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IEEE Boston Spring Social and Awards

The 2016 IEEE Boston Section Spring Social and Awards Reception will be held on

**Sunday, June 12, 2016 from 1 - 4PM at the Crowne Plaza Hotel,
15 Middlesex Canal Park Road, Woburn, MA.**

At this reception, we will recognize and/or present awards of all IEEE levels from Fellows to section awards to all Boston Section recipients. Members of the section and their families and friends are invited to attend.

Look for more details on the Boston Section website (ieeeboston.org) and in upcoming issues of the paper and digital Reflector (please sign up for the digital Reflector if you do not currently allow electronic communications from the section) as this will be our main publicity outlet after the May 2016 paper Reflector issue.

You can sign up at this link, <http://ieeeboston.org/notifications-of-next-digital-reflector/>

(NOTE: IF YOU ARE A MEMBER OF THE BOSTON SECTION AND YOU ARE ALREADY RECEIVING THE DIGITAL REFLECTOR, YOU DO NOT NEED TO SIGN UP AS IT WILL BE AUTOMATICALLY SENT TO YOU. NON-MEMBERS CAN SIGN UP AS WELL USING THE SAME LINK ABOVE!

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Google+: <https://plus.google.com/107894868975229024384/>

LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>



Consulting 101: Here's What You Need to Know

Heinz Bachmann, Chair, Consultants' Network

Engineering is a great field for creative people who love technology and solving problems. Most engineers begin their careers as employees where they develop skills. After a few years, some find that they are ready for a change and move away from purely technical work to assume roles in fields such as sales, marketing or management. Many are perfectly content solving technical problems all day long and develop additional expertise. Yet eventually some of these experts find that they, too, are ready for a different work environment, and consider consulting.

There are a number of reasons to consider a career in consulting. Disillusionment with the corporate world, a desire for independence and flexibility and augmenting retirement income are often mentioned. These are valid reasons, but there are other considerations as well.

Consulting is basically a life-style choice. As a consultant, while you will be (and want to be) dealing with corporate clients, you are no longer just a cog in someone else's machine. You will have some control and flexibility in your work hours, so you can catch those soccer games and scout meetings. If it's a nice day, go fishing and finish that job on Saturday night. If you can afford it you can take that long vacation and combine some business with pleasure. You might attend that conference that just happens to be near a beach or a ski resort. A business is a good tax shelter with generous deductions.

Professionally, things can get very interesting. Often clients come to a consultant with challenging, non conventional problems that do not have cookie cutter solutions and are therefore interesting to solve. If you enjoy an intellectual challenge, there are opportunities. I myself have done unusual things that I never expected to ever do and found these very stimulating. Have you ever worked on a wireless fencing scoring system? Or determined how to send a message across the continent in the shortest possible time?

It is very satisfying when that business that you have worked on so hard finally creates revenue and becomes profitable. It's a great feeling to have created something of measurable value.

But no situation is ideal. Let's talk about some things that many people find problematic. Be aware that a successful consultant is more than a technical problem solver. You must be comfortable dealing with people, and you must understand planning, marketing, business building, accounting taxes and everything else that comes with owning a business. Especially in the early stages, you may not be able to afford much outside help and do everything from balancing the books to printing business cards to cleaning the office.

Expect to always spend significant time looking for the next contract. When you find that interested party, be prepared to work to negotiate an acceptable deal. You must write proposals and have ready terms and condition sheets and be prepared to read the fine print in the client's statement of work. And make sure that you get paid.

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

You must be willing to forego a steady income and accept that revenue comes in spurts. There are no paid sick days and there is no unemployment compensation, so financial planning is a must. You must provide your own health care, disability insurance and plan for retirement without an employer-matched 401K.

While some consultants do quite well, in general you cannot expect the same income as an employed engineer in his or her prime earning years. Don't quit your job and start consulting to increase your income.

Expect that it will take a year or two to get that revenue flowing. You will need a financial cushion, both for ramp up time and to bridge hard times. Plan accordingly. Keep at least one year of family living expenses in the bank.

That said, these are not insurmountable problems. Even if you are primarily a gear head, you can learn to do these other things, as I can attest from my own experience. The IEEE Consultants' Network (www.bostonconsult.com, C Net for short) is here to help you do just that.

Each year C Net offers a series of ten events focused primarily but not exclusively on small business topics. These include business building, marketing, accounting and tax issues, legal issues and growth. We have covered sales strategies, how and where to find clients, how to grow your business, and how to get paid. We also have joint meetings

with other organizations such as the IEEE Entrepreneurs' Network where you can meet potential clients. Members can create a profile on C-Net's website and get listed in the annual printed directory. Many potential clients with problems search for consultants affiliated with the IEEE.

C-Net members network with and refer clients to each other. We also meet for informal dinners where new members can socialize and share experiences.

If you are considering a move to consulting, I would urge you to attend our next meeting, Everything You Wanted to Know About Consulting But Were Afraid to Ask, where a panel of 5 consultants will share their experiences and tips on how best to consult. A usual this will be held on the 4th Wednesday of the month at 6:30, Wednesday April 27, at Constant Contact, 1601 Trapelo Road, in the Great Room on the 1st floor, Waltham, MA 02451. We hope to see you there.

Heinz Bachmann serves as the Chairman of the Boston chapter of the of the IEEE Consultants' Network. In 2003 he founded CustomRF, a consulting company that operates mostly in the RF and wireless space, with special emphasis on antennas. He has held engineering, marketing and management positions with companies in commercial wireless, point-to point radios and satellite communications and was an Adjunct Professor at the Wentworth Institute of Technology. He received a Diploma in Electrical Engineering from the ETH (Federal Institute of Technology), Zürich, Switzerland.

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LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>

Locally held IEEE Conferences

Save the travel costs and participate in these IEEE conferences held locally.

2016 IEEE High Performance Extreme Computing Conference
September 13 - 15 2016
www.ieee-hpec.org
(Abstract submission deadline is May 16, 2016)

2016 IEEE Symposium on Technologies for Homeland Security
May 10 -12 2016
www.ieee-hst.org

Hotel and Conference Registration is Now Open!!!

2016 IEEE International Symposium on Phased Array Systems & Technology
October, 18 - 21 2016
www.array2016.org

As always, the views expressed in our editorials are those of the author and not necessarily those of the IEEE Boston

Letters to the editor can be sent to,
["sec.boston@ieee.org"](mailto:sec.boston@ieee.org)

IEEE prohibits discrimination, harassment and bullying.
 For more information visit <http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html>

Call for Course Speakers/Organizers

IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity. The IEEE Boston Section, its dedicated volunteers, and over 8,500 members are committed to fulfilling this core purpose to the local technology community through chapter meetings, conferences, continuing education short courses, and professional and educational activities.

Twice each year a committee of local IEEE volunteers meet to consider course topics for its continuing education program. This committee is comprised of practicing engineers in various technical disciplines. In an effort to expand these course topics for our members and the local technical community at large, the committee is publicizing this CALL FOR COURSE SPEAKERS AND ORGANIZERS.

The Boston Section is one of the largest and most technically diverse sections of the IEEE. We have over 20 active chapters and affinity groups.

if you have an expertise that you feel might be of interest to our members, please submit that to our online course proposal form on the section's website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is <http://ieeeboston.org/course-proposals/>). Alternatively, you may contact the IEEE Boston Section office at sec.boston@ieee.org or 781 245 5405.

- Honoraria can be considered for course lecturers
- Applications oriented, practical focused courses are best (all courses should help attendees expand their knowledge based and help them do their job better after completing a course)
- Courses should be no more than 2 full days, or 18 hours for a multi-evening course
- Your course will be publicized to over 10,000 local engineers
- You will be providing a valuable service to your profession
- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.

Entrepreneurs' Network – 6:30PM, Tuesday, 5 April

Strategic Alliances for M&A and Successful Exits

Meeting Location – Constant Contact, 1601 Trape-
lo Road, 1st Floor, InnoLoft, Waltham, MA

PRE-MEETING DINNER at 5:15 PM (sharp) at
Bertucci's, Waltham.

For today's entrepreneur - who faces high hurdles to funding, ever increasing competition, thin barriers to entry, and shortened cycles from invention - strategic alliances and partnerships have become a key survival technique. For the startup company, your strategic partner can be your first source of outside funding, the beta tester of your product or service, and source of credibility for your first angel or venture capital investment round. For the early stage company, alliance partners can help you to gain competitive advantages, increase sales, scale up production, penetrate new markets and deliver new products and services. The strategic alliance partner, might also offer more... the potential for an exit strategy, the potential acquirer for your company or one to lead you to a future acquisition.

On April 5, our ENET panel will include present and past CEOs, investors and Merger and Acquisition (M&A) professionals, moderated by a startup company and M&A attorney. All have extensive experience developing and building these alliances to deliver value and to aid companies for future M&A events and for their exit strategies. They will tell what to look for and what to avoid as they : (1) address the process of identifying possible partners, drilling down to the best one and securing the relationship; (2) share experiences regarding what has made their partnerships successful, and, more importantly, what went wrong and why; (3) discuss how these relationships aided them in their M&A and exit strategies, (4) review the risks to their companies, and the learning process that they went through.



Speaker: Katherine Hays, co-founder and CEO of Vivoom, Inc. (<http://www.vivoom.co/>) a mobile media company that enables brand-safe storytelling between advertisers and consumers. The company has built a platform that allows brands to put people at the center of their entire mobile marketing process. . Customers using Vivoom's platform include Citibank, General Mills, TCU, Universal Pictures, NCM, In the Pink for Lilly Pulitzer among others. Prior to Vivoom, Katherine served as CEO of GenArts from 2008 to 2015. While CEO, she more than doubled the company's number of high-end users and transitioned the company to a SaaS business model, and made acquisitions of wondertouch, UK-based SpeedSix, Ltd., and the Tinder business (formerly part of The Foundry). Katherine has a proven track record of launching media and technology companies including Massive Incorporated, the In-game advertising network she co-founded, ran as COO/CFO and eventually sold to Microsoft in 2006. Prior to Massive, Katherine was an equity research analyst with Goldman Sachs. She is a graduate of Princeton and Harvard Business School.



