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Kathy Dopp 2/10/2010

From: Kathy Dopp [REDACTED]

Date: 02/10/2010 04:50 PM

Subject: Suggestions for San Fran. VSTF Objectives Draft Doc

Regarding your request for public input on the VSTF Objectives for San Francisco. [http://www.sfgov.org/site/vstf\\_index.asp](http://www.sfgov.org/site/vstf_index.asp)

My background is mathematics with an emphasis on study of voting systems since 2004. Hastily because my hands hurt and I'm busy with graduate school, here are my suggestions for improving your objectives. First, preliminarily, California has several problems with its post-election audits (last time I checked) because CA randomly selects the precincts to audit prior to finishing and publicly announcing all its absentee ballot counts. This practice opens a large loophole for tampering with the late-counted ballots that are not in randomly selected precincts. Another problem that CA has is locations using the instant runoff voting method that is substantially more difficult to audit. Most of my comments will be restricted to requirements for voting systems to make the accuracy of reported election results fully and efficiently auditable.

#### 1. Open Data Formats

This section is commendable and crucial. However it could be improved by:

Requiring vote tally reports also (in addition to precinct and ballot type) by unique machine ID and by any batch of paper ballots that are counted together at one time and place. In other words, absentee ballots counted in batches should \*not\* have to be resorted by precinct and audited by randomly selecting precincts. Auditors should have flexibility to publicly report and hence audit any group of ballots that are normally counted and

stored together at one time and place. Also, it is crucial to know the machine number and the date.

I am not 100% certain if there should be separate sections for "Open Data Formats" and "Reports Produced by the Voting System". My inclination would be to separate these items. under a possible new category "reports produced by the voting system", if instant runoff voting is going to continue to be used in the SF area, then to make the publicly reported election results accuracy fully auditable, the voting system also needs to produce a report for each precinct, machine, or batch of absentee ballots, a list of the tallies cast for each unique possible ballot ordering that voters can cast. Eg. If there are three candidates running and voters may fill out three ballot positions ranking those candidates, then there are 15 possible unique votes that can be cast for each precinct or other audit unit. These would be:

ABC  
AB  
A  
ACB  
AC  
BAC  
BA  
B  
BCA  
BC  
CAB  
CA  
C  
CBA  
CB

Only this way can SF avoid doing ballot level audits and still make the precinct tallies reported precinct summable so that precincts tallies can be publicly reported and the tallies checked by the public and the precincts can still be randomly selected for auditing. Otherwise each individual ballot vote must be publicly reported in order to audit the accuracy of IRV results.

## 2. Accessible Ballot Marking Devices

Please add the word "necessarily" in "(but not casting)" so that this language does not have to be altered later if a federal requirement for BMDs that allow voters with disabilities to drop the ballot into the ballot box at the BMD without having to handle the ballot. I.e. Allow this new type of system that some folks are discussing.

### 3. Paper Ballots

Please add a requirement that requires a paper ballot system that allows the voter to manually mark the ballot with the voters' choices. Your language seems to allow systems that electronically mark the ballot without allowing the voter to manually mark the paper ballot. Research has shown that the lack of proofreading skills of the average voter, results in a higher undetected error rate on systems that electronically mark paper ballots rather than allowing the voter to manually mark the ballot themselves.

### 4. Per-ballot random auditing

An electronic list of all ballots cast is also necessary for doing ballot level audits, not just an image of each ballot. Perhaps you've covered this under the open standards section. This should also be listed under reports so that the public can verify the results. This system sounds potentially costly and there would also be a need to group small precincts together so that ballot privacy is protected.

### 5. End to end auditing by voters

I think this idea is logically flawed. It is not possible IMO to both allow voters to verify that "their own ballot was counted" (correctly at least with all the others) and to not disclose how voters' votes were cast, opening up possible vote buying or coercion. I'm not buying this and IMO it should be dropped as this involves an Internet system and ballot definition files that voters cannot verify are secure or not, etc. I.e. the technology is not there yet for this method and may never be there -- unless I am mistaken about what you are talking about.

