

AASHTOWare Bridge Rating Tool Demonstration



AASHTOWare Bridge Rating/Design
User Group Meeting
Kansas City – August 2017

Presentation Outline

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



History

- In fall 2013, conversations about high-speed bridge ratings took place
- Demonstrated a prototype at the January 2014 Task Force meeting
- Informal meeting after the August 2015 User Group meeting to gauge interest in a rating tool
- Idaho took lead on funding and the gathering of requirements for Phase 1 of a new rating tool
- Phase 1 of development of the new tool was added to the 2016 workplan



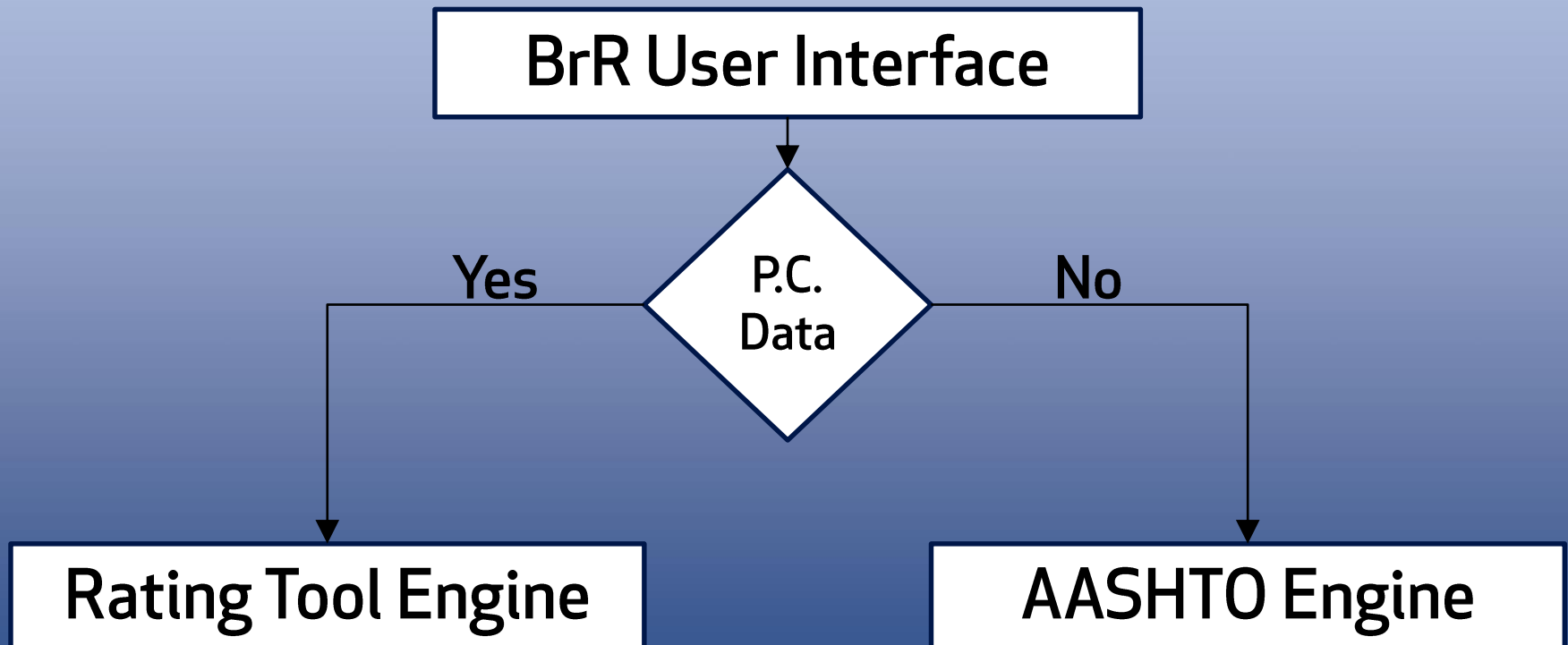
Capabilities – Phase 1

- 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)



