

IEEE *The Open Channel*

Newsletter for the Hampton Roads Section of the IEEE
The Institute of Electrical and Electronics Engineers, Inc.

http://www.ewh.ieee.org/r3/hampton_roads/

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February 2004

Systems Engineering and Software Engineering Processes, Products, and People from a Standards Perspective - Stand on the Standards

Date/Time: Thursday, February 19, 2004 at 6:30 PM

Location: ROM Thai Restaurant **757.480.7900**

7512 Granby Street, Norfolk, VA 23505

Cost: Members and guests \$20; Students \$10

Systems engineering and software engineering standards have been around since the late 1960's, have evolved, and will continue to evolve. However, systems engineering and software engineering have continued to be two of the least well-understood engineering disciplines.

The goals of this tutorial are to: 1) describe the systems engineering and software engineering standards heritage, processes, and products; 2) show the relationship between systems engineering and software engineering processes and products based on the standards; and 3) encourage and challenge the participants to read, understand, select, tailor, and apply the systems engineering and software engineering standards, i.e., "stand on the standards," as opposed to relying solely on other sources such as instructions, procedures, guides, textbooks, education, training, and experience. Understanding the standards will significantly aid in understanding the relationship between systems engineering and software engineering.

Customers, companies, authors, educators, managers, engineers, and others may have an understanding of portions of systems engineering and software engineering based on these other sources. Standards, developed by subject matter experts and approved by a nationally recognized standards organization, provide a more complete and common understanding of systems engineering and software engineering, and thus provide a firm foundation for product and process development. Knowledge of these standards and experience in applying them are also significant enhancements to any engineer's career.

Mr. John Clark is a Chief Engineer with Defense Mission Systems, a Division of Northrop Grumman Mission Systems. John is located at Warfare Systems Engineering in Virginia Beach VA. Currently he is supporting Northrop Grumman Newport News at the Virginia Advanced Shipbuilding Carrier Integration Center (VASIC) on the new CVN 77 and CVN 21 aircraft carrier programs. John's background includes over 37 years of experience in applying systems engineering and software engineering to a wide variety of systems including the acquisition, development, verification/testing, operations, and support/maintenance of military tactical command, control, communications, computer, intelligence, radar, sonar, electronic warfare, identification, weapon, network, scientific, and information systems. He earned a Bachelor of Science degree in Electrical Engineering from the Pennsylvania State University and a Master of Science degree in Electrical Engineering from the State University of New York. John's current professional memberships include IEEE and INCOSE. He and his wife Linda of over 36 years have four children, Robin, Kristin, Jason, and Aimee, and two grandchildren, Anthony and Eddie. John is an active member of his church and leads the Royal Rangers outreach ministry program for at-risk boys in a local trailer park.

Directions to ROM Thai: Please see page 3

Reservations: None required however if you have questions about the meeting, please contact Tim Gavin [757-827-1786 x313 or tim_r_gavin@ieee.org].

Checks: Checks should be made out to IEEE and brought to the meeting.

Future meetings

March 18 *Manohar Deshpande, Center in Electromagnetics Research Branch, NASA Langley Research (tentative)* **May 20**
April 15

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All materials for THE OPEN CHANNEL are due by the 25th day of the month preceding the issue month. Address all correspondence to:

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Letter from the Chair

I would first like to congratulate Dr. William Edmonson on his exemplary service to the Section in the position of Chair for the past two years. I would also like to thank the membership and executive committee for giving me the opportunity to lead the Section this year.

My name is Timothy R. Gavin and I have been an IEEE member for over 10 years but I have only been active with the local section for about 4 years. I became active in the Section after moving here from Buffalo, NY and I found that it was good way to get out and meet new people with interests similar to mine. I have served the Hampton Roads Section as Secretary, Treasurer, and Vice Chair in that time. I am currently employed by Jacobs Engineering Sverdrup Technology Group in Hampton. I am a licensed Professional Engineer in the State of Virginia and a member of NSPE.

