



Volume 7  
Issue 1



23rd International Conference  
on Software Engineering

Westin Harbour Castle Hotel  
May 12–19, 2001  
Toronto, Ontario, Canada

## ICSE 2001 Window on the World

<http://www.csr.uvic.ca/icse2001/wow/>

### Welcome to ICSE 2001 in Toronto!

We hope that you will enjoy the conference and will help make it an exciting, informative, and memorable ICSE. The ICSE 2001 program consists of many traditional ICSE events. 434 people registered for tutorials and 642 for workshops. The Doctoral Symposium featured the work of a dozen doctoral students from around the world. There are three tracks of refereed papers: 47 technical papers, eight case-study reports, and six education papers. Several plenary sessions will feature six keynote speakers and three panels will provide a forum for discussion on timely topics. Finally, there are Invited Industry Presentations, Research Demos and Posters, and an Exhibits and Tools Fair. The ICSE 2001 program also features several events that are new to ICSE. The New Software Engineering Faculty Symposium provided a forum for discussions of ways to succeed in academia. The David Lorge Parnas Symposium, a

special feature of ICSE 2001, was held to honor the work of David L. Parnas on his 60<sup>th</sup> birthday. The Challenges and Achievements in Software Engineering (CHASE) presentations provides both a research and an industrial view of the same topic. Finally, the Frontiers of Software Practice (FoSP) provide mini-tutorials on new and promising software technologies. The organization of ICSE 2001 was a team effort that involved many people whose names are listed in the program and the Proceedings. We are deeply grateful to all of them, and hope that if you see them at the conference, you will

thank them for a great effort.

— Hausi A. Müller  
— Mary Jean Harrold  
— Wilhelm Schäfer



### Net-Centric Computing – