

# Vendor Questions and CDOS Responses

## RFP CDOS-Elections – RFP-2018-001

1. Is the RFP requesting inclusion of application hosting services for the RLA application, or is the State going to provide or procure hosting services outside of the scope of this RFP?

Answer: The State is fully prepared to host the RLA application. In that model, network firewalls, web application firewalls, and proper network segmentation will be the responsibility of the Colorado Department of State (CDOS). The vendor will be responsible for providing working code with deployment instructions, server configuration parameters and set-up instructions, and assisting CDOS staff with any production set-up issues related to the provided vendor code and set-up instructions. If the vendor intends to host the RLA application, please include full information on hosting services in your response.

2. Are companies and vendors who worked on Phase I of the RLA project prohibited from bidding on this RFP (Phase II enhancements)? If not, will bids from vendors who participated in the Phase I development be provided any greater consideration in comparison to proposals from new bidders?

Answer: No, to both questions.

3. Will the winning bidder have access to the initial Phase I software developers for any knowledge transfer? Are the Phase I software creators obligated to provide any knowledge transfer?

Answer: No, to both questions. The Phase I developers may, but are not contractually obligated to facilitate or provide any transfer of knowledge.

4. Are there any known defects or issues with the Phase I software? If so, what are they?

Answer: The Free & Fair github repository for the Colorado RLA tool lists 75 “Open” issues (<https://github.com/freeandfair/ColoradoRLA/issues>). Of particular interest to CDOS are issues: #680 – Use flags for cookies (security issue), #903 – Prevention/recovery from contests to audit mistakes, #797 – Simultaneous elections, #182 – Improved UI look & feel, and #528 – Support Internet Explorer.

CDOS would also like to see a solution that addresses fault tolerance and high availability in all tiers of the application, not just the database layer. Possible solutions include distributed computing frameworks and containers. CDOS will also be interested in solutions that have performance improvements (CPU, I/O, and Memory) over the incumbent application.

A CodeClimate (<https://codeclimate.com>) analysis of the code estimates that there is more than 1000 hours of technical debt reduction needed for the current application. Other notable observations of the current code base includes: nearly 300 PMD (<https://pmd.github.io/>) warning suppressions, 14 occurrences of FindBug suppressions, and 25 instances of Checkstyle suppressions.

5. Is there a summary report available on the Phase I deployment with details on how the software performed operationally?

Answer: No.

6. Exhibit D page 2 > Requirement: Code must be publicly available and developed under a GPL 3.0 license. GPL 3.0 is a GNU General Public License 3.0: A specific variation of an open source license (see <https://www.gnu.org/licenses/gpl-3.0.en.html>). The current ColoradoRLA software is licensed under the Affero General Public License (AGPLv3), not the GPL version 3 (GPLv3, aka GPL 3.0). There are a few very significant differences between the GPLv3 license and the AGPLv3 license, and the licenses are not interchangeable. For a web application like this, both Colorado

and contractors are much better protected if the code is licensed under the AGPL. Please clarify that you expect the code for this RFP to be licensed under the AGPLv3.

Answer: The GNU Affero General Public License is a modified version of the ordinary GNU GPL version with one added requirement: "if you run a modified program on a server and let other users communicate with it there, your server must also allow them to download the source code corresponding to the modified version running there." -

<https://www.gnu.org/licenses/why-affero-gpl.en.html>. Our desire is that the license under which the RLA app is developed *does not* require disclosure or publication of proprietary code from the multi-factor authentication system currently used to validate users of the RLA system, and we believe neither license requires it. Subject to final approval by CDOS' legal counsel, CDOS is open to conducting the Phase II software development under AGPLv3.

7. page 13 > Provide milestones and development timelines required by the development requirements outlined in Exhibit A. The only dates I see related to development are the Contract Period "5/10/18 – 5/30/2019" Can you clarify any development deadline requirements or goals besides the contract period?

Answer: The general election occurs on November 6<sup>th</sup> 2018. The vendor should propose a development schedule that will ensure the necessary features for auditing the election are pushed to production and code lock down before the general election. Other features may be developed after the general election.

