Worcester County IEEE
Newsletter

November 1995

Special Meeting - Worcester Section

Thoughts on the Future of the EE Profession, EE Education, and the IEEE

J. Thomas Cain, President of IEEE

Monday, November 6, 1995 at 6:30 PM (snacks at 6:00 PM), WPI, Worcester

Tom Cain, president of IEEE, will discuss the major changes that have been occurring in the electrical engineering profession, as well as in IEEE itself.

Worcester Section - PACE - Internet Subsection

Local Area Networks and the Internet

Elaine Altavilla, Novell

Thursday, November 16, 1995 at 7:00PM, DEC (SHR3), Shrewsbury

Local area meets wide area! This months meeting will focus on making your local area network Internet-ready.

Worcester Section - Computer Society

Borland's Delphi32

Peter Marquez, Borland International

Monday, November 20, 1995 at 7:00 PM, Tax Software, Burlington

This months meeting will provide a sneak preview of the new multithreaded, 32 bit Delphi, and the significant enhancements to InterBase and the Borland DataBase Engine.

Worcester Section

Borland's Delphi32, Interbase, and DataBase Engine

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Monday, December 11, 1995 at 7:00 PM, WPI, Worcester

An introduction to Delphi, Borland's object oriented, client/server, rapid application development environment with a true optimizing native code compiler.

Computer Society

Implementation of the IEEE Standard for Taming CHAOS in Software Product Development and Maintenance

Moisey Lerner

Wednesday, January 10, 1996 at 6PM, Quantum, Shrewsbury

See the article inside for information on this subject.

IEEE Computer Society Training on Software Process

Introduction to the Capability Maturity Model*

January 17,18,19, 1996, GTE, Needham - IEEE members $995, non-members $1295

THE PACE PAGE

PACE Activities

Larry G. Nelson Sr.

There was a large and very active get together at this years annual PACE conference. It was held in Cedar Rapids Iowa over the Labor Day weekend. You would think with this being the last long weekend before school starts that everyone would have plans other than meeting with other EEs. This was the largest PACE meeting so far. Why the big turnout and why was everyone so wound up? We had the normal meetings to discuss how to best help the unemployed engineer and what we need to do to keep our profession in a good light. What occupied most of our time? It was the thought that someone was apparently trying to rip apart the structure of the IEEE and there were areas that were scheduled for wholesale change.

We had meetings, discussions, roundtables, cracker-barrels, and straw votes. The bottom line is any changes need to be made slowly and in a controlled manner to insure we "fix" only what is broken. We have one of the largest and best technical / professional organizations in the world and we want to be sure not to fix what isn't broken. We voted to have the Directors go back to the drawing board for their plans and when they have something a little more reasonable to present it to the membership for a vote before they implement changes.

Larry - L.nelson@ieee.org - 508-949-2914 Fax - 508-943-1075 voice

IEEE-USA Introduces New Resume' Referral Service

IEEE-USA has negotiated an agreement with Resume'-Link Inc. establishing the Electrotechnology Resume' Referral Service. IEEE members can place their resume's free of charge on this national database used by employers to fill job openings.

Members may register for the service with or without a current resume'. The appropriate information forms are available through the World Wide Web at http://www.resume-link.com/ or by calling Resume'-Link at 614-529-0429. Once the registrant has submitted the information, it will be posted on the database within 48 hours and will remain active for six months. The participant may renew the listing by returning a reminder card and submitting updated information.

The service matches resume's with employer inquiries, except for those which the participant has specifically denied access on the information form. Search criteria can include technical skills, job functions and geographical preferences. When a match is made, Resume'-Link forwards participant information to the employer, who then may contact the candidate directly.

The Electrotechnology Resume' Referral Service expands IEEE-USA's array of employment assistance services, which include the National Job Listing Service, the Job Bank USA employment database, Kinko's Copy Center discounts, and a variety of free employment assistance information for unemployed members. For more information on these programs contact: Bill Anderson at 202-785-0017, ext. 330 or at w.anderson@ieee.org.

