

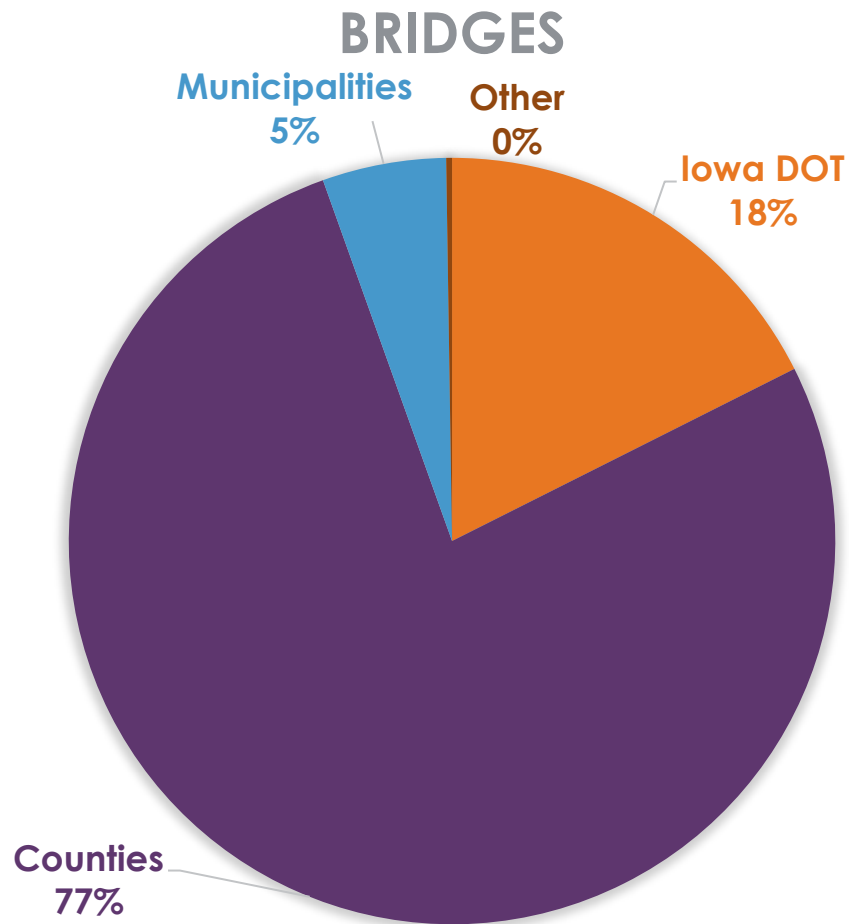


Iowa DOT's Implementation of BrR for Locals

Shawn Sersland, PE



Overview of Iowa



Bridges in Iowa

- Total = 23,737 bridges
- Iowa DOT = 4,174
- Counties = 18,264
 - 99 counties
- Municipalities = 1,240
 - 254 municipalities
- Other = 58

Overview of Iowa

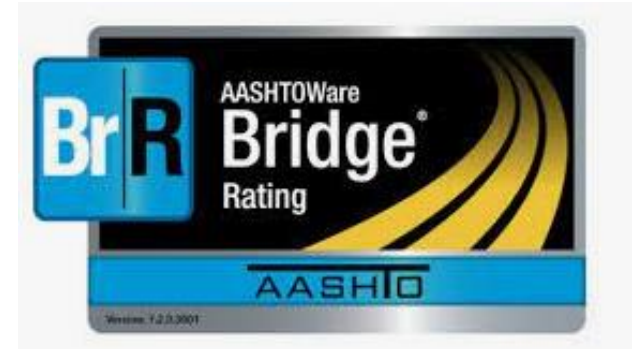
Load Rating Programs

Iowa DOT

- LARS
- CulvertCalc
- Transitioning to AASHTOWare BrR
- Iowa Automated Permit System (IAPS)
 - SUPERLOAD CE

Local Public Agencies

- Method of Choice
 - In-House Spreadsheets
 - CulvertCalc
 - AASHTOWare BrR
- In-Progress of Obtaining an Agency Sponsored License for AASHTOWare BrR



Challenges for Locals: New Trucks

Trucks Added in the Last 10 Years in Iowa

SHV's	AASHTO
EV's	FAST Act
Type 5-2	Iowa Legislation
Fluid Milk Permit	Iowa Legislation
All-Systems Permit	Iowa Legislation
Small Annual Crane Permit	Iowa Legislation
Annual Permit Trucks for LPA's	SNBI Changes
IOH Vehicle	Iowa Legislation
Hydroexcavators	Iowa Legislation

LPA's Can't Bulk Analyze and Must Rerate Every Bridge Every Time

Challenges for Locals: Permitting



- Local Level:
 - LPA's can't currently bulk analyze
 - Can't Efficiently Review a Permit Request
- State Level:
 - Goal: Statewide Permitting System
 - Need Local Bridge Files Set Up for Our Permitting System

Solution: BrR for Locals

Iowa DOT is Working to Set Up AASHTOWare BrR for the Locals

- Batch analyze for New Legislation and Permitting
- Get Ratings Quickly and Efficiently
- LPA's Have More Ownership Over the Files if They Want to Change Consultants
- BrR Can Model Many Different Bridge Types
- State will Provide Templates for Standard Bridges
- Getting the Local's Inventory in BrR would Help Towards a Statewide Permitting System



Solution: BrR for Locals

Agency Sponsored Consultant License

- Allows A Member Agency with Unlimited License to Purchase a Bundle of Licenses to Distribute Amongst Local Agencies and Their Consultants
 - 5 Bundle Options
 - Range 50-150 Licenses, Increments of 25
 - Installation Support Only
- Iowa is Not Requiring Locals Rate with BrR but Encourage It.

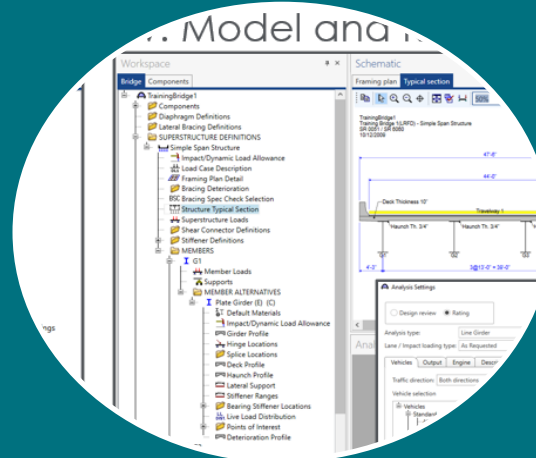


Iowa DOT Implementing BrR for Locals

Roadmap



- Gauged Interest
- Formed Taskforce



- Creating Standard Models
- Securing Funding
- Logistics of Distribution



- Pilot Project
- Implementation
- Training
- Long Term Support



Gauged Interest

Made Sure BrR Would be Used by Locals if Implemented



- Presented to Locals
 - Explained...
 - What AASHTOWare BrR is
 - The License Option
 - Our Intentions
 - Benefits
 - Challenges
 - ProMiles - BrR's Capabilities
- Spoke Individually with Consultants who do Work for LPA's
- Feedback was Positive

