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NO. 2 2003
SPRING 2003

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S Software

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American Society for Quality

Software Division

SOFTWARE STAKEHOLDER MANAGEMENT— IT'S NOT ALL IT'S CODED UP TO BE

BY ROBIN DUDASH

The Project

It was time for the Project Team's unveiling of the new software system. A year had passed since they were first commissioned to develop a new order entry system. The Project Team was especially proud of the work they had done. They worked hard to make sure that the project was done on time, on budget, and performed exactly as everyone said it needed to. "We finally did things right this time," said the Project Manager. Everyone was sent to the application's training class to learn how to use the new system. Today was the day for the new order entry system to be used by those who had been trained.

On the other hand, the Sales Representatives did not understand why the order entry system had to change; the old one worked just fine. The first anxious Sales Representative sat down at the sophisticated new computer station to enter the first order, and said, "This is too complicated. I can't use this!" Another Sales Representative picks up the rhetoric and says, "Yes, this will never do!" The Sales Department swells with groans of frustration. A concerned Sales Manager hears the complaints and thinks about all the money that was spent. The Sales Manager glares at the Project Manager and says, "This isn't what I wanted! This will never do!" These are the very same people you trained yet a

month and a half ago. The Project Team feels betrayed. How could they do this to people who have worked so hard to get them what they wanted?

The story may be exaggerated (just a little), but haven't we all been a part of a project like this in our lifetime? Unfortunately, some of us have been the user, the proud team member, the trainer, and yes, even the one who will take the fall—the Project Manager.

Project Stakeholder Model

The Project Manager failed to realize that not only is he/she responsible for delivering the software system, but is also responsible for managing stakeholder expectations. Perhaps not even realizing who the software system's stakeholders are is the first mistake. We must recognize that 'software stakeholders' extend beyond just the user.

A formal project stakeholder model assists in the:

- identification of these stakeholders;
- definition of their specific stake in the project;
- development of a communication strategy to specifically address stakeholder interests;
- prediction of stakeholder behavior;
- and, adaptation of this strategy in the project implementation.

(cont. on p. 4)

CHAIR'S CORNER

BY MICHAEL P. KRESS

What Are the Benefits of ASQ and Software Division Memberships?

I am often asked what benefits are provided by ASQ and the Software Division. I would like to give you my perspective.

I pay \$106 to ASQ for my Senior membership, which includes *Quality Progress* and an additional free magazine subscription, plus \$8 for Software Division dues. For these dues I receive access to a host of services.



Quality Progress—I can't tell you the depth of information I find in this publication that is helpful to me on my job. Many times it has helped me justify positions I have taken on business decisions I have had to make. Overall it keeps me abreast of the latest developments in techniques like six sigma, design of experiments, the latest on standards, and methods used by others to manage effective quality programs.

ASQWire—This e-mail newsletter is delivered every other week. It contains the latest information and special offers on ASQ products and services.

ASQNet—ASQ's members-only Web site helps me gain insights and exchange ideas with people around the world.

ASQ Sections—Although I cannot attend all the local sections meetings, I have found them to be a most informative and helpful forum for learning, questioning, and networking. It is an underutilized resource that we should avail ourselves of.

ASQ Divisions—Your Software Division Council is working hard to serve you in the following ways. We provide you with the quarterly newsletter—information on interesting and informative events, organizations, certification, interest surveys, international standards, lessons learned, and job opportunities. We are also available and eager to answer a host of questions every month from division members who are seeking advice on various topics. We may not always have the answer and we cannot endorse specific services or products, but we try to refer the person to a resource that can help them. Our Web site can be found at <http://www.asq-software.org/>.

This Web site provides you with *Software Quality*, our newsletter, a link to resources, job opportunities, certification information, software body of knowledge, council members and regional councilors, conference registration information, and more. Our newsletter also provides conference summaries for those of us who can find neither the time nor the money to attend conferences in person. These summaries have been popular with members because they summarize the central message of proceedings that cover typically more than 500 pages. For example, in this issue you will find a synopsis of the *4th International Conference on Software Test (ICST[®])* held in Cologne, Germany. This is the largest testing event in Europe. The synopsis provides interesting perspectives on agile methods

and extreme programming as well as European perspectives on testing and process improvement.

Our new Web site is still under construction and will be even more robust.

Our financial resources do not come from your dues. Only \$8 of your total ASQ dues comes to our division treasury. Most of our operating revenue comes from our conferences and workshops. Because of 9-11 and the economy, our conference revenues have been hurt in recent years. We are using our revenues largely for host services, postage and telephone, and travel to our council meetings, our newsletter, our memberships in international standards organizations, such as ISO and IEEE, and for Web site enhancements. No council members are paid for their services. We are all volunteers with jobs and families. We review our finances with members at the division meeting held each year during our annual conference.

ASQ Career Services—Provides access to Internet-based tools including job search and resume service.

ASQ Quality Library—Quality Information Center - members receive free internal information searches from our QIC research library.

Discounted member rates on ASQ's Quality Press publications, certification courses, conferences, and journals.

ASQ Dues Reduction Program—for the recently retired

ASQ Dues Relief Program—for the recently unemployed

In summary, while we think we provide some valuable services, we are always trying to think of new ways to serve our members better. Toward that end, we published the results of a member interest survey in a past newsletter and are using the results to guide and enhance our services menus. Each of you is invited to feel free to contact me with your comments and suggestions so that we can maximize our contributions to you.

CONGRATULATIONS

The Software Division congratulates Chris D. FitzGibbon for being awarded the Armand V. Feigenbaum Medal for 2002. It was awarded to him "In recognition to his involvement in ASQ activities, and his contributions and accomplishments in the field of software quality management and process improvement."

In the Winter 2002 issue article "Standardized Defect Statuses" by David Brown, the author information was missing.

David Lile Brown holds a bachelor's degree from Tufts University, and a master's degree and doctorate from the University of Connecticut. He is a member of ASQ's Software Division and holds CQA and CSQE certifications. He is an independent consultant specializing in leading business process improvement teams, developing corporate quality assurance methodologies, and creating and teaching courses on quality. He may be reached at davidbrown46@cox.net.

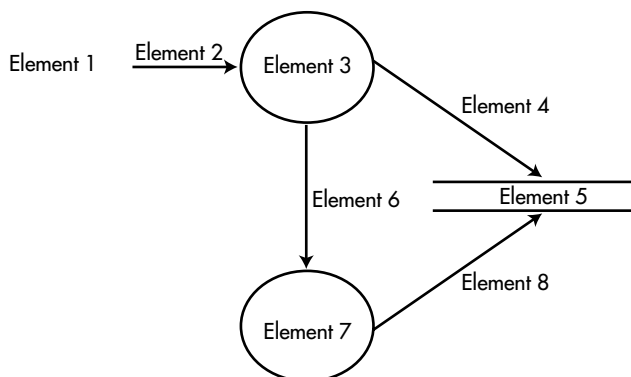
SOFTWARE QUALITY ENGINEERING QUIZ

BY LINDA WESTFALL

Whether you are preparing for the Certified Software Quality Engineer (CSQE) examination or just testing out your knowledge of software quality engineering, why don't you sit back and let your brain do its thing. The answers can be found on p. 15 if you need a helping hand.

Note: The items in this quiz are NOT from past CSQE examinations NOR were they created as part of the CSQE exam development process.

1. A software developer might be sued for malpractice if:
 - A. their software was intentionally designed to steal money from their customers.
 - B. their software program provides unreasonably poor professional services.
 - C. they knowingly misrepresented the capabilities of their software product.
 - D. their software caused injury or property damage because it was dangerously defective.
2. Put the following audit steps in the order in which they typically occur.
 1. Preparation
 2. Reporting
 3. Planning
 4. Corrective Action
 5. Execution
 - A. 1, 3, 5, 4, 2
 - B. 1, 3, 5, 2, 4
 - C. 3, 1, 5, 4, 2
 - D. 3, 1, 5, 2, 4
3. Based on the diagram at lower left, the circle labeled Element 3 is:
 - A. an entity external to the system.
 - B. a data item.
 - C. a process inside the system that transforms the data.
 - D. a repository for data (e.g., buffer, queue, data file, data-base).



This diagram is used in question 3.

