

City and County of San Francisco

Open Source Voting System Feasibility Assessment

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1. Introduction

1.1. Purpose of this Document

This section will describe an overview of this assessment, and the approach taken to gather information required to deliver the final assessment.

1.2. Objectives of Assessment

This section will describe the general scope of the project:

- Goals of assessment

1.3. Scope of Assessment

This section will describe the general scope of the project:

- Components of voting system defined below section
- Assessment of available options; not provide recommendation
- No exhaustive list of requirements; we are not developing the system in this document

2. Executive Summary

2.1. Summary of Assessment

This section lays out the summary of each option.

2.2. Critical Assumptions

This section will describe the list of assumptions that will be used as the basis of our assessment. Once confirmed, these assumptions will be placed into the corresponding subsections in this report.

Starting list of assumptions – these will be modified, added to, and confirmed:

- *Own everything; use community as a bonus to increase quality/transparency, but don't use to reduce cost or increase velocity of project.*
- *'Benevolent Dictator for Life' Open source model*
- *Build by component*
- *New voting system must all voting system regulations and accessibility requirements*
- *Assume the new interim voting system has same capabilities as current voting system to make assessment*
- *Open source license assumed – GNU Public License version 3*
- *Assessing Feasibility means: Willingness to own + track record + skillset + capacity/resource + incentive to execute + mandate*
- *City works in siloed divisions that provide services to each other based on request*
- *No need to debate the benefits to open source; assume open source pros and cons are already weighed and the City wants to proceed with open source*

3. Proposed Voting System

3.1. Scope of Voting System

Based on Section 301(b) in the Help America Vote Act (HAVA), a voting system must be able to define the ballot, cast and count votes, report and display results, and maintain/produce an audit trail.

Please see attached diagram for what components of the voting system is in scope and out of scope for the purposes of this assessment. **Content is being developed.**

3.1.1. Hardware/Software Components

Please see attached for specific hardware and software components in consideration with estimated time and cost in mind. **Content is being developed.**

3.2. Parameters of Standard Voting System

This section will list the regulations, requirements, guidelines that a standard voting system needs to follow (e.g. CA Voting System Standards, Voluntary Voting System Guidelines 2.0, etc.).

4. Open Source Governance Model

4.1. Licensing

This section will detail the licensing approach that is assumed (e.g. GNU Public License version 3), and what that means when running an open source project with this license.

4.2. Open Source Model – BDFLM

This section will describe Benevolent Dictator for Life Model, the assumed open source governance model, that the City of SF will need to use to operate. There will also be justification as to why this model is best to assume compared to others.

4.3. Community Engagement

This section will describe the type of community engagement that is needed and a level of support that is assumed to run an open source project.

4.4. Tools

This section will describe the tools that the government will need to maintain the codebase, and the tools needed for the open source community to review/make changes to the code if put on an open source platform.

4.5. Programming Language

This section will describe the type of open source programming language that will be assumed to assess the feasibility of each option based on skillset to build.

4.6. Infrastructure

This section will describe the type of IT infrastructure this open source project would run on (operating system, “stack”, etc.).

4.7. Agile Approach

This section will describe what agile development would mean for this project, and how an agile approach to development would impact budget, certification processes, procurement, etc.

4.8. Security

This section will describe what open source would mean in terms of making sure the voting system will remain secure (if not more secure), and what additional measures the government should do to ensure the voting system will be secure. It will also discuss the risks and concerns around security with open source.

5. Functionality Development Approach

5.1. Incremental Development

This section will describe how to break down the voting system into modular components, and explain the approach to deploy new parts of the voting system separately over a period with the assumption that the interim voting system will be compatible. This will impact how many Request for Proposals (RFP) will be needed, how budget is requested, and how voting system certification is completed.

5.2. End-to-End Development

This section will explain the approach to develop the end-to-end system entirely and deploy it all at once. This will impact how many RFPs will be needed, how budget is requested, and how voting system certification is completed.

5.3. Certification Considerations

This section will go into further detail on the importance and impact of the timing and cost of the certification process on this proposal.