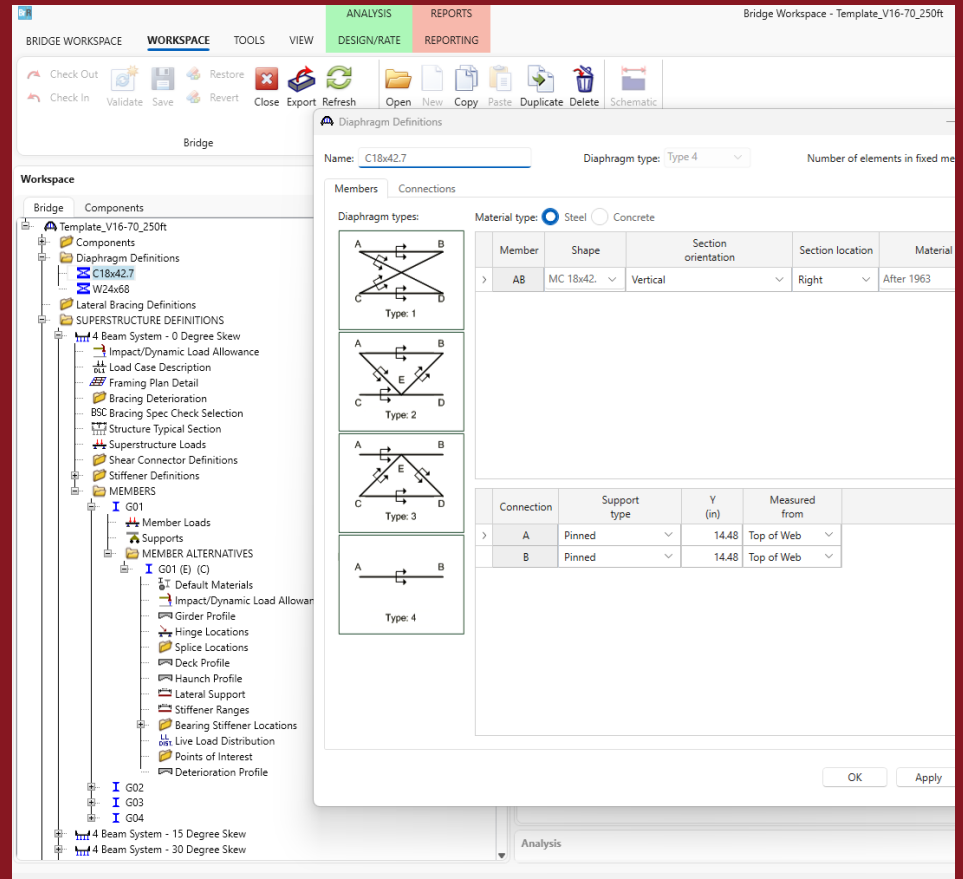
Formed Taskforce

Shawn Serland, Jim Hauber, Scott Neubauer	Bridges and Structures Bureau
Brian Moore, Lee Bjerke	County Service Bureau
Niki Stinn	Local Systems
Chris Cromwell	FHWA
Geoffrey Trees, Carolyn Kois	ProMiles
Mitch Rydl Alex Davis Doug Crouch	Audubon County Engineer Buchanan County Assistant Engineer Kossuth County Assistant Engineer
Rudy Koester Jason Havel	City Engineer for Waukee City Engineer for Iowa City
Steve Reneker, Andrew Putz Steve Moffitt Lowell Miller Courtney Wand	Kirkham Michael HGM Calhoun-Burns Origin Design

Hired ProMiles

Awarded STIC Grant “AASHTOWare BrR Software Support”

- Assist on Taskforce
 - Work Out Logistics of Implementation
 - Presentations & Short Demoes Explaining BrR's Capabilities
- Initial Training
- Consult with Research Efforts to Model Standard Bridge Templates
 - Review Templates are Inputted As Intended
 - Answer Questions on BrR



The screenshot displays the AASHTOWare BrR software interface. The main workspace shows a tree view of components for a bridge template, including Diaphragm Definitions, Lateral Bracing Definitions, and SUPERSTRUCTURE DEFINITIONS. The Diaphragm Definitions dialog box is open, showing four diaphragm types (Type 1, Type 2, Type 3, Type 4) with their respective diagrams. The dialog also includes a table for defining connections and supports.

Member	Shape	Section orientation	Section location	Material
> AB	MC 18x42	Vertical	Right	After 1963

Connection	Support type	Y (in)	Measured from
> A	Pinned	14.48	Top of Web
B	Pinned	14.48	Top of Web

Create Standard Models in BrR

Iowa DOT has Standards from 1914 - Present



TRUSSES

BOX CULVERTS



STEEL GIRDER

BOX BEAMS



PRESTRESSED BEAM

CONCRETE SLAB/BEAMS



Create Standard Models in BrR

- Previously - DOT Provided Charts of Controlling Rating for Each Standard
 - Works if Bridge Matches Plans
 - Not Reliable if Bridge is Modified/Deteriorated
- With BrR - Can Provide Model Templates of Standard Bridges Instead
 - Adjust Model for Deterioration or Repairs
 - Get Ratings for All Members and Locations
 - Can Use in Batch Analysis of Inventory

**Research Project TR-832
Implementation of AASHTOWare BrR
Program for Rating Iowa Bridges**

Slab Bridge Standards Load Rating Summary - LRFR Rating Method

J44-06/14, 2'-10 Barrier Rail, All Skews

Truck	Bridge Length								
	70	80	90	100	110	120	130	140	150
HL-93 Oper	1.76	1.66	1.67	1.73	1.62	1.72	1.78	1.88	1.81
Controlled by	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M
Location	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.5L Sp 2	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.5L Sp 2
HL-93 Inv	1.36	1.28	1.29	1.34	1.25	1.33	1.38	1.45	1.40
Controlled by	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M	STR1 +M
Location	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.5L Sp 2	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.4L Sp 1	0.5L Sp 2
IA Type 4	67.9	62.4	61.2	62.2	58.3	61.1	62.9	66.1	67.0
IA Type 3	67.6	64.6	64.1	65.0	61.6	64.3	65.8	69.0	69.2
IA SU4	63.5	59.1	58.4	59.6	56.3	59.2	61.0	64.3	65.1
IA SU5	71.6	65.2	63.8	64.7	60.9	63.7	65.3	68.5	69.1
IA SU6	74.7	67.5	65.6	66.2	63.3	65.8	67.2	70.3	69.9
IA SU7	81.8	73.1	70.2	70.3	67.0	70.2	71.5	74.5	72.5
IA 3S3A	95.0	93.1	85.8	92.4	91.4	97.4	101.6	101.8	108.0
IA 3S2A	94.2	94.4	82.2	89.9	94.3	99.4	102.8	99.4	103.6
IA 3S3B	109.8	103.5	105.6	109.5	102.1	108.4	109.0	97.9	101.4
IA 4S3	116.8	111.7	111.4	113.5	104.4	109.4	108.1	97.0	100.8
IA 3-3	105.4	115.0	100.1	107.8	112.3	115.8	114.7	108.1	105.2
IA 5-2	113.9	103.8	101.2	102.9	94.3	98.6	101.1	97.5	101.8
IA EV2	63.7	62.8	62.2	62.2	59.2	62.2	64.0	67.3	68.9
IA EV3	63.8	60.9	60.9	62.1	59.1	61.9	63.6	66.9	67.2
90k	90.3	84.3	84.8	88.4	82.9	88.3	92.1	95.6	101.3
100k Crane	87.8	89.4	84.4	83.2	79.5	81.6	82.3	85.2	83.2
136k A	111.6	102.1	101.0	103.8	96.2	101.7	105.3	101.1	106.0
136k B	111.6	102.1	101.0	103.8	96.2	101.7	105.3	101.1	106.0
156k	126.5	117.1	115.8	119.0	110.4	116.6	115.2	104.2	109.0

HL-93 ratings are reported as Rating Factors, all others are Tons.

