

**Intelligent Transportation Systems (ITS)  
Commercial Vehicle Operations (CVO)**

**CVISN Operational and Architectural  
Compatibility Handbook (COACH)**

**Part 2**

**Management Checklists**

Preliminary Version

POR-97-7067 P2.0

## This is a Preliminary Issue

It is important to note that this is a preliminary document. All sections included are complete and have been reviewed by JHU/APL, but not by other DOT contractors or state/federal government agencies. The purpose of this issue is to obtain comments and feedback on this document from those external organizations before a baseline version is published.

**Note:** This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from the JHU/APL CVISN site on the World Wide Web, at <http://www.jhuapl.edu/cvisn/>.

Comments and suggestions pertaining to this document, as well as lessons learned while applying it, are solicited and will be welcomed. Please respond to:

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### Change Summary:

Version P2.0 of this document incorporates revisions related to these change requests:

- CRF 728 – Update COACH Part 2 in entirety.

**CVISN Operational and Architectural Compatibility Handbook (COACH)  
Part 2 – Management Checklists**

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# 1. INTRODUCTION

The CVISN Operational and Architectural Compatibility Handbook (COACH) provides a comprehensive checklist of what is required to conform with the Commercial Vehicle Information Systems and Networks (CVISN) operational concepts and architecture. It is intended for use by state agencies with a motor carrier regulatory function and by motor carriers. It is also intended to provide a quick reference for developers of CVISN Core Infrastructure systems.

Reference 3, the CVISN Glossary, contains an acronym list as well as brief descriptions of many commonly used terms.

## 1.1 COACH Structure

The COACH is divided into 5 parts:

Part 1 - Operational Concept and Top-Level Design Checklists

**Part 2 - Management Checklists**

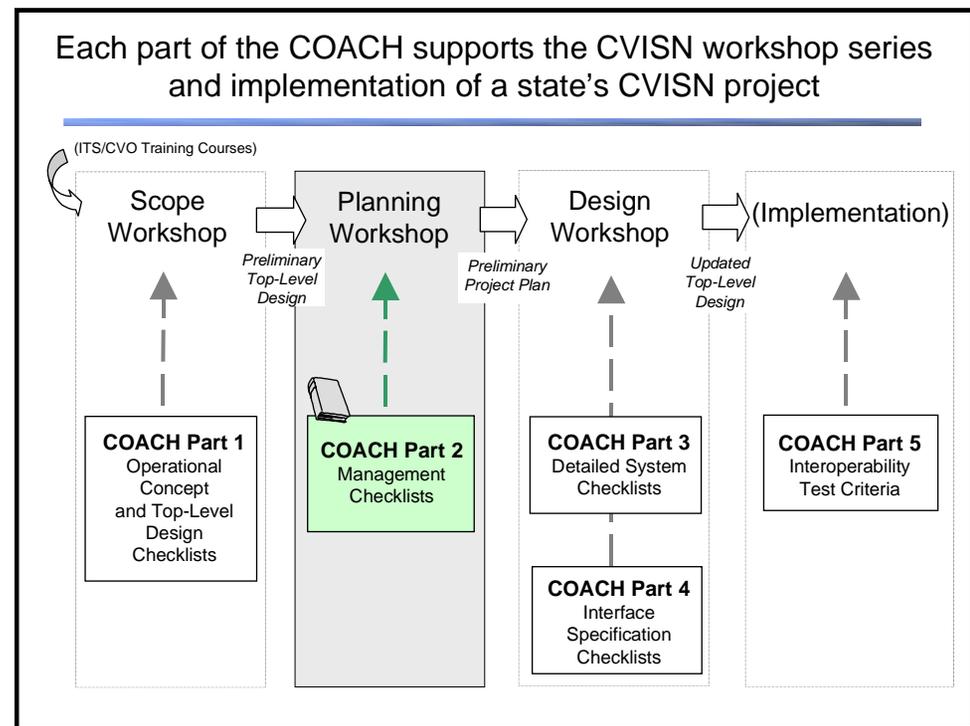
Part 3 - Detailed System Checklists

Part 4 - Interface Specification Checklists

Part 5 - Interoperability Test Criteria

All are available at the Browse and Download Documentation; Architecture section of the JHU/APL CVISN web site <http://www.jhuapl.edu/cvisn/>.

