PollChief®
A Division of Konnech

Konnech®
Election Administration Tools
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ABVOTE

March 25, 2013

Al Davidson, UVS Project Lead
Colorado Department of State
1700 Broadway Street, Suite 200, Denver, CO 80290
Email: Al.Davidson@SOS.STATE.CO.US

Dear Mr. Davidson:

Re: RFI 20130215 Colorado Uniform Voting Systems (UVS)

This response will address software solutions for the UVS. These aspects include options to automate aspects of absentee voter processing, accommodate Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) voters, use a Smartphone/tablet iPollBook (which can also of course be deployed onto laptops as an e-pollbook), track ballots, and manage assets.

There will be more than one billion Smartphone sold worldwide in 2013. Most UOCAVA voters have smart phones. These voters spend one or more hours on the smart phones every day. In many areas, a cellular network is the only way to access the Internet.

Konnech is the leader in mobile voting technologies. Konnech successfully tested the ABVote Mobile App for a nationwide mock election in 2012 under the auspices of a City of Detroit FVAP grant and presented it at the NIST/EASE sponsored Future of New Voting System Symposium in February 2013. (www.ABVote.com/NIST_EAC_Demo_Post.pdf). This new concept provides voters a complete service -- general information search, voter registration, absentee request, candidate study, and ballot delivery and marking all from a mobile device.

Our experience with UOCAVA ballot delivery and election logistics management systems positions Konnech to link our Mobile App easily with your current and future tabulation systems. Please give us a chance to demonstrate our applications.

We look forward to hearing from you after you've reviewed our proposal.

Sincerely,

Eugene Yu
President
Konnech, Inc.
eyu@konnech.com

Table of Contents

Proposal for RFI 20130215 - Colorado Uniform Voting System

1. SOLUTION DESCRIPTIONS

1.1.Overall Description of UOCAVA System

20. Allow secure electronic delivery and return of ballots for voters qualifying under the Uniform and Overseas Citizens Absentee Voting Act and other voters allowed by federal or Colorado law to receive or cast ballots by secure electronic delivery methods.

Konnech first developed its system for accommodating UOCAVA voters (ABVote) under the MOVE act in response to the FVAP's (Federal Voters Assistance Program) project for a UOCAVA wizard in 2010. Within only three months, Konnech designed and deployed the system for three different states customized in three different ways for their varied requirements. Two of those states decided to actually use the new system in the General Election.

Konnech's two states (Montana and Nevada) had the highest eligible voter usage rate of all the states who participated in the program. Konnech was the only one of the six vendors to have all of its clients' ballots ready to go and markable onscreen on the GOLIVE date 45 days before the general election. Konnech's ABVote system was rated by the FVAP as the quickest for the voters, the easiest for the voters and the fullest backend for the administrators. For the FVAP data related to 2010 vendors' performance, please click this link http://www.fvap.gov/resources/media/fvap_ovf_presenation_02112011.pdf and go to page 22. By dividing the total ballot download with the total UOCAVA numbers list for each State, Konnech stands out among the vendors based on this list.

FVAP.GOV
FEDERAL VOTING ASSISTANCE PROGRAM

State Nov 2010 Election Wizard Usage Rate

State	Vendor	Ballots Downloaded	Total Overseas Voters	Usage Rate	
MT	Konnech	540	4,253	12.70%	VOTE
NV	Konnech	100	1,001	9.99%	VOTE
UT	Everyone Counts	203	2,146	9.46%	
DE	Democracy Live	276	4,531	6.09%	
MO	Scytl	142	2,500	5.68%	
VA	Credence	706	14,437	4.89%	
IN	Scytl	88	3500	2.51%	
MS	Scytl	146	10,000	1.46%	
NM	Scytl	19	1,500	1.27%	
CO	Democracy Live	31	2,500	1.24%	
NE	Scytl	19	3,500	0.54%	
KS	Scytl	4	1,200	0.33%	
WA	Scytl	188	60,000	0.31%	
NY	Scytl	927	320,735	0.29%	
WV	Democracy Live	33	25,000	0.13%	
ID	Democracy Live	26	20,000	0.13%	
AR	Democracy Live		25,615	0.00%	

Total Overseas Voters Data Was From the FVAP Nov 2010 EVSW RFPs Requirements Related to Each States.

Nevada's Largest 2 Counties had opted out Using EVSW.

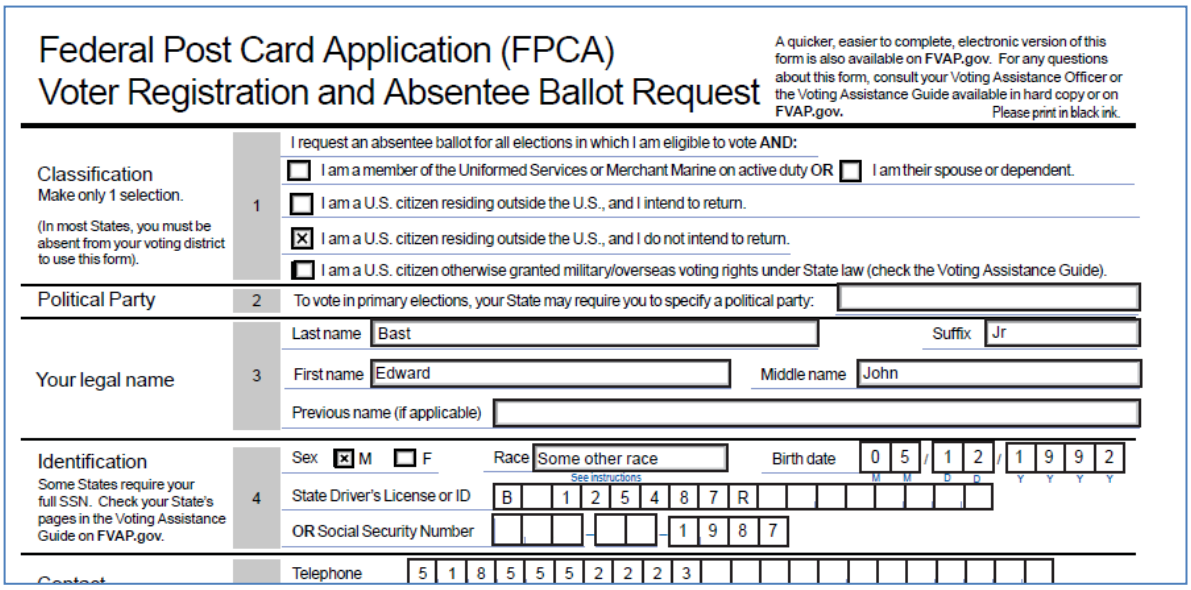
1.1.1. Ballot Style Creation

The first step is ballot creation, as mentioned in bullet 1 of the RFI.

Konnech's ABVote provides many options for creating the ballots because each State has different procedures. The ballot cache can therefore be created by importing from Excel spreadsheets, from PDFs, from the Voter Information Project (VIP) files, or even from Word documents. In a few States, the state already creates a ballot style cache, so if your Saber system has already implemented a ballot style system, we anticipate that we'll import the ballot styles from that.

1.1.2. Voter Application

Konnech's ABVote system allows the voter to fill out the Federal Post Card Application (FPCA) online, then submit it. They can use our screen to do that, or, if Colorado desires, could do it through your Sabre system.



Federal Post Card Application (FPCA)
Voter Registration and Absentee Ballot Request

A quicker, easier to complete, electronic version of this form is also available on FVAP.gov. For any questions about this form, consult your Voting Assistance Officer or the Voting Assistance Guide available in hard copy or on FVAP.gov. Please print in black ink.

Classification
Make only 1 selection.
(In most States, you must be absent from your voting district to use this form).