Speaker: Richard C. Kimball, Senior Director of Bigelow LLC (<http://www.bigelowllc.com/>) for over twenty years, where he has built stockholder value in family-owned and owner-managed businesses, managing client relationships in distribution, technology, and service industries for U.S. and foreign clients. Kimball's operating experience includes serving as Vice Chairman and Director of Rock of Ages Corporation, the nation's leading quarrier and manufacturer of specialty granites

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and granite products. Prior to joining Bigelow, Dick served in a number of sales, marketing, and consulting positions with Universal Packaging, Unilever, and The U.S. Department of Commerce and The U.S. Department of State. Kimball has served on the Board of several public and private companies, including Merchants National Bank, Hollis Automation, and Advanced Systems Inc. He has been quoted in a number of publications including the American Bankers magazine, CFO magazine, The Boston Globe, and the Wall Street Journal. Dick is a graduate of Babson College, where he has served as Trustee for over 20 years, and has chaired several Babson Councils on Family Business, Entrepreneurship, and Global Business.



Speaker: Charles R. Lax, Co-Founder and Managing General Partner of GrandBanks Capital, <http://www.grandbankscapital.com>, focusing on investments in Internet infrastructure, software and software services, security and storage applications, mobile

media, financial technologies and services, and wireless technologies and services. Charley's investment career includes investments in 54 portfolio companies, which have resulted in 39 exits thus far. His track record includes 15 companies that went public, of which 10 achieved market caps in excess of \$1 billion. The combined value of exits during Charley's venture career has been over \$6.1 billion which includes the \$4.6 billion purchase of GeoCities by Yahoo!. Charley was recently named one of the top 50 venture capitalists on the east coast by AlwaysOn. Charley currently serves on the boards of a number of GBC companies, including; Defense Mobile, GlassHouse Technologies, KnowledgeVision, SilverRail Technologies and TIM Group. Charley is also a founding General Partner of SOFTBANK Venture Capital (established in 1997), an early-stage venture capital firm. Prior to his career in venture capital, Charley worked for a series of software companies in marketing, product management and sales roles, including Phoenix Technologies Ltd., the BIOS developer. Charley is

a graduate of Boston University, B.S. magna cum laude, and currently serves on the Advisory Boards of Boston University Athletic Department and recently retired from the President's Council of the Franklin W. Olin College of Engineering.



Moderator: Robert Adelson, business and tax attorney, partner at Boston law firm of Engel & Schultz LLP (www.ExecutiveEmploymentAttorney.com), and Chairman of The Boston Entrepreneurs' Network. Rob has been an attorney for over 30 years specialized in business, tax, stock and options,

employment, contracts, financings, trademarks and intellectual property. Rob began as an associate at major New York City law firms before returning home to Boston in 1985 where he has since been a partner in small and medium sized firms before joining his present firm in 2004. Rob represents entrepreneurs, start-ups and small companies, independent contractors and employees and executives. Rob is a frequent speaker on business law topics and author of numerous articles published in Boston Business Journal, Mass High Tech and other publications. He has been named among the "Top 20 Boston Startup Lawyers" by Chubby-Brain.com, a website that provides tools for entrepreneurs. Rob has been on the ENET Board since 2002 and Chairman since 2009 and is also a Co-Founder and Board member of the 128 Innovation Capital Group. He holds degrees from Boston University, B.A., summa cum laude, Northwestern University (Chicago), J.D., Law Review, and New York University, LL.M. in Taxation.

Pre-meeting Dinner at 5:15 PM (sharp) at Bertucci's, Waltham, (Exit 27B, Route 128)

E-Minute Presentations will be given at the start of the meeting. These very short presentations enable young startup entrepreneurs to gain experience in presenting their summary business plans to expert panels and audiences.

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

Check for Updates at: Boston Entrepreneurs' Network Website at (<http://www.boston-enet.org>)

Directions: Constant Contact is adjacent to RT 128 / 95 at Exit 28B.

See: <http://www.constantcontact.com/about-constant-contact/office-location-waltham.jsp>

Reservations: ENET Constant Contact meet-

ings are free to ENET members and \$20 for non-members. No reservations are needed for the premeeting dinner. To expedite sign-in for the meeting, we ask that everyone -- members as well as non-members -- pre-register for the meeting online. Pre-registration is available until midnight the day before the meeting. If you cannot pre-register, you are welcome to register at the door.

Photonics Society – 6:30PM, Thursday, 7 April

Swept Source Lasers

Dr. Bart Johnson, Axsun Technologies



The development of swept source lasers has made high-speed optical coherence tomography (OCT) cost effective at 1060 and 1310 nm wavelengths. Axsun Technologies manufactures this type of source and has made inroads into ophthalmology and cardiology applications.

The 1060 product, for example, tunes 990-1100 nm at a 100 kHz sweep rate. This external cavity diode laser is tuned by a MEMS Fabry-Perot filter.

The act of rapidly sweeping the filter induces a mode-locking behavior. This is because when the pulses deplete the gain medium they are red shifted due to the index rise in the semiconductor optical amplifier associated with the linewidth enhancement factor. Instead of each wavelength building up anew from spontaneous emission, the pulses are nonlinearly red shifted to track the filter sweep. A feedback mechanism built into the laser dynamics ensures that the nonlinear shift follows the MEMS filter sweep. Axsun has created numerical models of this process and used it to design a new generation of low noise swept lasers. The numerical model predicts mode locking and chaotic pulsation behaviors in laser designs intended for difference applications. The agreement with experiment is striking. The talk will focus on this laser physics to

show how it makes these various OCT applications possible.

Juliet Since 2000, Bart Johnson has been employed as an electro-optics engineer at Boston-area start-ups CoreTek (tunable VCSELs), Azna (chirp managed lasers for telecom) and Axsun Technologies. His current position is Systems Engineering Fellow at Axsun involved in laser-based NIR spectroscopy and Optical Coherence Tomography. He is actively working in the area of NIR spectroscopy, chemometrics and applications. In OCT, he contributes to electronic systems design and testing as well as theoretical modeling of swept laser sources. He holds a BEE from the University of Minnesota and a PhD from MIT in electrical engineering.

This meeting begins at 6:30 PM Thursday, April 7th, MA, 02420. The meeting is free and open to the public. All are welcome. Prior to the seminar there will be social time and networking from 6:30 – 7:00PM. Dinner will also be provided. The seminar will begin at 7:00PM.

For more information contact Jade Wang, Boston IEEE Photonics Society Chapter chair at jpwang@ll.mit.edu, or visit the Boston IEEE Photonics Society website at www.bostonphotonics.org.

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

**Directions to Forbes Rd Lincoln Laboratory:
(from interstate I-95/Route 128)**

- **Take Exit 30B onto Marrett Rd in Lexington – Merge into left lane**
- **Make the first Left onto Forbes Rd.**

- **Proceed straight through the small rotary and enter the parking lot.**
- **The entrance is on your right.**

**To assist us in planning this meeting, please pre-register at
<http://www.ieeeboston.org/Register/>.**

Computer Society and GBC/ACM - 7:00PM, Thursday, 14 April

Balancing Flexibility and Scale in a Synthetic Biology Foundry

Barry Canton, Ginkgo Bioworks, Inc.

There is a growing demand to source a wide range of chemical products (for example, plant-derived extracts) from engineered microbes. While recent advances in synthetic biology and metabolic engineering make this work technically feasible, commercial success is hindered by the cost to develop the microbes. Development has been costly because the complexity and diversity of biology favored a labor-intensive, small-batch approach to engineering. Ginkgo has built a foundry that allows many microbial engineering projects to use shared processes in a high-throughput, largely-automated fashion that unlocks substantial economies of scale. In this talk, I will outline the approach, custom software, and hardware that we use to allow flexibility and scale to co-exist where previously one came at the expense of the other. I will illustrate this with examples from each stage of the engineering process across representative projects.

Barry Canton co-founded synthetic biology company Ginkgo Bioworks in 2008 and has helped build the company to 55 people and raised more than \$50M in investment over the last year. At Ginkgo, Barry is responsible for the development of the foundry, a centralized facility for organism engineering. In this role he oversees the development of hardware, software, and wetware technologies. Earlier, he led the development of new methods for

assembling DNA from standard parts. He holds a PhD in Biological Engineering from MIT, where his thesis focused on refinement of standard biological parts and the interactions between a host cell and an engineered genetic circuit. At MIT, he was involved with the Synthetic Biology Working Group that was instrumental in catalyzing the new field. He also holds an MEngSc in Mechanical Engineering from University College Dublin.

This joint meeting of the Boston Chapter of the IEEE Computer Society and the GBC/ACM will be held in the main auditorium on the 1st floor of the Broad Institute, corner of Main and Vassar Streets in Cambridge.

Up-to-date information about this and other talks is available online at

<http://ewh.ieee.org/r1/boston/computer/>.

You can sign up to receive updated status information about this talk and informational emails about future talks at <http://mailman.mit.edu/mailman/listinfo/ieee-cs>, our self-administered mailing list.

To assist us in planning this meeting, please pre-register at,

<http://www.ieeeboston.org/Register/>.

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Reliability Society – 5:30PM, Thursday, 14 April

Infrastructure for Rapid Assessment of Reliability: Infrastructure and Process Improvements in the Reliability Testing of a High Density Microelectronic Packaging Technology

Hannah Varner, Draper Laboratory



Draper Laboratory has developed a high density microelectronics packaging technology called iUHD (integrated Ultra High Density)[1] based on a foundation of Multi-Chip Module technology combined with automated silicon fabrication techniques.

As part of the technology development, we needed a means to efficiently characterize the environmental reliability of fabricated features in order to quickly evaluate new materials and processes. In response we have developed an infrastructure for accelerated life testing of features and process variations. We started by conducting a Failure Modes and Effects Analysis to focus our efforts on the most critical aspects of the technology given customer environmental qualification requirements. Then we developed test structures for high risk priority numbers. Each test structure is designed and with one feature so we are able to tailor the life testing for the relevant failure mechanisms, and ensure test results are straightforward to interpret. We used a common test die format, common package and common test interface board. This common infrastructure makes it feasible to evaluate a large number of different test structures with a limited amount of resources. The common infrastructure also makes the testing method extensible to new structures as the technology evolves.

We have completed an initial assessment, and confirmed the expected environmental robustness of Draper's iUHD technology. We have also leveraged this infrastructure to quickly characterize a new via

process, and are using the test structures to evaluate changes to our metallization process and geometries. Along the way, we improved upon some shortcomings identified in our first set of test die.

This paper will describe the infrastructure we have developed including generic test die, as well as report on our initial results, improvements and future directions.

Hannah Varner is a Member of Technical Staff at CS Draper Laboratory in the Production Quality and Analysis division. Hannah has worked in reliability engineering and accelerated life testing activities in the micro-electronics and inertial instrument areas of the company. She has a SB in Mechanical Engineering from Brown University where she managed the production of and quality systems for Brown's first satellite (EQUiSat).

e-mail:hvarner@draper.com

5:30-6:00 Sign In, Networking, Light Dinner & Refreshments

6:00-6:10 Chapter Chair Greetings & Announcements

6:10-8:00 Hannah Varner, Draper Laboratory

8:00-8:15 Q&A session, meeting adjourns

Meeting Location: 3 Forbes Rd, Lexington, Massachusetts

To assist us in planning this meeting, please pre-register at

<http://www.ieeeboston.org/Register/>.

Entrepreneurs' Network Cambridge Meeting – 6:00PM, Tuesday, 19 April

Guerrilla Marketing to Create Buzz for your Product or Service

Guerrilla Marketing is inspired by tactics of Guerilla Warfare which relies heavily on irregular, unconventional tactics and strategy - think ambushes, raids and elements of surprise!

Likewise, Guerrilla Marketing thrives on unconventional marketing strategies, imagination and creativity. It's goal is to strike a prospective customer in a personal and memorable way which creates massive amounts of social buzz. Guerrilla Marketing is an ideal method for startups who need to connect with a large audience with limited resources.

Learn from our panelists who will share their unique strategies and how they created their guerrilla marketing campaigns. If you are looking for ways to distinguish your business from the competition, or graduate from marketing lightweight to marketing Ninja, this event is for you!



Panelist: Katie Martell, Co-Founder, CMO, <http://cintell.net/the-team/>, Twitter: @KatieMartell

Katie Martell is on a mission to help B2B companies better understand their buyers as Co-Founder and CMO of Cintell, a SaaS customer intelligence company. She has spoken at events including TEDx, MarketingProfs, BMA, and more, and often writes about marketing in various publications. As Director of Buzz at NetProspex, (acquired by Dun & Bradstreet) she accelerated the company 2X each year from startup to award-winning organization serving members of the Fortune 500. Katie is a graduate of Emerson College in Boston where she is a scotch enthusiast, ska aficionado, and board member of the American Marketing Association.



Moderator: Stacey Arbetter, Co-founder & CEO of Mutt Maps, Inc., <http://muttmaps.com/>

Stacey is a Serial Entrepreneur of several successful startups including the leading supplier in North America of an industrial product for the transportation industry and, previously, the largest independent exporter of automobiles in the U.S. She excels at identifying market opportunities and is motivated by new challenges where complex, innovative problem-solving skills and business strategy can bring direct and immediate value to an enterprise. Stacey's latest startup is Mutt Maps. Mutt Maps is a web app developing a community for pet owners that delivers community-reviewed, geolocated, pet-friendly places, services and products.



Organizer: Dr. Karthik Ganesan, Program Director, Cognizant Technology Solutions, <http://www.cognizant.com/>

Dr. Karthik Ganesan is the American Program Director for Business Consulting and Enterprise IT at Cognizant Technology Solutions, a NASDAQ listed, Fortune 500 US corporation. He manages a multi-million dollar portfolio of services for corporate customers, leading globally distributed teams to provide domain knowledge and technical services. Dr. Ganesan's experience spans applying optimization and domain knowledge skills to manufacturing, supply chain, logistics and retail operations in large corporations. As a domain leader, he manages teams spread across the USA, Latin America, Europe and India for delivering business and IT projects. He focuses on solving logistics operations

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and supply chain management and manufacturing problems faced by his customers. He is responsible for leading the business center in implementing full-life cycle solutions to his customers within competitive, time constrained contractual terms. His responsibility extends to internal and external team management, customer satisfaction and securing repeat business for his group. Prior to taking this industry position, he spent over a decade in graduate level teaching and research in both engineering and business schools.

Karthik was granted a Young Scientist Award by the Department of Science and Technology of the Government of India. He was elected a Fellow of the Institution of Engineers (FIE), India, is a member of American Society of Engineering Education (ASEE) and of the Institute of Electrical and Electronics Engineers (IEEE). He is a postdoctoral fellow from The Ohio State University, Columbus. He holds Graduate and Doctoral degrees in Industrial Engineering and Management from the Indian Institute of Science and an undergraduate degree in Mechanical Engineering.

E-Minute Presentations will be given at the start of the meeting. These very short presentations enable young startup entrepreneurs to gain experience in presenting their summary business plans to expert panels and audiences.

Where: Microsoft Technology Center, 255 Main Street /One Cambridge Center, Cambridge, MA. 02142 Phone: (781) 487-6400 The One Cambridge Center GENERAL ENTRANCE is on 255 Main Street, Cambridge, across from the Kendall Square Post Office. Exit Kendall Square T Station to Main Street. Once you exit the station, head down the Marriott side of Main Street going in the direction of Boston/the Longfellow Bridge. The One Cambridge Center entrance is located next to the Boston Properties entrance. Enter through the glass revolving door and proceed to the Microsoft facilities on the second floor. Note: There is also a direct Microsoft en-

trance across from the rotary at the confluence of Main Street and Broadway. See also: http://www.microsoft.com/en-us/mtc/locations/boston_directions.aspx

Note: There is also a direct Microsoft entrance across from the rotary at the confluence of Main Street and Broadway.

PUBLIC TRANSPORTATION: Travel Mass RT 2 East from RT 128 Exit 29A directly to the Alewife MBTA garage. Park at the Alewife Garage (\$7.00) on the MBTA subway Red Line. Take the inbound train (the only one available there) for 15 minutes to Kendall / MIT. The entrance to the Microsoft Technology Center is directly across the street from the station.

Check for Updates at: Boston Entrepreneurs' Network Website at <http://www.boston-enet.org>

Admission: General admission is \$10. Free to ENET members. Free pizza and soft drinks will be served. Advanced registration is requested but not required.

Local Conferences

2016 IEEE High Performance Extreme Computing Conference
September 13 - 15 2016
www.ieee-hpec.org
(Abstract submission deadline is May 16, 2016)

2016 IEEE International Symposium on Phased Array Systems & Technology
October, 18 - 21 2016
www.array2016.org

2016 IEEE Symposium on Technologies for Homeland Security
May 10 -12 2016
www.ieee-hst.org

Power & Energy Society – 6:30PM, Tuesday, 19 April

Challenges and Opportunities in High Level Renewable Energy Integration

Eduard Muljadi, Senior Engineer, National Renewable Energy Laboratory



In this talk the challenges and opportunities in integrating high level renewable energy will be presented. The background of renewable energy will be discussed first, the nature of the resources, different types of renewable energy generators, the concept of generator and the plant, the similarities and differences between

conventional and renewable power plants.

Then the presentation will continue with the discussion on the grid integration aspect of renewables, the opportunities and the limitations to participate in the ancillary services, and the flexibilities and direct response of the power converters. Hardware/software commonly used in analyzing grid integration of renewables will be presented. Different types of testing necessary to ensure seamless integration to the grid, and facilities at NREL to support the renewable industries. And, finally we will have a Q&A session at the end of the presentation.

Eduard Muljadi (M'82-SM'94-F'10) received his Ph.D. (in Electrical Engineering) from the University of Wisconsin, Madison. From 1988 to 1992, he taught at California State University, Fresno, CA. In June 1992, he joined the National Renewable Energy

Laboratory in Golden, Colorado, where he is currently a principal engineer in the Power System Engineering Center. His current research interests are in the fields of electric machines, power electronics, and power systems in general with emphasis on renewable energy applications. He is member of Eta Kappa Nu, Sigma Xi and a Fellow of the IEEE. He is involved in the activities of the IEEE Industry Application Society (IAS), Power Electronics Society (PELS), and Power and Energy Society (PES). He is currently a member of various committees of the IAS, PES, and an Editor of the IEEE Transactions on Energy Conversion. He holds two patents in power conversion for renewable energy.

Meeting Location: National Grid, 40 Sylvan Road, Waltham, MA 02451 (Rooms: Valley A&B)

Refreshments start at 6:00PM, talk commences at 6:30PM. Free and Open to the Public.

Visit the IEEE PES Boston Chapter website for further details –

<http://www.ieeepestboston.org/>

To assist us in planning this meeting, please pre-register at

<http://www.ieeeboston.org/Register/>.

Life Members – 4:00PM, Tuesday, 26 April

A Brief History of Satellite Communications

Since the launch of Sputnik surprised the world on 4 October, 1957, satellites have become an integral part of worldwide communications. Lori Jeromin,

MIT Lincoln Laboratory, will talk about the evolution of satellite communications from the 1960's to present, including some highlights of Lincoln Laboratory.

