

AASHTOWare Bridge Rating Tool Demonstration



AASHTOWare Bridge Rating/Design
User Group Meeting
Boise- August 2018



Presentation Outline

- Introduction
- Capabilities
- Use Cases
- Procedure
- Demo
 - Configuration
 - Precomputed Data
 - Operation
- Future Enhancements



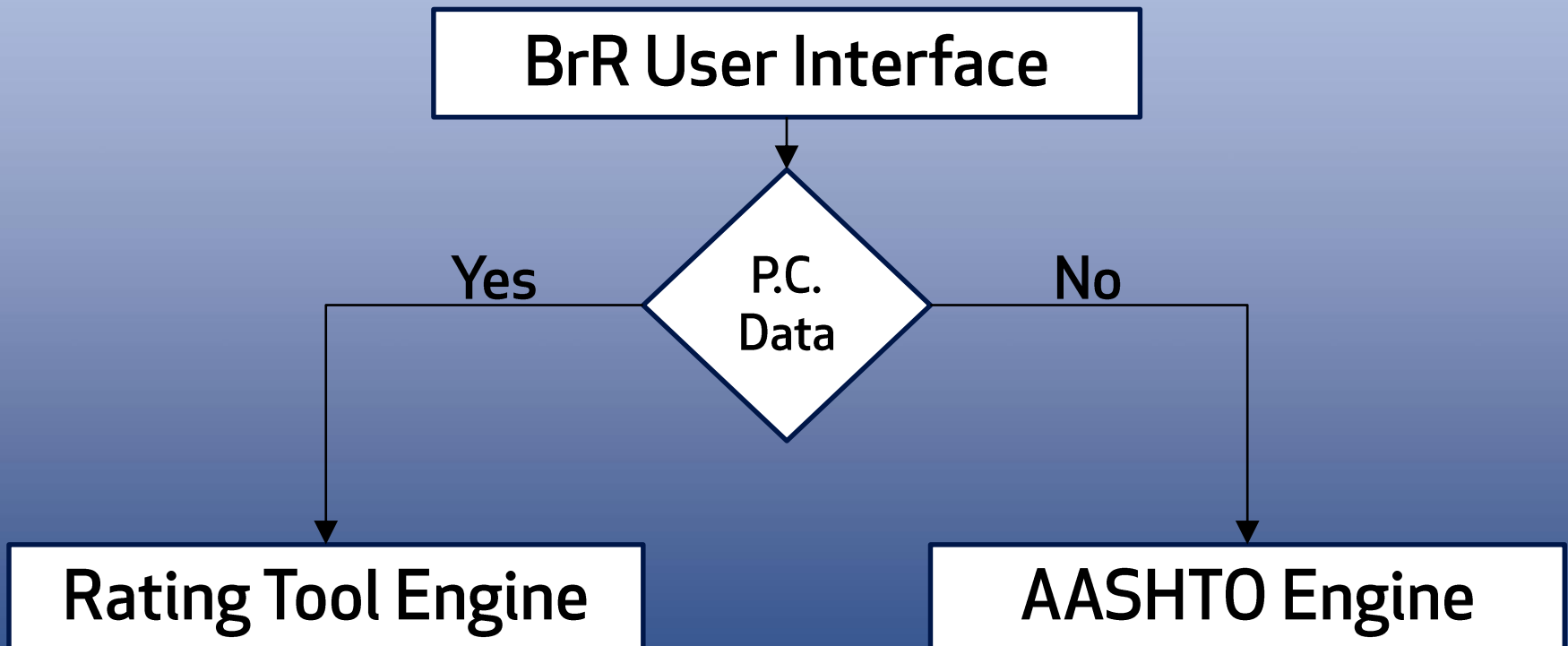
Capabilities – Phase 1

- LFR rating
- Structure Types
 - Reinforced concrete multi-girder
 - Prestressed concrete multi-girder
 - Steel multi-girder
- Standard gage analysis based on distribution factors
- Minimal reporting (for performance consideration)
- Seamless integration into existing Analysis API
- Web Services (integration with permit routing)