1 — I request an absentee ballot for all elections in which I am eligible to vote AND:
- ☐ I am a member of the Uniformed Services or Merchant Marine on active duty OR ☐ I am their spouse or dependent.
- ☐ I am a U.S. citizen residing outside the U.S., and I intend to return.
- ☒ I am a U.S. citizen residing outside the U.S., and I do not intend to return.
- ☐ I am a U.S. citizen otherwise granted military/overseas voting rights under State law (check the Voting Assistance Guide).

Political Party — 2 — To vote in primary elections, your State may require you to specify a political party:

Your legal name — 3
Last name: Bast — Suffix: Jr
First name: Edward — Middle name: John
Previous name (if applicable):

Identification
Some States require your full SSN. Check your State's pages in the Voting Assistance Guide on FVAP.gov.

4
Sex: ☒ M ☐ F — Race: Some other race (See instructions) — Birth date: 05 / 12 / 1992 (M M D D Y Y Y Y)
State Driver's License or ID: B 1254 87R
OR Social Security Number: ___-___-1987

Contact
Telephone: 5185552223

Figure 1. FPCA created by the system

Figure 2. The voter may apply online using a computer or a smart phone or tablet app.

1.1.3. Administrator Approval

Konnech's ABVote simultaneously sends an email to the voter informing them that their request has been submitted and sends an email to the local election official (LEO) alerting them that one of their voters has submitted a request. The email to the LEO includes a link to the administrator's back end of the program.

The information that the voter keyed in appears in the back end, juxtaposed next to (a) that voter's information from the statewide voter registration system (SVRS), if any, and (b) next to the information from the Yearlong UOCAVA FPCA File (YUFF) the voter may have previously submitted. The display of the new information side-by-side spares the LEO from having to click into different programs to look up the info in the SVRS and YUFF. The information display can include the signature images to spare the LEOs from looking up signature cards. This saves time for the LEO at this busy time of the election cycle.

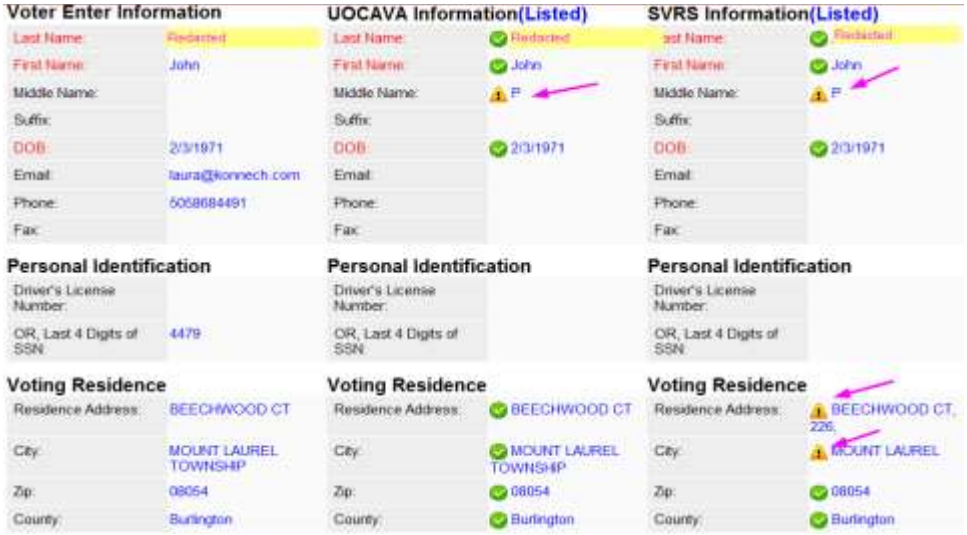
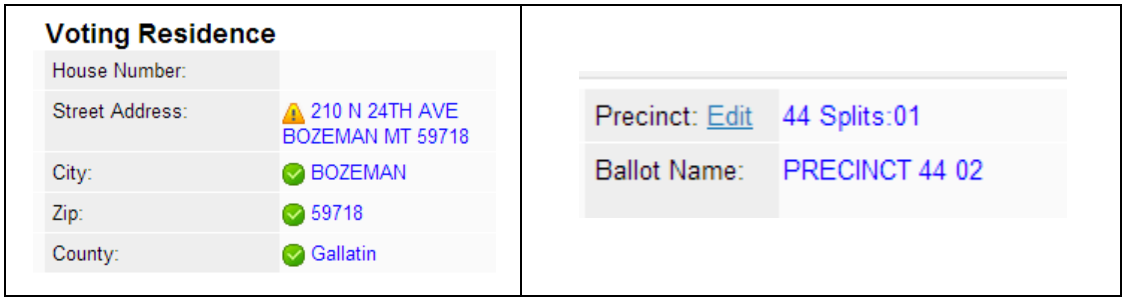


Figure 3. Administrator Applicant Comparison Screen

The program determines the correct precinct and ballot style for the voter by referring to both the SVRS and the state's street index. This, again, saves time for the LEO. Depending on Colorado's preference, the system can either transmit ballot access to qualified voters instantly, as chosen by Montana, or upon a click of approval by the LEO, as chosen by Michigan and Nevada.



Figures 4 and 5. The address above converts to Precinct 44, Split 01, Ballot Name Precinct 44 02

1.1.4. UOCAVA Voter Votes

The voter instantly receives an email with a Personal Identification Number (PIN) and a link to access the ballot. The voter clicks on the link, enters and the PIN and a confirmation of his email address, and his ballot appears.

Figure 6. Email to voter with link and PIN to access the ballot

If it happens to be for a primary election, the voter can choose which party's ballot he wishes to vote.

The system displays the instructions and ballots exactly as created by the administrators. The voter can click to choose party for a primary, and can click to view the Spanish instructions provided by an administrator. Interestingly, voter using a smart phone or e-tablet can also use Google's language translator in the Cloud to instantly to hear translations into over 600 other languages.

The voter can click on the ovals to mark the ballot onscreen, can change his mind and reaffirm his choices, will be prevented from over-voting a contest, and will be specifically reminded of any contests he has under-voted. For write-ins, the voter will be able to click that oval and key in his write in choice. The voters also, of course, have the choice to mark manually by printing out the packet.

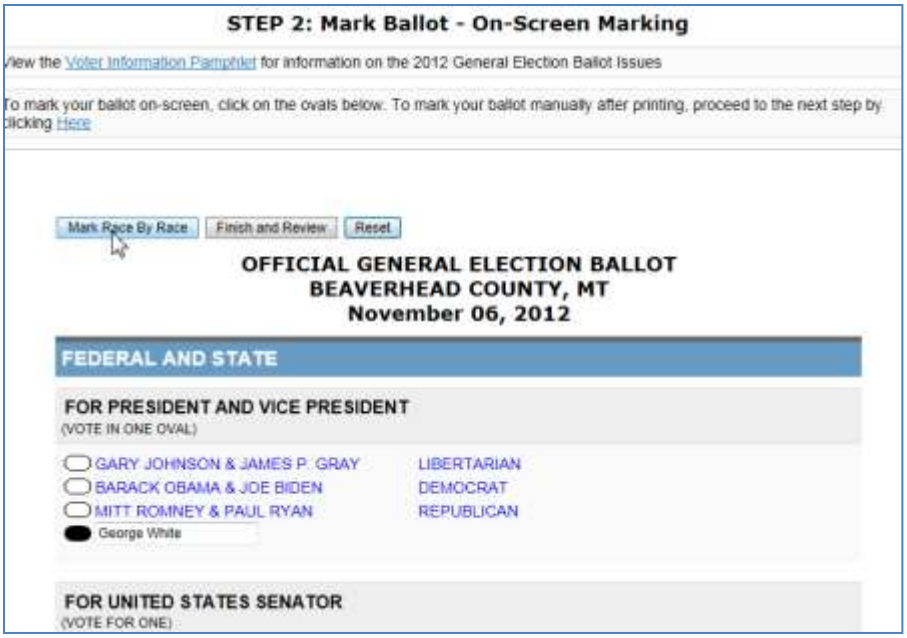


Figure 7. Sample of part of a typical ballot

The program prevents over-voting by deselecting as the voter makes his/her various choices. If the voter should accidentally miss voting a particular contest, or fails to select the total number of candidates allowed, the system reminds of this two times—once at the first "finish & Review" click, then again with a pop-up when the voter first clicks "confirm". If the voter clicks 'OK', the system proceeds with those contests un-voted.

Figures 8 and 9. Two alerts to the voter that the ballot is under-voted.

The system creates a pdf packet with the ballot and supporting documents and instructs the voter on how to properly prepare and return the packet. The sequence varies for our different clients. In the case of Michigan, the voter must print out the ballot packet, sign on both a declaration sheet and an envelope template, then mail the ballot packet back to the jurisdiction. In the case of Montana, the voter can sign digitally and email the ballot packet back. So our program instructions naturally vary at this point to reflect each State's procedures. Due to nationwide concern about online voting, we do not plan to automatically transfer the ballot choices.

As an extra security measure, at the moment of creation of the ballot PDF, the system instantly transmits an email to the voter informing him that a ballot has been created in his name. This prevents a third party from stealing this opportunity from him.

1.1.5. Handicapped Accessibility

Visually impaired voters accessing the system from a computer can use their JAWS reader to hear the instructions and choices read aloud, and speak into their microphone to indicate their choices.

Voters accessing the system via the app on a smart phone or e-tablet have additional marking options. They can listen and speak their choices; they can tap on their choices; or they can shake-to-vote—that is, wave the phone from left to right for no, up and down to vote yes. This is a patent pending app of Konnech's that uses the devices' inherent motion detection system. This can be tremendous help in accessibility for voters who have a variety of handicaps—hearing, vision, mobility, reading cognition, voice disorders, and dexterity. These types of disorders are now common due to stroke and brain injury.

1.1.6. Multi-Language Capability

We will, of course, allow the users to switch to 'Spanish' from 'English' to present the instructions exactly as your administrators have prepared them for the in-person ballots and will add in future languages you add in the future. Immediately, however, if the voter is accessing the system from a smart phone, he can get the translation of over 600 languages from Google's Cloud translation service. This means that if your voter's native language is Bulgarian, Slovak, Vietnamese, Basque, Greek, or any of 600 others, the system can provide their voting instructions in their own languages right NOW.

1.1.7. Satisfaction Survey

The voter has the option to fill out a satisfaction survey. In the case of Montana, Over 2,000 Montana uniformed and overseas voters used the system to access their ballots, over 5% filled out the survey, 93% rated themselves satisfied or very satisfied with the system, and 5% of the users (that is, 87% of all survey takers) filled in comments.

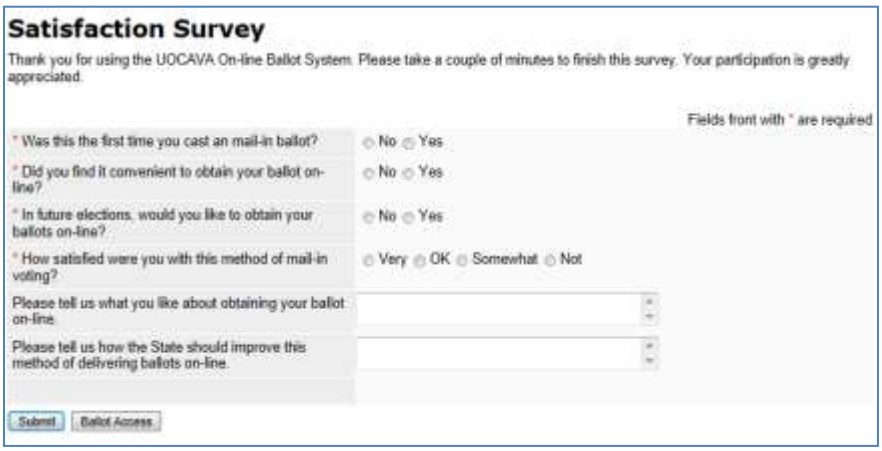


Figure 10, Satisfaction Survey

1.1.8. Receiving Voted Ballots

The ballot packet creates a simple one-dimensional identifier barcode on the supporting documents that indicates whose ballot it is and which generation of the ballot this is (in accordance with NIST security guidelines). This one-dimensional identifier barcode does NOT appear on the ballot—only on the supporting documents.

The system can also create a two-dimensional (2D) barcode on the ballot only (NOT on any supporting documents) which would encode the marked ballot choices. The 2D barcode is an addition to the marks on the ballot, NOT a replacement of the marks on the ballot. So the voter (and later on, any auditors) can see the marked ovals on the ballot.

This is significant because as listed in the RFI in bullet point 4, systems should provide for a verifiable paper audit trail.

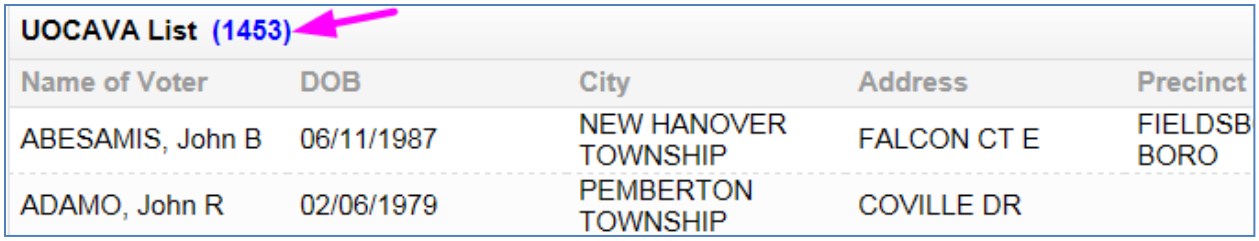
The LEO could then scan the 2D barcode from the returned ballot into either a tabulator or a ballot-on-demand printer (BOD), and the BOD would print a machinable ballot to feed into the tabulators.

When the voted ballot is submitted by the voter (depending on the methods authorized by Colorado, via email, fax, or mail) the LEOs can scan the 1D barcode on the envelope or supporting documents to record whose ballot has been returned, and which generation of the ballot it is (as recommended by NIST security guidelines), separate the ballot from the supporting documents, then scan the 2D barcode (located only on the ballot itself so it can't be linked to a voter's identity) into a ballot on demand printer to recreate the marks on a machinable ballot. This will save LEO labor and will increase confidentiality for your UOCAVA voters, because it will eliminate the current task in which the LEOs and witnesses manually recreate the voters' marks onto a machinable ballot.

Bar Code	Name of Voter	Print Date	Received Date	Status
440095423	Bast, Edward	03/11/2013 01:00:02 PM	03/11/2013 01:04:27 PM	Pending
665943767	Konnech, Perry	01/21/2013 10:41:24 AM	01/21/2013 10:43:32 AM	Available
1103392423	Katt, Kitty	01/11/2013 02:39:35 PM	01/11/2013 02:40:12 PM	Available
631356193	Konnech, Jelly	01/11/2013 02:31:33 PM	01/11/2013 02:32:12 PM	Available

Figures 11 and 12. This voter created the ballot three times, but submitted the one listed in green. The LEO might mark this as Pending as a provisional ballot.

If desired, Konnech can use the applications from the UOCAVA voters to create Colorado's MOVE Act directed Yearlong UOCAVA FPCA File (YUFF), or can access the existing list if Colorado has already created one.



