

Deepak Gopalakrishna  
Beverly Kuhn (Texas A&M Transportation Institute)  
Rachel Klein (Battelle)  
Wayne Berman (FHWA)

# Traffic Management Capability Maturity Framework

Validation Workshop: March 13, 2014

# AM Agenda

- 8:30 Welcome and introductions
- 8:45 Workshop overview
- 9:15 Workshop outcomes
- 9:30 Fireside chat– Traffic Management in the region.
- 10:00 Break
- 10:15 Exercise: Self-Assessment by participants using the TCMCF Tool for Connected Corridors
- 11:00 Assessment of Traffic Management capability: Results/findings
- 12:00 Lunch (on your own)

# PM Agenda

- 1:00 Summary of capability assessment
- 1:30 Identification of required actions
- 2:30 Development of action plan and next steps
- 3:15 Wrap up

# Welcome and Introductions

- Name, Agency, Role in Traffic Management
- FHWA Introduction
- Caltrans/Metro Introduction
- Materials
  - Slideshow
  - Handout #1- 1-Minute Evaluation
  - Handout #2 - Full Quiz
  - Handout #3 - Action Handouts

# Workshop Overview

- Question: How familiar are you with capability maturity frameworks in transportation systems operations and management
  - ☐ Significant expertise. We had previous exposure to SHRP2 work in this area and have applied it in our agency/region
  - ☐ Somewhat familiar. Have read or participated in meetings on this topic.
  - ☐ Brand new concept

# Capability Maturity Frameworks

## Process Matters

Projects fail or do not achieve desired functionality for a variety of reasons unrelated to the technology

## Prioritizing the right actions

Is your agency ready?  
How would you know?  
What should you do next?

## Focus on the weakest link

What is holding the agency back in becoming a leader in this area?

## Capability Maturity Frameworks for Transportation Operations

### Process

- Adapted from software development world
- A consensus-driven consistent structured evaluation or assessment of a process.
- Guides an agency towards a higher level of implementation, standardization, and return on investment.

### Outcomes

- Clear identification of weak links in the process
- Prioritization of areas of improvement
- List of process-oriented actions that an agency can implement

# Capability Maturity Framework

## Process Improvement Areas

## Capability Levels

Dimensions or Process Area	What is it	Level 1 Ad-Hoc. Low Level of Capability	Level 2	Level 3	Level 4 Optimized. High level of capability
<b>Business Process</b>	Plans, Programs, Budgets	Statement of capability	..		
<b>Systems &amp; Tech</b>	Approach to building systems	..	..		
<b>Perf. Measurement</b>	Use of performance measures	..	..		
<b>Workforce</b>	Improving capability of workforce	..	..	..	..
<b>Culture</b>	Changing culture and building champions	..	..	..	..
<b>Collaboration</b>	Improving working relationships	..			..

Step 1. Self-Assessment  
Work with your stakeholders to assess where you are in terms of the capabilities in each area

Step 2. Identify areas of improvement and the desired levels of capability to improve program effectiveness

Identify actions that you need to take to move to the desired levels of capability

# Six Dimensions of Capability

1. Business processes
2. Systems and technology
3. Performance measurement
4. Culture
5. Organization and workforce
6. Collaboration



# Agency or Region or Corridor?

- Capabilities exist in agencies
- Together, they provide the capabilities for the region or corridor
  - Differences in capabilities are normal but can be a challenge when looking regionally or for a corridor
  - Differences in agencies can constrain regional responses
- Actions can be
  - Agency-level
  - Multi-Agency
  - Regional

# Actions

- Framework defines levels
- Actions define steps that an agency can take to advance levels
  - Level 1 to Level 2
  - Level 2 to Level 3
  - Level 3 to Level 4
- Advancing a level implies potentially taking actions across all dimensions
- Provides a provide idea or nugget for a region to consider
- Agencies can customize and prioritize actions as part of their planning efforts

# Moving From Level 1 to Level 2

## Level 1 Capability Features

- Agency specific
- Ad hoc
- Address immediate concerns
- Driven by problems (firefighting)

## Level 2 Capability Features

- Nominal systematic approaches starting to emerge
- Addressing immediate concerns but geographic influence broadening
- Applications of advancements / technologies in spot locations
- Approaches are operator driven; static and time-of-day

# Moving From Level 2 to Level 3

## Level 2 Capability Features

- Nominal systematic approaches starting to emerge
- Addressing immediate concerns but geographic influence broadening
- Applications of advancements / technologies in spot locations
- Approaches are operator driven; static and time-of-day

## Level 3 Capability Features

- Advanced application of technology.
- Limited level of automation.
- More of a system-wide approach.
- Replicate and integrate systems within operations.
- Collaboration is high via engagement of regional stakeholders

# Moving From Level 3 to Level 4

## Level 3 Capability Features

- Advanced application of technology.
- Limited level of automation.
- More of a system-wide approach.
- Replicate and integrate systems within operations.
- Collaboration is high via engagement of regional stakeholders

## Level 4 Capability Features

- Regional approaches.
- Levels of automation based on historical, current, and predicted data.
- Full extent of regional collaboration.
- Multi-modal decision making across the entire region.