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

ry's contributions to this evolution. Satellite Communications basics and current challenges will also be addressed.

Lori Jeromin is a native of Waldwick, New Jersey. She received the B.S. degree in mathematics from Bucknell University, Lewisburg, PA and the S.M. degree in electrical engineering from MIT. Since 1978, she has been with MIT, Lincoln Laboratory in Lexington, MA. Her primary research interests include communications theory, information theory and their applications to RF and optical satellite and other wireless communications systems.

Ms. Jeromin has served as Vice Chair and Chair of the Boston Chapter of the IEEE Communications Society. She has served as member-at-large, Treasurer, and Secretary of the Boston Executive Committee.

Consultants Network - 6:30PM, Wednesday, 27 April

Panel Discussion - Everything You Wanted to Know About Consulting But Were Afraid to Ask

A panel discussion consisting of 5 consultants who will share their experiences and tips on how best to consult.

Topics covered will include:

- Specialization vs. generalization
- On site vs. off site
- Your tools vs. client's tools
- Proposals
- Record keeping
- Corp, Sole proprietorship, or partnership
- 1099, Corp to Corp, or, W2
- Consulting, contracting, and employees
- Pitfalls and traps to avoid

The session will be an open discussion and questions are encouraged.

Panel Members:

Larry Nelson, Nelson Research
l.nelson@ieee.org

The meeting will be held at the Lincoln Lab Auditorium, 244 Wood Street., Lexington, MA at 4:00 PM. Refreshments will be served at 3:30 PM. Registration is in the main lobby. Foreign national visitors to Lincoln Lab require visit requests. Please pre-register by e-mail to reception@ll.mit.edu and indicate your citizenship. Please use the Wood Street Gate.

For directions go to <http://www.ll.mit.edu/>; for other information, contact Steve Teahan, Chairman, at (978)763-5136, or Steve.F.Teahan@raytheon.com

To assist us in planning this meeting, please pre-register at <http://www.ieeeboston.org/Register/>.

Steve Golson, Trilobyte Systems
SGolson@Trilobyte.com

Clive Bolton, Bolton Engineering, Inc.
CBolton@BoltonEng.com

Ronald Goodstein, First Shot Logic
Simulation and Design
info@firstshotlogic.com

Craig E Goldman, CoAutomation Inc.
info@coautomation.com

PLEASE NOTE: The meeting is open to the public. No charge for Consultants Network members or employees of Constant Contact; \$5 entrance fee for all others. Casual dress. Registration - (no registration required)

Meeting Location: The Consultants Network meeting starts at 6:30 PM. The meeting will take place at Constant Contact, Reservoir Place

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

- 1601 Trapelo Road, Waltham, MA 02451, in the Great Room on the First Floor

meeting details and last-minute information <http://www.boston-consult.com/calendar.php>

Driving Directions: Follow I-95/route 128 to Trapelo Rd in North Waltham, Waltham. Take exit 28 from I-95/route 128. (<https://goo.gl/maps/tvn3l>) Consultants Network meetings generally take place on the fourth Wednesday of each month, but are not held during the summer months. Check the Consultants Network website for

For more information, e-mail cn.boston@ieee.org or chairman@boston-consult.com; or contact the chairman Heinz Bachmann, at 978-637-2070. The Consultants Network website is at www.boston-consult.org.

IEEE Boston Section Online Courses:

Verilog101:Verilog Foundations

CLASS DESCRIPTION: Verilog is IEEE standard 1364. It is a Hardware Description Language that is the corner stone of much of the simulation world. Verilog Foundations is a comprehensive introduction to the IEEE 1364 (Verilog). The Verilog Foundations class has a slightly different approach to learning Verilog than other methods. There is a lecture section for each main topic. This presents a basic foundation for the language. There are nearly 100 labs/examples giving comprehensive “how to” examples of most Verilog language constructs. There are working solutions for each lab. All the work can be done independently by the engineers, at their own computer, and at their own pace. **Register at <http://www.ieeeboston.org> and click on course title**

System Verilog 101: Design Constructs

CLASS DESCRIPTION: SystemVerilog is an extensive set of language constructs to the IEEE 1364-2001 standard. It's meant to aid in the creation and verification of models. There are over 100 labs/examples giving comprehensive “how to” examples of most SystemVerilog language constructs. There are working solutions for each lab and the students can use the lab database for developing their own models later. The class is also self paced. All the work can be done independently by the engineers, at their own computer, and at their own pace. There are self-grading quizzes for each chapter that allow the student to see if he/she is learning the material. The lab database you will be able to download and is yours to keep. **Register at <http://www.ieeeboston.org> and click on course title**

System Verilog 102: Verification Constructs

CLASS DESCRIPTION: SystemVerilog is an extensive set of language constructs to the IEEE 1364-2001 standard. It's meant to aid in the creation and verification of models. SV102, this class, covers verification constructs. SystemVerilog102, like all CBE classes, is lab based. There are over 30 verification labs/examples giving comprehensive “how to” examples of most SystemVerilog verification language constructs. The class is also self paced. All the work can be done independently by the engineers, at their own computer, and at their own pace. **Register at <http://www.ieeeboston.org> and click on course title**

Introduction to Embedded Linux Part I

CLASS DESCRIPTION: This first of a 2-part series introduces the Linux Operating System and the use of Embedded Linux Distributions. The course focuses on the development and creation of applications in an Embedded Linux context using the Eclipse IDE. The first part of the course focuses on acquiring an understanding of the basic Linux Operating System, highlighting areas of concern for Embedded Linux applications development using Eclipse. The latter part covers the methods for booting Embedded Linux distributions including embedded cross-development and target board considerations. **Register at <http://www.ieeeboston.org>**

High Performance Project Management

CLASS DESCRIPTION: This 12 hour course (broken into short 10 to 20 minute independent modules) provides the project methodology, concepts, and techniques that ensure successful completion (on time, on budget, with the quality required) of projects, large and small. Participants learn the steps to take before, during, and at the end of a project to hone planning and execution to a strategically built process that delivers project success when used. **Register at <http://www.ieeeboston.org>**

Data Interoperability using JSON and JSON Schema

Date & Time: Tuesday & Wednesday; May 3 & 4; 8AM - 4PM
Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA
Speaker: Roger Costello, MITRE

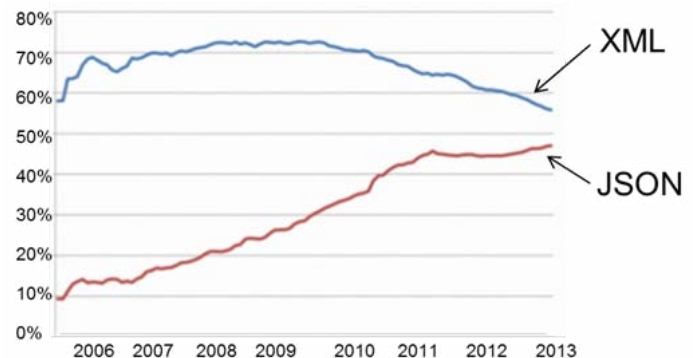
Description/Overview:

JSON is a very popular data format. It is heavily used in data exchanges between browsers and web servers but its usage has expanded well beyond browser-server data exchanges. This class covers all parts of the JSON data format. Upon completion the student will be able to create JSON documents of arbitrary complexity. JSON Schema is a powerful language for specifying the allowable content of JSON documents. JSON Schema is often used as a contract between machines exchanging JSON data. To ensure conformance to the contract JSON documents are validated against a JSON Schema using a JSON Schema validator. Roughly 2/3 of the first day is spent on JSON. The remaining time is spent on JSON Schema (which is considerably more complex than JSON). Security risks of JSON and JSON Schema and how to mitigate the risks will be emphasized.

This is an packed class, lots of excellent information is covered. The instructor created a tutorial on JSON and JSON Schema, consisting of over 300 Powerpoint slides, 100 examples, and 16 lab exercises. The class is a hands-on course. Over the 2 days the student will have ample opportunity to test their understanding of the material, as he/she works on 16 lab exercises. A zip file will be provided containing the complete tutorial. The student must bring a laptop and have internet access (we will be using an on-line JSON Schema validator).

Target audience:

This class is for anyone dealing with data: exchange-



Based on directory of 11,000 web APIs listed at Programmable Web, December 2013

ing data, manipulating data, creating data. No programming experience required. Experience with HTML and/or XML is useful.

Benefits of attending or goals of course: You will understand the JSON data format and be able to create JSON documents of arbitrary complexity. You will understand how to specify the format of JSON documents using JSON Schema and how to validate JSON documents against a JSON Schema.

Outline:

- Comparison of JSON to other data formats (e.g., XML)
- JSON – 7 types of values: object, array, string, number, true, false, null
- JSON Schema – we will cover all the keywords for specifying schemas, such as type, minimum, maximum, multipleOf, pattern, maxLength, items, maxItems, properties, and many others

Materials included with registration: Course notes. A zip file will be provided containing the complete tutorial. The student must bring a laptop and have internet access (we will be using an on-line JSON Schema validator).

Speaker Bio: Roger Costello has a Ph.D. in computer science from Ohio State University. His specialty is data formats. For 15 years he was immersed in the XML suite of technologies and has written dozens of articles on various aspects of XML. For the last three years he has focused on the JSON technologies. He has taught the JSON, JSON Schema class at his company to standing-room only classes.