UOCAVA List (1453)

Name of Voter	DOB	City	Address	Precinct
ABESAMIS, John B	06/11/1987	NEW HANOVER TOWNSHIP	FALCON CT E	FIELDSB BORO
ADAMO, John R	02/06/1979	PEMBERTON TOWNSHIP	COVILLE DR	

Figure 13. Yearlong UOCAVA FPCA File (YUFF)

ABVote enables the State or LEO to transmit a mass email from the system to all the UOCAVA voters on our YUFF from specific precincts or districts (or the entire State itself) to inform them of an upcoming election. If desired, it can even include their PIN to access their precinct's ballot. If preferred by the State, it could transmit faxes to those who had checked "fax" as their first choice on their FPCA, but this choice is vanishingly rare from the new generation of voters. If they had checked "mail" as their 1st choice, the system can prepare it as a mail merge, which the administrators' could print onto a hard copy.

We will allow the users to switch to Spanish from English to present the instructions exactly as your administrators have prepared them for the in-person ballots. Also, if the voter is using a smart phone, he can get the translation of over 600 languages from Google's Cloud translation service.

Konnech is expert at interweaving multiple databases to create a smooth, seamless experience for both voters and administrators. Some of the databases we typically access for a UOCAVA voting system are:

Voter Registration (names, DOB's, last 4 of SSNs, home addresses, precincts/splits, VR numbers, counties/jurisdictions, absentee status, etc.)

Driver's License (names, DLNs, expiration dates)

Street Index (statewide addresses pegged to jurisdictions and precincts/splits)

Yearlong UOCAVA FPCA File (YUFF) MOVE Act directed list of UOCAVA voters; in some states, it's a central, state-wide database, and sometimes it's included in the voter registration database, but in some states each jurisdiction maintains its own YUFF, in which case Konnech writes an interface for each jurisdiction's YUFF.

Konnech is expert at identification technology; our systems offer signature comparison for the LEOs' visual inspection, and the smart phone/e-tablet app can apply both voice ID recognition and signature recognition sub-routines. It can also, if desired, apply multiple ID parameters to ensure secure identification. The multiple parameter approach (our Predictive Analysis Module) compares the available biometrics (network, location, device ID, entered ID info, signature, voiceprint) to inform the LEO of the weight of authentication evidence.

ABVote collects, quantifies, and reports on a variety of factors.

- Help-desk requests on demand

- Countries accessed
- Satisfaction levels
- Voter status
- Voter types
- Ballots mailed
- Ballots faxed
- Ballots emailed
- Ballots approved
- Ballots returned
- UOCAVA
- Non-UOCAVA

On-Demand Reports are dynamic, always visible on the site.

The system displays live, on-demand statistics and reports by Individual County or for entire State of:

Number of new requests for ballots pending

Number of requests for ballots that have so far been approved

Number of requests for ballots that have been rejected

Total Number of requests for ballots that have been received, whether approved, rejected, or pending

Number of voters on the UOCAVA lists

Voter Request Events

Voter Access Ballot Events

Voter Download Ballot Events

Number of entrees on the UOCAVA list

From the voluntary voter Satisfaction Survey:

Number and percentage of survey responders who reply that they are casting an absentee ballot for the first time

Number and percentage of survey responders who reply that they found it convenient to obtain their ballots online

Number and percentage of survey responders who reply that they would or would not like to obtain their ballots online in the future

Number and percentage of survey responders who reply that this method of absentee voting was Very Satisfactory, OK, Somewhat Satisfactory, or Not Satisfactory

For the State level only, it will also display live, on-demand statistics and reports of each county's log-in frequency.

WEEKLY

The program currently creates a weekly report to the state of Traffic Analytics— daily and to date (site usage, bounce rate, pageviews, Direct Traffic, Referring Sites, Search Engines, Pages per visit, Average Time on site, New Visits, Countries (name & number and percentage of users), unique pageviews, average time on page, Exit percentage).

For your convenience in evaluating this system for UOCAVA voting, the RFI bullet points are listed below, with the corresponding aspect of Konnech's system. Although these points are designed to address the features of voting machines to be placed in polling places, we feel that many of them apply to the UOCAVA, asset tracking, and e-pollbook system, too.

1.2. Asset Management Description

Although the RFI doesn't ask for complete election asset management, bullet point 25 asks for electronic tracking of voting equipment location.

25. Allow electronic tracking of voting equipment location.

We recommend you use Konnech's election asset management module from the PollChief suite of election tools for electronic tracking of voting equipment location.

Poll Asset Management System (PAMS) tracks all the generic and unique assets needed for elections in the manner specified by HAVA auditor guidelines. PAMS reduces inventory management time by two thirds, according to Leon County, Florida.

1.2.1. ADVANTAGES OVER GENERIC PROGRAMS

Web-based

Ballot Control

Chain of Custody

Election Packing— clerk, precinct, building

Critical Item Return Alert

Email Alerts

Interactive Testing— pre- and post-election logic and accuracy tests

Return Ratio Calculation

Trouble Tickets

White Board

Mobile Phone Access

Input Options— Keyboard, Bar Code scanner, RFID, iPhone, Android, Import

Condition Classification for HAVA compliance

Financial Reporting for HAVA compliance
Storage Mapping for HAVA compliance
Office Use Versus Election Use for HAVA compliance
Asset disposal records for HAVA compliance
Return Unpacking
Voting Machine Archives
Drayage Wizard – cargo value, loading guide, delivery routes and maps
Polling Place Exceptions— delivery constraints and special equipment needs

Attachment Tracking – security seals, comm. Packs, memory cards, etc

Lading Monitor — complete correct truck loading
Searchable Web Log
A Statewide program provides consistency from county to county

A Statewide program gives the State insight to assist the counties

1.2.2. HAVA/EAC Compliance

The system complies with HAVA/EAC property records management rules. It profiles each type of item, including photo, description, HAVA/State/local funding breakdown, storage location, etc, and further creates an individual profile for each controlled item such as tabulators.

Item ID	100002
Item Name:	OS Unit
Price/Basic Unit:	$1000.
HAVA Funds:	500.00
State Funds:	250.00
County Funds:	250.00

Figure 14. Item Profile

1.2.3. Tracking & Logs

PAMS creates a chain of custody and an archive for critical election items such as voting machines, memory cards, and e-poll books, tracking usage history, trouble calls, repairs, testing, software upgrades, etc. A history archive of each machine provides back-up for any inquiries that may arise.

1.2.4. Pre and Post Election Tests

Acceptance, Logic & Accuracy (L&A), Prep and Post Election Tests will be guided by your testing forms, and can be done with a computer, smart phone or tablet. Systematic, archived testing records pre-empt many election result challenges from disappointed candidates or voter watchdog groups.


ACCU-VOTE OS PREPARATION CHECKLIST PCT #: 1274

Accu-Vote Asset Number: 1451241

Init.: Konnech, George Checklist Start Date: 12/08/2010

General Guidelines: Power OFF and Unplug when Severe weather is expected. Except when charging for 24 hours, AVOS should be powered OFF and Unplugged when left unattended for more than a few hours.

☑ No Visible Damage if YES: scratch

☑ Charge Battery for 24 hours (Plugged IN and Power ON)

☑ Power OFF and Unplug

DIAGNOSTICS TEST

Figure 15. Logic and Accuracy checklist

1.2.5. Election Planning

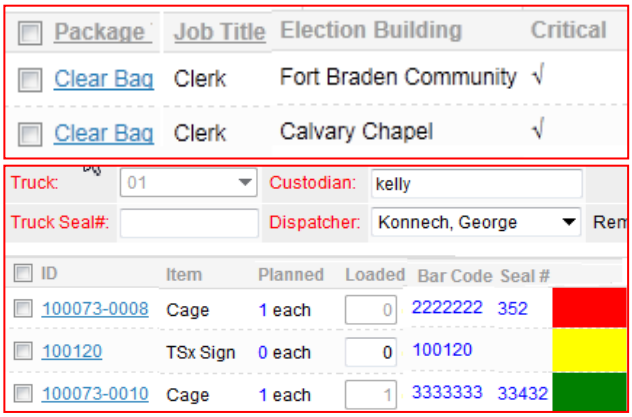
PAMS plans the inventory consumption for multiple elections using historical return ratios so you can predict your election needs with high confidence. Past election inventory plans can be used and modified with ease. Better budgeting and control of the supply consumption are at your fingertips.

