November 1997 Events & Table of Contents

Date of Event	Page of Article	Event Sponsor	Event Location	Web Site http://www
Nov. 2	Page 4	GBC/ACM PDS	UMASS Boston Harbor Campus	acm.org/chapters/gbc
Nov. 5	Page 3	Boston Siggraph	GTE Waltham	v-site.net/siggraph-ne
Nov. 18	Page 7	WebTech	MIT 1-390 Cambridge	acm.org/chapter/webtech
Nov. 18	Page 3	SPIN	GTE Needham	cs.uml.edu/Boston-SPIN
Nov 17	Page 6	SIGCHI	MIT	
Nov 20	**Page 1**	**GBC/AMC IEEE-CS**	**MITRE**	**acm.org/chapters/gbc eee-boston.org**

ARE YOU EXPIRED ?

If the top line of your mailing label below reads **EXPIRED**, please renew your membership at the very affordable rate of $10/yr. Please consider renewing for more than one year at time. It saves all of us some labor. For that $10 you get your very own copy of this newsletter/local event calendar. And, not to worry, we know our database can handle the century boundary because at least one member has paid through the year 2000! Thank you.

The Greater Boston Chapter of the acm

P.O. Box 465
Lexington, MA 02173

GBC/ACM is a non-profit educational and scientific society.

First Class
Presorted
U.S.. Postage
PAID
Boston, MA
Permit Number
56536

First Class:
Dated Materials

The Official Newsletter of the Greater Boston Chapter of the acm

The Real Times

Vol.36 No.3 www.acm.org/chapters/gbc November 1997

IEEE Computer Society & GBC/ACM
6:30 pm, Thursday, November 20th
Content Based Video Access - Broadcast News Navigator
Andrew Merlino, The MITRE Corporation

ABSTRACT

Access to video based on its content is an important requirement for applicationssuch as video teleconference archiving, video mail access, and individualized video news program generation. With the increase of multimedia information, including broadcast news, video mail, and even surveillance video, it is becoming more and more difficult to access this information based on its content efficiently and to derive summaries such as trend analyses from this information. Towards a solution for this problem, we in the Multimedia Computing program at The MITRE Corporation have developed techniques to automatically capture, annotate, segment, summarize and visualize stories from a large body of video information taken from the broadcast news media (such as Jim Lehrer News Hour, CNN PrimeNews, and ABC World News Tonight). Our state-of-the-art system, which automatically extracts stories and commercials and visualizes the news, is the first to process audio, imagery, and text streams simultaneously to provide context based access to broadcast news. Our system, based on a foundation of commercial relational database and video server technology, includes a Broadcast News Editor (BNE) component and an associated video viewer, the Broadcast News Navigator (BNN). With the Broadcast News Editor, we perform video analysis (Black Frame, Logo, Anchor booth, Reporter Scene Recognition), audio analysis (Silence Detection, Speaker Change), and closed caption analysis (proper name extraction and token detection). We process these correlated detections through a finite state machine to discover broadcast, commercial and story segments. A summarization, gist, theme and key frame are generated from each story segment. With this information in our multimedia database, the user of the Broadcast News Navigator can perform queries on broadcast video as well as perform trend analysis queries. Some user evaluations suggest that reductions in search time by a full order of magnitude might not be unreasonable. Currently, we are looking into integrating speech transcription tools into our system, and we are transitioning our technology to "the real world." In our presentation, we will outline the problem of working with large volumes of multimedia data (processing the data, storing it, and exploiting it for the web based end user) and we will explain our solution. We will also discuss the evaluation techniques we used during the development of this system, and some of our findings. And we will give a live demonstration of the system, accessing over a years worth of news from various broadcast agencies.

BIOGRAPHY

Andrew Merlino is a Lead Database Technology Software Engineer at The MITRE Corporation and the Project Lead for BNN. He received a BS in Computer and Information Science from the University of Massachusetts at Amherst in 1985 and an MS in Computer Systems Engineering from Northeastern University in 1989.

Important Details

Meeting begins at 6:30 pm (with coffee at 6:15 pm) A no-host dinner follows.at A-Lobby, The MITRE Corporation, Bedford, MA. PHOTO ID REQUIRED.

For more information, contact Alan Brooks at (781) 271-6497 (abrooks@mitre.org)

Directions to MITRE

From Rt. 95 - Take exit 32 (Rt. 3 north).

Take exit 26 (Rt. 62). Right on Rt. 62. Left at the first light onto MITRE grounds. Follow road to the Right past the A-Building Lobby to parking on left. Please show a photo ID to the guard in A-Building Lobby.

