmental measures
- Construction environmental monitoring & reporting requirements
- Construction borrow, waste, & staging areas environmental measures

Potential Construction EMS Focus Areas-Continued

- Contractor value engineering proposal environmental measures
- Construction plan modification environmental measures
- Construction budget environmental measures
- Construction inspection of environmental measures

Potential Construction EMS Focus Areas-Continued

- Construction material testing environmental measures
- Use of environmentally friendly (recyclable, non-toxic) construction materials
- Incentives & disincentives for environmental measures
- As built drawings of environmental measures

Potential Areas to Integrate Environmental Protection & Enhancement Measures

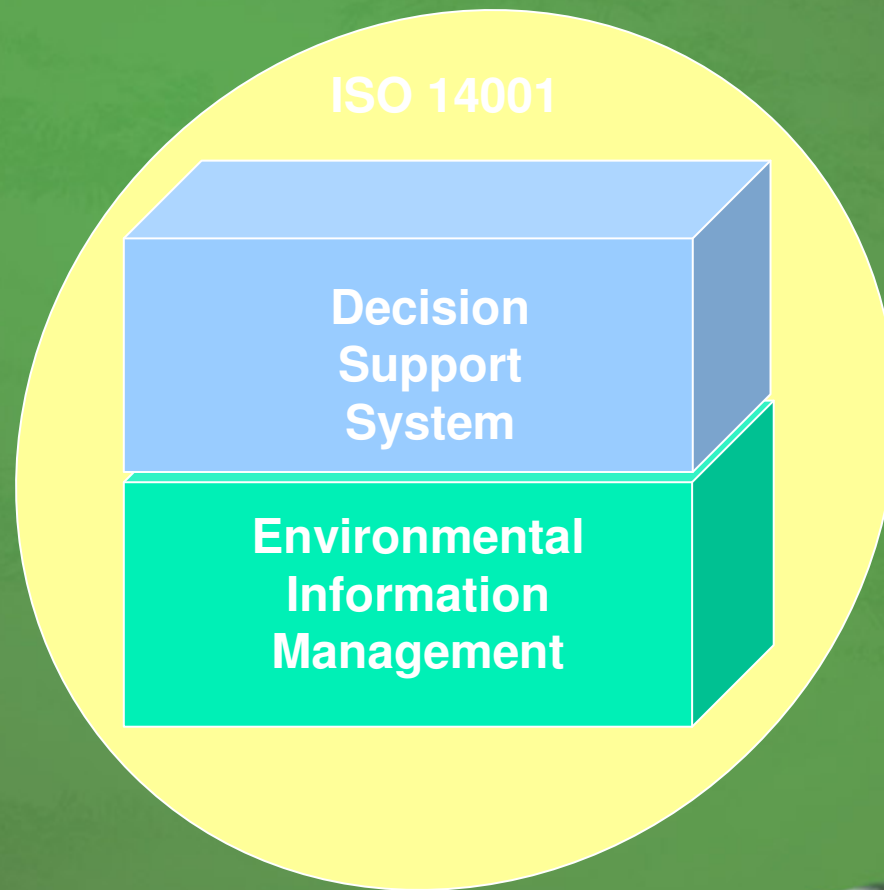
- Agency & construction organization business plan & budget
- Construction management system
- Construction specifications
- Construction office & field manuals
- Construction policies & procedures
- Construction training program
- Construction QC/QA program
- Construction work plans
- Contractor pre-qualification

Environmental Information Management & Decision Support System (EIM & DSS)

NCHRP 25-23(2)-Software for an EIM & DSS

Objective: To design, test, & demonstrate a prototype software for an EIM & DSS that builds on the concepts presented in NCHRP Report. 481. The software shall support decisions in transportation planning, programming, project development, operations, and maintenance.