1.2.6. Packing Templates

The system lists the items to be packed for the poll worker pick-up, the precincts, and each building. Bar-coded material and the Mobile App work with the well-planned Packing Template, making the packing process quick and easy rather than a tedious, time consuming chore. There will be no reasons for missing any item(s) at the polling places.

1.2.7. Check-Out and Check-In Control

PAMS controls Check-Out and tracks the Return of all items for each polling site. The Critical Item Return List highlights any essential items (e.g., ballot boxes, poll books, e-PollBooks, memory cards, tally sheets, etc) that the poll workers are missing in their election night delivery, so they can be searched for immediately, before the delivery truck or poll worker drives away.



Figures 16 and 17. Check Out and Truck Loading

1.2.8. Order and Transfer

Automatic email alerts for under-stock items are sent by the system, eliminating the need for last minute ordering. A system generated Transfer List makes real-time Pick-Up and

Drop-off easy. The Smartphone Mobile App makes the complex election package preparation move swiftly.

1.2.9. Delivery Planning

PAMS includes a complete drayage program for the Election Day delivery trucks.

A. The drayage wizard annotates the delivery time constraints of the various polling locations (e.g., not during school hours, never on Sunday, etc.). This helps the routing manager to plan the pre-election day delivery route.

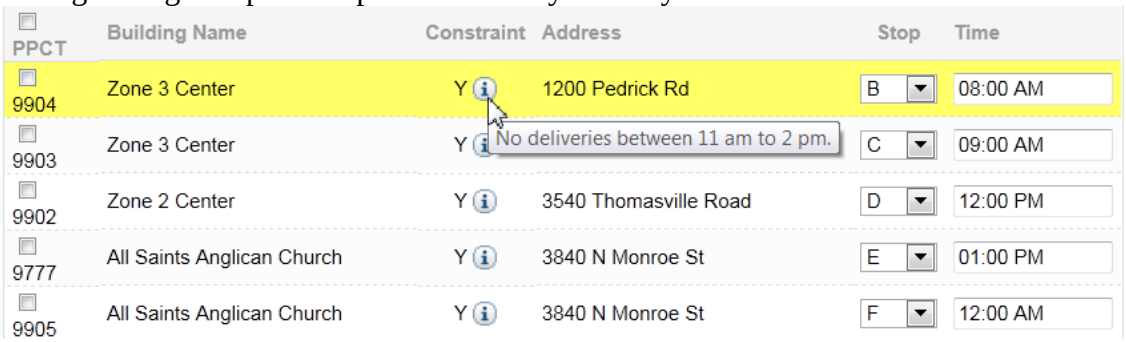


Figure 18. Dispatcher Route Planning Screen

B. The drayage wizard calculates the value of the cargo on each truck, drawing from the purchasing data in the inventory databank.

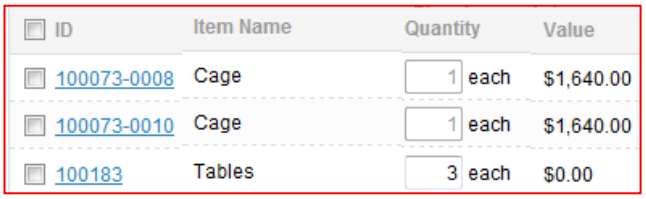


Figure 19. Cargo Value Calculation

C. It annotates driver's name and license number, the truck license number, the route number, etc.

D. The drayage wizard produces a loading manifest, first in last out.

E. The drayage wizard maps out the delivery route.

Figure 20. Delivery Map

F. Typically, the trucks are loaded, and then the cargo locked inside overnight before the next day delivery. The drayage wizard records the number of the security seal applied to the truck's cargo door.

1.2.10. Return Unpacking

Once supplies are checked back in on election evening the unpacking begins. The program distinguishes between items turned back in and items re-shelved, and will accommodate both individual and bulk unpacking methods; either way of unpacking and counting the supplies back in can be recorded with computer, barcode scanner, smart phone, or tablet. Items which cannot be reused can be discarded and recorded as "disposed." The program will calculate a return/reuse ratio to assist in supply planning for future elections.

1.2.11. Smart phone Asset Management Application

An app for iOS or Android smart phones is part of the asset management module. The smart phones can access the internet in both WiFi and 3G areas, so staff can manage all assets on their feet, on the go.

iSupply allows the clerk to toggle from function to function to:

(1) correct the inventory instantly while standing at the shelf.

(2) pull up and view the purchase order to check against deliveries when receiving incoming parts or supplies.

(3) record the movements of serialized voting equipment such as DREs, scanners, and ePollBooks

(4) assign and record Security Seals

(5) document Logic and Accuracy testing

(6) track the movement of controlled, numbered ballots.

This accomplishes far more than dumb input from bar code or RFID scanners—this puts a fully functional terminal in the administrator's hands as he's walking around.

For instance, a technician might be taking inventory and discover that an asset needs to go for repair. Although a bar code scanner or RFID could record the asset's ID number, neither one would be able to say why the machine had been moved—the staffer would have to get to a computer to record the comments of the problem. The smartphone would enable the technician to enter the specifics of the problem right into the asset's comments section while standing next to the machine.

For another example, when the dispatcher applied a security seal to the delivery truck's cargo door, he could record that number while standing in the loading dock. Then he could toggle over to another screen to record a comment about a voting machine, then toggle back to the truck security screens. The next morning, the driver would check on the smartphone that the number of the seal was unchanged and would confirm that information in the records.

In the course of delivery and setup, the staffer might notice and correct a flaw in a machine. He can pull up the screen for that machine on his smart phone, enter the ID and problem and corrective action he took, and save the info, right there on his feet in the field.

For another example, when the dispatcher applied a security seal to the delivery truck's cargo door, he could record that number while standing in the loading dock. Then he could toggle over to another screen to record a comment about a voting machine, then toggle back to the truck security screens. The next morning, the driver would check on the smartphone that the number of the seal was unchanged and would confirm that information in the records.

Figure 21. Smart Phone Asset Management

1.3.iPollBook Description

The RFI asks for an e-pollbook. Konnech's system can be deployed on laptops, like a traditional e-pollbook, but the iPollBook for iPhones and iPads will be more convenient and accessible.

The iPollBook is placed at each polling place. The iPollBook app runs the program on iPhones or iTablets, and the regular program operates it on laptops. The program interacts with the voter registration database. Some States do not want their pollbooks to access the internet, in which case the device accesses only the voter registration database which was downloaded into the device just before the election. Other States allow the device to interactively consult and update the voter registration database, in which case the device communicates via WiFi, 3G, or 4G.

The Poll Worker touches the Voter Search button to find the voter

Figure 22

The poll worker can search by name and check it against date of birth and street address, or voter registration number, or driver's license number. If the jurisdiction attaches a card scanner to the device, the poll worker can simply swipe magnetic strip on the driver's license to pull up the information.	  Figure 23
Some people share similar names and addresses, so extra identifying information is required.	 Figure 24

The voter information appears.

The State will choose which fields from the voter record should appear. Some States would like the image of the voter's signature to appear for comparison purposes.

If the voter has come to the wrong polling place, the device can inform her of her correct precinct and polling place.