Create Standard Model in BrR

Researchers:

Michael Baker – HGM – Kirkham Michael

Scope

- Libraries
 - Rail & Curb Shapes
 - Material
 - Prestress Beam Shapes
 - Iowa Trucks
- System & Analysis Settings
- Example Standard Bridge Models
(1 Model/Type, Don't Model All Standards)
 - Box Beam Std
 - Single Box Culvert
 - Double Box Culvert
 - Triple Box Culvert
 - CMP
- Initial Templates for Review
 - Steel Girder
 - Prestressed Beam
 - Reinforced Concrete Slab
 - Truss
- Model All of Remaining Standards
 - Steel Girder
 - Prestress Beam
 - Reinforced Concrete
 - Trusses
- Documentation & Written Guidance

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Funding & License Distribution

Funding

- Originally Thought LPA's Would Have to Pay
- However, DOT Decided They Would Fund the Licenses

License Distribution

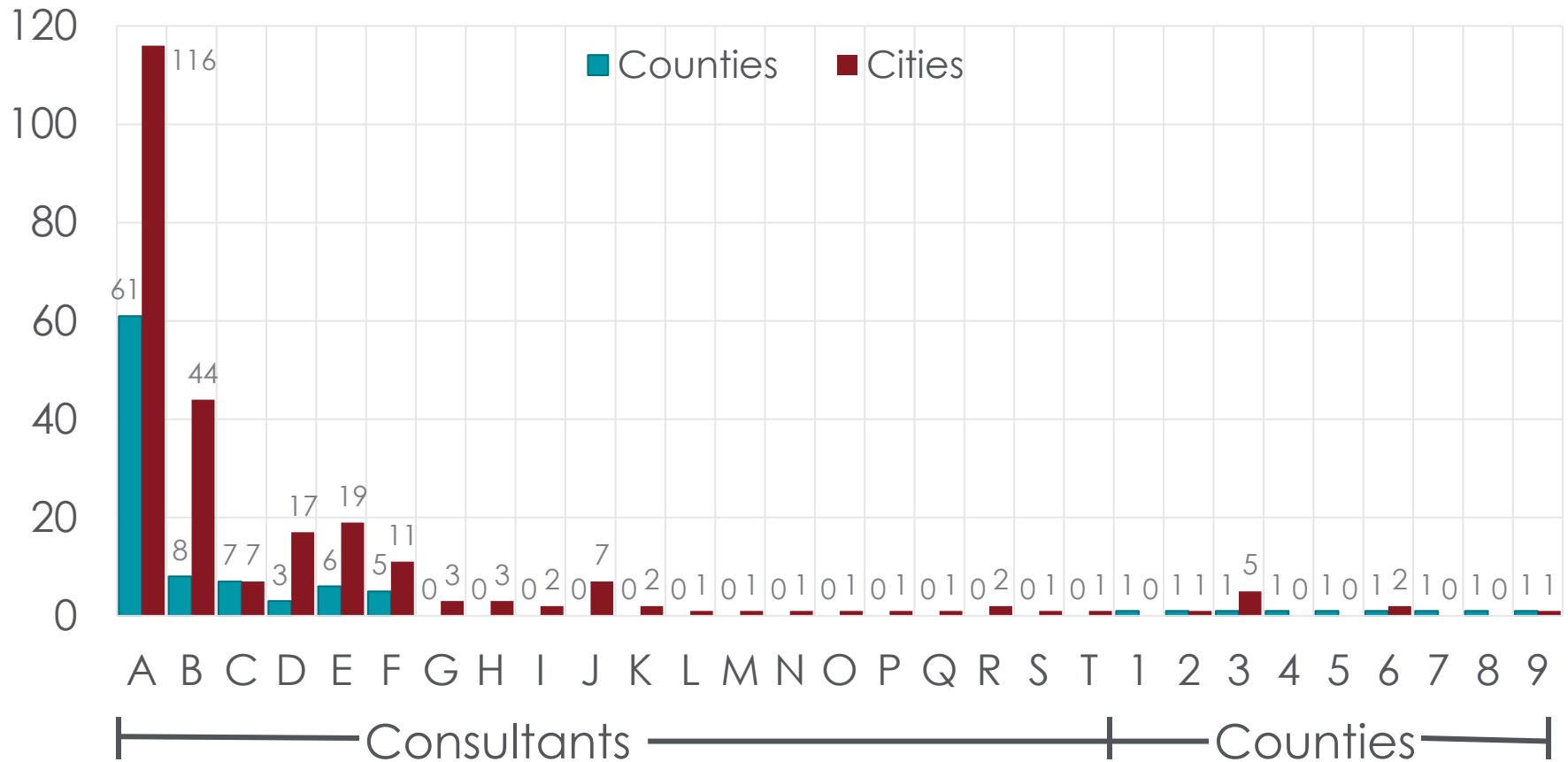
- DOT Approved 50 Licenses for FY2025
- Number of LPA's
 - 99 Counties
 - 254 Municipalities
- Majority Hire Consultants
- Result - Licenses Need to Be Divided Amongst...
 - 20 Consultants
 - 9 Counties



