

Joint Boston/Central New England Chapter of IEEE Computer Society and GBC/ACM Meeting Thursday, October 16, 2008 Security in Voting Systems Lecturer: Professor Ronald L. Rivest, MIT CSAIL

Time: 7:00 pm - 9:00 pm

Location: Stata Center Auditorium (MIT room 32-123)

Details: http://www.gbcacm.org/node/146

Overview: While running an election sounds simple, it is in fact extremely challenging. Not only are there millions of voters to be authenticated and millions of votes to be carefully collected, counted, and stored, there are now millions of "voting machines" containing millions of lines of code to be evaluated for security vulnerabilities. Moreover, voting systems have a unique requirement: the voter must not be given a "receipt" that would allow them to prove how they voted to someone else---otherwise the voter could be coerced or bribed into voting a certain way. This lack of receipts makes the design of secure voting system much more challenging than, say, the security of banking systems (where receipts are the norm). We discuss some of the recent trends and innovations in voting systems, as well as some of the new requirements being placed upon voting system requirements, including some approaches based on cryptography.

Lecturer Bio: Professor Rivest is the Viterbi Professor of Computer Science in MIT's Department of Electrical Engineering and Computer Science. He is a member of MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL), a member of the lab's Theory of Computation Group and is a leader of its Cryptography and Information Security Group. He received a B.A. in Mathematics from Yale University in 1969, and a Ph.D. in Computer Science from Stanford University in 1974. Professor Rivest has research interests in cryptography, computer and network security, voting systems, and algorithms. Professor Rivest is a co-inventor of the RSA public-key cryptosystem. He has extensive experience in cryptographic design and cryptanalysis, and has published numerous papers in these areas. He is a founder of RSA Data Security and Verisign. Professor Rivest is a member of the National Academy of Engineering and of the National Academy of Sciences, and is a Fellow of the Association for Computing Machinery, the International Association for Cryptographic Research, and the American Academy of Arts and Sciences. He is also on the Advisory Board for the Electronic Privacy Information Center.

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Please check for any last-minute changes to meeting arrangements by visiting the GBC/ACM website http://www.gbcacm.org before the meeting.

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Professor Rivest has won numerous awards. Together with Adi. Shamir and Len Adleman, he has been awarded the 2000 IEEE Koji Kobayashi Computers and Communications Award and the Secure Computing Lifetime Achievement Award. He has also received, together with Shamir and Adleman, the 2002 ACM Turing Award. Most recently, Professor Rivest has served on the U.S. Technical Guidelines Development Committee, which has drafted proposed standards for certifying voting system in the U.S.

Directions: This joint meeting of the Boston/Central New England Chapter of the IEEE Computer Society and GBC/ ACM will be held in the Stata Center Auditorium (MIT room 32-123). The Stata Center is on Vassar St near the intersection with Main St. There is a big hole in the ground between it and Main St marked as building 76 on the map. You can see it on a map at http://whereis.mit.edu/map-jpg?mapterms=32&mapsearch=go. The auditorium (room 32-123) is on the ground floor.

For more information contact Peter Mager (p.mager at computer.org)

IMPORTANT NOTICE - PLEASE READ

Since January 2007 - we have switched from a hard to soft copy of the Real Times. In order to send you notification of the Newsletter posting, we need your email address. We are asking members to send their email address to membership@gbcacm.org.

Please include your first and last name, if you would like to receive email copy/notification of the Real Times soft copy.

Usenix Boston Conference Review by Peter Mager

Usenix held its annual conference in Boston the week of June 23-27. The conference included about 20 tutorials, 3 days of technical sessions, guru-is-in discussions of a number of technical issues, and several interesting invited talks. I've summarized some of the highlights below.

On Wednesday, June 25, Robert Lang gave an overview of origami and how it's increasingly being used for practical problems, such as folding up bulky items so they can fit in confined spaces like the space shuttle's cargo bay. Drew Endy, who's in the process of moving from MIT to Stanford, gave an overview of some of the challenges of synthetic biology and how they might be of interest to computer programmers. On Thursday, David Patterson described the challenge of programming multicore architectures and how various groups are starting to address them. Jim Waldo talked about Darkstar and the role of games in driving computer architectural developments. On Friday, Ajay Anand described the Hadoop project and Matthew Melis gave a summary of the investigations into the space shuttle Challenger disasters and how the lessons learned may apply to the problems of other complex systems.