It's not uncommon for voters to forget that they had already received and mailed back an absentee ballot. The system will display whether an absentee/early ballot has already been received; if yes, the poll worker would explain to the voter that her ballot had already been received.

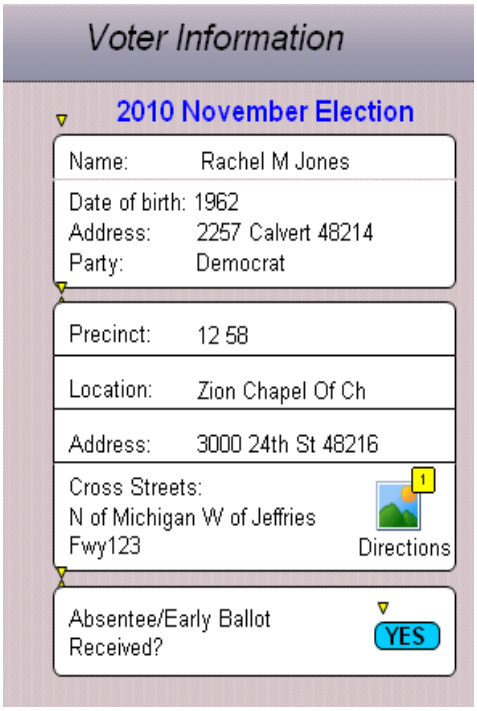


Figure 25

If, however, an early ballot hasn't been received, it asks "Issue Ballot?"

If the poll worker taps on yes, The iPollBook pops up a text box where the poll worker can enter any necessary information such as "provisional", issue the ballot, then press "Confirm".

If for some reason the transaction must be cancelled, the poll worker would press "Cancel".

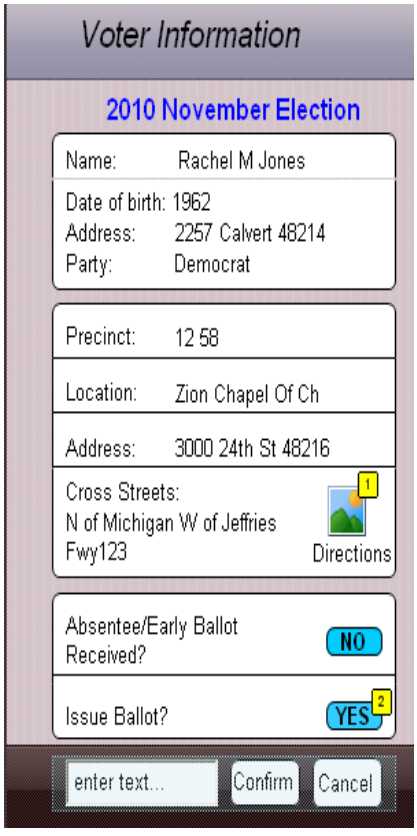
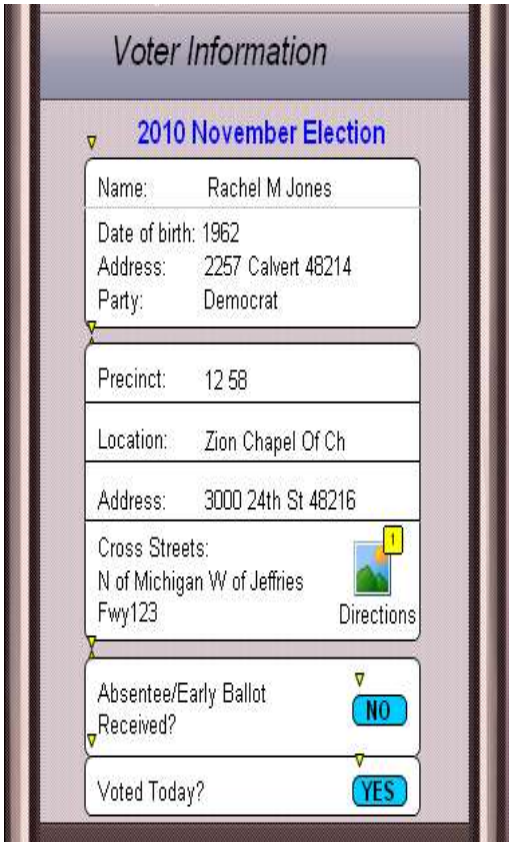


	Figure 26
The voter can sign directly onto the screen or onto a digital signature pad, depending on the preferences of the State.	 Figure 27
Once the poll worker has clicked on "Confirm", the screen will change to show that the voter "Voted Today". It will no longer offer the option of issuing a ballot. If the system is online, every iPollBook at all polling places would have updated to show that this person had voted today. If not online, only the device at this voter's own polling place will have changed to show this. At the close of Election Day, the system will summarize how many ballots of each ballot style were issued. The LEO's will upload the iPollBook information for retention for potential audits. The day after the election, all information from the voter registration database will automatically be erased from the device's memory banks.	 Figure 28

2. OVERVIEW OF STATEWIDE ARCHITECTURE

An important aspect of this program will be the architecture, i.e. access, of the statewide network. Two major considerations are to:

- provide each County election office and the State elections department with individual access to one centralized system;

- give each county access to **only** its own data, with the State having overview of all data.

Konnech is experienced in designing star architecture networks providing centralized systems in which members see only the data of their own websites, but in which the hub has overview of the entire system. Commonly referred to as a parent-child relationship, or as a hub-node relationship, it preserves the confidentiality and operational flexibility of the child/node (county in this case) and also permits overview by the parent/hub (State in this case).

In the example below, there is a single, centralized login site for both the counties and the State. The user name and password for Montana's Hill County will grant access only to the Hill County data; the Glacier County user name and password will grant access only to Glacier County data. On the other hand, the State user name and password will grant access to all the data.

Figure 29 Star Architecture Web Network login

After logging in at the State level, the State administrator can either search or click a drop-down box to view a single county's data. County logins, of course, do not lead to this option of selecting other counties.

Figure 30 State level county drop-down box

The State can look at the data for statewide totals or for an individual county. For instance, in the example below of New Jersey, the number and list of UOCAVA voters statewide (26,051) or for Burlington County only (1,453).

Statewide list and total—26,051

UOCAVA List (26051)

Name of Voter	DOB	City
AARON, John K	07/26/1969	BERC
AARON, John L	06/10/1988	ENGL
AARON, John L	12/15/1970	ENGL

A single county's list and total—only 1,453

UOCAVA List (1453) County: BURLINGTON

Name of Voter	DOB	City	Address
AKGUN, John	05/13/1959	MAPLE SHADE TOWNSHIP	JEFFERSON DR
AKINS, John C	12/13/1989	HAINESPORT TOWNSHIP	MARYLAND AVE
ALESZCZYK,	09/11/1984	DELRAN	SPRINGCRESS

Figure 31 County or Statewide list and totals

The State will be the hub, and each county will be a node.