Per ballot-level audits would come as close to this objective as is

possible IMO.

## 6. National Standards

Doesn't a state requiring conformity to the national standards, as Debra Bowen noted earlier, also require freezing insecure malfunctioning voting systems in that once changes are made to the voting system software, the voting system no longer is compliant with federal standards? My thought therefore is that \*not\* requiring voting systems to meet federal standards and instead having a state standard might be preferable. However, this is not my area of expertise.

I really like and appreciate the work you've done. Keep up the good work.

Cheers,

--

Kathy Dopp, mathematician, Ph.D. candidate in political science

<http://electionmathematics.org>

Town of Colonie, NY 12304

"One of the best ways to keep any conversation civil is to support the discussion with true facts."

Realities Mar Instant Runoff Voting

<http://electionmathematics.org/ucvAnalysis/US/RCV-IRV/InstantRunoffVotingFlaws.pdf>

Voters Have Reason to Worry

<http://utahcountvotes.org/UT/UtahCountVotes-ThadHall-Response.pdf>

Checking election outcome accuracy

<http://electionmathematics.org/em-audits/US/PEAuditSamplingMethods.pdf>

Dave Ketchum 2/12/2010

From: Dave Ketchum [REDACTED]

To: [voting.systems.task.force@sfgov.org](mailto:voting.systems.task.force@sfgov.org)

Cc: [RangeVoting@yahoogroups.com](mailto:RangeVoting@yahoogroups.com)

Date: 02/12/2010 07:44 PM

Subject: For 2/17 SF VSTF meeting - proposing Condorcet

As a member of a group (RangeVoting) exploring ways to do elections better, I heard of the current SF efforts via Joyce McCloy, and offer what I believe are useful thoughts.

The SF efforts are WORTH pursuing - you have been trying, are big enough to do something useful, and could perhaps do partnerships for bigger abilities.

I see no useful future in what is said about rounds, but expect you have to explore what can be done with the variant of RCV you have been using.

Your next item is exploring alternative methods. I CHEER, and recommend including Condorcet. It has many similarities with what SF has been using, yet can claim better results for less labor:

Most Condorcet voting could use exactly the same ballots as SF is using.

SF talks of recording ballots, so this data from such ballots could be read for other purposes.

Reading this data into a Condorcet  $N*N$  matrix is a trivial programming effort.

Determining winner from the matrix is also a minor programming effort, though also easy for humans to do - and the latter makes sense when exploring which variant of Condorcet is best.

Condorcet also permits such as ranking multiple candidates the same - worth adding in after verifying the basics.

Auditing is simple since any collection of ballots can be read into an  $N*N$  matrix and total voting for a race is simply summing all the matrices (no need to ask precincts for more details after

identifying some losers).

Dave Ketchum

Arthur Keller- 2/16/2010

From: Arthur Keller [REDACTED]

Date: 02/16/2010 02:57 AM

Subject: SF Voting Systems Task Force comments

Please consider these issues.

1. Adopt IEEE P1622 Voting Systems Electronic Data Interchange standard and/or OASIS EML v6.0 standard once officially adopted.
2. Consider publishing all the ballots in image AND Cast Vote Record form. Consider whether this satisfies the requirements of End-to-End Auditing by Voters.
3. Consider allowing voters to use the Internet to create and print ballots which are physically mailed or otherwise delivered to the Registrar of Voters within the requisite time deadlines, and are counted provisionally.
4. Any election management and reporting system must log all access and updates by date/time, who, and activity.
5. Consider having precinct-count optical scanners that print the precinct results (of first choices) to be posted at the pollsite. Also consider having the website that reports results allow a spreadsheet showing the results by precinct to be downloaded as they are incrementally posted. Spreadsheet separates in-precinct totals from vote-by-mail totals from provisional ballot totals.

