Lessons from Electrification for Identification

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The electrification of society started in the 1880s. By the 1950s, much of the industrialized world had been electrified, and the issues facing electrical utilities included such things as meeting demand with capacity, negotiating price compromises between regulators and operators, and improving availability and quality. As we engineered ever more sophisticated generation and distribution systems we discovered systemic failure modes that we had never anticipated, as with the 1965 Northeast US blackout. And as recently as 2003, we learned that we still hadn't entirely eliminated systemic failure. We still wrestle with these systems today, although the challenges are less about how to generate electricity or deliver high-quality service; instead, the issues are how to integrate the economic control systems that prices represent with the technical control systems that operate the systems, and how to use these economic control systems to drive the networks toward more environmentally friendly configurations.

With the advent of negligible-cost computing, storage, and networking, we're embarking on a whole range of new "-fications" as a civilization. This issue of *S&P*, under the leadership of guest editors Susan Landau and Deirdre K. Mulligan, looks at *identification*—the addition of robust identity management services to the deep infrastructure of our societies. Their guest editors' introduction (p. 13) represents a guided tour of this issue of the magazine as well as the big issues confronting the people engineering identity management systems worldwide today.

The scope of the problem is huge, the complexity is high, and the opportunity for systemic failure is substantial. When you begin to work on and change machinery that touches things that people care deeply about—either because of their pure importance, as with electronic voting, or because of their ubiquity, as with identity management—you encounter strong emotions, strong opinions, and very vigorous debate. No longer does the first to the market with the cheapest product shape the outcome.

Of course, the interesting challenge is how to get serious consideration of systemic implications before premature implementation causes harm. As we've seen with the e-voting debate, serious engagement didn't begin until after people began implementing real systems at scale. At that point, there was a crescendo of debate that now appears to be tiptoeing in the direction of good solutions.

With identity management, we could see a similar evolution. Researchers and technology developers have been thinking about and building technical identity management systems for quite some time, but society has continued to stumble along with relatively primitive, less-than-rigorous systems. The speed with which people and information move in modern society has exposed the limitations of the legacy systems, and so interest in improving the technical systems and processes is strong.

As we've seen with the electrical system's evolution and the re-engineering of the US voting system, change makes us rediscover essential assumptions and expectations about systems as well as their complexity and inherent risks. In the case of e-voting, the debate re-educated society at large about our expectations of the process, why we have such things as secret ballots, and what it takes to provide confidence that the process has been conducted fairly. With this issue of *S&P*, we hope that you'll be better prepared to participate in the debate over identity management and ensure that the non-technical policy makers who will make many of the key decisions can make high-quality choices. □

Letters to the Editors
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