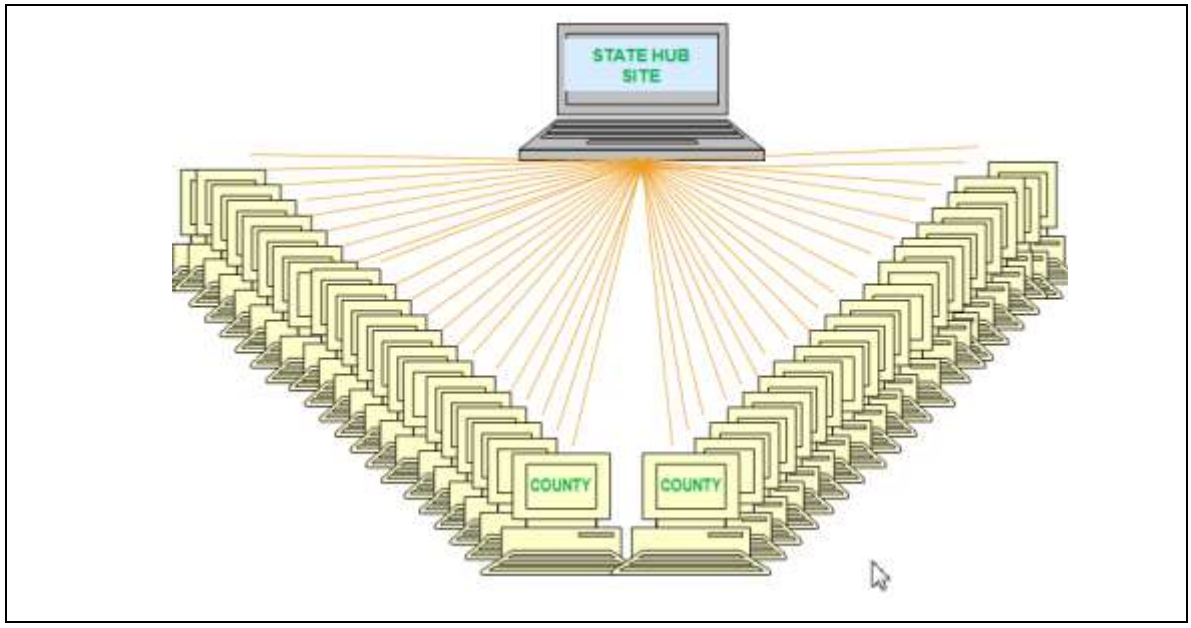


Figure 32 Counties and State Relationship Illustration

3. SECURITY

3.1.SERVER SECURITY

PollChief® servers are kept in a leased cabinet in a telecomm datacenter located in Lansing, MI with equally secured backups in Okemos, Michigan, or Los Angeles, California.

Secure Facility

Double hulled datacenter core

Manned 24 X 7 X 365

Biometric security scanner

IPTV camera system with full recording

Secured entrances from lobby

24 X 7 collocation access

Large redundant Internet backbones including AT&T, Level 3 &UUnet

Data Center Core

Phase I = 5K sq ft, Phase II = 10K sq ft

Double walled & roofed exterior & interior

Primary power

Backup generator

Redundant battery array

Redundant backbone Internet connections

3.2.WEBSITE SECURITY

Konnech uses Hypertext Transfer Protocol Secure. Hypertext Transfer Protocol Secure (HTTPS) is a combination of the Hypertext Transfer Protocol with the SSL/TLS protocol to provide encryption and secure (website security testing) identification of the server. HTTPS connections are often used for payment transactions on the World Wide Web and for sensitive transactions in corporate information systems.

3.3.DATA SECURITY

Konnech ensures that data is kept safe from corruption and that access to it is suitably controlled. Thus our security policies help to ensure privacy. They also help in protecting personal data. There are multi-level roles for system access, strong password protection for web access, and 5 minute (or other interval selected) time out for idle users. The data is encrypted while sent through SSL/TLS and resident in the SQL database. All cryptographic functionality is implemented using (National Institute of Standards and Technology) NIST-approved cryptographic algorithms/schemas

3.4.OPERATIONAL SECURITY

Konnech has a well-defined architecture (or algorithm) set in place. For example, we only allow certain IP address to access certain data points. Konnech establishes a firewall between testing data and actual data. Thus, our programmers and testers cannot view or alter the actual data of the voters except the authorized personnel within Konnech.

Sometimes programming mistakes, such as buffer overflows, can affect the security of a database. We pay close attention to operator issues; we utilize strong passwords on routers and workstations, we guard against the accidental disclosure of a shared key and we restrict forwarding of configurations to ensure they are not sent to un-trusted third parties.

3.5.PLAN TO PREVENT INTRUSION AND CAPTURE INTRUSION DATA

Konnech is hyper-alert to the needs of security for sensitive data. We have chosen to establish a policy and set of procedures that prepare our organization to both prevent and to detect signs of intrusion, building the right policies and procedures for hardware and software selection, installation, maintenance and support, for the selection of a secured datacenter and for the recruiting and training of the related personnel.

1. Identify and enable system and network logging mechanisms.

   Our procedures require secured data logs; the logged data is secured, monitored and studied. The plans for dealing with intrusions are updated and tested.

2. Identify and install tools that aid in detecting signs of intrusion.

   We use only Cisco routers and firewalls. Managed switches are used on all servers. Symantec Anti-Virus, Internet security, and anti-spyware programs are used for all servers. Microsoft Systems Center Manager is used to show the state, health and performance information as well as alerts generated by availability, performance, configuration or security situations/criteria, so we can gain rapid insight into the state of the IT environment, and the IT services running across different systems and workloads.

3. Generate information to verify the integrity of the systems and data.

   a. Our programs monitor the full inventory of our hardware assets, and maintain an authoritative copy of all critical files and directories.
   b. The programs capture and characterize expected processes and user behavior and trigger an instant alert when unexpected incidents occur. This ensures that only authorized users and system functions occur.
   c. To protect our system inventory and ensure the integrity of our reference data, we keep authoritative copies of files and checksums on write-protected or read only media stored in a physically secure location.
   d. Furthermore, we maintain paper copies of critical files in the event we are unable to recover uncorrupted electronic versions.

4. To prepare for the worst situation, Konnech provides redundant data and systems. This protects the voters even if the primary system should totally fail. Our clients are protected by a back up URL with a totally separated domain hosting, data network, and data hosting channel with a sync database.

5. Konnech is constantly vigilant for new security procedures and products. We consider new ideas and suggestions based on changing network environments, new project requirements and users profiles.

3.6. UOCAVA Voter Confidentiality

The delivery and return of ballots requires additional extraordinary measures to preserve and protect voter confidentiality. The system does not retain the voter's marks on the ballot. If the voter accessed it from a computer, the server scrubs the marks the instant the voter finishes. If the voter accessed it from a smart phone, the marks are never even captured at the server—instead, they only occur in the memory of the phone itself, and scrub out when the user closes the program.

3.7.iPollBook Voter Confidentiality

The iPollBook automatically scrubs the voter registration database from memory the day after the election to ensure that voter information cannot be accessed.

4. RFI Bullet Points

1. Provide for the design, creation, and testing, of ballots to be voted electronically or on paper, and for the importation of the ballots into an electronic voting unit upon or through which an individual voter may cast his or her ballot on all contests for which the voter is eligible.	Our system provides for the design, creation, and testing of ballots by import from a variety of methods—VIP, SABER, PDF, Excel, spreadsheet, or even individually if an LEO chose to do so for a small, local election.
2. Capture the voter's vote electronically and provide for output to a paper ballot for tabulation.	Konnech's UOCAVA voters may print the ballot out to mark manually on paper or may mark electronically on the screen of their computer or smart phone/tablet. When those ballots are submitted to the LEO, the 2D barcode on the ballot can be scanned to facilitate tabulation.
3. Provide a method for the voter to receive and visually verify that the correct ballot is displayed in the electronic voting unit.	Although this bullet refers to the actual voting machine in the polling place, it's important for UOCAVA voters to have the same ability. Konnech's UOCAVA voters can see the voter displayed on their computer or smart phone screen.

