1

Introduction to Bridge Management

29 Feb- 2 Mar, 2000

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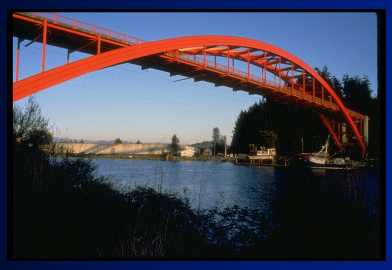
Thank You For Coming!



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Introductions

Host Agency: Michigan DOT

Your Instructors:

- **Ray Hartle**
  Michael Baker Jr., Inc.
- **Paul D. Thompson**
  Consultant

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Sponsorship

- Michigan Department of Transportation
- FHWA
- National Highway Institute

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Logistics

- Course Times: 8am - 5pm Tues-Thurs
- Incidentals

Incidentals

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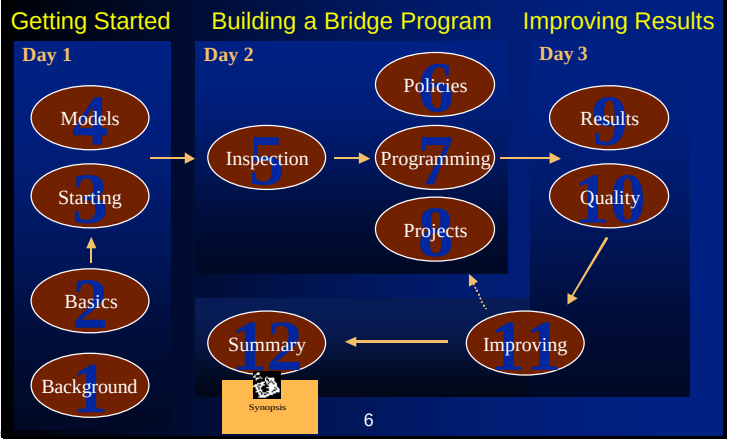
Course Structure and Workflow



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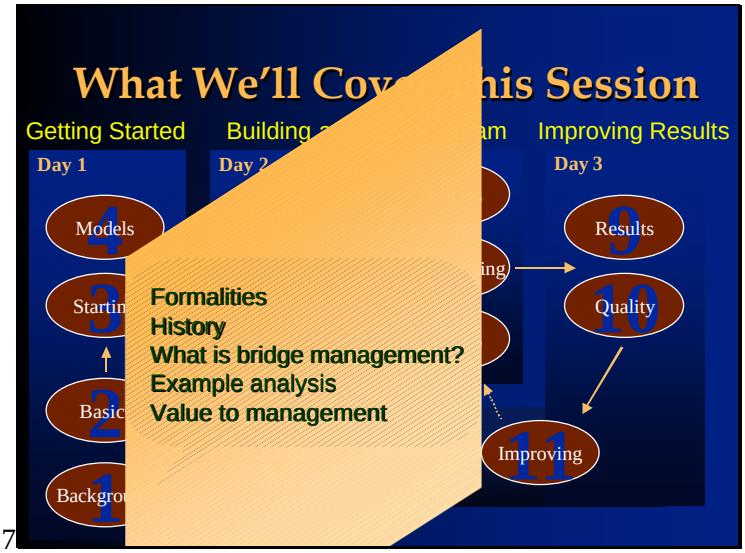
What We'll Cov his Session
Getting Started
Building
am
Improving Results
Day 1
Day 2
Day 3
Models
Startin
Basic
Backgro
Results
Quality
Improving
Formalities
History
What is bridge management?
Example analysis
Value to management

8


History
How Bridge Management Came
To Be What It Is
8

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National Bridge Inventory
Inventory
Defense
Dimensions
Design
Structural appraisal
Functional appraisal
Traffic
Rationale
9

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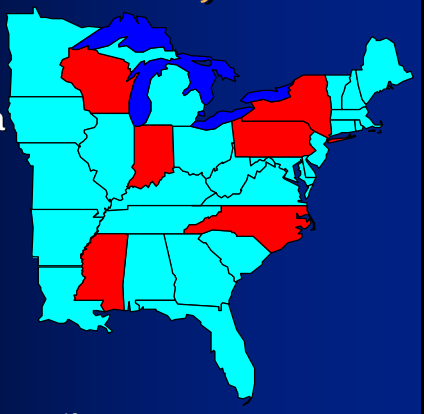
Major State Projects

