NATIONAL BRIDGE ELEMENT IMPLEMENTATION

Western Bridge Preservation Partnership Meeting
May 9th, 2012

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What is Pontis?

- Powerful Bridge Management Analytical Software Tool
  - Organize the bridge inventory
  - Allow for entry and storage of inspection data
  - Develop a preservation policy
  - Simulating future bridge conditions
  - Developing a bridge program
Pontis Basics

• Development started in the early 1990’s under FHWA guidance
• Result of many millions invested by states and FHWA
• Part of AASHTOWARE – BRIDGEWare software
• Licensed by over 40+ states
• Supports AASHTO element level inspection and management
Versions

• Version 5.1.2
  • Microsoft .NET
  • Standalone (.NET) or Enterprise Web Based Application
  • NBEs/BMEs
  • Only Inspection software
  • Management depends on 5.2
  • Released March 2012

• Version 5.2
  • Microsoft .NET
  • Standalone (.NET) or Enterprise Web Based Application
  • NBEs/BMEs
  • Advanced Bridge Management Software
Why Change?

- Computer Technology Answer:
  - Have to stay up with technology to support user base
  - New Operating Systems (64 Bit)
  - New Database
  - New Programming Languages
  - New Protocols/Standards
  - Internet

- Better performance, enhanced capabilities, and more features.
Why Change?

• Element Answer:
  • In early 2011 AASHTO officially adopted the AASHTO Guide Manual for Bridge Element Inspection
  • New elements (CoRe -> NBE)

• Provides a foundation for improving bridge management
• Incorporate 15+ years of extensive user comments
• Simplify for usability and capability
• Better align with state DOT business practices
NBEs/BMEs

• National Bridge Elements (NBEs):
  - Form the core, fundamental parts of the bridge
  - Minimum that will be required to be reported to FHWA
  - Cover items such as Girders, Deck, Abutment
  - Can not be changed by an agency

• Bridge Management Elements (BMEs):
  - Used to help model other parts of the bridge
  - Cover items such as: joints, wearing surfaces
  - Agency may add, edit, delete BMEs

• Protective Systems and Defect Flags
NBEs/BMEs

- Parent/Child relationship established
- All elements now have 4 condition states
- Defect flags applied at the element level instead
- Defect flag language included with the parent element description
- Elements can be set to deteriorate or not

- Great flexibility and supports what is needed for the bridge management modeling
NBEs/BMEs

- Included in draft Highway Bills
  - Mandatory NHS Bridges
  - Study for NHS Bridges
- Foundation for new FHWA NBI
- Change is coming

S.1813

AN ACT

To reauthorize Federal-aid highway and highway safety construction programs, and for other purposes.

Be it enacted by the Senate and House of Representativ
Federal Requirements

“(d) INVENTORY UPDATES AND REPORTS.—

“(1) IN GENERAL.—The Secretary shall—

“(A) annually revise the inventories authorized by subsection (b); and

“(B) submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate a report on the inventories.

“(2) INSPECTION REPORT.—Not later than 1 year after the date of enactment of the MAP–21, each State and appropriate Federal agency shall report element level data to the Secretary, as each bridge is inspected pursuant to this section, for all highway bridges on the National Highway System.
The Basics of Pontis 5.1.2

- Pontis 5.1.2
  - Built off of the existing 5.X architecture (5.11/5.1.03)
  - Add support for new AASHTO National Bridge Elements
  - Assorted minor enhancements
  - “Features release”
- Goal: Allow for NBE/BME inspections to be done with Pontis and lay the foundation for 5.2 (management).
Graphical User Interface
New Feature – NBE/BME Elements

• Newly adopted bridge element standard that replaces CoRe elements for element level bridge inspections

• Fully supported in Pontis starting with version 5.1.2

• CoRe elements still visible in Pontis but all new inspections will be NBE/BME
New Feature – Protective Systems

- Parent/child relationships
- Easily identifiable through icons
New Feature – Multi File Uploads

- Ability to upload multiple Files at once
New Feature – XML Export/Import

• XML is an industry standard format for saving and transferring data

• PDI is still available option for exporting/importing data
New Features – User Requested Features

- Integrated Guide Manuals

- Easy access to past CoRe elements
New Feature – On Demand Lists

- Performance improvement for agencies with large databases, from 70 sec load time to 7 sec load time
- Filter bridges as you type
Pontis 5.1.2 Foundation for 5.2

• Lays element level foundation
• Starts technology updates
• New database tables and relationships started
• Starts agencies on a multi-year migration process
What is in Pontis 5.2?