Decision (Run/Cancel) Date for this Courses is Friday, April 22, 2016

Payment received by April 19

Members \$395

Non-members \$435

Payment received after April 19

IEEE Members \$435

Non-members \$475

<http://ieeeboston.org/event/data-interoperability-using-json-and-json-schema-spring-2016/>

IEEE Boston Section Social Media Links:

Twitter: <https://twitter.com/ieeeboston>

Facebook: <https://www.facebook.com/IEEEBoston>

YouTube: <https://www.youtube.com/user/IEEEBostonSection>

Google+: <https://plus.google.com/107894868975229024384/>

LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>



2016 IEEE International Symposium on Technologies for Homeland Security



Co-sponsor:



Gold sponsor:



10 - 12 May 2016
Waltham, MA USA

Plenary Speakers:



Acquisition Executive
Mark S. Borkowski,
Office of Technology
Innovation and
Acquisition



Mr. Dave Masters
Senior Program
Advisor, S&T,
Borders and
Maritime



Mr. Shawn Romanoski,
Telecommunications
Director, Boston Police
Department



Richard W. Vorder
Bruegge is a Senior
Photographic
Technologist at the
Federal Bureau of
Investigation



RADM Steven G.
Smith USN (Ret) Senior
Government Execu-
tive (SES) Director
Disaster Planning &
Risk Management, U.S.
Small Business
Administration

Overview

- Over 115 presentations in, cyber security; land and maritime border security; biometrics and forensics; attack and disaster preparation, recovery and response
- Ample networking opportunities with speakers, including the welcome/poster reception
- **Tutorials** (tutorial only registration is available! This will include access to all Tuesday activities)
- **Panel Sessions**
- **Save travel costs and attend this international IEEE symposium held locally!**

Technical Sessions

Cyber Security

System Security; Cyber Analysis; Attack Modeling; Mobile Authentication; Network Security 1, 2; Risk Assessment; Research Methodologies and Ethics; Panel Session

Attack/Disaster Prep, Recovery, Response

Resilience Quantification; Fire; DIORAMA; CBNRe/HazMat; Prediction and Management; Cyber Critical Infrastructure; Info Sharing & Analysis; Social Media/IoT; Emergency Communications and Broadcast

Biometrics & Forensics

General Topics 1, 2, 3; Face Recognition; DNA; Eye; Fingerprinting; Tattoo

Land and Maritime Border Security

Border Processes, CONOPS & System Architecture; Airborne Sensing & Imaging; Big Data & Analytics; CIKR Site Protection

For more information on the technical program and registration see,
www.ieee-hst.org

Last Notice Before Course Begins, Please Register Now!!!

Making You a Leader - Fast Track

Date & Time: Wednesday, April 27; 8:30AM - 5:00PM

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Robin Goldsmith, President, GoPro Management

We do projects to make change. Yet, change will not occur without leadership, and leaders are rare. Leaders make others want to do what the leader wants done. Leaders cause ordinary people to achieve extraordinary things. Managing is not the same as leading, and titles do not make leaders. Seminars can teach you to manage, but they cannot teach you to be a leader. Rather, making a leader takes special techniques—such as our personal development clinics—that can change deep-seated behaviors learned over a lifetime. However, since clinics usually last about ten weeks, this mini-clinic was devised as a more convenient alternative. This format places responsibility upon the participant to carry out an extended informal follow-on program after completion of the formal seminar workshop session. During the follow-on period, the participant uses time-condensed methods that simulate the lifetime learning which makes a leader. Therefore, commitment to carrying out these exercises is essential for successful transformation.

Participants will learn:

- Leadership characteristics and practices that are essential for project and personal success.
- Differences between management and leadership, how they conflict, and why leaders are so rare.
- Behaviors leaders use to influence others, up and down, to want to do what the leader wants them to do
- Special techniques personal development clinics use to change lifetime learning and make leaders.
- How to employ those special techniques in a fol-

low-on mini-clinic to develop the leadership skills they need to make their projects successful.

WHO SHOULD ATTEND: This course has been designed for business and systems professionals who want to improve their ability to lead and influence other people.

OUTLINE

LEADERSHIP CHARACTERISTICS & ROLE

How leadership looks and feels
Management vs. leadership
Leadership components of project success
Basic leadership practices; power sources
Real change leaders in organizations

TEAMS AND LEADERSHIP

Everyone feels leadership is lacking
Everyone thinks s/he is a leader
Results, not actions or intent
Workgroups, teams, and leaders
Situational leadership styles
Coaching and sports analogies to projects

INSPIRING AND MOTIVATING

Gaining commitment to project success
Communicating that influences others
Addressing negativism and groupthink
Conscious and unconscious messages
Greatest management principle
Hierarchy of needs effects on projects
Hygiene factors vs. motivators
Helping project players get their rewards
Influencing up and down without authority

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

Inspiring the extra efforts projects need
Energizing the project team

SHARED VISIONS

Relating values and vision to projects
Getting others to embrace one's vision
Developing a motivating project vision

WHERE AND HOW LEADERS ARE MADE

Born or made? How do we know?
Habits of thought that affect project success
Overcoming self-limiting lifetime learning
Leader's critical success factors
Traditional education doesn't make leaders
Special way—personal development clinics

SETTING AND ACCOMPLISHING GOALS

S.M.A.R.T. goals for self and project
Action plans to achieve your goals
Visualizing and emotionalizing

DEFINING THE FOLLOW-ON PROGRAM

Clarifying project leadership objectives
Breaking into prioritized subgoals
Establishing rewarding daily achievements
Special techniques to change habits

CARRYING OUT THE MINI-CLINIC

Working with a follow-up support structure
Mapping results regularly to goals
Objectively recording leadership changes
Self-leadership through the process

Speaker's Bio:

Robin F. Goldsmith, JD is an internationally recognized authority on software development and acquisition methodology and management. He has more than 30 years of experience in requirements definition, quality and testing, development, project management, and process improvement. A frequent featured speaker at leading professional conferences and author of the recent Artech House book, *Discovering REAL Business Requirements for Software Project Success*, he regularly works with and trains business and systems professionals.

*Last Notice Before Course Begins,
Please Register Now!!!*

**Decision (Run/Cancel) Date for this Courses is
Monday, April 18, 2016**

Payment received by April 13

Members	\$220
Non-members	\$245

Payment received after April 13

IEEE Members	\$245
Non-members	\$265

<http://ieeeboston.org/event/making-you-a-leader-fast-track-fall-2015/>

Last Notice Before Course Begins, Please Register Now!!!

Defining and Writing Business Requirements

Date & Time: Monday & Tuesday, April 25 & 26; 8:30AM - 5:00PM

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Robin Goldsmith, President, GoPro Management

Discovering and documenting business requirements for projects always has been the weakest link in systems development. Up to 67 percent of maintenance and 40 percent of development is wasted rework and creep attributable to inadequately defined business requirements. Too often projects proceed based on something other than what the business people really need; and traditional methodologies commonly focus mainly on the format for writing requirements. This interactive workshop also emphasizes how to discover content, why to build it and what it must do to produce value for the customer/user. Using a real case, participants practice discovering, understanding, and writing clear and complete business/user requirements that can cut creep, speed project delivery, reduce maintenance, and delight customers

Participants will learn:

- Avoiding creep--role and importance of defining business requirements accurately and completely.
- Distinctions between the user's (business) requirements and the system's (design) requirements.
- How to gather data, spot the important things, and interpret them meaningfully.
- Using the Problem Pyramid™ tool to define clearly problems, causes, and real requirements.
- Formats for analyzing, documenting, and communicating business requirements.
- Techniques and automated tools to manage requirements changes and traceability.

WHO SHOULD ATTEND: This course has been designed for systems and business managers, project

leaders, analysts, programmer analysts, quality/testing professionals, auditors, and others responsible for assuring business requirements are defined adequately.

OUTLINE

REQUIREMENTS ROLE AND IMPORTANCE

Sources and economics of system errors
How requirements produce value
Business vs. system requirements
Survey on improving requirements quality
Software packages and outsourcing
How we do it now vs. what we should do

DISCOVERING "REAL" REQUIREMENTS

Do users really not know what they want?
How the "real" requirements may differ
Aligning strategy, management, operations
Technology requirements vs. design
Problem Pyramid™ tool to get on track
Understanding the business needs/purposes
Horizontal processes and vertical silos
Customer-focused business processes
Who should do it: business or systems?
Joint Application Development (JAD) limits
Management/supervisor vs. worker views

DATA GATHERING AND ANALYSIS

Surveys and questionnaires
Research and existing documentation
Observing/participating in operations
Prototyping and proofs of concept
Planning an effective interview
Controlling with suitable questions

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

FORMATS TO AID UNDERSTANDING

Business rules, structured English
 E-R, data flow, flow, organization diagrams
 Data models, process maps
 performance, volume, frequency statistics
 Sample forms, reports, screens menus

DOCUMENTATION FORMATS

IEEE standard for software requirements
 Use cases, strengths and warnings
 7 guidelines for documenting requirements
 Requirements vs. implementation scope
 Iterating to avoid analysis paralysis
 Conceptual system design solutions
 Detailing for clarity, clarifying quality

GETTING MORE CLEAR AND COMPLETE

Stakeholders and Quality Dimensions
 Addressing relevant quality factor levels
 Standards, guidelines, and conventions
 Detailing Engineered Deliverable Quality
 Simulation and prototyping
 Defining acceptance criteria

MANAGING THE REQUIREMENTS

Supporting, controlling, tracing changes
 Automated requirements management tools
 Measuring the "proof of the pudding"

Speaker's Bio:

Robin F. Goldsmith, JD is an internationally recognized authority on software development and acquisition methodology and management. He has more than 30 years of experience in requirements definition, quality and testing, development, project management, and process improvement. A frequent featured speaker at leading professional conferences and author of the recent Artech House book, *Discovering REAL Business Requirements for Software Project Success*, he regularly works with and trains business and systems professionals.