4. Using the PERT method of effort estimation, if the minimum time to accomplish a task is estimated to be 30 days, the most likely time is estimated at 45 days and the maximum time is estimated at 90 days, which of the following effort estimates would be used for the task?
 - A. 30 days
 - B. 45 days
 - C. 50 days
 - D. 55 days
5. Which of the following are derived measures?
 - I. The defect density of a software work product
 - II. The size of a source code module in lines of code
 - III. The duration of a task in hours
 - IV. The phase containment effectiveness of the design phase
 - A. I and IV only
 - B. II and III only
 - C. II, III, and IV only
 - D. I, II, III, and IV
6. Which of the following testing strategies ignores the internal structure of the software?
 - A. Interface testing
 - B. Top down testing
 - C. White box testing
 - D. Black box testing
7. Which of the following would be done as part of a physical configuration audit?
 - A. A review of the verification and validation reports to verify test completeness
 - B. An evaluation of the elements of the quality system for applicability
 - C. An evaluation of the user's manuals for format and completeness
 - D. A review of all approved changes to verify their implementation

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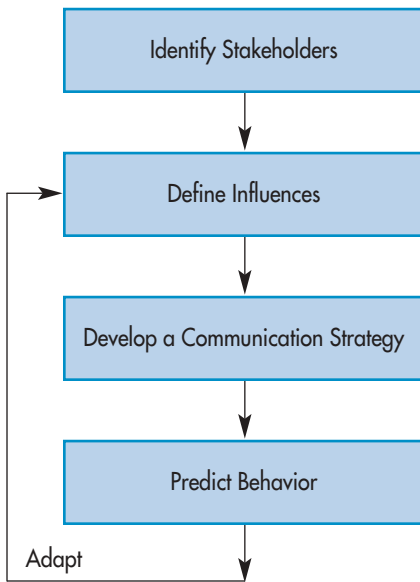
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SOFTWARE STAKEHOLDER MANAGEMENT

CONTINUED

PROJECT STAKEHOLDER MODEL



Identifying Stakeholders

There are many “software stakeholders” to be identified for a project. To identify all of the current and potential stakeholders, let us examine how software quality might be characterized with respect to stakeholder expectations. A typical software quality attribute and expectation is the lack of ‘bugs.’ However, this is a very narrow view of software quality. A more comprehensive view is defined by IBM, which measures the ability of its software products to satisfy CUPRIMDSO quality attributes – capability, usability, performance, reliability, installability, maintainability, documentation/information, service, and overall. Quality attributes such as these are what Juran calls quality parameters for “fitness for use” (Kan, 1995). Subsequently, a software product that was thoroughly tested and close to being ‘bug free’ may not meet current (or even future) stakeholder (customer) expectations, such as easy to use, quick response time, and easy to change, resulting in dissatisfaction.

Looking at this broader definition of software quality, the Project Manager in the project described can identify all of the stakeholders – the Project Team, the Software Supplier, the User Department, and the IS Department Manager. Each of these stakeholders has a different reason for having an interest in the software system. Management of these stakeholder interests is referred to as Project Stakeholder Management. While this is important in every project, it is especially important for software development where the deliverables are not as tangible as constructing a building.

Identify Behavioral Influences

Projects are developed in organizational environments. Project managers need to identify and interact with key organizations and individuals within the project systems environment. This management process is necessary to determine how the stakeholders are likely to react to project decisions, what influ-

ence their reaction will carry, and how they might interact with each other and the project manager to affect the chances for project success. The impact of project’s strategy and decisions on all the stakeholders must be considered in any rational approach to the management of a project (Cleland, 1990). The following stakeholder management model is depicted for the described project:

Stakeholder	Interest	Reason
Project Manager	Ultimate responsibility of the project execution and deliverables	Personal credibility
Project Team	Responsibility for completing assignments	Job performance
IS Manager	Ultimate responsibility for fulfilling the business need Responsible for maintaining the software in the future	Departmental worth
Sales Representatives	Responsibility for using the software to make the system work	Job performance
Sales Manager	Ultimate responsibility for fulfilling business goals	Affects ability to service customers
Software Supplier	Responsibility for fulfilling requirements	Payment Future sales performance

Develop a Communication Strategy

Once the stakeholders are identified and their interests understood, the most important activity as a Project Manager is to define the project goals, scope, and end results. The Project Manager must process the information received from the stakeholders and articulate an understanding back to obtain definition and agreement. In all cases, this definition and agreement must be documented.

Not only are these goals, scope, and end results established at the start of a project, but they must also be communicated throughout the project life cycle. Again, a project is developed in a dynamic organizational environment. The Project Manager must manage stakeholder expectations by listening to current business needs, addressing any yet unstated stakeholder requirements, and adjusting project deliverables to address those needs. What was perceived as a need a year ago may not be what is needed now.

The Project Manager must also be sure that the project owner, the IS Manager in this case, is clear on project goals and objectives. The IS Manager can assist in managing business requirements, acquiring additional resources to meet changing needs, and breaking down organizational barriers to success.

Without clear goals and objectives, the Project Manager also cannot direct the project team toward the agreed upon requirements. Given the most talented people in the company on the project, the Project Team cannot reach the goal without a clear target (Randolph & Posner, 1988).

The goals and objectives must also be communicated to the end users of the software. In return, the Project Manager must listen to the needs and concerns of the users, and assure them that their concerns are understood. User buy-in is key to managing their stakeholder expectations. Methods to obtaining user buy-in can include prototyping interfaces, and conducting train-

SOFTWARE STAKEHOLDER MANAGEMENT CONTINUED

ing early in the design phase to solicit user feedback. Obviously the more the user interface differs from the current system, the more resistance will be expressed by the user. Often, training is conducted after the design is mostly complete, which may be too late to accommodate specific needs. It should also be recognized that not all users get it in just one training class. It has been my experience that the closer training is conducted to actual system startup, the more successful the startup.

If a software supplier is used, the Project Manager must also communicate goals and objectives to the supplier and make these part of contract review. In need of special attention, but often overlooked, is the contractual training to be provided. Typical training provided by the software supplier is a “show-and-tell” class, and may not address the users’ deepest concerns “How will I use it on my job?” While a good introductory class, this type of

‘show-and-tell’ class may present more questions for the users than answers, creating a stage for animosity. The Project Manager should use this opportunity to address concerns and specific likes and dislikes to build a communication channel, and/or present actual user prototype screens as a more focused alternative.

A second training class scheduled close to system startup should train users using actual examples. A few individuals may even need one-on-one training. Of course, user manuals, as much as we like to keep them in the drawer, should be part of the project as they also are part of the communication process, perhaps in the form of a quick reference written from the users’ perspective.

Thinking that all this training adds costs to the project? Yes, it does. However, I have observed project after project that had shortcuts in training, such as not properly planning and/or not soliciting user feedback, and they ended up costing two to three times their original estimate in the end (if there was an end). Without their buy-in throughout the project life cycle, users will find every reason *not* to use the system, and the project will incur unnecessary costs just to mollify their complaints.

The following depicts a communication strategy for the Project Manager with respect to each stakeholder:

COMMUNICATIONS STRATEGY

Stakeholder	Capability	Usability	Performance	Reliability	Installability	Maintainability	Documentation/ Information	Service	Overall
Project Manager	Define and document agreed-upon goals Document agreed-upon changes Keep a global awareness to changing needs	Assess training needs for users	Define and document agreed-upon goals Learn ‘likes’ and ‘dislikes’ about current system Document system test plan	Agree upon software development methodology	Define and document installation plan	Define and document resource requirements for future growth	Reaffirm goals throughout project life cycle Project status Obtain approval of milestones Assign work breakdown packages	Address ‘likes’ and ‘dislikes’ about current system Assess training needs for project team Keep positive attitude	Reaffirm goals throughout project life cycle Communicate project status Obtain approval of milestones Assume empowerment of project management
Project Team	Understand goals	Comply with development procedures	Comply with development procedures	Comply with development procedures	Comply with development procedures	Comply with development procedures	Comply with development procedures Project status	Keep positive attitude	Project status
IS Manager	Agree upon goals	Define and document standard user-interface	Agree upon acceptance criteria for testing	Define and document software development methodology	Agree upon installation plan	Define and document software development methodology Define requirements for future growth Provide software maintenance tools and training	Agree upon acceptance criteria Approve milestones	Conduct project compliance audit Prepare for ownership and maintenance of the system	Project status
Sales Reps	Understand goals	Provide user prototype entry screens for review Provide training using actual test cases	Understand expectations and use	Communicate project expectations	Understand installation plan	Anticipate expectations and future use	Project status	Provide ‘show-and-tell’ training class	Project status
Sales Manager	Agree upon goals	Invite a sales rep to represent the users on the project team	Understand expectations and use	Communicate project expectations	Agree upon installation plan	Assess 5-year business goals	Project status	Prepare for ownership	Project status
Software Supplier	Agree upon goals Provide evidence of capability	Assign through contract review	Assign through contract review	Assign through contract review	Assign through contract review	Assign through contract review	Project status	Contract milestone progress payments	Project status

SOFTWARE STAKEHOLDER MANAGEMENT CONTINUED

Predict Behavior and Adapt

Based on an understanding of stakeholder behavioral influences and a communication strategy, the Project Manager can proceed to predict stakeholder behavior in executing a project. Stakeholders with a high vested interest should be studied carefully by the Project Manager, and their strategies and actions noted to see what effect such actions might have on the project's outcome. Once the potential effect is determined, then the project strategy should be modified through resource reallocation, replanning, or reprogramming to accommodate or counter the stakeholder's actions through a stakeholder management strategy.

For example, perhaps the Sales Manager takes the attitude that the department is too busy to provide input. The response could be to offer to have the project status meeting in the Sales area, communicate the decisions that need only Sales participation, and provide a meeting agenda with a time frame. If having a Sales Representative serve on the Project Team is not possible, then negotiate that you and/or a project team member observe a Sales Representative's different situations. It is important to establish a communication channel to establish project ownership.

Effective Stakeholder Management = Stakeholder Satisfaction

The body of knowledge for the CSQE recognizes that delivering quality software that satisfies stakeholder expectations is contingent on successful project management. Not only is the Project Manager responsible for the project definition and execution, but the successful Project Manager also recognizes the responsibility for stakeholder management. In order to satisfy stakeholder expectations, these perceived needs (stated and unstated) must be managed, and the ultimate responsibility belongs to the Project Manager.

References

- Kan, Stephen H. *Metrics and Models in Software Quality Engineering*, (Addison-Wesley, 1995), p. 5.
- Cleland, D. I. *Project Management-Strategic Design and Implementation*, 1st ed., (TAB Books, 1990), pp. 94-95.
- Randolph, W. A. and B.Z. Posner, *Effective Project Planning & Management*, (Prentice-Hall, 1988), p. 16.

Robin Dudash has 18 years' experience in all levels of computing from business mainframes, client-server, to real-time process control platforms. She has degrees in computer science and applied mathematics, and an MBA, concentrating in finance, from the University of Pittsburgh. She holds CQManager, CQA, CQE, CRE, CSQE, QS-LA, and QS-9000 certifications. She has been a Senior ASQ member since 1994 and the ASQ Pittsburgh Section education chair for the last seven consecutive years. She has also taught the CSQE Refresher course based on the ASQ BOK. Dudash currently owns her own company which provides consulting for ISO/QS/TE-9000 quality system development, training services, and internal quality auditing. She is also a subcontracted lead assessor. She may be contacted at www.iqps.net.

EVA FREUND IS NEW DIVISION TREASURER

Eva Freund (CSQE, CSDP) is a subject-matter expert in independent verification and validation and does business as the IV&V Group. She currently performs IV&V activities for the National Archive's Electronic Records Archive (ERA) Program. She was formerly the acceptance test manager and acting project manager for the IV&V Task for the FBI's IAFIS Program. She has participated in and led test efforts for such companies as UUNET, DIGITAL Corp., MCIMetro, and Bell Labs/ATT Information Systems.

Freund was also an active member of both the IEEE 1059 (Guide to Software Verification and Validation) and 1012-1998 (Standard for Software Verification and Validation Plans) and is active in the current IEEE 1012 and 829 Working Groups and a reviewer for *Software Quality Professional*. She is a member of ACM, IEEE Computer Society, IEEE Standards Association, and the American Society for Quality. She received her bachelor's degree from Fairleigh Dickinson University and her master's degree from Goddard College.

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By posting the newsletter on ASQ's Web site we are able to provide you with information more effectively as well as reduce the cost of printing and distribution. The newsletter is formatted so that you can download it and "take it with you" as well as share it with others in your organization.

This Spring 2003 issue of *Software Quality* is the last issue printed on paper. Starting with the summer issue, the newsletter will be available only on the Web.

If you have a valid e-mail address you will receive a quarterly e-mail notification after each new edition is released. We encourage you to contact ASQ and ensure your e-mail address on record is correct, and that your preferences allow for us to inform you of new newsletter issues. If you so choose, you can unsubscribe from ASQ marketing literature and still receive industry-specific news from the division.

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STANDARDS CHAIR REPORT

BY SCOTT DUNCAN

What follows are the notes from the last face-to-face meetings of the IEEE SW Engineering Standards Committee (February) and the US SC7 TAG (April) meetings. The next meetings are in August and September. There are several standards efforts that are of interest to Software Division members and, as always, details are available by contacting me to be added to the list of people who review and comment on drafts of standards.

IEEE SESC

Management Board Meeting (2-19-03)

As their revision periods occur, all IEEE SESC standards will be harmonized with the Software Engineering Body of Knowledge (SWEBoK), other IEEE standards, and relevant international standards. No accidental contradictions should exist between standards. Explicit contradictions should be documented in the standards and other material with reasons why. Also, as the revisions occur, the standards should take a process approach rather than a deliverable/product one. Product material would be included as appendices and, at some point if the SESC standards collection becomes available on CD-ROM, as electronic templates apart from the standard document.

Other material discussed at the meeting had to do with the progress on specific standards work. Details can be provided to those interested; however, some of this is noted below.

SESC Executive Committee Meeting (2-20-03 & 2-21-03)

There was a discussion of the relationship between terms associated with maintenance and life cycle support for software systems. For example, in the DoD world, "maintenance" is equivalent to "sustainment," which goes beyond any specific instance of analysis, design, and construction. (The relevant standard is IEEE 1219, which is just entering its revision cycle.)

The Software Quality Assurance Plan standard (IEEE 730) will need to have a process revision done on it. This would be an obvious one for Software Division involvement. (Though it completed a revision last year, there may be interest in an earlier revision than the typical five-year cycle.)

It was noted that the (International) Conference on Software Engineering Education and Training (CSEET) is a good one with regard to opportunities for influencing academia regarding education of students to professional matters and knowledge base. The 2004 conference will be in Norfolk, VA (March 1-3) and co-located with ASM's SIGCSE conference (March 3-7). Further information is at <http://www.cs.virginia.edu/cseet04> with deadlines for workshop proposals on August 4 and, for all tutorials, workshops, panels, and papers, September 8. Other sponsors and supporters (besides IEEE-CS) include ACM and the SEL.

It is planned that guidance standards will progressively be dropped in favor of books on the subjects published through the SESC book series. There was also discussion of a digital library of references from the books and linking electronic versions of the books to the related standards. Currently planned book topics and main authors include:

- SQA by John Horch
- Testing by Bill Hetzel
- CM by Don Shaeffer
- V&V by Roger Fujii [also the general editor of the series.]
- Process by Jim Moore
- Reviews and Audits by Richard Thayer

SESC is looking to create cross-reference model relationships between their standards and major process models like

ISO 12207 and the CMMI using a tool from SPC called QuagMap.

The SESC Standards collection is about to be updated for revised publication. The SESC is looking into "publishing" by CD-ROM, which would eventually allow linking between standards and electronic deliverable templates.

Areas for possible future SESC work could be:

- Software construction process
- Allocation of design to software
- Training process (i.e., as defined in ISO/IEC 12207)
- Software product maturity (i.e., DoD Technology readiness levels)

Agile Methods

SESC is beginning work on an anticipated "standard" on Agile methods, intended to provide advice and guidance to those considering engaging in a development contract with organizations stating they use, or will use, such methods. The goal of the document will be to lay a foundation for mutual agreement as to what claiming use of Agile methods means in a contractual situation.

The standard would guide acquisition organizations to an understanding of key Agile methodology concepts/assumptions which could impact proposed contract work. An SESC presentation will have been held at this year's Software Technology Conference (STC) sponsored by the U.S. Air Force out of Hill AFB. (The organization that sponsors the monthly *Crosstalk* magazine.) Barry Boehm and Richard Turner (from the DoD's OSD) are working on a guidebook comparing "agile" and "disciplined" methodologies.

Some of the issues related to traditional acquisition practice and Agile methods are that Agile methods usually assume:

- Close, reliable customer communication/participation during the project;
- Requirements through "stories" (like use cases);
- Incremental development and delivery ("no architecture before its time");
- Writing unit tests before code (but what about independent testing, V&V?);
- Most documentation only in code (a maintenance issue?); and,
- Security, reliability, maintainability, performance, etc. (and "nonfunctional" requirements) must be expressed as "stories" (how is this consistently done?)

US SC7 TAG Issues

ISO/IEC JTC1/SC7 is the subcommittee under a joint technical committee for ISO and IEC that handles system and software engineering standards. The US TAG forms positions on SC7 issues (e.g., ballots, new work proposals, officer nominations, etc.) and passes them through ANSI (the official ISO member). SC7 has Working Groups (WGs) to divide its business into various SW/SE topics and the US TAG has corresponding Task Groups (TGs).

While I attended as our division representative, other division members also participated on the TAG as representatives of their companies or organizations:

- Boeing (Mike Kress)
- International Function Point Users Group (Carol Dekkers)

(cont. on p. 8)

STANDARDS CHAIR REPORT

CONTINUED

- NASA Jet Propulsion Laboratory (Mike Gayle, also the TAG chair)
- Software Engineering Institute (Dave Zubrow)

In general, the TAG supports development of software and system engineering standards that, for the most part, meet the needs of large-scale developers and acquirers since it is large government agencies and contractors who make up the majority of the TAG membership. Most smaller organizations are consulting firms with government project connections. Our division is a significant exception to the typical TAG member.

Standards Integration and ISO 9001/9000-3 Work

SC7 has drafted a “Product Line Framework” document to provide guidance for how to integrate its standards. The framework uses ISO 9001 process categories since it is important for SC7 standards to be consistent with ISO 9001 given its role in the standards world.

Related to ISO 9001 has been the work by WG18 on revising 9000-3. This work has reached its Final Draft International Standard stage and, along with most of the US TAG members, division member response to my circulation of the ballot was almost unanimously to approve. However, in order to achieve the SC7 integration desired, the TAG feels that 9000-3 should be phrased in a way specific to other SC7 standards. The TAG also feels the scope of 9000-3 should include both software and systems.

Besides 9000-3 integration, ISO/IEC 15288 and 12207 (on System and Software Life Cycle Processes), are not well integrated. WG7 has initiated a Harmonization Study to plan for their revision (among others). A guide to 15288 (ISO/IEC 19760) is in its final ballot and the TAG voted in favor with no comments.