Iowa DOT Implementing BrR for Locals

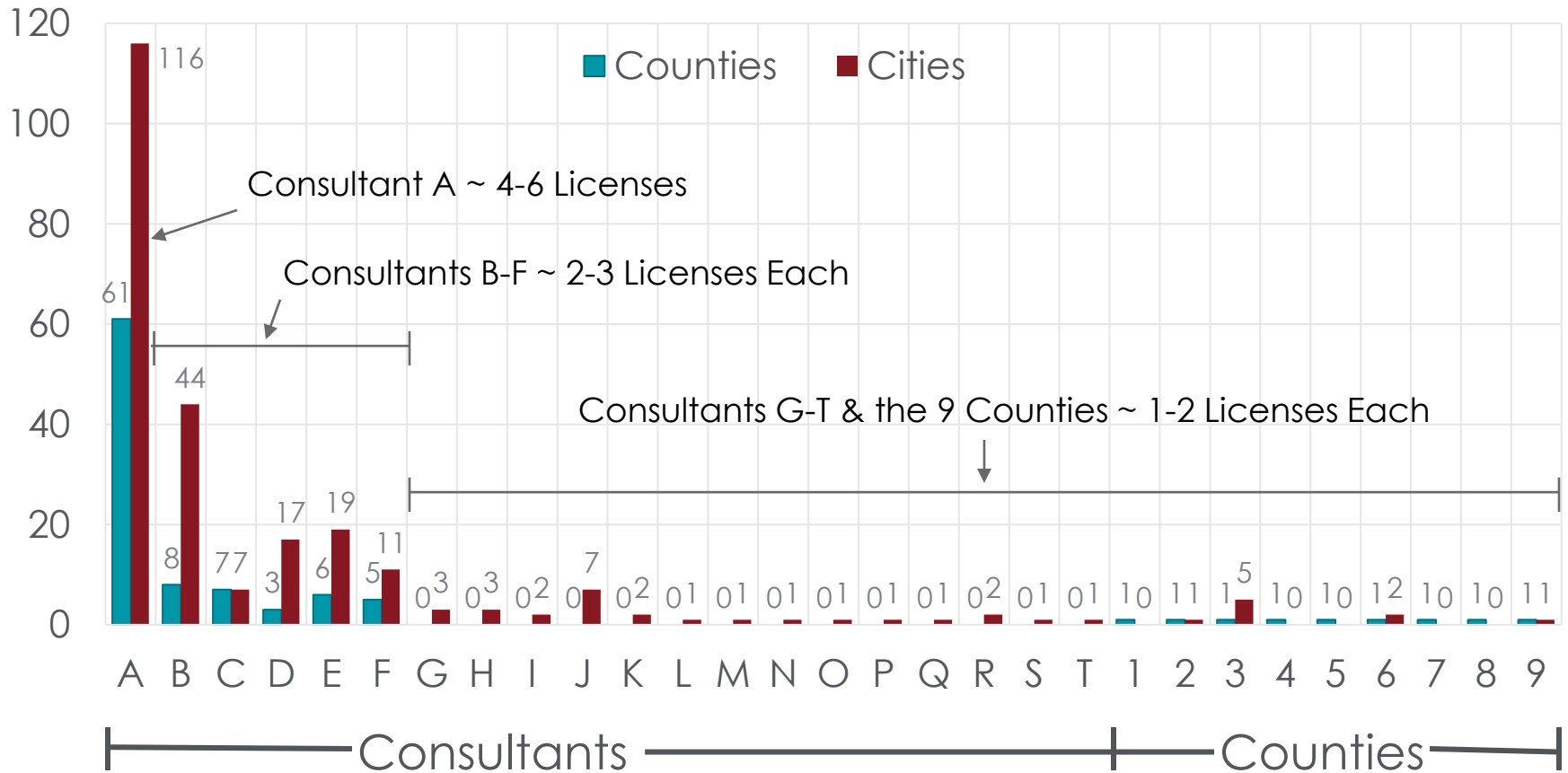
License Distribution

Number of LPA's Each Consultant/Agency Load Rates



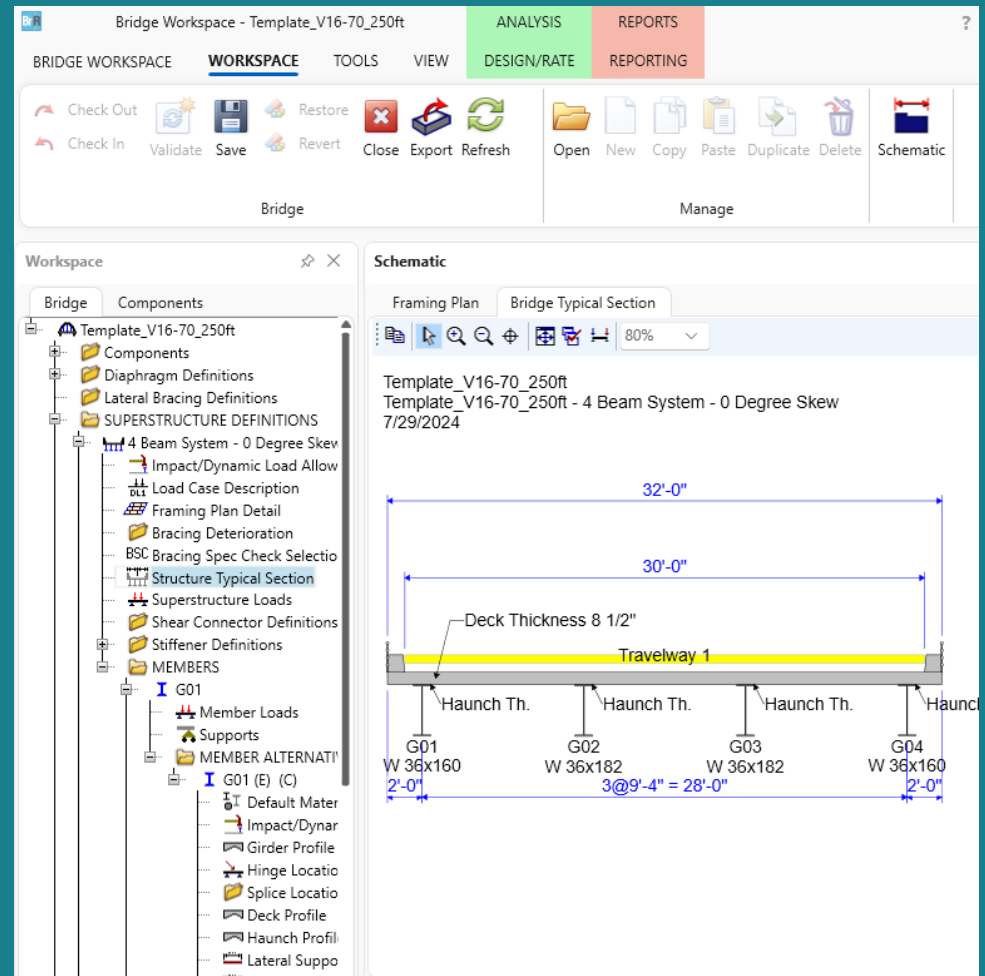
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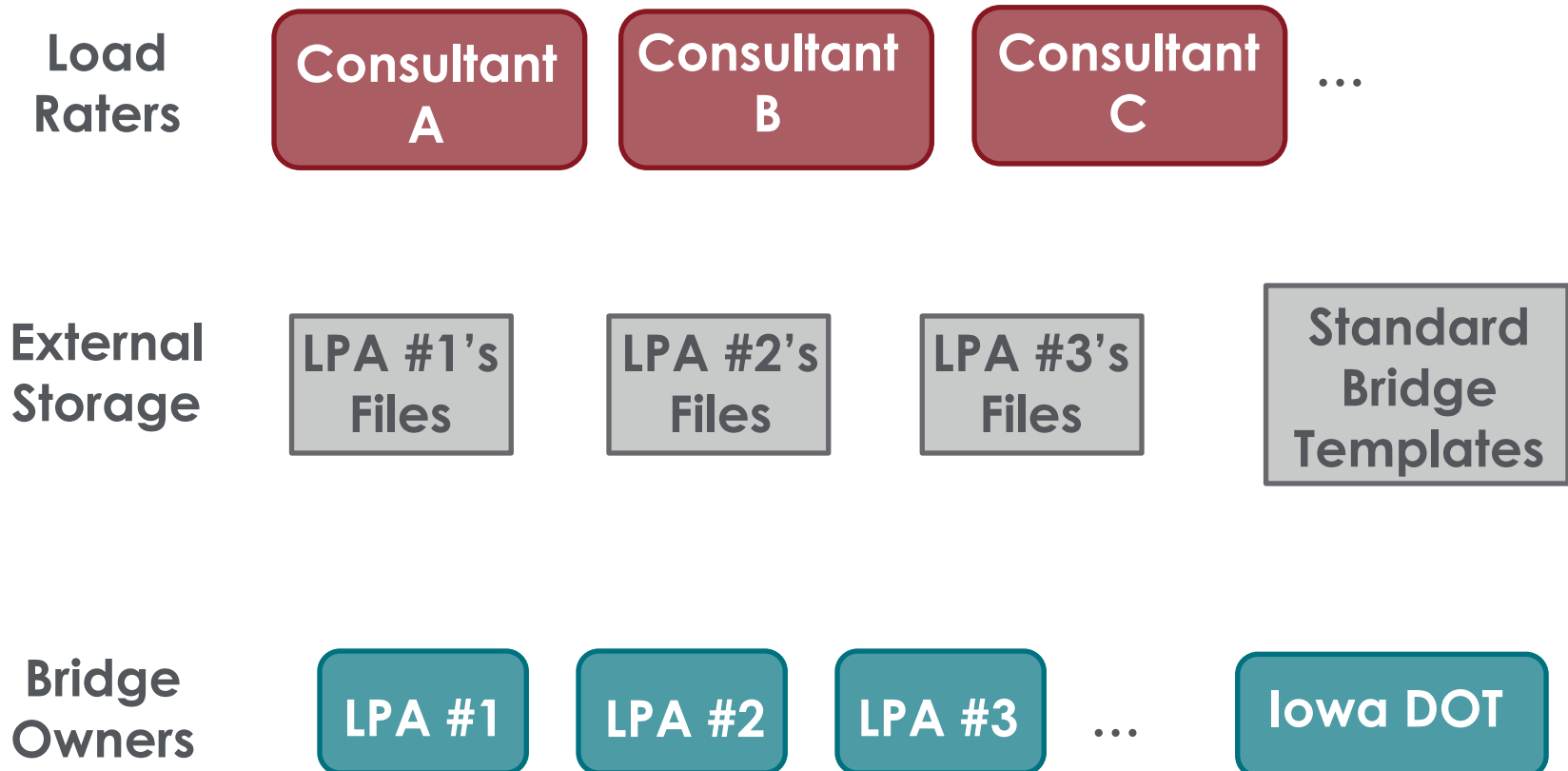
Pilot Project

