

3. CVISN System Development Overview

3.1 Top-Level Design Leads Into Program Plan

The *Introductory Guide to CVISN* [67] describes a model development process for implementing CVISN capabilities. Figures 3–1 and 3–2 are repeated here as a refresher.

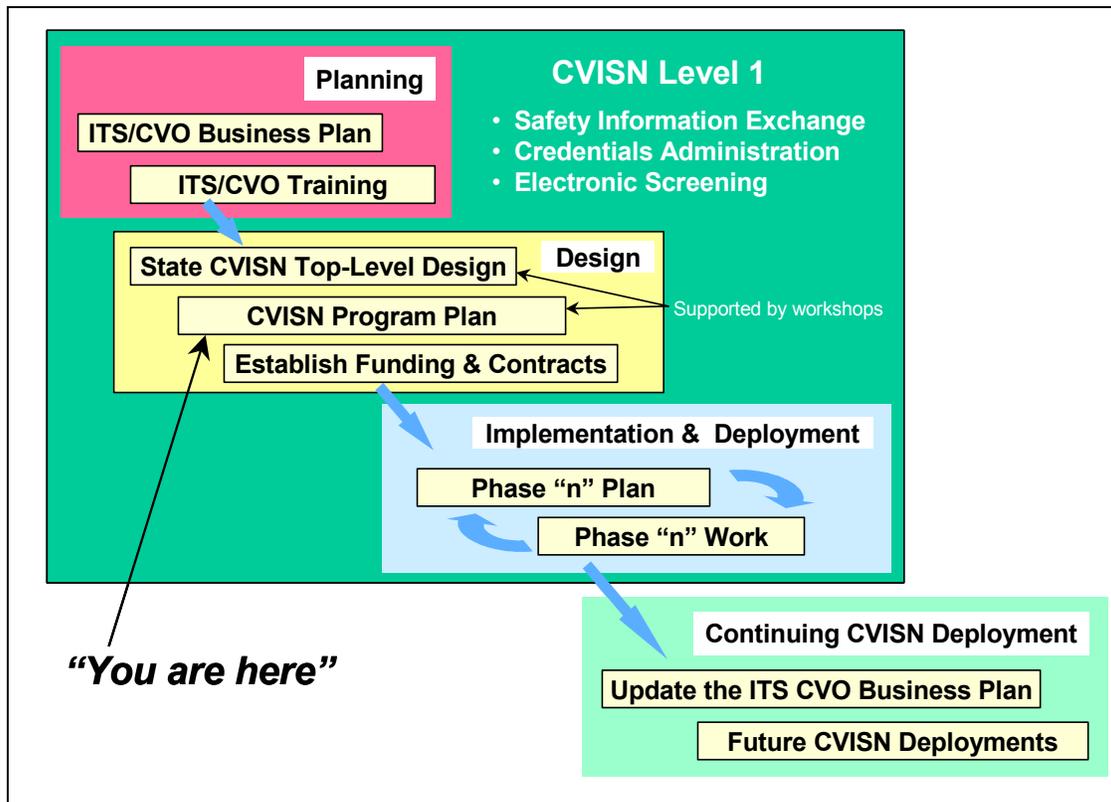


Figure 3-1. Each State Deploys CVISN Capabilities Incrementally Starting with Comprehensive Management and Technical Planning

The recommended Level 1 deployment process shown in Figure 3–1 builds on the CVISN Prototype and Pilot states’ experience. Business planning and team training precede design. Top-level design precedes program planning.

The *CVISN Guide to Top-Level Design* [62] describes the principles and processes for reaching the starting-point for developing the program plan.

Figure 3–2 is the format for the phased approach steps described in the remaining sections of this chapter.