Also see http://www.mitre.org/about/location/b-map.html.

Real Times Managing Editor
Robert Epolito, **(617)862-1181**, epolito@tiac.net

The Real Times is published ten times per year (September through June) and is the official newsletter of the Greater Boston Chapter of the Association for Computing Machinery, First or third-class postage paid at Boston, MA 02101, Lexington, MA 02173, and other post offices.

Timely notices of events, meetings, and other activities of interest to the Chapter's Membership should be submitted by the 10th of the month Before the intended issue and sent, with attention to the Managing Editor to:

GBC/ACM, P.O. Box 465, Lexington, MA 02173.
(617) 862-1181

The Chapter's mailing list is available to related professional organizations or for commercial use. Please contact the Membership Chair at the address above when requesting mailing lists.
Subscriptions:
Annual subscription cost is included in the Chapter Membership dues of $10.00. See top line on mailing label for membership expiration date. Library subscriptions are free. Please send orders for copies to the Chapter mailing address above.
Postmaster:
Address changes should be sent to the mailing address above. Allow eight to ten weeks for changes to address or membership renewal to become effective. Send old label with address modifications.

John Lakos Review

On October 4, John Lakos gave a pds seminar on large scale C++ software design: on how things scale when moving from small to large systems and on what causes these scaling problems.

The basic premise of the seminar was that in large C++ systems, uncontrolled interdependencies can complicate maintenance, decrease reliability and performance, and significantly increase compile and link times. The seminar focused on ways to reduce these interdependencies through careful design and syntactical conventions. Issues were grouped as either logical design paradigms (He proposed a layering approach) and physical design issues (how to group classes and functions into code and header files so as to decrease compile and link time and improve maintainability of the system).

Some general rules for library and layered system design:

The basic idea is that each layer should be an "insulated" subsystem, so that changes in any layer won't affect layers above or below it. Lakos referred to Bertrand Meyers' open/closed design principle: Classes should be open to extensibility, but closed to modification. This means it should be possible to extend their interface, but not modify the implementation. The interface definition should be a wrapper/facade that can be used to control the lower layer subsystems. The following heuristics and rules of thumb were presented:

Design to reduce compile time dependencies. Avoid unnecessary #include directives, especially in header files. A #include in a header file creates visibility (and thus dependency) to any code that needs to be aware of the interface definition, while a #include in a .c file only creates a dependency in the current implementation. Lakos suggested putting the header file associated with a .c file as the first include to flush out any dependencies a .h file has on other includes. This dependency should be the determining factor in putting the #include in the .h file rather than the .c file. Generally IsA, HasA relationships to other classes, Inlined functions and Enums mandate that a header file needs to be included from a .h file; otherwise it is often sufficient to include it from the .c file.

Sometimes forward declaring a class will create more independence than including that class's header file. This can be true if only a pointer/ reference to that class is visible from the client class; this maintains independence from the details of the lower layer class's interface details.

Always pass user defined objects using either const references or a modifiable pointer. Otherwise, you may cause an extra constructor/ destructor call. Passing objects by value is exorbitantly expensive.

Don't depend on compiler defaults for copy, constructor, destructor and assignment operators. Explicitly including these in a header file will make adding a new implementation of these later transparent to client programs and increase layer independence.

Avoid unsigned and short in interfaces since this can lead to ambiguity in calls. Use int, double or float instead. This isn't a factor in implementation.

Try to maintain consistency when overloading and overriding operators and functions. A good rule of thumb is to follow int behavior when deciding how functions and operators on other data types should behave.

continued on page 7

(John Lakos - continued from page 2)

Some specific suggestions:

== should be a free function (rather than a member function) since it would not be symmetric if defined as a member function, so the commutative nature of == would be lost.

= (assignment) should be a member function.

+= must be a member function:"do something to me and return a reference to me".

++i returns an l-value so user defined types should behave similarly when operated on by the ++ prefix operator, but i++ returns an r-value.

Use of templates can have tricky performance and maintenance implications. (The comment was made that templates take 35 times as long to compile on hp than on sun. I don't know the reliability of this, but it may be worth a brief investigation.)

A crucial point was the importance of avoiding cyclic dependencies between classes. This forces class implementations to include each other's header files, makes it difficult to break up the system for independent development and unit testing, and can in the worst case lead to exponential increases in system complexity and severe performance degradation. It may be worth constructing a dependency graph of our class (or at least header file) dependencies as part of our documentation effort.