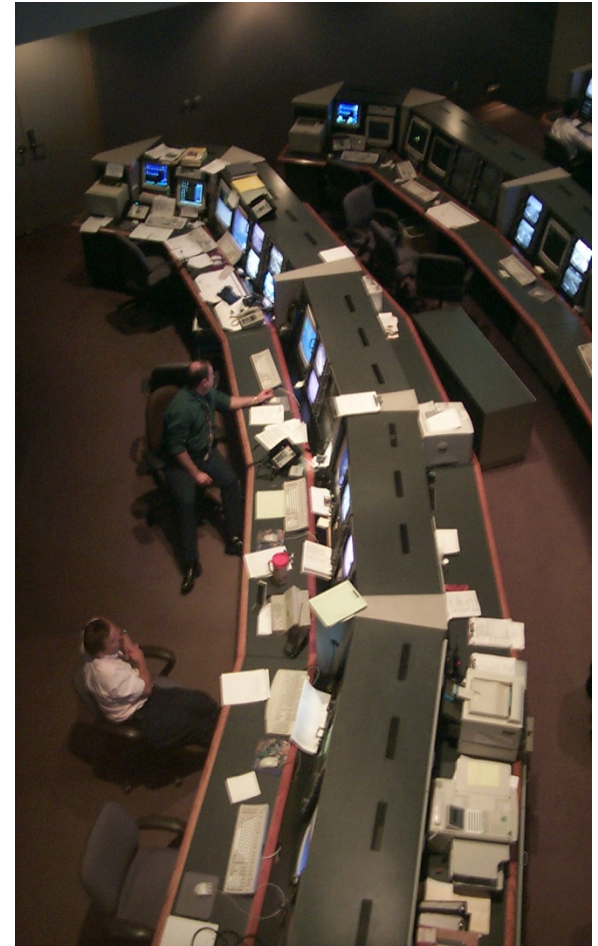
# AASHTO SOM Guidance

- AASHTO SOM Guidance. [www.aashtosomguidance.org](http://www.aashtosomguidance.org)
- CMM is being used widely as part of SHRP2 implementation efforts
- Focuses on capability for all operations



# Today's Focus: Traffic Management CMF

- Focus on traffic management rather than all organizational functions.
- Not strategy-specific
- Specific process areas that are applicable to traffic management concerns
- Actions are **from a traffic manager's perspective** but require input and coordination from others



# Use of the Framework

- Consensus building among stakeholders for institutional changes
- Before implementing traffic management activities and strategies
- Not intended as a benchmarking tool
- Can be reviewed at a regional or an agency-level



# Beta Version of Tool

- <http://cb-dev.tti.tamu.edu/atm-quiz/index.html>

The screenshot shows the '1-Minute Evaluation' page of the 'Traffic Management Capability Maturity Framework'. The header includes navigation buttons: 'Start' (red), 'Clear' (orange), 'Final Summary' (green), and 'Actions' (blue). The main content area is titled 'Welcome' and contains the following text:

Welcome to the Traffic Management Capability Maturity Self-Evaluation Tool. This tool is intended for agencies or regions to assess current capabilities with respect to traffic management. Once the current capability is identified, the tool provides concrete actions for agencies to improve their capabilities to a desired state of operations.

Modeled after the [AASHTO Systems Operations and Maintenance guidance](#), this tool assesses traffic management capability in the same six dimensions – Business Processes, Systems & Technology, Culture, Organization and Workforce, Performance Measurement, and Collaboration. However, in this tool, traffic management is viewed as a subset of the larger Systems and Operations programs. The capability levels and the actions are more focused and defined from a traffic manager's perspective. The actions may require other agencies to be the responsible party, which is intended to foster multi-agency collaboration and dialogue about traffic management at the regional level. Users that take this quiz are encouraged to share this tool with agencies that they collaborate and work with on traffic management of their respective transportation systems.

