



Commercial Vehicle Information Systems and Networks (CVISN) Level 1 includes three types of systems: national systems, state systems, and carrier systems. The national systems include Motor Carrier Management Information System (MCMIS), Safety and Fitness Electronic Records (SAFER), the International Registration Plan (IRP) Clearinghouse, and the International Fuel Tax Agreement (IFTA) Clearinghouse. These systems have all been deployed and are in some early stage of operation. State systems are being deployed one state at a time. As part of each state's deployment, it will partner with a limited number of carriers. After the state's systems have been proven with a few carriers, it is anticipated that many other carriers will begin to deploy their systems. Figure 6-1 shows a recommended process for states to use.

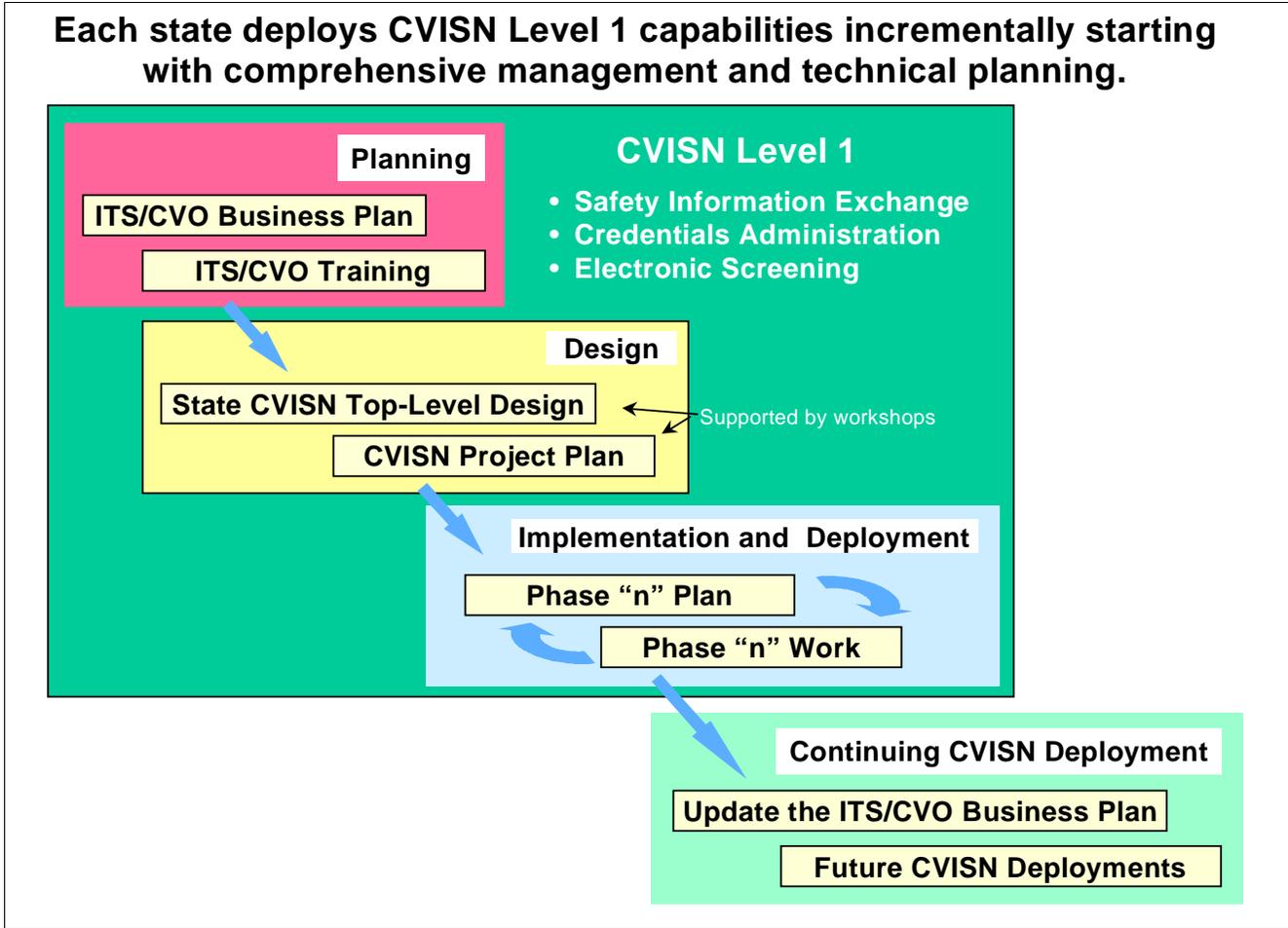
The Federal Motor Carrier Safety Administration (FMCSA) strongly recommends that Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO) project teams use the process shown in Figure 6-1 to minimize risk and achieve conformance with the ITS National Architecture.