Another issue was the need to keep base classes simple and streamlined. A story was related about how at one point Mentor Graphics had a huge string class (with a 27 page header file) in its implementation. As a result, a "Hello World" program that used it had a 1.2 MB executable and real apps became similarly bloated. The need to partition error messages / codes in separate files / classes was also emphasized, so as to avoid the need to recompile the whole system every time a new error code was added.

Lakos distinguished between internal linkage that is done by the compiler at compile time in resolving things like typedefs and enums and external linkage done only at link time.

Significant link time can sometimes be saved by putting #ifndef wrappers around #include statements (as opposed to only having them in the header files themselves). This will avoid the overhead of unnecessarily scanning included files extra times. Lakos gave examples where this could save 10% to 20% of link time for systems of medium complexity.

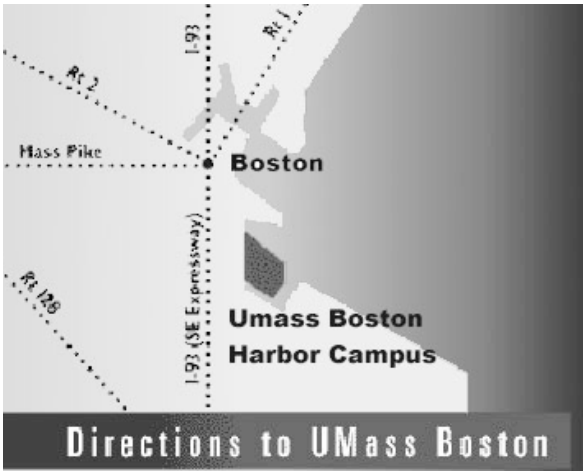
Another interesting suggestion was to link source file comments to documentation using html url links embedded in code comments.

WEBTECH MONTHLY MEETING
FOR November

Tuesday, November 18, at MIT, room 1-390 (the usual place). The guest speaker will be Simeon Simeonov from Allaire, and the topic (yet to be articulated in detail) will be about the use of tag-based languages for internet application development.

Seminar & ***Book Titles***	**Advance Registration**	**Walk-in**	**Enter Amount**
Java for C & C++ Developers	$75	$85	
Java Multimedia Cyber Classroom			
Web-based Data Access Programming	$75	$85	
Web Development with Visual Basic 5	$20	$20	
International ACM#_____		Subtotal	
GBC ID#_____or $10 (required)		$10	
Pay to GBC/ACM with Check or money order Only		**Total**	
Batch: **Chk #** **Trans. #** **Date**			
Name:			
Affilliation:			
Address: Home Work			
City: State: Zip:			
Home Phone:			
E-mail:			
Restrict use of my name to: ACM use only Professional socities only			

PDS - 1997 Fall Series



On the MBTA: Take the Red Line to JFK/UMass Station. A free shuttlebus will carry you from the "T" parking lot to the campus. MBTA buses following routes 8 and 16 also stop at the campus.

By car from the north: Take Interstate 93 south through Boston to exit 15 (JFK Library/South Boston/Dorchester) and follow the University of Massachusetts signs along Columbia Road and Morrissey Boulevard to the campus.

By car from the south: Take Interstate 93 north to exit 14 (JFK Library/Morrissey Boulevard) and follow Morrissey Boulevard northward to the campus.

By car from the west: Take the Massachusetts Turnpike (Interstate 90) east to the turnpike's end at Interstate 93. Take I-93 south one mile to exit 15 (JFK Library/South Boston/Dorchester) and follow the University of Massachusetts signs along Columbia Road and Morrissey Boulevard to the campus.

Indoor and outdoor parking space is available for $3.50 per day

Java for C & C++ Programmers

With Paul Deitel
November 8, 1997 (Saturday)
UMass, Boston Harbor Campus

OVERVIEW:
This is a fast way to get started learning Java.

WHO SHOULD ATTEND:
Practicing C or C++ programmers interested in a fast-paced introduction to Java programming.

SEMINAR TOPICS:
- Applets and applications
- Object-oriented programming
- Graphics
- Graphical User Interfaces (GUIs)
- Exceptions
- Multithreading
- Multimedia: Images, image maps, animation and audio
- Files and Streams - Networking
- Server communication

LECTURER:
Paul Deitel has delivered Java, C and C++ courses for many industrial clients. Paul and Harvey Deitel are coauthors of many books. Their books are used in thousands of universities in more than 100 countries and have been translated into Russian, Spanish, French, Chinese, Japanese and Korean. Paul is a graduate of MIT Sloan School of Management.

