



Management Division

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Safety Engineering & Risk Analysis Division



Technology & Society Division

T & S

Engineering & Technology Management Group Newsletter

Michael Ambrose, Editor

Winter 2003

Message from the Editor

We continue to implement our plan to improve the way we serve you. I hope you find this issue of the newsletter interesting and enlightening. This issue is primarily sponsored by SERAD (Safety Engineering and Risk Analysis Division). However, we also have some news about upcoming events and the first article of a three part series on project management.

The newsletter is the conduit for members to present technical ideas and information under a less regimented review process. The *Engineering Management Journal* is available if members wish to present relevant articles (e.g., research manuscripts, case studies and overviews of practice), which may include peer review, to a more widely distributed technical journal.

As always, I invite you to submit an article if you have a particular interest or have specific knowledge of a relevant topic. There are some basic ground rules. The content of this newsletter will be balanced and apolitical. Controversial issues will be evaluated objectively. Criticism of individuals or organizations will not be presented. Authors will be responsible for the content of their articles. Publication of a particular opinion does not indicate approval by the E&TM Group, the three member divisions, or ASME.

Please contact me if you have any questions or input.

Mike Ambrose
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NSF's Directorate for Engineering Leader to Give 2003 Towne Lecture

John A. Brighton, the head of NSF's Directorate for Engineering will be giving the Towne Lecture on Wednesday, November 19 from 1:00 to 2:00 pm at IMECE. As head of the Directorate for Engineering, he manages a budget of approximately \$540 million. The Directorate for Engineering helps to ensure that the United States maintains its preeminence in science and engineering leading to fundamental discoveries, technological innovation, and economic growth. Before joining NSF, he held leadership and faculty positions at National-Louis University, Pennsylvania State University, Georgia Institute of Technology, Michigan State University, Carnegie Mellon University, and Purdue University.

Dr. Brighton received a PhD in mechanical engineering from Purdue University and also holds BS and MS degrees from Purdue. Dr. Brighton is a Fellow of ASME and the American Society of Engineering Education.

The subject of Dr. Brighton's lecture will be the role of the National Science Foundation in advancing the national research and education agenda in science and engineering. The NSF plays a critical role in the national agenda for research and education working closely with universities and

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Speaker Set for IMECE T&S/ Management Joint Dinner



Dr. Richard Hinder

Dr. Richard Hinder will be speaking during the Technology & Society/Management Division Dinner at this year's IMECE. The topic of his speech will be 'Changing roles for the engineer in the

21st century - a European view'. Dr. Hinder examines challenges facing society and engineering today, and stretches definitions of the term 'engineer' far wider than 20th century thinking would allow. The technological generalist will be re-examined.

Dr. Hinder, Managing Director of Richard Hinder Associates in London UK, is an Institution of Electrical Engineers Fellow. Prior to setting up his consulting company, he was Head of International Technology Services in the UK Department of Trade and Industry. Prior to his position at DTI, he served as Science and Technology Counsellor at the British Embassy in Tokyo, as R&D Director at the Home Office (covering police, fire and prison services) and as Tutor at the University of Cambridge, where he earned his

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Project Management: A Competitive Advantage?

David V. Tennant, PE, PMP

This is the first in a three-part series on project management. This edition looks at why projects fail and how companies realize that effective project management is a competitive advantage.

Most companies that develop products or provide services consider themselves pretty accomplished when it comes to managing projects. This is especially true in the engineering profession. After all, many companies pride themselves on their accomplishments: power plants with better availability and less emissions, new computer chips that offer more power but are cheaper to produce, advances in automobiles offering improved safety and more features for minimal incremental costs.

However, it has been my experience that for every four projects that succeed, one fails or loses money (i.e. 20% fail rate). It is possible to read in the media about projects that failed to meet one or all of the following criteria: budget, schedule or performance/quality. This is known as the triple constraint. How much better would your company's bottom line be if we could have 100% of our projects meet the triple constraint? How much marketing and customer good will could be leveraged if our reputation was to always be on time and budget?