The recommended state deployment strategy for CVISN Level 1 consists of three key steps: Planning, Design, and Implementation and Deployment.

**Planning** – This step includes participation in two ITS/CVO training courses and the development of an ITS/CVO State Business Plan. These elements promote ITS/CVO awareness and are essential to effective coalition building among the state agencies involved in CVO and with industry.

**Design** – The purpose of this step is to permit the state to establish its CVISN program team, including at a minimum a CVISN program manager and a system architect. Once these individuals have been selected, a state can participate in the “Understanding ITS/CVO Technology” training course and in three CVISN Deployment Workshops. These activities will assist the state in developing its CVISN Program Plan and Top-Level Design.

**Implementation and Deployment** – In the final step (actually a series of steps or phases), states buy or build subsystems and integrate them into their operations to achieve deployment of CVISN Level 1 capabilities.



**Figure 6-1 Recommended State Deployment Process for CVISN**

The recommended Level 1 deployment process is intended to build on the CVISN Prototype and Pilot experience. An extensive set of technical documentation is available from the prototype and pilot programs. The workshops encourage the use of the system development approach used by the model deployment states. Several vendor products are now available as commercial off-the-shelf items (although modifications will likely be required in each state). The evaluation results and operational experience gained by the prototypes and pilots can also greatly benefit subsequent states.

It is anticipated that states will continue to deploy CVISN additional capabilities after the Level 1 deployment. These could include deploying to more sites, deploying to more carriers, or adding more capabilities.

In summary, this process is to:

- ◆ Complete a Business Plan that encompasses all ITS/CVO activities in the state or region.
- ◆ Attend the ITS/CVO technical training courses sponsored by FMCSA.
- ◆ Attend a series of CVISN Deployment Workshops designed to assure architecture conformance and interoperability of deployed systems.
- ◆ Complete a Program Plan that encompasses all CVISN projects or efforts in the state or region.
- ◆ Complete a System Design that describes the top-level design for all planned changes or additions to CVISN-related systems or products.

- ◆ Develop or modify systems to implement the design.
- ◆ Integrate systems into a “system of systems” and test to ensure that they work.
- ◆ Include CVISN standard interoperability tests as part of the integration and test effort to verify architectural compatibility.
- ◆ Follow the ITS/CVO Architecture Conformance Assurance Process.
- ◆ Develop and/or follow technical use agreements to ensure interoperability at the operational and programmatic levels.

## 6.1 ITS/CVO Business Plan

The FMCSA (formerly FHWA) has been carrying out its ITS/CVO Mainstreaming Program for several years. A key element of this program is for each participating state to complete an ITS/CVO Business Plan. Forty states have either completed or are currently working on their plans. This plan embodies a state’s vision for CVO over the next 3 to 5 years. The objectives, recommendations, and common issues states encounter are described in Table 6-1.

