

**NEBRASKA CHARTS  
CHILD SUPPORT ENFORCEMENT  
SYSTEM**

**INDEPENDENT VERIFICATION &  
VALIDATION  
ASSESSMENT REVIEW**



**U.S. Department of Health and Human Services  
Administration for Children and Families  
Office of Child Support Enforcement**

# Table of Contents

---

---

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1. INTRODUCTION .....</b>	<b>3</b>
1.1 BACKGROUND .....	3
1.2 METHODOLOGY .....	4
<b>2. FINDINGS.....</b>	<b>6</b>
2.1 PROJECT ESTIMATING AND SCHEDULING.....	6
2.2 PROJECT PERSONNEL.....	6
2.3 QUALITY ASSURANCE .....	7
2.4 CONFIGURATION MANAGEMENT .....	7
2.5 SYSTEM CAPACITY .....	8
<b>3. RECOMMENDATIONS .....</b>	<b>9</b>
3.1 INDEPENDENT VERIFICATION AND VALIDATION.....	9
3.2 IV&V PROCUREMENT AND PROJECT MANAGEMENT PLAN.....	11
3.3 PROJECT ESTIMATING AND SCHEDULING.....	13
3.4 PROJECT PERSONNEL.....	13
3.5 QUALITY ASSURANCE .....	14
3.6 CONFIGURATION MANAGEMENT .....	15
3.7 SYSTEM CAPACITY .....	16

## **EXECUTIVE SUMMARY**

---

As a result of missing the October 1, 1997, deadline for operating a comprehensive automated Child Support Enforcement System (CSES) meeting the requirements of the Family Support Act of 1988 (FSA88), the State of Nebraska's CHARTS (Children Have A Right To Support) System became subject to the mandatory provisions of Federal regulations at 45 CFR 307.15(b)(10). These provisions require an entity independent of both the State Title IV-D agency and CHARTS project management structure to perform Independent Verification and Validation (IV&V) of all technical and managerial aspects of the project. To support this effort, the Federal Office of Child Support Enforcement (OCSE) conducted an *IV&V Assessment Review* on April 27-29, 1999, to determine the scope of IV&V required for CHARTS. This report presents the findings of that assessment review.

## **SUMMARY OF FINDINGS AND RECOMMENDATIONS**

---

### **SCOPE OF REQUIRED IV&V SERVICES**

The State is currently in the process of completing its software development and implementation of FSA88 requirements, as well as planning and design work for PRWORA (Personal Responsibility and Work Opportunity Reconciliation Act of 1996) enhancements to CHARTS. In addition, the State is also preparing an application for an Alternative System Configuration (ASC). After careful analysis of the CHARTS project, this Office has determined that the State must immediately acquire IV&V services for the CHARTS development project. The IV&V provider who supplies these services shall review and make recommendations on the following areas of the CHARTS development process as described in Section 3 of this report:

- **Project Estimating and Scheduling**
- **Project Personnel**
- **Quality Assurance**
- **Configuration Management**
- **System Capacity**

**IV&V services will be required until such time that Nebraska successfully implements and receives Federal certification of CHARTS for all requirements of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), as delineated in this report. The acquisition of this *IV&V Service Provider*, either through a formal procurement of contract resources or Interagency Cooperative Agreement, will need to commence immediately. To assist the State in this regard, this report's recommendations are**

structured to present specific IV&V tasks that can be included in the Statement of Work of an *IV&V Service Provider*. **The IV&V Service Provider must supply all plans, reports of findings, and recommendations to ACF Central and Regional Offices at the same time that they are supplied to the State, as specified in 45 CFR 307.15(b)(10)(ii).**

#### **IV&V SERVICE PROVIDER**

**The State must move to begin the identification of requirements for and formulation of a Scope of Work for ongoing IV&V services to the State's CHARTS project.** It is incumbent on the State to begin the acquisition process for these services now to avoid further schedule delays. Therefore, the State should immediately pursue the identification of potential IV&V resources in-State. If these resources, independent of the State's Title IV-D agency and its umbrella agency, cannot be identified then a contract procurement effort must be initiated. This report has been designed to provide the State with a series of initial recommendations that can be incorporated into a Scope of Work for the project's *IV&V Service Provider*. To further support the State's IV&V process, OCSE is committed to providing the State with technical assistance in the form of documentation review and recommendations, as needed, to assist the State in the acquisition/ procurement of an *IV&V Service Provider*.