6. No connection of the election management system to any external network of any kind. Burn CDs at election management system to provide results to election reporting system (which is connected to the Internet). The CDs to include first choice totals as well as spreadsheet by precinct.

Arthur M. Keller, Ph.D.  
Lecturer, University of California, Santa Cruz  
Chair, IEEE P1622 Voting Systems Electronic Data Interchange committee  
Field Inspector, Santa Clara County Registrar of Voters  
Managing Partner, Minerva Consulting

**Brent Turner 2/17/2010**

From: "Brent Turner" [REDACTED]

Subject: Voting Systems Task Force / Brent Turner public comment

SF Voting Systems Task Force

Public comment- Brent Turner

02 /17 /10

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As a concerned citizen and election reform activist, I appreciate the opportunity to make public comment regarding the work of The Voting Systems Task Force. The groups I represent applaud the efforts of San Francisco County on this matter.

As a catalyst for the creation of this task force, it is my belief that San Francisco has the opportunity to lead the nation with respect to election system security and procedures.

San Francisco County has access to the cutting edge information



regarding better election systems. Over the past few years, Dr. Richard C Johnson (now deceased) and Alan Dechert have tendered much information to our Elections Department regarding open source voting systems. Open Voting Consortium has demonstrated working open source / paper ballot systems to the Elections Commission.

As some individual members of the Task Force likely have vested financial interests in "non profits" that are currently developing voting systems to be sold under "licensing agreements" to SF and other counties, those members of the Task Force should be removed from the Task Force. It is a concern that these members Task Force work may be being guided by financial motives, even if their venture is in the legal form of a "non-profit". There is community concern regarding systems being promoted by members of the Task Force purporting to be " transparent " as these systems are, as described by the members of The Task Force and other representatives for the "non profit", failing to meet the open source community standards of General Public Licensing. The aforementioned creates a conflict and should be weighed when interpreting Task Force conclusions or suggestions regarding open source software and surrounding issues.

I have submitted a copy of a report from The Common Data Workshop written by Benjamin Long. This paper discusses the need for Election Markup Language ( EML ) by Oasis. I submit this comment on behalf of the open source community. It is our opinion software code proposed for usage in better systems should have EML capabilities integrated throughout the election management, ballot delivery and voting processes.

Best regards,

Brent Turner  
(See attached file: CDFWorkshopReport.pdf)

Mitch Trachtenberg 2/17/2010

From: Mitch Trachtenberg [REDACTED]

Date: 02/17/2010 11:26 AM

Subject: voting systems guidelines

Dear Members of the San Francisco Voting Systems Task Force,

Thank you for the work you are doing. Your "Recommendations Under Consideration" dated Jan 20, 2010 seem to me to be well thought out and thorough.

I am writing this in part to respond to some of your recommendations, and in part to make sure you are aware of some documents I have written in connection with the Humboldt County Election Transparency Project, which has now conducted independent scanning and counting of the last three elections in Humboldt County using entirely off-the-shelf hardware and open source software.

I believe that your very last bullet under mandate 5, establishing a policy that San Francisco serve as a testing ground, is absolutely critical. A perhaps unintended side-effect of the national certification regime has been to create a barrier to entry for new voting system approaches. I believe that these new approaches can be far more robust against fraud and far less expensive than the approaches now frozen into place.

No small business or independent project has a hope of raising the funds required to pass the current national certification process. The only evolution that is taking place, therefore, is within the existing vendor community, within some academic groups, and within projects made up of that small minority of the population who are gluttons for punishment (like me).