Thoughts on the Future of the EE Profession, EE Education, and the IEEE

J. Thomas Cain, President of IEEE and Professor of EE, University of Pittsburgh

Tom Cain, president of IEEE, will discuss the major changes that have been occurring in the electrical engineering profession, as well as in IEEE itself. Historically, IEEE Region 1 has been home to major portions of the computer industry and defense electronics. Over the past decade the computer landscape has changed drastically, from the dominance of the minicomputer to the rise of the workstation and personal computer. More recently, the defense electronics industry has begun a drastic reorganization and down-sizing. There is reason to believe that some structural changes may be occurring to the electrical engineering profession, beyond its historically cyclic nature. What do these changes mean for the profession, electrical engineering education, and the IEEE? The current president of IEEE, J. Thomas Cain, is in a good position to address these questions.

Meeting of the Worcester Section will be at 6:30 PM (snacks at 6:00) on Monday, November 6, in room 116 Atwater Kent (Electrical and Computer Engineering) building, Worcester Polytechnic Institute. An optional on-campus dinner will follow; reservations needed; contact John Orr. For more information contact John Orr (508-831-5273, orr@ece.wpi.edu).

Tom Cain is president of the IEEE. He received the PhD degree in Electrical Engineering from the University of Pittsburgh in 1970, and has been in the EE department at Pittsburgh since 1966. His areas of interest include real-time systems, including control of nonlinear systems, and robot manipulators in particular. Tom is a Fellow of the IEEE. This award was received for "Leadership and contributions to computer science and engineering education." He has served in numerous leadership roles in IEEE prior to his presidency, having been active at the Institute, Society and Section levels. Among his many IEEE activities, Tom has been Vice President and Acting President of the Computer Society. Outside IEEE, he has served on the ABET Board of Directors, and as President of the Computing Science Accreditation Board.

Directions to WPI: From I-290 westbound take exit 18; from I-290 eastbound take exit 17. In both cases follow the signs for route 9 westbound. After passing through Lincoln square (Worcester Auditorium on your right, Courthouse on your left) watch for Boynton St. (about 5 blocks). Turn right on Boynton. In one and a half blocks turn left into the WPI parking lot. Park and walk up the hill (sidewalk and stairs) at the far end of the lot. Pass the Civil Engineering building (Kaven Hall) on your right and Fuller Labs (new building) also on your right as you ascend the steps. Turn right at the top of the steps. Atwater Kent is the second building on your right after Fuller Labs.

IEEE Educational Activities Announces a New Web Page!

The IEEE Educational Activities Department has developed a page for the World Wide Web. Accessible with any text- or graphics-based Web browser, the Education Web Page is designed to provide information about continuing electrical engineering education to individuals working in the field. Featured on the page are:

Professional Development Activities to help enhance your career; Continuing Education Products, including books, videotapes and self-study courses, to help you remain technically vital; Accreditation Activities, for information on becoming a Program Evaluator; Educational Activities Board meeting minutes and rosters; and Education News, featuring announcements of recent or upcoming events related to electrical engineering education.

Using any text- or graphics-based Web browser, go to http://www.ieee.org/eab/ for the IEEE Education Web Page. The main IEEE Web Page is located at http://www.ieee.org/

The Education Web Page will be updated every two weeks, so check back often for current electrical engineering education news.

For more information, contact Gale Langseth, Outreach Coordinator, Educational Activities, IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, New Jersey 08855-1331; (908) 562-6526; g.langseth@ieee.org.

CNEC

Larry G. Nelson Sr.

The Central New England Council. What is it? What does it do for our members, and Do We Need It? The council was formed as a way to provide technical society presence for a group of sections that do not have the membership to support the society as individuals. As an outgrowth of this grouping we each get the Reflector with meeting notices from all the member sections. This was self supporting until a few years ago. Electro was a major source of income and paid good dividends which supported the meetings and the publishing of the Reflector. At the last CNEC meeting it was voted to assess each Section $2.00 per member to help keep the books in balance. Two years ago it was $1.00 and we paid it. Last year no bill was sent so no money was paid. This amount is less than the cost to print and mail the Reflector. I need some feedback from you about the value of continuing to get the Reflector. This will not affect your dues in any way but it does come from the treasury of the Section and is your money. You should also know that no money comes from IEEE to pay for the Reflector, even though a note is in your dues bill about a non refundable portion. That is why it is non refundable. If you belong to a Society other than Computer or Power, CNEC is the source of any meetings you see in the area.