My goals as the chair for 2004 will be to increase meeting attendance and find volunteers for the numerous open committee positions that the section has available. Some of the steps that I and the other officers are going to take to achieve these goals are to tailor our meeting topics to those that interest the majority of our members and to find a meeting place and time that best suits the schedules of our members.

The officers of the section have at our disposal a very powerful database tool for analyzing the membership of the section. Currently we have over xxxx members in the section. Of that xxxx, xxx are full members (not student or associate members) and of those full members xx percent list their affinity group as computers. This area is out of the scope of my normal work activities. However, other officers and members who are in regular attendance work in this area and will have input in coordinating future speakers. Hopefully we will be able to provide speakers and topics that will bring some more members out to the meetings.

Everyone realizes that in today's world there are too many obligations for our time outside of the office. I know that family obligations take priority over professional society meetings and that it is often inconvenient to be able to attend a meeting that begins at 7pm because of family commitments. Also, 7 pm tends to be a difficult time because it is too late come to the meeting directly from the office and usually if somebody goes home before the meeting it's often difficult to leave. For this reason, the section intends to begin holding meetings at lunchtime. We intend to start these lunchtime meetings after the summer break in September. We are hoping that members will be able to extend their lunch breaks by an hour in order to be able to attend. Some other professional societies in the area have gone to this format and have had good success with it. The theory is that it's easier to get away from the office for an extra hour during the day than to be able to get away from the home for 2 hours at night.

As always your comments and suggestions are always welcome. Please feel free drop me email if you have any good ideas.

This month's speaker is John Clark from Northrup Grumman. His topic is "Systems Engineering and Software Engineering Processes, Products, and People from a Standards Perspective" This should have broad appeal to our membership. Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems which integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation.

Tim Gavin

IEEE HR Annual Elections - Results

The Hampton Roads Section officers were installed at the January meeting. The officers for 2004 are:

Chair: Tim Gavin
Vice-chair: Dr. Robert Dawes
Treasurer: William Clayton
Secretary: Brent Phillips

Directions to ROM Thai

Directions from the Peninsula:

- Take I-64 E to I-564/US-460 (Granby) St. exit (Exit 276), towards the Naval Base.
- Turn RIGHT on Granby Street
- Turn LEFT on Little Creek Road
- Turn RIGHT into the shopping center.
- ROM Thai is in the back corner!

Directions from the South Side:

- Take I-64 W to VA-165 (Little Creek Rd) exit, (Exit 276C), towards US-460 W
 - Turn LEFT on VA-165 Little Creek Road
 - Cross the railroad tracks.
 - Turn LEFT into the shopping center at Wards Corner, just before US-460 (Granby St.).
 - ROM Thai is in the back corner!
-

2004 Annual Student Paper Competition Results

Dr. Robert Dawes and William LaBelle

On January 22, 2004 the 2004 Annual Student Paper Competition was held at Webb Student Center at Old Dominion University. Five ten-minute papers were presented by students from Hampton University, Old Dominion University, and Christopher Newport University. The papers were scored by a panel of three volunteers. In decreasing order of score, the papers were:

1. *The Use of Commercial Software for the Analysis of 802.11 Wireless Communication Performance Within Aircraft Cabins*, by Genevieve Hankins and Mennatoallah Youssef.
2. *Cryogenic Characterization of InGaAs PIN Detectors*, by Christopher S. Garcia.
3. *Flaw Detection in Aluminum Structures Using a Low Tc Squib*, by Michael McFarlane
4. *Eclectic Electrics*, by Jamaal McDaniel, Tasha Edmonds and Tyrone Smith
5. *My CLASS Research Experience*, by Russell Battle.

The first place paper was awarded a prize of \$200; second place \$100; and third place \$50, paid immediately by the Section Treasurer. Congratulations to all participants. May they all go on to participate in presentations at SouthEastCon 2004.