Last Notice Before Course Begins, Please Register

**Decision (Run/Cancel) Date for this Courses is
 Friday, April 15, 2016**

Payment received by April 12

Members \$415

Non-members \$430

Payment received after April 12

IEEE Members \$430

Non-members \$455

<http://ieeeboston.org/event/making-you-a-leader-fast-track-fall-2015/>

Last Notice Before Course Begins, Please Register Now!!!

Basics of Software Defined Networking (SDN)

Date & Time: Saturdays, April 23 & 30; 9AM - 12 noon; Monday May 3, 6-9PM (optional)

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Dr. Bhumip Khasnabish, ZTE (TX) Inc.

Introduction: This is an introductory level course on Software Defined Networking (SDN). Motivations for SDN and architectures of SDN will be discussed. Network migration and transformation for supporting SDNized organic and over the top (OTT) services will be also covered. We'll use IEEE and

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

other journal/magazine publications and published standards specifications as reference materials for this course. Hands-on assignments will help the students initiate and complete exercises using open source platforms and test beds. We'll also discuss novel techniques for solving the emerging real-life/-operator challenges related to (i) cost-effective network infrastructure development, and (ii) networked services and security management.

Outline of Topics to be covered:

- What is SDN and Why do we need SDN?
- SDN Architecture Overview
- Review of Open Source SDN and related Projects
- North- and South-bound Interfaces of SDN Controller
- East- and West-bound Interfaces of SDN Controller
- Review of Open Source SDN Tools and (Virtual) Labs
- Migration to SDN and Integration with Legacy Networks
- Hands-on works/assignments suggestions using open source test beds

Target Audience:

The course is designed for network and network software/system designers who are considering to gain introductory knowledge about SDN.

Benefits of Attending the Course:

This is an introductory level course on Software Defined Networking (SDN). The students will learn about motivations for and architectures of SDN as applicable to the mobile and multimedia networks for both organic and over the top (OTT) services. The assignments will help the students initiate and complete exercises using open source platforms and test beds.

Materials included in the course:

A summary of the slides, and a list of useful web resources including a few white papers.

Speaker Bio:

Dr. Bhumip Khasnabish works in the Strategy Planning and Standards Development division of ZTE (TX) Inc., USA. Previously, he worked at Verizon/GTE Laboratories (Waltham, MA, USA) and at Bell-Northern Research (BNR) Ltd. (Ottawa, Ontario, Canada). His research interests include network and system virtualization, network coding, open networks and systems, and software-defined networking and services. Bhumip initiated cloud and data center activities in the IETF, co-chaired the ATIS IPTV Interoperability Forum (IIF), and founded and chaired both the ATIS NG-CI task force and the MSF Services WG. In addition, he is a member of the DMTF and ONF leadership teams. As an ONF member, Bhumip contributed to the development of: Migration Use Cases and Methods, Migration Tools and Metrics, and SDN Migration Considerations.

***Last Notice Before Course Begins,
Please Register Now!!!***

**Decision (Run/Cancel) Date for this Courses is
Friday, April 14, 2016**

Payment received by April 11

Members	\$235
Non-members	\$255

Payment received after April 11

IEEE Members	\$255
Non-members	\$275

<http://ieeeboston.org/event/basics-of-software-defined-networking-sdn-spring-2016/>

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>



Date:
April 15-16, 2016

Location:
Central Connecticut State University (CCSU)

1615 Stanley Street
New Britain, CT 06050

Steering Committee:

Conference Chair:
Dr. Charles Rubenstein,
Pratt Institute
(c.rubenstein@ieee.org)

Conference Co-Chair:
Dr. Haoyu Wang, CCSU
(wanghao@ccsu.edu)

Student Competition Chairs

MicroMouse:
Soon Wan, Vicor Corporation
(gimsoon@ieee.org)

Student Paper Contest:
Rob Vice, Vicor Corporation
(vice@ieee.org)

Ethics Competition:
Bruce Hecht, Analog Devices
(Bruce.Hecht@analog.com)

Student Volunteers Chair:
Dr. David Broderick, CCSU
(broderick@ccsu.edu)

Industry Chair:
Dr. Biao Zhang, ABB
(biaozhang@ieee.org)

CCSU Venue Co-chairs:
Dr. Ravindra Thamma
(thammarav@ccsu.edu)
Dr. Hassan Shibly
(hshibly@ccsu.edu)

More Information at:
<http://ewh.ieee.org/reg/1/sac>

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Region 1 Director:
Ron Tabroff
(r.tabroff@ieee.org)

Region 1 Student Rep:
Nikhil Shenoy, Rutgers Univ
(nrs76@scarletmail.rutgers.edu)

2016 IEEE Region 1 Annual Student Conference

April 15-16, 2016 – Central Connecticut State University

Connecting Students with Industry Professionals and IEEE Leaders



The IEEE Region 1 Student Conference is the premier annual event where all student branches from IEEE Region 1 (the northeastern United States) meet to discuss mutual challenges and compete in regional competitions.

The conference's objective is to encourage lively student engagement and provide an opportunity for students to network and learn from other students from across the Region, while applying practical engineering knowledge in the various competitions.

The conference also provides a great opportunity for student members to network with industry professionals and IEEE volunteer leaders.

Conference Highlights:

- ❖ Undergraduate Student Paper Contest
- ❖ MicroMouse Workshop for Newbies and Pros
- ❖ Regional MicroMouse Competition
- ❖ Student Ethics Competition
- ❖ Networking Opportunities
- ❖ Meet IEEE Leaders and Industry Professionals
- ❖ Award Ceremony and Dinner

To submit a paper for the **Student Paper Contest:**

<https://ieee-r1-studentconference.myreviewroom.com>

Hotel and Conference Registration Deadlines

Hotel Registration: March 15, 2016

Early Bird Conference Registration: March 31, 2016

<https://meetings.vtools.ieee.org/m/37907>

About the Conference Hotel Accommodations:

Courtyard by Marriott Hartford/Farmington 1583 Southeast Rd; Farmington, CT 06032
Hotel accommodations will be provided on a first come first serve basis for those traveling more than 100 miles each way. Teams will be required to share a room (4 students per room). Hotel accommodations will not be provided for local participants. Conference meals and breaks will be provided for all registrants.

Conference Patrons:

MicroMouse Prizes provided by IEEE's Member and Geographic Activities (MGA) Board.
The 2016 Region 1 MicroMouse Competition & Workshop is proudly sponsored by:



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Version 1 ; 02/22/2016

CALL FOR PAPERS



2016 IEEE High Performance Extreme Computing Conference (HPEC '16)

Twentieth Annual HPEC Conference

13 - 15 September 2016
Westin Hotel, Waltham, MA USA



www.ieee-hpec.org

Committees

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The IEEE High Performance Extreme Computing Conference (HPEC '16) will be held in the Greater Boston Area, Massachusetts, USA on 13 – 15 September 2016. The HPEC charter is to be the premier conference in the world on the confluence of HPC and Embedded Computing.

The technical committee seeks new presentations that clearly describe advances in high performance extreme computing technologies, emphasizing one or more of the following topics:

- Advanced Multicore Software Technologies
- Case Studies and Benchmarking of Applications
- Automated Design Tools
- Mapping and Scheduling of Parallel and Real-Time Applications
- Computing Technologies for Challenging Form Factors
- ASIC and FPGA Advances
- Open System Architectures
- Data Intensive Computing
- Big Data and Distributed Computing
- Interactive and Real-Time Supercomputing
- Graph Analytics and Network Science
- Fault-Tolerant Computing
- Embedded Cloud Computing
- Digital Front Ends
- General Purpose GPU Computing
- Advanced Processor Architectures
- Secure Computing & Anti-Tamper Technologies
- New Application Frontiers

HPEC accepts two types of submissions:

1. Full papers (up to 6 pages, references not included), and
2. Extended abstracts (up to 2 pages, references included).

Preference will be given to papers with strong, quantitative results, demonstrating novel approaches or describing high quality prototypes. Authors of full papers can mark their preference for a poster display or an oral presentation. Presenters who wish to have hardware demonstrations are encouraged to mark their preference for a poster display. Accepted extended abstracts will be displayed as posters.

All paper and extended abstract submissions need to use the approved IEEE templates. Full paper submissions with the highest peer review ratings will be published by IEEE in the official HPEC proceedings available on IEEE eXplore. All other accepted submissions and extended abstracts are published on ieee-hpec.org. Vendors are encouraged to sign up for vendor booths. This will allow vendors to present their HPEC technologies in an interactive atmosphere suitable for product demonstration and promotion.

We welcome input (hpec@ieee-hpec.org) on tutorials, invited talks, special sessions, peer reviewed presentations, and vendor demos. Instructions for submitting will be posted on the conference web site shortly.

Modern Wireless System Design: From Circuit to Web-based Apps

Date & Time: 9:00AM - 4:30PM, Thursday & Friday, June 9 & 10, 2016

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Henry Lau, Lexiwave Technology

Overview: Nowadays, as the features of wireless communication products and systems are getting more in number and sophisticated to stay competitive, the products have to contain both hardware and software. It is thus beneficial for an engineer or manager to acquire a broad understanding on how a modern wireless communication product or system works with both hardware and software components. This course is aimed to provide an opportunity for participants to acquire technical insights on the vital aspects of Modern Wireless System Design from an industry and practical perspective. It is an introductory level for circuit, software, system engineers and managers who would like to acquire an overview on the vital aspect and design considerations on complete wireless system design. Various functional blocks of wireless systems and products will be discussed and analyzed with practical examples on commercial products.

The software development will also be addressed to provide a comprehensive understanding of the development of complete wireless systems. The course will be conducted by a wireless design expert with rich industrial experience. Interactive and open discussions between speaker and participants are encouraged and facilitated to make the whole course more interesting and thought stimulating.

Audience: System engineers, wireless product designers, software engineers, RF and microwave circuit design engineers, field application engineers, business development engineers and managers involved in wireless products and systems.

