

for smaller developers. According to Professor Geoff Dromey, director of the institute, a new Rapid Assessment Program (based on SPICE technology) has been developed. About 30 Queensland software developers have successfully completed trials. Companies such as these typically do not appreciate the strategic benefits of SPI programs. They are too busy running hard to complete projects to be able to justify dedicating the required resources, so quick results are required.

The program provides a relatively low-cost combination of assessment, mentoring, and training during about six months to deliver a structured framework for the developer to implement ongoing improvements. SQI was founded in 1991, and has worked extensively with overseas institutes, including SEI, on SPICE and CMM programs among others.

The ASEI in Adelaide has also responded to a similar need for affordable, bite-sized, easily digestible programs suited to small-to-medium enterprises. Founded in 1995, ASEI is a cooperative enterprise between the software industry and academic and research institutions in South Australia and is supported by the South Australian Government.

Apart from a few larger branches of defense contractors, all software developers in South Australia are small-to-medium enterprises. ASEI is developing a suite of services called Sound Software Engineering Practices for small-to-medium enterprises tailored to their needs as identified in research. In phase one of these services<sup>2</sup>, emphasis is on configuration management, which the research highlighted as a major issue in more than 60 percent of small-to-medium enterprises. ASEI also has plans to roll out other modules addressing further SPI areas.

The phase-one service includes a high proportion of customized assessment and mentoring time that provides considerable flexibility and adaptability. Therefore it depends on the availability of trained and experienced staff for implementation. Trials have been successfully completed with 15 small-to-medium enterprises (mostly South Australian, but one each from Victoria and Northern Territory).

## Conclusion

There appears to be much good work in software quality and process improvement taking place in Australia. Increased activity to publicize that there is a better way to build and acquire software will result in higher awareness and create demand for the programs becoming available. This then raises the issue of how to ensure adequate resources with appropriate experience and training to support a national rollout.

If deployed more widely, programs tailored to the needs of small-to-medium enterprises, can assist in promoting the concept that worthwhile returns can be achieved on modest investments of time, resources, and money. ♦

## Notes

1. Alastair James, director of STM Consulting, undertook research for this report on behalf of SEA.
2. These research programs were funded through the Department of Communications, Information Technology and the Arts via Software Engineering Australia's (National) (SEA) project funding.
3. Stocktake of Australia's Information Industries, A report by STM Consulting Pty Ltd for the Information Industries and Online Taskforce, DIST, Canberra, 1998
4. [www.ticket.org/quality.htm](http://www.ticket.org/quality.htm)

## SEA Profile

This article is reprinted with editing from the Software Engineering Australia (National) (SEA) Software Journal, November 2000. SEA is an industry-led body with the charter of improving the quality and reliability of software in Australia. SEA is supported by the Commonwealth through the Department of Communications, Information Technology, and the Arts.

To achieve this Charter SEA focuses on these three core mission statements:

- Provision of information and services to assist entrepreneurs and managers to build evermore robust software businesses focused on exceeding customer expectations (business development).
- Provision of services for both developers and acquirers of software and software systems support for the continuous but rapid improvement of productivity, timeliness, and quality levels.
- Smoothing the path to new technology awareness, understanding, and adoption.

SEA works collaboratively with domestic and global alliances, with government departments, organizations, and professional bodies to drive its mission. SEA serves as an information network to all those in the software industry involved in the research, development, production, acquisition, and use of software in Australia.

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## Letter to the Editor

Dear **CROSSTALK**:

Theron Leishman's June 2001 article, *Extreme Methodologies for an Extreme World*, is a nice introduction to the agile-methods world. However, Figure 4, "Evolutionary/Spiral Model," is not the version of this model being endorsed by the DoD 5000 series of regulations. It is instead an Incremental Waterfall process, an example of the "Hazardous Spiral Look-Alikes" that Fred Hansen and I discussed in our May 2001 CrossTalk article, *The Spiral Model as a Tool for Evolutionary Acquisition*. Assuming that a point-solution design for the requirements in increment 1 can be scaled up to the requirements of future increments may work well for small projects

done by refactoring experts, but will generally be a disaster for larger-scale and embedded systems.

One way to fix Leishman's Figure 4 is to replace the "Requirements Analysis, Preliminary Design, ..." segments of the spiral by "Inception, Elaboration, Construction and Transition." These phases, used by the Rational Unified Process and MBASE, use risk considerations to determine under what conditions an extreme method or a more heavyweight method will best fit the system's needs.