#### **PRIOR APPROVAL**

The Request for Proposals (RFP) and contract (or similar documents if IV&V is performed by another State agency) must be submitted to ACF for prior approval, regardless of the cost or contractual arrangements. The IV&V services contract or agreement with a State agency must include the names and qualifications of key personnel who will actually perform the IV&V services. **For all IV&V activities, the State must submit an Advanced Planning Document Update (APDU) addressing in sufficient detail the IV&V activities and related costs eligible for Federal financial participation (FFP) at the applicable matching rate.**

#### **IV&V DURATION**

**IV&V must be performed at initial activation of the *IV&V Service Provider* contract or State agency agreement. Thereafter, the IV&V services must be performed semi-annually** until such time that Nebraska successfully implements and receives Federal certification of CHARTS for all PRWORA requirements. ACF will periodically reevaluate the IV&V scope of work and frequency requirements of CHARTS based upon project progress or when one or more of the IV&V triggers occurs, as described in 45 CFR 307.15(b)(10)(i), such as failure to meet a critical Advanced Planning Document (APD) milestone.

# INDEPENDENT VERIFICATION AND VALIDATION (IV&V) ASSESSMENT REVIEW FOR THE NEBRASKA CHARTS PROJECT

---

---

## 1. INTRODUCTION

---

As a result of missing the October 1, 1997, Federal certification deadline for having in statewide operation, a comprehensive, automated system meeting the requirements of the Family Support Act of 1988, the State of Nebraska's CHARTS (Children Have A Right To Support) System for Child Support Enforcement became subject to the mandatory provisions of Federal regulations at 45 CFR 307.15(b)(10). These provisions require an entity, independent of the State IV-D Agency and CHARTS project structure, to perform Independent Verification and Validation (IV&V) of all technical and managerial aspects of the project. In support of the State's project, the Federal Office of Child Support Enforcement (OCSE) conducted an *IV&V Assessment Review* of the CHARTS development project. This review included analysis of current system documentation, CHARTS project management, organization, planning and resources, and various project activities and in order to help determine an appropriate scope of the IV&V services that the State will be required to obtain.

### 1.1 BACKGROUND

---

As part of the IV&V Assessment Review, a site visit to help determine the required scope of IV&V for CHARTS was held on April 27-29, 1999, at the CHARTS development office in Lincoln, Nebraska. The IV&V assessment team consisted of:

Karen Anthony	ACF/OCSE/DCSIS
David Lesmeister	ACF/Region VIII
Edward Franklin	ACF/Region VIII
Michael Enright	BAE Systems, Inc.

Primary State and Courts program and project management and resource staff supporting the IV&V assessment team's analysis and data gathering included:

<u>CHARTS STAFF:</u>	Cynthia Brammeier,	HHS, Project Manager
	Bernie Diesen	HHS, Technical Director
	Mark Dombos	HHS, Lead Mainframe Programmer
	Nancy Naumann	IMS, System Development Coordinator
<u>JUSTICE/IMS STAFF:</u>	Mike Berggren	IM, JOB 148 Manager
	Ron Bowmaster	JUSTICE, Technical Staff
	Jim Cariotto	JUSTICE, Administrator

## 1.2 METHODOLOGY

In preparation for the on-site portion of the IV&V Assessment Review, questions regarding the following areas of system development were sent to the CHARTS project team: Project Management, Contracting, Project Wide Processes, Systems Engineering, Operating Environment, Data Management, Development Environment, Software Architecture, and Coding And Testing. CHARTS project staff responsible for each of the areas addressed by the assessment review's questions provided responses and backup documentation. Table 1. Primary CHARTS Documents Reviewed, details the various project and application-specific documentation provided both during and subsequent to the IV&V Assessment Review. information during discussions.