- Wisconsin
- North Carolina
- Pennsylvania
- New York
- Alabama
- Indiana



Details

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Major National Projects

- FHWA Demonstration Project 71
  - Report DP-71
  - Pontis
- NCHRP Project 12-28(2)
  - Report 300
  - Bridgit

Details

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International Contributions

- Denmark (DanBro)
- Finland (SIHA)
- Ontario
- Switzerland (KUBA)
- Sweden (SAFE)

Details

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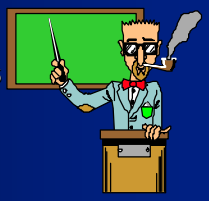
AASHTO BMS Guidelines

- Required Ingredients
- Alternative Approaches
- Implementation Steps
- Database Management
- Potential Enhancements
- Glossary



Contents

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CoRe Elements

- Commonly-Recognized Elements
- Standardized Definitions
  - Elements (Components) of Bridges
  - Visual Condition States
  - Feasible Actions

Examples

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ISTEA and Management System Regulations

- Intermodal Surface Transportation Efficiency Act of 1991
- Seven Systems Required
- Must Inform Statewide Planning
- Must Include Locals

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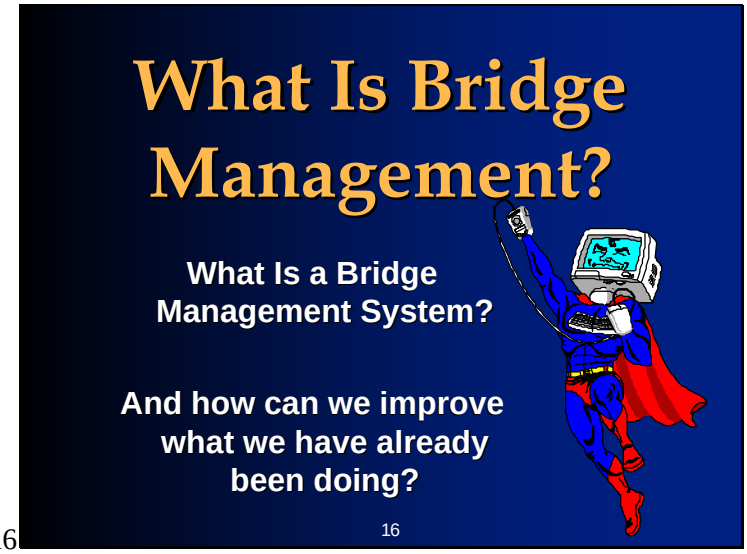
What Is Bridge Management?
What Is a Bridge Management System?
And how can we improve what we have already been doing?
16

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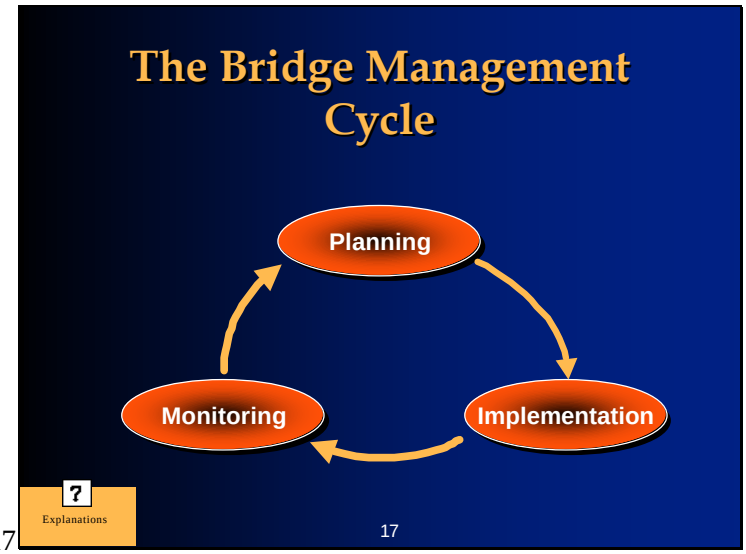
The Bridge Management Cycle
Planning
Implementation
Monitoring
Explanations
17