The tool comprises two major steps:

1. A multiple-choice quiz which establishes current capability
2. A menu of actions based on current and desired levels of capability

Before initiating the quiz, you may want to identify the individuals in your TMC and region who are best positioned and experienced to address the steps outlined above, and involve them throughout the self-evaluation and action planning process.

It is recommended that you set aside 4 hours to complete this self-evaluation. The results from this self-evaluation will provide the input to your capability maturity action plan.

At the bottom, there are input fields for 'Name' and 'Email'.

# Workshop Outcomes

- Familiarize participants with the tool so it can be a useful resource in to their agencies and regionally.
- Walk through the framework to give the participants a head start on their specific regional situation and identify a set of prioritized actions for implementation
- Help FHWA validate the tool and identify areas for possible improvement or refinement

# Fireside Chat: Traffic Management in the region

# Key Questions

- What are some success stories institutionally for traffic management in the region?
- What challenges continue to persist?
- What are some upcoming activities/projects which keep you up at night?
- What is keeping you from taking the next step in traffic management institutionally?

# 1-Minute (or 5-Minute) Evaluation

- Please indicate where you think your AGENCY (A) and the REGION (R) is in each of the capability dimensions?
  - Use best judgment for region
  - 1-2 minutes or less
  - If you feel that the agency or region is between levels, note that as a 1+ or 2+ in the handout
- 15 minute BREAK

# Results

Dimension	LA County	City of Pasadena	City of Arcadia	CHP	Caltrans	LA DOT	Region
Business Processes	4	2	2	3	2	2	2.33
Systems & Technology	4	4	2	2	1	4	2.17
Performance Measurement	3	3	1	2	1	2	1.67
Organization & Workforce	4	4	2	2	2	4	2.00
Culture	3	2	2	3	3	3	2.83
Collaboration	3	1	1	2	2	4	2.67

# Comparison to AASHTO CMM workshop (2 years ago)

Dimension	Level 1	Level 2	Level 3	Level 4	Current Workshop
Business Process	1+				2.33
Systems/ Technology		2-	3+ (Caltrans/ Safety)		2.17
Performance Management	1				1.67
Culture	1	2 (Caltrans)			2.00
Organization/ Workforce		2			2.83
Collaboration	1+ (routine)		3 (emergencies)		2.67

# Feedback

- What are the critical dimensions in the region?
- Results accurately reflect situation?
- Is there consensus around the critical dimension?
- Challenges to improvement?



# Break

# Exercise #1 – Detailed Self Assessment of Traffic Management Capability

# Focus of the Capability Assessment

- **Connected Corridor (I-210)**
- We will be walking through 30 or so questions individually
  - Some questions easier than others
  - Not applicable is a valid answer since the tool is also meant for regional operations
  - Discussion and comments for each question are more critical than the levels
  - The questions are being validated so criticism of wording, levels, relevance is greatly appreciated