[Note: IEEE SESC has a system-engineering standard, 1220, and is revising it toward consistency with 15288. After revision, 1220 will be “fast-tracked” as an ISO/IEC standard and then undergo harmonization work at the SC7 level.]

Work on ISO 15504

There has always been a disconnect between 12207 and the Technical Report version of 15504. Though 15504 is well on the way to becoming a standard, small problems have been discovered in the 12207 Amendment regarding processes which, as defined, are not assessable, and the TAG supports developing a corrigendum to make them more assessable.

As always, the TAG considers the comprehensive exemplar model in Part 5 of 15504 to be so detailed that it might be used to displace existing methods. It has also caused Part 5 to consistently lag behind other parts of the standard (and the TR before that) by many months. There are also maintenance concerns related to having it try to cover all processes in 12207. The TAG wants the example less detailed with but a few sample processes so it is clearly an example.

Another problem is that Part 1, which contains all terminology definitions for the entire 15504 document set, is lagging three of the other four parts. The TAG decided to approve the current CD version of Part 1 as long as changes to definitions affecting Part 2 (the normative one) are prohibited. It also agreed to approve the FDISs for Parts 2, 3, and 4. And, it agreed to oppose Part 5.

Other Integration Issues

Some further gaps in the amendment to ISO/IEC 12207 are being worked:

- SC7’s software maintenance process standard, 14764, is substantially different from IEEE SESC’s 1219 and the TAG approved joint revision of the two standards so both organizations adopt the same result.
- IEEE and SC7 are also jointly adopting a risk management process standard through “fast-track” submission of IEEE 1540, which, at the SC7 level, is now known as ISO/IEC16085 and will be revised (based on fast-track comments) to suit both IEEE SESC and SC7.

The IEEE SESC liaison, Jim Moore, has noted that IEEE/EIA 12207.1 contains an information model that describes process-related information products [i.e., deliverables, documents]. SC7’s WG2 has a suitable information product standard (15289), but there has not been strong movement toward its completion. The TAG feels IEEE should contribute its standard and that WG7 should take over the progress of 15289, broadening its scope to include system engineering.

SC7 Vocabulary Work

SC7 has a vocabulary development project going and, once again, IEEE SESC has offered up one of its standards, 610.12, as part of that effort. (SC7 has numerous candidate vocabulary sets and they will be combining them and producing one set of terminology from all of the ones that have been suggested/offered.) Jim Moore proposed to the TAG, and they have accepted, the idea of developing a database of definitions that will be printed as a standard on a periodic basis. The TAG also agreed that anyone should be free to copy and use definitions without a license or royalties and will propose this through SC7.

Quality and Integrity Standards

In critical applications, integrity levels need to be assigned to system components. SC7’s 15026 covers this and is about to be revised. Japan has proposed a five-part replacement, which the TAG feels might dilute the content.

This concern is also shared by the TAG with regard to the work on the 25000 series (headed by Japan), which is to replace the 9126 and 14598 series. These older standards (some parts of which are, themselves, not yet published) are well regarded and most software quality frameworks trace to them. The current revision plan has ~14 documents identified for the final set. The TAG opposes most of the new standards. Dave Zubrow, an editor in one of the major groups of documents within the 25000 series, wants to see the work refocused. Right now, it is being pursued in a bottom-up fashion, defining the details of the measures and computations on the measures before having an agreed to software product quality model which effectively defines the characteristics (i.e., “ilities”) that the metrics are supposed to quantify. This should be an area of direct concern and involvement by our division because it will affect the international “definition” of product quality.

Asset and Software License Management

The TAG, to this point, has opted not to participate in the proposal to form a new WG to address this topic. One TAG technical expert, John Phippen, expressed concern over this as the work can/will affect how software product licenses would be regarded internationally. The TAG agreed to allow John to pursue this subject further. If members of the division and the Division Council feel this is a topic of concern given the larger commercial software company base represented in the division than in the TAG, we may want to support John Phippen’s work.

Those interested in standards work can contact Scott Duncan: softqual@knology.net, 706-649-2345 (weekdays), 706-565-9041 (evenings and weekends).

MARK YOUR CALENDARS

13TH

INTERNATIONAL CONFERENCE ON SOFTWARE QUALITY (13ICSQ)

Dallas, Texas

October 6-9, 2003

Renaissance Dallas-Richardson

13ICSQ provides a forum for individuals and organizations seeking technologies, concepts, and techniques to improve the quality of their software products, processes, and services, and networking/learning opportunities.

The 13th International Conference on Software Quality (**13ICSQ**) is presented by the Software Division of the American Society for Quality (ASQ). **13ICSQ** includes two days of tutorials (Monday & Thursday) and a two-day conference (Tuesday & Wednesday) highlighting keynote speakers, and presentations and technical papers from a variety of invited industry experts and practitioners.

Keynote Speakers:

- Jerry Weinberg
- James Bach
- Bill Curtis
- Karl Wiegers

Invited Speakers:

- Robin Goldsmith
- Herb Krasner
- Mark Paulk
- Neil Potter
- Johanna Rothman
- Mary Sakry

For more information on the **13th International Conference on Software Quality**, including:

- Conference presentation abstracts & speaker bios
- Tutorial abstracts, outlines, & presenter bios
- Registration information
- Hotel & other travel information



visit our official Web site at

www.icsq.org

13th International Conference on Software Quality

Preliminary Program



Tuesday, October 7, 2003

7:00 a.m. – 8:00 a.m.	CONTINENTAL BREAKFAST WITH EXHIBITORS Today's Exhibits Open 7:00 a.m. – 7:00 p.m.				
8:00 a.m. – 9:30 a.m.	Welcome - Mike Kress, ASQ Software Division Chair KEYNOTE ADDRESS: Gerald M. Weinberg - Quality Alibis: Tools, Rules, Fools, and Schools				
9:30 a.m. – 10:00 a.m.	Refreshment & Networking Break With Exhibitors				
10:00 a.m. – 11:00 a.m. Concurrent Sessions	<p>Session A1: Software V&V <i>Axel Podschwadek</i> A Step-by-step Guide to Incremental Testing: Managing Feature Interaction for Communication Devices</p>	<p>Session A2: Requirements Engineering & Management INVITED SPEAKER: <i>Robin Goldsmith</i> Avoid Creep – Discover the REAL Requirements</p>	<p>Session A3: Leadership Tools & Skills <i>Carol Dekkers & Patricia McQuaid</i> "Maximizing Project Success – Give Your Communication Skills a Tune-up"</p>	<p>Session A4: Software V&V <i>Esther Derby</i> Practical Aspects Reviews</p>	<p>Session A5: Exhibitor's Presentation</p>
11:00 a.m. – 11:15 a.m.	BREAK				
11:15 a.m. – 12:15 p.m. Concurrent Sessions	<p>Session B1: Software Engineering Processes INVITED SPEAKER: <i>Mary Sakry</i> Practical CMM™ & CMMI™: Focusing Improvement on Business Goals & Project Problems</p>	<p>Session B2: Requirements Engineering & Management <i>Tim Olson</i> Successful Strategies for Improving Requirements</p>	<p>Session B3: Leadership Tools & Skills <i>Manfred Hein</i> The Blame Game V2</p>	<p>Session B4: Measurement and Metrics <i>Samira SiSais Cherfi, Jacky Akoka & Isabelle Comyn-Wattiau</i> A Framework for Conceptual Modeling Quality Evaluation</p>	<p>Session B5: Exhibitor's Presentation <i>The Westfall Team – Linda Westfall</i></p>
12:15 p.m. – 1:45 p.m.	Lunch with Exhibitors				
1:45 p.m. – 2:45 p.m. Concurrent Sessions	<p>Session C1: Quality Management <i>Dennis Fraitley</i> Is There Hope for Software Quality?</p>	<p>Session C2: Hot Topics INVITED SPEAKER: <i>Mark C. Paulk</i> Some Explanatory Factors for Software Quality</p>	<p>Session C3: Software Standards–IEEE Panel <i>Claire Lohr & Scott Duncan</i> Current Trends in IEEE Software Engineering Standards</p>	<p>Session C4: Measurement & Metrics <i>Tao Yi</i> A Repeatable Software Process for Software Defect Tracking: Compuware's QACenter Experience</p>	<p>Session C5: Exhibitor's Presentation</p>
2:45 p.m. – 3:15 p.m.	Refreshment & Networking Break With Exhibitors				
3:15 p.m. – 4:15 p.m. Concurrent Sessions	<p>Session D1: Quality Management <i>Patricia Enswoth</i> The Accidental Project Manager: QA to the Rescue</p>	<p>Session D2: Configuration Management <i>Craig Thomas</i> Configuration Management Practices and Tools Used for Linux Kernel Development</p>	<p>Session D3: Certification <i>Rufus Turpin & Doug Hamilton</i> Certification of Software Quality Professionals</p>	<p>Session D4: Metrics & Measurement <i>Onur Demirors</i> Utilization of Defect Density Metric for SPC Analysis</p>	<p>Session D5: Exhibitor's Presentation</p>
4:15 p.m. – 4:30 p.m.	BREAK				
4:30 p.m. – 5:30 p.m.	KEYNOTE ADDRESS: Karl Wieggers: The Soft Side of Peer Reviews				
5:30 p.m. – 7:00 p.m.	RECEPTION WITH EXHIBITORS				

