

INFORMATIONWEEK

www.informationweek.com • FOR BUSINESS AND TECHNOLOGY MANAGERS • OCTOBER 7, 1996

Performance Booster

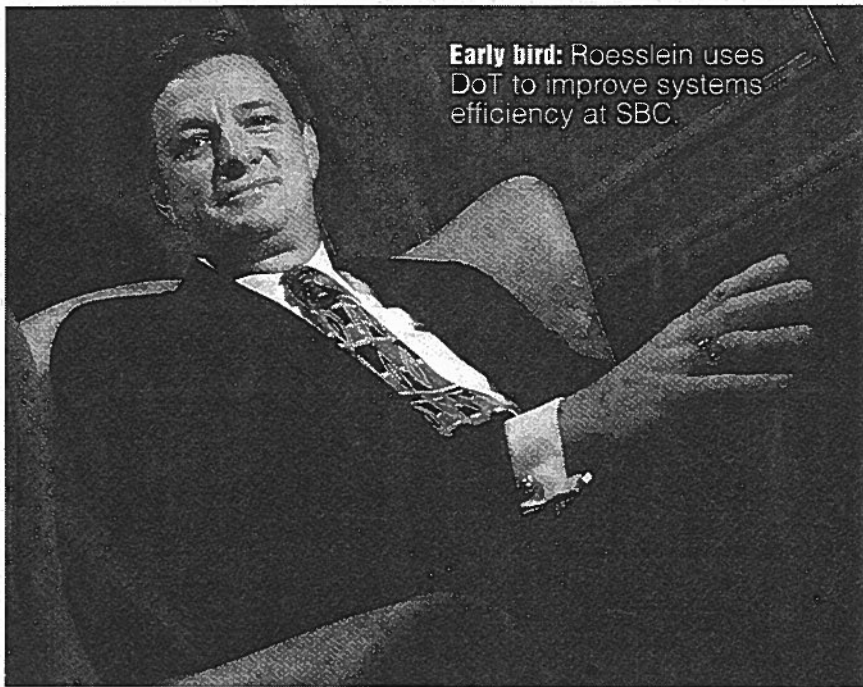
Early adopter SBC uses new technique to speed diagnosis of systems problems

Like many IS managers, Charles Roesslein, VP for IS at SBC Communications, is looking for a better way to do his job. In Roesslein's case, that means improving the efficiency of a crucial client-server network. What's different is how he's going about it.

Roesslein is an early IS adopter of a statistical diagnostic technique known as Design of Testing (DoT), also called Multivariable Testing or

Design of Experiments. Despite its rather dry-sounding names, the technique can dramatically speed the diagnosis of complex systems problems, and can help find new ways to increase system performance, say its proponents. "This could bring breakthrough changes to a system," says Mark Anderson, a principal of Stat-Ease Inc., a Minneapolis company that sells DoT software and services.

Early bird: Roesslein uses DoT to improve systems efficiency at SBC.



Put simply, DoT lets users simultaneously test several variables that can affect a system or process, instead of laboriously investigating the effect of each variable one at a time. DoT has been highly effective in improving manufacturing processes in diverse fields, including computer hardware and some service industries. But the technique is only starting to be used for addressing IS problems. "It's a challenge to get people to see that it will work," says Kieron Dey, technical director at QualPro Inc., a Knoxville, Tenn., company that is a key proselytizer of the method.

Yet DoT could be a natural solution to many IS problems. Testing a single variable at a time is slow and can miss problems that occur only when several factors interact. DoT provides a mathematical technique for sorting the potential factors into combinations that can be tested to find fast and cost-effective solutions.

Always Available

At SBC Communications, the goal is to improve the availability of a 500-terminal customer-service network used by the Bell company's reps to service or establish accounts and sell products. "I'd like it to run better," says Roesslein. "We're operating in an increasingly competitive environment, and we want to be up 7-by-24."

Roesslein describes typical glitches: "A terminal goes dead, the screen freezes, we have to re-boot ... it's

IT Management

infrequent and sort of random." But the problems happen often enough to cause headaches—and can be difficult to figure out. "It could be the type of PC we're running, or the power of the PC, or a software app on the PC," says Roesslein. "It could be the LAN in the service center. It could be the operator—human error, degree of skill, training."