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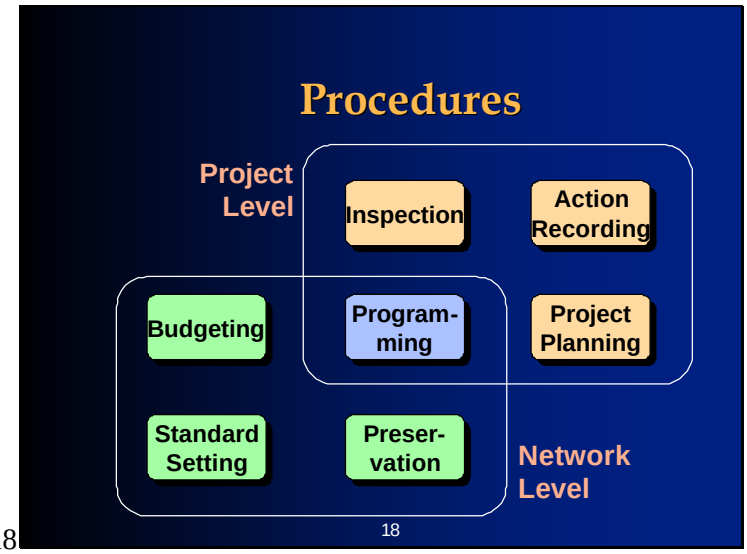
Procedures
Project Level
Inspection
Action Recording
Budgeting
Program-ming
Project Planning
Standard Setting
Preser-vation
Network Level
18


Objective Analysis
• Measurable
• Repeatable
• Consistent
• Testable
• Defensible
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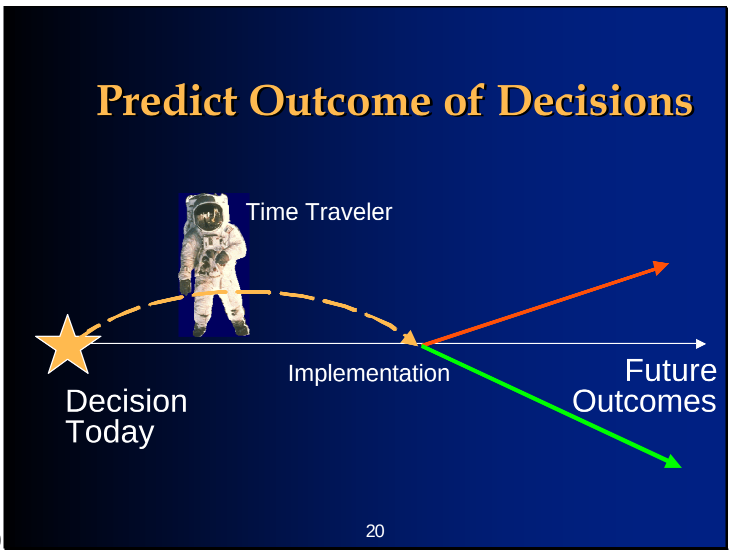
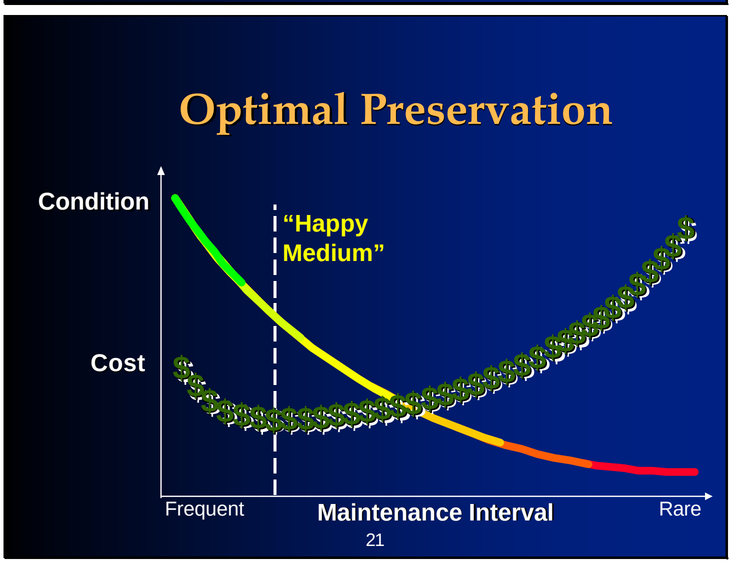