**Table 1. PRIMARY CHARTS DOCUMENTS REVIEWED**

Project Organization	CHARTS Organization Chart and Staffing mix	3/5/99
	Staffing Information	
	Responsibility Spreadsheet	
Project Tracking and Scheduling	Project Tracking and Scheduling	3/2/99
	Case Initiation Work Plan and Batch Construction Work Plan	
	Online Construct and Object Test Work Plan	2/26/99
	Financial Defect Tracking	
	PCR Tasking and Tracking	
Conversion Overview	2/26/99	
Project Communications	Examples	3/31/99
Change Control Management	Change Request and Issue Control Procedures	3/3/99
	Current Project Change Requests	
	CSENet Interface Certification Requirements	3/5/99
LAN/WAN Environment	Network Architecture: A Network Blueprint and CHARTS Sites and CHARTS License Reconciliation	3/2/99
		2/26/99
CHARTS Architecture	Application Architecture	
	Event Logging Example	3/1/99
	Batch Modules	2/27/99
	Batch Run List	2/2/99
	Power Builder Modules	3/4/99
Misc. Object Association Maps		
Batch Interfaces	CSE Interfaces N-FOCUS/CHARTS Interface Requirements and CHARTS Requirements from N-FOCUS	3/99
CHARTS Document Generation Architecture	CHARTS Document Generation	
CHARTS Database	Database Management and Database Statistics Entity Relationship Diagram (ERD)	2/26/99
CHARTS Security	Security Design	
CHARTS Help	Training Plan	4/99
	On-line Help and Original Help Guidelines	
Testing Tools	SQA Team Test 3.0 Work Flow and Defect Trend Report	
Online Testing	Object Sponsor Responsibility	2/99
	On-line Module Checklist	
	Document Test Checklist	
	Create New On-line Activity	
	CHARTS Help Sign-Off Sheet	
Batch Testing	General Info.	3/99
	Batch Test Schedule	3/99
	Extract Test Cases	3/99

**Table 1. PRIMARY CHARTS DOCUMENTS REVIEWED (CON'T)**

Assisted Acceptance Testing	Augmented Test Plan	1/99
	Test Plan	1/6/99
	Network Test Plan	2/26/99
Change Management Introduction	On-line Migration Procedures	
	Batch Migration Procedures	3/1/99
	PCR's with Installed Software	
Quality Assurance	Introduction	4/21/99
	Relational Team Test Information	
	QA Reporting Examples	
	Cobol Program Module Stats	
	Daily Production Checklist	1/98 - 4/99
	Schedule Not Finished Report	
	Problem Logs	
	Application Tuning Time	2/26/99

## **2. FINDINGS**

---

The findings in this report are based on the discussions held with State staff during the on-site portion of the review as well as upon subsequent review of the provided CHARTS documentation.

### **2.1 PROJECT ESTIMATING AND SCHEDULING**

---

Based upon a review of various CHARTS project reports, our review found substantial inaccuracies in the tracking and reporting of staff assignments and hours spent to accomplish tasks. Current project estimating and scheduling processes do not provide a methodology for or adequately support the accurate reporting of hours required to complete tasks. Though labor hour totals are available, they are not accrued to a task level. The review team also did not find staff specifically assigned to this type of project management tracking responsibility, either in the detailed tracking of progress against plans or in the aggregation of labor hours by tasks.

The assessment review found a lack of structured planning between the software development efforts of the CHARTS project and of the Court's JUSTICE system. Little or no integration exists of the two projects' planning, design, development and installation schedules into a common schedule identifying critical paths and interdependencies.

As of the date of this report, CHARTS has been implemented in all counties. The child support enforcement component of the Court's JUSTICE system has been installed in all counties except Douglas (Omaha), and a few sparsely populated counties where the existing data conversion effort is anticipated to be a labor-intensive manual process. The situation in Douglas County was being addressed by the State's request for an Alternative System Configuration (ASC). However, at the time of the review there did not appear to be any reliable labor hour estimates for either the manual conversion of data to the CHARTS system in the remaining [manual] counties, nor of the extent of software development resources, scheduling and cost for the Douglas County Court system (as part of the ASC). Additionally, the State does not appear to possess an effective estimation tool, process or methodology for creating such labor hour estimates, at this time.

### **2.2 PROJECT PERSONNEL**

---

Our review team found that the CHARTS project lacks adequate staffing in both the numbers of staff and in those having the appropriate skill sets. One example, as highlighted in section 2.1 above, is in the area of project estimating and scheduling. Our review also noted a lack of full-time, dedicated Quality Assurance (QA) staff. QA staff, on a project of this scope and complexity, can provide immediate benefit and improvement in areas such as software configuration management and control, application testing, risk assessment and management, and in the institution of and adherence to application and documentation development methodologies and standards. Another area of concern for the project, relative to staffing needs,



is in the ongoing operational and maintenance support of the CHARTS system when the implementation contractor(s) leaves. At this time, contract employees are the primary resource for systems development and enhancement activity. Should the State pursue continued maintenance and operation of the system in a contracted, facilities-management type of environment, proactive planning and resource estimating will need to be accomplished. Without adequate planning and estimating in areas such as resources, scheduling and cost, lapses in CHARTS operations and maintenance can occur due to protracted procurement cycles, and operational failings can result due to a new contractor's lack of knowledge of, and learning curve associated with taking over such a complex software application and environment. If staffing of the CHARTS system's maintenance and operation phase is to remain with contract not State personnel, as projected, consideration will need to focus on adequate State staffing in areas such as project planning and estimating, QA, standards and documentation, testing, and project management, administration and coordination (with JUSTICE and Douglas County).

