UNSOLICITED PROPOSAL

Federal Voting Assistance Program (FVAP)

Trusted Anonymous Voting System (TAVS)

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Prepared for:

Federal Voting Assistance Program

Rosslyn, VA 22240

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In Partnership with:

Open Source Digital Voting Foundation

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1. BACKGROUND

Whereas the FVAP as directed by Congress desires to implement a remote voting solution for military personnel overseas, and developing an authoritative technical solution for that has hitherto proved problematic this solution proposes a patent pending approach that addresses all known technical, legal, and procedural challenges that have previously prevented deployment of a functioning solution.

The solution envisioned by the Team Credence will provide:

- ✓ Anonymous voting
- ✓ Software Independent (SI) voting
- ✓ Military voters with ability to directly verify their cast ballot digitally
- ✓ Remove the need for mailed paper ballots
- ✓ CAC based access for military voters to secure voting via military networks
- ✓ Works with existing fielded computer equipment; does not require any special hardware
- ✓ Takes advantage of today's computer savvy military personnel's own preferences
- ✓ Remote hosted solution, so minimizes footprint in DoD network servers and clients
- ✓ Avoid a political role for DoD in delivering or tallying of ballots
- ✓ Provide dual pathway accounting and tallying of ballots for election authorities
- ✓ Full auditing capabilities with reconciliation with voter registrations
- ✓ Transparent oversight for election and party observers during actual vote casting operations
- ✓ Open source to permit inspection of implementation mechanisms, voting and tabulation
- ✓ Robust security measures and real time tracking of potential external attacks
- ✓ Works with today's messaging standards and protocols
- ✓ Uses available encryption technologies and secure networking
- ✓ Future proofing that allows new technologies to be integrated
- ✓ Support full use of the OASIS EML election management standards

To achieve all this the patent pending solution uses a unique solution architecture that combines lessons learned from previously fielded remote voting systems with new measures and techniques that exploit available devices and communications networks. Furthermore the architecture uses a distinct combination of computer servers to separate out roles and responsibilities so that each component relies on another for a critical aspect of the election process. By providing physical separation of these specific details the system is able to provide each of the specific desired capabilities noted above.

2. TECHNICAL PROPOSAL

2.1 INTRODUCTION TO TEAM CREDENCE

Team Credence—consisting of **Credence Management Solutions LLC,** a small minority-owned company providing management and technical advisory services to government agencies; along with our Election/Voting Subject Matter Expert partners, and our Technology Solution partners, **Open Source Digital Voting Foundation**, is pleased to present our unsolicited proposal for consideration to Federal Voting Assistance Program (FVAP).

Team Credence presents a unique collaboration among its team-members, all of whom are *committed to enabling "Open Government" through the use of technology to promote transparency, collaboration, and participation*. Our solution provides an efficient, flexible, and scalable, framework that can be leveraged during the upcoming general elections in November 2010 to *"strengthen our democracy and promote efficiency and effectiveness in Government."*

Credence Management Solutions LLC (Credence) provides management consulting, strategy, business transformation, and advisory services to government agencies. Credence serves its customers as an independent and objective "Trusted Advisor" combining functional, technical, and acquisition capabilities to meet the business goals of government programs. Credence is a Small Business Administration (SBA) certified 8(a) and HUB-Zone business, with an active Secret Facility Clearance by the Defense Security Service (DSS). Credence qualifies as a Small Business under the NAICS Code 541519 with Size Standard of $7,000,000.

Credence is currently supporting the BTA Enterprise Integration Directorate on multiple contracts, and we are knowledgeable with the organization and its mission. We are also intimately familiarity with the Organization for the Advancement of Structured Information Standards (OASIS) Election Markup Language (EML), and our Technical Architect, Mr. David Webber currently serves as the *editor of the OASIS Election and Voter Services Technical Committee*. Mr. Webber has also assisted the *State Office of Statistics in California with implementing their OASIS EML 530 election statistics reporting system and with the Pew Foundation and Google development staff to develop the new OASIS EML 150 for polling district boundary mapping and polling place location.*

The Open Source Digital Voting (OSDV) Foundation is a non-profit public benefits corporation, whose mission is to work to restore trust in the cornerstone of American democracy—the process of fair and free elections—through the *design and development of open source, transparent, high-assurance election and voting technology, freely available for adoption and deployment by any state, jurisdiction, or precinct*. The range of efforts to accomplish the mission span the entire elections and voting ecosystem including voter registration, ballot design, voting devices, and election management services. The OSDV Foundation's flagship effort is the TrustTheVote Project – a digital public works project, creating freely available open source technology maintained in a public trust. Open source technology and practices are a key aspect of this public works project, and a critical ingredient to ensure transparency and trust.

