

Testimony of
Dr. Herbert Lin
Chief Scientist, Computer Science and Telecommunications Board
National Research Council
Before the
Election Assistance Commission
November 13, 2007

Good morning Commissioners and thank you for the opportunity to address you today. My name is Herbert Lin, and I am chief scientist at the Computer Science and Telecommunications Board of the National Research Council. The National Research Council is the operating arm of the National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine of the National Academies, chartered by Congress in 1863 to advise the government on matters of science and technology.

I am the study director of the Academy project on State Voter Registration Databases that the Election Assistance Commission (EAC) is sponsoring. It is a three year project in which we have empanelled an expert committee, co-chaired by Sharon Priest, former Secretary of State of Arkansas, and Olene Walker, former Governor of Utah. We are organizing a series of workshops under the auspices of this committee and through this committee the National Research Council will be issuing an interim and final report to address challenges in implementing and maintaining state voter registration databases and provide advice to the states on how to evolve and maintain these databases in order to share information with other states securely and accurately in fulfillment of the Help America Vote Act of 2002.

This project has two goals. The first goal is to provide useful advice to the elections community on statewide voter registration databases—how they might be implemented, what kinds of difficulties might be encountered in their implementation, and what solutions might help to overcome these difficulties. This advice will be provided in two reports to the EAC.

We expect to complete an interim report by April 1, 2008 that will outline challenges to achieving interoperability of state voter registration databases; describing potential solutions to these challenges; and discussing specific timelines over which state and local election officials could implement possible solutions, including solutions that could be implemented prior to the 2008 Federal election.

A final report, due at the end of the project (3rd quarter, CY 2009), will build on the interim report by describing the technical, procedural, and organizational impediments to full voter registration database interoperability and outline a plan for achieving interstate interoperability of state voter registration databases. The final report will address such issues as: (1) What is the current state of voter registration databases across the states? (2) What functionality is useful for a state in checking its voter registration database against that of another state? (3) What are the

main technical, procedural, and organizational impediments standing in the way of full interoperability? and (4) What paths to interstate interoperability minimize technical risk and expense?

The second goal of the project is to catalyze discussions and interactions in the elections community with information technology (IT) experts to which the elections community does not normally have much access. In 2005, the National Academies worked with the EAC to bring together election officials, state IT managers, and some of the most experienced and senior information technologists and computer scientists around the country. Two meetings were held in 2005 with these participants, and the uniformly positive response from the elections community to these meetings led directly to the discussion aspect of the current project.

To support this second goal, we will hold six workshops in the 2007-2008 time frame. These workshops will be oriented towards small-group discussions among technology experts and state and local election officials in order to facilitate the exchange of ideas among the participants.

To date, we have empanelled the study committee, the roster of which is attached. On August 6, 2007, we held an inaugural committee meeting and workshop in Washington, D.C. That event featured presentations on the status of voter registration database efforts, technical and operational issues associated with record matching, and lessons to be learned from interoperability and database operations in other domains. We are currently completing planning for the second workshop, to be held on November 29-30, also in Washington, DC. Details about this workshop and registration information are available at CSTB's Web site, <www.cstb.org>.

The proceedings from these two workshops—oriented towards expert presentations—are a primary source of input to the committee for its deliberations prior to the preparation of the interim report. After the interim report is issued, the discussions of the remaining workshops will add to the committee's knowledge base for preparation of the final report.

I should add that we are casting a broad net for participation in and input into subsequent workshops. To that end, we encourage members of the election community to make their interests and concerns known to us, so that the workshops can be structured in the most useful and appropriate ways. We look forward to working with the Commission in the months to come.

Committee on State Voter Registration Databases

Ms. Sharon Priest - (Co-Chair)
Downtown Little Rock Partnership

Sharon Priest, co-chair, is executive director of the Downtown Partnership a non-profit organization devoted to developing downtown Little Rock, Arkansas. In 1994 Ms. Priest became the first woman elected to be Arkansas Secretary of State. In 1998 she was re-elected to a second and last (term-limited) term as Secretary of State. As Secretary of State, she successfully implemented the National Voter Registration Act (NVRA) in Arkansas. In 2000 she was elected President of the National Association of Secretaries of State. After the 2000 presidential election, she was thrust into the forefront of the movement toward election reform. Ms. Priest testified before U.S. House and Senate Committees on election reform. In 2005 she was appointed to the Federal Reserve Bank Board of Street Louis. She was also recently appointed to the Carter-Baker Commission on Federal Election Reform. She was a Toll Fellow in 1995, and has won numerous distinctions including the Excellence in Leadership Fellowship, Women Executives in State Government, 1997 and TIME/NASBE Award for Outstanding Leadership in Voter Education, 1996.