**Table 6-1 ITS/CVO Business Plan Guidelines**

<p><b>The objectives of the state business plans are to:</b></p> <ul style="list-style-type: none"> <li>▪ Establish an ongoing CVO planning process.</li> <li>▪ Promote public/private partnerships.</li> <li>▪ Provide justification for obtaining ITS/CVO funding.</li> <li>▪ Guide the integration of new ITS/CVO technologies.</li> <li>▪ Establish public/private forums with broad membership to enable ongoing planning, issue identification, and issue resolution.</li> </ul>
<p><b>It is recommended that each plan include:</b></p> <ul style="list-style-type: none"> <li>▪ Goals and Objectives (<i>Why?</i>)</li> <li>▪ Projects (<i>What? Where?</i>)</li> <li>▪ Technical Approach (<i>How?</i>)</li> <li>▪ Organizations and Management (<i>Who?</i>)</li> <li>▪ Schedules and Milestones (<i>When?</i>)</li> <li>▪ Funding (<i>How much?</i>).</li> </ul>
<p><b>Common issues States encounter:</b></p> <p><b>The plan should specifically address any issues important to the state. Some of these will be state specific, but some common ones encountered are:</b></p> <ul style="list-style-type: none"> <li>▪ <i>Data Security:</i> How can the state ensure adequate data privacy and integrity?</li> <li>▪ <i>Interoperability:</i> How can the state ensure that its systems are interoperable with national systems, carrier systems, and other states’ systems?</li> <li>▪ <i>Process Changes:</i> What business processes should be changed to improve effectiveness and efficiency?</li> <li>▪ <i>Policy Changes:</i> What changes in policy are necessary to enable process and system improvements?</li> <li>▪ <i>Institutional Barriers:</i> What institutional barriers must be overcome to enable process and system change? How can this be done?</li> <li>▪ <i>Expertise:</i> What process and systems expertise exists and what must be borrowed or acquired?</li> <li>▪ <i>Build vs. Buy:</i> Which software packages should be purchased as commercial off-the-shelf and which must be custom developed by in-house staff or contractors?</li> <li>▪ <i>System Integration:</i> How will new systems be integrated with existing (legacy) systems into a well integrated “system of systems”?</li> <li>▪ <i>Testing:</i> How can a state establish a comprehensive test program to ensure that systems work as required?</li> </ul>

### Why is the ITS/CVO Business Plan So Important?

The plan will lay the framework for CVO projects over the next 3 to 5 years. **It will define the major projects to be undertaken.** These may include projects to change policies, improve business processes and construct facilities (e.g., weigh station upgrades) as well as technical, system development projects.

### 6.2 ITS/CVO Working Group

A side effect from **the planning process may in fact be more important than the plan itself.** A working group of stakeholders representing all the state CVO agencies develops the plan. Several representatives of

the motor carrier industry are included. An FHWA Division Office representative is also included. This may be the first time that these folks have worked together. It may be the first time that state officials see how the motor carrier community views the state. It will broaden people’s perspective and give them a means to work with others in their state to address issues of common concern. See Figure 6-2 for a detailed description.