The EIM&DSS Fits into The ISO 14001 Framework:



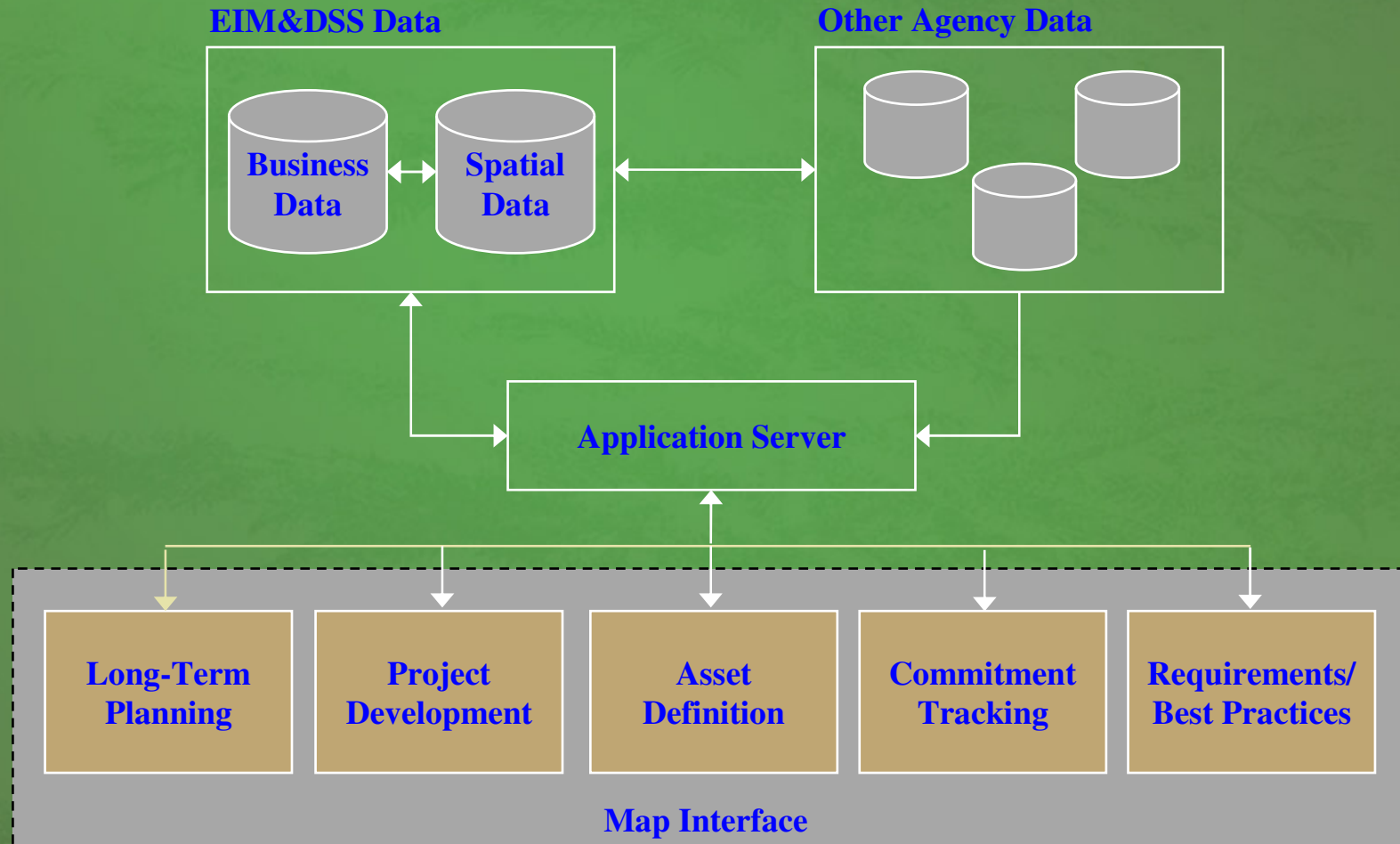
ISO 14001 EMS Definition

- The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

EPA EMS Definition

- A set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency

EIM & DSS System Concept



EIM & DSS System Design Key Points

- Web-based system
- Flexible data structure
 - Allow agencies to configure specific attributes for each entity (e.g., plan, project, asset)
 - Use basic set of tables for planning, project development, & maintenance

EIM & DSS System Design

Key Points-Continued

- Mapping
 - Map interface supported for display and selection
 - Useful but optional –fully functional without the map
- Use of document links to provide a level of integration with other systems and data

EIM & DSS Main Screen & Navigation (From Report 481 Concept)

Planning **Select a module or a location**

Programming

Project Dev.