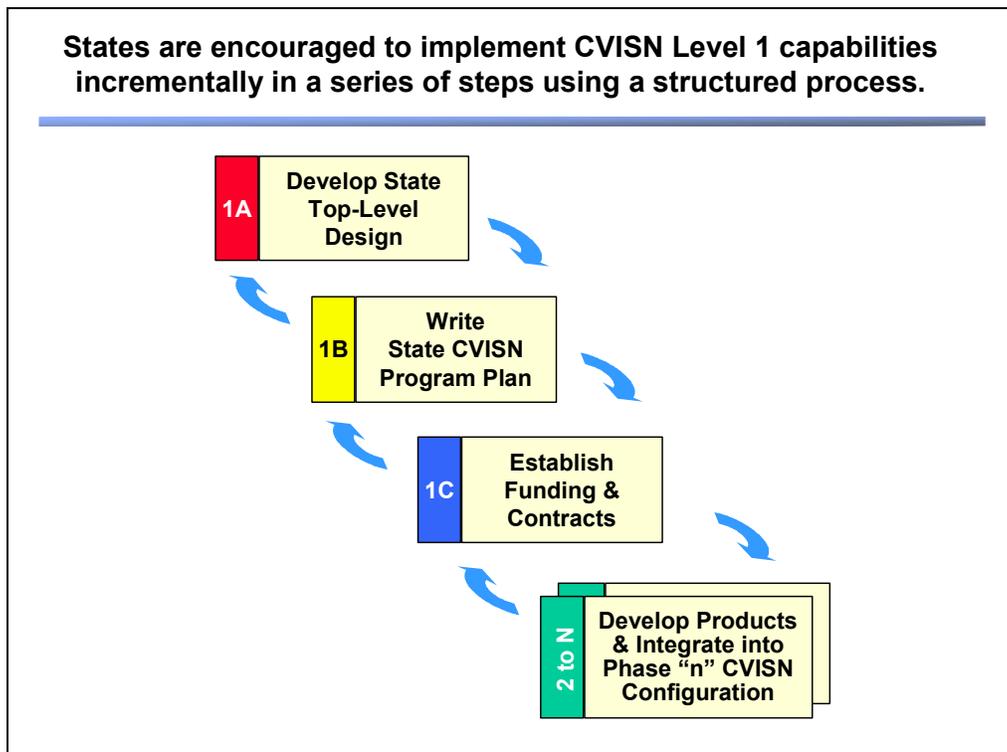


Figure 3-2. CVISN Incremental Deployment Approach

3.2 Take a Flexible Risk-Reducing Phased Approach

Deploying CVISN capabilities is a major undertaking. In order to reduce risk, you should use an incremental development and deployment approach called **phase planning**. We define a phase as a period of calendar time specified for planning purposes to allow incremental delivery of a complex system. Planning and implementing by phases mitigates risk, such as funding delays or shortfalls; a failed technical approach; a subcontractor who never performs and is replaced; the loss of a major stakeholder; or sooner-than-expected termination of development.

The guiding principles for phase planning are detailed in the *CVISN Guide to Phase Planning and Tracking* [44]. They are:

- Mentally switch from a linear development model to a spiral development model. The essence of the spiral model is first to establish a baseline plan and an overall vision of the architecture; and then to deploy the products incrementally by successive iterations through design, build, test, and next-phase planning.
- Plan, develop, and release products incrementally, such that useful end-to-end functionality is delivered with each phase, upon which subsequent phases can build.

- Maintain stakeholder commitment via visibility into progress by physical demonstrations of useful capability, and by regular management status reporting.
- Sustain a system perspective – a vision of the overall CVISN architecture, deployment strategy, and interdependency of products.
- Schedule, schedule, schedule.

Figure 3–2 illustrates that Phase 1A is devoted to the state top-level design, begun at the Scope Workshop. Phase 1B is devoted to writing the Program Plan.

This guide has been prepared with the experiences of early CVISN deployments in mind. The approach defined in this chapter assumes that your state is providing some level of system integration. If you decide to subcontract the entire role of system integrator, you may not follow the detailed steps outlined herein. Nevertheless, the material presented within this guide can still help you to understand what they must accomplish.

3.3 The Program Planning Phase

Figure 3–3 shows the seven steps within Phase 1B.