## **2.3 QUALITY ASSURANCE**

---

There appears to be no formal Quality Assurance system administered either by local staff or by a third party. Numerous areas were identified in the CHARTS project and in the project's interaction and coordination with the Court's JUSTICE system where QA services could reduce and mitigate ongoing issues, such as: the lack of schedule and resource coordination between CHARTS and JUSTICE development project; lack of effective cost and time estimating and scheduling for application development; institution and execution of improved application testing within and between the CHARTS and JUSTICE applications; institution of and adherence to standardized testing processes and procedures; and, standardization of application documentation formats, requirements, and definitions.

## **2.4 CONFIGURATION MANAGEMENT**

---

There are some activities done by the CHARTS staff that the State describes as Quality Assurance relative to activities based on the State's Program Change Request (PCR) system. This tool documents system problems and tracks them through discovery, analysis, programming, testing and implementation. However, our review found the tool's use did not approach the broad areas encompassed by QA, and only minimally addressed the need for configuration management (CM) processes.

The review identified significant risk management and configuration management issues on the CHARTS project and its interaction and configuration management relative to external systems. Application and operational changes to external systems [i.e., JUSTICE and potentially the Douglas County system] that interface with or directly influence CHARTS are sometimes unknown to CHARTS staff until after a system malfunction occurs. There is no formal project management, structure, tool, or mechanism in place to identify, communicate and coordinate systems changes that occur outside CHARTS. The State has formed a committee to address the communication and coordination issues. There is no formal configuration management plan or procedures that provide a written description of the CM process.

## **2.5 SYSTEM CAPACITY**

---

The review team, in discussions with State staff identified issues surrounding the sometimes difficult production pace of doing reporting and data exchange between the CHARTS client-server system and the IMS mainframe. With implementation of CHARTS being expanded to substantially increase the number of networked clients, in addition to ongoing PWORWA modifications, additional, unidentified capacity and load balancing burdens will likely stress the system. To-date, as State staff informed the review team, no comprehensive stress or load balance testing or capacity analyses had been accomplished to approximate the potentially high transaction and data throughput volumes that the CHARTS system will eventually support as a client server product. Further exacerbating the issues of system capacity are as-yet unresolved issues regarding total system storage centrally and in the distributed environment, and the amount of archival data that will need to be maintained by the IMS mainframe/client server-based CHARTS system. Given the CHARTS users' native ability to generate ad-hoc and structured queries of the database, which in some cases generate huge, data-bound responses, network bandwidth also appears to be a particularly appropriate candidate for detailed analysis.

### 3. RECOMMENDATIONS

---

The IV&V Assessment Review team provided some of the following recommendations to the State's project management team during the two-day visit to the project. Additional recommendations resulted from review of the State's CHARTS project documentation.

#### 3.1 INDEPENDENT VERIFICATION AND VALIDATION

---

The State must acquire Independent Verification and Validation (IV&V) services in accordance with 45 CFR 307.15(b)(10). These services can be obtained from a contractor via an RFP or from an independent State agency. If a contractor is used, the RFP and contract must be submitted to ACF/OCSE for prior approval, regardless of the cost or thresholds. The contract must include the names, experience, and skills of key personnel who will actually perform the IV&V analyses. If IV&V is to be performed by another State agency, similar, equivalent documentation must be submitted, usually taking the form of a detailed Interagency Cooperative Agreement. **The State must concurrently submit an Advance Planning Document Update (APDU) describing in sufficient detail, the prescribed IV&V activities, work products, and costs eligible for Federal financial participation.**<sup>1</sup>

This initial IV&V activity should describe the level of IV&V services to be provided, consisting of an initial review at contract (or State agency agreement) activation and semi-annual reviews to monitor the overall status and management of the project's development effort. Many aspects of this level of IV&V service are briefly described below, and will be further defined by the State and its *IV&V Service Provider*. **The IV&V Service Provider (be it State agency or contractor) must supply all plans, reports of findings, and recommendations to ACF Central and Regional Offices at the same time that they are supplied to the State's IV-D agency and CHARTS project management (including draft documents submitted for comment), as specified in 45 CFR 307.15(b)(10)(ii).**

#### INITIAL AND SEMI-ANNUAL IV&V REVIEWS

An initial (at contract or State agency agreement activation) and semi-annual IV&V reviews shall be required to ensure the project is on schedule and requirements are being met for Federal certification. These reviews will need to be defined in the CHARTS project's Advance Planning Document Update's (APDU) Project Management Plan (PMP). The PMP must specifically address the need for IV&V, the IV&V services and tasks to be acquired, their procurement, and detail concerns such as IV&V management, reporting, resources, schedule and costs. These informational requirements collectively document the project's overall IV&V management plan.

