

TECHNOLOGY AS IF PEOPLE MATTERED

PROCRUSTEAN SOLUTIONS

by Michael Yard

Procrustes, according to Greek mythology, had a house by the side of the road where he offered his hospitality to every passing stranger, inviting his guests in for a pleasant meal and a night's rest on his very special bed. According to Procrustes, his bed had a magical property—its length fit exactly anyone who lay down upon it. What Procrustes didn't volunteer was the method by which his one-size-fits-all was achieved. If the guest was too tall, Procrustes cut off his legs; if he was too short, he was put on a rack and stretched to just the right height.

Procrustes is alive and well in 2001. Posing as salesperson, consultant, or devotee of technology, he continues to lure the unsuspecting with promises of solutions that magically adapt to provide a perfect fit for every problem. A well-known adage among computer programmers describes the Procrustean approach: if you are trying to sell a hammer, every problem begins to look a lot like a nail.

Technology sometimes does provide almost magical solutions to real-world problems. But all too often the promises of technology are misapplied, particularly in the case of elections technology. In the past seven years working as a consultant in international election administration, I have seen plenty of unsuitable applications of technology, including:

- Fully funded proposals to provide fax machines to district electoral offices that have neither electricity nor phone lines
- A \$5 million voter ID card system dependent upon biometric identification to prevent duplicate registration for less than a million voters. That computes to \$5 per voter for a system that six months after the election has still not produced the ID cards
- An electronic ballot box to automatically scan and count ballots—for use in a country where power outages for more than 20 hours per day are the norm
- A plan to deploy 30,000 laptop computers in a gigantic wide-area-network to register 50 million voters, again in a country without reliable electricity or telephone connections

The introduction of the concept of “appropriate technology” is most often attributed to British economist, E.F. Schumacher, in his classic book, *Small is Beautiful: Economics as if People Mattered*. In the title, as well as throughout the book, Schumacher gives an appropriate framework for evaluating technological and economic systems.

To stop the rampant misapplication of technology, we need criteria to help election decision makers decide upon the appropriateness of any proposed solution. Based on my first-hand experience, I propose the following criteria for applying technological solutions and encourage those in charge of IT decisions to refine them based upon their experience.

Appropriate technology:

- *Matches the problem to be solved.* First, a thorough effort must be made to define the problem. Every appropriate application of technology begins with a detailed requirements analysis, which should be completed before beginning to evaluate proposed solutions.
- *Matches the environment in which it must be used.* An integral part of the requirements analysis is determining any environmental considerations: electrical supply, communication media, security concerns, and availability of replacement parts and technological skills to operate and maintain the system.
- *Matches the budget and available funding.* The proposal should consider the total cost of ownership over the lifecycle of the technology and the return on investment. The solution should represent a responsible use of resources, regardless of who is paying the bill.



- *Is flexible and updateable.* Technology that allows for incremental change, or for a phased-in approach, is preferable to a one-size-fits-all full-scale overhaul. The solution should fit into the existing infrastructure as much as possible, instead of making the organization adjust to fit the solution.
- *Takes into consideration the legal, regulatory, procedural, and cultural framework.* It also fits in as part of an integrated system approach to elections. For example, if the solution requires sharing of data between different organizations, it is important to know whether the country's privacy protection laws allow such sharing. Or, if the solution depends upon photo ID cards, it is relevant to consider whether there are any cultural inhibitions about taking photos.

For all its abuses, technology has provided significant improvements to electoral processes, and there are many examples of solutions that fit the problem:

- In Ukraine, the Central Election Commission used a computer-telegraph interface that it allowed it to build a nationwide network using wiring that was already in place but no longer used. This new network reduced the time for reporting election results from several days to a few hours after the close of the polls.

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- In Ghana, voter registration was accomplished using optical-mark reading technology, the same technology used by the West African Exams Council. Teachers, all of whom were familiar with the technology and the importance of correctly shading the forms, were used as registrars.
- The publication of election results on the Internet, practiced with varying degrees of success by many countries, has given voters and international observers immediate access to more detailed data than is accessible via other new media.

Technology should serve human needs, rather than requiring people to serve the interests of the latest, greatest technology. Those in search of technological solutions would be well advised to carefully measure how well the solution fits the problem before accepting Procrustean claims that the bed will magically adjust to provide a perfect fit.

Michael Yard is a consultant who helps design election technology solutions.

A COMMON LANGUAGE

by T.J. Rainsford

Accenture, Microsoft, and election.com recently teamed to form the Election and Voter Services Technical Committee. This assemblage brings together vendors, manufacturers, election-related NGOs, and industry experts in an effort to define an open architecture standard for developing Extensive Markup Language (XML)-based election services systems. The three companies formed the Committee under the auspices of the Organization for the Advancement of Structured Information Standards (OASIS), an international, non-profit organization that works to develop industry-specific structured information standards using XML and Standard Generalized Markup Language (SGML).

XML is a method of "tagging" information so that it can be read by other electronic systems across computer platforms. Unlike other Web-based protocols like Hyper Text Markup Language (HTML), XML tags can be defined to meet specific industry or information requirements. The OASIS Technical Committee is defining the tagging schemes for data related to conducting elections, producing ballots, and processing votes. The Technical Committee will be working over the next year to develop standards for the use of XML in voting systems. The Committee also plans to issue recommendations for the application of these standards around the world.

The purpose of the Election and Voter Services Technical Committee is to develop a standard for the structured interchange of data among hardware, software, and service providers who engage in any aspect of providing election or voter services to public or private organizations. The services performed for such elections include (but are not limited to):

- *voter role/membership maintenance (new voter registration, membership and dues collection, change of address tracking, etc.)*
- *citizen/membership credential review*
- *requests for absentee/expatriate ballots*
- *election calendaring*
- *logistics management (i.e. polling place management)*
- *election notification*
- *ballot delivery and tabulation*
- *election results reporting and demographics*

For further information on the OASIS and the Election and Voter Services Technical Committee, please visit www.oasis-open.com or contact T.J. Rainsford at tjrainsford@kdlltd.com.