NCHRP 08-113 Integration of Performance, Risk and Asset Management Self-Assessment Outline

# Objective

The purpose of this outline is to present a framework for a Transportation Performance, Risk and Asset Management Integration, Self-Assessment – Capability Maturity Matrix. It is the basis for a tool which will be developed later that transportation agencies can use to assess how well they are integrating Performance, Risk and Asset Management within their organization. It will aid in evaluating the maturity of their integrated program, identifying areas where they can take steps to improve and expand their capabilities.

# The Six Steps of Maturity

This section defines six unique levels of integrated management program maturity. Figures 1 and 2 outline these levels, describing an agency’s increasing capability to deliver effective performance, asset and risk management practices. Agencies which have not yet begun the process of integrating their management practices or have not shown commitment to do so will not have reached the initial level and will fall under the pre-integration level. The work completed in NCHRP 08-113 is intended to demonstrate the value of a highly integrated asset management program. Efforts will be made to reinforce the value of such a program to motivate agencies to begin to seek methods to move towards an integrated performance, asset, and risk management program, understanding the values and efforts associated with the integration of various areas at different levels.



**Figure 1. The Six Levels of Integration Maturity**

**Level 0 – Pre-Integration.** The agency has not yet begun the process of integrating their management practices or has not shown a commitment to do so.

**Level 1 – Initial Stage.** The agency has identified a need to integrate its risk, asset, and performance management programs and intends to undertake such work. At this stage the agency is identifying agency and leadership champions and determining the overall structure needed for establishing such an integrated program.

**Level 2 – Defined Stage.** The agency has established metrics for measuring the integration of risk, asset, and performance management. It has also established agency goals and has developed initial documentation for the intended integrated management system. The agency is also working towards measuring their current level of maturity and establishing a roadmap towards a highly integrated asset management program, including developing a timeline to put the program in place. The agency has undertaken work to integrate risk, asset, and performance management in at least one asset class. Processes have also been put into place that allow specific departments to further undertake such work on a small scale, which may primarily be reactive.

**Level 3 – Expanded and Repeatable Stage.** The agency has identified its approach to systematically and consistently achieving management area integration across asset classes and budgeting periods. However, management systems may not be fully coordinating among important assets and there may be discrepancies in approach, data management, and results across appropriate agency departments.

**Level 4 – Managed Stage.** The agency has worked to deploy an integrated management program across appropriate asset classes and departments. The agency is systematically measuring and monitoring its business, practices, and operations to ensure documented processes are followed consistently. The agency is also insuring that coordination and integration occur across the organization. These processes are producing results as expected at the project and program levels.

**Level 5 – Optimizing Stage.** The agency is committed to continuous improvement, constantly optimizing and working toward a system with highly integrated performance, risk, and asset management practices, where they are needed to advance the organization’s mission and achieve strategic goals.

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**Figure 2. Integration Maturity Descriptions**

# Components of the Self-Assessment Capability Maturity Matrix

The Self-Assessment Capability Maturity Matrix will consist of four components as illustrated in Figure 3. Each of the components includes several subcomponents. Each of the subcomponents will be evaluated on its “Maturity Level” using a scale of zero to five (0 – 5). The following sections provide a brief description of each of the components and their respective subcomponents.

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**Figure 3. Capability Maturity Assessment Outline**

## Component 1: Policy and Agency Structure

The Policy and Agency Structure component considers the organizational structure of an organization and the level of policies in place that support the development and use of the integrated system. There are seven subcomponents.

### Subcomponents

* The agency has identified an integration champion.
* The agency has modified its organizational structure to facilitate management area integration.
* The agency has modified its policies to support management area integration.
* The needs and goals of individual departments and functions are incorporated into agency strategy to ensure long-term success of integration.
* The Agency has identified innovation in management practices as a priority for agency leadership.
* Top management has authorized and bought-into a policy on innovation in management practices.
* The policy on innovation in management practices:
  + Provides a framework for development and implementation of a strategic management plan.
  + Sets out the agency’s commitment to satisfy applicable requirements.
  + Sets forth a commitment to continual improvement.
  + Is effectively communicated to employees and stakeholders.
  + Is reviewed and updated on a regular basis to support continuous improvements.

## Component 2: Human Capital (Capacity and Competency)

Human Capital refers to the people managing the work of the organization as well as the people doing the work of integration. There are five subcomponents that consider the people aspects of an integrated Performance, Risk and Asset Management system and measure.

### Subcomponents

* Agency leadership shows strong support for integration and motivates staff to participate.
* Employees have skills and training needed to understand and support their roles in integration.
* Expectations and incentives for employees and groups are tied to measures of integration.
* Knowledge retention tools and succession planning are integrated into agency policy and structure.
* Staffing needs are regularly evaluated to ensure that new roles are created, and existing roles are modified as needed to support evolving requirements over the course of integration and beyond.

## Component 3. Resource Requirements

This section considers the agency’s support for developing an integrated system through funding and other key resources. The six identified subcomponents are outlined below.

### Subcomponents

* The need for the budgets for asset, performance, and risk management are combined or are highly flexible and funding can be moved to support changing asset needs.
* The agency has established funding specifically to support management area integration.
* The agency has developed flexible programming plans to account for variations in available funding consistent with asset needs, risk, and performance.
* The agency has established support for integration from executive leadership and/or legislators for integration and has an approved integration strategy.
* The top management demonstrate leadership and commitment to integration by ensuring related policy, strategic plan and integration objectives are established and aligned to organizational objectives.
* Top management ensures that resources for the integrated management system are available and actively directs and supports people to contribute to an effective program.

## Component 4. Data and Information Systems

Component 4 considers the agency’s work to develop and maintain data and information systems needed to support integrated systems. Nine subcomponents of this subject are outlined below.

### Subcomponents

* Management systems support integration (e.g., cross-program tradeoff analysis and target setting)
* Good data governance is being implemented, with rules and procedures for acquiring, managing, analyzing, reporting, and disposing of data to support integration
* Historical, current, and projected future performance data and indicators support planning, programming, implementation, and other integrated decision making
* Internal and external factors are identified and recorded in the information system for the agency to forecast potential influence, demand, and required level of services
* Quantitative forecasting analysis and software are used to develop alternative planning scenarios and to address uncertainties in data and models
* The agency determines, obtains, and manages the financial, non-financial, and technical data and information that is necessary to enable the integrated management
* The agency reviews the data and information periodically in the light of developments in quantitative and qualitative analytical measures as well as the criticality and complexity of the decisions being made
* The agency implements changes to the measurement, collection and analysis of data and information that support integrated management where it is beneficial
* The agency has a process to identify, create, regularly review, update, and control the documented information