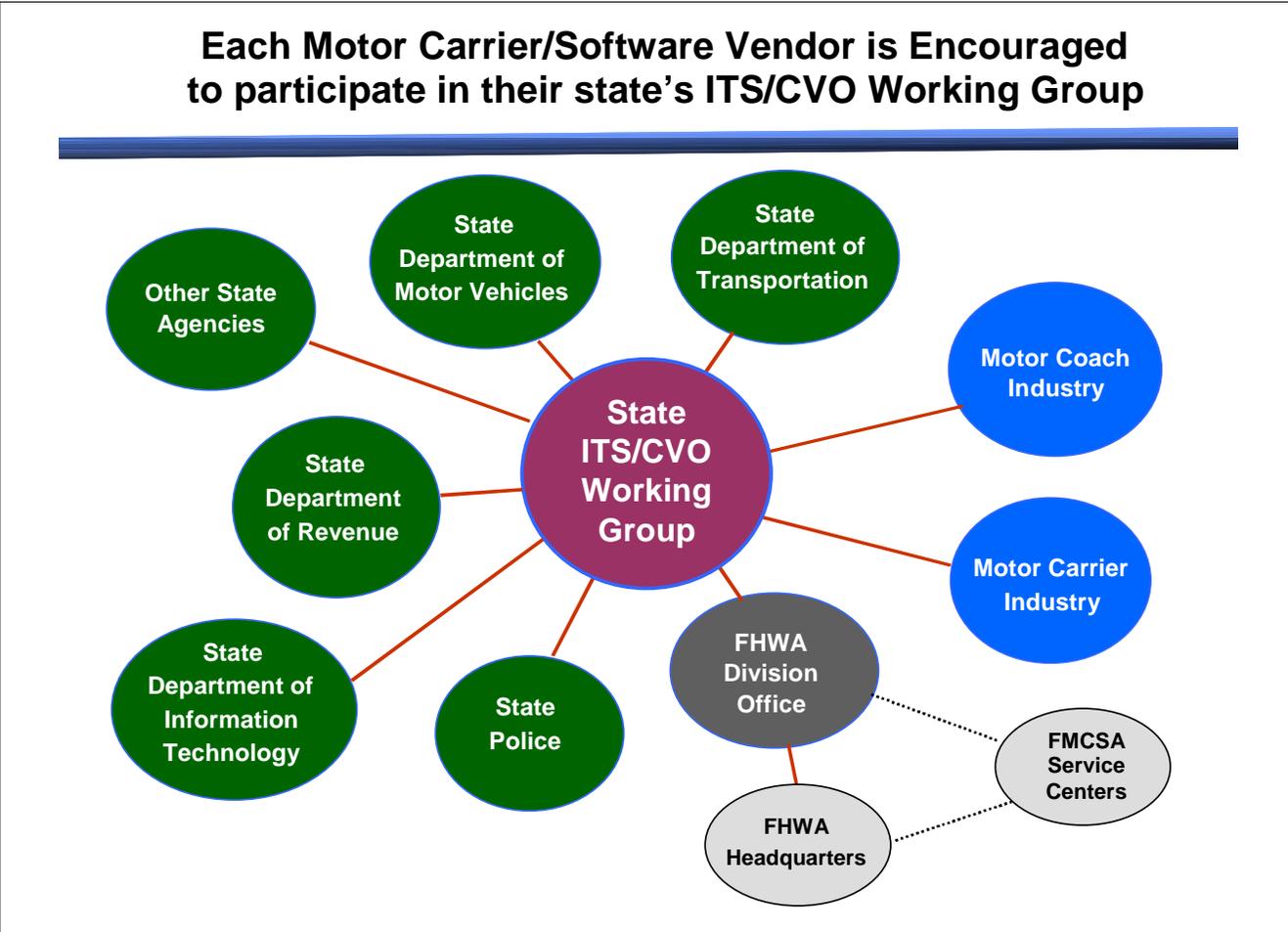


Figure 6-2 State ITS/CVO Working Group

### 6.3 ITS/CVO Training

The FMCSA has sponsored development and delivery of a series of three technical training courses for the states. These technical training courses are described in Table 6-2.

**Table 6-2 ITS/CVO Technical Training**

Course Title and Description	Length of Course
<b>Introduction to ITS/CVO</b> – provides an overview of the ITS/CVO program’s purpose, structure, components, current and future implementation, and technology.	1½ days
<b>ITS/CVO Technical Project Management for Nontechnical Managers</b> – emphasizes skills development for managing the design and implementation of ITS/CVO technology.	2 days
<b>Understanding ITS/CVO Technology Applications</b> – provides an overview of the CVISN architecture, technology, and standards, and how to apply them to ITS/CVO.	2 days

The training courses are designed to build awareness of and commitment to ITS/CVO deployment among the states. They are offered on an ongoing, as-needed basis. They include a mix of lectures, exercises, and case studies. The target audience includes state managerial staff, FMCSA field staff, and industry representatives.

### 6.4 CVISN Deployment Workshops

The CVISN Deployment Workshops are a series of three workshops to assist states in implementing the CVISN Level 1 Capability. At the workshops, the states will develop preliminary products necessary to prepare for CVISN deployment. These products include a preliminary CVISN Program Plan and a top-level system design.

*It is critical that the state CVISN Program Manager, CVISN System Architect, and CVISN team members from each state agency attend the workshops as a team.*

It is anticipated that the series will include Scope, Planning, and Design Workshops as described in Table 6-3.

