June 25, 2019
Agenda

• Bridge Management
  • BrM 6.2 Features
  • BrM Hosting Services
  • BrM 6.3 Inside Look
FY2019 BrM Licensees

<table>
<thead>
<tr>
<th>County/City</th>
<th>State</th>
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<tbody>
<tr>
<td>Los Angeles Co</td>
<td>CA</td>
</tr>
<tr>
<td>City of Phoenix</td>
<td>AZ</td>
</tr>
<tr>
<td>Penn. Turnpike</td>
<td>PA</td>
</tr>
<tr>
<td>Richmond Metro Auth</td>
<td>VA</td>
</tr>
<tr>
<td>FHWA</td>
<td>DC</td>
</tr>
</tbody>
</table>

42 State Departments of Transportation
+ District of Columbia & Puerto Rico

Map Key
- Licensee
- Non-Licensee
BrM 6.2 Features

• Added Web Services functionality for future communication and data sharing with AASHTOWare Bridge Rating (BrR).

• Added Program Comparison tool for comparing similarities and differences of the two programs.

• Added the “23 Metric Report – As of Date” report that determines the level of FHWA compliance for each selected bridge as of the selected date.

• Various bug fixes and miscellaneous items.
AASHTOWare Bridge Integration through Web Services

- Funded by the AASHTOWare Research, Innovation, and Product Improvement (RIPI) Program

- **Phase 1** complete with BrM 6.0 release
  - Framework ready and available within BrM.
  - BrM has ability to send and receive load rating information to and from BrDR.

- **Phase 2** planned for completion with BrDR 7.1 release in 2020
  - Complete the same framework in the BrDR software as already completed in BrM.
  - Will have the interface and ability to send and receive load rating information to and from BrM.
Program Comparison Tool

• Allows users to quickly compare two large data sets that were produced by two separate program optimizations

• Determines what is the same, what is different, and how different are the selected programs

• Analysis is provided and comparable in list as well as graphical output
Program Comparison Tool

Program 1: TAMP1-SGR-ALL-ST-MAINT-NBIS_JBE, Scenario 1: TAMP1-SGR-ALL-2B vs Program 2: TAMP1-SGR-ALL-ST-MAINT-NBIS_JBE, Scenario 2: 2tn per year by Deck Area

Year: All Years, Subdivision: All Subdivisions, Category: All Categories

- Same in Both
- Same Work Dil Yrs
- Same Bridge Dil Work
- Unique to Program
Program Comparison Tool

Program 2: TAMP1-SGR-ALL-ST-MAINT-NBIS_JBE, Scenario 2: 2tn per year by Project Cost Total

Year: All Years, Subdivision: All Segments, Category: All Categories

Same Work Dif Yrs

Unique to Program

Same in Both
23 Metric Report – As of Date

Determines the level of FHWA compliance for each selected bridge as of the selected date.
BrM Hosting

A hosted BrM application improves the user experience by:

1. Allowing BrM users to focus on asset management, not software upkeep;

2. Generating faster support and resolution of issues as Mayvue doesn’t have to acquire the state’s database to begin troubleshooting;

3. Eliminating the need for the BrM users to participate in the troubleshooting;

4. Removing wasted time waiting for your IT department to step in and help;

5. Testing the BrM site in your State’s exact environment (shared workspace);
6. Receiving regular software updates at your discretion;

7. Eliminating user concerns about running the correct upgrade scripts or if a patch was applied correctly;

8. Allowing States to take advantage of latest software features / functionalities without delay;

9. Creating a separate test environment for the State to test upcoming releases;

10. Allowing experts to ensure your site is running at its optimal performance.
BrM 6.3 Release

• Planned for Fall 2019

• Key Features
  • Inspection Scheduler
  • Component Level Deterioration
  • Scheduled Processes
  • Tunnel Work Candidates
BrM 6.3 Release – Inspection Scheduler

• Assign and manage upcoming inspections

• Highlight which bridges have inspections due within a defined range of time (e.g. 2 months, 7 months, or 12 months)

• Allows managers to more efficiently manage their groups, assigned bridges, and tasks
BrM 6.3 Release – Inspection Scheduler Continued

- Opens window to create new team and add users to it
- Chart showing number of inspections by type for each month
- List of structures assigned to the current group
- Show previous assignments
- Currently active team assignments to the current group

AASHTOWare Bridge Management
www.AASHTOWareBridge.com
BrM 6.3 Release – Component Level Deterioration

• Formerly called NBI Deterioration

• Allows users to evaluate multiple deterioration profiles for each component of a bridge

• Users can configure their own model parameters to create a custom profile that will be applied on a per bridge basis when modeling

• Development of this enhancement is being spearheaded by Michigan and Texas DOTs
BrM 6.3 Release – Scheduled Processes

• Schedule certain BrM services to be run at regularly scheduled intervals (e.g. weekly or monthly)

• Run scheduled process-intensive tasks (e.g. sufficiency rating calculations) during off peak hours

• Designated personnel will be notified by email confirming successful completion of the process

• Champions are the Alabama and Virginia DOTs
BrM 6.3 Release – Tunnel Work Candidate

• High priority enhancement identified by multiple states

• Functions similar to the Bridge work candidate page, but will use multi-asset actions

• Establishes the framework for the future state of BrM where other asset types can easily be included (e.g. walls and signs)
Agenda

- Modernization status
- Enhancements in 2020 7.1 release
- Data integration endeavors
- BrDR presentations
- Task Force members
- User Group meetings
Bridge Rating Licensees (FY19)