The Honorable Olene Walker - (Co-Chair)
State of Utah

Olene Walker, co-chair, was the first woman Governor of the State of Utah. Before being appointed as governor, she served as the first woman Lieutenant Governor of Utah. During her time in office, Dr. Walker spearheaded many important initiatives including education programs, budget security measures, healthcare reform, and workforce development. She also worked to implement the federal "Motor Voter" legislation in Utah and oversaw the plan to bring Utah into compliance with the "Help American Vote Act" (HAVA). She has chaired the National Conference of Lieutenant Governors and is a past president of the National Association of Secretaries of State. She was the first Lieutenant Governor ever to serve as the president of that organization. Dr. Walker received her Bachelor's, Master's and Doctorate degrees from Brigham Young University, Stanford University and the University of Utah, respectively.

Dr. Rakesh Agrawal
Microsoft Search Labs

Rakesh Agrawal, NAE, is a Microsoft Technical Fellow at the newly founded Search Labs. His areas of expertise are in developing fundamental data mining concepts and technologies and pioneering key concepts in data privacy, including Hippocratic Database, Sovereign Information Sharing, and Privacy-Preserving Data Mining. He is the recipient of the ACM-SIGKDD First

Innovation Award, ACM-SIGMOD Edgar F. Codd Innovations Award, ACM-SIGMOD Test of Time Award, VLDB 10-Yr. Most Influential Paper Award, and the Computerworld First Horizon Award. He is a member of the National Academy of Engineering, a fellow of ACM, and a fellow of IEEE. Scientific American named him to the list of 50 top scientists and technologists in 2003. Prior to joining Microsoft in March 2006, Dr. Agrawal was an IBM Fellow and led the Quest group at the IBM Almaden Research Center. Earlier, he was with the Bell Laboratories, Murray Hill from 1983 to 1989. He also worked for 3 years at India's premier company, the Bharat Heavy Electricals Ltd. He received the M.S. and Ph.D. degrees in Computer Science from the University of Wisconsin-Madison in 1983. He also holds a B.E. degree in Electronics and Communication Engineering from IIT-Roorkee, and a two-year Post Graduate Diploma in Industrial Engineering from the National Institute of Industrial Engineering (NITIE), Bombay.

Dr. R. Michael Alvarez
California Institute of Technology

R. Michael Alvarez is a professor of political science at the California Institute of Technology (CalTech). His research interests have been in the areas of elections and electoral behavior, survey methodology, statistics and political methodology, and more recently, election administration. Professor Alvarez is currently the co-director of the Caltech/MIT Voting Technology Project and recently co-authored a book from Brookings Institution Press, Point, Click and Vote: The Future of Internet Voting. Professor Alvarez received his Ph.D. and M.A. degrees in political science from Duke University and his B.A., magna cum laude, in political science from Carleton College.

Ms. Charlotte W. Cleary
Independent Consultant

Charlotte Cleary, retired, was general registrar of Arlington for 19 years. As such, she was responsible for planning, organizing, and directing voter registration and elections. After she retired, she continued working in the election field on a temporary basis. She has served as a member of the writing and research team for the Poll Worker Institute grant on poll worker recruitment, training, and retention, for the Election Assistance Commission. In 2004 she served on the Virginia State Board of elections evaluation committee to review RFPs for the new statewide election system. She was a certified professional general registrar in Virginia under the Weldon Cooper Center from 1994 through 2000. She has been a member of the Federal Election Commission Advisory Panel from 1998 through 2003, the Election Center from 1990 through 2003, and the Constitution Project Forum on Election reform from 2001 to 2003. She received a B.A. in English from American University, in Washington D.C.