2.2 PROPOSED KEY PERSONNEL

Our proposed Key Personnel includes a team that is uniquely qualified to deliver on the FVAP COTS Support Services contract, due to our extensive experience in working with the BTA, intimate familiarly with FVAP, strong election and voting subject matter expertise, and a proven technical solution that is highly secure, configurable, scalable, reliable, and cost-effective.

Our Proposed Key Personnel includes:

- **Mr. David RR Webber (Voting/Elections Technical Architect):** Mr. Webber has over 30 years of IT experience, with over 20 years experience developing government solutions including experience with **election management and voting solutions design**. He currently serves as the **technical editor for the Election and Voter Services Technical Committee in OASIS**. David **assisted the State Office of Statistics in California with implementing their OASIS EML 530 election statistics reporting system**. His committee work has also included developing trusted processing mechanisms and XML for secure public elections using open source code implementations. In addition he has worked with the Pew Foundation and Google development staff to develop the new OASIS EML 150 for polling district boundary mapping and polling place location. He has extensive election system design experience for meeting both US and overseas country voting solution requirements. He is the lead architect and inventor for the proposed Team Credence solution. David has significant Open Source Software (OSS) development experience. He **holds two US patents for EDI and XML technologies cited by over 30 other patents.**
- **Mr. John E Sebes (CTO OSDV):** Mr. Sebes has over 25 years experience providing information technology consulting services related to information security, technology strategy, and IT operations assurance. With experience in executive management and in technology innovation and development, he has performed a variety of roles including strategist, architect, designer, analyst, and advisor for a variety of organizations including established technology companies, start-ups, venture capital firms, major government agencies, and financial services firms. His experience, in addition to **designing and implementing the current OSDV elections support system,** includes a variety of strategic and/or security-critical systems such as banking, payments, mobile computing, healthcare informatics, electronic medical records, digital rights management, digital control systems, and national critical infrastructure protection.
- **Mr. Siddhartha Chowdhary, PMP (Program Manager):** Mr. Chowdhary has 17 years of experience in program and project management, strategic planning, and integration of enterprise business system and COTS implementations. He is a **Certified Project Management Professional** and possesses an active Secret Clearance. **Mr. Chowdhary will serve as the Program Manager for Team Credence and the principal point-of-contact (POC) for BTA. He is knowledgeable with the BTA organization and programs and has established relationships within BTA,** including their financial and contract personnel. These relationships will ensure that Team Credence can hit the ground running upon award, and can execute effectively on this contract.

- **Mr. Paul E. Stenbjorn (Voting/Elections Subject Matter Expert):** Mr. Stenbjorn is the principal and founder of Election Information Services, LLC - providing election information management and systems development services to election officials in several states. Formerly, Mr. Stenbjorn served as the **Information Services Manager for the Virginia State Board of Elections and was instrumental in the state's participating in the Voting Information Project and the development of XML election results reporting** in concert with the Associated Press and other news outlets. Mr. Stenbjorn has over 17 years of experience in information and technology management in the private sector, with national non-profit organizations, political campaigns and the public sector - including the Virginia Housing Development Authority, Campaign for America's Wilderness (part of the Pew Charitable Trust), the Democratic National Committee and the National Center for State Courts.

2.3 INTRODUCTION TO OUR PROPOSED SOLUTION

Team Credence envisions developing an initial Proof of Concept (PoC) solution to demonstrate the feasibility of the approach and to field test it with end users, election officials and voter representatives to validate the concepts. Then Team Credence will also work with academic voting domain security experts to incorporate their feedback to improve solution components incrementally. Additionally we will provide an initial set of audit report tools and facilitate this by leveraging the FVAP preferred OASIS Election Markup Language (OASIS EML) and/or Voter Information Project (VIP) voting data formats.

The Team Credence solutions benefits envisioned are:

- ✓ Experienced election management system solution development team
- ✓ DoD experienced developers familiar with DoD secure networks and solutions configuration
- ✓ Patent pending solution that is unique in its solution architecture
- ✓ Open source solution permits full transparency and public oversight
- ✓ Built from the ground up to use OASIS EML public election management standards
- ✓ Uses leading security measures to safeguard the solution in today's hostile world
- ✓ Compatible with existing FVAP voting project initiatives

Considering these factors our solution provides a unique opportunity for FVAP to deliver on its mandate from Congress in 2002 to provide secure remote voting for the UOCAVA community.