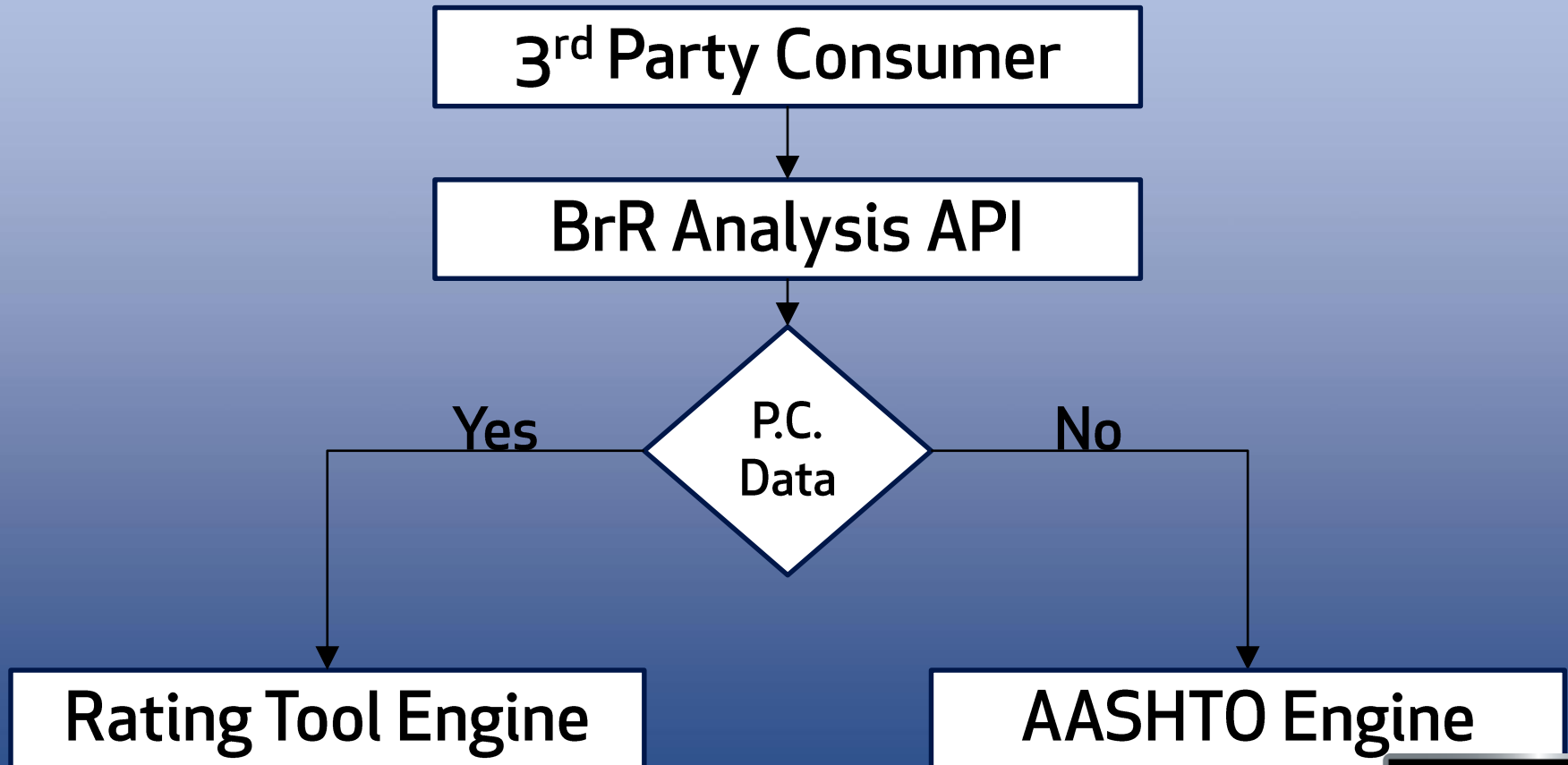
Use Cases

- UC1 - User Interface



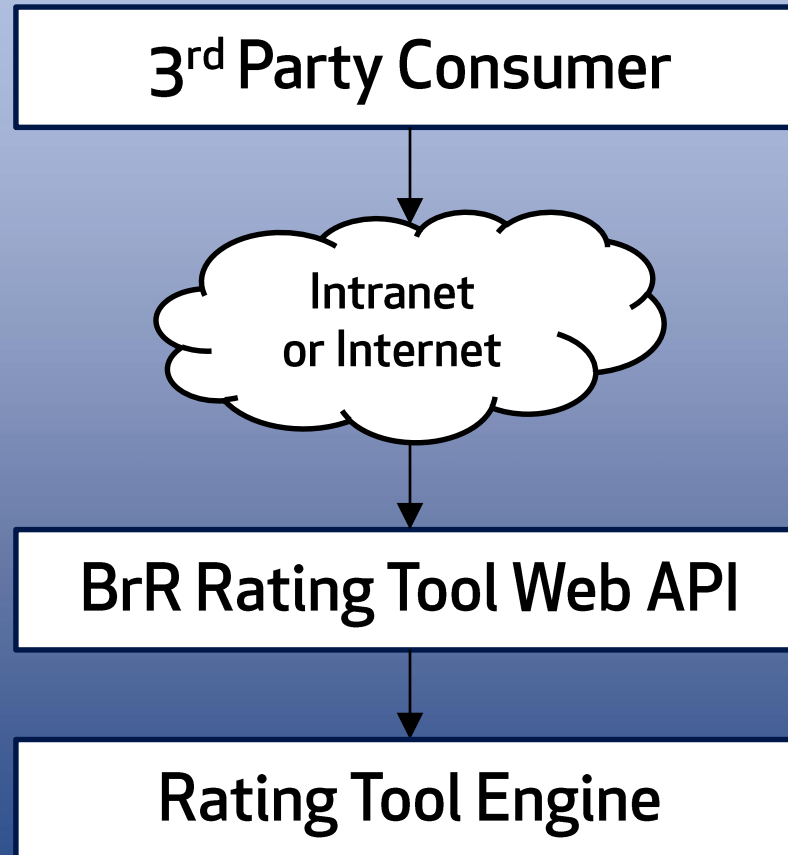
Use Cases – Cont'd