**Table 6-3 CVISN Deployment Workshops**

Workshop Title and Description	Length of Course
<b>Scope Workshop</b> – will produce a preliminary CVISN top-level system design. This design will include a project scope, state system design templates, and initial operational scenarios.	3 to 4 days
<b>Planning Workshop</b> – will produce a preliminary CVISN Program Plan. This Program Plan will include a work breakdown structure, performance milestones, organizational responsibilities, and schedule for Phase 1 (see Subsection 6.7).	3 to 4 days
<b>Design Workshop</b> – will review and provide feedback on an updated top-level design. This design will be developed as the product of detailed analysis and design efforts by the state subsequent to the Scope Workshop.	3 to 4 days

#### Why Should a State Participate in the Workshops?

There are several important reasons that a state should participate in these workshops:

- ◆ The workshops are a **proven process** that has worked successfully for the CVISN Prototype and Pilot States. The workshop content has been refined based on feedback from this initial group of 10 states.
- ◆ The workshops will provide **an opportunity to learn from the experience of the Prototype and Pilot States**. These lessons learned may help new CVISN states save time and money by avoiding mistakes and maximizing their ITS/CVO investments. The designs and program plans used by these states will be part of the workshop materials. In addition, representatives of several states will be available as a resource during the workshops.

- ◆ The workshops will provide states with the **tools** to move toward their ITS/CVO and CVISN deployment goals. The Program Plan and top-level system design will provide a blueprint for future systems development and implementation in a manner that is consistent with the National ITS Architecture and applicable standards. The Program Plan will provide estimates of staffing requirements, costs, and technical needs that will guide states in obtaining and allocating necessary resources to ensure effective implementation.
- ◆ The workshops will emphasize **consistency with the National ITS Architecture**. Section 5206 of the Transportation Equity Act of the 21<sup>st</sup> Century (TEA-21) requires that all ITS projects funded from the Highway Trust Fund, including congressionally designated projects, must be consistent with the National ITS Architecture and applicable standards.

### 6.5 State CVISN System Design

The State CVISN System Design should identify system requirements, software requirements, interface requirements, and top-level design of the system hardware, software, and networks. Typically, the state’s system design description will include tables, diagrams, and text that identify top-level requirements, design elements, and interface standards.

### 6.6 State CVISN Program Plan

The State CVISN Program Plan is the logical next step for states that have completed their ITS/CVO Business Plan. The business plans have a strategic focus, and define program goals and projects at a conceptual level. The program and project plans have a technical focus, and define the state information system design. Other important differences between the Business Plans and Program Plans are indicated in Table 6-4.

**Table 6-4 ITS/CVO Business Plan and CVISN Program Plan Descriptions**

Planning Horizon	ITS/CVO Business Plan	A medium- to long-term planning horizon of 3 years or more.
	CVISN Program Plan	A short-term planning horizon of less than 3 years.
Scope	ITS/CVO Business Plan	The broad application of ITS technologies to CVO in the areas of safety assurance, credentials administration, roadside screening, and carrier operations.
	CVISN Program Plan	Information systems and networks that are related to implementing CVISN Level 1 capabilities in the areas of safety information exchange, electronic credentialing, and electronic screening.
Content	ITS/CVO Business Plan	Describes projects at a conceptual level, including general approaches and organizational responsibilities, relative priorities, approximate duration, and order-of-magnitude cost estimates.
	CVISN Program Plan	Includes specific work assignments, phases, schedules, and budgets. (Per-project details are provided in the state project plan.)

### 6.7 Obtaining Deployment Funding

The workshops result in two accomplishments: an effective working group with a common understanding and objectives and a comprehensive State CVISN Program Plan. Both of these will be essential for the next step for a successful deployment.

Recall that the FMCSA recommends a three-step deployment process: planning, design, and implementation and deployment. The maximum amount of Federal ITS Funds to be made available for all three phases is \$3 million. This represents the 50 percent ITS Federal share of the estimated \$6 million total cost. (The estimate is based on the plans and

experience of the CVISN Pilot States.) The planning step is estimated to require \$50,000 of Federal ITS Funds. The design step is estimated to require \$350,000 of Federal ITS Funds.

Some states will have obtained full funding prior to the workshops or during the workshops from state or congressionally designated funds. Other states will need to use the State CVISN Program Plan produced by the workshops as a justification for obtaining adequate funding to support the CVISN Level 1 deployment program. When this is the case, the working group must:

- ◆ Identify potential sources of funding, including public/private partnerships.
- ◆ Prepare “proposals” (presentations, applications, proposals, etc.) as needed by each targeted funding source.
- ◆ Use the working group as an advocacy team to build consensus for the plan among state legislature and executive agencies, the motor carrier industry, and other stakeholders.