I would also ask you to consider the importance of an additional requirement or goal for machine-based voting. This goal is based on my most recent project, "universal" ballot counting software. I believe it is preferable that ballot counting systems

not require any per-election updating or configuration via memory cards or any other external mechanism. There is now sufficient open source software that, prior to counting ballots, a system can directly determine the ballot layout from the first ballot or ballots it is given to scan. Details of this approach are in my online document at this address:

[http://docs.google.com/View?id=dgxf37nt\\_174d37hvghf](http://docs.google.com/View?id=dgxf37nt_174d37hvghf)

By eliminating the need for per-election updating, it becomes much easier to guard machines and software against errors and possible fraud. Although this process is not always called updating, when software relies on customization information to tell it where each candidate is located on each ballot, that is in effect updating the software.

I would also urge the committee to stress the importance of redundant counting, whether by machines or by humans. I have written a document attempting to explain why, in my opinion, what is really motivating many hand count advocates is the need for redundancy, which they interpret as a need for hand counting. I have no objection to hand counting; in fact, I wish it would be tested in many jurisdictions and I believe it can be successful. I also believe redundant machine counting can accomplish many of the same ends, more quickly. I've written a document in which I attempt to explain this:

[http://mitchtrachtenberg.com/machine\\_vs\\_hand.html](http://mitchtrachtenberg.com/machine_vs_hand.html)

The importance of redundancy is hardly a new discovery. In Roy Saltman's 1975 paper on machine counting, written for the United States General Accounting Office (GAO), he was extremely clear on the issue:

4. Recounting The advantage of a hard-copy, machine-readable ballot is that an independent verification of the count is possible. Ballots can be recounted on a different machine or they can be recounted by hand. Machine recounting permits a larger recount with considerably less effort. If a backup machine is available, and that is recommended as a good management practice, the ballots may be recounted on that machine. Further

confidence in the recount may be expected if the management of the backup machine is independent of the organization managing the primary machine. An independent organization could be considered to be one that reported to a different elected official and received an independent budget...

Finally, I hope your task force investigates what we in Humboldt County have accomplished for the past three elections. We scan every ballot received at the central counting location INDEPENDENTLY of the official, certified equipment. The scans are then made available on DVD to anyone who wishes to count them. (They are also put online.) I do an independent count using open source software that I have developed and am continuing to develop. The transparency project made news when, in the 2008 Presidential election, we exposed a problem with Diebold's Accuvote tabulation system that had not been revealed to the California Secretary of State during California's top to bottom review. There is a thorough report on this situation at the Secretary of State's web site, and I would encourage the committee to read this report:

[http://www.sos.ca.gov/elections/voting\\_systems/sos-humboldt-report-to-eac-03-02-09.pdf](http://www.sos.ca.gov/elections/voting_systems/sos-humboldt-report-to-eac-03-02-09.pdf)

Our approach is no longer an experiment in our county, it is now part of the Humboldt County election process. Information about the Transparency Project is available at:

<http://www.humetp.org> and <http://www.humtp.com>

If you have not already, please speak with our Registrar of Voters in Humboldt County, Carolyn Crnich, to learn more.

Thank you again for putting your efforts into election integrity, and good luck with your work. If I can assist you in any way, I hope you will get in touch.

Mitch Trachtenberg  
volunteer, Humboldt County Election Transparency Project  
developer, Ballot Browser software and other open source  
election solutions



[REDACTED]  
Trinidad, CA 9557

Joseph Lorenzo Hall- 2/18/2010

On Thu, Feb 18, 2010 at 9:44 AM, Joseph Lorenzo Hall  
[REDACTED] wrote:

Voting Systems Task Force  
City, Room 362  
1 Dr. Carlton B. Goodlett Place  
San Francisco, CA 94102  
Email: [voting.systems.task.force@sfgov.org](mailto:voting.systems.task.force@sfgov.org)

(Hi Greg, Jim and Ping! While I'm not familiar with the other members of the task force, I know Greg and Ping very well and Jim less-well although I have worked with him in the past when I lived in Oakland during graduate school.)

Greetings,

Thank you very much for the opportunity to comment on the San Francisco Voting System Task Force's "Draft VSTF Recommendations Under Consideration". I want to commend the city and county of San Francisco for taking on this challenge and for doing so with what appears to be exactly the right people for the task.