Over the past 10 years, project management has taken on new meaning to many companies—especially those wishing to improve their performance in this cost-constrained economy. To a large degree, the Information Technology (IT) industry has not only embraced, but also pulled ahead in the application and use of project management techniques. This was out of necessity because of the constant cost and schedule overruns associated with large, enterprise-wide software applications. Also, the Y2K projects in the late '90s identified a need to better plan and execute those projects.

If we could generate a "Top 10" list of why projects fail, it would look something like this:



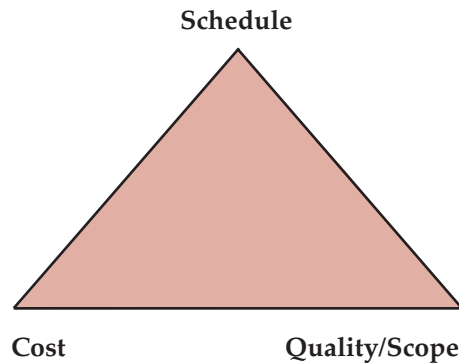
Dave's Top 10

1. Poor Planning
2. Inadequate Resources
3. Lack of Management Support
4. Poor Communications
5. Conflicts Between Departments or individuals
6. Poorly Defined Roles & Responsibilities
7. Objectives Not Clear
8. Changes in Scope
9. Failure to Heed Warning Signs
10. Unrealistic Expectations

And, I suspect that based on all of our collective experience, we could easily

generate an additional 10 items for this list. It is interesting to note that most of these failure criteria involve the soft skills. Essentially, we are saying that projects rarely fail because of technical reasons. We can always find a sharp technical person to solve the technical problems. Rather, it is generally the lack of coordination, communication, and control issues that prevent project success.

A senior executive once asked me: "Of the three parameters, cost, time, and quality, which one is the most important?" The reality is that each one is tied to the other. Let's return to the triple constraint for a quick review. As shown below, the schedule, project cost, and quality/scope are linked as indicated by the equilateral triangle.



The Triple Constraint

When companies begin to fall behind schedule, one way to catch up is to assign additional resources. This will invariably affect the budget (usually by running over). In another case, when companies realize they are running over budget, they look for ways to cut corners or reduce the scope. Referring to our triangle above, we can see that the failure of one parameter means that the other two will be very close behind. That is why it is important to track all three of these entities in meeting the project objectives.

The question becomes: How can companies use project management as a competitive advantage?

There are several corporations that have developed extensive methodologies (i.e. processes) that serve as a roadmap to planning, executing, controlling, and closing projects. This is not strictly a cookbook approach. Rather, this is an organizational commitment for consistency in how projects are managed. Too many

times, project success depends on the specific project manager assigned rather than a process for repeatable success. Some companies have recognized this and captured their company's "best practices" combined with recent industry guidelines. The resulting process gives them a competitive advantage in preventing the "Top 10" list above from becoming reality.

Companies have begun to take notice. In a recent exhaustive survey¹ of industry, project management improvements had the following impacts:

Return on Investment	25%
Sales Growth	9%
Customer Satisfaction	20%
Improved Time-to-Market	15%

Clearly, effective project management generates a better bottom line, improved cost control, and happier customers. Next time, we will look at what should be contained in a project plan, how each project follows a lifecycle, and what you or your company can do to start improving your management of projects.

David V. Tennant, PE, PMP is an independent consultant who has successfully managed or rescued over \$3.5-billion in projects and programs. He lives in the Atlanta area and can be reached at dvtent@aol.com

¹The Value of Project Management, Center for Business Practices, 2001

2003/2004 **SERAD PARTICIPATION** Meetings & Seminars

September 2-5, 2003
IDETC-2003, Chicago, Illinois

Program:
http://www.me.uic.edu/detc2003/SERAD_Paper_Session_Details.pdf

November 17-21, 2003
IMECE-2003, Washington, D.C.