Figure 1-1 The COACH Supports the Workshops



## 1.2 COACH Part 2 Description

This is Part 2 of the five-part COACH. It includes three checklists associated with the methodology for planning, developing, and managing CVISN information systems:

- Program/Project Management.
- Program/Project Planning.
- Phase Planning and Incremental Development.

The COACH Part 2 checklists are intended to be used to indicate the scope and depth of a state's commitment to a common programmatic approach to CVISN, and to provide a tickler for remembering the steps associated with that approach.

Each state should create and maintain a filled-in master copy of the COACH. This is most easily done by typing directly into the MS Excel workbook version of the checklists (the tables in this MS Word document were cut and pasted from that Excel workbook).

## 1.3 Relationship to the Guides

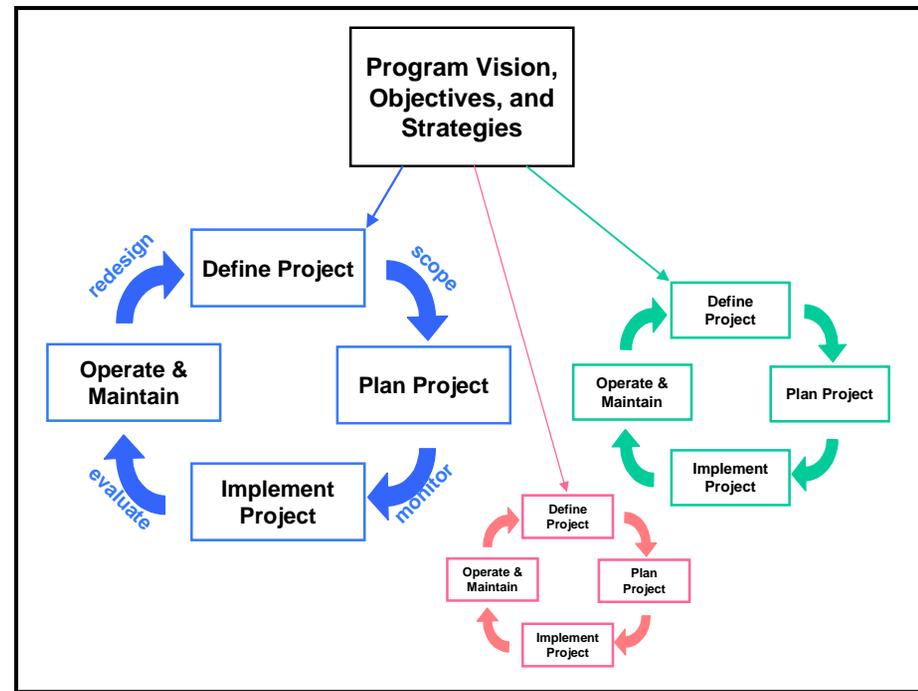
Before completing the COACH Part 2 checklists in Chapters 2 and 3, states should read the *CVISN Guide to Program and Project Planning* [9]. Before completing the checklists in Chapter 4, states should read the *CVISN Guide to Phase Planning and Tracking* [10].

## 1.4 “Program” vs “Project”

The COACH Part 2 checklists refer to the entities “Program” and “Project”. Although they sound like synonyms these words have different formal meanings as explained below.

**Program** -- A group of related projects managed in a coordinated way to obtain benefits not available from managing them individually. Programs usually include an element of ongoing activity. For example, publishing a newspaper is a program; each individual issue is a project. The person in charge is called the “Program Manager”.

**Project** -- A temporary endeavor undertaken to create a unique product or service. Taking on the CVISN Program sets in motion a mixture of projects that deploy utility and performance in the three major functional areas, as illustrated in Figure 1-2. For example, electronic screening at a weigh station is a project. The person in charge is called the “Project Leader”.



**Figure 1-2 A Program Gives Rise to Interrelated Projects**

See Chapter 1 in the *CVISN Guide to Program and Project Planning* [9] for further discussion of “program” versus “project”.