Benefits:

Upon completion of this course, participants should be able to:

1. understand the key functional blocks of Modern Wireless Products/Systems and their characteristics and specifications
2. understand how the key component blocks interact and the implications on overall system performance
3. compare and evaluate different types of receiver and transmitter architectures
4. comprehensive understanding on the embedded software development as well as web-based and app-based software development
5. acquire practical design techniques from case studies on commercial wireless products

Course Content:

- Receiver
- System Characteristics
- Signal and Noise
- Noise temperature, noise bandwidth, noise figure, sensitivity
- Linearity
- Dynamic Range, one dB compression point, intermodulation
- Critical Circuit blocks
- LNA, local oscillator, mixer, IF amplifier, demodulator, baseband amplifier
- System Architectures and design considerations
- Heterodyne, Direct Conversion, Image-reject

and Low-IF Receiver

- Sample Receiver Designs

Transmitter

- Circuit blocks: oscillator, modulator, buffer amplifier, frequency multiplier, power amplifier, output filter
- Major issues: power gain, power efficiency, harmonic prevention and suppression

Wireless Modules

- Types: GPS, Bluetooth, GSM/GPRS, Wifi
- Applications
- Electrical parameters

Miniature Antennas for Portable electronics

- Antenna Fundamentals
- Radiation mechanism
- Source of radiation
- Characteristic of radiation
- Parameters and specifications
- Radiation pattern, antenna efficiency, aperture concept, directivity and gain
- Types of antenna and performance
- Dipole
- Monopole
- Loop
- miniature antennas – patch, inverted-L, inverted-F, meandered line
- Practical design considerations and techniques for portable electronics

Software Development

- Embedded device
- Type of MCU
- Characteristics, functions and features

- Design considerations
- Web database development
- MySQL
- Website development
- Software - HTML, Javascript and PHP
- Web server
- Smartpone Apps Development
- Android development tool
- Phonegap
- IOS

Expertise: Henry Lau received his M.Sc. and MBA degrees from UK and USA respectively. He has more than 25 years of experience in designing wireless systems, products and RFICs in both Hong Kong and US. He worked for Motorola and Conexant in US as Principal Engineer on developing RFICs for cellular phone and silicon tuner applications. Mr Lau holds five patents and has one patent pending, all in RF designs. He is currently running Lexiwave Technology, a wireless company in Hong Kong and US designing and selling RFICs, RF modules and wireless solutions. He has also been teaching numerous RF-related courses internationally.

**Decision (Run/Cancel) Date for this Courses is
Tuesday, May 31, 2016**

Payment received by May 25

IEEE Members	\$395
Non-members	\$435

Payment received after May 25

IEEE Members	\$435
Non-members	\$455

<http://ieeeboston.org/event/modern-wireless-system-design-from-circuit-to-web-based-apps/>

QA Testing in the Digital World

Date & Time: 9:00AM - 4:00PM, Saturday, May 7, 2016
Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA
Speaker: Rajkumar J. Bhojan, Wipro Technologies

Overview: As we are entering an era of digital transformation, software organizations across industry sectors are challenged to adopt QA and software Testing in digital technologies coupled with organizational, operational, and business model innovations. Mobile technology is growing at rapid speed. Companies need quick, agile and technology driven organizations to provide an incessant delivery model. Academicians and testing experts have to come up with effective verification techniques to ensure reliability of these mobile applications.

This 6 hours course (lecture/lab) will address the following questions: How to create new ways of adopting QA and testing in their core software. Are we able to deliver better product using existing testing methodologies? Do we have a better solution for verifying and validating IOT devices with real time data? What is the role of test automation in DevOPs environment? During the lab portion of the agenda, a laptop will be required and all software will be made available to participate in the lab exercises.

Target Audience: IT Professionals Students both UG and PG with Computer Knowledge Researchers (IT)

OUTLINE

- * Introduction to Digital QA Transformation
- * Test Automation in DevOPs environment - Tools and Testing Strategies - ATDD and BDD in Agile Projects
- * Hands-on Session on Mobile Test Automation
- * Role of CI and CD in Testing space
- * Mobility Testing and its automation
- * Cloud based solution for Mobile test automation

Goals/benefits of Attending:

1. Will get knowledge of software industry trending in QA
2. Latest technologies used in Software Testing
3. Participants can directly implement the taught methodologies in their software projects
4. Research can enhance in Digital transformations

Notes / printouts will be distributed during the session

Speaker bio: Rajkumar J.Bhojan is a Lead Architect (TA), Wipro Technologies, Boston, MA, USA. He has over two decades of professional experience in both IT and Academics. He holds M.Sc., (Phy), MCA, M.Phil (CS) and currently he pursues Ph.D. in Computer Science. He has executed IT projects in diverse geographies including India, Australia, China & USA. He has worked as a QA Manager, Corporate Trainer and Principal Consultant in reputed organizations. He has presented many technical papers at International conferences, Journals and IEEE forums. He is a Certified Scrum Master and has rich experience in Agile/scrum Methodologies. He is a member in IEEE and ACM. http://sites.ieee.org/sem/files/2013/07/May_2014-WL_Rev1.pdf <http://www.atagg.agiletestingalliance.org/speakers.html>

Decision (Run/Cancel) Date for this Courses is Thursday, April 28, 2016

Payment received by April 25

IEEE Members	\$235
Non-members	\$255

Payment received after April 25

IEEE Members	\$255
Non-members	\$275

<http://ieeeboston.org/event/qa-and-testing-in-the-digital-world-spring-2016/>

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

Introduction to Network Function Virtualization (NFV)

Date & Time: Saturdays, May 14 & 21; 9AM - 12 noon

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Dr. Bhumip Khasnabish, ZTE (TX) Inc.

Introduction:

This is an introductory level course on NFV. Motivations for and implementations of (a) network functions like routers and switches, and (b) service functions like firewalls, load balancers, and quality-of-service managers using virtual machines (VMs) and virtual network functions (VNFs) will be discussed. The use cases, requirements, and frameworks as published by the organizations like ETSI/NFV, ONF and DMTF will be reviewed. Suggestions for a few hands-on assignments using open source NFV test-bed will be also included in this course.

OUTLINE

- Definitions of NFV and SFV (Service Function Virtualization)
- Motivations for NFV and SFV
- DMTF and ETSI/NFV Use cases
- Overview of Information and Data Modeling
- Logical Functional Block Subsidiary Management
- Cross-Domain Identity Management of Resources and Users
- Suggestions for Hands-on Assignments (OPNFV-Arno)

Benefits of Attending:

This is an introductory level course on NFV. The students will learn how the use of virtualization of network and service functions can save both network/

service infrastructure development (CapEx) and operations (OpEx) costs. The use of virtualization and automation are expected make the assignment of resources to services as seamless as practically feasible, as will be demonstrated via discussions of use cases and projects like CORD (Central Office Redesigned using Datacenter).

Materials included in the course:

May provide a summary of the slides, and a list of useful web resources including a few white papers.

Speaker Bio:

Dr. Bhumip Khasnabish works in the Strategy Planning and Standards Development division of ZTE TX Inc., USA as a Senior Specialist/Director. Previously, he worked at Verizon/GTE Laboratories (Waltham, MA, USA) and at Bell-Northern Research (BNR) Ltd. (Ottawa, Ontario, Canada). His research interests include network and system virtualization, network coding, open networks and systems, and software-defined networking and services. Bhumip initiated cloud and data-center activities in the IETF, co-chaired the T&I committee of ATIS IPTV Interoperability Forum (IIF), and founded and chaired both the ATIS NG-CI task force and the MSF Services WG. In addition, he is a member of the leadership teams of both DMTF and ONF.

As an ONF member, Bhumip contributed to the development of: Migration Use Cases and Methods,

Migration Tools and Metrics, SDN Migration Considerations and Use Cases, and SDN Migration Prototype and Demo Proposals. He initiated cost-performance analyses for migrating to OpenFlow-based networks, and participated in SPRING-OpenFlow® activities. As the Chair of DMTF NSM WG, Bhumip initiated and completed several network service and virtualization profile works, and liaison work with ETSI/ISG NFV. Bhumip authored several books, book chapters, and journal and conference papers. He is also an inventor in 31 US patents.

**Decision (Run/Cancel) Date for this Courses is
Thursday, May 5, 2016**

Payment received by May 2

IEEE Members \$195

Non-members \$215

Payment received after May 2

IEEE Members \$215

Non-members \$245

<http://ieeeboston.org/event/introduction-to-network-function-virtualization-nfv-spring-2016/>

IEEE Boston Section Social Media Links:

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LinkedIn: <https://www.linkedin.com/groups/IEEE-Boston-Section-3763694/about>

Last Notice Before Course Begins, Please Register Now!!!

Advanced Embedded Linux Optimization

Time & Date: 6 - 9PM, Mondays, April 4, 11, 18, 25

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Mike McCullough, RTETC, LLC

Course Summary - This 4-day technical training course provides advanced training in the debugging, testing, profiling and performance optimization of Embedded Linux software. The first part of the course focuses on advanced debugging, testing and profiling in an Embedded Linux context with a focus on using Eclipse, Backend Debuggers, JTAG and In-Circuit Emulators as well as Kernel Logging capabilities and Kernel Hacking. The latter part of the course covers performance measurement and optimization affecting boot, memory, I/O and CPU performance and key performance optimization tools for Embedded Linux software including the perf tool, advanced cache usage and compiler-based optimization.

Who Should Attend - The course is designed for real-time engineers who are developing high-performance Linux applications and device drivers using Embedded Linux distributions. It is also targeted at experienced developers requiring a refresher course on Advanced Embedded Linux optimization.

Course Objectives

- To understand methods for debugging, profiling and testing Embedded Linux software.
- To provide an overview of Linux application performance measurement and optimization.
- To understand the tools used for performance optimization of Embedded Linux software.
- To give students the confidence to apply these concepts to their next Embedded Linux project.