**Table 6-5 Sources of Deployment Funding**

Federal Sources
<ul style="list-style-type: none"> <li>▪ ITS/CVO deployment incentive funding</li> <li>▪ Congressionally designated ITS projects</li> <li>▪ Motor Carrier Safety Assistance Program (MCSAP)</li> <li>▪ Performance and Registration Information Systems Management (PRISM)</li> <li>▪ Federal-aid highway programs</li> <li>▪ New TEA-21 programs (e.g., Borders and Trade Corridors).</li> </ul>
State Sources
<ul style="list-style-type: none"> <li>▪ Legislative appropriations</li> <li>▪ Agency operating budgets</li> <li>▪ Pooling (public/private partnerships)</li> <li>▪ Innovative financing.</li> </ul>
Private Sources
<ul style="list-style-type: none"> <li>▪ User fees</li> <li>▪ Public/private partnerships.</li> </ul>

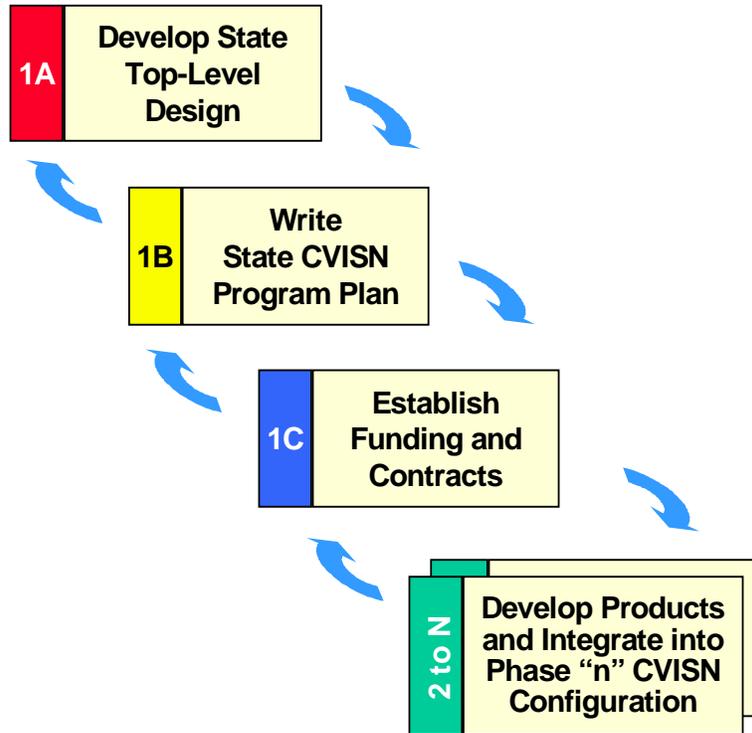
The *ITS/CVO Funding Strategies for States* [Cambridge Systematics Inc., 1998] provides a report on potential funding sources. Some potential sources of funding are listed in Table 6-5.

## 6.8 Incremental Deployment

Deploying CVISN Level 1 capabilities is a major undertaking that typically takes several years. In order to reduce risk, it is strongly recommended that states use an incremental deployment approach. It is critical that this large program be broken into a series of 3- to 6-month time periods called phases. Specific results or products are defined for each phase. These are defined in detail for each phase just before it begins, and more broadly for subsequent phases. The use of phases allows taking a big job and breaking it into small, manageable pieces. If a state completes the first couple development phases on time and meets all the objectives, this provides assurance that the plan is realistic. If not, it allows the state to revise the plan and take corrective action prior to committing extensive resources to a project that is not properly structured for success. Incremental development and measurable milestones ensure stakeholder participation and feedback and real visibility into program or project progress.

Figure 6-3 shows that the first phase is devoted to developing the state top-level design, preparing the State CVISN Program Plan, establishing full funding for the program, and issuing major contracts for products and technical services. Each subsequent phase is a development phase that results in some type of demonstration or operational capability. More information on phases is provided in the *CVISN Guide to Program and Project Planning* and the *CVISN Guide to Phase Planning and Tracking*

**States are encouraged to implement CVISN Level 1 capabilities incrementally in a series of steps using a structured process.**



**Figure 6-3 CVISN Incremental Deployment Approach**