### 1.5 CVISN Program / Project Management

COACH Part 2 applies the design decisions recorded in COACH Part 1. Fundamental to program and project planning is the work breakdown structure (WBS). The Work Breakdown Structure (WBS) is the bridge from the system design to the program and project plans. The WBS is a hierarchical decomposition of the work to be done to implement the system design. Each state should develop a WBS based upon their system design. Templates and a full discussion of this methodology are given in Reference [9].

## 1.6 How States Should Use This Document

The COACH summarizes key concepts and procedural guidelines for deploying CVISN. The COACH focuses on topics of proven worth to state project teams. State program managers should begin with COACH Part 1, before filling out Part 2.

The key planning concepts and procedural guidelines for CVISN states have been summarized in this document in a series of checklist tables. Each table in this document consists of these columns:

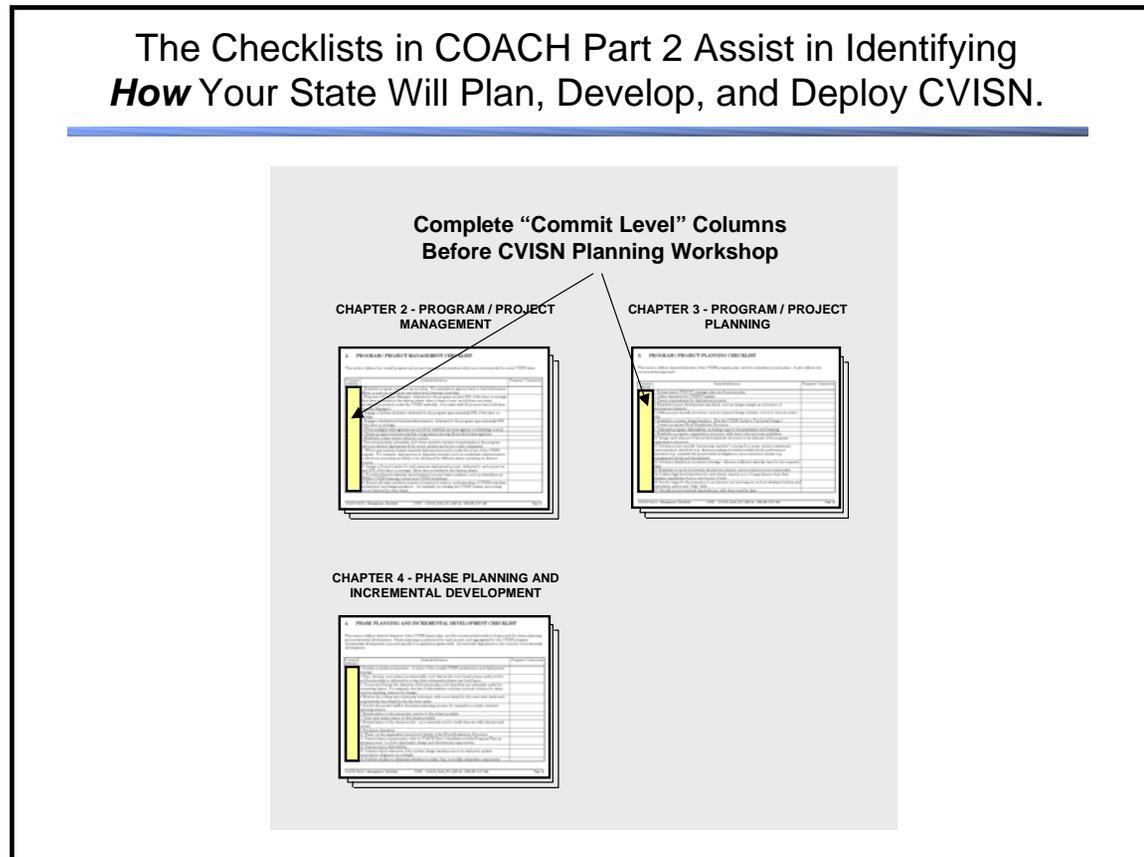
- Commit Level (F/P/N) – the state’s commitment level to the intended action.  
Using the first column of each checklist entry, a **commitment level should be filled in** by the state. There are three possible levels of commitment:
  - (F) This rating indicates a **full** commitment. This level means that at least 80% of the state’s CVISN projects are intended to be managed in a way that is compatible with the checklist action statement.
  - (P) This rating indicates a **partial** commitment. This level means that between 50% and 80% of the state’s CVISN projects are intended to be managed in a way that is compatible with the checklist action statement.
  - (N) This rating indicates **no** commitment. This level means that less than 50% of the state’s CVISN projects are intended to be managed in a way that is compatible with the checklist action statement.
  