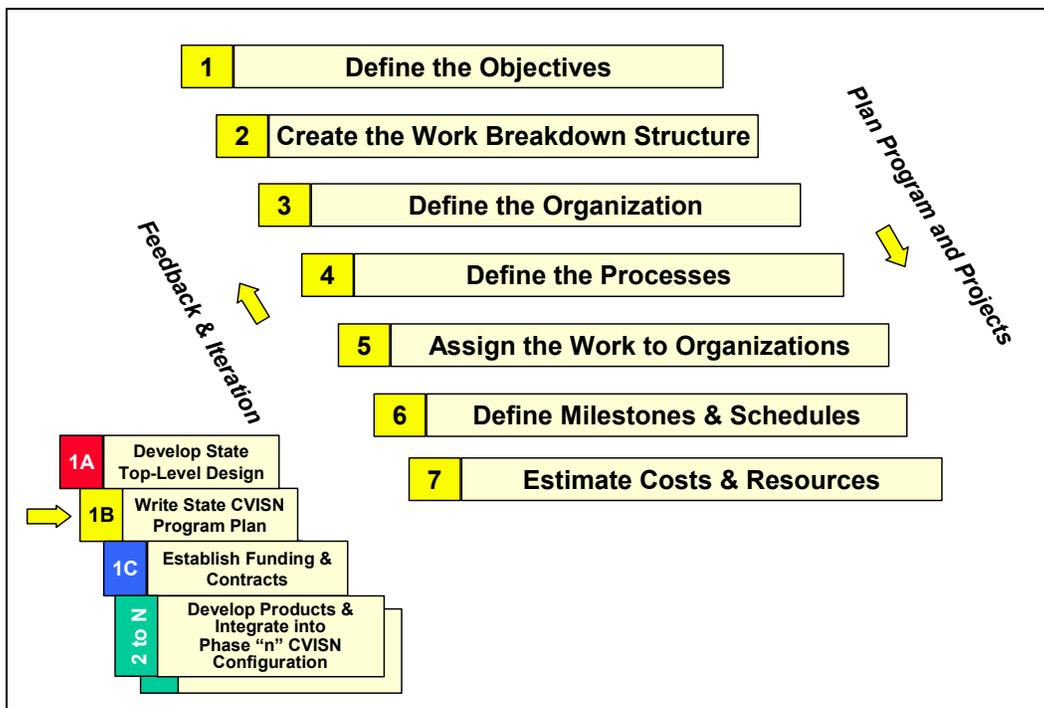


Figure 3-3. A Mature Planning Process is Necessary to Plan the Work and Communicate Among Team Members

At the end of the planning phase you will have:

- A completed program plan that reflects all of the decisions made in this step.
- Documents necessary to support acquisition of full program funding.
- Preliminary phase charts encompassing all three CVISN functional areas.

3.3.1 Factors to be Considered in the Program Planning Phase

- What other projects are going on in your state that may impact the CVISN program? For example, in 1999 “Y2K” preparation efforts had such a high priority that no resources were available for CVISN tasks in several states. Are there any major projects in your state that will compete for resources, such as a replacement payroll system?
- Are major upgrades planned in the hardware and communications systems that provide the state’s CVISN infrastructure?
- Is there a program in your state to actively promote “electronic government” and deliver more services over the Internet and the Web? Can you leverage on that initiative?
- Can you leverage with neighboring states? For example, by agreeing on common business processes and then partnering in an acquisition.
- Be sure to understand and appreciate the procurement cycle in your state. It evolved over years for valued purposes and in response to problems, and must not be subverted. Note the procurement steps required and how long they typically take, especially for innovative approaches.

3.3.2 Key Decisions

- What is the CVISN Program organizational structure?
- Who will fill the key roles, such as Program Manager, System Architect, and Project Leaders?
- What is the program Work Breakdown Structure (WBS)?
- Will the state update current legacy systems? Re-compete? Re-develop?
- Will the state participate in regional and national programs such as PRISM?
- What are the priorities and sequence for implementing capabilities?
- Should the state build or buy each subsystem?
- Who is the system integrator? The state, or a contractor?
- Should the state have an independent verification and validation (V&V) agent?

Note: “Verification” refers to the set of activities that ensure that software correctly implements a specific function. “Validation” refers to a different set of activities that ensure that the software that is built is traceable to customer requirements. Verification answers the question “Are we building the product right?”; validation answers the question “Are we building the right product?”.