However, the document you released for public comment was perhaps not fully-baked. I offer a critique below based on my own knowledge of voting systems and voting technology policy.

Please accept my comments in the spirit of peer-review and a hope that I can be helpful.

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## # High-level Comments:

\* This is a very rough draft that is at such an early state it is difficult to usefully comment on. I would have recommended the next iteration be released for public comment as you might exhaust people's ability to comment.

\* The recommendations should have some sort of temporal time-line. That is, which recommendations are short-term and which are long term? This might allow the public to understand which of these the Task Force considers "low-hanging fruit" compared to more extensive types of reform.

\* There is remarkably little detail about privacy issues. Specifically, voter privacy and ballot secrecy are a large part of what keeps elections fair (free of undue influences like bribery or coercion). I see this mentioned in the section on end-to-end auditing, but no where else. Any proposal to make scanned ballot images or vote data that could leak information about the identity of the voter in relation to the ballot contents needs to consider these issues.

\* Some of the recommendations are incomplete or otherwise mysterious unless the reader is steeped in the intricacies and vagaries of the voting systems market, debates, etc. All acronyms should be defined and each recommendation should have enough narrative text associated with it such that a lay reader or possibly a scientific lay reader might be able to decipher them knowing only a little about voting systems and elections policy.

\* It's not clear to me that the task force has a coherent and consistent understanding of the parameters within which they are working. That is, what kinds of recommendations and solutions are out of scope for the Task Force? For example, is seriously considering that San Francisco develop, manufacture, certify, implement and support an entire voting system in scope? That could be possible in the next 20 years with a series of coordinated reforms at the local and state level, but it will certainly not happen in 10 years. (in my opinion)

\* Some of the recommendations appear to contradict or directly conflict with other of the recommendations. I'll highlight those in my detailed comments below.

# Detailed Comments:

## Objectives

\* The list of 13 objectives needs work. For example, "Archival" is an adjective. Archival what? At a minimum, 1) each objective should be the same type of word or phrase; and, 2) each objective should be defined or elaborated so that your audience knows what you're talking about. I also tend to think that referencing the objectives in the recommendations by their numbers is inferior; it's easy to just see a soup of numbers and not think about what objectives a particular recommendation is honoring. I would recommend that you have a pithy semantic way of pointing back to the objectives, even if only comma-separated list of them after each recommendation (instead of a comma-separated list of numbers that point to them).

\* all acronyms should be expanded upon first usage (BMD, ABM, CVR, DRE, etc.)

\* I need to express my opposition to the recommendation, under Accessible Ballot Marking Devices: "Eliminate the process of election workers, officials, etc., that requires establishing voter intent through interpretation of ambiguous ballots". For non-BMD/ABM voting systems, like optical scan, this is *exactly* the hard part of the counting process. This is what the 1% and PEMT audit intend to measure, in part: the frequency with which a machine makes mistakes that result in a different ballot interpretation than a human might make. The paper record is the fixed interpretation of voter intent... and I'd like to see this recommendation contextualized specifically for BMD/AMB in the sense of: "one of the particular advantages of a BMD/AMB is..." and not written to sound like the intent here is to adopt some rule or procedure that would say, "If the machine didn't count it, the voter must have made a mistake fixing their intent upon the ballot."

\* No mention of privacy at all in the "Per-Ballot Random Auditing" section. Also realize that there is a patent application for the Calandrino et al. method of serial-numbering upon scanning and storing that number with the CVR ( Edward W. Felten, Joseph A. Calandrino, & J. Alex Halderman. System and Method for Machine-Assisted Election Auditing. Retrieved February 18, 2010, from <http://www.wipo.int/pctdb/en/wo.jsp?WO=2009017507>. (Patent application number: 20090037260) )

\* p. 3: Is "independent verification" a recommendation? What is that? (I can guess, but I shouldn't have to.)