4. Allow vote capture by electronic means and provide for a voter verifiable paper audit trail.	Konnech's ABVote system for UOCAVA voting provides a voter verifiable paper audit trail. It captures the marks that the voter has marked onscreen, and also visually displays the regular, print version. The voter can print it if he wishes, and the LEO prints them. If an audit is performed, the marked ballots can be viewed.
5. Allow vote capture by electronic means and meet accessibility standards, including providing the voter the opportunity to access an audio ballot or other accessible ballot form, and to cast a ballot privately and independently.	Konnech's ABVote goes far beyond these accessibility standards. Visually impaired voters on computers with JAWS-type devices can of course convert the instructions and choices to audio ballots. We far exceed that; we accommodate many more disabilities with our shake-to-vote patent pending app for tablets and smart phones; voters with vision, hearing, voice, reading cognition, mobility, and dexterity disabilities are accommodated. Speak to vote, tap to vote, or shake to vote.
6. Allow the importation of audio ballot content that may have been created externally.	Konnech will gladly allow the import of externally created audio ballot content into the UOCAVA ballots.
7. Allow the voter to review, change, and confirm choices made while casting votes on the electronic vote capture system.	Konnech's system allows the voter to review, change, and confirm the choices throughout the process—while marking, at the point where he clicks to indicate he's finished voting, at the point where he's choosing his submission method, and at the point where he's generating his PDF, and even once he's done, if he hasn't yet submitted it back.
8. Allow the casting of provisional ballots electronically and the segregation of these ballots from other ballots cast until verification of voter eligibility is complete.	Although this bullet refers to the ballots at the polling place, we feel it's important for the State administrators to know that they have the same options with UOCAVA ballots. Konnech's ABVote allows provisional ballots to be marked as "pending". LEOs would not add pending provision ballots to the ballot stream until after their status had been changed to "approved."

9. Allow the reporting of accepted provisional ballots as an individual category along with other categories the State of Colorado may require, including but not limited to, ballots cast during Early Voting, on Election Day, and by mail.	Konnech's ABVote will allow this and will report a veritable plethora of other reports.
10. Provide for accumulation, tabulation, and reporting of all votes cast by electronic means.	Although this bullet point refers to the tabulation machines at the polling places and election headquarters, it's important to know that Konnech's ABVote enables your tabulation equipment to count the UOCAVA ballots when the 2D barcode on the ballot is scanned by either transferring the choices into a tabulator or by actually transferring the marks onto a machinable ballot from a ballot on demand printer.
11. Allow accumulated election results to be audited in a risk limiting audit via a single vote cast record.	Although this bullet point refers to the tabulation machines at the polling places and/or election headquarters, be aware that ABVote's ballots display the choices visually so they can be audited.
12. Allow printing of a removable paper copy of results at the polling site from each individual electronic voting unit used.	Although this bullet point refers to the machines at the polling places and election headquarters, be aware that Konnech's ABVote tracks and reports the numbers of ballots returned.
13. Provide for the design and development of paper ballots by ballot style and precinct, on two-sided ballot pages, and multiple page ballots.	Although this bullet point refers to the machines at the polling places and election headquarters, be aware that Konnech's ABVote provides for the design and development of paper ballots by ballot style and precinct. The actual ballot can be multi-page. Two-sided printing could of course be done, but would require the overseas voter to take extra steps to flip the paper over if they were printing them out, so would probably not apply to the UOCAVA voters.
14. Provide for the printing of paper ballots on demand for issue via mail, at polling sites, through County Elections Offices, and Service Centers.	This bullet point refers to the machines at the polling sites, County Elections Offices, and Service Centers. We are proposing only certain software solutions, not the hardware. Be aware, however, that Konnech's ABVote allows the LEOs to issue the ballots in the correct styles to be mailed, faxed, or emailed.

15. Provide for the efficient processing of ballots that require resolution of voter intent.	In most cases, voter intent will be clear on the UOCAVA votes, because they usually will have marked from onscreen, clicking into ovals; if it's a write-in, they normally will have keyed the name into the write-in spot. If, however, there should be a question, the LEO would mark the ballot as 'Pending" until voter intent had been resolved.
16. Provide for a central count accumulation and reporting of votes cast on paper ballots.	Although this bullet point refers to the machines, be aware that Konnech's ABVote will provide a 2D barcode as well as the visual markings, so the choices can be quickly transferred onto a machinable ballot and tabulated in the central count accumulation.
17. Allow the centralized accumulation and reporting of all votes cast and the reporting of such votes by method cast including provisional ballots.	This bullet refers to the tabulation machines, which we are not proposing. However, please be aware that our system reports votes cast through the system, including provisional ballots and return methods.
18. Allow the centralized accumulation and reporting of all votes cast and the reporting of such votes by candidate, "yes or no", and contest within each precinct in the election.	This bullet refers to the voting machines, which we are not proposing. Although in a different system we have a capability to capture and tabulate votes, we don't expect Colorado will choose for us to deploy that method, because of nationwide online voting suspicions. Rather, we expect that Colorado will prefer us to use the returned PDF method of submitting voted ballots.
19. Allow production of a uniform precinct-level electronic results export.	Our system reports that information—not the votes cast, because we conscientiously prohibit the system seeing into the contents of the UOCAVA ballot, but the total number of ballots created.
20. Allow secure electronic delivery and return of ballots for voters qualifying under the Uniform and Overseas Citizens Absentee Voting Act and other voters allowed by federal or Colorado law to receive or cast ballots by secure electronic delivery methods.	This is exactly the gist of our proposal. Our program is described extensively above. See section I.A. Overall Description of UOCAVA System

21. Allow automated verification of voter signatures via comparison with voter registration file signatures and the signatures provided on mail ballot return envelopes. These systems must provide a means to calibrate acceptance criteria.	Our system will display the signatures which have been scanned into the registration and/or the YUFF databases for comparison. If you allow your UOCAVA voters voting from smart phones/e-tablets to sign with a fingertip on the device screen, it will also display that signature for comparison, without the need to scan it in.
22. Provide automated sorting of mail ballot envelopes to various jurisdictional or precinct level divisions.	This bullet point refers to the machines for sorting incoming mail, which we are not proposing. Be aware that Konnech's ABVote system will create markings on the supporting documents for identifying the jurisdictions and precincts to support automated sorting.
23. Provide, possibly in conjunction with sorting or signature verification, the attachment of a date stamp to the mail ballot envelope.	This bullet point refers to the machines for sorting incoming mail, which we are not proposing. Konnech's ABVote system captures the date and time of ballot creation as well as when the submitted ballot is entered into the system, and can also display signatures.
24. Provide a solution for security of the entire system including physical security, data integrity measures, contingencies, and backup strategies.	The security of the entire system is described in Section III. Security above.
25. Allow electronic tracking of voting equipment location.	See Section I.B. Asset Management Description above
26. Provide for a real time electronic pollbook.	See Section 1.3 iPollBook Description above.
27. Systems must be able to provide content and instructions in both English and Spanish with the potential for adding additional languages in the future.	Konnech's UOCAVA system will, of course, allow the users to switch to 'Spanish' from 'English' to present the instructions exactly as your administrators have prepared them for the in-person ballots and will add in future languages you add in the future. Immediately, however, if the voter is accessing the system from a smart phone, he can get the translation of over 600 languages from Google's Cloud translation service. This means that if your voter's native language is Bulgarian, Slovak, Vietnamese, Basque, Greek, or any of 600 others, the system can provide their voting instructions in their own languages right NOW.

ATTACHMENT A

Over 2,000 Montana uniformed and overseas voters used the system to access their ballots, over 5% filled out the survey, 93% rated themselves satisfied or very satisfied with the system, and 5% of the users (that is, 87% of all survey takers) filled in comments.

Survey List (154) [Out of 2705 Voter Access Ballot Events]

Was this the first time you obtained an on-line ballot?
Yes: 137 (88.96 %)
No: 17 (11.04 %)
Did you find it convenient to obtain your ballot on-line?
Yes: 150 (97.40 %)
No: 3 (1.95 %)
In future elections, would you like to obtain your ballots on-line?
Yes: 143 (92.86 %)
No: 5 (3.25 %)
How satisfied were you with this method of mail-in voting?
Very: 116 (75.32 %)
OK: 27 (17.53 %)
Somewhat: 5 (3.25 %)
Not: 2 (1.30 %)