2.4 UNDERSTANDING OF THE REQUIREMENTS

In this section, we discuss each of the required functional areas required to support the FVAP needs.

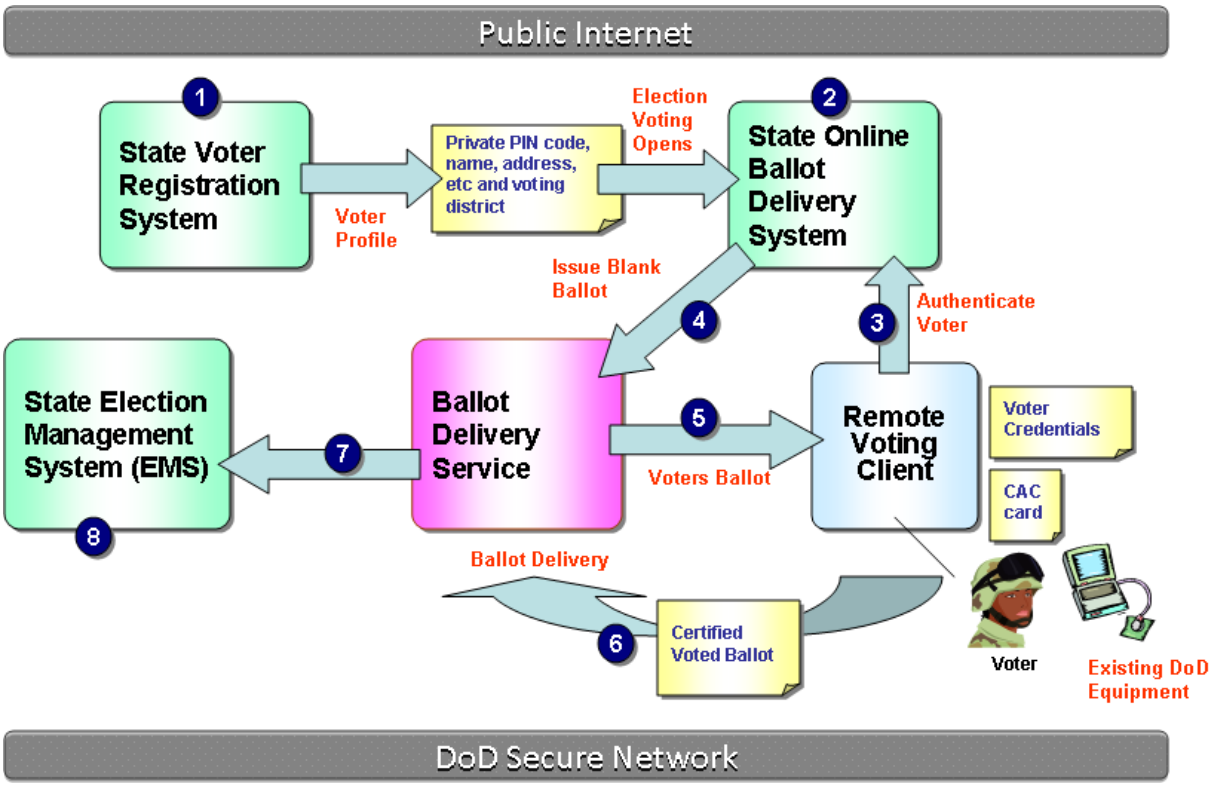


Figure 1 – Uniformed Overseas Voting Desired Voting Scenario

Figure 1 shows a diagram of envisioned scenario for a military voter casting a ballot. The key aspects are normal online state voter registration, use of existing secure networking facilities overseas with CAC enabled access for delivery of voter specific ballots and then third a secure ballot delivery service for trusted delivered to election authority for tabulation. Because this approach uses existing DoD equipment there are no special devices to purchase or ship to uniformed voters. However this introduces a number of factors that we will be addressing shortly. In addition there are further desired capabilities include anonymous balloting, ability for the voter to confirm actual voted details, and removing DoD role in tabulation processing.