City/County/Territory
- Kansas Turnpike
- NY State Thurway
- Army Corps of Engr
- 9 Cities
- 99 Counties

Other
- 14 Universities
- 673 Consultant

Map Key
- Non-Licensee
- Licensee

35 State Departments of Transportation + Manitoba, District of Columbia & Puerto Rico
Bridge Design Licensees (FY19)

<table>
<thead>
<tr>
<th>Country</th>
<th>Licensees</th>
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<tbody>
<tr>
<td>Manitoba, Canada</td>
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<table>
<thead>
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<tbody>
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<tr>
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<tr>
<td>Consultant Licenses</td>
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<tr>
<td>Non-Licensee</td>
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</tr>
</tbody>
</table>

Map Key:
- **Licensee**
- **Non-Licensee**
- **Consultant Licenses**
Release since last annual meeting

- 6.8.3 release – October 2018
- Modernization Phase 1
  - Legacy user interface coupled with both the legacy and modernized analysis modules
Coming releases

- Modernization Phase 2 – Summer 2019
- 6.8.4 release
  - MBE 3rd Edition with 2019 Interim and bug fixes
- Last release of the legacy system, and maintenance, specification updates, and support will cease effective June 30, 2021
Coming releases (Cont’d)

- **6.8.4 release**
  - Only critical bug fixes will be incorporated into 6.8.4 going forward

- **7.0 release**
  - Modernized user interface coupled with the modernized analysis module
  - Also includes 3 Load Rating Tool enhancements
Coming releases (Cont’d)

- 7.0 Beta testing
  - Beta TAG kicked off testing on March 19
  - Beta 3 released on June 3
  - Modernized system has more than 2 million lines of code, user interface has more than 800 windows
7.0 Beta testing

Strategy is to divide and conquer based on structure types, configurations and features

32 Beta testers from 18 agencies

Identify testing gaps to be filled by third-party testing
### Divide and conquer

#### Coming releases (Cont’d)

<table>
<thead>
<tr>
<th>Design</th>
<th>Rating</th>
<th>No Coverage</th>
<th>Design</th>
<th>Rating</th>
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<tbody>
<tr>
<td>PS I-beam</td>
<td>PS U-beam</td>
<td>PS Box (adjacent and spread)</td>
<td>PS T-beam</td>
<td>RC T-beam, I-beam</td>
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<tr>
<td>Steel Rolled Beam (Schedule Based, Cross Section Based)</td>
<td>Steel Plate Girder (Schedule Based, Cross Section Based)</td>
<td>Steel Built Up (Cross Section Based)</td>
<td>Timber</td>
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<tr>
<td>Girder System Bridges</td>
<td>Girder Line Bridges</td>
<td>Floor system Superstructures</td>
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</table>
Next release

- 7.1 release – Summer 2020
- Specification updates and bug fixes
- Modernization “Phase 3”: New features and feature enhancements
  - Total 38 tasks plus additional to be determined Maintenance and User Group enhancements
Next release (Cont’d)

- Prestressed Concrete Design Tool (Phase 2)
  - Design all the beams in the cross section with additional design parameters like iteration on number of beams
  - Line definition entry with user-defined live load distribution factors and dead loads
Next release (Cont’d)

- Prestressed Concrete Design Tool (Phase 2)
  - Provide structural framing plan, typical section and beam profile schematics
  - Create a camber table that includes the PCI multipliers
  - Compute stability checks for transport
Next release (Cont’d)

- Steel Plate Girder Design Tool
Next release (Cont’d)

- AASHTO Timber Engine
  - Replace MADERO plus…
  - LRFR capability
  - Support timber glulam beams
  - Axle weight reduction for timber deck rating per AASHTO Standard Specifications
Next release (Cont’d)

- Improved and additional reporting capabilities
  - 17 recommendations from BrDR Report TAG
- BrM Web Service Integration
Data integration endeavors

- FHWA Bridge Information Modeling Standardization (HIF-16-011)
  - Evaluated AASHTOWare IFC Bridge Converter
- TPF-5(372) Building Information Modeling for Bridges and Structures
  - Member of the Software Advisory Group
## Task Force members

<table>
<thead>
<tr>
<th>Chair</th>
<th>Todd Thompson</th>
<th>South Dakota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vice Chair</td>
<td>Eric Christie</td>
<td>Alabama</td>
</tr>
<tr>
<td>Member – BrM</td>
<td>Beckie Curtis</td>
<td>Michigan</td>
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<tr>
<td>Member – BrM</td>
<td>Craig Nazareth</td>
<td>Rhode Island</td>
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<tr>
<td>Member – BrM</td>
<td>Kent Miller (Bruce Novakovich)</td>
<td>Nebraska</td>
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<tr>
<td>Member – BrM</td>
<td>David Hedeen (Mark Faulhaber)</td>
<td>Minnesota</td>
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<tr>
<td>FHWA Liaison – BrM</td>
<td>Derek Constable</td>
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<tr>
<td>Member – BrD</td>
<td>Dean Teal</td>
<td>Kansas</td>
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<td>Mark Bucci</td>
<td>Louisiana</td>
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<td>Member – BrR</td>
<td>Joshua Dietsche</td>
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<td>Vinacs Vinayagamoorthy</td>
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<td>Mike Johnson</td>
<td>Idaho</td>
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<tr>
<td>FHWA Liaison – BrDR</td>
<td>Tom Saad</td>
<td>FHWA</td>
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User Group meetings

Bridge Design and Rating

► RADBUG

July 30-31, 2019, South Lake Tahoe, CA

Bridge Management

► BrMUG

September 17-18, 2019, Louisville, KY
Thank You!