Sincerely,  
 Barry Boehm  
 University of Southern California

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11. Welker, K.; Oman, P.W.; and Atkinson, G., Development and Application of an Automated Source Code Maintainability Index, *Journal of Software Maintenance*, 1997, May/June, pp. 127-159.
12. Lowther, B., The Application of Software Maintainability Metric Models on Industrial Software Systems, master's thesis, Department of Computer Science, University of Idaho, Moscow, ID, 1993.
13. Liso, A., Software Maintainability Metrics Model: An Improvement in the Coleman-Oman Model," CROSSTALK, Aug. 2001, pp. 15-17.

### Note

1. The discussions in this article can apply to either set of MI definitions. The majority of people use the latter set of MI definitions. I still use the original MI equations for some applications. If used to track software over its life, it is important not to change equations mid-stream. There are other variants of the MI equations that organizations have tailored for specific interests (both the 3- and 4-metric versions). The discussion in the paper generally applies to most of these as well.

### About the Author



**Kurt D. Welker** is an advisory engineer at the Idaho National Engineering and Environmental Laboratory with 14 years experience in software development, systems integration, and software measurement. He is a technical lead on the Electronic Combat System Integration Project performing reengineering, integration, and software maintenance on several electronic combat analysis models for the Air Force Information Warfare Center that simulate radar detection, weapon lethality envelopes, electronic counter-measures, reconnaissance, passive detection, and communications jamming. He functioned as the principle investigator for the development of a general-purpose lexical scanner/parser tool called the Data Stream Analyzer that provides data format integration. He also functioned as the principle investigator on a software measurement/process-improvement research initiative. He has been using MI to assess and track software maintainability for about eight years. Welker has a bachelor's of science degree in computer science from Brigham Young University and a master's of science degree in computer science from the University of Idaho.

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### Letter to the Editor

Dear CROSSTALK,

I was reading the new June 2001 issue Vol. 14 No. 6 yesterday and was non-plussed to read in three different places (From the Publisher, the abstract to the first article *Extending UML to Enable the Definition and Design of Real-Time Embedded Systems*, and the text of *The Quality of Requirements in Extreme Programming*), references to Universal Markup Language (UML).

All three of the contexts refer to the Unified Modeling Language created by Booch, Rumbaugh, and Jacobson of Rational Software Corporation. There is no real-time software design methodology called Universal Markup Language to my knowledge.

Thanks for an excellent publication.

Regards,  
Karl Woelfer  
Seattle, WA

### Coming Events

**August 27-30**

*Software Test Automation Conference*  
[www.sqe.com/testautomation](http://www.sqe.com/testautomation)

**August 27-31**

*5th IEEE International Symposium on Requirements Engineering*  
[www.re01.org](http://www.re01.org)

**Sept. 10-14**

*Joint 8<sup>th</sup> European Software Engineering Conference and 9<sup>th</sup> ACM SIGSOFT International Symposium on the Foundations of Software Engineering*  
[www.esec.ocg.at](http://www.esec.ocg.at)

**Oct. 15-18**

*16<sup>th</sup> Annual SEI Symposium*  
[www.asq.org/ed/conferences](http://www.asq.org/ed/conferences)

**Oct. 15-19**

*21<sup>st</sup> International Conference on Software Testing and EXPO 2001*  
[www.qaiusa.com/conferences](http://www.qaiusa.com/conferences)

**Oct. 22-24**

*11<sup>th</sup> International Conference On Software Quality*  
[www.asq.org/ed/conferences](http://www.asq.org/ed/conferences)

**Oct. 29-Nov. 2**

*Software Testing Analysis and Review*  
[www.sqe.com/starwest](http://www.sqe.com/starwest)

**Nov. 4-7**

*Amplifying Your Effectiveness (AYE)*  
[www.ayeconference.com](http://www.ayeconference.com)

**Feb. 4-6, 2002**

*International Conference on COTS-Based Software Systems (ICCBSS)  
At the Heart of the Revolution*  
[www.iccbss.org](http://www.iccbss.org)

**April 28 - May 3, 2002**

*STC 2002  
"Forging the Future of Defense Through Technology"*  
[www.stc-online.org](http://www.stc-online.org)