OUTLINE

Course Schedule Day 1

Getting Started with Embedded Linux
Linux and the GPL
Building the Kernel Source Code
Embedded Linux Kernels
BSPs and SDKs

Linux References (Books and Online)

Basic Debugging Review
Embedded Applications Debugging
GDB, GDB Server and the GDB Server Debugger
An Eclipse Remote Debug Example
Debugging with printk and LTTng
System Logs
Other Debuggers
System-Level Debug
System-Level Debug Tools
The /proc and /sys Filesystems
Basic Logging
KGDB and KDB
Crash Dumps and Post-Mortem Debugging
Debugging Embedded Linux Systems
Backend Debuggers
JTAG and In-Circuit Emulators
Hardware Simulators
Analyzers
Debugging Device Drivers
Kernel Probes
Kexec and Kdump
Kernel Profiling

Course Schedule Day 2

Testing
Design for Test
Agile Software Design
Unit-Level Testing
System-Level Testing
Code Coverage Tools
gcov
Automated Testing
DebugFS
Configuring DebugFS
DebugFS Capabilities
Advanced Logging
LogFS
Using Logwatch and Swatch
Using syslogd and syslog-ng

- Kernel Hacking
- Configuring Kernel Hacking
- Kernel Hacking Capabilities
- Tracing
- ptrace and strace
- New Tracing Methods
- SystemTap
- Ftrace, Tracepoints and Event Tracing
- Tracehooks and utrace

Course Schedule Day 3

- Profiling
- Basic Profiling
- gprof and Oprofile
- Performance Counters
- LTTng
- Another DDD Example
- Manual Profiling
- Instrumenting Code
- Output Profiling
- Timestamping
- Measuring Embedded Linux Performance
- Some Ideas on Performance Measurement
- Common Considerations
- Uncommon Considerations
- Using JTAG Methods
- BootLoader Optimizations
- Boot Time Measurements
- Effective Memory and Flash Usage
- Filesystem Choices
- Addressing Performance Problems
- Types of Performance Problems
- Using Performance Tools to Find Areas for Improvement
- Application and System Optimization
- Device Driver Optimization
- CPU Usage Optimization
- Memory Usage Optimization
- Disk I/O and Filesystem Usage Optimization
- The Perf Tool
- Improving Boot Performance
- Boot Time Optimization
- The Linux Fastboot Capability
- Building a Smaller Linux
- Building a Smaller Application
- Filesystem Tips and Tricks
- Some Notes on Library Usage
- Performance Tool Assistance
- Recording Commands and Performance
- System Error Messages and Event Logging
- Dynamic Probes
- User Mode Linux and Virtualization

Course Schedule Day 4

- Improving CPU Performance
- Run Queue Statistics
- Context Switches and Interrupts
- CPU Utilization
- Linux Performance Tools for CPU
- Process-Specific CPU Performance Tools
- Stupid Cache Tricks
- Improving System Memory Performance
- Memory Performance Statistics
- Linux Performance Tools for Memory
- Process-Specific Memory Performance Tools
- More Stupid Cache Tricks
- Improving I/O and Device Driver Performance
- Disk, Flash and General File I/O
- Improving Overall Performance Using the Compiler
- Basic Compiler Optimizations
- Architecture-Dependent and Independent Optimization
- Code Modification Optimizations
- Feedback Based Optimization
- Application Resource Optimization
- The Hazard of Trust
- An Iterative Process for Optimization
- Improving Development Efficiency
- The Future of Linux Performance Tools
- Some Final Recommendations

Lecturer Bio – Mike McCullough is President and CEO of RTETC, LLC. Mike has a BS in Computer Engineering and an MS in Systems Engineering from Boston University. A 25-year electronics veteran, he has held various positions at LynuxWorks, Tilera, Embedded Planet, Wind River Systems, Lockheed Sanders, Stratus Computer and Apollo Computer. RTETC, LLC is a provider of Eclipse-based development tools, training and consulting for the embedded systems market.

***Last Notice Before Course Begins,
Please Register Now!!!***

**Decision (Run/Cancel) Date for this Courses is
Friday, March 26, 2016**

Payment received by March 23

IEEE Members	\$395
Non-members	\$435

Payment received after March 23

IEEE Members	\$435
Non-members	\$470

To Register, <http://ieeeboston.org/event/advanced-embedded-linux-optimization-spring-2016>

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

Last Notice Before Course Begins, Please Register Now!!!

Flexible Electronics - Packaging Design, and Materials Analysis for Aerospace, Military, Medical & High end Consumer Products

Time & Date: 8AM - 5PM; Thursday, March 31, 2016

Location: Crowne Plaza Hotel, 15 Middlesex Canal Park Road, Woburn, MA

Speaker: Tina Barclay, , Chief Technical Officer, TAS Consulting

Prerequisites:

Assume Student can read schematics, understand component usages and has some basic thermal analysis capability.

Class Summary:

This is a one-day session focusing on the advanced packaging needed for a flexible board design. This course will not cover schematic layout and circuit design. It will cover what you do with the completed schematic. It will address layout issues to avoid and what components work best in a flexible design. It will show what methods are available and almost available to package the flexible circuit board.

What materials work best for which industry?

What analysis should be performed to assure the design will work in the intended environment?

Who should attend?

This course is designed for Engineers involved in the above design elements of a project. This course will demonstrate the work needed to review the materials and environment for designs using flexible circuits.

Course Objectives:

- Understand circuit board layout changes for flexible electronics
- Show how to remove Heat in a flexible board.

- Review, Show, Typical Analysis needed for Reliability concerns
- Review electronics Packaging Issues and How to handle them
- Introduce Solder Fatigue concepts and what to do about it
- Review different Industry needs and show the key indicators for each.

Course Schedule:

1. Review student backgrounds and industries – course will be pushed toward the industries represented. (1/2 hr.)
2. Basic background on flexible boards (1/2 hr.)
3. Review schematic layouts – what works and what doesn't – this will be industry specific. (1/2 hr.)
4. Review analysis needed: structural, thermal, reliability, solder fatigue (1 hr.)
5. Walk through analysis for each of the above. (1 hr.)
6. Show issues of each of the analysis types, work-arounds, show stoppers, and realistic answers to some industry concerns. (1 ½ hr.)
7. Review solder fatigue differences for different solders. (1/2 hr.)
8. Review any additional industry needs specific to student's industries and questions. (1 hr.)
9. Lab Time- Students to work on project – can bring one or work on one provided. (1 ½ hr.)

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>

Instructor:

Tina Barclay has over 30 years of experience in electronic packaging, testing, and analysis (BS Engineering – Thermal and Materials and MS – Systems Engineering and program management. Tina worked for aerospace companies (ITT, TRW, Perkin Elmer, Goodrich and Aerojet), NASA (Marshall Space Flight Center), automotive (both Ford and Chrysler), military black boxes (Singer Librascope, Army, Navy and Air Force modules) as well as high end medical and commercial (Spectracom, MKS, Kodak, etc.). She has run and created testing labs, procedures, designs, fixes for designs, and the first BGA used in high temperature environments. Tina has R&D experience, proposal experiences, and program management experience in all the above industries. She has 21 US patents — all in electronics packaging, materials, and thermal. Her experience has included all levels of parts reliability for systems ranging from 6-month

to 10-year reliabilities. She is a frequent speaker at industry-specific conferences like IMAPS (International Microelectronics and Packaging Society) and ASE (Automotive Society of Engineers) and is on the IPC (IPC - Association Connecting Electronics Industries) Specification Review Panel.

***Last Notice Before Course Begins,
Please Register Now!!!***

**Decision (Run/Cancel) Date for this Courses is
Wednesday, March 16, 2016**

Payment received by March 14

IEEE Members	\$235
Non-members	\$260

Payment received after March 14

IEEE Members	\$260
Non-members	\$285

To Register, <http://ieeeboston.org/event/flexible-electronics-spring-2016>

Call for Course Speakers/Organizers

IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity. The IEEE Boston Section, its dedicated volunteers, and over 8,500 members are committed to fulfilling this core purpose to the local technology community through chapter meetings, conferences, continuing education short courses, and professional and educational activities.

Twice each year a committee of local IEEE volunteers meet to consider course topics for its continuing education program. This committee is comprised of practicing engineers in various technical disciplines. In an effort to expand these course topics for our members and the local technical community at large, the committee is publicizing this CALL FOR COURSE SPEAKERS AND ORGANIZERS.

The Boston Section is one of the largest and most technically divers sections of the IEEE. We have over 20 active chapters and affinity groups. if you have an expertise that you feel might be of interest

to our members, please submit that to our online course proposal form on the section's website (www.ieeeboston.org) and click on the course proposal link (direct course proposal form link is

<http://ieeeboston.org/course-proposals/> . Alternatively, you may contact the IEEE Boston Section office at sec.boston@ieee.org or 781 245 5405.

- Honoraria can be considered for course lecturers
- Applications oriented, practical focused courses are best (all courses should help attendees expand their knowledge based and help them do their job better after completing a course
- Courses should be no more than 2 full days, or 18 hours for a multi-evening course
- Your course will be publicized to over 10,000 local engineers
- You will be providing a valuable service to your profession
- Previous lecturers include: Dr. Eli Brookner, Dr. Steven Best, Colin Brench, to name a few.

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>



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General Topics 1, 2, 3; Face Recognition; DNA; Eye; Fingerprinting; Tattoo

Land and Maritime Border Security

Border Processes, CONOPS & System Architecture; Airborne Sensing & Imaging; Big Data & Analytics; CIKR Site Protection

For more information on the technical program and registration see,
www.ieee-hst.org

Please take this short survey, <https://www.surveymonkey.com/r/B8R2DYL>