LAMBDA NOTES

SRE President's Message

Presidents Corner

One of the features of these newly reconstituted Lambda Notes (thank you Woody!) is that we plan on having a section from me, your erstwhile president, on the goings-on of the SRE. I will report on what is happening and also what needs to happen.

If you attended the 2007 RAMS, you know that they have kept up the tradition of providing a useful, high quality conference. I am pleased to say that the SRE was well represented at the Symposium. We probably led the symposium in attendance from a percentage standpoint! Pam Rabon put together a wonderful SRE dinner on Monday evening. The 2007 RAMS was located at a golf and country club and the SRE sponsored a hole in the RAMS golf tournament. Dick Rudy won a complementary play in that tournament.

Duane Cook honcho'd the SRE booth at RAMS this year and did an excellent job. The booth was manned by volunteers virtually the entire time that exhibits were open. We signed up a lot of new members, and the activity was well worthwhile. The upcoming 2008 RAMS is in Las Vegas at Palace Station Hotel & Casino, January 28-31, 2008. Go to www.rams.org for more information.

We have a number of ambitious projects in work. Highlights from our 2007 annual meeting at RAMS include:

- Complete retooling of the SRE website, to include improvements in email options, dues payment options, a "members only" section, website layout and consolidation, and other improvements. A committee consisting of Woody

Rabon, Jim Hess, Clarence Meese and Duane Cook will be developing a comprehensive website improvement plan. A few preliminary changes have already been made.

- Dave Auda has agreed to be the Chapters Coordinator working with the VP, Ken Dalton. He will be contacting the chapters and will be the "go-to" for chapter contacts, mentoring, and new chapter formation.

- We are starting two new activities this year. We intend to sponsor a student to attend RAMS, with the development of the Hans Reiche scholarship. Clarence Meese and Joel Nachlas are revising the initial draft document. In addition, I have put together a proposal for a SRE Fellow designation. We hope to finalize these at our BoD meeting at the 2008 RAMS

- We are also reviewing and consolidating the minutes from the last several years. This will lead updates of our critical documents, the constitution and by-laws. Dick Rudy, Clarence Meese, Woody Rabon, Jim Bartlett, Duane Cook and Tim Adams have agreed to help.

There are a lot more actions in our official January meeting minutes. If you would like to review the minutes, and do not have a copy, please request one from your chapter chair.

If you wish to offer suggestions in any of the above areas, or other ideas for the SRE to consider that would add value to society membership, please contact us. We are always looking for people to help with these initiatives. Remember, the SRE is your society. It exists for our mutual benefit with no paid staff, no formal headquarters and very low overhead. You are the folks who will ultimately determine its success or failure.

Respectfully,

Bob Loomis
SRE President

Stan Ofsthun Award - RAMS 2007

Dr. Larry Crow received the Stan Ofsthun Award for best paper at the 2007 RAMS for his paper "PER: A Process Control Methodology for Development Testing". The award consists of both a plaque and an honorarium. In addition, Dr. Crow was recognized at the SRE Banquet during RAMS. Congratulations to Larry, who is a repeat winner in what was reported by Joel Nachlas as very strong competition this year.

The Stan Ofsthun Award is provided for the best paper at RAMS by an SRE member. Candidate papers receive a blind review in the areas of originality, significance, accuracy, applicability, and clarity. Joel Nachlas is the coordinator of the award. If you are a SRE member and are authoring a RAMS paper, be sure and list your affiliation with SRE in the biographical part of the paper.

DRAT, aka Dr. Bob's Handy Dandy Reliability Toolkit

One of the benefits of SRE membership is the disk that is produced annually by the SRE for distribution to members. One of the new items on the disk this year is DRAT, also known as Dr. Bob's Handy Dandy Reliability Toolkit.

The tool is an Excel workbook that is comprised of a series of reliability analysis and design tools. It was designed by Bob Loomis. As part of his job, Bob had the requirement to perform occasional reliability analyses and experimental designs. In doing so, Bob would research the best way to solve the problem, design the solution (often implemented in Excel), and solve the problem. Over the years, it became apparent that the "wheel" was getting "re-invented" every time one of these requirements arose. The problems were fairly diverse, but tended to have repetition. It occurred to him that a more general easy-to-use tool in Excel would save a lot of time in problem solving, and he collected his various applications and built the original version of the tool.

Over the years the tool evolved. New tool functionality was added, formats were standardized, and additional applications were included. Some funding was identified which permitted the Reliability Analysis Center (now RiAC) to scrub the tool, and do a peer review of it. The RiAC also did a survey on desirable functionality, receiving over 400 responses. As a result, even more applications were included in the tool, including curve fitting/parameter generators for Weibull, Weibays and Lognormal distributions.

The tool itself consists of a workbook with a series of sheets, each sheet being an application. In addition to the curve fitting mentioned earlier, the tool has several mission reliability tools, tools for exact and approximate sample size determination, failure rate estimators for both time and cycle truncated testing, reliability confidence interval estimators, and simple series and parallel reliability calculators. One caveat – the tool makes extensive use of macros, so ensure that they are enabled when the tool is opened. If macros are not enabled, nothing will work incorrectly. It is just that some things will not work at all.

One of the concerns in the tool development was that the users of the various applications understand the assumptions that underlie each of them (known generally as "when all you have is a hammer – every problem looks like a nail" syndrome), and there is an extensive Help function associated with each of the applications.

The tool is not intended to compete with any commercial products. The applications in the tool were all developed from textbooks and other open resources. It is a convenient way to do work that requires more than the back of an envelope, but less than a large commercial package.

Technical Supplement

The following is reprinted with permission from the Ottawa Chapter of SRE It was initially posted in the Ottawa Feb 2007 newsletter.

RELIABILITY CENTERED MAINTENANCE

RCM is becoming a hot topic everywhere. Typing the term 'Reliability Centered Maintenance' into Google results in over a million hits. Wikipedia even has two entries – one with UK spelling (Centred) and one with US spelling (Centered). Last November, the US General Accounting Office, equivalent to our Auditor General, investigated a proposal of the Federal Aviation Authority (FAA) to use an RCM approach for maintaining air traffic control equipment. Sounds like a no-brainer right? Well, the proposal was opposed by officials from the two FAA unions that represent technicians and engineers, who testified before Congress that RCM is **unsafe, inefficient, and a threat to the reliability** of equipment!

A link to the full report and a few other RCM sites is provided below, including one cautioning that jumping into RCM before you are already managing maintenance well is not cost effective. What follows is a general introduction to RCM taken from the GAO report.

The RCM approach to maintenance began to develop in the late 1960s, when a joint FAA and commercial airline industry task force investigated the periodic-maintenance approach then widely used to ensure aircraft safety. In 1968, the task force created a handbook that was applied to the Boeing 747. The handbook called for a reduction in the requirements established for maintenance and overhauls of equipment, while increasing reliability and safety.

Subsequently, in the 1970s, DOD hired United Airlines to study the relationship between maintenance, reliability, and safety. In 1978, United Airlines staff produced a document entitled "Reliability- Centered Maintenance." This document differed from the 1968 handbook in that it expanded certain points and called for a more rigorous analysis of scheduled maintenance programs. Different versions of RCM have evolved from the original 1978 process. RCM processes are highly regarded by several different industries and are used worldwide.

RCM is a data-driven, analytical process used to determine the most value-added maintenance requirements that are needed to keep equipment functioning properly. It requires that data be collected and analyzed on the causes and consequences of failures, in order to determine the maintenance needed to prevent future failures. For example, performance data can be analyzed to determine whether a particular component wears out with age or fails randomly--key information for deciding the maintenance approach most appropriate for that item. Generally, RCM analyses are used to identify which of three approaches is most appropriate for preventing equipment failures: (1) periodic maintenance, meaning procedures are performed at regular intervals (for example, monthly); (2) condition-based maintenance, meaning equipment is monitored but only serviced when potential problems warrant it; and (3) run-to-fault maintenance, meaning equipment is allowed to fail because maintenance would have no effect on whether (and when) equipment fails.

FAA's Potential RCM Maintenance Approaches:

Periodic maintenance:

Description: Scheduled maintenance performed at set time intervals, regardless of equipment condition. Maintenance can include inspection, adjustments, cleaning,

lubrication, parts replacement, calibration, and repair. If failures are unrelated to equipment age, periodic maintenance can be unnecessary. Possible application: radar antenna drive motors.

Condition-based maintenance:

Description: Condition-based monitoring forecasts time when maintenance should be performed. Predictive testing and inspections eliminate unnecessary maintenance and extend equipment life. Also includes cycle-based and performance-hour procedures. Possible applications: replacement of digital audio tapes after a certain number of recording cycles; maintenance of emergency power generators after a certain number of hours of operation.