• Builds off capabilities of existing Pontis versions
• Completely replaces and rewrites many previous modules
• Some significant areas:
  • Full incorporation of risks
  • Multi-objective analysis
  • Enhanced deterioration models
  • Life cycle cost analysis
  • Bridge level analysis
  • Project and Program Planning
  • Enhanced reporting
  • New data exchange
Multi-objective bridge modeling and prioritization framework

- Ability to evaluate and prioritize multiple objectives (current and future conditions, risks, and safety) simultaneously across all bridges.
- Better fit to agency workflow and business practices
Replacement of the project planning module

- Advanced analysis capabilities to for life cycle cost analysis, multi-objective comparisons and expected performance measures for the projects being created
- Performance measures for expected condition improvement, risk reduction, safety improvement and related economic evaluation
Incorporation of risks definitions

- Ability to define bridge risks at the bridge level
- Support for user-defined risks to be considered
- Ability to define multiple risks for any bridge
- Consideration given based on the risk potential and consequences
Risk Assessments
Improved cost estimating for bridge replacements

- Improved replacement recommendations coming from future years deterioration simulations to consider roadway level of service needs and current design standards in determining the proposed width, length and cost of the replacement bridge.
- Ability to “opt-out” historic bridges
- Better models for culvert cost estimates
Support for “corridor” based and geographically proximate project development

- Ability to define a collection of bridges (on a route, in an interchange, etc.) that will have their needs queried, evaluated and packaged as a group to take advantage of economies of scale.
- Improved project development process and cost savings for the agency
### Bridge Groups

#### Network Corridor List

**Corridor Filter**
- Corridor Name: 7-Axle Right Bridge Style
- Replace Template Set: 7-Axle Right Bridge Style
- Wide Template Set: Automatic

**Roadway Characteristics**
- Roadway: Other
- Roadway: On System Bridges
- Roadway: Other

**Project Characteristics**
- Project Name: Central Valley Flood Control
- Project ID: D05.02.34.067
- Assigned to Program: Federal Bridge
- Program Category: Highway
- Program: 940
- Subject: On System Bridges

**Bridge Group**
- 11- Lane Governor Bridge

<table>
<thead>
<tr>
<th>Bridge Group</th>
<th>District</th>
<th>Bridge Corridor District</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- Lane Governor Bridge</td>
<td>11- Lane Governor Bridge</td>
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</tr>
</tbody>
</table>
Who/How will Pontis 5.2 be Done?

- AASHTO BRIDGEWare Task Force
- AASHTO Staff
- Pontis Technical Review Team (TRT)
  - Assist in evaluating technologies and making detailed recommendations
- Pontis Users Group
- Contractor (InspectTech)

- Multiple groups/people working toward the same goal.
Solicitation

- States are asked to help support 5.2 development
- Significant advantages to participating states:
  - TRT participation
  - On-site training/assistance
  - Early knowledge and implementation
  - Staff expertise considerably increased
When will Pontis 5.2 be available?

• Development on 5.2 has started!
• Phased releases
  • Version 5.2.1
    • Core program framework, risk assessments, integrated utility functions, network corridors
    • October 2012
  • Version 5.2.2
    • Implementation of new deterioration models and multi-objective analysis
  • Version 5.2.3
    • Integrated project and program planning
    • All administrative features

Completion and delivery of the final phase (5.2.3) is expected by January 2015.
Advantages of Pontis

• Full support and maintenance provided by AASHTO.
• Enhancements and features are fully coordinated with AASHTO guidelines.
• Incorporation of FHWA regulatory requirements.
• Development administered and overseen by a task force of State DOT representatives. (Software created by DOTs for DOTs)
How do I stay updated?

Enhanced Communication Options:

- Webinars
- Email list
- Twitter/Facebook
- Pontis website (http://pontis.inspecttech.com/)

- Just Ask!
Webinar Series

http://www.youtube.com/user/PontisBridge
Webinar links on website:

http://pontis.inspecttech.com/
Next Webinar:
Advanced Inspection Module Training

• Using the Pontis built in customization features
  • Adding in your own custom reports to Pontis
  • Adding in custom developed screen/forms into Pontis
  • Tips for developing agency custom elements in Pontis
  • Changes to the administrative module in Pontis 5.1.2

Date: Wednesday May 16th
Time: 11:00 - Noon (EST)

To Register use link:
• https://www4.gotomeeting.com/register/671193535
QUESTIONS

http://pontis.inspecttech.com/