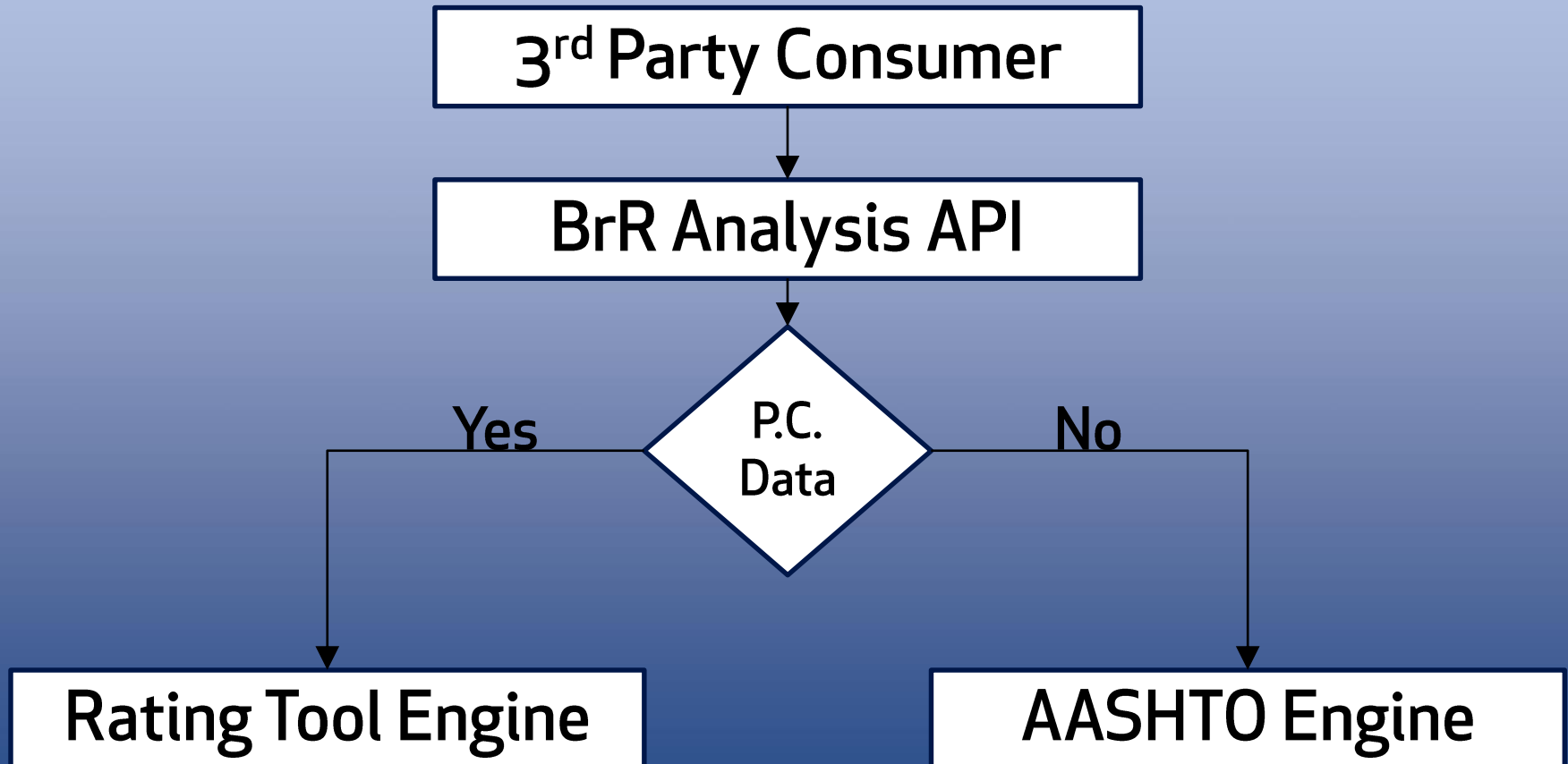
Use Cases

- UC1 - User Interface



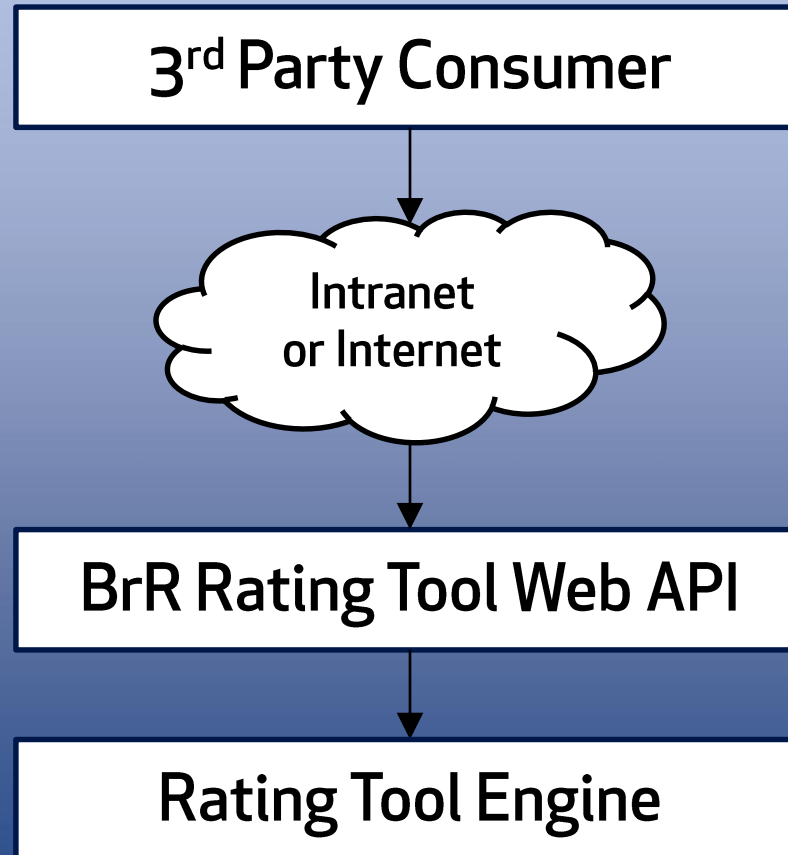
Use Cases – Cont'd

- UC2 - Analysis API



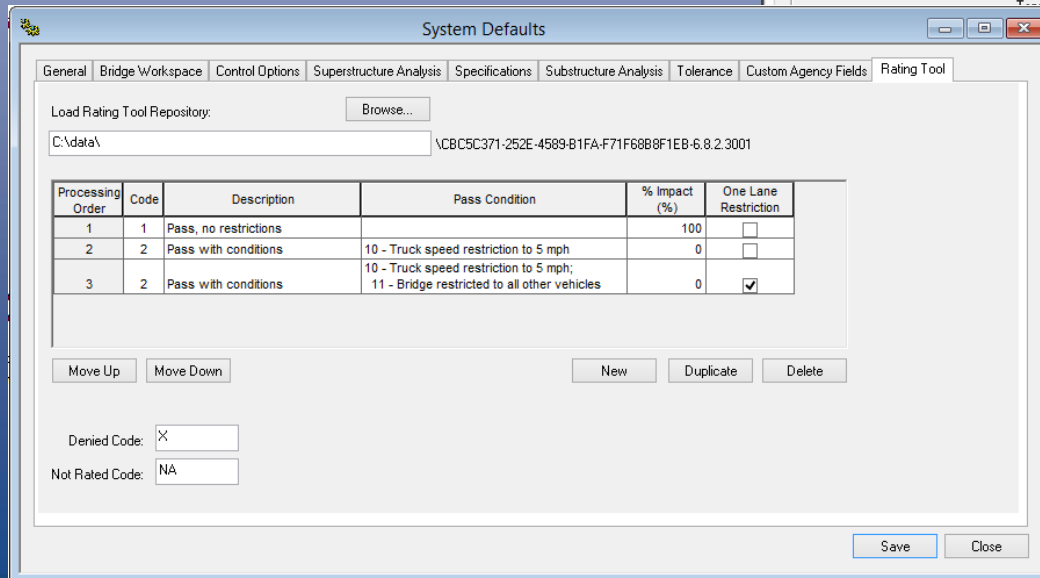
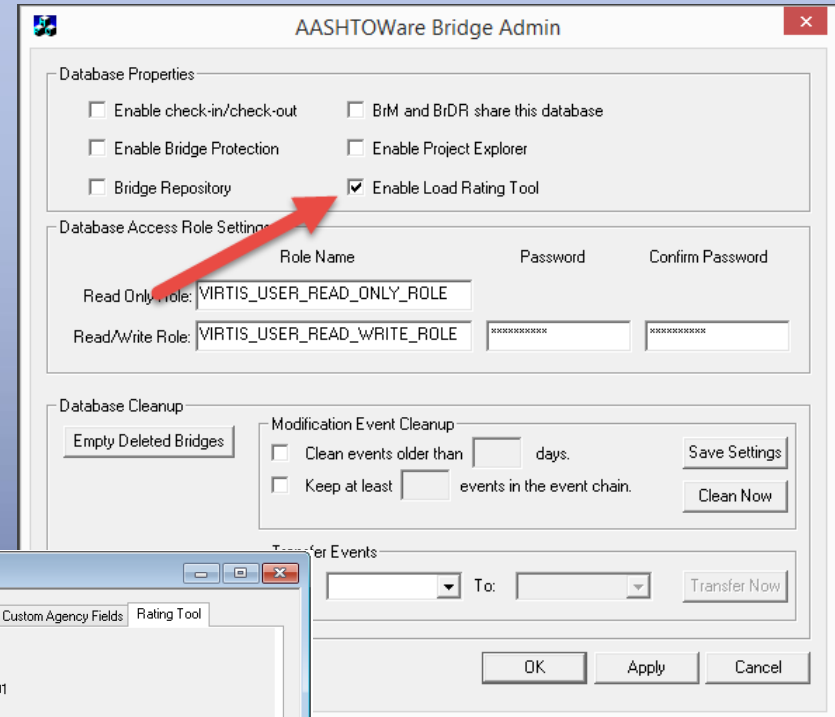
Use Cases – Cont'd

- 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 these are tabs for 'Bridges', 'Vehicles', and 'Rating Results'. The 'Rating Results' tab is active, showing a table of bridge data and a 'Process Permit' button.

Analysis Settings: Rating Demo Template

Analysis Settings:	Bridge Database				Has Precomputed Data	Travel Direction
	Bridge ID	Route Number	Number of Structures	Completely Defined		
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

Vehicle	Rating Level	BID	Bridge ID	Route Number	Code	Description	Inventory Rating Factor	Of
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	

Buttons: Create Rating Results File..., View Rating Results File..., Process Permit, Close

Demonstration

Future Enhancements

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



Thank You