8. Exhibit A pg. 4 > In addition, the system must be able to accurately identify and match each county's variation of the contest name with the standardized name of the contest in the system. The state audit administrator will need a screen from which to map any unidentified column(s) to the contest(s). pg. 9 > This may require the software to identify and associate contest or candidate names that are not exactly identical in every county's CVR (e.g., "Secretary of State"

vs. "State Secretary"). When the software is unable to correctly correlate a CVR contest header with a known contest, the state administrator must have the ability to map the statewide and multi-jurisdictional contests from the state administrator pages. pg. 9 > The software should display the applicable voting choices when the state audit administrator uses a mouse to "hover" over the ballot contest name when selecting audited contests. How will these "standardized names" be provided? In the past CDOS has provided a mapping for those situations in which the contest names and choice names for a single contest differ in the CVRs provided by different counties, thus establishing a "standardized name" which should also match the name used in the Election Night Reporting (ENR) system. A variety of good general-purpose tools already exist suitable for comparing names and establishing this sort of standardized naming for contests and choices. All of the data needed is available at the time of the Logic and Accuracy Tests. Writing custom software and designing associated user interfaces to aid in this kind of fuzzy name matching across different systems would add significantly to the cost and complexity of the development work. We expect it would be far more cost-effective to establish standard names up-front and either require that they be used in CVRs, or define and provide a standard mapping of contest and choice names as a separate input for the RLA Tool. Given a well-defined mapping input file, it would be easy to read it in before reading in the CVRs and follow the mappings indicated. Can the requirement for custom name-mapping software be dropped from the "Minimum Viable Product"?

**Answer: CDOS expects to require counties to use standard contest and choice naming conventions in the next iteration of Conditions of Use for the Dominion and Clear Ballot systems. The systems may not be able to utilize exactly the same contest and choice names in every instances. Phase II of the software must identify and rectify contest and choice name**

inconsistencies, or provide DOS the ability to map contests and choices shared by more than one county as the same contest or choice.

9. Exhibit A pg. 6 > Utilizing the random seed, the random selection of ballots should come from the ballot manifests, not the CVRs. In general, might sampling in fact best take place from CVRs, not ballot manifests, for efficiency in selecting ballots for a given contest or party? In all cases, the manifests and CVRs must be compared, and suitably independent data must be available and must be checked to ensure that sampling is being done properly, as discussed in the paper by Bañuelos and Stark.

Answer: As discussed in the referenced paper, the randomly selected ballots should be drawn from the manifest and not the CVR. In exhibit A, we discuss comparing the manifest to the CVR to ensure each file reflects the same number of ballot cards. The corresponding paper ballot and CVR record are compared in the audit.

10. Exhibit A pg. 10 > the software should allow the state audit administrator to terminate: ... A contest for one county while other counties continue to audit that contest. In this case the county's audit status should be listed as "Partially terminated" and the aborted contest status should be listed as "Audit terminated". pg. 10 > When a county's audit has been terminated by the state audit administrator, the county's status should be listed as "Audit terminated" instead of "Audit complete". To agree with the second excerpt, it looks like the first excerpt should be changed to switch the two statuses: => the software should allow the state audit administrator to terminate: ... A contest for one county while other counties continue to audit that contest. In this case the county's audit status should be listed as "Audit terminated" and the aborted contest status should be listed as "Partially terminated".

Answer: In this case, the “partially terminated” terminology applies to the overall county audit status. And the “audit terminated” applies to the contest status within that county and not the overall contest status across all counties.

11. System Background/Statistical Concepts Section:

- a. How can the RLA provide confidence that the eligibility check process (signature verification by software and software-managed comparison by election judges and staff) is as accurate as the tabulation that the RLA does check? Is the contractor responsible for performance that realizes the fruits of this definition?

Answer: Voter eligibility is outside of the scope of the RLA software. The contractor will not be responsible for confirming voter eligibility.

- b. What about an error in outcome caused by a combination of tabulation and eligibility error, or only eligibility error?

Answer: Voter eligibility is outside of the scope of the RLA software. The contractor will not be responsible for confirming voter eligibility.

