Two recent—yet very different—real-world experiences provide valuable lessons for building the technologies necessary for true teledemocracy.

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VOTING TECHNOLOGY IMPLEMENTATION

It’s been suggested that teledemocracy should primarily support the existing system of representative democracy [2, 3]. If we accept that proposition, then information technology that supports the existing democratic system must be implemented. This article examines two cases of electronic voting implementations: one in the U.S. and one in Europe. The first case describes the technical problems encountered by Pennsylvania’s Montgomery County in moving from mechanical to electronic voting machines. The second case describes a Norwegian effort to implement a fully automated voting system in Oslo County, and how technical problems led to a parliamentary crisis. By examining these two cases, in many respects similar to teledemocracy implementations, some conclusions are drawn about the unique challenges of implementing teledemocracy.

In times of record-low voter turnout, Montgomery County officials hoped that by replacing their old mechanical voting machines with new state-of-the-art electronic machines, they would avoid technical problems while making voting more attractive to constituents. Their old voting machines—900-pound booths—were difficult to transport and were beginning to experience mechanical problems. Because the machines were no longer being manufactured, they were also very expensive to maintain. So, in 1992 Montgomery County took a step into the future by replacing its 40-year-old voting booths with new MicroVote machines.

The debut of the MicroVote system was fraught with machine breakdowns and software malfunctions, and long lines for voters. MicroTech, the makers of the system, reported that 49 machines had experienced repeated power failures. The president of...
MicroTech attributed problems to an inadequate number of voting machines, insufficient voter and poll-worker education, scroll problems, and printer jams in the voting machines, in addition to a lack of understanding about cross-filing votes. To avoid the same problems in the April primary election, each machine was inspected, repaired, and tuned by technicians eager to please MicroTech’s largest customer. Unfortunately, even with these efforts in place, problems such as power failures, scrolling errors, and misaligned ballots were rampant, leading to long lines and voter frustration. A later report by the county Voter Services Department pointed to problems with 17.7% of all the MicroVote machines used. MicroTech disputed the county figure and claimed the voting machines had an operating ratio of 99.86% during the primary, probably supported by very different measuring methods. In addition, the design of the MicroVote machines, with its wing-like side panels, simply did not afford the voters enough privacy. It was reported that one voter held an opened umbrella behind him while making his selections. At another election, the same person brought a blanket and had two friends hold it behind him. Montgomery County later switched to another vendor of voting machines and enjoyed better success.

Oslo County, the seat of the Norwegian capital, has traditionally had one of the most accurate voting systems in Norway due to extensive training of election officials. In 1988, however, the time had come to shed the inefficient manual system and move into the 21st century. A request for proposals for a fully automated voting system was announced, and a state-controlled computer services company was selected. During the next two years, the system was extensively tested. Because the current law of Norway did not allow for the use of a fully automated voting system, two parts of the system were selected for use and testing during the local elections of 1991. Checking of voter registration was partially tested, and optical reading of votes was fully tested. No significant problems were reported from the tests.

Come the parliamentary election in 1993, the voter registration and optical reading subset of the system were put into full use in what was expected to be a ticker-tape parade of modern information technology. The accuracy and speed of the automated voting system was even cited as a reason for not allowing newspapers to conduct exit polls outside of the polling buildings. With the successful demonstration of the advantages of information technology, the parliament would probably be pressured to consider changes to the law, opening for greater IT use in elections. In fact, such changes were already under consideration by the government. Unfortunately, just after the system started up, the voter registration subsystem failed. A simple programming error in the communication unit connecting the local systems with the central database was corrected in a few hours, but only after creating an unacceptable situation with long lines of irate voters waiting outside the polling stations. Just minutes before the error was corrected, however, the decision to return to the manual system was made, and the parade was over.

In the aftermath of the election, the local election board of Oslo voted unanimously not to accept the results of the Oslo election. The decision was based primarily on the technology problems. Simultaneously, representatives for one of the largest political parties in Norway demanded that a high-ranking administrator involved with the election be removed from his position. The most serious problem, however, was that the allocation of almost 15% of the total parliamentary seats were unconfirmed for a month. Finally, in what one newspaper called a “scandalous decision,” the same parliament that had just been elected decided to accept the results of the Oslo election. In the aftermath of the election, all attempts at electronic elections were stopped, and Norway was set back many years in its move towards teledemocracy. All the result of a single programming error. Years later, there are still no plans to introduce any IT solutions into Norway’s election system.

Two different cases of first steps toward teledemocracy have been described. In one case, the officials involved never gave up, persisting in their beliefs in technology. In the other case, the technology was abandoned after the first technical glitch. It is time to take stock of the experiences gained from these two cases. By extrapolating from the experiences with conventional voting technology, some lessons for teledemocracy technology implementations may be learned:

• Habits matter. People in Monroe County had been accustomed to a certain level of service. Though it may not have been a very fancy system, it worked, and people were used to how it worked. Voters may be expected to react negatively to any deviation from the service to which they are accustomed.
• **Simplicity matters.** In Monroe County, voters met with systems that did not display the whole set of choices on one screen. Many voters were confused by these setups. When designing voting systems, it is important to understand that the user population is not the same as the mainly self-selected population using PCs at home and at work. The voter population will include people with little or no computer experience.

• **Privacy matters.** These same voters will expect any technological solution connected to elections or teledemocracy to maintain their privacy. The “umbrella-person” from Monroe County may serve as a good example of the U.S. standard that all voters are entitled to privacy when casting their ballots. Any real or perceived threat to a voter’s privacy will probably lead to extensive negative publicity.

• **Failure sensitivity.** This area is very sensitive in terms of failures. Even subpercentage failure rates may affect the votes of thousands of people, and are unacceptable. Such errors may, in addition to receiving much attention from the press, leave potential voters disillusioned about their role in our democracy.

• **Power and change.** In our democratic system, many people have become powerful players by understanding and working within the current system. Any significant change in the system is likely to affect the power-base of the current players, thereby leading some powerful players and stakeholder groups to resist the introduction of a teledemocracy.

• **High visibility.** When the technology driving teledemocracy fails, it is hard or impossible to cover it up. Such failures are likely to be widely publicized. Both the Monroe and Oslo cases were highly publicized.

• **Problems combine.** The first six lessons combine to form a final lesson. The technology involved in teledemocracy implementation must be easy enough that anyone can use it. Both the perception and reality of privacy must be maintained. The failure sensitivity and the high visibility of teledemocracy implementations combine to support those resisting the change to which teledemocracy leads. If all six lessons are heeded, the implementation of a teledemocracy will be much more likely to succeed.

Though this article was based on two cases of failed implementations, it is important to note that the article takes no stand on the likelihood of teledemocracy failure, only what may happen if the technology behind it fails. New York’s Assembly Speaker Sheldon Silver [1] has suggested that “no one gets credit for spending money on voting machines.” An important question to ask may be whether anyone will get credit for implementing the technology needed to create a teledemocracy. If not, the reality of teledemocracy may be further away than generally perceived. Therefore, when implementing the technology needed for teledemocracy, practitioners must be more vigilant than ever. Potential failures must be avoided through special attention to design and vigorous testing of all elements involved in the technology solution, while political support must be ensured.

**References**