Dr. Gary Cox
University of California, San Diego

Gary W. Cox, NAS, is a professor of political science at University of California, San Diego. In addition to numerous articles in the areas of legislative and electoral politics, Professor Cox is author of *The Efficient Secret* (winner of the Samuel H. Beer dissertation prize in 1983 and of the 2003 George H. Hallett Award), coauthor of *Legislative Leviathan* (winner of the Richard F. Fenno Prize in 1993), author of *Making Votes Count* (winner of the Woodrow Wilson Foundation Award, the Luebbert Prize and the Best Book in Political Economy Award in 1998); and coauthor of *Elbridge Gerry's Salamander: The Electoral Consequences of the Reapportionment Revolution*. His latest book, *Setting the Agenda*, was published in 2005. A former Guggenheim Fellow, Professor Cox was elected to the American Academy of Arts and Sciences in 1996 and the National Academy of Sciences in 2005. He received a Ph.D. from the California Institute of Technology in 1983.

Dr. Paula Hawthorn
Independent Consultant

Paula Hawthorn, retired, serves as a consultant and continues her involvement with U.C. Berkeley. She received her Ph.D. in Electrical Engineering and Computer Science from the University of California in 1979. Her thesis topic was on the performance of database systems. She has spent much of her career as a manager of database development, including Vice-President of Software Development for start-ups such as Britton Lee and Illustra, and both management and individual contributor positions at Hewlett-Packard (working on database performance issues) and Lawrence Berkeley National Laboratory.

Ms. Sarah Ball Johnson
Kentucky Board of Elections

Sarah Ball Johnson currently serves as the executive director of the Commonwealth of Kentucky's State Board of Elections. She has twelve years of experience in election administration on the state level. She has a Bachelor of Arts degree in Business Administration from Transylvania University and a Master of Public Administration degree, specializing in state and local government, from the University of Kentucky. She participated in four international election observation trips to Slovakia, Kosovo, Macedonia and Nigeria. She is a member of the National Association of State Election Directors and serves as the Southern Region Representative on the Board of the association. She serves on the Election Assistance Commission Standards Board. She was elected by his peers to the Executive Committee of the Standards Board and serves as Chair of the Executive Committee. She is a member of the Election Center.

Mr. Jeff Jonas
IBM Software Group

Jeff Jonas is a distinguished engineer and chief scientist of Entity Analytic Solutions at IBM. He is responsible for shaping the overall technical strategy of next generation identity analytics and the use of this new capability in the overall IBM technology strategy. The IBM Entity Analytic Solutions group was formed based on technologies he developed as the founder and chief scientist of Systems Research & Development (SRD). SRD was acquired by IBM in January 2005. He applies his real world experience in software design and development to drive technology innovations while delivering higher levels of privacy and civil liberties protections. He is a member of the Markle Foundation Task Force on National Security in the Information Age and actively contributes on issues of privacy, technology, and homeland security to leading national think tanks, privacy advocacy groups, and policy research organizations, including the Center for Democracy and Technology, Heritage Foundation, Center for Strategic and International Studies, and the Office of the Secretary of Defense Highlands Forum.

Mr. John W. Lindback
State of Oregon

John Lindback is director of elections for the State of Oregon, a position he has held since March 2001. His duties include enforcing laws governing the conduct of elections in Oregon, enforcing Oregon's campaign finance laws, administering the state's initiative and referendum process and publishing state voters' pamphlets. Previously, he worked for six years as chief of staff for the Lieutenant Governor of Alaska, a job that included administrative oversight of Alaska's statewide election system. After earning a journalism degree from the University of Arizona in 1976, Mr. Lindback reported on government for newspapers for 12 years. He has worked in the public sector since 1988 as a budget analyst, legislative finance aide, public information officer, chief of staff to a lieutenant governor and now state elections director. He is secretary of the National Association of State Elections Directors. He was also elected to the Executive Board of the Elections Assistance Commission's national Standards Advisory Board; a group composed of 110 elections officials from across the nation.