- c. a) Under what conditions will a full hand count occur and how will it be performed? b) Will the transition to a full hand count have impact on the implementation of the software?

Answer: RLAs evolve into hand counts based on the parameters of the applicable algorithm. In the event that a full hand count is required, it is unlikely that counties will use the RLA software for this purpose. This is outside the scope of the RLA software.

12. Minimum Viable Product Section:

- a. Will these hash values be useful for the public to confirm the uploaded files that were used in the audit?

Answer: The hash values of the uploaded files are saved in the RLA software database. They are displayed to county and state audit administrators and included in audit round reports to show that the content of the ballot manifests and CVR files uploaded by the counties are identical to the files utilized by the software to drive the audit.

- i. If redaction takes place that changes the hash value, the answer may be no.

Answer: True.

- ii. Hashes could be recorded for portions of the uploaded files that will be available to the public even after redaction, if necessary. Isn't a most desirable form of redaction one that is by column so entire contests remain intact in the record? If contest columns were hashed each as a unit, wouldn't better public verifiability result.

Answer: The file is ultimately a text file so performing a hash of a column/field is not feasible without creating multiple files – 1 file for each column.

- b. Will the ballot manifest format allow use of ballot style information resulting from sorting of ballots while eligibility-checking or while batching for counties that do decide to sort- e.g. Boulder?

Answer: Identifying ballot style by batch is not something that CDOS plans for the ballot manifest format or software to support. Requiring all counties to compile their ballot manifests and counting batches by ballot style is not practical in a central count environment, and would create many openings for human error.

- c. What is the mechanism that confirms that the ballot manifest is not derived directly from the CVR?

Answer: The counties are instructed to create the ballot manifest, either as each batch is scanned or from the batch header sheets after all of the ballots have been scanned.

- d. What is the action to be taken when this mismatch occurs? DS note: I think the question here is what should the software do, not what the counties should do.

Answer: The county should compare the ballot manifest to the batch header sheets to find any discrepancies. The counties may also use a Batches Loaded Report available from the voting system to confirm that the ballot manifest accurately describes how the ballots were batched.

- e. Isn't it valuable to identify contests that are countywide as separate from those that have scope within county (either entirely or shared with other counties)?

Answer: The software needs to determine if the contest is audited only within the county (single-county) or if the audit of the contest is shared with other counties (either multi-county or statewide). Knowing that a contest is countywide or only a portion of the county does not make a difference in the calculation of the diluted margin because ballots cast totals per each contest are not available.

- f. Isn't this better done by a central authority, and arranged so that mapping always remains clear?

Answer: Ideally, all counties would enter all contest names the same in SCORE and all counties (or the vendor) would program the election to all have the same contest names. However, experience has shown that the same contest can and will have several variations in contest names in the ENR export, and this will be true for the CVR export. Additionally, county office contest names will tend to be the same because the counties do not include the county name in the contest name – there will be multiple “County Clerk & Recorder” contests that should not be interpreted as being multi-county contests.

- g. Are not identical scope multi-county contests comparable and the minimum margin contest may be used as in the previous sentence? Such as US Congress CD1 or SBOE CD1, etc. If CD2 and CD3 are in the same county such as Eagle, can they be compared to sample only to the one with the minimum margin?

Answer: Yes, but there could also be multi-county contests that do not overlap any other contest's scope. That is why each audited contest must be evaluated separately to see if there is an overlap.

- h. Isn't it not just the "nature"? but the geographical (or more relevant- the BallotType or "district style" scope of the contest?

Answer: By "nature" CDOS means jurisdictional nature, which corresponds to the geographical scope of the contest.

- i. Isn't it better to compile a list or more than one list that can be used for any contest at any expected sample rate in advance, so that counties can at their discretion audit ahead of the number of ballots required to be sampled in a given round? For example there could be 5 different incremental portions of the statewide sample list of ballots, from which contests could benefit from samples that correspond to the district. Once the first list had been exhausted for a contest, the second would be used, etc. The use of all five lists would be the same as having initially sampled for that effective margin, and in general each portion of the published list would be exhausted in a single round by design.