Further operational details include for the wizard to automatically check that the voter is providing information that matches with that actually registered in the states own voter registration management system. This exchange of data will also ensure that a voter has been approved to receive a ballot by election officials and has not already returned a completed ballot.

In summary the required functionality involves **assisting military and overseas voters (covered under Uniformed and Overseas Citizens Absentee Voting Act "UOCAVA") to:**

1. Via an online hosted forms wizard application retrieve a valid ballot that
    a) Confirms the voters entitlement to vote

b) Is specific to the voter's jurisdiction, with federal, state and local offices and applicable referenda issues

c) Can be marked and completed electronically

d) Can be returned electronically securely and anonymously to the designated election officials systems for tallying

e) Allows voter to confirm that their ballot was cast and delivered accurately

f) Is externally managed and controlled outside of DoD by trusted third party providers

g) Removes DoD systems from tallying process

h) Provides independent dual track tallying

i) Provides tracking and usage statistics

j) Allows for transparent reporting and auditing and voting oversight by election authority and party officials

k) Customizable to each states local integration needs

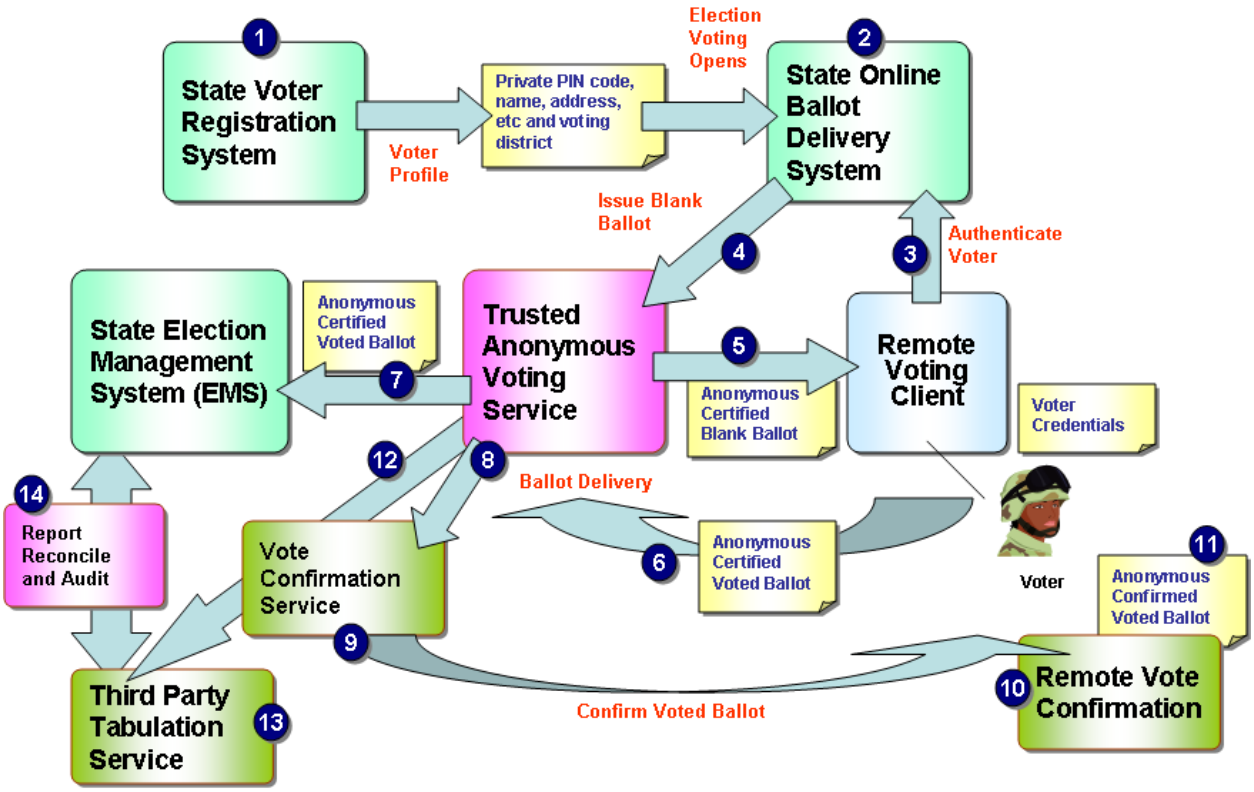
l) Uses common data format standards

m) Provides safeguards against external threats or internal process manipulations

In addition for future deployment purposes the voted ballot records will support automated ballot tallying but that will require further work to integrate with each of the states own data extraction software and tallying systems.