Please let me know your feelings about paying this assessment. If we do not pay it the only way to get the Reflector is to subscribe separately which is currently $10.00 but I have been told that it will be going up.

Thank you and I look forward to hearing from you.
Larry - L.nelson@ieee.org
508-949-2914 Fax - 508-943-1075 voice

[Editors note - Although the $2.00 assessment seems small, it represents a significant part of the Worcester Section's budget. A decision to pay it could mean making hard decisions on priorities for other Section expenditures.]

Executive Committee Meetings

Larry G. Nelson Sr.

The Worcester County Section Executive Committee has a meeting every month. During these meetings we plan the technical meetings hosted by the section and societies. We have held these meetings at various companies that donate the use of a room and at times we have met at various restaurants. At our last meeting it was decided to have the next few meetings at area restaurants in the hope that you, the members, would attend. I am taking this opportunity to invite each and every one of you to come to our executive committee meetings and give us feedback. We are looking for meeting ideas, locations, speakers, and any type of volunteer help we can get. To help with planning I have scheduled several months of meetings in advance to give

IEEE Computer Society Training on Software Process

Introduction to the Capability Maturity Model*

This course is offered by the IEEE in cooperation with GTE Government Systems Corporation

Schedule: January 17,18,19, 1996 from 8am to 4:30pm **Location:** GTE Government Systems, Needham, MA

Class size: Limited to 25 participants **Cost:** IEEE members $995, non-members $1295

Instructors: C. Ahara and J. Perry, who together have over 50 years experience in software engineering and software management. They have been trained to present this course and are authorized Lead Assessors for the CBA IPI (CMM*- Based Appraisal for Internal Process Improvement).

Prerequisites: Participants must have knowledge of both software engineering and management, including exposure to Software Quality Assurance and Software Configuration Management, and basic management principles. This course is a prerequisite for the CMM-Based Appraisal training.

Who Should Attend: Software Engineering Process Group members and those involved in software process improvement, those involved in software process appraisals, software managers, and software practitioners committed to software process improvement at their facility.

Course Content: Software Process Maturity, Overview of the CMM, Value of the CMM, CMM Structure, Modules for all 5 CMM Levels, Interpreting the CMM. The 3-day course introduces participants to the CMM, its concepts and fundamental components. The course discussions emphasize understanding of the five maturity levels and their characteristic Key Process Areas (KPAs). The course is composed of lectures, class exercises, and opportunities for participants to be actively involved through case studies, questions and discussions. It currently utilizes version 1.1 of the CMM released in February 1993.

Further Information: Maureen Harris at 617-455-3393 or harris.maureen@mail.ndhm.gtegsc.com

(* The Capability Maturity Model and the CMM are Service Marks of Carnegie Mellon University)

you plenty of notice. In the past few years we have lost some of the workers on the executive committee and we could use any level of help you could provide. We all want to provide you with valuable meetings and services but we need to know what you want. While these are open meetings we would like some idea of how many will be coming so we can have proper seating and can let the restaurant know how many we expect. The meals are ordered off the menu. Please let me know if you will be able to join us by e-mail, fax, or phone.

Thank you and I look forward to meeting you at our meetings.

Larry - L.nelson@ieee.org

508-949-2914 Fax - 508-943-1075 voice

Meeting Schedule

November 8 - The Grill in Northboro off 290

December 13 - (Christmas Party & meeting) The Sole Proprietor, Highland Street in Worcester. Seating is limited so call early.

January 10 - Location TBD

Borland's Delphi32

Peter Marquez, Borland International

Delphi32, InterBase, and the Borland DataBase Engine. This months meeting will provide a sneak preview of the new multithreaded, 32 bit Delphi, and the significant enhancements to InterBase and the Borland DataBase Engine. Peter Marquez, Borland Systems Engineer will provide a peek at the future you don't want to miss.

Meeting starts at 7:00 PM on, November 20, 1995 at Pencil Pushers - Tax Software, 10 New England Executive Park, Burlington, MA. For more information call Al Reinhart, DisCom Systems at 508/869-6417.