- Intended Action – summary statements of the management policy or process technique that the state is being asked to commit to.
  
- Preparer Comments – available for the state to refer to another document or plan, note a question, record a clarifying statement, etc.

If the state maintains its master copy of this document electronically, the following conventions are recommended when filling in the columns to illustrate the “firmness” of the state’s plan:

- *Italics type* : Tentative, not approved by the final decision makers.
- Regular type : Approved by the decision makers (or supported by consensus).
- **Bold type** : Completed.

**Figure 1-3 Using the COACH Part 2**

States are to fill out the “Commit Level” column for the tables in chapter 2 (Program/Project Management), chapter 3 (Program/Project Planning), and chapter 4 (Phase Planning and Incremental Development), prior to attending the CVISN Planning Workshop.



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## 2. PROGRAM / PROJECT MANAGEMENT CHECKLIST

This section defines the overall program and project management practices which are recommended for every CVISN state.

Commit (F/P/N)	Intended Actions	Preparer Comments
	1. Establish program executive sponsorship. For example an agency head or chief information officer; or a group such as an executive-level steering committee.	
	2. Empower a Program Manager, dedicated to the program at least 30% of the time on average. More time is needed in the startup phase, when a team is new, and if there are many simultaneous projects under the CVISN umbrella. (One state with 20 projects has a full-time Program Manager.)	
	3. Engage a System Architect, dedicated to the program approximately 80% of the time on average.	
	4. Engage a facilitator/scheduler/administrator, dedicated to the program approximately 50% of the time on average.	
	5. When multiple state agencies are involved, establish an inter-agency coordinating council.	
	6. Obtain an approved memorandum of agreement among all involved state agencies.	
	7. Establish a state carrier advisory council.	
	8. Recruit interstate, intrastate, and owner-operator carriers to participate in the program before production deployment (both motor carriers and motor coach companies).	
	9. Where appropriate initiate separate deployment projects under the scope of the CVISN program. For example, deployments in disparate domains such as credentials administration vs electronic screening are likely to be developed by different teams operating as distinct projects.	
	10. Assign a Project Leader for each separate deployment project, dedicated to each project at least 30% of the time on average. More time is needed in the startup phase.,	
	11. Provide adequate training opportunities to project team members, such as attendance at FHWA's CVISN training courses and CVISN workshops.	
	12. Ensure all team members acquire a broad and common understanding of CVISN activities, architecture, and design guidance -- for example, by reading the CVISN Guides, and noting lessons-learned by other states.	

Commit (F/P/N)	Intended Actions	Preparer Comments
	13. Foster a sense of professional fellowship and teamwork. Likely to require teambuilding interventions such as a partnering workshop; and periodic face-to-face meetings of geographically dispersed teams.	
	14. Adopt the strategy of incrementally developing and deploying products in 3-6 month phases, where each phase adds additional CVISN capabilities. This is called the “spiral” development model as opposed to the “linear” model. Refer to the CVISN Guide to Phase Planning & Tracking.	
	15. Establish a configuration management process for controlling changes to the system baseline; this typically includes a Configuration Control Board. Utilize state's existing configuration control process wherever possible.	
	16. Set up a program library; obtain needed references identified in the CVISN Guide to Program & Project Planning.	
	17. Maintain a list of action items, decisions, and issues. (By definition action items require formal closure.)	
	18. Delineate needs for external communications with stakeholders (including the state legislature), and with related projects.	
	19. Conduct monthly team meetings and status assessments.	
	20. Track progress versus schedule monthly; strategize accordingly.	
	21. Conduct quarterly stakeholder progress reviews before a wider audience.	
	22. Monitor actual costs and resource expenditures relative to estimates.	

