

Enhancing and Implementing Fully Transparent Internet Voting

Kevin Butterfield¹, Huian Li¹, Xukai Zou¹, Feng Li²

¹Purdue School of Science, IUPUI; ²Purdue School of Engineering and Technology, IUPUI

Voting over the internet has been the focus of significant research with the potential to solve many problems. Current implementations typically suffer from a lack of transparency, where the connection between vote casting and result tallying is seen as a black box by voters. A new protocol was recently proposed that allows full transparency, never obfuscating any step of the process, and splits authority between mutually-constraining conflicting parties. Achieving such transparency brings with it challenging issues. In this paper we propose an efficient algorithm for generating unique, anonymous identifiers (voting locations) that is based on the Chinese Remainder Theorem, extend the functionality of an election to allow for races with multiple winners, and introduce a prototype of this voting system implemented as a multiplatform web application.

Advisor: Xukai Zou, Purdue School of Science, IUPUI; Feng Li, Purdue School of Engineering and Technology, IUPUI