

Using a Concept of Operations to Support Regional Integration Projects

Developing and operating large-scale integrated transportation management systems at the regional, statewide, and multi-state level is extremely complex. Experience has shown that the use of a structured systems engineering process is critical to support such an endeavor. The foundation of the systems engineering process is the concept of operations. Transportation agencies require concrete guidance to support the development and use of a concept of operations for regional, statewide, and multi-state transportation management systems.

This detailed document provides technical guidance and recommended practices for concepts of operations in regional, statewide, and multi-state transportation management systems. The document addresses:

- Benefits of developing a concept of operations
- Challenges posed by a regional initiative
- Development process
- Use throughout system lifecycle

Intended Audience

The guide is intended for individuals involved in, or responsible for, a wide range of transportation operations activities: Management, Planning, Design, Operation, and Maintenance. This will include but will not be limited to officials of Departments of Transportation, planning commissions, emergency service organizations, etc. This guidance document will be useful to a broad scope of people - ranging from technical personnel to individuals with less technical knowledge:

- Managers will find the guide useful in that it elucidates the need to identify the wide range of user expectations implicit in a regional initiative and the need to define roles and responsibilities of other transportation professionals who will interact with the proposed system.
- Planners can use the guide to be apprised of the factors that need to be considered in addressing regional transportation needs, such as resource identification, ongoing operations and maintenance support, cooperative agreements, and the usefulness of a Concept of Operations for future planning activities.
- Designers and builders involved in regional integration efforts can learn from the guide how a concept of operations can support the identification of high-level functional requirements and inform other phases of the systems engineering process.

Key Technical Topics Addressed

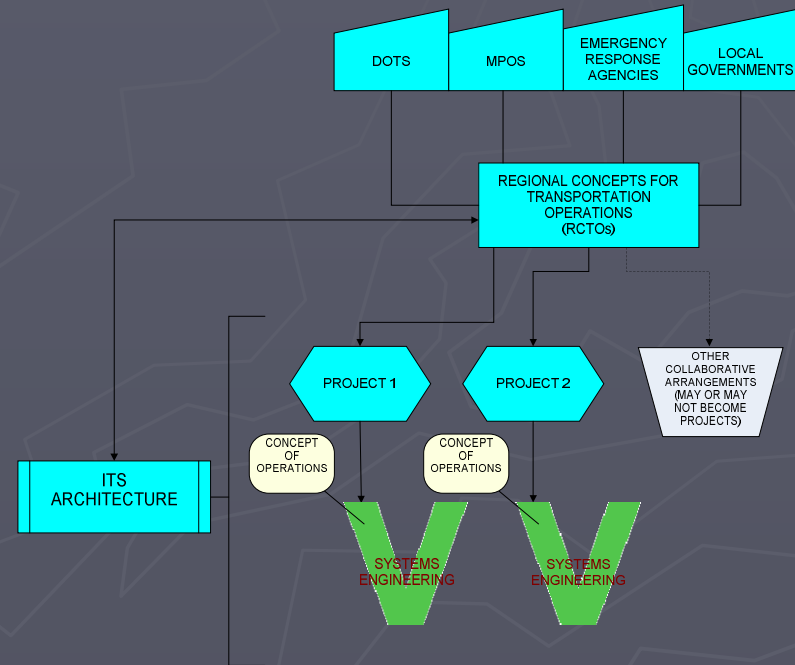
- The distinction between a concept of operations for a TMC/TMS and a concept of operations for regionally integrated systems
- What should be included in concepts of operations for regional, statewide, and multi-state transportation management systems
- How to develop a concept of operations based on the identified needs and constraints unique to a particular region, state, or multi-state corridor/region and the stakeholders to be involved with the system
- How to effectively use the concept of operations throughout the life-cycle of a regional/statewide/multi-state transportation management system
- How to identify the stakeholders and need for collaboration and coordination
- How to use the regional concept of operations to support requirements



U.S. Department
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Chapter Titles

1. Introduction
2. Systems Engineering Overview
3. Concept of Operations in the Regional Context
4. Concept of Operations Defined for the Regional Initiative
5. Developing a Concept of Operations for a Regional Initiative
6. How to Use a Concept of Operations in Regional Integration Initiatives
7. Case Study



Concept of Operations in the Regional Context

This diagram from Chapter 3 shows how a Regional Concept for Transportation Operations (RCTO), with input from regional stakeholders and ITS Architecture, can develop plans for regional operations leading to individual projects, each of which can be implemented using systems engineering guided by a concept of operations.