13th International Conference on Software Quality

Preliminary Program



Wednesday, October 8, 2003

7:00 a.m. – 8:00 a.m.	CONTINENTAL BREAKFAST WITH EXHIBITORS Today's Exhibits Open 7:00 a.m. – 3:00 p.m.			
8:00 a.m. – 9:15 a.m.	Opening Remarks – Linda Westfall, 13ICSQ Chair KEYNOTE ADDRESS – James Bach: How Testers Think			
9:15 a.m. – 9:45 a.m.	REFRESHMENT BREAK WITH EXHIBITORS			
9:45 a.m. – 10:45 a.m. Concurrent Sessions	<p>Session E1: Hot Topics <i>Scott Duncan</i> Automating Software Life Cycle Workflow: Implementing a "No Excuses" Approach</p>	<p>Session E2: Software Engineering Processes <i>J. Bielak</i> Transforming Use Cases Into Design</p>	<p>Session E3: Project Management <i>Linda Shafer, Herb Krasner, & Don Shafer</i> A Software Project Management Certificate Program: Ten Years of Experiential Data</p>	<p>Session E4: Software V&V INVITED SPEAKER: <i>Johanna Rothman</i> Shattering the Myth of Inadequate Testers</p>
10:45 a.m. – 11:00 a.m.	BREAK			
11:00 a.m. – Noon Concurrent Sessions	<p>Session F1: Hot Topics INVITED SPEAKER: <i>Herb Krasner</i> Agility & Quality</p>	<p>Session F2: Software Engineering Processes <i>Angelica Arceneaux</i> Designing Effective Processes</p>	<p>Session F3: Project Management <i>James Ward</i> Key Project Constraints</p>	<p>Session F4: Software V&V Student Presentation <i>Mebran Sharafi</i> A Software Design and Code Inspection Method to Find Major Potential Defects</p>
Noon – 1:30 p.m.	LUNCH WITH EXHIBITORS			
1:30 p.m. – 2:30 p.m.	KEYNOTE ADDRESS – Bill Curtis: We Need More Cowboy Programmers			
2:30 p.m. – 3:00 p.m.	REFRESHMENT BREAK WITH EXHIBITORS			
3:00 p.m. – 4:00 p.m. Concurrent Sessions	<p>Session G1: Hot Topics <i>Robin Dudash</i> Software Stakeholder Management</p>	<p>Session G2: Software Engineering Processes INVITED SPEAKER: <i>Neil Potter</i> Steamrolling the Organization With Process, or Is There a Better Way?</p>	<p>Session G3: Software Process Improvement <i>Trudy Howles</i> A Personal Approach to Improving Software Quality</p>	<p>Session G4: Software V&V <i>Marcelo Fantinato & Mario Jino</i> Functional Testing Criteria Based on Extended Finite State Machines</p>
4:00 p.m. – 4:15 p.m.	BREAK			
4:15 p.m. – 5:15 p.m. Concurrent Sessions	<p>Session H1: Measurement & Metrics <i>Tim Olson</i> Using a Measurement Framework to Rapidly Achieve Measurable Results</p>	<p>Session H2: Software Process Improvement <i>Tom Cagley</i> Extracting Real Value From Process Improvement</p>	<p>Session H3: Software Process Improvement <i>Geree Streun</i> A Practical Approach—Moving Level 1 to Level 2</p>	<p>Session H4: Software V&V <i>Todd Petersen</i> An Experience Paper on the Use of Software Fault Injection Testing</p>

ASQ Certification Examinations - Special Offering at 13ICSQ

Sunday, October 5, 2003 — Exam time 8:00 a.m. to Noon

Application Deadline: September 5, 2003

- Certified Software Quality Engineer (CSQE)
- Certified Quality Auditor (CQA)
- Certified Quality Manager

13th International Conference on Software Quality



Preliminary Tutorial Schedule

Monday, October 6, 2003

Thursday, October 9, 2003

FULL-DAY TUTORIALS:

- **Gerald M. Weinberg:** The Quality Clinic (limited to 20 participants)
- **Karl Wieggers:** In Search of Excellent Requirements
- **Robin F. Goldsmith:** Proactive Testing—Project Manager's Secret Advantage
- **Mary Sakry & Neil Potter:** Making Process Improvement Work – A Concise Action Guide for Software Managers and Practitioners
- **Joyce Statz & Jorge Boria:** Risk-Driven Software Testing
- **Dan Houston:** Software Quality Function Deployment

FULL-DAY TUTORIALS:

- **Bill Curtis:** Using ITIL and Cobit for Improving IT Processes
- **James Bach:** An Introduction to Context-Driven Test Methodology
- **Johanna Rothman:** Everything Project Managers Need to Know About Requirements But Were Too Busy to Ask
- **Danny R. Faught:** Stocking the Tester's Toolbox
- **Herb Krasner:** eXtreme Programming—What It Is and When to Use It

HALF-DAY TUTORIAL - MORNING:

- **Eric Patel:** Career Challenges and Opportunities for Software Quality Professionals: Competing and Thriving in Today's Economy

HALF-DAY TUTORIAL - AFTERNOON:

- **Bob Galen:** Software Projects - Effective Estimation & Planning Techniques for Development and Testing

The 13ICSQ Preliminary Conference Brochure including Registration Information is available. To obtain a printed copy of this brochure call ASQ Customer Service at 800-248-1946 and request the 13ICSQ Preliminary Brochure. A PDF version of this brochure and a link to online registration is also available on our Web site at www.icsq.org.

13ICSQ Hotel:

Renaissance Dallas–Richardson Hotel
900 East Lookout Drive • Richardson, TX 75082
Phone: 972-367-2000 or 800-468-3571
Fax: 972-367-3333

13ICSQ Registration Fees:

	ASQ Software Division Members	Nonmembers Before 9/1/2003	Nonmembers After 9/1/2003
2-day Conference + 2 Tutorial days	\$1,295	\$1,295	\$1,395
2-day Conference + 1 Tutorial day	\$995	\$995	\$1,095
2-day Conference only	\$695	\$695	\$795
Tutorial only (per day)	\$395	\$395	\$495

13ICSQ Sponsors & Exhibitors:

For information on how your organization can help sponsor or become an exhibitor at 13ICSQ visit our Web site at www.icsq.org/13icsq_sponsors_exhibitors.htm.

For information on becoming a 13ICSQ sponsor, exhibitor, or for other questions, please contact Linda Westfall, 13ICSQ conference chair, at 972-867-1172.

FROM THE REGIONS

Region 1 Eric Patel

The ASQ Software Division again sponsored the 23rd Annual Boston Quality Conference (BOSCON) April 10-11. This year more than 250 professionals gathered for a day of 24 track sessions followed by a day of tutorials. We distributed information on ASQ's Certified Software Quality Engineer (CSQE) certification program as well as Software Division materials. I'd like to thank John Pustaver, former Region 1 councilor, and Steve Rakitin who were on hand to talk with conference attendees.

We invite everyone in the Greater Boston area to join us at the Software Quality Group of New England (SQGNE) meetings held at Sun Microsystems in Burlington, MA. Since January we've had presenters discuss agile methods, test planning, and virtual teams. These free meetings start at 6:00 p.m. on the second Wednesday of each month (except August). There is plenty of hardcopy information to take back with you regarding upcoming conferences, calls for papers, course information, etc.

Our outreach program has commenced. Local ASQ, QAI, and IEEE sections have been contacted to discuss how we can work together to promote our mutual goals. Over the upcoming months more detailed strategies will be outlined and shared with the region.

Region 4 Chris Fitzgibbon

It was a long wait this year, but spring has finally arrived in Region 4! With the warmer weather comes an opportunity for Software Division members in Canada to become more involved with the division. We are seeking deputy councilors in several cities to help promote the division and communicate software quality-related activities to other members.

One particular region of the country where a deputy councilor is needed is the West Coast. For several years, Dan Zrymiak has done an exceptional job as the deputy councilor for British Columbia and the Yukon. Dan has recently accepted the volunteer role as the chair for one of ASQ's medal committees. It is with sincerest appreciation that I thank Dan for his contribution to the division and congratulate him on his new role. Please

contact me (tel: 613-563-9000, e-mail: chris@orioncanada.com) if you would like to participate as a deputy councilor in the Greater Vancouver area or elsewhere in Canada.

Conferences

The **13th International Conference on Software Quality (ICSQ)** is being held in Dallas October 6-9, 2003. This conference promises to be one of the best software quality events of the year. To get more information or to register, check out the conference Web site at www.icsq.org.

Closer to home, Toronto will host several conferences for the software quality practitioner during the next year. The call for papers is now out for the **58th Annual Quality Congress** May 24-26, 2004. The deadline to submit draft papers is August 4, 2003, and the AQC's typically have a software track. More information is available at the AQC Web site (<http://aqc.asq.org>). On October 2, 2003, the **ASQ Toronto Section** will hold its Quality Forum. This single-day conference will also have a software track. Its Web site is: www.torontoqualityforum.com. And, the **Quality Assurance Institute (QAI)** holds its **International Quality Conference 2003** in Toronto October 1-3, 2003. Some preliminary information is available from the conference Web site: <http://conference.dkl.com>.