Mr. Bruce A. McPherson
State of California [Retired]

Bruce McPherson was the 30th California Secretary of State. The first 26 years of his career he worked in the newsroom of the family-owned Santa Cruz Sentinel, serving as sports editor, news reporter, city editor, and editor. During this time he served on, and was president of, numerous community organizations. In his 11 years in the California Legislature, he focused his attention on education, environmental protection, and public safety. In the aftermath of the resignation of the California's Secretary of State in early 2005, Governor Arnold Schwarzenegger nominated

him to be Secretary of State. Mr. McPherson was confirmed unanimously in both the Senate and the Assembly. While in office, he updated the information technology required to meet election laws, and oversaw three statewide elections and two special elections. Mr. McPherson graduated from Cal Poly – San Luis Obispo with a B.S. degree in Journalism in 1965. He subsequently was given an honorary degree in Humane Letters from Cal Poly – San Luis Obispo in 2005.

Ms. Wendy Noren
Boone County, Missouri

Wendy Noren is county clerk of Boone County, Missouri, a position she has held since 1982, and she managed the election division of the office for 4 years prior to that. Ms. Noren is responsible for keeping records of the orders, rules, and proceedings of the County Commission. In addition, she is responsible for inspecting and reviewing all voter precinct boundaries within the County and conducting elections. Throughout this period, she has served as a programmer for all of the voter registration functions. Over the past 25 years, she has been one of the first to implement emerging technology for the county's voter registration system--often years before most jurisdictions. As both the programmer and user, she has a unique perspective on the critical components of a voter registration system. Other administrative responsibilities of the Clerk include maintaining payroll files, administering employee benefits, administering the Records Management budget, and procuring adequate insurance and bonding for the County's assets and elected officials.

Ms. Fran Ulmer
University of Alaska, Anchorage

Fran Ulmer is the interim chancellor of the University of Alaska, Anchorage, bringing to this position 30 years of experience of public policy in Alaska. Previously, she was a fellow at the Institute of Politics at Harvard University's Kennedy School of Government and a Distinguished Visiting Professor of Public Policy at the Institute of Social and Economic Research. In the early 1980s, she was the Mayor of Juneau, then a member of the Alaska House of Representatives (1986-1994) and in 1994 she became the first female Lieutenant Governor of Alaska. In that year, she was appointed to the North Pacific Anadromous Fish Commission by President Bill Clinton and served on this international board for 11 years. She has participated in numerous panels, task forces, commissions and forums as a speaker, moderator and panelist to address the intersection of science, economics, politics and policy. She currently serves on the Board of Trustees of the National Parks Conservation Association, the Advisory Board of the Union of Concerned Scientists and the Alaska Nature Conservancy Board. At the national level, Ms. Ulmer has served as a member of the North Pacific Anadromous Fish Commission, the Federal Communications Commission's State and Local Advisory Committee, and the Federal Elections Commissions Committee. She has a B.A. in political science and economics and a Law Degree from the University of Wisconsin.

Dr. William E. Winkler
Bureau of the Census

William Winkler is a principal researcher with the U.S. Census Bureau. He is a fellow of the American Statistical Association. He has published over 130 papers and has developed eight (and counting) generalized computer systems for record linkage, edit/imputation, multipurpose and multiway sampling, text classification, and masking for public-use microdata. Dr. Winkler holds a Ph.D. in probability theory from Ohio State University.

Dr. Rebecca N. Wright
Stevens Institute of Technology

Rebecca N. Wright is an associate professor of computer science at Rutgers University. She is also Deputy Director of the DIMACS Center for Discrete Mathematics and Theoretical Computer Science. Prior to that, she was a professor of computer science at Stevens Institute of Technology and a researcher in the Secure Systems Research Department at AT&T Labs and AT&T Bell Labs. Her research spans the area of information security, including cryptography, privacy, foundations of computer security, and fault-tolerant distributed computing. Professor Wright serves as an editor of the Journal of Computer Security and the International Journal of Information and Computer Security, and was a member of the board of directors of the International Association for Cryptologic Research from 2001 to 2005. She was a co-author on a study, "Statewide Databases of Registered Voters: Study of Accuracy, Privacy, Usability, Security, and Reliability Issues," commissioned by USACM. She was an invited speaker in the National Academy of Engineering's 2007 U.S. Frontiers of Engineering Symposium. She received a Ph.D. in Computer Science from Yale University in 1994 and a B.A. from Columbia University in 1988.