Dr. Roland Mielke, Genevieve Hankins and Mennatoallah Youssef (First Place)



Dr. Mielke and Christopher S. Garcia (Second Place)



Dr. Mielke and Michael McFarlane (Third Place)

2004 National Engineers Week Future City Competition

William LaBelle

On January 17, 2004 dozens of middle school students invaded The Virginia Air and Space Museum in Hampton to exhibit their ideas for the cities of the future. The students came from across Hampton Roads to compete in the 2004 National Engineers Week Future City Competition Regional Event. The regional coordinator for the event was Mark Del Sordo, The Engineering Club of Hampton Roads.

The mission of the National Engineers Week Future City Competition is to provide a fun and exciting educational engineering program for seventh- and eighth-grade students that combine a stimulating engineering challenge with a "hands-on" application to present their vision of a city of the future.

This annual competition employs a team-based approach. All members of the team have an important role that is necessary for the completion of the project. Each team is comprised of students, a teacher, and a volunteer engineer. The students can be a class when it comes to all research, modeling, writing, etc. only three may actually present. It is interesting to see and hear our young students

have to offer. We may think some of their ideas are far-fetched but who knows. Maybe some of those ideas will come to be in a hundred years or so.

There were four phases to the competition: Computer Disk Design; Build a Model, Essay, and Verbal Presentation. For the Computer Disk Design phase the students used the *SimCity 3000 Unlimited*™ from Maxis to create a city from blank piece of land, solving all the municipal problems, and achieving quality of life conditions we all desire. The stopping point was 50+ years into the future.

The ‘Build a Model’ phase seems to be the most enjoyable, who would have thought? Students create a portion of a city using reusable materials (conservation anyone) to make roads, buildings, bridges, etc. The primary criteria are there must be a moving part and the roadways must be a scaled version of a section of the computer-generated version. What structures are present is up to the students’ imagination.

The Essay phase requires the students to research and write on a yearly topic, or theme. Students are encouraged to incorporate the topic into their model. The topic for this year was *Beneficial Uses of Plastic Products or Services in Seniors Citizens Lives*. The question that was posed: “How can plastics be used to help senior citizens in the future!”

The final phase is the presentation held at VASC. Here the students ‘sell’ their city taken on civic rolls to describe all their city has to offer to live, work, and play. They present their city to a team of judges who ask some difficult questions concerning pollution, waste management, transportation, living conditions, etc.

The competing schools and awards were:



Berkley Middle School, Williamsburg

Teacher: Richard Goode
Engineer: Ralph Buehrle
Students: Katie Brewer, William Hurley, Alex Williams
Awards: First Place Overall, Best Essay, Students Choice



Southampton Middle School, Cortland

Teacher: Lionel Morgan
 Students: Kristan Aranda, Molly Mann, Mallory Taylor
 Awards: Second Place Overall, Best Model, Innovations in Transportation



Independence Middle School, Virginia Beach

Teacher: Mack Stevens
 Engineer: Dwight Sinclair
 Students: Christopher Dollins, Koleen Dunlap, Daniel Whicker
 Awards: Third Place Overall



Reservoir Middle School, Newport News

Teacher: Kevin Nelhuebel
Engineer: William LaBelle
Students: Joseph McKee, Earl Morris, James Valdemar
Awards: Environmental



Western Branch Middle School, Chesapeake

Teacher: Sharon Davis
Students: Megan Flanagan, Carole Flory
Awards: Spirit of Engineering

IEEE Events and Announcements

SoutheastCon 2004

SOUTHEASTCON brings together electrical, electronics, and computer engineering professionals, faculty and students to share the latest information through technical sessions, tutorials and exhibits. It is the most influential conference in the southeast for promoting awareness of the technical contributions made by the electrical and computer engineering profession to the advancement of engineering and science, education, and to the community.

This annual Region 3 conference will be held in Greensboro, North Carolina March 26 - 28, 2004. For more information visit the conference web site at:

<http://www.ewh.ieee.org/cmte/secon04/>

SIEDS 2004

The 2004 IEEE Systems and Information Engineering Design Symposium will be held on Friday, April 16th, 2004 in downtown Charlottesville at The Omni Hotel.