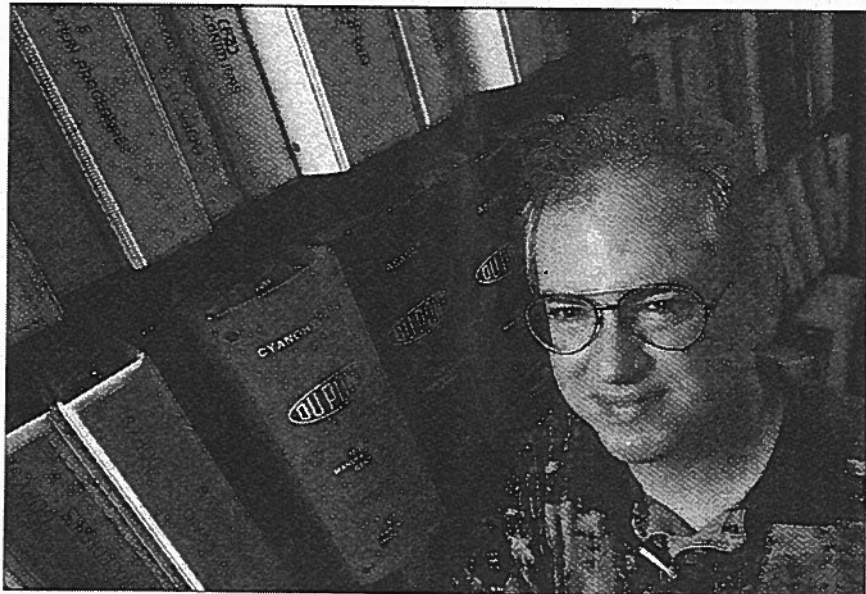
Brainstorming Everywhere

The first step SBC Communications took to address this mass of potential problem causes—and solutions—was to brainstorm across organizational boundaries for a

provide the results you need, and at an acceptable cost."

The short list of possible fixes then will be sorted by DoT statistical software to devise testing packages that each examine several combinations of variables. "If you have 30 variables to choose from, the mathematics tell you which combination of factors each rep should get," Roesslein says.

Few other companies have applied DoT directly to systems problems, but some IS organizations have found ways to use DoT for other problems. At a DuPont Co. plant in Axis, Ala., chemical engineer John Gay oversees a small IS department that serves about 300 users.



Problem solver: DuPont engineer Gay turned to DoT to improve communications between his IS department and its 300 users.

complete list of factors, says Roesslein, who has successfully used DoT to solve non-IS problems. "We wanted to have at the table anyone involved in the process at any level," he says. That included IS, other technical staff, sales, and marketing, he adds. This process identified more than 30 possible factors as diverse as network bandwidth, make of computer, operators' training, and details of operating procedures.

This fall, Roesslein plans to take the next step. "We'll cycle through the list, eliminate all but those that are cheap, quick, easy to do," he says. "It often turns out that they

"As the complexity of what we were doing increased—linking with off-site computers in other states, running a local plot server, supporting a PBX, dealing with security demands—we were getting overloaded in our communications with users," he says. To improve those communications, Gay turned to DoT, attending a QualPro course and then working with a QualPro consultant. QualPro offers four-day courses for \$995; consulting services can cost as much as \$150,000 per project.

"When we analyzed what the problems were, about 40% of them turned out to be user error," says

Gay. "People didn't know what to do, or were trying to do the impossible, and we realized that a lot of that was fixable." Gay's group ran tests using variables that included various ways that users contacted IS, IS contacted users, and problems were followed up. Gay says that by using eight test groups, each with its own combination of variables, the IS group was able to get a better view of possible solutions in one month than single-variable tests could have provided in a much longer period. "It turned out that only two or three [factors] had a real impact," Gay says. "Things we thought would be important, like contacting us in writing, weren't as important as some simple training."

Hands-On IS

Some technology managers come into contact with DoT for another reason: They're required to support the business units that are using the technique to improve other processes. "IS has to help, both in getting hands-on data and then helping format the data that's gathered," says QualPro's Dey. "That's absolutely critical, and sometimes difficult."

Ed Medford is IS manager for the Knoxville Utilities Board, which provides power, water, and gas service for more than 300,000 customers in eastern Tennessee. As the utility uses DoT for process improvements such as speeding gas-line hookups for new customers, Medford is asked to provide IT support. That includes helping process-improvement teams analyze historical data they use to measure performance.

Though the technique can be widely applied, there are some things DoT isn't good at, users say. "You need a history of results, so it's not really for designing systems from the ground up," says SBC Communications' Roesslein. But DoT may be used with many sophisticated systems as IS managers learn to apply it.

Says Anderson of Stat-Ease: "If people can think of a system as a process, then identify the factors that affect that process and measure outputs in even a semiquantitative way, this could lead to a breakthrough in performance." —Edward Cone