- UC2 - Analysis API



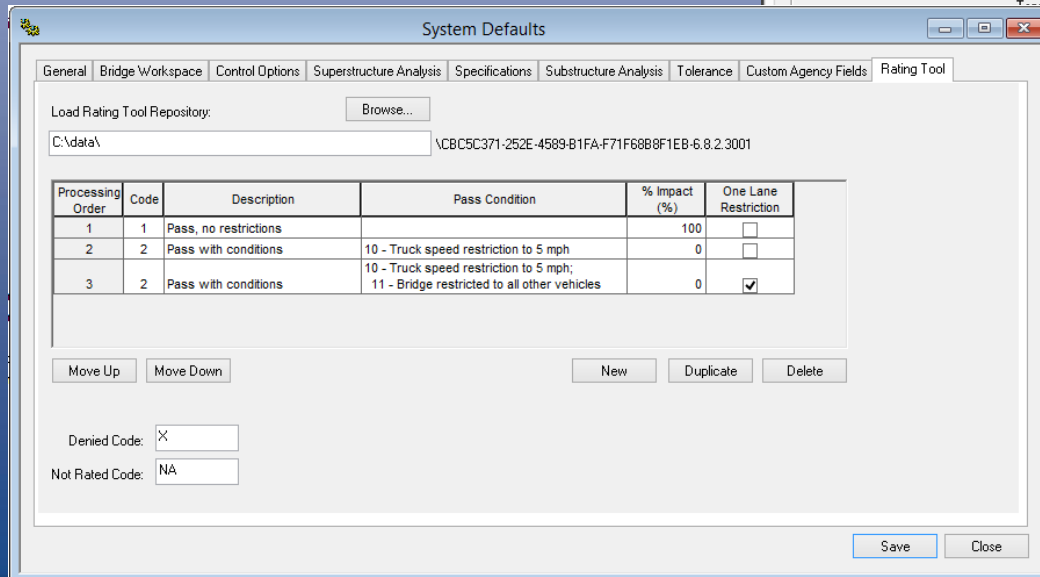
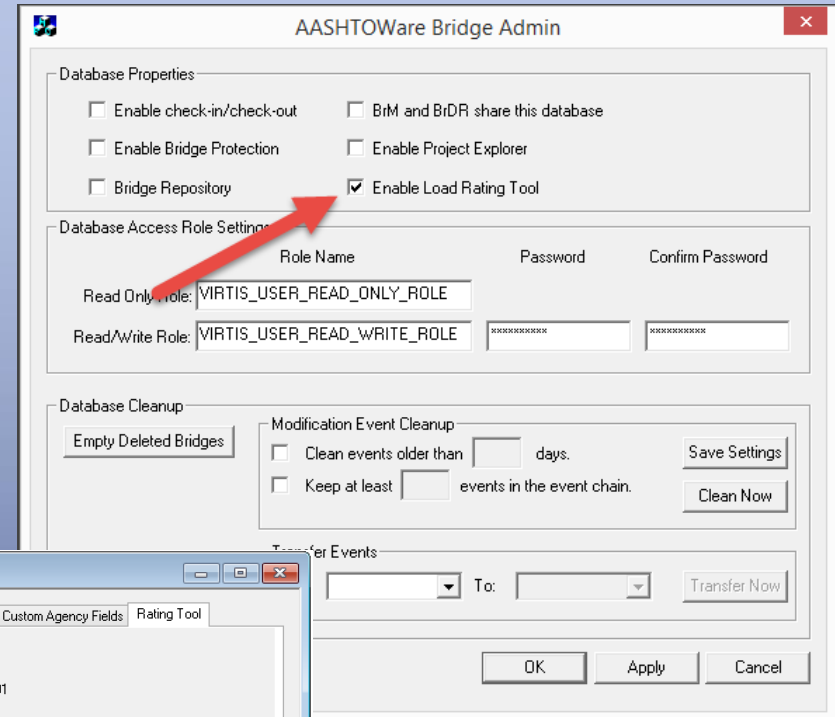
Use Cases – Cont'd