Professor K. Preston White (SIEDS '04 Committee Chair) has mentioned that there is still a window of opportunity for those interested in presenting papers to submit one. The SIEDS 04 Conference is currently accepting submission of one-page abstracts for expanded presentation in a 30-minute format at the Symposium.

Those requesting further information on the 2004 IEEE Systems and Information Engineering Design Symposium are encouraged to visit our website at:

<http://www.sys.virginia.edu/sieds04>

and consider this unique opportunity. Please don't hesitate to contact us should you have questions or concerns about your paper abstract and participation in the Symposium.

Local Engineering Announcements

PEC: The Peninsula Engineering Council Engineer of the Year Banquet will be held at Point Plaza Suites and Conference Center., (The former Ramada Inn), 950 J. Clyde Morris Blvd, NN. on February 28, 2004. A flier with the details will be sent to all societies shortly.

Tickets this year will be \$25 per person. Please contact your HR Section PEC Representative William LaBelle [757-619-9050, w.labelle@ieee.org] for tickets and banquet information.

SOLE: 6th Annual Mid-Atlantic Logistics Conference & Professional Development Workshop Woodlands Conference Center/Woodlands Hotel & Suites, Williamsburg, Virginia USA. April 1-3, 2004

- ◆ *Mr. Louis Kratz, Assistant Deputy Under Secretary of Defense (Logistics Plans and Programs) is our Keynote Speaker.*
- ◆ *PD Workshop on April 1 conducted by Accenture, "Aligning Customer Relationship Management (CRM) With Supplier Relationship Management (SRM): Focusing on Customers and Suppliers Without Stovepipes."*
- ◆ *Two Conference days - Friday, April 2nd and Saturday, April 3rd - Technical and Education Tracks both Days.*
- ◆ *Logistics Seminar Series presentations on "Maintenance Excellence" and "Math for Logisticians" on April 2-3*
- ◆ *"Hands On" training/demonstration of logistics software tool kits in our "Discovery Zone" and Exhibit areas*
- ◆ *Friday, April 22nd Conference Social Sponsored by BearingPoint*
- ◆ *Continuing Education Units (CEU's) available for Workshop and Logistics Seminar Series programs.*

For Additional Information, Please Visit Us On Our Web Page <http://www.mid-atlantic-log.net>.

Local Engineering Events inputs

Are you are organizing or sponsoring a local event of interest to the engineering community? Do you know of one? Let us know! Send your event announcement to me, William LaBelle (w.labelle@ieee.org), for publishing in the next edition(s) of *The Open Channel*. Additionally, your event can be announced, or a link established, on the section web site. The section newsletter reaches about 1000 local IEEE members each month. It is a free resource that you can't ignore.

Hampton Roads Engineering Society Calendar

The HRESC is a free website and e-mail calendar of engineering society events for the Hampton Roads area. It is open to the public and all societies are invited to advertise their events. List members receive a weekly text-only e-mail calendar of events.

Currently, HRESC is maintained by Ray Walsh (SNAME). Beginning March 2004 the Engineering Society will be maintained by William LaBelle (w.labelle@ieee.org).

IEEE-USA TODAY'S ENGINEER topics (January 2004):

Assignment: Overseas

The land of opportunity for today's engineers extends well beyond their own country's borders. Preparing for an overseas assignment is key to having a meaningful and enjoyable experience. Of course, adequate preparation goes beyond packing your suitcases and updating your passports...

[<http://www.todaysengineer.org/Jan04/assignment.asp>](http://www.todaysengineer.org/Jan04/assignment.asp)

Protect Your New Ideas and Inventions

Since its establishment in 1790, the U.S. Patent and Trademark Office has issued more than six million patents — more than one third of them in the last 25 years. The pace of innovation is speeding up, and now more than ever, engineers need to protect their new ideas and inventions by maintaining both a technical and legal audit trail...

[<http://www.todaysengineer.org/Jan04/protect.asp>](http://www.todaysengineer.org/Jan04/protect.asp)

The IEEE Leads EWeek 2004

The IEEE is serving as lead society for National Engineers Week (EWeek) this year, 22-28 February, and is helping to pave the way for expanding the celebration around the world...