SESSION CHAIR:
Mike Plusch, plusch@ultranet.com

Seminar Book Offer

(***This seminar includes a book in lieu of notes.***)
Java: How to Program, second edition
Harvey and Paul Deitel
seminar and required book only $100.00
optional CD $15.00

Professional Development Seminars - 1997 Fall Series

Web-based Data Access Programming

With Michael Corning and Bob Beauchemin
December 6, 1997 (Saturday)
Northeastern

OVERVIEW:

This seminar leads the participants through the world of basic data access from using Active Data Objects in VBScript to complex distributed transaction processing with Microsoft Transaction Server to Remote Data Services implemented with Internet Explorer 4.0. Specific "gothchas" with Oracle and SQL Server will be described. The seminar explains the nuances of Microsoft's data access models and their effect on applications.

WHO SHOULD ATTEND:

People interested in understanding Microsoft's data access technologies in the context of the IIS 4.0 and Active Server Pages.

SEMINAR TOPICS:

- The heritage: ODBC, DAO, and RDO
- The Heir Apparent: OLE DB and ADO
- The Fine Print: a detailed examination of ADO
- The Best of Both Worlds: ADO and ODBC
- The New Economics of Data Access: Microsoft Transation Server
- The Sky is Not the Limit: Remote Data Access Services using IE4

LECTURERS:

Michael Corning is an Active Server Pages Developer Support Engineer at Microsoft. He is also the coauthor of "Working with Active Server Pages" and a contributor to "Web Development with Visual Basic 5" both published by Que in 1997. He has also contributed high technology articles to the Journal of Financial Planning, Smart Access, and Microsoft Interactive Developer.

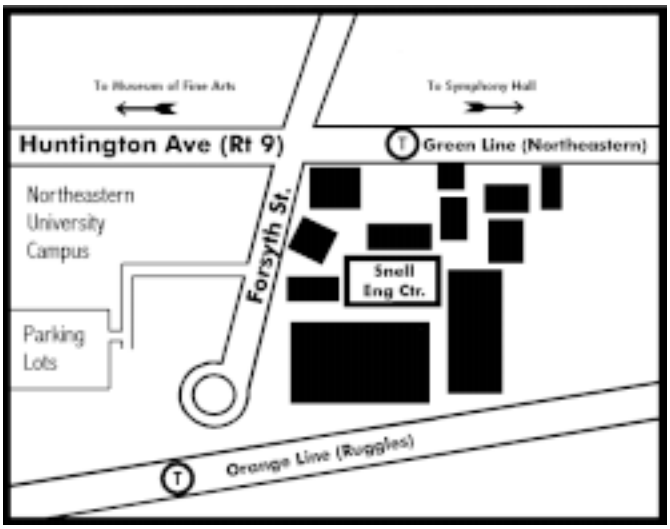
Currently Bob Beauchemin is a senior software engineer and information systems architect at STEP Technologies, Portland OR, a consulting company specializing in Microsoft technologies and web-based software solutions. He certified MCT, MCSE, MCSD (Microsoft certified trainer, systems engineer, solution developer). He has taught most of Microsoft official systems administration, database and web development curriculum.

SESSION CHAIR: Peter Mager, psm@tiac.net

Seminar Book Offer

Working With Active Server Pages
Michael Corning
List: $39.99 PDS price: $25.00

GENERAL INFORMATION



NORTHEASTERN LOCATION

Northeastern University, Boston, is within walking distance of the MBTA Green Line (Arborway/E Train) Northeastern station and the Orange Line Ruggles station. Free parking is also available.

SCHEDULE

8:30am - 9:00am	Registration (continental breakfast)
9:00am - 12:15pm	Morning session (break at 10:30am)
12:15pm - 1:30pm	Lunch(provided on-site)
1:30pm - 4:30pm	Afternoon session (break at 2:30pm)

REGISTRATION FEES

Included in the $75 fee are seminar materials, lunch, and refreshments. Registrants not current members of the GBC/ACM are charged an additional $10, and become members of the chapter for a year. This is distinct from ACM membership. Surcharge for on-site registration is $10. Purchase orders, credit cards, faxes and e-mail cannot be accepted. **Enrollment is limited and on a first come, first served basis.** Early registration must be made by a check or money order at least three weeks in advance of the seminar to receive confirmation from GBC/ACM.