Run-to-fault maintenance:

Description: No maintenance is planned for equipment because it would not reduce the probability of failure or extend equipment life. Backup equipment may be needed to reduce the risk and cost of failure. Possible application: flat panel displays.

Procedure: RCM analysis carefully considers the following questions:

Functions	What are the functions and associated desired standards of performance of the asset in its present operating context?
Functional Failures	In what ways can it fail to fulfill its functions?
Failure Modes	What causes each functional failure?
Failure Effects	What happens when each failure occurs?
Failure Consequences	In what way does each failure matter?
Proactive Tasks And Task Intervals	What should be done to predict or prevent each failure?
Default Actions	What should be done if a suitable preventive maintenance task cannot be found?

RCM Links:

http://www.gao.gov/new.items/d0781r.pdf

http://www.idcon.com/article-rcmtrap.htm

http://en.wikipedia.org/wiki/Reliability_centred_maintenance

http://en.wikipedia.org/wiki/Reliability_Centered_Maintenance

SRE Chapter Chair

We are pleased to announce the Establishment of a new SRE chair at the national level. The title of the newly created position will be Chapter Chair, and the following responsibilities will be delegated to that position:

- Support the growth of existing SRE chapters and assist with chapter problem solving

- Explore the opportunities for new chapter creation

- Stimulate chapter activities to further the attainment of the SRE mission

The Chapter Chair will be operating under the direction of the SRE Vice President, with full support of the executive committee. Chapters are encouraged to take advantage of this new resource in support their ongoing activities and growth planning.

We are pleased to announce that Mr. David Auda, CRE, has been appointed to this position for the 2008 program year.

He can be contacted directly via email at SRE_Chapter_chair@yahoo.com or via phone: (716) 686-1548 days, or (716) 634-1040 evenings

David has held a number of chapter officer positions in the Rochester SRE and is active in the ASQ Reliability Division as the Region 2 councilor. His experience includes past chair of the ASQ Buffalo chapter as well as chair of their annual conference. He has been a return presenter at the annual RAMS symposium and annual ASQ World Conference on Quality and Improvement.

We are pleased that David has agreed to accept this position and urge you to avail yourselves of this chapter resource. We welcome David to the SRE leadership and hope that you will work with him to more firmly establish, fortify and grow your chapters.

Respectfully,

SRE Leadership Team

Other New SRE Initiatives

We have a number of new initiatives for 2008 that you may be interested in.

First, we are in the final stages of establishing a Fellow designation for SRE. Since SRE is oriented toward the practitioner, our Fellow designation will be, as well. When the details are finalized, they will be posted on the SRE website and discussed in Lambda Notes

As an incentive, we will be awarding an 80GB iPod Classic to one lucky SRE member. The drawing will be at the SRE BoD meeting at RAMS in January 08. You need not be present to win, but you do have to be a registered SRE Member in good standing. Each Chapter will identify their paid membership as of the BoD meeting and we will have a drawing for the iPod.

In addition, we are planning an SRE Luncheon at RAMS on Tuesday, January 29th. We will have a drawing for two iPod Shuffles from among the SRE members present at the luncheon.

We are also continuing with our very successful Stan Ofsthun award, which recognizes the best SRE paper at RAMS each year with a plaque and monitory award.

And finally, the SRE is pleased to announce that we will be sponsoring a "scholarship" to assist a student in attending RAMS. The scholarship will reimburse expenses up to $1200, and include RAMS Registration and a two year SRE membership. We will announce the scholarship early in 2008 for a 2009 award.

The Last Word

We want to publish Lambda Notes quarterly. To make this newsletter more useful to the members of SRE we would like to include information about each of the chapters of SRE. Please send us copies of your chapter newsletters or just information about your chapter. The more chapters contributing to this effort the more useful it will be to the entire society. This is the third or fourth "rebirth" of Lambda Notes since the mid 1960s. None of the earlier efforts lasted for more than three issues. To make this one different we must have input from the chapters, not just the officers and committee chairs. We know many of you are doing good things in your chapters, please share it with all of us.

SRE Officers:

President
Robert Loomis, PhD

Vice President
Ken Dalton

Secretary
Pam Rabon

Treasurer
Woody Rabon

Immediate Past President
Henry Cook

SRE Committees:

Chapter Chair
David Auda

RAMS BOD representative
Clarence Meese

Stan Ofsthun Award facilitator
Joel Nachlas

SRE Webmaster
Duane Cook

Lambda Notes editor
Woody Rabon