Predict Outcome of Decisions
Time Traveler
Implementation
Future Outcomes
Decision Today
20

20


Optimal Preservation
Condition
"Happy Medium"
Cost
Frequent
Maintenance Interval
Rare
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Data Collection and Processing

- Inventory
- Inspection
- Traffic
- Safety
- Past Actions

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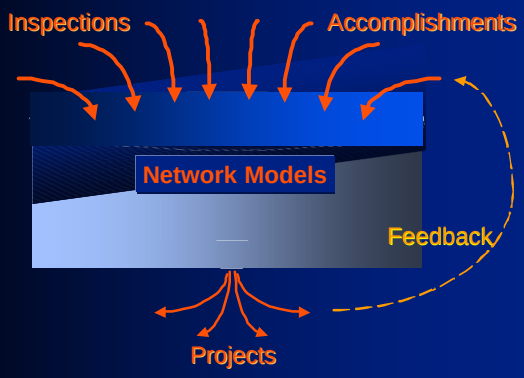
Analysis Workflow



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Continuous Improvement of Decision-Making

- Learn About Your Inventory
- Update Predictive Models Based On Experience
- Research Current Problems
- Keep Pushing the State-of-the-Art

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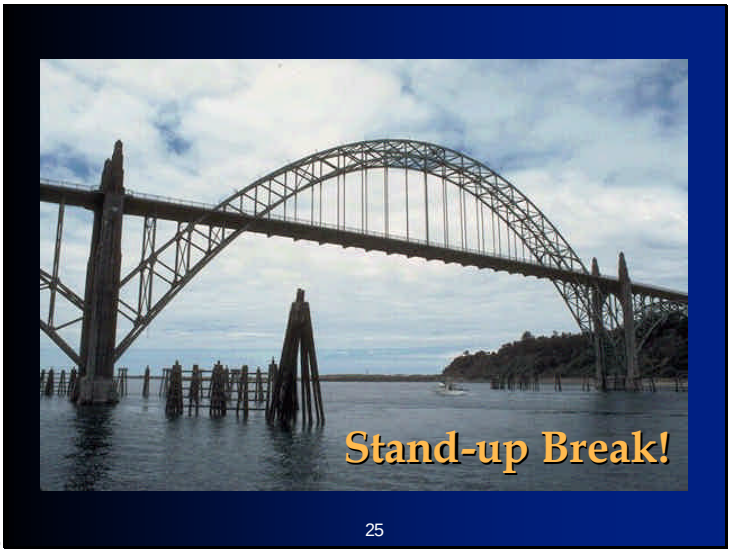

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Example Analysis

Example Analysis
Concrete girders, Severe environment (150,000 meters)

Year: 0

Condition State	Percent	Action	Unit Cost	Total Cost
1 No deterioration	80.9%	0 Do nothing	0	0
2 Spalls/Cracks	17.2%	1 Seal,patch	2	51583
3 Exposed Rebar	1.8%	1 Clean,patch	6	16116
4 Section Loss	0.1%	1 Rehab	50	7868

Reset | Cost 6 | No Seal | Next Year | Finish | 75567

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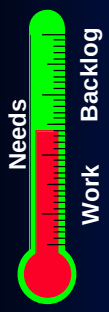
Summary: Management Value



What BMS must support:

- Strategic uses of limited funding
- Resource allocation
- Justify funding requests

How BMS must do it:

- Screen many alternatives quickly
- Predict outcome of decisions
- Focused views of bridge program
- Support quality improvement

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Example BMS Questions

- Bridge Condition and History
- Implications of Project Decisions
- Priorities and Schedules
- Budget Size and Tradeoffs
- Cost of Alternative Standards
- Value of Preventive Maintenance

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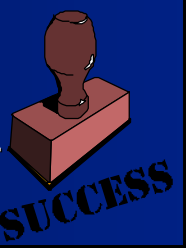
Critical Success Factors

- Top Management Support
- Adequacy of Inspection Program
- Maintenance and Contract Management Feedback
- Data Sharing
- Quality Control
- Bridge Management Leader



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...Next: Bridge Management Systems

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