6. Development Options

6.1. Development Definition (Build, Run, Maintain, etc.)

This section describes how this report defines “development” based on what the RFP asked for. It will describe why we used the Software Development Life Cycle (SDLC) model, and explains what “gather requirement, design, build, run, and maintain” means. This is the basis of the framework of how we assess each option.

6.2. Options

Options	Open Source Role		
	Owner	Committer	Contributor
Department of Elections develops voting system	City of SF Department of Elections	City of SF Department of Elections	Open Source Community
The City as an entity develops a voting system	City of SF Department of Technology	City of SF Department of Technology	Open Source Community

The Department develops a voting system in collaboration with other jurisdictions' election departments	City of SF Department of Elections and Alameda County Department of Elections	City of SF Department of Elections and Alameda County Department of Elections	Open Source Community
The City as an entity develops a voting system in collaboration with other jurisdictions	City of SF Department of Technology and Alameda County Department of Technology	City of SF Department of Technology and Alameda County Department of Technology	Open Source Community
The City issues an RFP to have a system built	City of SF Department of Elections	Contractors awarded from RFP	Open Source Community
The City purchases an LA System	City of SF Department of Elections	City of SF Department of Elections using LA County's new hardware	Open Source Community

*Note:

- (1) The City joining Travis County's project was a listed option in the RFP, but cannot be evaluated as an option anymore as the project has been cancelled.
- (2) Each option can be permutated in ways that meets the RFP requirements.

7. Feasibility Considerations

7.1. Accessibility

This section will describe the accessibility considerations that need to be taken when creating a new voting system based on information we gathered from stakeholder meetings and compliance to legal requirements. Additionally, it will explain how accessibility affects open source governance qualification criteria.

7.1.1. Usability

This section will describe how the new voting system will not only have to be accessible, but useable. The gap between accessibility and usability will be explained further here, with considerations on how it will affect the type of hardware and the software features that are chosen.

7.2. Ownership

This section will explain how feasibility criteria must take into account the general opinions towards this proposal because ultimately a department must be willing to own and take responsibility for the execution and outcome of this project.

7.3. Accuracy

This section will explain how an open source solution will incorporate methods of accuracy to count the ballots, and make the voting process more transparent.

7.4. Auditability

This section will explain how the auditability is tracked in this open source solution from ballot marking through tabulation.

7.5. Ability for another Jurisdiction(s) to Leverage

This section will explain how other cities will be able to leverage the work that is done in SF for this open source project based on knowledge of current partnerships with other jurisdictions.

7.6. Thought Leader Reputation

This section will describe how SF could be a true thought leader, as it would be the first city/county to evaluate and move forward with this project if they decide to.

7.7. Physical Storage Space

This section will propose and explain the feasibility around how much physical storage space would be needed to keep all hardware in SF, and be brought to precincts for election day.

7.8. Staffing Requirement

This section will explain the number of resources needed operationally to build, run, and maintain this new open source voting system.

7.9. Capability Model

Please see the attached capability model that will show how each option is evaluated based on the feasibility criteria. **Content is being developed.**

7.9.1. Scoring of Criteria - Scoring Metric Definition

This section will define each criterion, and justify why it was used to evaluate the capability of each option. If there is scoring involved, it will also define the scoring metric.

7.9.2. Software Capability

This section will explain the qualifications of development teams by option that are needed, and analyze which option/department have key skillsets needed to build the initial source code.

7.9.3. Hardware Capability

This section will explain the qualification of commercial off-the-shelf (COTS) hardware that is needed for the new voting system to be certified.

7.9.4. Team Skillset

This section will explain the development team skillset that is needed to run and maintain open source community code. It will dive into for each option:

- What is the team's experience in developing software in an open source manner?
- What is the team's ability to govern an open source community?
- What is the team's experience in managing a project like this?

7.10. Cost

Please see attached to see how the cost is determined for each option. In this section, it will make assumptions on rates, # of equipment, etc. For each option, cost to build (design, test) cost to run (maintain), and cost to operate will be defined and broken down into capital and operating expenses.

Content is being developed.

7.11. Timeframe

Please see below diagram for an example timeline for each sprint to be able that leads to an overall estimate of how long this project will take to complete. Content is being developed.

8. Detailed Feasibility Assessment Data

This section will include the detailed tables of assessment.