3.4 The Funding and Contracts Phase

Figure 3–4 portrays the general process steps for the funding and contracting phase; it is intended to give a conceptual framework and starting point. You should customize as necessary a specific process that meets the requirements of your state. It is not too early to start putting in place indefinite delivery / indefinite quantity task-order type contracts (called ID/IQ contracts) that will establish a contracting vehicle for information system hardware, network infrastructure, and support services. Look far ahead, some items have very long lead times – you may wish to begin drafting preliminary Requests for Proposals (RFPs) now.

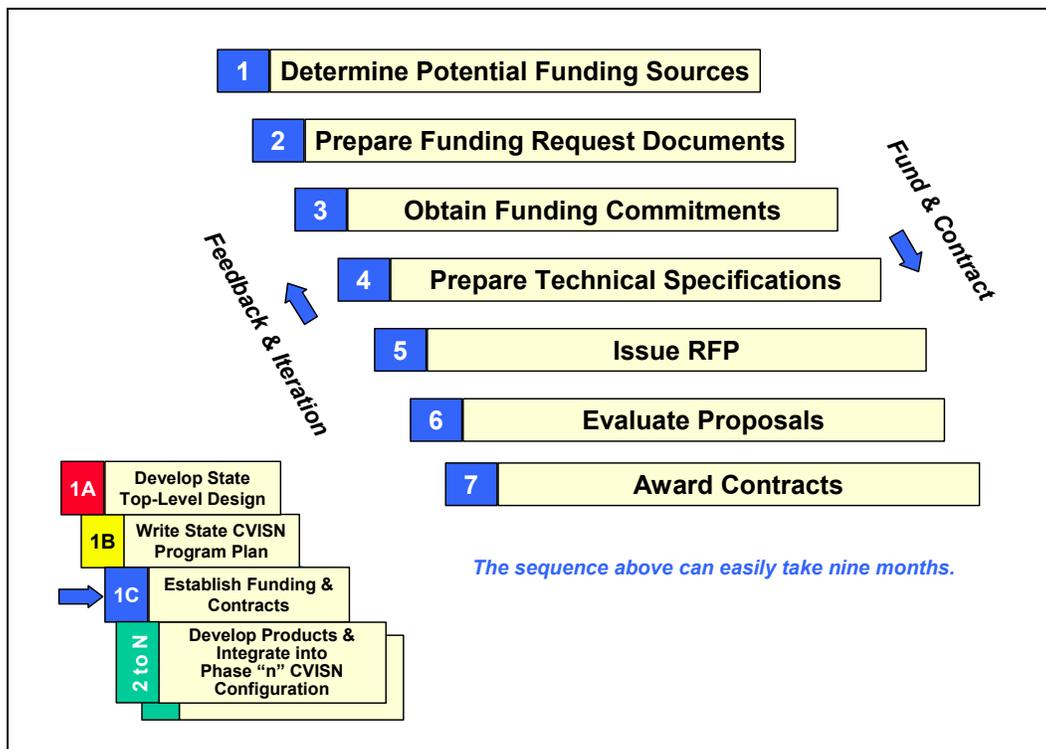


Figure 3-4. The Final Phase of Program Organization is to Obtain Funding, and to Contract for Necessary Products and Services

3.4.1 Factors to be Considered in the Funding and Contracts Phase

- Use contractual vehicles that allow work to be defined and costed at a high level before all the details are known. The contractual mechanism must also have the flexibility to define detailed process and system design as the work proceeds.
- In particular, consider using some type of indefinite delivery/indefinite quantity (ID/IQ) contract vehicle with your systems integration agent, network support, and software services vendors. This allows you to define specific task orders as the work proceeds. It allows the team a lot more flexibility in solving problems. It allows adapting to changes in technology as the project proceeds.

3.4.2 Key Decisions

- How much funding is required to complete the project?
- Where will the funding be obtained?
- What type of procurement should be used for each product or service?
- Do any funding sources have restrictions on how they can be contracted or used?
- What terms and conditions related to software, intellectual property rights, or other copyrighted products should be included in the contracts?