Answer: There is no "in advance" possible. The risk limit is chosen 32 days before the election and the audited contests are chosen 3 days after the election. The random seed is created and the audit started the day after the ballot manifest and CVR files are uploaded. The ballot list reflects all of these parameters.

j. In preparation for multi card ballots, isn't it better to use the phrase "ballot card" throughout?

Answer: Yes.

k. Does this reference to "the software" mean that there is only one instance of software? Or can multiple instances of software be run, depending on what the workload is? And also please confirm whether the software can be broken down into interoperable components, each standing alone as detailed in Q51.

Answer: The intent is that a county would be able to log in to the software multiple times and share the workload between the logged in accounts. The details of how this is implemented would be up to the vendor.

l. Isn't this a mistake and contrary to how counties will actually use the RLATool? Will counties be expected to know in advance what the workload is at the time of upload? Won't they need to change the number of audit boards at the moment staffing considerations come up, such as people need to go home or more can come in? Surely the number of teams should be flexible at the time they are working?

Answer: CDOS provides all counties with an estimated workload after the target contests have been selected.

m. Doesn't this tie the productivity of all audit boards to the same rate and schedule? Surely some boards will work harder or faster than others and will not want to wait for others to finish their split of the samples? Wouldn't it be better for this allocation of samples to boards be done at the time each next sample becomes available for audit? Will this also mean that ballots must be obtained from storage in synchrony with the split of ballots to boards?

Answer: The requirement speaks for itself.

- n. Wouldn't this mean that audit boards could not proceed ahead of what is required in a given round?

Answer: Yes.

- i. Can't this be made a county option, in case the county process for opening boxes and obtaining ballots cannot or does not want to take advantage of this feature?

Answer: No.

- o. What causes the ballot manifest to be independent of the CVR, particularly when it is expected to know Tabulator Number (a fact only known after scanning is complete)?

Answer: CDOS trains the counties that the ballot manifest should be maintained individually. The Tabulator ID is known at the time that the ballots are scanned, and it can be displayed on the scanner software screen. Therefore, the ballot manifest can be created independently of the voting system tabulation.

- p. Wouldn't the best approach be to create a statewide ballot manifest so all contests, including various multi-county contests can be sampled from the same manifest?

Answer: The deadline for creating the ballot manifest and uploading it to the software is the day before the audit is started. Requiring the state to obtain copies of the county ballot manifest and compile a statewide ballot manifest would only delay the start of the audit when the software already has the files and it could do that much faster.

- q. Isn't there misunderstanding about the meaning of the existing UI, for example "no consensus" was misunderstood in at least one county?

Answer: This is a training issue.

- r. Wouldn't it be better during a per ballot confirmation process that the order of contests on the ballot be changed or reversed to avoid monotony and provide for better verification?

Answer: No.

- s. How will this be afforded without encouraging an opportunity for checking of previous adjudication from CVRs or AuditMarks?

Answer: The intent of the review is to give the current audit board a second chance to review the reported ballot markings before being submitted. The audit board should not be looking at the CVR file or ballot images during the audit.

- i. Will this process be required to be completed immediately or could it be deferred to another set of individuals? DS Note: I think the review can be deferred to a different board.

Answer: The final reported ballot markings should be submitted to the software by the same audit board.

- ii. What will be used as the source of facts about voter intent for this review?

Answer: The counties train the audit board members on how to interpret voter intent per the CDOS Voter Intent Guide.

- iii. Could this be deferred overnight for example?

Answer: Yes, as long as the session is not logged out. If the session is logged out then the reported ballot marking would need to be entered again.

- iv. Will the original data captured from each ballot be recorded and made available to the public for study so an external party could review why changes were made during this perhaps unnecessary review step?

Answer: No.

- t. Isn't this less efficient than allowing each audit board to go ahead and if they choose, to continue auditing ahead into the next round if it is clear what contest continues to require auditing (some contests may for reasons of narrow margin require many more ballots than will be assigned in a single round)?

Answer: Yes.

- i. Will the software partition the original sample requirements among rounds for narrow margin contests that require many samples?