---

<sup>1</sup> IV&V services are eligible for reimbursement at the regular (66 percent) rate of Federal financial participation.

The initial and semi-annual IV&V reviews will require the *IV&V Service Provider* to assess system development in areas including, but not limited to, the following:

- a.) Analyze project management capabilities and organization, planning documents, evaluate project progress, resources, budget, schedules, work flow and reporting, and make recommendations as necessary.
- b.) Review and analyze project requirements definition documents to assure adherence to established standards and traceability to software design documentation and code.
- c.) Review and analyze processes to ensure they are continuously documented, carried out, and analyzed for improvement.
- d.) Assess the project's CM function/organization by reviewing its reports and procedures and making recommendations regarding appropriate processes and tools to manage application development and change control activities.
- e.) Monitor the performance of the QA function/organization by reviewing its reports and performing spot checks of system documentation.
- f.) Assess the project's risk management plan and make recommendations regarding organization, processes, policies, and overall effectiveness of the plan to identify, analyze, and mitigate potential project risks.
- g.) Assess and recommend improvement, as needed, to assure continuous stakeholder buy-in, support and commitment, and that open pathways of communication exist among all stakeholders.
- h.) Assess and recommend improvement, as needed, to assure software testing is being performed adequately through review of test plans or other documentation and through direct observation of testing where appropriate, including participation in and coordination of peer reviews.
- i.) Report on the State's efforts to address the findings and recommendations from this IV&V Assessment Review Report.
- j.) Some of the above tasks may be assigned to the State's QA function/organization. In that case, the *IV&V Service Provider* would be responsible for ensuring these tasks are being performed through the review of QA products and reports.
- k.) Assess and recommend improvement, as needed, to assure lines of communication between the project staffs and State management for both CHARTS and JUSTICE are in place and engaged.
- l.) Assess and recommend improvement, as needed, to assure appropriate user and developer training is planned and carried out.
- m.) Assess and recommend improvement, as needed, to assure maintenance of a data center, including data center input to the project regarding operational and maintenance performance of the application.
- n.) Review system hardware and software configuration and report on any compatibility and obsolescence issues.
- o.) Develop performance metrics, which allow tracking of project completion against milestones set by the State.

## FULL TECHNICAL IV&V REVIEWS

Full technical (software and hardware) IV&V reviews are not specifically required for the CHARTS project. However, the State is strongly advised to select an *IV&V Service Provider* with the appropriate technical skills and resources available to support such reviews should they become necessary as a result of significant findings during the semi-annual IV&V reviews, such as a need to assess application performance or system capacity issues. These reviews may also be initiated by the State to give it assurance that the project's code base, documentation, etc., is in good shape and to identify and address any problems before they become unmanageable. Full technical IV&V reviews may include, but not be limited to the following areas of review for remediation and elimination of deficiencies:

- a.) Perform a detailed review of the system documentation (Requirements, Design, Training, Test, Management Plans, etc.) for accuracy and completeness.
- b.) Perform studies of system for processing capacity and throughput, and storage, network, and transaction capacity for design efficiency, and performance tuning.
- c.) Analyze application, network, hardware and software operating platform performance characteristics relative to expected/anticipated/contractually guaranteed results and industry standards/expectations.

## 3.2 IV&V PROCUREMENT AND PROJECT MANAGEMENT PLAN

---

Many of the recommendations contained in this report are presented to the State in the form of general requirements for the State to incorporate into a procurement vehicle's Scope or Statement of Work for an *IV&V Service Provider*. In addition, much of this report's Findings and Recommendations can essentially expand upon the already required information contained in the CHARTS APDU's Project Management Plan (PMP), thus supplementing the information on IV&V management planning needed in the PMP. This IV&V management planning information for the APDU's PMP must include a detailed plan of action for the required periodic, independent reviews of the CHARTS project's development and implementation activities, milestones and deliverables. In addition, the report's recommendations can be incorporated into what this report refers to as an "IV&V Management Plan".<sup>2</sup>