\* Also, it seems like it will be a while before a federally-certified end-to-end auditable voting system is available... so perhaps the first bullet on p. 3 should be a long-term recommendation.

\* I think it's a big mistake to recommend that San Francisco has it's own certification program that goes above and beyond the CA and Federal programs. Instead it makes more sense to work with the State and Federal process to get what you think is missing into one of those processes.

\* As for the design competition, the task force might be interested in an invite-only workshop in April sponsored by NSF, I3P and IARPA called DESSEC, "DEsigning a Secure Systems Engineering Competition" ( <http://www.thei3p.org/events/dessec.html> ). While that will focus on design for security, I think it will be useful for this thinking and I can imagine Greg or Ping would be very interested in attending and reporting back (although I can guarantee either will be invited, but I can ask).

\* I think your recommendations on source code disclosure and open source need to be particularly nuanced and much more fleshed-out than they are now (and not conflict with each other as they do now). I bet Greg could do a good job of moving this particular ball forward in terms of thinking about what a municipality might want to privilege or require from it's vendors (although he'll have to suspend his OSDV thinking for a bit and put himself in the shoes of a SF elections/procurement officer). This is a place where I think your task force can really make an



impact: devise a sensible and not-too-radical system that prefers open and available source.

\* Footnote 1 is funny... you talk about how you are distinguishing the use of "end-to-end" to mean "soup to nuts" or "beginning to end" but then the first bullet under the End-to-Edn Auditing by Voters section is essentially exactly the opposite kind of thing (essentially a cryptographic voting system that produces receipts and has a bulletin board... although I realize there are non-cryptographic schemes like ThreeBallot; those are in the minority of proposed "open-audit" systems).

\* The Task Force needs to be a bit more clever in the user-centered section. That is, the recommendation under "Public-involvement / User-Center Process" is broken... as the election officials know, when a jurisdiction is in the position to purchase a voting machine, they're largely at the mercy of what is on the market right now. To attempt to build requirements for a system and such that might not be fulfillable by any system available on the market means that this is much less about procurement and more about working directly with vendor R&D staff during the design stages of voting system development. In short, if you issue an RFP that is too ambitious in terms of requirements for a purchase to be completed within a couple of years, you will get very little vendor interest and response as it takes them at least 2 years and millions of dollars to get through federal and state certification.

\* I haven't seen a model for election-day hand-counting of paper ballots in the precinct that would work... that is, without hiring or staffing a second poll worker force (poll workers are often so exhausted that it's a miracle they can close the polling place \*without\* a significant added burden of manual vote tabulation). So, if you recommend something like this be attempted in small elections per the very last recommendation, I suggest you think hard about how this might be sensibly piloted and accomplished (and, no, pointing to the paper entitled, "The Titanium Standard for Election Verification and Security" which describes one method is not sufficient!).

Thank you for allowing me to comment. Please don't hesitate to

get in touch.

Sincerely, Joseph Lorenzo Hall

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Joseph Lorenzo Hall  
ACCURATE Postdoctoral Research Associate  
UC Berkeley School of Information

Princeton Center for Information Technology Policy  
<http://josephhall.org/>

**Geoffrey Wandesforde-Smith 2/19/2010**

On Fri, Feb 19, 2010 at 12:29 PM, Geoffrey Wandesforde-Smith  
[REDACTED] wrote:

On the recommendation of Joe Hall, I read both his comments to you and the (very) draft VSTF report you are circulating.

But I must have missed something. This task force to look at the city's voting system seems to be exclusively focused on voting machines. Can one of you please tell me whether you have no brief to consider vote-by-mail ballots? If they are sorted and counted by machine, that would seem to be a concern.

In the 2008 consolidated presidential election, there were 178,585 absentee/vote-by-mail ballots.

Geoffrey.

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Geoffrey Wandesforde-Smith  
Emeritus Professor of Political Science  
University of California, Davis