- UC3 - Web Services



Procedure

- Configuration
 - Enable rating tool
 - Set output path
 - Scenarios and codes



Procedure – Cont'd

- Precomputed data
 - Generation
 - Maintenance

Precomputed Data

Generate Maintain

Analysis Type: Line Girder

Rating Method: LFD

Points of Interest

Override bridge points of interest

Steel Member

- Generate at tenth points
- Generate at section change points
- Generate at user-defined points

Concrete Member

- Generate at tenth points except supports
- Generate at support points
- Generate at support face & critical shear points
- Generate at section change points
- Generate at user-defined points

Overwrite existing precomputed data

Stop on first error

Save as System Defaults Generate

Close

Precomputed Data

Generate Maintain

| Bridge ID | Precomputed Data | | | | Bridge | | | |
|-----------|------------------|------------------|----------------|---------------|-----------|------------------|----------|--|
| | Bridge ID | NBI Structure ID | Date Generated | Generated By | Bridge ID | NBI Structure ID | Date | |
| 32 | PSSS-0395-PSIB | PSSS-0395-PSI | 08/07/17 | Bridge Bridge | PSSS-03 | PSSS-0395-PSI | 08/07/17 | |
| 33 | PSSS-0396-PSIB | PSSS-0396-PSI | 08/07/17 | Bridge Bridge | PSSS-03 | PSSS-0396-PSI | 08/07/17 | |
| 34 | PSSS-0397-PSIB | PSSS-0397-PSI | 08/07/17 | Bridge Bridge | PSSS-03 | PSSS-0397-PSI | 08/07/17 | |
| 35 | PSSS-0398-PSIB | PSSS-0398-PSI | 08/07/17 | Bridge Bridge | PSSS-03 | PSSS-0398-PSI | 08/07/17 | |
| 36 | PSSS-0399-PSIB | PSSS-0399-PSI | 08/07/17 | Bridge Bridge | PSSS-03 | PSSS-0399-PSI | 08/07/17 | |
| 37 | PSSS-0400-PSIB | PSSS-0400-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0400-PSI | 08/07/17 | |
| 38 | PSSS-0420-PSIB | PSSS-0420-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0420-PSI | 08/07/17 | |
| 39 | PSSS-0421-PSIB | PSSS-0421-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0421-PSI | 08/07/17 | |
| 40 | PSSS-0422-PSIB | PSSS-0422-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0422-PSI | 08/07/17 | |
| 41 | PSSS-0423-PSIB | PSSS-0423-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0423-PSI | 08/07/17 | |
| 42 | PSSS-0424-PSIB | PSSS-0424-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0424-PSI | 08/07/17 | |
| 43 | PSSS-0425-PSIB | PSSS-0425-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0425-PSI | 08/07/17 | |
| 44 | PSSS-0426-PSIB | PSSS-0426-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0426-PSI | 08/07/17 | |
| 45 | PSSS-0427-PSIB | PSSS-0427-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0427-PSI | 08/07/17 | |
| 46 | PSSS-0428-PSIB | PSSS-0428-PSI | 08/07/17 | Bridge Bridge | PSSS-04 | PSSS-0428-PSI | 08/07/17 | |