Toronto and Southern Ontario

In late April, the **Toronto SPIN** held another excellent session on measuring process improvement. Check the Toronto SPIN's Web site for future planned events: www.torontospin.com. The **Toronto Association of Systems and Software Quality (TASSQ)** holds dinner meetings during the last Tuesday of each month. April's meeting discussion was on security related issues. Upcoming events are available at www.tassq.org.

Ottawa and Montreal

The **Ottawa SPIN** (www.spin.org) recently had sessions on "Process Improvement in a Down Market" and "Higher Software Quality at a Lower Cost." The May 22 SPIN will compare the organizational maturity of Canadian organizations with other countries. The **Ottawa Software Quality Association**

has its regular meetings on software quality topics; e-mail the OSQA (e-mail: bzottor@nubex.ca) for speakers, topics and to be added to their mailing list.

Calgary, Edmonton, and Vancouver

Calgary is home to one of the most successful software quality discussion groups. Recent topics at the **IEEE/ASQ Discussion Group for Software Quality** meetings were "QA Processes in an Agile Environment" and "Performing Risk Assessments." The group meets every two weeks at the Calgary campus of the DeVry Institute from September through May. All sessions are free and advance registration is not required. Their Web site is www.software-quality.ab.ca.

If you have news that other **ASQ Software Division** members should know, contact me at chris@orioncanada.com or 613-563-9000. I would especially like to hear about any software quality events in Eastern Canada and the Prairies.

Region 5 Joel Glazer

The Baltimore Section presented a lecture on software reliability at a monthly dinner meeting in April. The speaker, Dr. John Healy, is telecommunications systems specialist for the Federal Communications Commission. He is currently working on ensuring the reliability of SS7 networks. John was formerly the chief scientist of network reliability at Telcordia Technologies. John has a Ph.D. in mathematical statistics from Purdue University, and has 30 publications in journals such as the *Journal of the American Statistical Association*, *Technometrics*, *IEEE Transactions on Reliability*, *Psychometrika*, etc. He spoke about the need for both the buyer and seller of software to predict its reliability. This tutorial reviewed the need for a software reliability prediction procedure. He discussed the need to use all the available data to predict the reliability.

Region 6 Tom Gilchrist

This spring, SASQAG (the Seattle Area Software Quality Assurance Group) held another "\$99 Training Day" on Friday, April 18, 2003. The workshop, "The Change Agent: Leveraging the Testing Role," was presented by David Capocci, a senior QA/QA consultant at Safeco Insurance. These events are designed to

(cont. on p. 14)

FROM THE REGIONS

CONTINUED

be full-day workshops and/or tutorials, with food service, at a reasonable price (\$99). For information on upcoming events, visit www.sasqag.org/99days.

The Pacific Northwest Quality Conference organization is presenting its annual "Spring Tutorials" May 8 in Bellevue, WA, and May 9 in Portland, OR. The three tutorials include:

- 1 Reduce Rework and Project Delays by Implementing Peer Reviews (Inspections)**
Mary Sakry, The Process Group
- 2 Architectures for Automated Testing**
Douglas Hoffman, Software Quality Methods, LLC
- 3 Test-Driven Development: a Hands-On Introduction**
Ward Cunningham,
Cunningham & Cunningham, Inc.

For more information, visit <http://pnsqc.org/workshop/spring03.htm>.

On the third Thursday of every month (except December), SASQAG holds monthly public meetings in the Seattle area at Attachmate in Factoria. SASQAG also supports certification and study groups. If you are in the area and want to attend, please check www.sasqag.org for upcoming events, directions, and meeting time.

If you have information on local software quality and testing events in your area of Region 6, please send them to me for our events calendar. I am looking for more information about activities and events in California. Visit <http://www.tomgtomg.com/asq6> for information on events around Region 6.

Region 8 Michael Kiefel

Attended the regional director's first quarter conference call for Region 8 section chairs in order to introduce myself to the regional leadership, promote the Software Division, and attempt to identify future section events of interest to members of the Software Division in Region 8.

At the February 25 Software Division regional councilor conference call it was suggested that I organize transportation from central and southeast Ohio to attend the 4th Annual Michigan Quality Conference. This conference includes an all day software-related topics track and is to be held October 23, 2003. Anyone interested in attending this conference from

this area and would like to car/van pool should contract me at 614-624-7973 or via e-mail at michael.kiefel@abbott.com.

Region 10 Nancy Poma

Mark your calendars - Michigan's 4th Annual Conference on Quality is set for October 23, 2003, at the Yazaki Training Center in Canton, MI. The Automotive, Customer-Supplier, and Software Divisions of ASQ are the sponsors, with three full tracks of presentations offered by these divisions. We are planning on software topics, such as CMMI, software metrics, embedded systems, and software process improvement methods. If you need more information, please contact me at nmpoma@comcast.net.

I presented "CSQE" at the GL-SPIN meeting at U of M Dearborn in March, and Mark Paulk presented "Process Modeling" at the GL-SPIN meeting at Oakland University in April. This year, the group has been alternating its monthly meeting sites in order to reach a broader range of people. For more information on upcoming events, check out the Web site at www.gl-spin.org.

Region 12 Irv Segal

Please welcome Irv Segal as the new regional councilor for Region 12. He has over 13 years of expertise consulting, validating, and auditing FDA regulated computer-related systems for a variety of FDA regulated firms. Since mid-2001 he has worked extensively with CATSWeb®, a 21 CFR, Part 11 compliant, Web-based, configurable software package from AssurX, Inc. Irv has also developed SysGen, Inc.'s evidoc™ series of Software Quality Assurance Methodologies. Irv also has over 15 years' experience in computer programming, systems analysis, and project management, including the managing of two large-scale Y2K upgrade projects, numerous validations of FDA regulated computer-related systems, and Internet applications. Irv holds a degree in Talmudic Law, is certified by Control Data Institute in computer programming & analysis, and is APICS certified as CPIM (Certified in Production & Inventory Management). His e-mail is irv_segal@hotmail.com.

Region 13 Grandville Jones

Two big events are coming up soon and many Software Division members are gearing up to attend.

The first is the Annual Quality Congress in May in Kansas City. Don't forget to stop by and say hello. My cell phone number is 303-969-0228. I invite all Region 13 members who are attending

to give me a call to discuss Software Division activities for the New Year.

The second event is the Annual Rocky Mountain Quality Conference June 10 & 11, 2003, at the Green Center at the Colorado School of Mines in Golden, CO. One of the tracks for the two-day conference is on software. There are software and IT presentations on SAN & NAS Solutions, SW Project Collaboration, Pursuit of Mainframe Quality in a UNIX System, Software Acquisition & Supplier Management, (by our own Software Division Council member Linda Westfall). Other presentations are on Linux certification and Data Warehouse Architecture. The Web address is www.rmqc.org.

I have set up a Yahoo Group as a quick communication tool for all Software Division members in Region 13. It's located at: <http://groups.yahoo.com/group/asqswdivisionregion13/>.

Region 15 Mark Neal

Contacted Software Process Improvement Network (SPIN) affiliates in the region to establish coordination activities. Identified members to serve as local chapter liaison for several of the chapters in the region. Looking to fill out representatives for remaining chapters. Established a region planning team including Carol Dekkers, Scott Duncan, Theresa Hunt, John Pelletier, and Mark Neal. The planning team will be meeting this quarter to discuss the possibility for a mini-conference in the region this year. Also this quarter we plan to send out surveys to region members to identify training needs, interest in mini-conferences, etc. Members interested in helping with region activities should contact me at mark.neal@alconlabs.com.

Region 25 Zigmund Bluvband

Proposal: The structure and mission of the ASQ Software Division International Region Network (IRN)

The structure:

Zigmund Bluvband—ASQ Software Division regional councilor for Region 25 (International), *coordination and support of the all non-U.S. ASQ Software Division activities*

Karol Frühauf—deputy regional councilor, *Western and Eastern Europe (EOQ members)*

Rino Simeone—deputy regional councilor, *Italy, Spain, Portugal, France*

Amitava Sengupta—deputy regional councilor, *Saudi Arabia and related Middle East world*

Zhenhua Yang (Jack)—deputy regional councilor, *Asian-Pacific region in general (mainly China and India)*

LNV Samy—deputy regional councilor, *Australia*

The mission:

1. To boost current interest of/to ASQ Software Division members and generally software quality people in every sub-region: what we can ask from the ASQ Software Division as a partnership or help:
2. To get and share information about relevant local software quality and testing events in every area: increase data deployment, coordination, as well as involvement, and need for help/sponsorship of ASQ Software Division
3. CSQE courses and exams promotion and explanation
4. To organize the information about local subregion SQA chat groups: Existence, Communication, Networking, Q&A, ability to enlarge/invite other people
5. Widely disseminate the ASQ Software Division BOK.
6. Possible interfacing between SQA professionals from various geographic areas of different subregions
7. Resources *TBD*