Answer: No. The software determines how many ballots to sample in the round such that the audit can be completed in the round if sufficient evidence is found that the apparent winner is the actual winner

- ii. c) Will the software provide a mechanism to allow counties sharing the same contest to decide when to opt to a full manual count?

Answer: No. Each county is expected to complete the round. If a county is experiencing a large number of discrepancies the state administrator will make the decision to manually terminate the county's participation in any shared audited contest and how to proceed with other means of auditing the contest.

- u. Doesn't this mean geographical scope of district (or perfect overlap of district)?

Answer: CDOS means jurisdictional nature, which corresponds to the geographical scope of the contest.

- v. Isn't jurisdictional nature (listed instances here) insufficient to allow minimum margin to control? It must be the minimum margin for each remaining contest when more than one shares the same geographical scope, otherwise just the margin.

Answer: The requirement speaks for itself.

- w. Doesn't this mean, or isn't it better if style (perhaps only party-style in this case) is used to sort ballots prior to making the ballot manifest?

**Answer: Sorting ballots by party before scanning them is not an option.**

- i. And wouldn't diluted margins improve and yield less auditing if ballots were sorted by more than just party style (such as groups of district styles or just large styles such as CD-style) in order to benefit audit calculations- by including style information in the ballot manifest?

**Answer: Sorting ballot by ballot style is not an option so the requirement to include the ballot style of each ballot in the ballot manifest would impose too great a burden on the counties to record that as each ballot is scanned. The software must be able to determine which party codes are associated with each ballot type and to keep track of them in the audit.**

13. Requirements Specification/Software Modifications Section:

- a. Ballot manifest file upload: Shouldn't the ballot manifest indicate a box number that would be accurate before tabulation, rather than requiring to know the tabulator the ballot will be inserted into at the time the manifest is created? Of course the box number should allow text to be included.

**Answer: No to the question.**

- i. The use of tabulator number suggests that the ballot manifest will be created from CVRs, but it should not.

**Answer: No, that is not correct.**

- b. Clear Ballot: Isn't this more evidence that the TabulatorNum isn't something that should identify a ballot in a manifest?

Answer: The Dominion CVR identifies a ballot by TabulatorID – BatchID – Position because each TabulatorID does not have a unique BatchID. The ballot manifest was designed to have the same fields. The Clear Ballot CVR does not follow that convention since it relies on batch header cards to define the batch ID so each batch ID is unique. We are simply trying to make the tool be compatible with Clear Ballot's CVR and not confuse the county with spurious information.

c. Audit Definition:

- i. Does "single-county contest" mean countywide, and only county?

Answer: No. The term "single county contest" indicates that this contest applies only to this county and not to other counties

- ii. Or does it include subset of county?

Answer: Yes. Depending on the applicable districts within a county, it could be across the whole county or only part of the county.

- iii. Isn't there a significant difference between these for audit sampling?

Answer: Yes. The difference between "partial" and "whole" is the applicable pool of votes and would not change the method in which the audit occurs.

- iv. a) Isn't there a concern that the ballot manifest was derived from the CVR by the county?

Answer: No.

1. b) When manifests do not have access to ballot style, does an alternative sampling make sense based on CVRs, not ballot manifests, for efficiency in selecting ballots for a given contest or party?

Answer: Yes.

2. Does that method provide sufficient information independent of the voting system to perform a valid audit?

Answer: Yes.

3. In all cases, the manifests and CVRs must be compared, and must be from separate sources and therefore suitably independent. Manifests and CVRs must be checked to ensure that sampling is being done properly, as discussed in the paper by Bañuelos and Stark.

Answer: This is not a question.

v. Not if the manifest knows the style- either by sorting or detecting the barcode on the envelope or looking at the style of the received ballot. The use of CVR for sampling is a less desirable approach, I believe.

Answer: The requirement speaks for itself.

vi. Does "all ballots cast" mean the ballot manifest?

Answer: The ballot manifest is a representative of "all ballots cast" within a county. In this scenario "all ballots cast" will be all ballot cards reflected in the CVRs.

vii. Shouldn't this be a box ID or name that held batches of ballots prior to scanning? Once scanning for tabulation takes place, only the CVR knows the TabulatorNum.