As a foundation document for the creation of a Scope of Work for an *IV&V Service Provider* (whether contractor or State agency,) it is intended for use as documentation to assist the State in creating and refining an acquisition/procurement document's Scope of Work for the eventual solicitation/acquisition of an *IV&V Service Provider*. If the *IV&V Service Provider* is to be a State agency, the Scope of Work for these services will need to be jointly constructed as part of an Interagency Cooperative Agreement defining the roles and responsibilities between the Title IV-D agency and the State agency serving as the *IV&V Service Provider*. OCSE is committed to providing technical assistance in the form of documentation review and recommendations, as

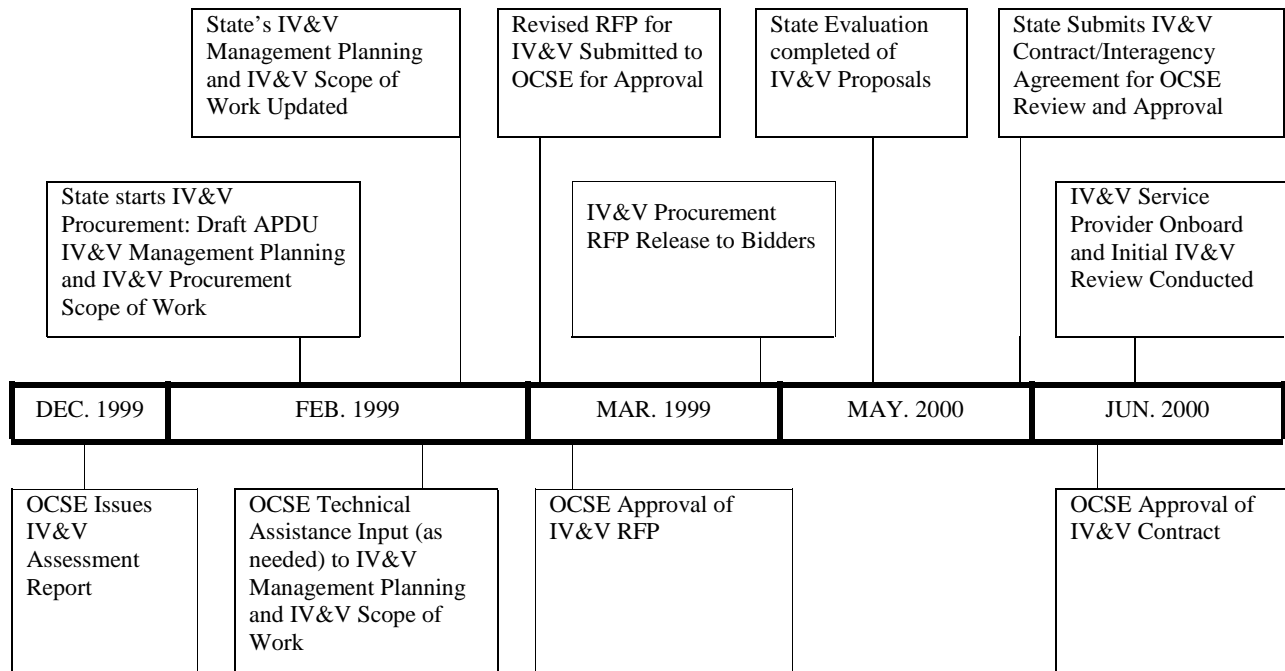
---

<sup>2</sup> The need for an IV&V Management Plan, beyond its use as a basis for a Scope of Work for an IV&V Service Provider (whether contract or State agency) is as a detailed plan of action for periodic independent reviews of the CAMS project's critical development and implementation phase milestones and deliverables. In addition, it serves as vital documentation to the State's required update to its Planning and Implementation Advance Planning Document Updates for the project.

needed, to assist the State in the development of its Interagency Cooperative Agreement and Scope/Statement of Work for the acquisition of the *IV&V Service Provider*.

Table 2. Estimated Schedule for CHARTS IV&V Procurement presents an estimated timeline representing an appropriate order for the major milestones in a CHARTS IV&V procurement, from the issuance of this report through to the *IV&V Service Provider* being brought onboard, to completion of the CHARTS APDU's PMP incorporating IV&V management planning. The State should use this estimated timeline as guidance in the development of its IV&V acquisition/solicitation planning and update of the State's CHARTS APD. If the use of an expedited procurement process is an option for the State, then this should be seriously considered for this effort, dependent upon cost and competition factors. The revised and finalized IV&V management planning information needed for incorporation to the CHARTS APDU's PMP should be one of the first *IV&V Service Provider* deliverables and should reflect any schedule changes consistent with the *IV&V Service Provider's* detailed Technical Proposal to the State's IV&V solicitation document. ACF will also periodically reevaluate the IV&V Scope of Work and frequency requirements of CHARTS based upon project progress, or when one or more of the IV&V triggers occurs, as described in 45 CFR 307.15(b)(10)(i), such as failure to meet a critical Advanced Planning Document (APD) milestone.