# I-210 Project Corridor & Caltrans Partners

## Phase 1 Area of Interest



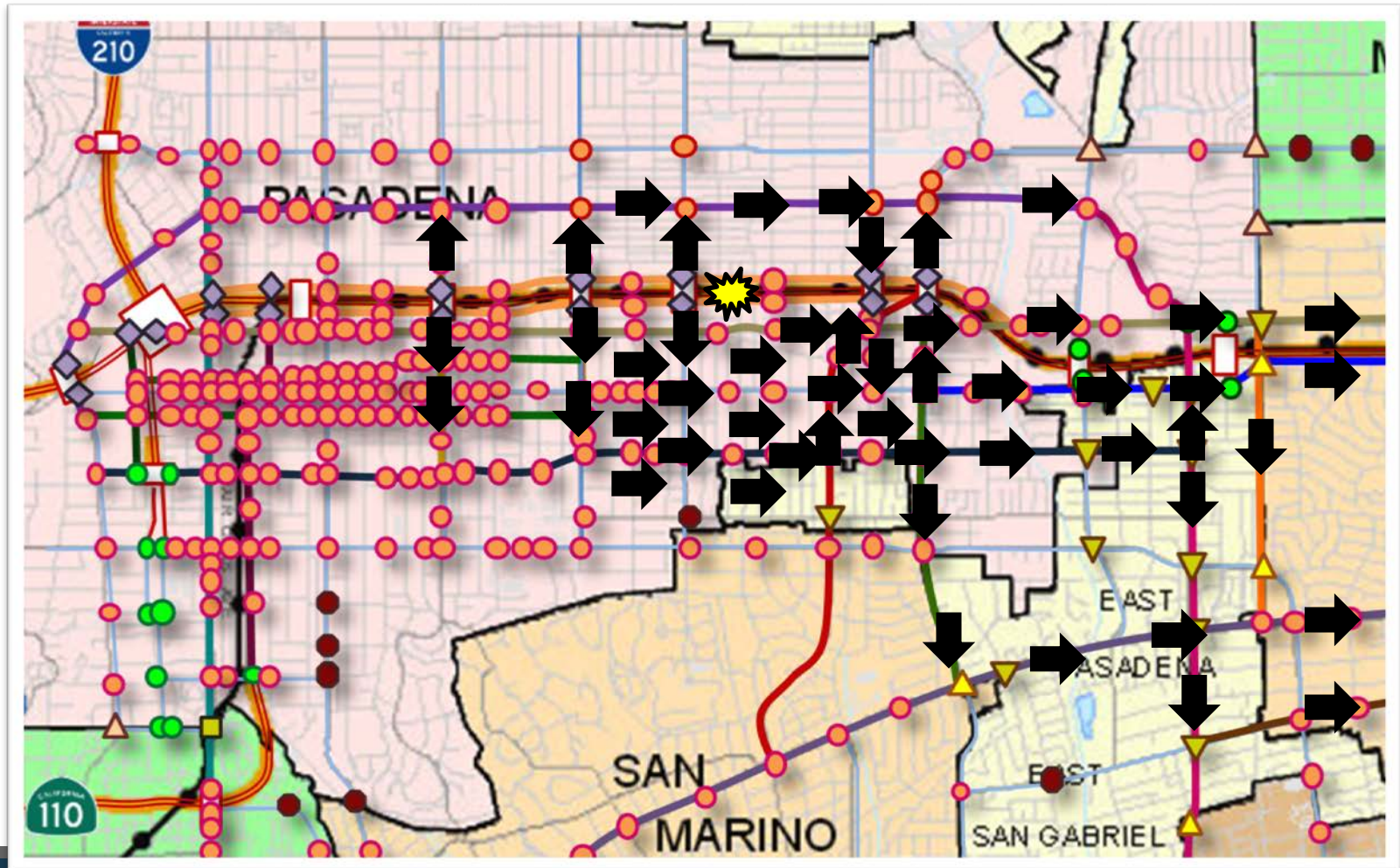
## Current Partners Identified (but are not limited to):

- Caltrans, Metro, UC Berkeley PATH, LA County, Pasadena, Arcadia, Monrovia, Duarte, (Phase 2 - Irwindale, Azusa, Glendora, San Dimas, and La Verne)