Answer: No to the question.

viii. Does this mean the software must recognize the geographical scope and identical overlap of applicable contests, and not just the "jurisdictional nature?"

Answer: The geographical scope and overlap of identical contests is set by the definition of the contest within SCORE. This software will not alter or adjust the

SCORE definition of a contest. The jurisdictional nature of the contest will affect how the audit is handled.

- ix. How will the software be able to coordinate disparate naming of identical contests when this is a social task among human beings? Isn't this asking too much of the software?

Answer: In this scenario, we are leaving the choice of method for comparing and contrasting names to the developer. If you continue to read that bullet point, it discusses the use of humans to identify and match the names where the known methods cannot identify an exact match.

- x. Does this mean the number of ballots to be sampled in the first round? Will this include a portion of the ballots expected to be sampled if that number exceeds a reasonable number for the first round, when a margin is narrow? Will the software show ballots to be audited in future rounds, if already known?

Answer: In this case, we are referring to the number of ballots to be pulled for the first round of auditing. This number is calculated by the software based on the margin between contestants and diluted margin of the contest. This number will not change. More ballots may need to be pulled for subsequent rounds, if the first round does not meet the audit limit. At this time, the exact ballots to be sampled will not be known.

d. Ballot Assignment:

- i. similar to other questions: Wouldn't this make more sense to say BoxID? Or another name so that it doesn't create confusion already existing with the meaning of BoxID in Clear Ballot lingo where it means in reality BatchID? Or does "Location" stand in for the need for a BoxID in Dominion based sample

ballot lists so TabulatorNum is not needed? Wouldn't it be better if the imprinted number on the ballot contained a BoxID instead of a TabulatorNum? Apparently Clear Ballot does not use a Tabulator number in its CVR.

**Answer: No.**

- ii. Can the software allow a change of number of audit boards as the need arises? Will the software be able to predict in real-time the expected completion time for an audit round and provide that information to the county admin as well as to the state administrator?

**Answer: No, the software will not allow for a change in the number of audits boards as the needs arise, because the system will inform the counties of the number of ballots to be counted for the round before the round is launched. No, the software will not predict the expected completion time of an audit as the method, available resources to the county are not under the state's control, and the time will vary by county.**

- iii. Wouldn't this freeze the schedule before performance is known, and make the allocation of human resources much less efficient?

**Answer: Since the number of ballots to be pulled for the first and subsequent rounds is known prior to the launch of that round, we are trusting the counties to allocate their resources to each round of the audit.**

- iv. Wouldn't it be better if counties could opt out of this re-organization of the random order of ballots to be sampled if that sorting provides them no advantage and allows them more freedom to audit ahead of schedule?

Answer: Batches of ballots are placed into storage containers. Separating the assigned ballots by bin/batch ensures the audit board teams will be able to efficiently locate the ballots for audit without the need for multiple teams to access the same batch of ballots.

e. Conducting the Audit:

- i. Wouldn't it be better if the screen and or report would inform the number of discrepancies per contest and the total number of sampled ballots to which these pertain?

Answer: Yes, but there is a limit to how much information can be displayed on the screen.

- ii. Wouldn't it be better if "Scanner #" were replaced by "Box or Location ID"?

Answer: No.

f. Dashboards:

- i. Don't these belong on the state and county administrator dashboards including a prediction about completion time?

Answer: There will not be a prediction of completion performed by the software. Having the county status available on a public dashboard does not preclude the status from the county and state admin dashboards.

14. Appendices:

- a. Was this pdf provided separately? Will it? It is chopped into many pages in the RFP, and not provided separately on the SOS website.

Answer: For the purposes of the RFP the process flow had to fit onto one or more 8.5X11 stand sheets of paper. If the vendor is awarded the contract they will be

provided with the process flow in a Visio format that is not constrained to a sheet of paper.

- b. Would it be better to say "number of ballots cast and intended to be tabulated?" Would it be better if ballot manifest also specified an opportunity to know the manifest by contest rather than by election if mechanisms are in place to provide that information?