- Once Enough Standard Bridge Templates are Made, Pilot with a Few Counties
 - Test Using and Modifying the Standard Bridge Templates
 - Network Analysis
 - Load Rating Tool



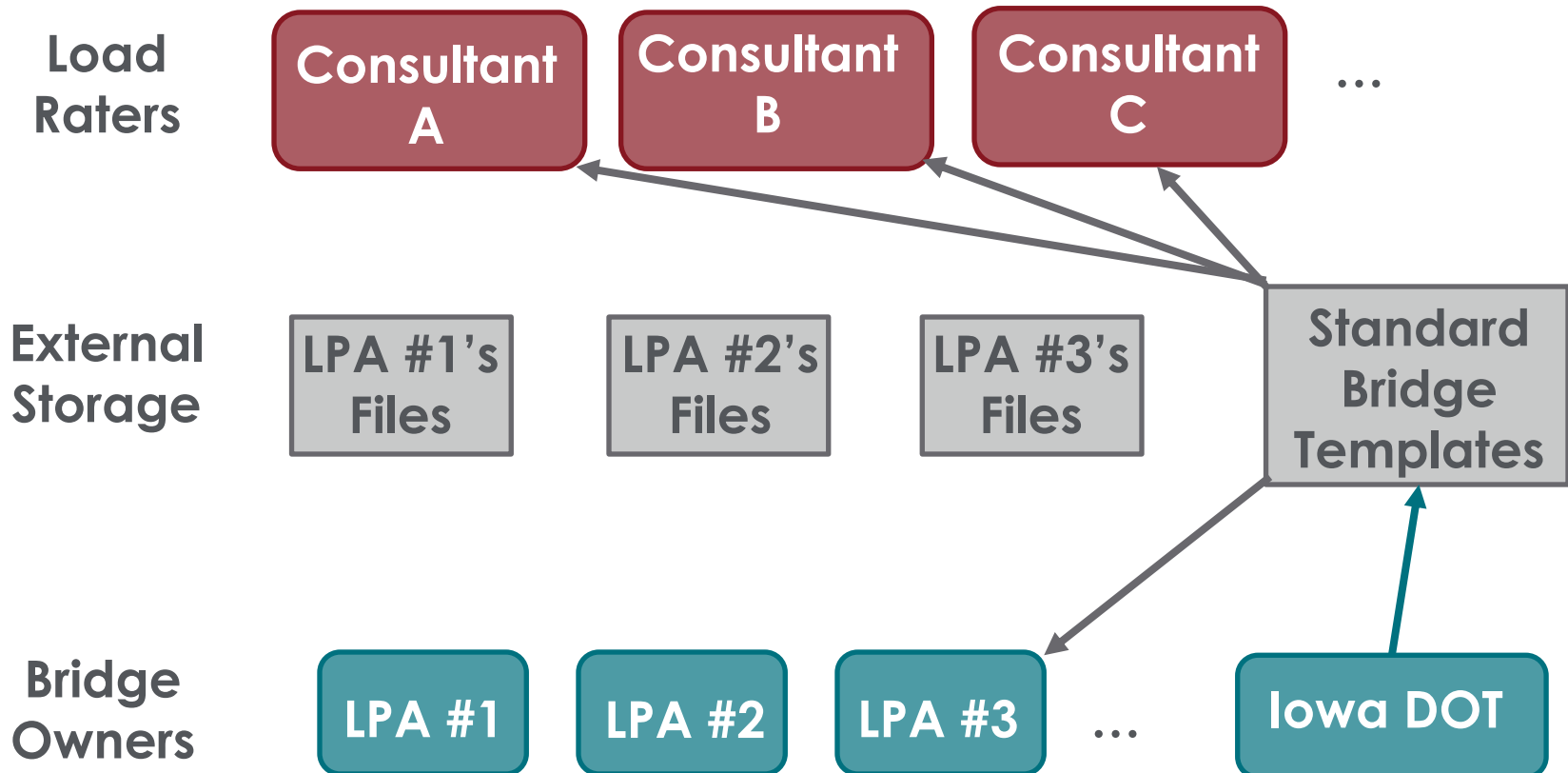
Distribution and Management

Challenge: Multiple Entities Will Need Access to the Same Files



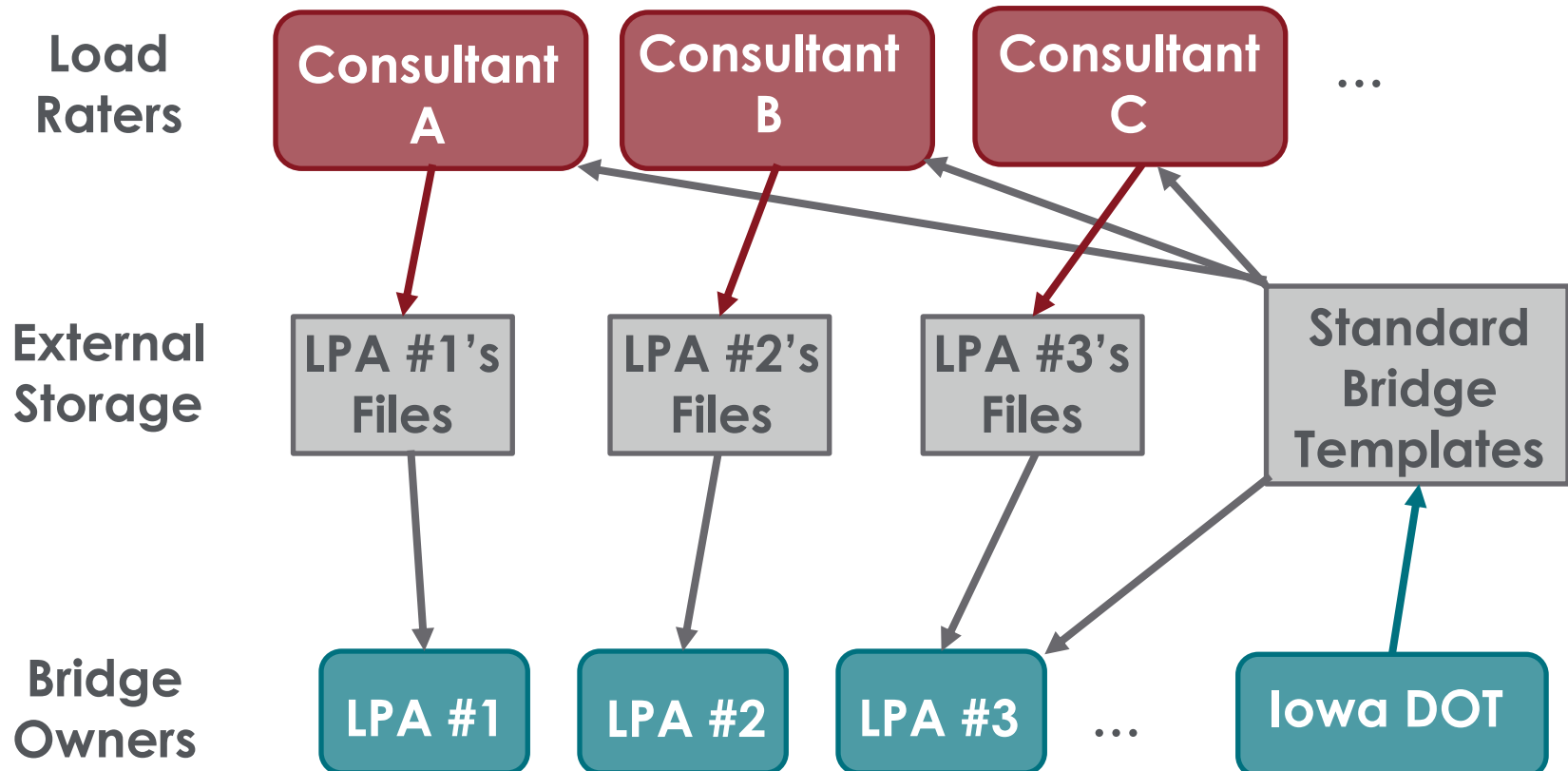
Distribution and Management

Every Load Rater Will Need Access to the Standard Templates



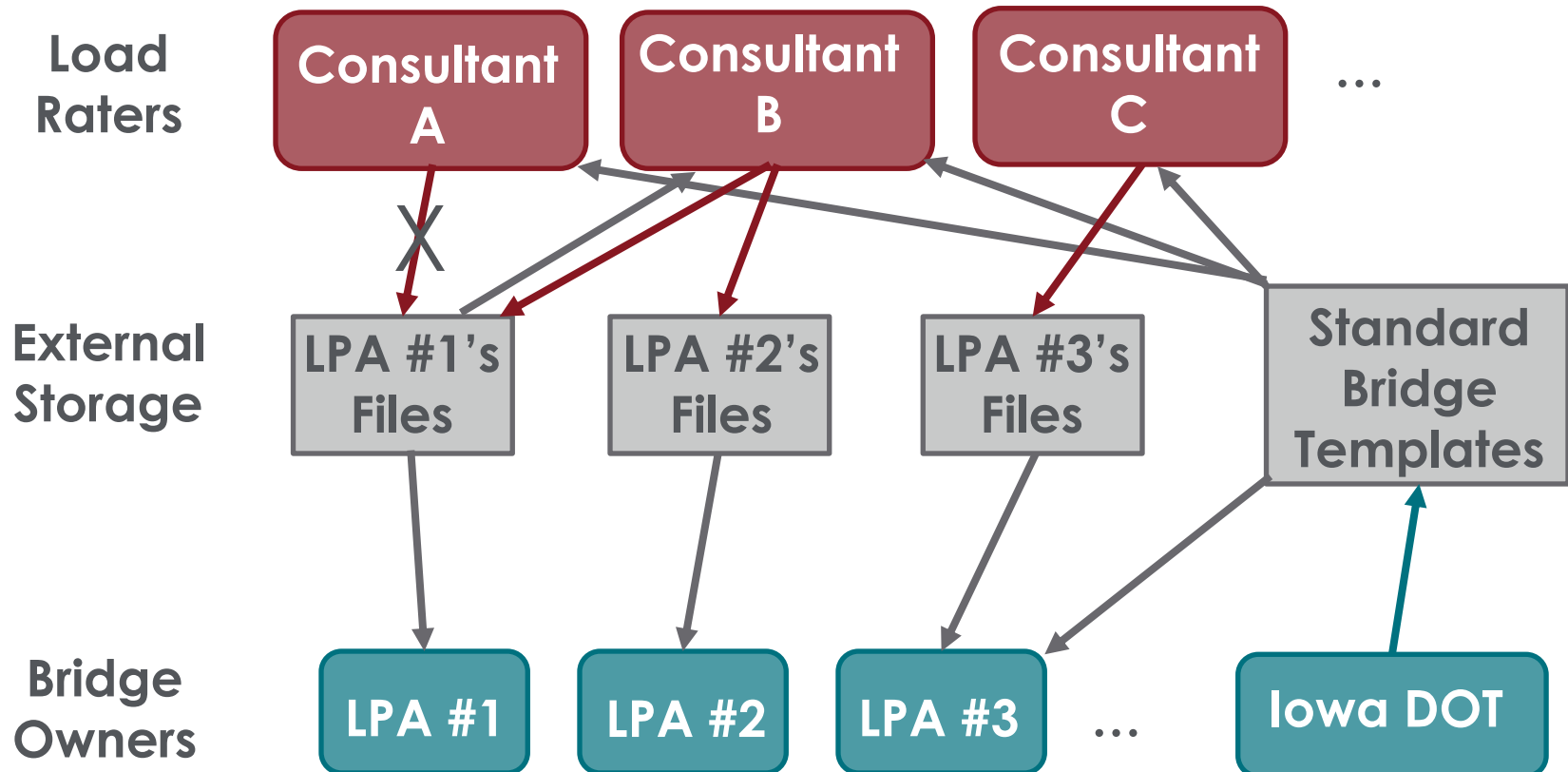
Distribution and Management

LPA's Doing Their Own Permitting Will Need Access to the Files



