

Guiding Principals

The following nine principles serve as a starting point for any TMS to implement a CM process.

1. Identify the context and environment in which CM is to be implemented and develop an appropriate CM Plan accordingly.
2. Define procedures describing how each configuration management process will be accomplished.
3. Conduct training so that all responsible individuals understand their roles and responsibilities and the procedures for implementing configuration management processes.
4. All items are assigned unique identifiers so that one item can be distinguished from other items.
5. Configuration documentation defines the functional, performance, and physical attributes of a system.
6. A baseline identifies an agreed-to description of the attributes of an item at a point in time and provides a known configuration to which changes are addressed.
7. Each change is uniquely identified.
8. Consider the technical, support, schedule, and cost impacts of a requested change before making a judgment as to whether or not it should be approved for implementation and incorporation in the item and its documentation.
9. Implement a change in accordance with documented direction approved by the appropriate level of authority.

Resources and Training

- CM for TMS Handbook, FHWA-OP-04-013, EDL# 13885
- CM for TMS Primer, FHWA-OP-04-014, EDL# 13886
- CM for TMS Fact Sheet, FHWA-OP-17, EDL# 13889
- CM for TMS Training Course, FHWA-NHI-03-119

"Configuration Management, applied over the life cycle of a system, provides visibility and control of its performance, functional and physical attributes. Configuration Management verifies that a system performs as intended, and is identified and documented in sufficient detail to support its projected life cycle."

- EIA Standard 649



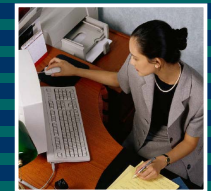
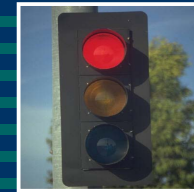
For More Information:

Configuration Management for Transportation Management Systems is available on the TMC Pooled-Fund Study website at <http://tmcdfs.ops.fhwa.dot.gov>

For information on the TMC Pooled-Fund Study, visit our website at <http://tmcdfs.ops.fhwa.dot.gov>

Call the FHWA Operations Help Line toll-free (866) 367-7487

MAINTAINING AND SUSTAINING SYSTEM INTEGRITY



Configuration Management for Transportation Management Systems

September 2003

What is Configuration Management?

Configuration Management (CM) describes a series of processes and procedures developed in the information technology community to establish and maintain system integrity. It provides a holistic approach for effectively controlling system change and is an integral part of the systems engineering process. CM helps to verify that changes to subsystems are considered in terms of the entire system, minimizing adverse effects.

The handbook entitled *Configuration Management for Transportation Management Systems* is intended to provide guidance for transportation professionals that are responsible for developing and maintaining complex Intelligent Transportation Systems (ITS) and Traffic Management Systems (TMS). The handbook expands on the information presented here, by detailing the various aspects and components of CM, and profiling several ITS organizations that have effectively applied CM techniques.

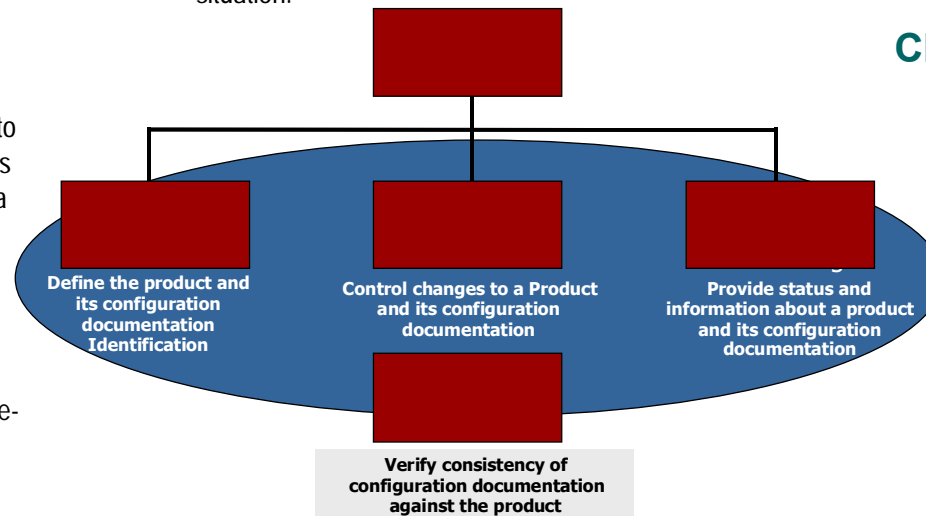
CM in TMS - Current Practices

In the spring of 2000, a survey was conducted to gauge the use of CM by transportation agencies in the United States. The survey revealed that a relatively low percentage of TMS agencies use CM. Particularly notable was that only 27% of signal control systems reported using CM. The survey clearly points to a need to educate the TMS community about CM in order to realize a significant commitment to this valuable resource-saving activity.

Configuration Management Process

The general CM process, graphically demonstrated below, is made up of the following elements:

- **Configuration Identification** – process of documenting and labeling the items in the system, by providing a unique identifier to track changes and identify item location.
- **Change Management** – process of assessing impacts of a possible changes to a system, determining the fate of the proposed change, executing the approved changes, and ensuring that the change is properly documented.
- **Configuration Status Accounting** – process of ensuring that all of the relevant information about an item is up to date and as detailed as necessary.
- **Configuration Audits** – process of analyzing Configuration Items and their respective documentation to ensure that it reflects the current situation.



Benefit Testimonials

"With almost 20 years experience in the design, implementation, modification and expansion of our system, the benefits of quickly being able to recover from problems by returning to an earlier working state are enormous. Our system has been very dynamic, and there is always an area where we are working on an improvement or upgrade, while still actively managing traffic."

"As in any large, complex system, CM can provide a constant understanding of the current state of the system.... The key factor in CM is having a central repository of information for reference as personnel changes occur over the life of the system. It is also a great aid in maintaining the system when items are replaced for repair. Technicians should have ready access to configuration data when installing or re-installing standard system components."

- Offered by respondents to a Spring 2000 survey of transportation agencies.

Challenges of Instituting CM in a TMS Organization

- CM must be implemented as early as practical in the development of the system and continued throughout the system's life cycle.
- Development and implementation of CM requires a significant investment of both human resources and capital.

- Offered by Georgia Department of Transportation