Program:
<http://www.asmeconferences.org/Congress03/TechnicalTracks.cfm>

July 20-24, 2004
PVP-2004, La Jolla, CA:

Call for Papers:
<http://www.asme.org/divisions/serad/call/serad2004callforpapers.pdf>

NSF's Directorate for Engineering Leader to Give 2003 Towne Lecture

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industry. This talk will provide some insights into how research priorities are set, how research grant awards are made and how the management of the processes are carried out within NSF and through collaborations with universities, industry, other government agencies, and professional societies.

The Henry Robinson Towne Lecture was established in 1925 in honor of Henry Robinson Towne, President of the Society in 1889. In 1886, Mr. Towne presented a paper titled: "The Engineer as an Economist". This paper was the beginning of many valuable ASME contributions on the subject of scientific management. Towne's landmark lecture and his other writings reflected the eclectic nature of his thinking in that he projected visions of managerial practices that are commonplace today such as profit sharing, data processing, management information systems and metric conversion.

The Towne Lecture provides an opportunity for outstanding leaders in the field of management, economics or business to share their experience with members of the Society. The Towne lecturers and their subjects have reflected Towne's presence and diversity. The lectures have included notable business leaders, entrepreneurs and professional managers, consultants, university deans, public servants, and an individual (Herbert Hoover) destined to be the president of the United States. Lecturers have come from as far away as Australia, England and Switzerland. The topics that the lecturers have chosen to discuss have typically mirrored their times while looking ahead to the future.

Why a Patient Safety Improvement Panel at the ASME Congress?

According to a 1999 report by the US National Institute of Medicine, medical mistakes cost our society approximately 100,000 lives and \$40,000,000,000 per year (IOM; 1999 *To Err is Human*). The report included several recommendations that are aimed at reducing errors in health care and improving patient safety.

In the *Report of the Quality Interagency Coordination Task Force (QuIC)*, dated February 2000, "Doing What Counts For Patient Safety: Federal Actions to Reduce

Medical Errors and Their Impact," the insufficiency of existing healthcare safety programs is addressed. Although the QuIC acknowledges that quality improvement programs within health care organizations could be enhanced or adapted to address medical errors, several obstacles do exist. Among the more serious obstacles are:

1. Inadequate knowledge about the frequency, cause and impact of errors, as well as about evidence of effective methods for error prevention and
2. Lack of understanding of system-based approaches to error reduction (such as those used in aviation safety or manufacturing) and the perceived difficulty of adapting those approaches to the health care sector.

Both reports suggested that system safety analysis and risk management experiences from high risk industries, such as from nuclear power, chemical, and aerospace, should be applied to healthcare to assist in improving patient safety.

At IMECE-2003, SERAD is sponsoring this Patient Safety Improvement Panel to hold a discussion on how the engineering experience with risk management in high risk industries may be applied in the healthcare industry and address the potential perils as well as the promises. Panel members include Procter Reed, PhD, Associate Director, National Academy of Engineering and James Battles, PhD, Senior Service Fellow for Patient Safety, Agency for Healthcare Research and Quality. Please stop by Wednesday, November 19th at 9:30 AM and join the discussion of this new challenging and worthwhile opportunity for us.

SERAD: 50 Years of Progress

A chronology of Safety/SERAD Division accomplishments and history from its inception in 1951 up to the current period has been published by the SERAD Division of the American Society of Mechanical Engineers and is readily accessible at www.asme.org/divisions/serad/links/index.html for your viewing in its entirety.

The history describes the original founding of ASME in 1880 as an educational, technical and professional society with a constant impetus for the continuing professional development of its individual members and the advancement of the state-of-the-art of mechanical engineering.