CANCELLATION & REFUND POLICY

Cancellations must be received in writing. The full fee will be refunded if the PDS Registrar receives written notification on or before the day of the seminar, addressed to GBC/ACM, PO Box 465, Lexington MA 02173. Refund requests received after the seminar date will be subject to a $15 administrative fee. The $10 membership fee will not be refunded.

ANY QUESTIONS?

See: http://www.acm.org/chapters/gbc or Call (617)862-1181

(continued on page 7 - PDS Second Seminar Location)

NOVEMBER GB/SIGCHI MEETING ANNOUNCEMENT
Monday, November 17, 1997

The Workplace of the Future: An Interactive Design Session with the Space Planning Organization Research Group (SPORG)

Chuck Kukla, Research Affiliate, Department of Architecture, MIT
William Porter, Leventhal Professor of Architecture, MIT
Turid Horgen, Senior Researcher, Norwegian Building Research Institute , MIT

Refreshments at 6:30, meeting at 7:00
Building 3, room 309, MIT
77 Massachusetts Avenue, Cambridge, MA.
Free and open to the public.
For more information please contact the program chair:
Ron Perkin, rperkins@shore.net, 978-465-6083 (email preferred)

Abstract
The Space Planning and Organization Research Group (SPORG) at MIT has existed informally for several years as a loose aggregation of faculty and outside professionals committed to the study of relationships among spatial, organizational, and technological dimensions of buildings and places. More recently, the group has focused on the modern workplace, thus necessitating a study of the relation of all these elements to work practice. Central to our study has been understanding the effectiveness of communication in the local and remote workplace, as well as the role of both the medium of communication and the modes of representation in communicating with others as well as with oneself. The final element is the role and power of diagramming in formation of concepts as well as in design. We will report on how the process of defining the workplace can match the workplace to the changing nature of work, thereby helping to make work more productive. We will explore what features of the workplace enable it to match or promote actual or desired changes in work. Lastly, we will demonstrate through an interactive design game how people design and how designing a workplace for design serves as the impetus for a workplace geared for efficiency, effectiveness, and change.

About the Speakers
Chuck Kukla is a Research Consultant in the Usability Expertise Center at Digital Equipment Corporation and a Research Affiliate at the Department of Architecture at MIT. With a background in chemical, mechanical, and system engineering, he has led projects in changing the workplace in industrial settings for many years. His current work at Digital involves consulting on design for the development of new products for the future workplace.

William L. Porter is a Professor of Architecture and Planning at MIT, former Dean of the MIT School of Architecture and Planning, and Fellow of the American Institute of Architects. Through teaching, research and practice, his work has included organizational reform within and outside MIT, computational aides to urban designers and architects, and architectural programming and design. His current focus is on exploring how design methods can be integrated into processes of individual and organizational learning .

Turid Horgen is a Norwegian architect and town planner, Research Associate at the MIT School of Architecture and Planning, and Senior Researcher at the Norwegian Building Research Institute, who has worked for 25 years on action research strategies in participatory design and environmental programming. Her current work focuses on innovative workplace design and on research into the relationship between design processes and work practices.

Directions
(Directions to MIT can be found at url: whereis.mit.edu
and url: whereis.mit.edu/bin/map?

From the North (I-95 or I-93)
If you are heading south on I-93, follow I-93 into Boston then follow the I-93 instructions below. If you are heading south on I-95, take the I-93 South exit then follow the instructions from I-93. Alternatively, take the I-90 East exit from I-95 then follow the instructions from I-90.
From the South (I-95 or I-93)
If you are heading north on I-93, follow I-93 (the Southeast Expressway) into Boston then follow the I-93 instructions below. If you are heading north on I-95, take the I-93 North exit then follow the instructions from I-93. Alternatively, take the I-90 East exit from I-95 then follow the instructions from I-90.
From the West (I-90) (Mass Turnpike)
Follow I-90 east to the Cambridge/Brighton exit (exit 18). Following the signs to Cambridge, cross the River Street Bridge, and continue straight about 1 mile to Central Square. Turn right onto Massachusetts Avenue and follow Massachusetts Avenue for about a half mile. The main entrance to MIT will be on your left. If you cross the river again, you have gone too far.
From Route I-93
From I-93, take exit 26, and follow the signs to Back Bay along Storrow Drive West, approximately 1.5 miles, to the exit for Route 2A. The exit will be on the left, just before the Harvard Bridge (more appropriately called the Massachusetts Avenue Bridge). The Charles River will be on your right. As you cross the bridge, you will be looking at MIT - the Great Dome and academic facilities are on the right, the dormitories and athletic facilities are on the left.
by Hood blimp
Take the blimp to the tall building with all the glass windows (that would be the Hancock tower). Head north over the Charles River and have them put you down on top of the large, convex, concrete structure on the north shore of the river (that would be the Great Dome of MIT). Watch out for police cars on the roof.

