



## **Public Statement to the Presidential Commission on Election Administration**

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*“Voting is fundamental to our democracy, and when voters go to the polls, they expect to cast their ballot privately and have their votes counted accurately.<sup>1</sup>”*

The Human Factors and Ergonomics Society (HFES) strongly encourages the Presidential Commission on Election Administration (PCEA) to incorporate human factors considerations when crafting its recommendations to President Obama for improving the voter experience. The field of human factors and ergonomics works to develop safe, effective, and practical human use of technology, particularly by developing scientific approaches for understanding the ways in which humans interact with complex systems, known as “human-systems integration.”

Human factors research can help to improve usability and accessibility in the voting system by contributing to greater understanding of how the devices we use, such as voting machines, and the environment in which we interact, such as the polling place, interact to affect human decision-making. Application of human factors in the development of new systems and processes will enable an enhanced voting experience, one that can ensure access for all Americans seeking to cast their vote.

This is not a new challenge for the scientific community. Researchers have been addressing voting technology, accessibility and usability issues for decades. HFES is particularly encouraged by research and guidelines developed by the National Institute of Standards and Technology (NIST)<sup>2</sup>. Work at NIST has highlighted the importance of clear ballot instructions, including language, placement, and font; developed a style guide for voting systems documentation; created guidelines for writing clear instructions and messages for voters and poll workers; and proposed human performance metrics for voting equipment. Applying these human factors and usability considerations to design can promote human understanding of voting technology, as well as how to use voting materials and technology more easily and comfortably, making the process more effective.

Some work has previously been done to translate human factors research findings into voting practices. In 2002, the Federal Election Commission approved an updated standard for national voting systems creating requirements for all voting technologies to ensure quality and integrity. In 2003, the Institute of Electrical and Electronics Engineers (IEEE) developed a standard, IEEE P1583, for the equipment used by voters and precinct workers. Despite these advancements, though, more work is needed to ensure that voters are able to reliably cast their vote for their intended candidate in a reasonable amount of time and in a manner that does not lead to stress or confusion.

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<sup>1</sup> Jastrzembski, T. S. (2004). Human factors and voting technology. Proceedings of the Human Factors and Ergonomics Society 48th Annual Meeting, 2173-2177.

<sup>2</sup> <http://www.nist.gov/itl/vote/publications.cfm>



Therefore, HFES urges the Presidential Commission on Election Administration to consider the following principles:

- Research findings from human factors, including human-systems integration, must be considered when setting standards and guidelines for improving the voter experience, especially with respect to usability and accessibility. Research findings suggest that designs that are helpful to older voters and voters with disabilities are also useful to younger and more able-bodied voters.
- Human factors research findings must be considered at all relevant points in the voting process. This includes the design and layout of the voting machines at the polling place, the design of the voting technologies themselves, the design of the ballots, and the role of the poll workers.
- Human factors must be considered with respect to management and poll worker processes, materials, and technologies. Although proper training is important, effective design and implementation of technology and systems increases efficiency and usability, ultimately reducing long lines and confusion.
- Attention must be paid to four key characteristics: the ability of the voter to cast a vote for the intended candidate; the ability to vote in a reasonable amount of time and with reasonable effort; user satisfaction, that is, the ability to vote without stress or confusion; and the ability to verify one's choices before casting one's vote.

Additional human factors resources for your consideration include:

- Everett, S. P., Byrne, M. D. & Greene, K. K. (2006). Measuring the usability of paper ballots: Efficiency, effectiveness and satisfaction. Proceedings of the Human Factors and Ergonomics Society 50<sup>th</sup> Annual Meeting, 2547-2551.
- Fryklund, I. (2004, January). Human Factors and the Kosovo Election Process. *Ergonomics in Design: The Quarterly of Human Factors Applications*, vol. 12, 1: pp. 6-11.
- Howell, W. C. (2000). HFES on the Florida ballot issue. *HFES Bulletin*, 43(12), 1.
- Jastrzemski, T. S. & Charness, N. (2007, October). What Older Adults Can Teach Us About Designing Better Ballots. *Ergonomics in Design: The Quarterly of Human Factors Applications*, vol. 15, 4: pp. 6-11.
- Jastrzemski, T. S. (2004). Human factors and voting technology. Proceedings of the Human Factors and Ergonomics Society 48<sup>th</sup> Annual Meeting, 2173-2177.
- Law, C. M., & Vanderheiden, G. C. (2001). Voting reform can include everyone: Average citizens, the aging population, and people with disabilities. Proceedings of the Human Factors and Ergonomics Society 45<sup>th</sup> Annual Meeting, 747.
- O'Hara, J. M. (2002). Improving voting systems. *HFES Bulletin*, 45(11), 1.

Thank you for the opportunity to express these views on behalf of the Human Factors and Ergonomics Society. Please do not hesitate to contact HFES should you require additional information.

The **Human Factors and Ergonomics Society (HFES)** is a multidisciplinary professional association with 4,500 individual members worldwide, including psychologists and other scientists, engineers, and designers, all with a common interest in creating safe and effective products, equipment, and systems that maximize and are adapted to human capabilities.