Origami

Origami has come a long way from the designs you learned in grade school. The basic rule is "one sheet, no cuts", but mathematical techniques have taken this pretty far. There are 36,000 origami designs listed in www.origamidatabase.com. Two of the original Delian problems (that are not solvable using straight edge and compass) are solvable using origami. Hishashi Abe used origami to trisect an angle, and Peter Messer used it to double a cube. There are 7 axioms that define ways to construct a fold, the 6 Huzita axioms defined in 2002 and a seventh discovered independently by Kashiro Hatori and Jacques Justin and added to the set a little bit later. You can construct solutions to all quadratic and cubic equations with rational coefficients using origami; this is not possible with only a straight edge and compass. Applications include folding stents for insertion into a blood vessel, airbag simulation and packing, and design of space telescopes, solar arrays and deployable

antennas for compact storage when being transported and smooth deployment to their final shape.

Multicore

David Paterson gave a talk on the challenges of parallelization and why it is important to solve them.

The computer architecture and chip industry is in a quandary. Intel cancelled high clock rate long pipeline designs to conserve energy. 100% of the companies founded to provide parallel computer hardware solutions to the marketplace have foundered. These include Convex, Encore, Inmos (the Transputer), MasPar, NCUBE, Kendall Square Research, Sequent and Thinking Machines. The physics of processor production dictates using computational engines working in parallel rather than more powerful processors or faster clock rates, but programmers have not yet figured out how to program them effectively for more than a few specialized problems.

Jim Gray listed developing software for parallel architectures as one of the 12 Grand Challenges for the computer industry in 1998. (Others included interpretation and generation of natural speech, understanding images, and real artificial intelligence.) Krste Asanovic and Bodik defined 7 computational dwarfs, patterns of communication and computation common across a set of applications, that need to be confronted if effective parallel programs are to become a reality. David Patterson and the Berkeley View team expanded this into a list of 13 motifs: finite state machines, combinational, graph traversal, structured and unstructured grids, dense and sparse matrices, spectral (FFT), dynamic programming, n-body, MapReduce, Backtrack/B&B, and graphical models. They produced a matrix showing in which of 11 main application areas (embedded systems, desktop systems, games, databases, machine learning, high performance computing, medicine, music, speech, CBIR and browser core code) each motif is important.

Adam Cockcroft on Millicomputing

Millicomputing is to microcomputers what micros

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were to minis. The milli stands for milliwatts. One goal of millicomputers is to run cool so lots of them can be packed together for enterprise computing without air conditioning. Another goal is long battery life for mobile computing. Millicomputers run slower, but use much less power, so they are attractive for mobile devices that you may want to keep active for a long time.

The current state of the art is a 620 MHz machine with 128 MB RAM and 8 GB of long term (disk or flash) storage that runs cold and needs to be recharged daily. The Freescale i.Mx31 SOC (with an ARM 1136 CPU) uses 250 mW of power, idles at 2 mWatt and costs about \$100. Check out the Homebrew Mobile Club to learn more.

Darkstar

Our attempts to escape into virtual reality has built online gaming into a multi-billion dollar per year industry, which Sun hopes to support better with Darkstar technology. Webkinz has 5 million subscribers, mostly 5 - 10 year olds and their mothers, who log on regularly to take care of their online pets. The world of Warcraft has 10 million subscribers who pay \$15/month (a total of \$1.8 Billion/ year) to participate in their online community. These services require 24/7 uptime world wide, with low latency, but modest throughput demands. Game companies have effectively become service companies to support this. The software is mostly event driven, uses client/server or publish/subscribe architectural models, and lots of graphics. Much of the software is written using action script 3 for flash. Sun supports this using Berkeley DB with lots of caching and distributed processing infrastructure.

Hadoop

The Apache Hadoop project develops open-source software for reliable, scalable, distributed computing, including:

• Hadoop Core, which provides a distributed filesystem (HDFS) and support for the MapReduce distributed computing metaphor.

• HBase builds on Hadoop Core to provide a scalable, distributed database.

Hadoop implements MapReduce, using the Hadoop

Distributed File System (HDFS). MapReduce divides applications into many small blocks of work. HDFS creates multiple replicas of data blocks for reliability, placing them on compute nodes around the cluster. MapReduce can then process the data where it is located. Hadoop has been demonstrated on clusters with 2000 nodes. The current design target is 10,000 node clusters.

