

# Free & Fair, Inc.

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Corporate Summary

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January 2016

# Free & Fair, Inc.

- Free & Fair, Inc. (F&F henceforth) focuses on *transparency* and *trustworthiness* in our business ethics, finances, science & technology of verifiable elections.
- The Hollywood pitch: *F&F is the Red Hat of high-assurance verifiable elections technologies.*
- *F&F is a Class B Corporation, thus its focus is public benefit to society, and not profit for shareholders.*
- *F&F is a private, employee-owned spin-out from Galois.*

# Mission

- Free & Fair...
  - ...sells and supports open source hardware and software solutions for verifiable elections.
  - ...focuses on election systems components that must be correct and secure.
  - ...designs and develops open source high-assurance verifiable elections technologies.
  - ...provides licenses, support, service, customization, integration, and training for verifiable elections technologies.
  - ...provides an alternative to traditional vendors with a focus on open pricing and open source.

# Principles

- Free & Fair...
  - ...has a transparency and trustworthiness agenda down to its core: we focus on ethics, assurance, and trust rather than marketing.
  - ...only implements systems that are subject to academic and industrial peer-review—our security policies, protocols, and architectures are created with, and reviewed by, the world's foremost experts and the public.

# Structure

- F&F's Board of Advisors includes world experts in verifiable elections research, development, and best practice.
- F&F's Board of Directors is Joe Kiniry (CEO & Chief Scientist), Rob Wiltbank (CEO of Galois), and a third high-profile member of the elections community.

# Ownership

- F&F is employee-owned and a Galois, Inc. spin-out.
- A small portion of F&F is dedicated to the (non-employee) researchers, engineers, and students who have made its existence possible.
- F&F intends to evolve as a company that we control in the long term—we do not intend to lose control through acquisition or venture capital.

# High-assurance Elections

- F&F designs and develops open source election systems as high-assurance systems.
- We use similar processes, methodologies, tools, techniques, and technology (known as *formal methods*) as demanded by Galois's other clients, such as
  - DARPA, NSA, DHS, NASA, DOE, etc.
- Our development process is peer-reviewed, has been used extensively for nearly two decades, and supports multiple programming language and platforms.

# Initial Products

- verified digital pollbook (e-pollbook): **DVL**
- verified supervised voting system: **STAR-Vote**
- verified vote-by-mail: **VVM**
- verified remote ballot marking device: **RBMD**
- verified tabulator: **OpenCount Tabulator**
- verified risk-limiting audits: **OpenCount Auditor**
- verified polling place wait tracker: **PQM**



# Key Product Principles

- all products are open source
- all products support verifiable elections
- all products are accessible to the disabled
- all products have formal system, architecture, module, and protocol specifications
- all products include evidence of their correct design, implementation, and security
- no products use proprietary hardware

# Accessibility and Usability

- all products have accessibility and usability built-in from first principles
- UI and UX design and experiments are part of our design and refinement process
- products must be accessible and usable by election officials, voters, and stakeholders in election observation and verification
  - e.g., we wish to facilitate sight-impaired election officials, observers, and election auditors
- we are aiming to be the “Apple of verifiable election systems”

# DVL – Digital Poll Book

- comprehensive e-pollbook solution supporting voter authentication, polling place check-in, identifying voter ballot style, printing ballot paper, etc.
- seamless integration with VREMS for election definition, voter list, and ballot style imports
- supports election day registration, secure update to voter information on or after election day
- realtime and post-election reports on election statistics
- runs on commodity laptop or tablets—no proprietary devices

# STAR-Vote: A Secure, Transparent, Auditable, and Reliable Voting System

- combines benefits of cryptographic-style verification with randomized, publicly-observable auditing of paper ballots (VVPAT)
- includes e-pollbook, vote casting, physical and digital ballot box, tallying, and auditing subsystems
- supports cast-as-intended and counted-as-cast election verification
- supports third party verification of election tally
- is technology agnostic—works with PC, laptop, touchscreen & all operating systems
- designed and implemented for accessibility and usability
- easy integration with existing polling place business processes