**Table 2. Estimated Schedule for CHARTS IV&V Procurement**



### 3.3 PROJECT ESTIMATING AND SCHEDULING

---

It is recommended that the State secure the services of a technical management consultant having significant experience in the successful development and implementation of large, complex software projects comparable to CHARTS. It is recommended that these services be used to assist the State in evaluating current and future CHARTS tasking and project staffing requirements, and provide structured methodologies for their estimation and tracking. The *IV&V Service Provider* should review and verify this technical consultant's methodologies and tools and ensure State staff have adequate training in their use and maintenance. In addition, the *IV&V Service Provider* should ensure that CHARTS staffing profiles are reasonable and justified with respect to the tasking for which they are developed, and make recommendations on how to resolve identified staffing deficiencies within the project, including recommendations on resource allocation and acquisition.

It is recommended that the State utilize any of a number of commercially available project management software packages for both current and future project management activities and tasks, such as PRWORA requirements implementation, Year 2000 Remediation, JUSTICE Interface, etc.

### 3.4 PROJECT PERSONNEL

---

The CHARTS project lacks adequate staffing in both the numbers of staff and in those having the appropriate skill sets. The *IV&V Services Provider* must review and make recommendations on the State's current staffing estimation and analysis methodologies and tools for opportunities for efficiency and application improvement. Specific areas to be reviewed and recommendations visited on by the *IV&V Service Provider*, include:

- a.) Resource requirements to implement a Quality Assurance (QA) organization structure, including staff, tools, and training, and if needed, third party considerations such as procurement schedules, costs, and scope of work.
- b.) Resource requirements in application development and ongoing maintenance support.
- c.) On-time and on-going hardware, network and application and operating systems software capacity analysis, monitoring and performance tuning.
- d.) Resource requirements surrounding the implementation of a Configuration Management methodology and structure, including resource commitments, standards and tools installation and training.
- e.) Resource requirements for the implementation of a formal QA function including standards and methodology for requirements, design, code and test through to final documentation. These estimates should include resource commitments for the on-going assessment for improvement.

The *IV&V Service Provider* should also be tasked with reviewing and making recommendations on any future project procurements, such as for a Technical Consultant to assist in the oversight and management of the project. Such recommendations should include employing measurable and repeatable models for staffing, resource and schedule estimating. Other potential areas for

review and recommendations, include: counsel on appropriate evaluative criteria in procurement vehicles; procurement strategies; appropriate staffing for project monitoring and project documentation (APDU/PMP) activities; and initial analysis of and ongoing tracking against PMP schedules to the task, phase and milestone level.

### 3.5 QUALITY ASSURANCE

---

Our review noted a lack of full-time, dedicated Quality Assurance (QA) staff. QA staff, on a project of this scope and complexity, can provide immediate benefit and improvement in areas such as software configuration management and control, application testing, risk assessment and management, and in the institution of and adherence to application and documentation development methodologies and standards. The documentation of QA policies and the standardization of QA procedures is not complete for CHARTS and is unknown for JUSTICE. The *IV&V Service Provider* should review and make recommendations, and subsequently monitor the State's implementation of a joint QA/QC function between the two project's (CHARTS and JUSTICE) to the extent practicable, and ensure that the QA function implements:

Review and make recommendations for improvement of the State's Quality Assurance plan as it pertains to CHARTS and, if applicable, to JUSTICE. Review its implementation and executive/organizational support in all State agencies participating in the CHARTS project and interdependent systems (JUSTICE and Douglas County, et al. The *IV&V Service Provider* should:

- a.) Evaluate and make recommendations on the project's QA plan, procedures and organization;
- b.) Evaluate the QA organization to verify that the organization has an appropriate level of independence from project management, and that the QA organization appropriately monitors the fidelity of all defined processes in all phases of the project; and
- c.) Provide recommendations to ensure that formal review and sign-off processes are used to monitor the quality of all products produced by the project, including the use of periodic self-evaluations to improve the process.
- d.) Review the set of QA objectives selected for implementation; and the indicators used to monitor QA implementation.
- e.) Assess, and make recommendations, as appropriate, to ensure the ongoing review of the current PCR processes and other system documentation to determine the extent to which it can be included in a rigorous independent Quality Assurance process.
- f.) Review and make recommendations in the support of the solicitation/acquisition or development of a third-party-managed Quality Assurance system including QA methodology and standards for design, code, test and requirements management and traceability, and monitor the uniform administration of the QA function across all agencies and departments involved in CHARTS systems development and implementation.
- g.) Recommend appropriate interagency workgroups and processes to ensure the elimination of communication failures between CHARTS and JUSTICE development



and operations organizations, including revised communications and agency authorization procedures.

The *IV&V Service Provider* should verify that the CHARTS project's organizational structure, including its Quality Assurance function adequately supports and incorporates Configuration Management (CM) functions within the project, and should make recommendations, where appropriate, to ensure the implementation of these functions.

### **3.6 CONFIGURATION MANAGEMENT**

---

Configuration Management (CM) on the CHARTS development project appears to be limited to on the CHARTS project to the use of a PCR (Program Change Request) process. The State must ensure that all CHARTS development processes are fully and formally documented (e.g., in a Software Development Plan or similar document), approved and controlled in accordance with formally documented CM procedures. The State must also ensure that only a single, CM-controlled description of these processes exists for the CHARTS project.

The *IV&V Service Provider* should:

- Review and make recommendations on all defined processes and product standards associated with the system development;
- Verify that only a single, CM-controlled description of all major development processes exists and that the defined and approved processes and standards are adhered to in development;
- Verify that all processes and standards are compatible with each other and with the system development methodology, and make recommendations on how to resolve all identified incompatibilities; and
- Verify that all process definitions and standards are complete, clear, up-to-date, consistent in format, and readily available to project personnel, and make recommendations on how to resolve deficiencies that are identified.

In addition, the *IV&V Service Provider* should verify that all software requirements can be traced (backward and forward) through the design, code and test phases to ensure that the system performs as intended and contains no unnecessary software elements. For those areas where weaknesses are identified, the *IV&V Service Provider* should provide detailed recommendations for improvement, including detailed applications of the existing/new CM process. These recommendations should, at a minimum and as required, include such aspects as organizational control, resources, and process models. The feasibility of a requirement traceability matrix or similar requirements management method should be evaluated and instituted by the State and verified by the *IV&V Service Provider*. The *IV&V Service Provider* should also verify that CHARTS requirements are under formal configuration control.

Finally, the *IV&V Service Provider* should periodically:

- a.) Review and evaluate the CM plan and procedures associated with the CHARTS development process;
- b.) Make recommendations to manage and ensure that all critical development documents, including but not limited to those associated with requirements definition, design, code, test, etc., are developed and maintained under an appropriate level of configuration control;
- c.) Make recommendations for appropriate processes and tools to manage system changes, including formal logging of change requests, and to ensure the review, prioritization and timely scheduling of maintenance actions; and
- d.) Review the use of CM information (such as the number and type of corrective maintenance actions over time) by project management for trend analysis or other appropriate management indicators.

### **3.7 SYSTEM CAPACITY**

---

The review recommends that the State strongly consider incorporating, as optional, pre-priced task(s) in any IV&V Service Provide Scope of Work, various types of processing, network, communications and storage, as well as application-specific performance and batch-process-related testing and capacity analysis requirements. Such independent produced, multi-faceted performance, capacity and load balancing assessments may lead to rapid improvements in CHARTS and CHARTS/JUSTICE operations than may be possible through State staff alone.

## **APPENDIX A. ABBREVIATIONS**

---

ACF	Administration for Children and Families
APD	Advanced Planning Document
APDU	Advanced Planning Document Update
CFR	Code of Federal Regulations
CM	Configuration Management
CSE	Child Support Enforcement
CSES	Child Support Enforcement System
DCSIS	Division of Child Support Information Systems
DHHSS	Department of Health and Human Services System
CHARTS	<b>Children Have A Right To Support</b> , the fully automated Child Support Enforcement System for the State of Nebraska
FFP	Federal Financial Participation
FSA	Family Support Act
H/W	Hardware
IMS	Information Management Services
IV&V	Independent Validation and Verification
JCL	Job Control Language
NE	Nebraska
OCSE	Office of Child Support Enforcement
PRWORA	Personal Responsibility Work Opportunity Reconciliation Act
QA	Quality Assurance
RFP	Request for Proposals