3.5 Development Phase “n”

The *CVISN Guide to Phase Planning and Tracking*[44] describes the process for planning and tracking progress as each phase proceeds. Figure 3–5 below is taken from that document.

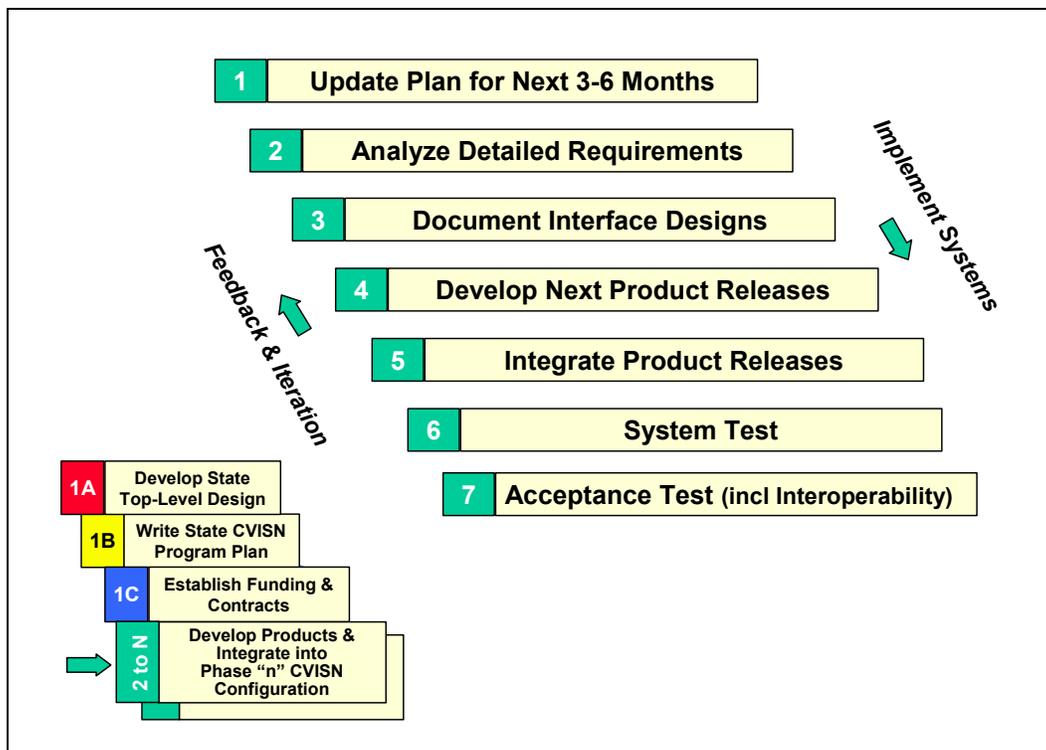


Figure 3-5. During Each Phase “n” a State Incrementally Develops Detailed Designs and Implements Systems Adapted to its Unique Requirements

3.5.1 Outcomes from Each Development Phase “n”

- Working products integrated into the operational environment.
- Test documentation showing proof that products worked as required.
- Operation and maintenance documentation.
- Net result: incrementally new operational capabilities.

3.5.2 Factors to be Considered in Development Phase “n”

- Allow time in the schedule for developers to analyze business practices, and to define more operational scenarios at the beginning of each phase.
- Allow time to document the state-specific interface requirements (e.g., EDI, XML). Some states have discovered that EDI or XML data element mapping takes more time, resources, and expertise than initially imagined.
- Functional tests: As components are developed, tests should be executed to verify that those components perform as envisioned.
- Interoperability tests: As components are integrated, tests should be executed to verify that the industry standard interfaces were implemented correctly.
- Configuration management: A change management process must be in place. When changes are made to interface designs, all stakeholders must be kept informed. Updates to systems on each end of the interface must be synchronized. Version numbers must be systematically assigned to all products, and version description documents prepared to ensure that compatible versions are installed together, and so that field support personnel know “what’s out there”.

At this point, you may wish to take a look at the planning chapters in each of the three CVISN application guides (Safety Information Exchange [64], Credentials Administration [63], and Electronic Screening [65]). There you will find generic project planning principles applied specifically to those technical areas.

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