ANSWERS TO THE SOFTWARE QUALITY ENGINEERING QUIZ

BY LINDA WESTFALL

1. Answer B is correct. A malpractice type tort lawsuit is appropriate if the software's author (or the program itself) provides unreasonably poor professional services. A conversion type tort lawsuit would be appropriate if the software was intentionally designed to steal from the customer or destroy property. A fraud type tort lawsuit would be appropriate if the seller of the software knowingly misrepresented the capabilities of the product. A strict product liability type tort lawsuit would be appropriate if the software caused injury or property damage because it is dangerously defective. **CSQE Body of Knowledge Area: I.D.2**
2. Answer D is correct. After the audit has been initiated, the audit is planned including the selection of the audit team and the writing of the audit plan. Then the audit team and lead auditor prepare for the audit by studying the relevant documentation prior to the on-site audit execution to evaluate its appropriateness and adequacy. The auditors use information from the input documents and audit criteria to prepare checklists and other tools for use during the audit. During this step, the lead auditor works with the auditee's organization to handle any logistics for the audit. The on-site audit is then executed. This is the information-gathering portion of the audit that starts when the auditors arrive at the auditee's location and ends with the closing meeting. Most of the time and effort of the execution step is spent gathering data and objective evidence. The lead auditor, with input from the audit team, then writes the audit report. Finally the auditee creates and implements a corrective action plan to address any findings found during the audit. The lead auditor then follows up on the implementation of those corrective actions to ensure that the corrective actions taken were implemented effectively, that they resulted in the elimination of the root cause of the problem. **CSQE Body of Knowledge Area: II.C.2**
3. Answer C is correct. In a data flow diagram, a circle is the symbol used for a process inside the system that transforms the data. In this example diagram, the process (labeled Element 3) received the data (labeled Element 2) from the external entity (labeled Element 1) and transforms it into two data items. One data item (labeled Element 4) is stored in a data repository (labeled Element 5). The other data item (labeled Element 6) is transferred to another process (labeled Element 7). **CSQE Body of Knowledge Area: III.C.3**
4. Answer C is correct. The PERT method adds the most optimistic estimate plus four times the most likely estimate plus the most pessimistic estimate and divided by 6. For this task that would be $(30 + (4 \times 45) + 90) / 6 = 50$ days. **CSQE Body of Knowledge Area: IV.A.3**
5. Answer A is correct. A derived measure is defined as a function of two or more values of base measures. In other words, the value of a derived measure is calculated using a formula or algorithm that combines two or more base measures or other derived measures. Defect density is calculated by dividing the number of defects found in a work product by the product's size. Phase containment effectiveness for the design phase is calculated by dividing the number of design defects identified during the design phase by the total number of design defects identified.
Base measures can be measured in terms of the attribute and the methods used to quantify it. For example, we can directly measure the size of a source code module by counting the line of code (assuming that we have clearly defined criteria). We can also directly measure the duration of a task by measuring the number of hours it took to complete that task. **CSQE Body of Knowledge Area: V.A.1**
6. Answer D is correct. According to the IEEE Standard Glossary of Software Engineering Terminology, black box testing, also called functional testing, "ignores the internal mechanisms of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions." **CSQE Body of Knowledge Area: VI.C.3**
7. Answer C is correct. An evaluation of the user's manual for format and completeness would be part of a physical configuration audit. A review of the verification and validation reports and a review of all approved changes to verify completeness would be part of a functional configuration audit. An evaluation of the elements of the quality system for applicability would be part of a quality system audit. **CSQE Body of Knowledge Area: VII.E.2**

PURCHASING A DEFECT-TRACKING TOOL

BY SHERRY MACKOWIAK

Until a few years ago, defect-tracking software tools were mainly used in larger software development shops. Most medium to small shops relied solely on lists to report and monitor defects. This is an error-prone method as defects can be misplaced or forgotten from release to release. As quality improvements come to the forefront, companies are finding that defect-tracking systems provide accountability, greater visibility to defects at an earlier stage in the process, and defect history. If it is time for your company to purchase a defect-tracking tool, I hope my experience will give you valuable information to assist you in your search.

My first step was to identify the stakeholders that would be using the tool or relying on information provided by it and gather their requirements. In my quest, I determined that the stakeholders would be Quality Assurance, Project Managers, Developers, Marketing, Customer Support, and Management. With that information, I spoke to the pertinent individuals within these groups, determined their defect-tracking needs. And because some of the stakeholders had no experience with Defect Tracking Tools, I put together a sheet of features advertised in the brochures of some of the better-known products (such as PVCS Tracker from Merant). I reviewed these features with the stakeholders and also walked them through several defect scenarios. For example, if the stakeholder was a Project Manager, I would ask them if they wanted to be notified of all defects on their projects as the defect was input or would a report be sufficient? And what kinds of reports would they find useful. Or I asked the Development Manager if they wanted all defects routed to them instead of directly to the Developer. From the information gathered from these stakeholders sessions, I compiled a grid of features that were *must have* and *would be nice* (see example of my grid on p. 17). In our particular case, the tracking system had to:

- run on Windows 98 or 2000,
- be configurable,
- support DB2 or come with a database,
- support a Web interface,
- allow file attachments,
- provide reports showing trends,
- provide e-mail alerts,
- and be easy to install/configure.

Also, I determined it would be desirable if it had an interface to our version control system, be able to import and export data, and have floating licenses.

Getting all our features in a tool seemed like a tall order. I searched the Web, spoke to other quality engineers, met with people who had used different types of defect tracking tools, and came up with five popular systems to review.

Of these five defect-tracking systems companies, I found all were eager to supply information about their product and most offered a 30-day evaluation versions of their software. This allowed me to review the different products and input the infor-

mation into my *Must Have* and *Would be Nice* grid. It also gave me a chance to determine how their product would perform on our particular system. And as I reviewed each of the product's features, I kept my grid in mind (i.e., what was important to my target audience). As soon as a tool did not provide a *Must Have* feature, it received an Eliminated notation in the Status column. It became clear from the evaluation that only three of the tools had all of our *Must Have* features.

The next step, to find the best tool for us, was to review the price of each of the three. Two were in the same price ballpark, but the third was close to five times more expensive than the others. I quickly determined that the expensive tool offered nothing more than the other two, so it was eliminated.

With only two tools left in the running, I reviewed the *Would be Nice* features and wrote my recommendation to my superiors.

Another Option—In my search of the Web, I found several defect-tracking systems that were freeware. I am always a little hesitant to use freeware because of the lack of available support with some. However, if the budget cannot be stretched to include the purchase of a defect-tracking system at this time, it is an option that I might consider after **careful** evaluation.

Summary—Undertaking the purchase of a defect-tracking tool can be a daunting task, but it need not be overwhelming if approached with a method that keeps the most important features at the forefront of the evaluation. With my grid method this objective was achieved and the final selection was easy to justify to my superiors and myself.

Sheryl J. Mackowiak is a sr. quality assurance analyst who has worked in software quality assurance for more than 10 years. Last December, she received her CSTE certification and is scheduled to sit for the CSQE exam in December. She can be reached at smackowiak@amsdirect.com.

CERTIFICATION

BY DOUGLAS HAMILTON

A CSQE Exam Review Committee meeting was held March 21 and 22, 2003, in Milwaukee. I would like to thank the following volunteers for making the session a big success: Karen Bishop-Stone, Christine Brown-Strysik, Nancy Casteel, Theresa Celusta, Terry Deupree, Kathi Harris, Alex Hilgendorf, Maria Cristina Spiak, and Rocky Thurston. In addition, a special thanks to Alex Hilgendorf for recruiting the volunteers and chairing the session.

The volunteers are what make the exam a success. The meetings are fun, challenging, and you learn something every time. If you are interested in volunteering, you must be a CSQE. Please mail your resume to Mary Martin at mmartin@asq.org for consideration for future workshops.

PURCHASING A DEFECT-TRACKING TOOL

CONTINUED

MUST HAVE AND WOULD BE NICE GRID FOR A DEFECT-TRACKING TOOL

	Customizeable	Report with trends	Platforms it runs on	Database it can use	Integrate w/ our Version Mgt System	E-mail Notify	Supports data exchange between applications	Have Web interface	Can attach files	Type of license (dedicated or floating)	Price	Status
MUST HAVE FEATURES	Yes	Yes	Windows 98 and 2000	DB2 or a database included		Yes		Yes	Yes		Inexpensive	—
WOULD BE NICE FEATURES					Yes		Have the ability			Floating licenses		—
Brand A	Yes	Yes	XP, 2000, NT, 98, XP	Dbase IV (x-based format)	Yes	Yes	ODBC	Yes	Yes	Dedicated licenses only, has Anonymous Submit	\$300 for dedicated license and \$200 for Internet version	In the favorable column, but does not offer floating licenses
Brand B	Yes	N/A	2000, NT	No	Yes	Yes	Import from a database or a delimited text file	N/A	N/A	N/A	N/A	<i>Eliminated:</i> Does not support the databases desired
Brand C	Yes, but slightly limited compared to Brand A	Yes	Web, Windows, Linux, Mac OS X, and Sun Solaris.	Codebase (x-base format)	No	Yes	XML, ODBC, SOAP	Yes	Yes	Both	Dedicated license \$220, floating license \$400	In the favorable column, but doesn't interface to our Version Mgt System
Brand D	Yes	N/A	98, 2000, NT, XP, Millennium, Unix	DB2	No	Yes	N/A	N/A	N/A	Both	Dedicated license \$1,500, floating license \$4,000	<i>Eliminated:</i> Although, Brand D appears to have the feature we desire, the cost is too expensive.
Brand E	Yes	N/A	2000, NT	No	N/A	Yes	N/A	N/A	N/A	Floating	N/A	<i>Eliminated:</i> Does not support 98, nor DB2

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BY MILT BOYD

Software Quality Professional (SQP) wants to identify more individuals willing to write reviews of books, videos, training materials, tools, or other resources of interest to our readers. Length and style of these reviews would depend on the subject matter, but they would need to be descriptive, objective, and referenced to specific topics within the CSQE body of knowledge.