# I-210 Pilot Project Goals

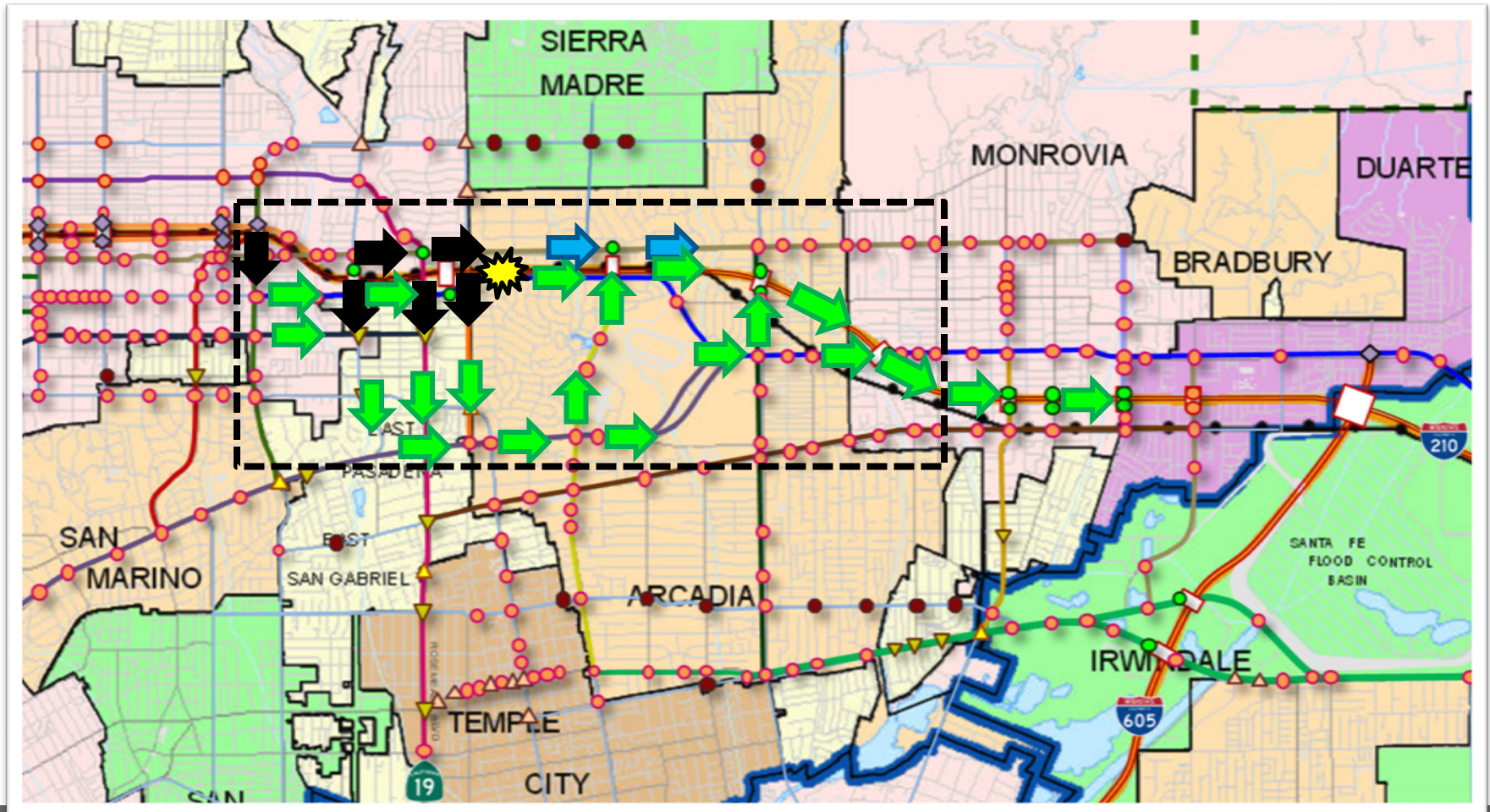
- ❑ Bring together corridor stakeholders to create an environment for mutual cooperation, including sharing knowledge, developing working pilots, and researching and resolving key issues
- ❑ Formulate a roadmap for the cost-effective implementation of future innovations
- ❑ Develop and deploy an integrated, advanced decision support system for use by the stakeholders as they actively manage the corridor
- ❑ Develop a set of performance measures to quantify the successes of the Connected Corridors pilot project
- ❑ Demonstrate project effectiveness that can lead to additional phases and funding for more advanced tools and capabilities
- ❑ Develop a pilot system that can be replicated on other corridors and be a model for other corridors in the state and country

# Operational Scenario (Incident Response Example)





# Operational Scenario (Incident Response Example)



# Interesting Qs?

- Questions with greatest variance between answers
- The highest rated questions
- The lowest rated questions



# Lunch

# Results

- To be tabulated

# How did we do?

- Consensus building
- Understanding of variance in key questions
  - Different reading of questions (note to clarify in the tool)
  - Differences in opinion (need to develop consensus)
- Overall assessment of levels
- Lowest rated dimension-
- Highest rated dimension-

# What Next?

# Actions

- Framework defines levels
- Actions define steps that an agency can take to advance levels
  - Level 1 to Level 2
  - Level 2 to Level 3
  - Level 3 to Level 4
- Advancing a level implies potentially taking actions across all dimensions

# Actions-2

- **Actions represent the thinking of various peers around the country as good practices and ideas**
- Concrete steps that an agency can take.
  - Start with action words...
  - Not too prescriptive, Not too generic
- Agencies can prioritize actions as part of their planning efforts

# Review of Actions

- 11x17 Handout lists all the actions that are available in the framework
- Focus should be on the lowest rated dimension since that is your primary constraint
- Actions are not prescriptive. They are suggestions and can be modified, improved, changed, or CREATED
- Not all actions need to be implemented right now
- If actions from other levels make sense, use them?

# Identification of Actions

- By each dimension starting with the weakest dimensions first
- Critical few in each dimension
- Identify a champion
- Think in 6-month increments



# Business Processes

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Systems and Technology

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Performance Measurement

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Culture

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Organization/Staffing

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Collaboration

Action	Owner	Timeframe (Yesterday, Short-Term, Near-Term)

# Wrap-Up

- Other feedback/evaluation
- How can we improve this tool?
- Ideas for marketing the tool nationally?
  - Tie-ins to any institutional activity?
- Will you be able to lead a session at your agency after this workshop?