OpenStack Board Briefing - STV

# Context

The OpenStack Board of Directors wishes to consider a resolution to call a special meeting of members to amend the bylaws of the OpenStack Foundation to remove the “cumulative voting” defined process for election of the 8 individual member Directors, and provide for an “order of preference” voting system using either the Condorcet method or the Single Transferable Vote (STV) method of voting.

This briefing paper is intended to brief the Board on the STV voting system, to support the consideration and discussion of the Board resolution when made.

# Single Transferable Vote

STV is an “order of preference” or “ranked” voting system that is used in certain US and international government, not-for-profit, and other association elections.

Wikipedia has a very good detailed summary of STV here: <http://en.wikipedia.org/wiki/Single_transferable_vote>, with this overall description:

“*Under STV, an elector has a single vote that is initially allocated to his or her most preferred candidate, and as the count proceeds and candidates are either elected or eliminated, is transferred to other candidates according to the voter's stated preferences, in proportion to any surplus or discarded votes. The exact method of reapportioning votes can vary…*

*The system provides approximately proportional representation, enables votes to be cast for individual candidates rather than for closed party lists, and minimizes "wasted" votes by transferring votes to other candidates that would otherwise be wasted on sure losers or sure winners.*”

In STV, each voter ranks the list of candidates in order of preference. In the most common ballot design, they place a '1' beside their most preferred candidate, a '2' beside their second most preferred, and so on. The completed ballot paper therefore contains an ordinal list of candidates.

However in the STV system proposed for consideration by the Board, the voter is not required to rank all candidates – the voter can choose how many to rank from 1 to the number ranked. In this way, STV provides for an “order of preference” vote without requiring the voter to know or form an opinion on all candidates for election. This is particularly useful in the case of the OpenStack Foundation, where the number of individual member Director candidates was greater than 20 in the last election.

## Counting STV Votes

STV utilizes a quota (sometimes called the threshold), which is the number of votes a candidate must receive to be elected. Quotas are calculated by one of two methods: the Hare quota and the Droop quota. **The committee recommends, if STV is selected as the preferred voting system, that the Droop quota be used.** The Droop quota the most popular quota used in STV elections today. Refer to <http://en.wikipedia.org/wiki/Droop_quota> for the distinction between the two quotas.

Once a candidate has reached the quota, their surplus votes are reallocated to the remaining candidates according to their preferences in a series of “rounds” of calculations. Voter preferences for eliminated candidates (the candidate with the fewest votes in a round where no candidate reaches the quota) are also reallocated to the remaining candidates in the next round.

More detail on the STV counting algorithm and variants can be found at <http://en.wikipedia.org/wiki/Meek%27s_method#Meek>.

## Use by other Foundations and Governments

The Apache Software Foundation (ASF) uses STV (Meek’s Method) for Board elections (<http://wiki.apache.org/general/BoardVoting>), and the Eclipse Foundation uses STV as well for Board elections (British Columbia Method).

In addition, STV is in use for parliamentary elections in Ireland and India, Senate elections in India, Pakistan and Australia, and local government/city elections in the UK, Australia, US (Cambridge, Massachusetts) and New Zealand.

## Choice of Counting Method

**After review of the various methods for counting votes, it is recommended that the Meeks method be used as the method for counting STV votes.** The Meeks Method has two principles:

* Once a candidate is eliminated from the count, all ballots are treated as if that candidate had never stood, and
* Winners retain a fixed proportion of every vote received, and transfer the remainder to the next nominated preference for a continuing candidate.

Meeks method is used by the ASF and has therefore been proven to a degree in the Open Source Software community.

## Legal Considerations

There is nothing in Delaware law that specifically prohibits STV as a voting system for the Board of Directors. There is no known case law that would invalidate STV as a voting system.

The legal advice of counsel to the Foundation is that STV can be used for the individual member Director vote, provided that the system is sufficiently clearly defined in the bylaws.

## Benefits of STV

The general system of ranking candidates from 1 to N is generally well understood in concept. The fact that STV is in use by ASF and Eclipse for Board elections also strengthens the likelihood that the members of the OpenStack Foundation would consider and adopt it as an alternative to cumulative voting. The data and results from an STV election can be published in full to members, enabling verification and analysis by members of where voter preferences were allocated in the end result.

## Drawbacks of STV

Like Condorcet, there are choices in implementation of STV - and complex math to calculate results - that can lead to confusion and uncertainty among members.

## Implementation of STV

[Jonathan Bryce to provide commentary]

## Conclusions

STV is a broadly implemented preference or ranking voting system that is in use by other similar Open Source Software Foundations for Board elections. The requirement to rank candidates strictly in order of preference, and the counting system in applying those preferences, results in a voting system that provides greater proportional representation than other voting systems. It is also not easily gamed. The voting process is easy to explain to voters, but as with Condorcet, the counting algorithm is more complex to describe (but not insurmountable).

STV is a viable alternative to the current cumulative voting system for individual member Directors, to reduce the perception and reality of block voting by company affiliation.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*