Answer: The definition speaks for itself.

- c. This RFP specifies that software will perform the comparison. Would "Humans interpret and record voter markings on randomly..." be more correct?

Answer: The definition speaks for itself.

- d. Is this necessary as the definition is in the previous line? Is there additional information provided here? There are slight differences.

Answer: The definition speaks for itself.

- e. Isn't this simply incorrect? See Q1. The RLA (of tabulation) only detects and corrects errors in outcome due to tabulation errors, not eligibility or other errors that may be caused by computer and or human error.

Answer: The definition speaks for itself.

- f. Will there be a definition of "actual outcome?"

Answer: The definition speaks for itself.

15. Can the contractor divide the software into sensible separable interoperable components that will provide flexibility for future deployment, for example in municipal or special district elections that have no SOS involvement? For example, a

- a. PRNG component could take the extent of the ballot manifest as input and produce a set of random integers with replacement. This list would be sufficient to count the entire set of ballots in random order.

- b. A separate tool could take as input 64 or fewer ballot manifests and produce jurisdiction-wide ballot manifest that also takes as input the output of the PRNG. The resulting output would be a very long list of samples each represented as an entry in a combined ballot manifest. This time not integers but pointers to real ballots. This list is subdivided by filtering the statewide list so that each sub-jurisdiction gets its own filtered portion of the random sample, in order.
- c. A separate component could take as input the contest characteristics including the election night reporting of vote counts for candidates per sub-jurisdiction, calculate diluted margin and produce a count of ballots needed to sample appropriate to each sub-jurisdiction. The result of this component would be provided to each sub-jurisdiction in the form of a count of samples needed from the sub-jurisdiction version of the list from component (2). The sub-jurisdiction would proceed to access and interpret the necessary number of samples out of the sampled ballot manifest in order of random selection (or in another order at local discretion as long as a continuous uninterrupted set of the samples in the original ordered list are interpreted during the round.)
- d. Once the ballots are collected together or perhaps one at a time at the discretion of the sub-jurisdiction, a separate component records the interpreted voter intent, packages it and communicates it to the central authority of the jurisdiction. This component can be launched in enough instances to accommodate the workflow at the time.
- e. Another component, or perhaps an extension to component in (3) above would take as input the CVRs from the sub-jurisdictions, formulate a jurisdiction-wide CVR and compare entries in that to the results provided by component (4). Once discrepancies are discovered and reported to the jurisdiction, a new target for sampling is produced

for each sub-jurisdiction- in the form of an index into the list produced by component (2). Then the sub-jurisdiction can (if it has not already) proceed to locate and interpret voter intent on those additional samples. Once this component calls for no additional samples in the contest, the contest is flagged as a completed audit, having met or exceeded its risk limit.

Answer: Most of the modularization mentioned in question #15 would be more advantageous to third parties or other jurisdictions, rather than the CDOS or the counties. We have shown that special elections are not adversely affected by the current application. Decisions on separating functionality into sensible components will be mostly left to the vendor and approved by CDOS.

16. Will data collected by the software be made public and in what form? Data might include timestamps of audit board decisions/entry of voter intent, actual recordings of voter intent from sampled ballots, images of sampled ballots? When will the formats for these reports be specified?

Answer: CDOS intends for RLAs to be as publicly transparent as possible without compromising voter anonymity.

17. Will there be a facility for sub-jurisdiction users (ie counties) to upload photographs of sampled ballots?

Answer: No.

18. Will the voter intent capture process be made available to ballot polling counties for use in capturing voter intent and communication to a central facility?

Answer: Ballot polling counties should already be using the voter intent guide to interpret the voter's intent.

19. Will the software include any facility for redaction of CVR files for purposes of public access,?

Answer: No.

20. Will the software include a facility for identification of and appropriate handling of ballot paper for which a potential risk of voter privacy exists e.g. stray marks that provide substantive identifiability or rare style when combined with CountingGroup or PrecinctPortion?

Answer: No.

21. Will the process of audit intent capture take place in public?

Answer: Audit intent - No. Voter intent – Yes.