ASME enjoys a proud place in the recognition of safety's history. It was the 1st technical society to recognize that the practice of safety is one of professional status. Strangely enough, this took place

at a time when safety was generally considered merely to be the logical outcome of sound procedures and proper engineering. Common sense was regarded then, as the essential technology for controlling hazards.....**WE'VE COME A LONG WAY SINCE THEN, BABY!!!!**

The long-term vision of John D. Grimaldi, Ph.D., the founding father of the Safety Division, which developed into the Safety & Risk Analysis Division of ASME. Dr. Grimaldi pioneered this fledgling division from a small committee (of the Design Division) to its present status as the world's foremost professional, safety and risk analysis leadership role in our professional societies. The essence of our existence is multi-disciplinary.

The chronology of Safety/SERAD includes a compilation of significant events including in-depth reviews of the following areas of activities.

- Tabulation of all prior chairmen and executive committee members
- Listing of significant dates and accomplishments
- Overview of the Student Safety Contest winners, runner-ups and descriptions of winning projects
- Meetings and participation in professional seminars
- Safety related publications

It was truly a pleasure and a privilege to participate in many aspects of Safety/SERAD's development, growth and accomplishments. I take great pride in having compiled this brief history and welcome the participation of all interested parties to add to this compilation of accomplishments with additional data that may be forthcoming from interested parties.

Come join in the rewarding journey to strive to minimize injuries and "improve the breed". Safety is universally our common denominator to all engineering and design efforts.

Paul J. Glasgow, P.E.

Speaker Set for IMECE T&S/Management Joint Dinner

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Ph.D. in physics. Dr. Hinder is invited to speak at both T&S/Management Joint Dinner and at Session T&S-1 Management of Technology for Business Development.

The dinner will be on Tuesday, November 18. You can sign up for the dinner via the conference registration.

E&TM Group Web Address:
www.asme.org/groups/etmg

View from the SERAD Helm



William Doerr

The past year has been another successful year for SERAD under the Chairmanship of Bryan Gore, whose term just expired on July 1. Under Bryan's term, SERAD prospered with the com-

pletion of its 50 year history (thank you again Paul Glasgow!) which is discussed elsewhere in the newsletter; a flourishing international IMECE-2002 program that was put together by Dr. Ben Ale, the SERAD Dinner at Congress thanks to sponsorship by FM Global Research and Exponent; and an expanding and thriving Student Safety Engineering Design Contest organized by Brian Brady.

During this coming year, the challenges that face SERAD are not unlike those that face most of ASME: Sustainability, and Customer Focus. For this SERAD Chair, our efforts center on the following four areas:

- Expand and sustain our communications to SERAD members.
 - Efforts in this area have begun with past SERAD Chair Paul Glasgow taking the coordinator reins for 2003.
- Sustain involvement in multiple conference forums.
 - During 2003, SERAD began programming for IDETC-2003 and PVP-2004 in addition to IMECE-2003. We need a general program coordinator to sustain our involvement in conferences other than IMECE. Interested Members should contact me (see contact info below) and volunteer for this vitally important position.
- Provide funding and support for the student contest program.
 - During 2002–2003, SERAD submitted application to the ASME Foundation to replace funding that was lost by a sponsor's hardship. This request comes at a time when student interest in the contest is at its highest level in recent times. We are actively seeking corporate sponsors and would appreciate recommendations for sponsors being sent to me (see contact info below).
- Involve the Old Guard from the former Safety, and Risk Analysis Divisions/ Task Forces as well as new graduates in SERAD activities.
 - A great resource exists if SERAD can draw upon the experiences from these two resources. We welcome contacts from any interested volunteers.

SERAD and your current Chair envision an exciting and rewarding year ahead for our members and those involved in the Division. We welcome your interests and participation; please contact me at William.doerr@fmglobal.com or call 781-255-4986.