Security Issues

Bruce Potter gave a tutorial on botnets and what you can do about them. The largest is the Storm Worm cluster, which so far has taken over between one million and ten million CPUs at one time and may have affected up to 50 million hosts in total. So far it's been used mainly for Spam and seems to be under the control of a single person or entity. The IT community is worried about what else it might be used for and is mobilizing against it. Microsoft defends against it with its Malicious Software removal tool. More bots are coming.

Digital Forensics is now more advanced than ever. Naïve attempts to delete data can actually be a flag for a canny investigator looking for interesting artifacts on a hard disk. Under Windows, quick formats don't actually delete much of anything (except the 1st character of each file name). Long formats are mostly a read only operation that looks for bad disk sectors and leaves more than 90% of the original data intact and susceptible to recovery. Even reformatting the disk in a different file format for a different operating system leaves significant amounts of the original data accessible. Even when it seems data is deleted, artifacts tend to persist in (sometimes) unexpected places. System restore in XP contains a duplicate copy of the Windows registry. The print spool directories (perhaps somewhere out on the network) contain duplicate copies of some data and may be backed up in unexpected ways. Thermite destroys disk drives, as does shredding; anything less is suspect. If you must do something that you want to keep absolutely private, try running a memory only OS such as Knoppix, but be wary of connecting to any network.

October 2008 Meetings

BostonPHP

Topic: October User Group::Flex & the Zend Framework

Date/Time: Wednesday, Oct 1st, 2008, 6:30pm

Location: IBM/Lotus 1 Rogers Street Cambridge, MA 02142

Details: http://www.BostonPHP.org

Overview: Rich Internet applications (RIAs) are everywhere. With Web businesses like Google and Yahoo! and brick and mortar companies like Harley Davidson and Sherwin Williams embracing RIAs for their online presence, the media buzz is giving way to the reality of a better Internet.

Adobe has recently contributed AMF support to the Zend Framework, allowing PHP developers to easily build Rich Internet Applications using Flex and Adobe AIR that interact with a PHP backend (see Andi Gutman's blog post today - http://andigutmans.blogspot.com/2008/07/adobe-to-contribute-amf-support-to-zend.html.

Kevin Hoyt, a technical evangelist with Adobe, will give an introduction to Adobe Flex and Adobe AIR, and will walk through how to create a Flex application powered by PHP and the Zend Framework. Working with Zend Studio for Eclipse, and Flex Builder (an Eclipse plugin), Kevin will demonstrate how to build, debug and deploy applications built with Adobe Flex, and how to have these same applications run on the desktop using the Adobe AIR runtime.

With this knowledge, developers will be able to easily build rich Internet applications that combine data from PHP and rich media like audio and video into a compelling application.

Software Quality Group of New England (SQGNE)

Topic:A Survey of Test Automation ProjectsSpeaker:Brian Le Suer, Star QualityDate/Time:Wednesday, October 8th 20086:00pm - 6:30pmNetworking6:30pm - 8:00pmPresentationLocation:Sun Microsystems, Burlington, MADirections:http://www.swqual.com/SQGNE/directions.htmlNetworking

Upcoming SQGNE Meetings

Estimating using Wideband Delphi Method - An interactive exercise - November 12th, 2008

Boston SPIN

Topic: What Agile Can Learn From Waterfall And What Waterfall Can Learn From Agile

Date/Time:	Tuesday, October 21st 2008	
6:00-7	:00 Networking with pizza	
6:00-6	:45 Roundtables (also with pizza)	
7:00-7	:10 Announcements	
7:10-8	:10 Presentation	
8:10-8	:25 Questions and Answers	
8:25-8	:30 Raffles and Gifts	
Speaker:	Michael Mah, Cutter Consortium	
Location: The MITRE Corporation		
	S Building	
	Bedford, MA	
Details:	http://www.boston-spin.org/	

Special Notice: We are moving back to the S Building for the October meeting! Roundtables are focused group or "birds-of-a-feather" discussions, with a Facilitator to stimulate and moderate discussion. These discussions are held during the Networking portion of the SPIN meeting before the speaker (from 6:00 to 6:45 p.m.)

New England Java Users Group

Topic: An evening with Rod Johnson from SpringSource

Date/Time:	Tuesday, October 14th, 6:00pm
Location:	The MathWorks 3 Apple Hill Drive Natick, MA 01760

Abstract: Specified as forthcoming on website!