SIGGRAPH - BOSTON
Wednesday, November 5, 1997
Networking time at 6:30pm
announcements &
feature presentation at 7:00pm
GTE Labs - Waltham, MA

Abstract
Virtual Reality for Archeologists
Virtual Reality is a valuable new aid in the study and practice of archaeology. How can thousands of students visit a remote temple on a mountain-top in Turkey? How can archaeologists study an Assyrian palace whose artifacts are scattered to museums all over the world? How can a popular Israeli tourist site be preserved from the effects of thousands of visitors? How can an archaeologist publish ALL the data for Neolithic village and still make the data usable and affordable? Using computer demonstrations, video tape, and advanced hand-waving, Eben Gay will show how virtual reality is solving these problems and providing unique new possibilities in the fields of archaeology and education.

About the Speaker
Eben Gay built his first virtual world in 1982; it displayed on a character terminal (and ran quite fast, considering). In 1992 he started ERG Engineering, Inc. in order to build virtual worlds full time. Among other projects, he has built virtual worlds for museum exhibits, medical applications, and industrial training systems. He has trained teachers how to use VR in their curriculum, taught courses in VR to school children, and produced virtual learning environments for schools and museums. He is currently supplying VR expertise to Learning Sites, Inc. which builds educational virtual worlds for studying archaeology. He is active in the Boston Virtual Reality Group and has helped them build cutting-edge VR projects or five SIGGRAPH conferences. Eben holds a Bachelor's of Science degree in Computer Science from Boston University. Where GTE Labs, Waltham, MA.

Directions
From Route 128 (interstate 95), get off at exit 27B, Winter Street, in Waltham.
From I-95 (128) South the exit leads you right onto Winter Street.
From I-95 (128) North,
turn right at the light at the end of the exit, onto Wyman Street,
turn right again at the next opportunity, onto Winter Street and cross over I-95.
Go West on Winter Street through 3 closely spaced traffic lights, staying in the right lane. The Cambridge Reservoir appears on your right and the entrance to GTE Laboratories (40 Sylvan Road) is on the left. About halfway past the buildings, turn right under a pedestrian bridge joining two buildings. The entrance is in the building on your right from the central courtyard. Park in the central lot, follow the signs pointing to Lobby 2 and the Auditorium and sign in at Lobby 2 (in the northeast-most building).

Software Process Improvement Network (SPIN)
November Meeting Announcement

"Metrics for the Intrapreneurial Software Organization"

Maxine Crowther
Senior Quality Consultant at Cadence Design Systems

Tuesday, November 18, 1997
6:30pm (networking & refreshments),
7:00-8:30pm meeting
(Admission Free)

GTE, Building #5,
77 A Street
Needham, MA
(Wheelchair accessible)

For Information contact:
Maureen Harris (617) 455-3393,
maureen.harris@GSC.GTE.com;
Ken Oasis (617) 563-4197
ken.oasis@fmr.com; or
www.cs.uml.edu/Boston-SPIN/

The software industry is fast-moving and quick-changing. In order to survive, software engineering organizations and teams must think about business objectives as well as the latest technology. Product metrics are only a piece of the puzzle. Software organizations must take into account their products, their processes, customer satisfaction, and continuous improvement in order to remain viable.

Abstract
In this talk, Maxine will walk through a common-sense approach to define a metrics program by following a simple closed-loop path that leads to a balanced set of product, process, satisfaction, and financial measures.

Maxine Crowther is currently a Senior Quality Consultant for the Software Engineering organization of Cadence Design Systems, a market leader in the Electronic Design Automation software industry. She had a 23 year career at Digital Equipment Corporation where she was an Information Systems professional, led Digital's Executive Information Center, co-authored a long-range planning methodology, and consulted in the corporate quality organization..

Directions:
To get to GTE, Building #5:

From Route 128 in Needham, take exit 19A onto Highland Avenue East. At first traffic light turn RIGHT onto Second Street. Go 1/4 mile (passing hillside Sheraton entrance on right) and turn RIGHT onto A Street. Go 1/5 mile and before GTE HQ building on left (multi-story glass facade), turn LEFT into Parking lot. Please enter at the cafeteria.