### 3. PROGRAM / PROJECT PLANNING CHECKLIST

This section defines desired elements of the CVISN program plan, and the subsidiary project plans. It also defines the recommended approach.

Commit (F/P/N)	Intended Actions	Preparer Comments
	1. Review state's ITS/CVO strategic plan and business plan.	
	2. Define objectives for CVISN Program.	
	3. Derive requirements for deployment projects.	
	4. Establish project development standards, such as design margin as a function of development lifecycle.	
	5. Define project-specific processes, such as required design reviews, or how to close an action item.	
	6. Establish a system design baseline. (See the CVISN Guide to Top-Level Design.)	
	7. Create a program Work Breakdown Structure.	
	8. Delineate program deliverables, including support documentation and training.	
	9. Establish a program organization structure, with clear roles and responsibilities.	
	10. Assign each element of the work breakdown structure to an element of the program organization structure.	
	11. Develop project-specific "partnering charters" covering four areas: mission statement; communication objectives (e.g. decision-making at lowest possible level); performance objectives (e.g. complete the project without litigation); issue resolution system (e.g. management levels and timeframes).	
	12. Develop a flexible procurement strategy. Allocate sufficient calendar time for the required steps.	
	13. Establish a top-level schedule divided into phases; ensure milestones are measurable.	
	14. Outline high-level objectives for each phase; express in a 1-2 page phases chart that explains capabilities from a user's point of view.	
	15. Set the stage for the transition to production use and support; such as database backup and restoration, and a user "help" desk.	
	16. Identify project external dependencies, with their need-by date.	

Commit (F/P/N)	Intended Actions	Preparer Comments
	17. Estimate cost and resource requirements first using summary top-down methods, such as historical analogy and manager's judgement. This will initiate the process and set targets.	
	18. Estimate cost and resource requirements using bottoms-up detailed methods, such as resource-type quantities for each element of the WBS. This will get 'buy in" from the staff, and validate the top-down estimates.	
	19. Determine potential funding sources and obtain funding commitments	
	20. Identify both programmatic and technical issues and develop a resolution plan.	
	21. Obtain approval, publish, and distribute program plan document. Include completed COACH Part 2 checklists as an appendix.	
	22. Maintain on each project a Project Leader's notebook with up-to-date copies of essential key charts and diagrams.	
	23. Maintain a Program Manager's notebook with up-to-date copies of essential key charts and diagrams.	
	24. Once a year or more often, re-figure the estimate-to-completion.	

#### 4. PHASE PLANNING AND INCREMENTAL DEVELOPMENT CHECKLIST

This section defines desired elements of the CVISN phase plan, and the recommended method of approach for phase planning and incremental development. Phase planning is performed for each project, and aggregated for the CVISN program. Incremental development is project-specific but applied program-wide. Incremental deployment is the outcome of incremental development.

Commit (F/P/N)	Intended Actions	Preparer Comments
	1. Sustain a system perspective -- a vision of the overall CVISN architecture and deployment strategy.	
	2. Plan, develop, and release incrementally, such that at the end of each phase useful end-to-end functionality is delivered in a way that subsequent phases can build upon.	
	3. Choose and format the elements of the phase plan such that they are naturally useful for presenting status. For example, the list of deliverables could also include columns for dates, current standing, reasons for change.	
	4. Employ the rolling wave planning technique, with more detail for the near-term tasks and progressively less detail for the far-term tasks.	
	5. Involve the project staff in the phase planning process, for example in a team-oriented planning session.	
	6. Review items on the issues list; resolve to the extent possible.	
	7. Close open action items, to the extent possible.	
	8. Review items on the decisions list -- as a reminder and to verify they are still relevant and correct.	
	9. Set phase objectives.	
	10. Flesh out the applicable lowest-level details of the Work Breakdown Structure.	
	11. Derive phase requirements; refer to COACH Part 1 checklists and the Program Plan as starting points. Look for alternative design and development approaches.	
	12. Itemize phase deliverables.	
	13. Indicate which elements of the system design baseline are to be deployed; update presentation diagrams accordingly.	
	14. Perform studies to determine whether to make, buy, or modify subsystem components.	