Implementation of the IEEE Standard for Taming CHAOS in Software Product Development and Maintenance

Moisey Lerner

THE PROBLEM: Chaos in Software Development and Maintenance

1. Chaos in New Product Development. According to The Standish Group, over 250 billion dollars are invested in the U.S. each year on the development of approximately 175,000 information technology projects. "... a staggering 31% of projects will be cancelled before they ever get

completed... 53% of all projects will cost 189% of their original estimates. Only 16% of all projects will be completed on-time and on-budget. In the large companies, the news is even worse: only 9% of their projects come in on time and on-budget. And, even when these projects are completed, many are no more than a mere shadow of their original specification requirements."

2. Chaos in Maintenance. Industry experts estimate the size of long-lived programs running government and business operations to exceed 100 billion lines of code. Keeping these programs in proper operating condition requires expenditure of from $1 to $3 per line of code/per year. Assuming this continues with a 10% increase per year, costs will consume $4 trillion in the next ten years.

3. Maintenance Versus Development. In software development, the cost of a change increases nearly exponentially the further the product is from its initiation. This cost reaches a maximum by delivery time. Maintenance (amending a product after delivery) then suffers the highest cost of a change. On the other hand, maintenance consumes, today, up to 80% of all programming expenses, leaving only 20% for software development. The cost of a change and the scale of expenses pushes the maintenance crisis to the top of the priority list. Once this crisis is solved, the problems in program development will be solved consequentially.

THE CAUSE: Rapid Increase in Product Complexity

1. The size of any significant software product tends to double every seven years. Program complexity increase accordingly.

2. Today, software development seldom ends with a stand-alone product. When new products enhance legacy products, they include the complexity of these older products.

THE IEEE Standard Solution

The IEEE Standard for Software Maintenance contains guidelines for reducing complexity of a commercial product. Implementation of these guidelines provides a solution to the problem.

1. The complexity of a commercial product, as a measure of chaos, can be evaluated by the ratio of the actual to the declared period of production (or modification) and delivery.

2. The more this ratio exceeds 1, the higher the level of chaos in production and maintenance. Chaos can be reduced by equipping the maintainer or developer with a 'good system' abstracted from the product. A 'good system' is one for which the ratio of the actual to the declared production period does not exceed 1.

3. Rules for creating a 'good system' are spelled out in the IEEE Standard for Software Maintenance.

4. To keep a system in proper condition, the system should evolve along with the product. A Reverse Engineering approach for this evolution will be described in the presentation.

Dr. Lerner has over 30 years of experience in industry and academia in hardware and software technology and design. He has created a "Genetic Matrix" approach to documenting complicated commercial products, a revolutionary low voltage hard-coating process and large DC+AC resonant power supply for covering aluminum alloys with films with next to diamond hardness, a three-phase alternating current process for anodizing aluminum foil for electrolytic capacitors, and (with T. Lerner) "TL - indices" for integral characterization of non-sinusoidal signal wave forms. He was Professor of Physics at the Institute of Electrical Communications in Novosibirsk and Tashkent for 6 years and Professor of Electrical Engineering at the Air Force Academy in Kiev for 5 years.

Local Area Networks and the Internet

Elaine Altavilla, Novell

Local area meets wide area! This months meeting will focus on making your local area network Internet-ready. Elaine Altavilla from Novell will discuss Novell's Internet products and strategy for providing complete, integrated solutions for LAN-Internet connectivity and global information access. Beginner and advanced, hands-on Internet workshops are held between 6:30 and 7:00

Meeting is at 7:00 on Thursday, November 16, 1995 at Digital Equipment Corporation (SHR3), Shrewsbury, MA. For more information call Al Reinhart, DisCom Systems at 508/869-6417.

Borland's Delphi32, Interbase, and DataBase Engine

Peter Marquez, Borland Systems Engineer

This months meeting will provide an introduction to Delphi, Borland's object oriented, client/server, rapid application development environment with a true optimizing native code compiler. Peter Marquez, Borland Systems Engineer, will include a preview and demonstration of the new multithreaded, 32 bit Delphi that will share a common backend with C++ and provide 300 - 400% performance improvements. The significant enhancements to Borland's database server, InterBase, and the Borland DataBase Engine will also be covered. This meeting will be a peek at the future you don't want to miss.

Meeting is at 7:00 on Monday, December 11, 1995 in Kennicutt Hall, Salisbury Labs, Worcester Polytechnic Institute, Worcester, MA. For more information call Al Reinhart, DisCom Systems at 508/869- 6417.