Speaker: Rod Johnson. Rod is one of the world's leading authorities on Java and J2EE development. He is a best-selling author, experienced consultant, and open source developer, as well as a popular conference speaker. Rod's best-selling Expert One-on-One J2EE Design and Development (2002) was one of the most influential books ever published on J2EE. The sequel, J2EE without EJB (July 2004, with Juergen Hoeller), has proven almost equally significant, establishing a comprehensive vision for lightweight, post-EJB J2EE development.

Rod has extensive experience as a consultant in a wide range of industries: principally, finance, media and insurance. He has specialized in server-side Java development since 1996. Prior to that, he worked mainly in C and C++. His experience as a consultant has led him to see problems from a client's perspective as well as a technology perspective, and has driven his influential criticism of bloated, inefficient, orthodox approaches to J2EE architecture, which have delivered very poor results for stakeholders.

Rod is the founder of the Spring Framework, which began from code published with Expert One-on-One J2EE Design and Development. Along with Juergen Hoeller, he continues to lead the development of Spring. He regularly speaks at conferences in the US, Europe and Asia, including the ServerSide Symposium (2003, 2004 and 2005), JavaPolis (Europe's leading Java conference), and JAOO (2004). Engagements in 2005 include two presentations at JavaOne 2005 and a keynote at the JavaWorld 2005 conference (Tokyo, June). Rod serves in the JCP on the Expert Groups defining the Servlet 2.4 and JDO 2.0 specifications.

Rod continues to be actively involved in client projects at Interface21, as well as Spring development, writing and evangelism.

Details:	http://www.nejug.org/events/show/78			
Boston CHI				
Topic:	Regular Meeting - TBA			
Date/Time:	Tuesday, October 14th, 2008 - 6:30 PM			
Location:	Sun Microsystems, Burlington, MA			
Speakers:	TBA			
Details:	http://www.bostonchi.org			
Abstract:	TBA			
Directions: html	http://www.bostonchi.org/directions.			

Independent Computer Consultants Association (ICCA Boston Chapter)

Topic: Your Client Wants What??? - Don't Stress, be Agile!

Date/Time: Wednesday, October 29, 2008, 7:00 PM

Speaker: Bob Hartman, Agile for All http://www.agileforall.com

Location: This special event will be held at the Hynes Convention Center in Boston as part of the SD Best Practices Conference & Expo.

Overview: The facts are all stacked against us as consultants: 30+% requirements churn for projects, with 50+% of projects completing late or failing entirely and a market mindset of instant gratification. How do small consulting companies compete in today's environment without having to take incredible risks along the way?

This is the key question facing leaders of small firms. Clients are getting harder to find in an economic climate that is eroding so we have to make every client count! To do this effectively is going to require changing the way we do business. One potential solution is the use of agile practices and principles to drive an agile process.

Join us at SD Best Practices Conference & Expo where Agile expert Bob Hartman will explore the principles and practices that drive the Agile process. In particular he will show us how using an agile approach can help mitigate risk for small consulting businesses. Come learn about the potential client benefits from using an agile approach. Providing exceptional value to your clients can help you establish or enhance longterm relationships with your clients that benefit both parties. From the perspective of a small consulting company, these relationships are the most valuable not just from a revenue perspective, but also as references and for word-of-mouth lead generation. Learn how having an agile approach in your toolbox can enable you to unlock additional opportunities. ** Expo pass is free with advance registration. **

Speaker: Bob Hartman has over 30 years of experience developing software. His logic-based approach to the development of high quality software

was developed early in his career while he was earning both his bachelors and masters degrees in Computer Science at Rensselaer Polytechnic Institute. Since that time he has broadened his industry knowledge by serving in almost every role in the software industry from developer and tester to development manager and executive. His experience includes 8 years running his own consulting firm and over 15 years of public corporate experience at the Vice President level.

Over the past 10 years Bob has advanced from being an early adopter of Agile to his current status as both a Certified Scrum Master (CSM) and Certified Scrum Practitioner (CSP). He has significant experience in training, coaching, and mentoring in all areas of Agile development.

