

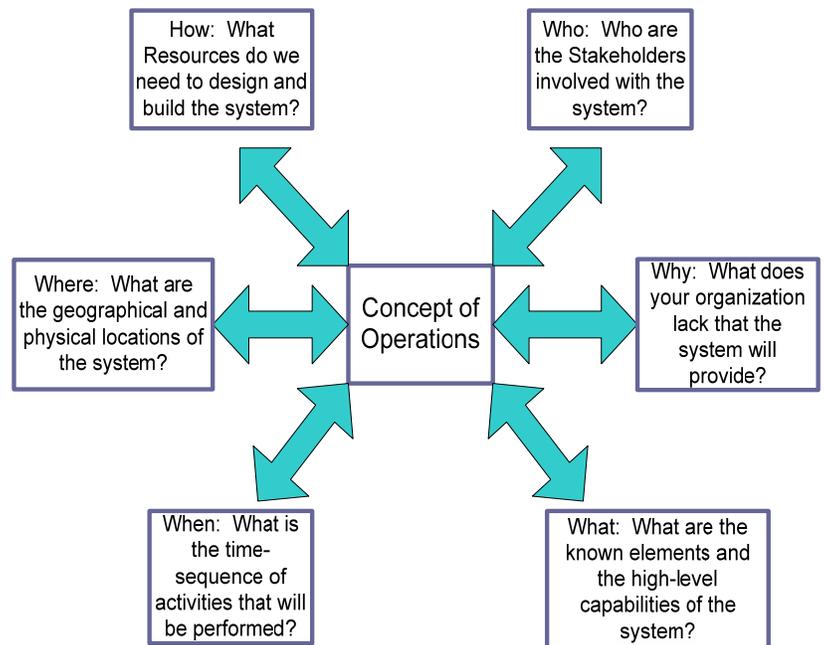
Developing and Using a Concept of Operations in Transportation Management Systems

A Concept of Operations serves as the foundation for the systems engineering process. *It is defined as a high-level description of what the major system capabilities will be, and it should be written such that people with a wide range of technical backgrounds may easily understand it.*

A Concept of Operations attempts to answer the who, what, when, where, why, and how questions for new systems in general terms.

As with anything that is built and utilized, the entire entity is only as strong as its foundation. The Concept of Operations should be a document available, and relevant, to all stakeholders in the system, no matter what their background or role within the system. In the context of a

Transportation Management System (TMS), it should be as readable and relevant to high-level decision makers and community leaders as it is to the TMS manager, the TMS operator, and other transportation professionals.



Why Use a Concept of Operations?

The primary motivations for moving forward with the development of a Concept of Operations include the following:

- The identification of system stakeholders and the assurance that they will communicate in a common forum.
- The formulation and documentation of a high-level system definition.
- The foundation for all lower-level sub-system descriptions.
- The definition of all major user groups and activities.
- The identification of the environment in which the system will function.



Benefits of Concept of Operations Use and Development

There are a variety of benefits that can accrue to an organization or group of organizations from developing a Concept of Operations, including the following:

- Stakeholder Consensus
 - Create consensus on the priority needs for an organization
 - Bridge the gap between the technical and operational sides of an organization
 - Provide continuity over the ebbs and flows of the economy and politics
- Reduction of Risk for the System
 - Reduce the risk of schedule and cost overruns
- Improvement in the quality of operations
 - Matching the agreed upon vision with the implemented, operational system



Benefit Testimonials

"The biggest benefit from developing a Concept of Operations is getting all the stakeholders to agree on what they all do and what they need from each other."

"In the systems life cycle, the Concept of Operations defines the players and the objectives, as system developers move through the systems life cycle, going deeper and deeper into the details of the system development, it is often easy to lose track of what one is to accomplish overall, no matter what the stage of the systems' development, the Concept of Operations helps to clear this up – it helps to keep the big picture in mind."

"Developing operational procedures, operational manuals [for an existing system], to clarify what their client (e.g. a department of transportation) wants of them for certain tasks. Under the present circumstances, if you ask one person who is a user in the system, what they're supposed to do, they will give you a slightly different, but similar, perspective on their duties or tasks. A Concept of Operations would serve as the baseline, spelling out what we do; the operational manuals developed thereafter, would tell us how we do it, but they need the underlying purpose (from the Concept of Operations)."

- Comments obtained from 2004 internet survey of transportation professionals

Additional Resources

The handbook entitled *Developing and Using a Concept of Operations in Transportation Management Systems* is intended to serve both as a comprehensive introduction to the Concept of Operations and a reference document for professionals involved in developing and using a Concept of Operations for Transportation Management Systems. For a non-technical audience, the *Primer* identifies key aspects of Concept of Operations, identifies the benefits of developing and using Concept of Operations, and profiles successful practices of existing programs. The material is available on the TMC Pooled-Fund Study website at <http://tmcdfs.ops.fhwa.dot.gov/>.

- Handbook, FHWA-HOP-07-001
- Brochure, FHWA-HOP-07-004
- Primer, FHWA-HOP-07-003