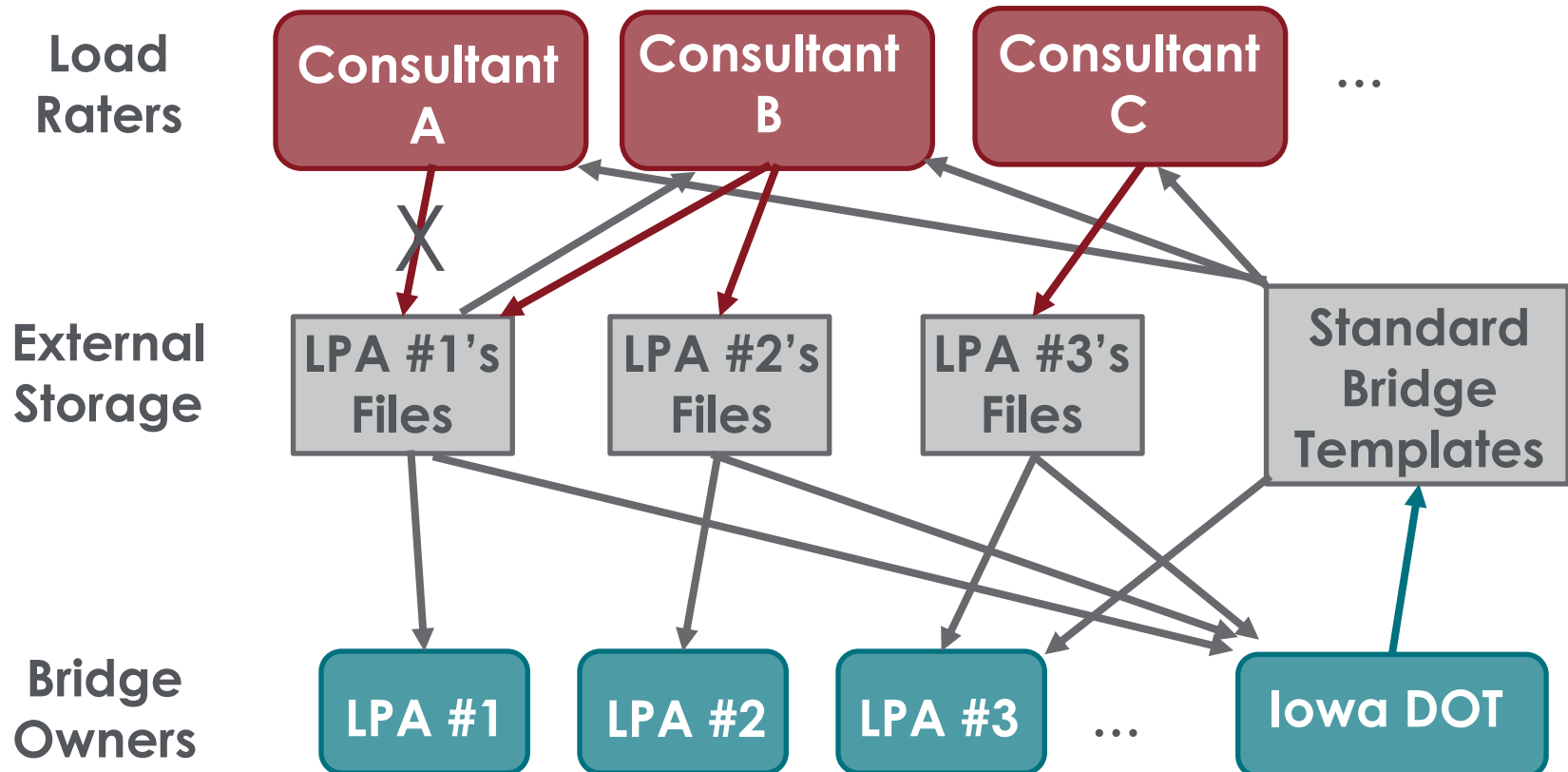
Distribution and Management

Need to Easily Move Files From One Consultant to Another

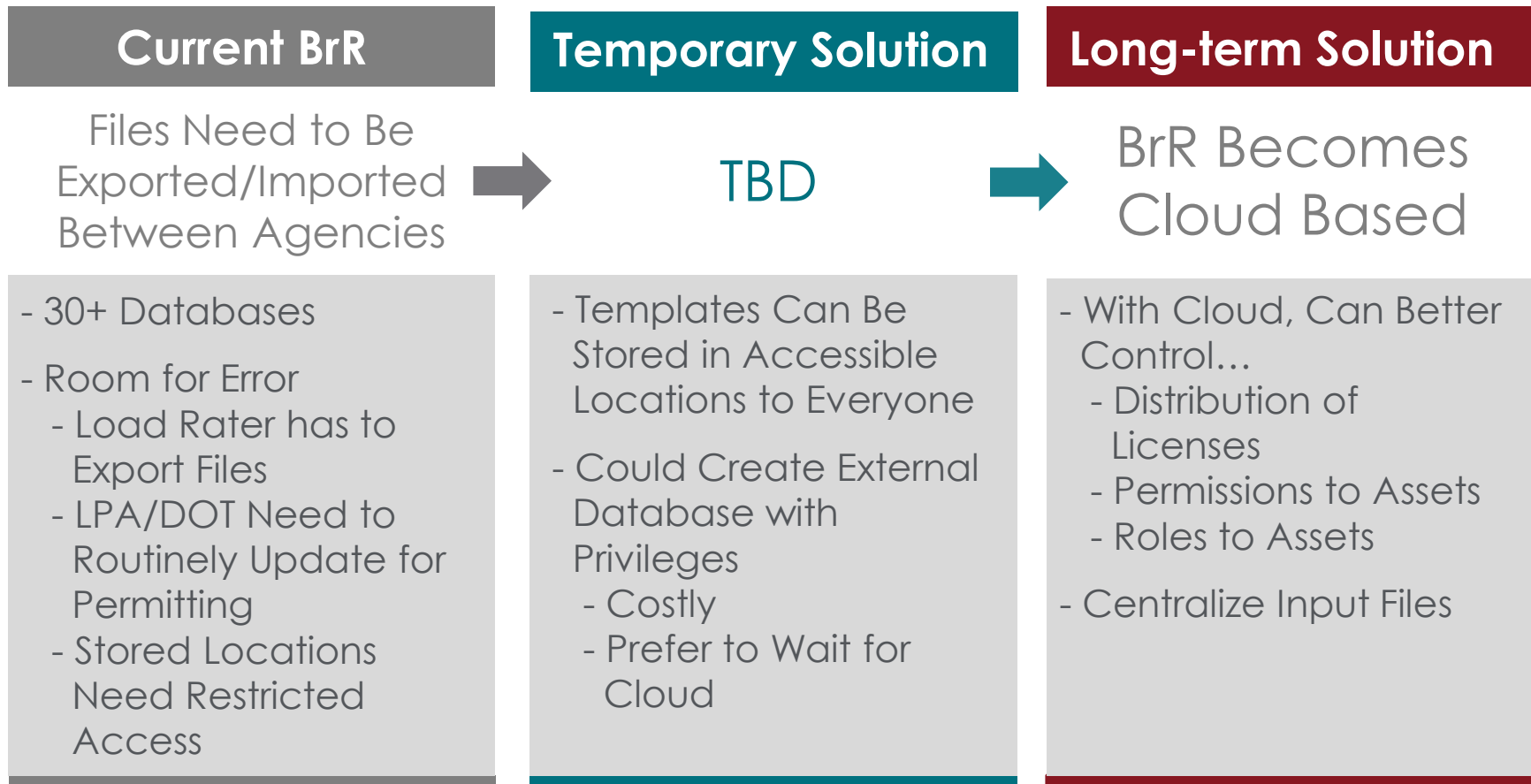


Distribution and Management

DOT Also Wants Access for Legislation & Statewide Permitting



Distribution and Management



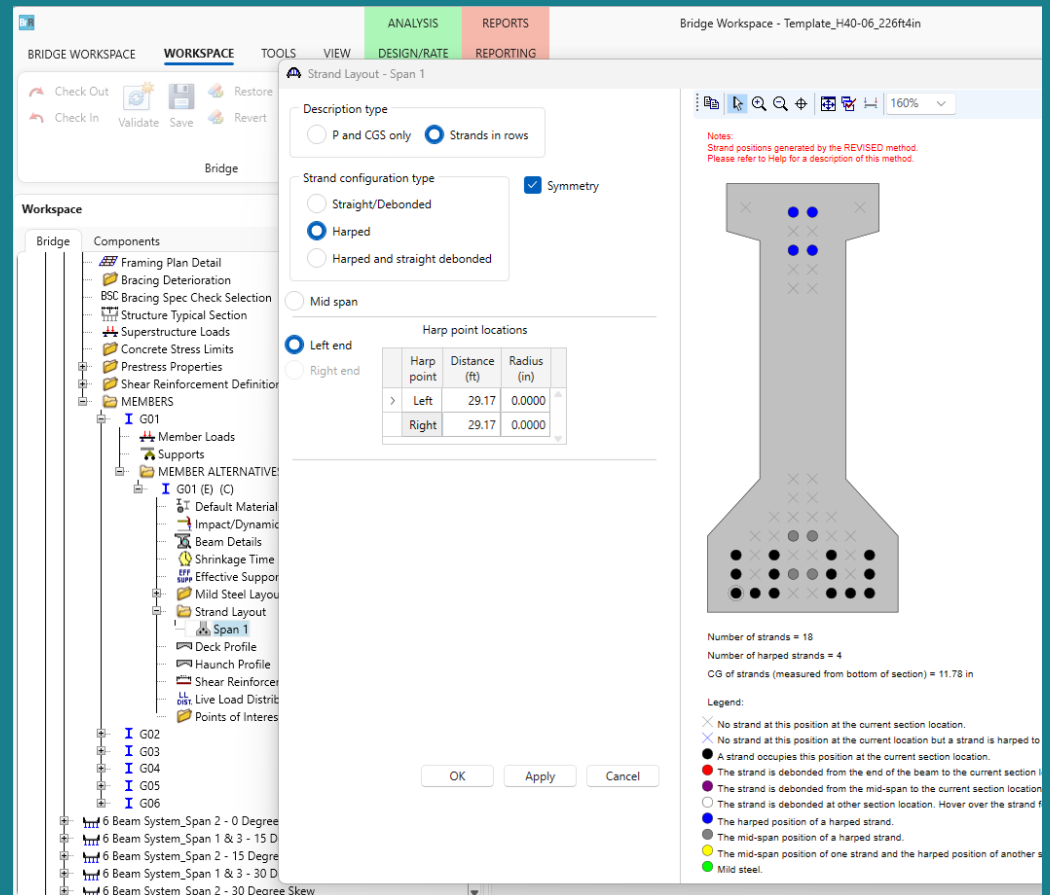
Training and Support

Initial Training

- ProMiles Will Do Training
 - 2 Day In-Person
 - Hands-On w/ Software
 - Overview & BrR Set Up
 - Creating Basic Bridge Models
 - Iowa Specific Components