2.5 PROPOSED SOLUTION

Team Credence is proposing a solution that leverages existing components, combined with customizations and software development, to deliver a comprehensive solution to FVAP. Figure 2 here shows the functional overview of this solution and we will describe each step of the process and how it achieves the objectives outlined in the requirements understanding.



Conceptual overview ONLY! Low level technical details not shown.

Figure 2 – Trusted Anonymous Voting Service (TAVS) functional overview

In figure 2 we have used color coding to distinguish the major process areas. Light green shading denotes system components provided by state election authorities. Purple shading denotes services provided by a trusted third party organization and dark green shading relates to independent services that allow confirmation and verification of the overall operations.

We now discuss each functional area illustrated in Figure 2:

1) State Voter Registration System

   Existing State voter registration systems, enhanced to permit voter to select private PIN code. Also integrates to VIP address and districting solution for ballot detail determination. Voter profile data provided to TAVS as XML feed prior to election balloting.

2) State Online Ballot Delivery System

Our solution uses a smart forms environment to deliver the FVAP Wizard functionality for voters. The Wizard obtains the voters registration information and then this presents a jurisdiction specific ballot that can be completed electronically. By dynamically selecting a ballot driven by available structured data and forms images provided by states the voters can receive a ballot that contains all races in the voters' specific registration jurisdiction. These ballots are rendered in an electronic format.

3) Voter authentication

   Using voter PIN code match voter details with state provided voter roll data from step 1. Track delivery of ballot to voter and voter cast ballot return.

4) Delivery of jurisdiction specific blank ballot to voter for completion and submission of cast ballot. This is routed through the TAVS that watermarks the ballot with a unique verification ID and ensures that ballot is now anonymous from tabulation perspective but can be recognized as a valid ballot by querying the TAVS to verify authenticity. Central observers can oversee these operations and verify that only authenticated voters are receiving ballots.

5) Remote voting client receives anonymous ballot. For military voters CAC based access will be provided directly from DoD secure networks to the remote voting client. All software involved is open source and hosting is via DoD portal that is CAC enabled. The TAVS also maintains the public digital certificate key for the voter; this is configured automatically for the voter using the remote voting client. This ensures trusted environment for voter and ability to use any DoD network system while maintaining voter privacy.

6) Once voter has made their ballot selections using the remote voting client, this is encrypted using their digital certificates and sent to the TAVS for anonymous delivery to the state.

7) State receives the anonymous decrypted ballot from the TAVS ready for tallying. State can confirm that ballot credentials are for authenticated voter, but cannot identify the voter. State places ballot in provisional status pending confirmation.

8) Simultaneously the TAVS sends the original encrypted ballot to the confirmation service that routes this read-only copy back to the voter for independent verification. The voter can choose the routing, such as to a PDA to ensure ballot confirmation process is independent of remote voting client.

9) Vote confirmation service sends voter read-only ballot copy.

10) Voter uses open source vote confirmation application to review ballot details.

11) Decrypts using their PIN and local credentials and then confirms cast ballot details. Re-sends confirmation ballot to TAVS.

12) Confirmed decrypted cast ballot sent by TAVS to independent third party vote tallying service. Also confirmation notice passed to state EMS system releasing cast ballot from provisional status into voted status.

13) Vote tallying service produces state specific tallying reports.

14) Audit and reconciliation reporting between state tallying and independent tallying service.

Numerous protections and safeguards are provided by this TAVS architecture and dual pathway processing designed to minimize risk exposure and potential for any coordinated external attacks. Firstly the system is designed to provide physical separation between voting and vote confirmation processes and hence meets NIST software independence (SI) requirements. It also ensures that election authorities and party officials can monitor the operations of the TAVS system. Furthermore by having all open source components that can be independently selected and verified it allows transparency in the ballot casting and confirm processes. Lastly by establishing clear physical separation between pathways and roles it minimizes risk by involving distinct separate organizational entities each collaborating in producing the overall services to the voter.

Overall Team Credence believes this solution offers a unique opportunity to fulfill the Congressional mandate from 2002 to provide remote online voting for UOCAVA.

2.6 FUTURE DEPLOYMENT PHASE

Once the initial PoC is completed then subsequent phases will provide actual production deployment with designated states adopting the TAVS solution. These will be tailored to the state specific systems, regulations and ballot requirements.