[<http://www.todaysengineer.org/Jan04/EWeek04.asp>](http://www.todaysengineer.org/Jan04/EWeek04.asp)

Electric Utility Reliability: Adding Cyber Security to the Mix

When the electric system delivers energy to the bulk of customers within accepted standards, and in the amounts desired for a reasonable price, then it is said to be reliable. But when the potential for security breaches and even large-scale terrorism gets added to the already present weather factors and equipment failures, the reliability scenario becomes far more complex...

[<http://www.todaysengineer.org/Jan04/reliability.asp>](http://www.todaysengineer.org/Jan04/reliability.asp)

Also in TE

Your Engineering Heritage: [Power and the Federal Theatre Project](#)

World Bytes: [What a Difference a Century Makes](#)

Capitol Shavings: [The Energy Bill — and Beyond](#)

Read the complete articles and other at the Today's Engineer web site (<http://www.todaysengineer.org/>).

Brain Teaser Challenge Column - Butch Shadwell

January 2004

At the time I am writing this I haven't received any correct answers for this BTC. Last month I was describing a very vivid dream in which "Fred is traveling north from Texas at 2000 mph and Jim is traveling southwest at 2000 mph from New York and then Jim shines a laser of 640 nm wavelength at Fred, what wavelength does Fred perceive?"

Some of the answers I got to this one made a basic mistake in failing to get the difference between the velocity vectors instead of the sum. Getting the difference means that the two vectors are placed tail to tail and the difference is measured from the point to point. This produces two vectors with 135 degrees between them. When you calculate the difference vector you get the two guys closing on each other at 3695 mph or 1.026 mi/s. In this case the apparent wavelength will be $\lambda_a = \lambda_o * ((c-v)/c)$, λ_o is the original wavelength, v is the net velocity and c is the speed of light (I used 186,000 mi/s). So, Fred is seeing a wavelength of 639.996 nm, my favorite color. But I bet you already knew that.

February 2004

There is an old Trinidadian saying, "You can't polish your shoes, without breaking a few eggs." I never did figure this one out, but maybe that's why a lot of folks don't pay much attention to old Trinidadians. Yet here you are, reading this column. Go figure.

In the islands, food grows all over the place. Most folks have at least one mango tree nearby. With the aid of a long bamboo pole (used to knock the mangoes from the higher branches) one can harvest some wonderful fruit. As it turns out, the Engineering Department of the University of the West Indies is in Trinidad. I haven't been invited to speak there yet but I have met a few of their students cruising the malls in south Florida.

Fortunately, I did have a chance to talk to some great West Indian students about robotic design while in Jamaica last year. It turns out, Nigel built a little machine that was driven by two large wheels on either side, and a third idler wheel in the back that kept it stable. Each wheel could be advanced one thousandth of a turn for each pulse it was fed, and the drive wheels were 5 inches in diameter and mounted 10 inches apart. After a long series of complicated maneuvers, the count totalizer for each wheel showed the right wheel had been fed 1,000,000 counts and the left wheel had been fed 638,000 counts, all in the forward direction. If the robot was facing north (0 degrees on the compass) when it started these maneuvers, what direction was it facing when they ended? Assume there was no slippage of the drive wheels and that they had very small contact surfaces with the ground.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution column.

February 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19 <i>IEEE Section Meeting</i>	20 <i>ODU Engineers' Week Open House</i>	21 <i>ODU Engineers' Week Student Competition</i>
22 <i>MATHCOUNTS – Southside</i>	23	24	25 <i>NASA Career Days</i>	26 <i>NASA Career Days</i>	27 <i>ECHR Engineering Excellence Banquet</i>	28 <i>Engineers' Day – Va. Air & Space Museum PEC EOY Banquet</i>
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March 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18 <i>IEEE Section Meeting</i>	19	20
21	22	23	24	25	26 <i>SouthEastCon 2004</i>	27
28 <i>SouthEastCon 2004</i>	29	30	31			