 - How to Copy and Adjust Standard Templates

Long-term Training & Support

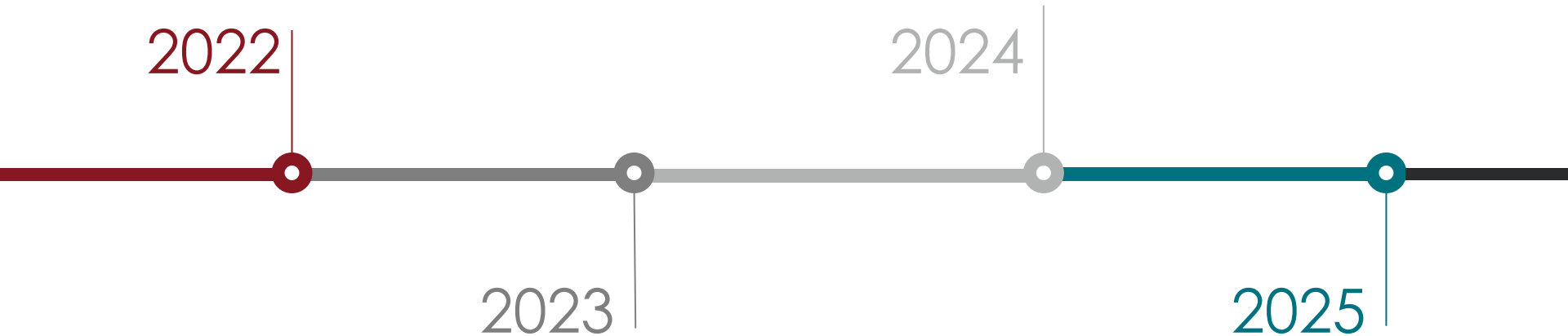
- TBD



Implementation Timeline

June - **Started to Gauge Interest**
 Oct. - **Applied for Standard Model Creation Research**

Jan. - **Standard Model Creation Research Kicked Off**
 July - **Funding Secured, 50 Licenses (FY2025)**
 Late Summer/Early Fall - **License Distribution**
 Fall - **Initial Training & Implementation**



Feb. - **1st Taskforce Meeting**
 May - **Posted RFP for Standard Model Creation Research**
 May - **Applied for STIC Grant for BrR Training and Support**

Standard Model Creation Continues
 Long-term Training - TBD
 Long-term Support - TBD



Important Takeaways

- Goal is to Help the Locals
- ProMiles Has Been a Huge Help
 - Presentations
 - Answering Questions
 - Reviewing Templates
 - Working With the County Service Bureau
 - Training
- What We Need For this To Succeed:
 - BrR to Go Cloud Based
 - More Bridge Types in the Load Rating Tool
 - Training
 - Time



THANK YOU FOR YOUR TIME AND ATTENTION



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