Select All Select Outdated Select Not Found Clear Selected Update Selected Delete Selected

Close

Procedure – Cont'd

- Operation of UI rating tool

The screenshot displays the 'Load Rating Tool' application window. The top section contains input fields for permit application details: Permit application number (abc), Application date (8/15/2017), Requested by (G. Trees), Minimum allowable rating factor (1.00), and Comment (Experimenting). Below this, there are tabs for 'Bridges', 'Vehicles', and 'Rating Results', with 'Rating Results' currently selected. Under the 'Rating Results' tab, there are filter options for 'Pass', 'Fail', and 'Exceptions', all of which are checked. A table displays the results of the rating process, with columns for Vehicle, Rating Level, BID, Bridge ID, Route Number, Code, Description, Inventory Rating Factor, and Overall Rating. The table contains five rows of data, all with a 'Pass, no restrictions' description. A 'Process Permit' button is located at the bottom right of the table area. At the bottom of the window, there are buttons for 'Create Rating Results File...', 'View Rating Results File...', and 'Close'.

Load Rating Tool

Permit application number: abc
 Application date: 8/15/2017
 Requested by: G. Trees
 Minimum allowable rating factor: 1.00
 Comment: Experimenting

Bridges | Vehicles | Rating Results

Analysis Settings: Rating Demo Template View...

| BID | Bridge Database | | | Completely Defined | Has Precomputed Data | Travel Direction |
|-----|-----------------|--------------|----------------------|-------------------------------------|-------------------------------------|------------------|
| | Bridge ID | Route Number | Number of Structures | | | |
| 31 | PSSS-03 | I-64 | 1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Both directions |
| 32 | PSSS-03 | | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Both directions |
| 33 | PSSS-03 | 64 | 1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Both directions |
| 34 | PSSS-03 | 00056 | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Both directions |
| 35 | PSSS-03 | 00029 | 1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Both directions |

Process Permit

Close

Filter results: Pass Fail Exceptions

| Vehicle | Rating Level | BID | Bridge ID | Route Number | Code | Description | Inventory Rating Factor | Of | Rating |
|---------|--------------|-----|----------------|--------------|------|-----------------------|-------------------------|----|--------|
| Type 3 | Inventory | 31 | PSSS-0394-PSIB | I-64 | 1 | Pass, no restrictions | 1.544 | | |
| Type 3 | Inventory | 32 | PSSS-0395-PSIB | | 1 | Pass, no restrictions | 1.354 | | |
| Type 3 | Inventory | 33 | PSSS-0396-PSIB | 64 | 1 | Pass, no restrictions | 2.032 | | |
| Type 3 | Inventory | 34 | PSSS-0397-PSIB | 00056 | 1 | Pass, no restrictions | 1.083 | | |
| Type 3 | Inventory | 35 | PSSS-0398-PSIB | 00029 | 1 | Pass, no restrictions | 1.019 | | |

Create Rating Results File... View Rating Results File... Close



Future Enhancements

- Specification
 - Multiple editions
 - LRFR
- Structure Types
 - Culvert
 - Floor system
 - Curved girder
 - Truss
 - Multi-cell box
 - Generic (custom influence lines)
- Web Services - Full BrR analysis



Training Example



Thank You