William Doerr
SERAD 2003–2004 Chair

SERAD to Participate in Development of ASME's Professional Practice Curriculum (PPC)

ASME has launched a new initiative to further support professional development of its membership. For in-depth coverage of this effort, please visit www.professionalpractice.asme.org

Several modules are in "beta" testing and others are presently under development. If you visit the above web site and click on "business functions", the menu at the left will contain the "Safety & Risk Management" module. SERAD has begun to develop this module to contribute to the PPC. In addition to meeting ASME's goals, this module will introduce students and young professionals to the importance of this topic in business, finance and government. Hopefully, it will also encourage participation in SERAD.

It must be noted that this module is not the end of SERAD's participation. This "introductory" module, like the others already completed, is intended to provide a level of information that is useful to the developing professional and to encourage further investigation. Thus, this module will be designed to be linked with future topics of interest. It may be that ASME will use this additional level of detail for ASME members only. To spread the wealth, the Management Division has been requested to contribute a module on project budgeting that will link with the program management module currently in beta testing.

The PPC was initiated by the Board of Professional Development and was initially chaired by a representative from SERAD. Currently, it is being managed by ASME staff. Please contact Marion Heller at (212)591-7078 or at hellerme@asme.org to obtain in-depth data as well as to offer any comments and/or contributions to module development.

ASME welcomes your interest and participation in this timely and meaningful program. If you have any questions or comments to offer, please contact Ron Saporita, P.E. at yankeeenergy@msn.com.

Student Safety Contest

In 1983, the SAFETY DIVISION (presently SERAD) initiated a student safety contest whereby students at all approved ABET engineering curriculums are invited to participate by submitting solutions to eliminate or minimize "real life" work related hazardous conditions (e.g., machine safety, fire control, coal mining safety, farm equipment, chemical transport safety.....the list goes on and on with at least 5 topics selected annually over the past 20 years). Presently, we invite 195 ABET colleges and universities in the U.S. and approved universities abroad to participate.

At the annual ASME Congress (formerly Winter Annual Meeting), SERAD bestows financial rewards and special recognition to the winning students, their professors, their ASME chapter and the college/university involved.

During the past twenty year period, the contest has been subsidized by NIOSH; Bridgestone/Firestone; Factory Mutual Research; Paul J. Glasgow, P.E. of Glasgow Products, Inc.; George Stanton, P.E. of American Hazard Control; Roger Harvey, P.E., etc. Due to the changing economic conditions that have impacted several sponsors, along with the increasing financial needs to support this expanding program, a request for additional sponsors is currently being made.

We always have a need for proposed safety related topics to be included as challenging projects for participating students. Please give this some thought and submit your suggested safety related projects.

If you teach a design course or participate in the development of engineering curriculum or are active in ASME student chapters, consider participation in this meaningful program. We welcome the inclusion of all approved ABET engineering institutions.

Please contact Brian G. Brady, P.E., Student Safety Engineering Design Contest Administrator at 25 Kinkel Street, Westbury, NY 11590, USA (516) 333-2520 if you have any questions, are interested in sponsorship, wish to suggest topics, etc.

Your participation is welcomed and appreciated.

Paul J. Glasgow, P.E.

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and
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2003-2004**

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Calling all mechanical engineers who would like to:

- Influence the career and academic choices of student engineers;
- Help young engineers find their way in the profession
- Contribute to the future of mechanical engineering
- Participate in a program that fits into your busy schedule

How can you do all these things, plus derive the satisfaction of passing on your experience?

By becoming a mentor to an ASME student member or young engineer. Young engineers eligible for ementoring have been out of school for 5 years or less. To learn more about ementoring or to become a mentor visit:

www.asme.org/ementoring.

Help ME Students, and Help Your Division Grow. Recruit a new ASME member.

When You Recruit a New Member, 50% of their first year dues will be used to fund scholarships for ME students. To get more information on this program, including tips on recruiting, and ways to contact prospective members, visit <http://www.asme.org/membershipdrive/> or contact Cheryl Hasan at hasanc@asme.org or 212-591-8239.

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