Maintenance


Operations

Closure

Mitigation & Enhancement

Compliance

GIS



Admin

Workflow

Content Mgmt.

Reports

Documents

Regulations

Public Involv.

Models

BMPs

System Design Screen Schematic

Environmental Information Management and Decision Support System

Hello, William E. Robert! Log Off

Planning

Program and Project Development

Assets

- List of All Assets
- Maintenance Facility List**
- Highway Segment List
- Bridge List
- Add New Maintenance Facility
- Add New Highway Segment
- Add New Bridge

Alternatives

Requirements/Best Practices Sets

Documents

Links/FAQ/Contacts

Log Off

Maintenance Facilities Map Selected Assets

	Type	Description
Select	Maintenance Facility	Sample Maintenance Facility
Select	Maintenance Facility	MEADOWVALE CREEK CULVERT
Select	Maintenance Facility	REG. RD 25 IC-320-MILTON
Select	Maintenance Facility	Noise Barrier - Site B (North Side) - We
Select	Maintenance Facility	Noise Barrier - Site 11 (South Side) - E
Select	Maintenance Facility	COBOURG CREEK BRIDGE
Select	Maintenance Facility	THEATRE RD OP
Select	Maintenance Facility	GAGES CREEK CULVERT
Select	Maintenance Facility	WOODROFFE AV IC-127-OTTAWA
Select	Maintenance Facility	Fast System on Madawaska Bridge

Unselect All Total number of facilities: 183 Selected total: 3 Selected on this page: 3

Initial Map Zoom Out Zoom In Pan Info



Layers:

- Sinkhole Area
- Water Area
- County Borders
- Highway Network
- Railroad
- Maintenance Facility
- Bridge

Zoom in to display all layers

Map layers

- Sinkhole Area
- State (Medium)
- Interstate Highway

0 40 80 120
Miles

EIM & DSS System Design Modules

- Long-term planning
 - Defining of long-term plans and plan alternatives, along with associated environmental management data
 - Detailing environmental analyses performed for a plan and the impacts determined from an analysis
 - Detailing public involvement steps and actions for a plan
 - Associating plans and projects

EIM & DSS System Design Modules- Continued

- Project development
 - Defining projects and project alternatives, along with associated environmental management data
 - Detailing environmental analyses performed for a project and the impacts determined from an analysis
 - Detailing public involvement steps and actions for a project
 - Associating projects and assets

EIM & DSS System Design Modules- Continued

- Asset definition
 - Viewing and editing data for roads, bridges and/or other assets, as well as associated environmental management data
 - Detailing any analyses, impacts, or public involvement steps for an asset (e.g., for a maintenance facility)
 - Associating assets with map features

EIM & DSS System Design Modules- Continued

- **Commitment tracking**
 - Detailing commitments and related actions
 - Associating commitments with a specific plan, project or asset

EIM & DSS System Design Modules- Continued

- Requirements/Best Practices
 - Detailing requirements and/or best practices associated with environmental management
 - Grouping requirements/practices into sets
 - A plan, project or asset alternative can have a requirement set associated with it

EIM & DSS Content Management is a Critical Success Factor

- Assure that the value of data exceeds the cost of data collection over the full life cycle of the data
- Assure the quality and completeness of the data
- Assure that responsibility is assigned for data collection, updating, and maintenance for the full life cycle of the data
- Assure that the financial resources are available to maintain the data over the lifecycle of the data

EIM & DSS Software Status

- Schedule
 - Fall 2006 – Project Finalized
 - Early 2007-Potential AASHTO Ware Pooled Fund Project Solicitation to Deploy Software

EIM & DSS Software Contact Information

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Thank You!

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