Call for Volunteers

There are many opportunities to help in the GBC/ ACM. If you are interested in volunteering your time, please review the current volunteer opportunities listed below. If anything appeals to you or if you have a skill you would like to share, please contact Volunteer Coordinator, Jay Conne, M:(617) 470-5038, volunteer@ gbcacm.org

Open opportunities: Membership Committee, Hospitality Committee, and Keeper of the Box

"Never doubt that a small group of thoughtful committed citizens can change the world; indeed, it is the only thing that ever has." - Margaret Mead

Online chapter membership signup and renewal now available!

We now offer chapter membership signup and renewal payments online using Google checkout. The annual chapter membership fee is still currently \$10.00 and you can pay for multiple years. The membership payment page is located at the following URL.

http://www.gbcacm.org/membership/join

If you have any questions, please contact the membership volunteer at membership@gbcacm.org

The Agile Bazaar Chapter of the ACM as Easy as You Session Information:

Topic: Deep Agile 2008 - Not as Easy as You Thought

Date/Time:Sat-Sun, November 8-9, 2008, 9:00am to 5:00pm

Speaker: James Coplien and Bob Martin

Location: MIT Room E51-345, Cambridge, MA

Overview: The sparks will fly when two passionate professionals - Jim Coplien and Bob Martin - square off to make the world safe for software development. In the corner of architecture, patterns and agile is Jim Coplien. Driving the necessity of test-based design is "Uncle Bob" Martin.

Each will use their long track records, numerous case studies, and success stories to argue that they have the answers you need to deliver successful projects and products. The difference here is that we are presenting both sides of the story, working with Jim and Bob to show how both approaches meet in the arena of professional software development.

Come prepared to be surprised and have your assumptions questioned! Our goal is to get well beyond the buzzwords and introductory agile ideas – and to get you thinking.

Price: Only \$545 at the Earlybird rate. That expires on Oct 14th so don't put off registering! We'll make it even easier when you register – enter this discount code: DA2008BP2FT for a further \$50 off. You'll pay only \$495 – a full \$155 savings off the standard price!

Space is limited to 90 in this MIT seminar room and we are expecting to sell out early. So register early! Go to http://agilebazaar.org/

- What Makes Agile Hard to Deliver? Don't repeat others' mistakes. Find out how the experts handle the recurrent problems that plague Agile initiatives.
- Agile and Architecture: How Much is Enough? Can good design emerge from TDD or should you use patterns to create an architecture upfront?
- Agile and Patterns: As co-founder of the software patterns community, James Coplien has some strong opinions on where Agilistas are going wrong.
- TDD Essential Discipline or Harmful Fad?: Can Test Driven Development create bad habits, or poor design? You can't find two more knowledgeable gurus to debate it than Bob and Jim!
- Evening Pub Session: Patterns on Steroids -Gaze into the depths from whence emerged the patterns concepts where else but at a pub, over beers, with James Coplien!
- Lean vs. Agile: How does a philosophy born in manufacturing guide software architecture? Or should it? Find out where it matches or misses.
- Agile and Professionalism: Good software architecture is at the core of too many essential services and products for us *not* to consider this a profession. But what does that entail?
- Panel Discussion/Open Discussion: Your chance to join in the discussion of the two days content with the speakers and panelists. Test out your new insights!

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Oct 14	Boston CHI - Regular Meeting - TBA - 6:30pm	Sun Microsystems, Burlington, MA	Page 6
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Oct 21	Boston SPIN - What Agile Can Learn From Waterfall And What Waterfall Can Learn From Agile - Michael Mah - 6:00pm to 8:30pm	MITRE, Bedford, MA	Page 5
Oct 29	ICCA Boston Chapter - Your Client Wants What??? - Don't Stress, be Agile! - 6:00pm to 9:00pm	Hynes Convention Center, Boston, MA	Page 7
Nov 8-9	GBC/ABC - Deep Agile 2008 - Not as Easy as You Thought - 9:00am to 5:00pm	MIT, Cambridge, MA - Room E51-345	Page 8
Nov 12	Software Quality Group of New England - <i>Estimating using</i> <i>Wideband Delphi Method - An interactive exercise -</i> 6:00pm - 8:00pm	Sun Microsystems, Burlington, MA	Page 5

If your membership has expired, please consider renewing it for one or more years. Currently the membership fee is only \$10/year. Your support helps make possible the wide array of GBC/ACM activities.

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in addition to access to our popular PDS seminars.Address:Paying for multiple years can save effort for you
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out your membership status.

NEW - Online membership sign-up and renewal available. Please see instructions on Page 6

Name:	
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*** October/November2008 Events Calendar ***