Commit (F/P/N)	Intended Actions	Preparer Comments
	15. Develop a detailed schedule for the work to be accomplished during the current phase. Most effectively done by identifying and linking activities per the critical path method, utilizing a desktop scheduling tool. The output can be printed as both a Gantt (bar) chart and a PERT (network) chart.	
	16. Identify named individuals who will perform the activities in the detailed schedule.	
	17. Update project external dependencies, with their need-by date.	
	18. Update the master program phases chart.	
	19. Complete the detailed design for all components and interfaces to be developed or modified in the phase. Start with the top-level design and phase objectives. Use COACH Part 3 checklists as guidance, plus the Scope and Design Workshops.	
	20. Define subsystem and component control and data interfaces. Utilize COACH Part 4 for functional allocation.	
	21. Conduct technical reviews in order to catch problems as early as possible in the development life cycle.	
	22. Maintain a strict version numbering system for all products.	
	23. Maintain stakeholder commitment via visibility into progress by physical demonstrations of useful capability, and by regular management status reporting.	
	24. Define system acceptance criteria; use COACH Part 5 checklists as guidance.	
	25. Conduct operational acceptance tests at the end of each phase; specify re-work if necessary.	
	26. Conduct a lessons learned session at the end of each phase (as part of planning the next phase).	

## 5. REFERENCES

1. **CVISN Website** hosted by the Johns Hopkins University Applied Physics Laboratory (JHU/APL) at <http://www.jhuapl.edu/cvisn/>.
2. JHU/APL, **CVISN Toolkit CD ROM**. *A comprehensive set of technical documentation and planning tools assembled on a CD-ROM to assist new CVISN deployment states in the development of their CVISN Project Plans before, during, and after the CVISN Workshops.*
3. JHU/APL, **ITS/CVO CVISN Glossary**, POR-96-6997. Available on-line at the CVISN Website [1].
4. JHU/APL, **CVISN Operational and Architectural Compatibility Handbook (COACH), Part 1 - Operational Concept and Top-Level Design Checklists**, POR-97-7067. Available on-line at the CVISN Website [1].
5. JHU/APL, **CVISN Operational and Architectural Compatibility Handbook (COACH), Part 3 - Detailed System Checklists**, POR-97-7067. Available on-line at the CVISN Website [1].
6. JHU/APL, **CVISN Operational and Architectural Compatibility Handbook (COACH), Part 4 - Interface Specification Checklists**, POR-97-7067. Available on-line at the CVISN Website [1].
7. JHU/APL, **CVISN Operational and Architectural Compatibility Handbook (COACH), Part 5 - Interoperability Test Criteria**, POR-98-7126. Available on-line at the CVISN Website [1].
8. JHU/APL, **Introductory Guide to CVISN**, POR-99-7186. Available on-line at the CVISN Website [1].
9. JHU/APL, **CVISN Guide to Program & Project Planning**, POR-99-7188. *Appendix A lists valuable project management references, including quite a few that published "lessons learned" from ITS deployments throughout the country.* Available on-line at the CVISN Website [1].
10. JHU/APL, **CVISN Guide to Phase Planning & Tracking**, POR-99-7189. Available on-line at the CVISN Website [1].
11. JHU/APL, **CVISN Guide to Top-Level Design**, POR-99-7187. Available on-line at the CVISN Website [1].

12. JHU/APL, *CVISN Guide to Integration and Test*, POR-99-7194. Available on-line at the CVISN Website [1].
13. JHU/APL, *CVISN Guide to Safety Information Exchange*, POR-99-7191. Available on-line at the CVISN Website [1].
14. JHU/APL, *CVISN Guide to Credentials Administration*, POR-99-7192. Available on-line at the CVISN Website [1].
15. JHU/APL, *CVISN Guide to Electronic Screening*, POR-99-7193. Available on-line at the CVISN Website [1].