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The world is constantly changing and we now face more and more challenges in how we live and travel. For example, in early August, we were not allowed to bring liquids and gel on board planes. When the new ruling first came into effect, many travelers were caught by surprise and major problems were reported at many international airports. The initial ruling has since been modified to allow limited amounts of liquids and gels to be included in the carry-on luggage. Hopefully, air travel to San Antonio for the DSI Annual Meeting will be less eventful.

This issue of *Decision Line* is one that many of us are eagerly waiting for because it provides information about the Institute's meeting in San Antonio as well as several interesting articles. In the President's letter, Mark Davis of Bentley University expresses his appreciation for the time and effort that this year's Program Chair (Mo Mahmood) and his committee members have put into organizing the conference in San Antonio. He also notes from an academic perspective that many changes have occurred: "Teams have replaced the individual; transdisciplinary has replaced disciplinary; and global has replaced national." This changing academic landscape necessitates conducting relevant and rigorous research that is transdisciplinary and cross-cultural. He suggests that in this dynamic environment we must change because there is no real alternative.

In Research Issues, Thomas J. Goldsby of the University of Kentucky observes that the growth in supply chain management (SCM) research has been unprecedented. He discusses several challenges facing supply chain management researchers and calls for respectability in a newly formalized discipline. Since SCM involves several diverse business disciplines, research in this area should include collaboration among the various disciplines to gener-

ate significant contributions to both practitioners and academics.

In the Classroom feature article on "Facing the Problem of Spreadsheet Errors," Ray Panko of the University of Hawaii notes that past research has shown that few organizations have policies requiring mandatory testing of spreadsheets and only a handful of spreadsheet developers do their own testing. Typically, spreadsheet developers make errors between 2 to 5 percent of all formulas, which is high compared with about 0.1 to 0.4 percent for software. He proposes getting rid of spreadsheet programs and replacing them with special-purpose software to reduce the high error rates.

In the article on Ecommerce, Allen Schmidt of Madison Area Technical College and Kenneth Kendall of Rutgers University suggest that Ajax can make loading of Web pages more efficient and display information faster. Ajax (shorthand for *Asynchronous JavaScript and XML*) is defined as "a technique that uses a collection of existing technologies to improve the functionality of a Web interface to give it more of the look and feel of a desktop application." The article presents how Ajax works, when Web developers should use Ajax, and drawbacks of using Ajax.

The topic of business school rankings has been hotly debated since the first full-time MBA ranking was

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DSI will be a co-host for the 14th International XBRL Conference, which will take place in Philadelphia, PA on December 4-6, 2006. The theme of this year's conference will be "Interactive Data—The Revolution in Business Reporting." For more information on this conference, visit the conference website: <http://conference.xbrl.org>

150 rows contained an error large enough to be financially material. (Sarbanes-Oxley practitioners, please take note.) KPMG, in turn, found that 91% of the spreadsheets created to support decision making had an error large enough to affect the decision.

Why do programming languages and spreadsheet programs create so many errors? As it turns out, they don't. The problem is not with the software but with the people using the software. To put things in a nutshell, many years of human error research in a variety of fields have shown that human beings always have an error rate floor of about 2% to 5% for cognitive actions as complex as those in programming and spreadsheet development. Human error theory suggests that human cognition evolved to balance several competing goals, including accuracy, speed, and the need for rapid changes of attention when needed.

Consider what happened when humans were hunters. If a saber tooth tiger was approaching, a person had to shift attention instantly from what they were doing. This limited the attention given to any task. In addition, if a saber tooth tiger was approaching, it was important to act quickly. A fast action with an occasional probability of error was much better than regret while being chewed on. In addition, while occasional errors do kill hunters, new hunters are easy and fun to make.

Spreadsheet Testing and Inspection

OK, if spreadsheet errors are frequent and important, and if the tools are not to blame, what should spreadsheet developers do? Research has shown that spreadsheet errors look a great deal like software errors in type as well as frequency. This suggests that the whole traditional systems development life cycle (SDLC) discipline in programming will be needed. We must, in effect, teach new dogs very old tricks.

All phases of the systems development life cycle are important, but one is absolutely critical. This is testing. Test-

ing is the *sine qua non* of error reduction. Unless a company spends about a third of the total development effort on testing, nothing else matters.

When programmers talk about testing, they mean something very specific—plugging in input test values and ensuring that the program gives the correct result. However, selecting good test values is extremely difficult to do. In addition, programmers have behavioral “oracles” to tell them what results they should have—for instance, whether a record is updated correctly. However, complex spreadsheets need computational oracles to compute expected results. Most of the time, spreadsheet computations are so complex that there is no alternative but to use a spreadsheet to predict the results. For spreadsheet developers, traditional testing will require extensive training (which is unlikely to be available) and may be prohibitively difficult.

A more attractive approach may be inspection, in which spreadsheet practitioners go over the spreadsheet, module by module, looking at *every* formula cell in the spreadsheet. Limited research indicates that spreadsheet developers are about as good at inspection as professional programmers. Unfortunately, while people are very accurate when they build formulae, their detection rates are much lower. Inspection requires teams of three to five programmers to produce a sufficiently high detection rate. With teams, detection rates rise to between 60% and 80%. With both testing and inspection, there must be multiple rounds at different levels of integration, beginning with unit testing, then testing of small modules.

Conclusion

Why not get rid of spreadsheet programs entirely and replace them with dedicated financial modeling, statistical, and other types of special-purpose software? The most important consideration is that humans will make the same number of errors when logic is involved. Specialized programs should be able to reduce errors by reducing the

number of cognitions users will make, but they will certainly not eliminate errors. Testing and inspection will still be critical. In addition, while spreadsheets are general purpose calculation systems, specialized programs—by definitions—do things that the spreadsheet programs cannot do. If spreadsheets are needed to supplement packaged programs, they often are used for especially complex calculations. ■

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published by *Business Week* in 1988. Robert Markland of the University of South Carolina compares several major full-time MBA rankings, discusses the pros and cons of the rankings, and examines the methodologies used in the rankings. He suggests that, “All of the stakeholders in the process will gain if we can move away from an obsession on a numerical ranking to a more balanced approach which stresses overall quality.”

Chetan Sankar of Auburn University reviews the book entitled *The Art & Craft of Case Writing* (2nd ed., M.E. Sharpe), by William and Margaret Naumes. The authors drew on their vast experience as case writers in writing this interesting book. The conclusion is that the book will be useful for both novice case writers and those interested in conducting educational case research.

See you all in San Antonio soon! ■

2006 DSI Annual Meeting Website Links

DSI Annual Meeting Homepage
www.dsi-2006.org

Online Conference Registration:
www.decisionsciences.org/CIS

Hotel Reservations
www.stayatmarriott.com/DSI2006/