You may look at the "Resource Reviews" section of any recent issue of SQP for examples of suitable contributions. The reviews are also available online: http://www.asq.org/pub/sqp/past/vol5_issue2/resourcereviews.html. Material to be reviewed will be forwarded to the reviewer. The book provided to be reviewed can typically be kept by the reviewer.

Please correspond directly with the "Resource Reviews" editor, Milt Boyd, (MiltBoyd@aol.com) expressing your areas of expertise in terms of the CSQE body of knowledge and the types of resources you would like to review.

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The Software Division reserves the right not to declare a winner should no suitable design be received. The winner agrees to transfer all rights to the winning design to the ASQ Software Division.

AND THE ODDS ARE? A PROBABILITY-BASED APPROACH TO DECISION MAKING IN SOFTWARE ENGINEERING

BY DAVE ZUBROW

This column grows out of my attendance at a class on Bayesian analysis and decision making. The class uses the text *Making Decisions* by D.V. Lindley (1985). In the preface the author writes, “There is essentially only one way to reach a decision sensibly. First, the uncertainties present in the situation must be quantified in terms of values called probabilities. Second, the various consequences of the course of action must be similarly described in terms of utilities. Third, that decision must be taken which is expected—on the basis of the calculated probabilities—to give the greatest utility.” I thought, how can this decision model be used for software project management and software process improvement?

Let’s look at the pieces of the process as they would be implemented. First, we would find ourselves in a situation requiring us to make a decision. This could be any number of instances from selecting a cost estimate to be used as a basis for project planning to deciding that a product is ready to be released. Second, we identify our potential decisions or courses of action. Third, we identify the possible outcomes and consequences associated with each possible decision. Fourth and fifth, we assign a value and probability of occurrence for the consequences of each decision. Finally, we compute the expected value of the alternative decisions and select the one that has the largest expected value.

Sounds logical and straightforward, doesn’t it? Yes it does sound that way and it is. But in practice, it is easy to be deceived and act in a manner contrary to the process outlined above. While we might make mistakes in any of the above steps—failing to recognize the variety of decision possibilities we have (e.g., thinking out of the box)—I want to focus on the role of probability in this column.

A good place to start the discussion is with the question, what is probability? It is our sense of the chance that a particular event will occur within a given time frame and given a particular situation. I purposely say “our sense of chance” because that is what it is, a feeling that we develop about how likely the occurrence of a particular event is or isn’t. For instance, we might ask if we are going to meet the delivery date, the budget, or some other commitment.

The assignment of probabilities to these outcomes (we make it or we don’t, for instance) is not made in a vacuum. Rather, we use the information that we have or can gather to inform ourselves. We will return to this in a moment.

Nowhere in the above does it imply a particular method for developing that sense of chance, or probability. However, there are a couple of rules in developing probabilities that must be satisfied:

1. For a sure event, the probability is 1.
2. Probabilities are non-negative.
3. For the union of disjoint events, their probabilities are additive.
4. For the intersection of disjoint events, their probabilities are multiplicative.

In the case of the intersection of disjoint events, this law can be used to derive conditional probabilities. These are probability statements of the form, “given that some event has occurred (B), the probability of a subsequent event occurring is A.” That is, the probability that we would assign to the occurrence of A depends on its preceding events. Furthermore, the conditional probability of A given B is equal to the intersection of A and B divided by the probability of B alone, $\Pr(A|B)=\Pr(AB)/\Pr(B)$.

This lays the foundation for the derivation of Bayes’ Theorem that you may have heard about. It takes the form

$$\Pr(A|B) = \Pr(B|A) \Pr(A)/\Pr(B)$$

And can be read as the probability of event A occurring given that B has already occurred is equal to the probability of B given A times the probability of A divided by the probability of B. Let’s apply this to a common project management concern, overrunning the budget. Substitute A with the notion of a final overrun of 10% or more and substitute B with a variance of 5% at the start of coding.

At the beginning of the project, we know from historical data that approximately 30% of the projects overrun their budgets by 10%. This is the value of $\Pr(A)$. We also know from historical data that 50% of our projects are over budget by 5% at the start of coding. This is the value of $\Pr(B)$. The final piece of data that we need is the probability of being 5% over at coding when the project at completion exceeded the budget by 10% or more. Let’s assume this is 25%. This is the value of $\Pr(B|A)$.

Before doing the calculations, think about how you would assess this project. We might be tempted to say that they have a budget variance of half of the permissible amount at this point and therefore we want to know the recovery plan. After all, 30% of our projects fail to meet this criterion. Or, you might be tempted to say that it is no big deal since half of the projects are in this state at coding and yet only 30% fail to meet the 10% criterion. Or, you might say that only a quarter of the projects failing to meet the 10% criterion were in this state at coding.

According to Bayes’ Theorem, all of these are overestimates of the probability that the project will fail to meet the 10% budget variance criterion. The computed probability is 15%. Now let’s think about the decision-making model.

We need to consider what the consequences on this particular project are if we do exceed the 10% budget variance criterion. And we need to think about our decision options: do nothing and stay the course, take some sort of correction like greater oversight or perhaps start resetting expectations, or simply increase our monitoring of project performance. Then we can alter the probability of an acceptable or unacceptable outcome associated with each of these. This would be making adjustments to the 15% probability of an unacceptable outcome that we just computed. Finally, we need to take into account the value of the consequences to help us select the best course of action given our analysis and judgment in this situation.

One element of beauty in this approach has to do with the options available when no or little historical data are available. Do you throw up your hands in despair? No. You do your best to marshal whatever information you can to come up with estimates of the probabilities.

I hope this article has given you an appreciation of how probability figures into decision making and perhaps has sparked an interest to look into this further. We constantly confront uncertainty in our professional and personal lives. Understanding probability is a very powerful and practical tool that has yet to be broadly applied in software engineering measurement and analysis. In a future article, I plan to describe in more detail the decision making model.

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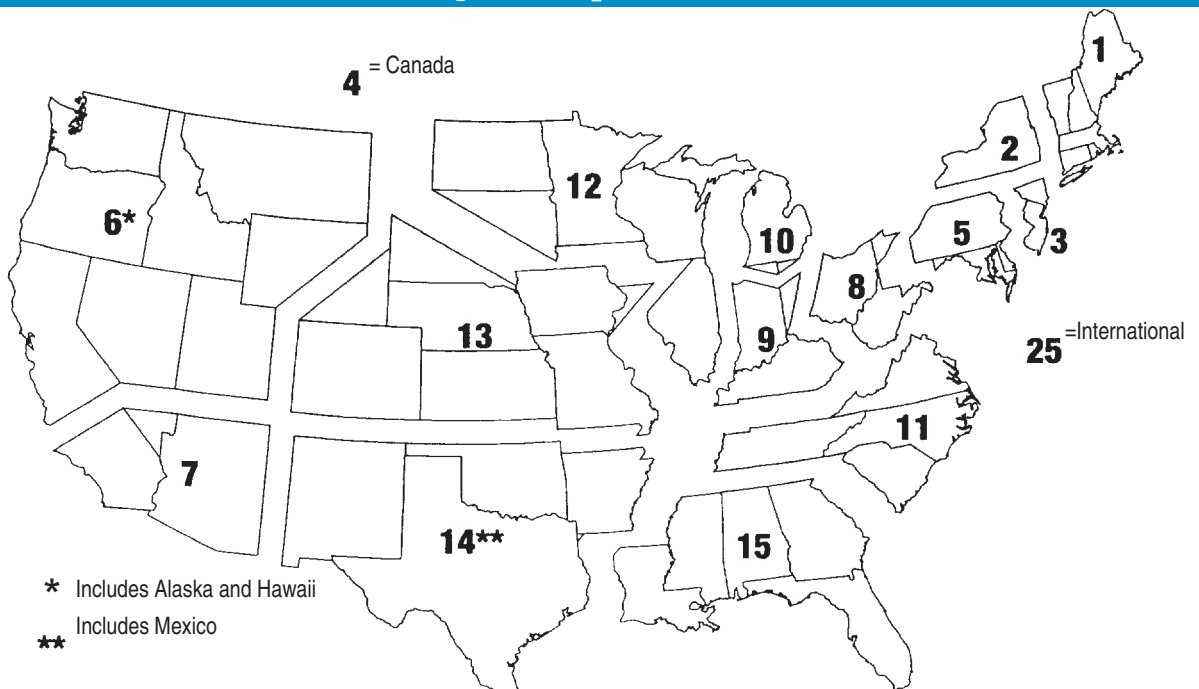
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Software Quality Professional is published in December, March, June, and September.
Subscription is for one year.

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