# VVM – Verifiable Vote by Mail

- combines paper-based elections with end-to-end verifiable election systems
- electronic delivery of ballots and paper ballot return for a faster, more natural, and more reliable voter experience
- provides simple cast-as-intended verification and third-party verifiable counted-as-cast election verification
- built-in mitigations against compromised voter computers, insider attack, and man-in-the-middle attacks on ballots in transit
- lower cost to the electoral authority than traditional postal voting
- can be piggybacked on existing supervised or unsupervised digital BMDs or on existing traditional paper-only early voting

# RBDM –

## Verifiable Remote Ballot Marking Device

- permits UOCAVA, overseas, and early voters to research candidates and issues and mark their ballots using their home computer or smart phone
- ballot marking can be partial, span time and space, and voter choice is never transmitted
- electronic delivery of ballots and paper ballot return for a faster, more natural, and more reliable voter experience
- UX facilitates independent voting for disabled voters and verification for sight-impaired voters
- built-in mitigations against compromised voter computers, insider attack, and man-in-the-middle attacks on ballots in transit
- lower cost to the electoral authority than traditional postal voting

# OpenCount Tabulator

- self-contained central or precinct tabulator
- uses off-the-shelf scanners and computing hardware
- scans, interprets, and tallies paper and digital image ballots, including optical-scan ballots associated with Diebold (Premier), ES&S, Hart, and Sequoia ballot styles
- capable of comprehending printed text and QR codes
- guarantees provenance of imported ballot images and their associated vote records

# OpenCount Auditor

- self-contained post-election risk-limiting audit solution
- risk-limiting audits are an innovative, efficient, and cost-effective way to provide transparency about, and check the accuracy of, election results independent of election processes and technology
- faster, more accurate, lower effort, and reduced cost relative to a traditional recounts
- has been used to support the California Secretary of State's Post Election Risk-Limiting Audit Pilot Program for 10 CA counties
- works for elections conducted using paper or digital image ballots, including optical-scan ballots associated with Diebold (Premier), ES&S, Hart, and Sequoia ballot styles



# PQM —

## Polling Queue Monitor

- custom device that passively observes mobile phones RF signals (Bluetooth, WiFi, and cellular)
- reports current average wait time at the polling place
- device is incapable of recording any information about voters, thus has no voter privacy implications
- election officials use wait time information to analyze polling place performance in real time or in an election postmortem, update voters in realtime via the web, SMS, or a rich mobile interface like OSET's BusyBooth app

# Thoughts on Product Licensing

- Our products are open source and free to every government agency.
- Every product will be open source released under dual licenses (an appropriate OSI-approved license and a commercial subscription and support license for government agencies).
- Electoral authorities that wish to use the released open source product with no support are welcome to do so for free, much as one would do with any Linux distribution.
- Electoral authorities that wish to use a hardened, customized product for their particular setting can execute a support contract with F&F via the commercial subscription and support license, available at various SLAs, much like one would do for an enterprise Linux product.
- F&F is open to negotiating with electoral authorities that wish to license the technology under a customer-defined alternative license, so long as the contract is public.

# Funding

- F&F intends to self-fund for the foreseeable future by pursuing opportunities in the elections space.
- F&F intends to take no funding that restricts its ethics, assurance, and trust agenda.
- F&F is in discussions with a variety of non-profit foundations about funding.

# Revenue

- Early revenue will come in the form of commercial and government engagements in the development of new elections products for specific customers.
- Long-term revenue will come in the form of subscription and support licenses, customization and integration development, technical and field support, and election official and volunteer training.

# Affordable Pricing

- All pricing is open and transparent.
- More demanding SLAs incur higher cost.
- Our objective in the long term is to decrease the overall cost of elections that use our technology.
- We perform bespoke development of new products with open source licenses (this is our preferred early focus).
- We perform customization/integration work for a specific client with open source licenses.
- We are happy to discuss bespoke development of new products or customization that is not open source.

# Conclusion

- Our democracy is a critical system, thus election technology must be open and high-assurance.
- It is time for a new alternative to the abusive oligopoly of elections systems vendors today.

***Free & Fair, Inc. is that alternative***

for more information  
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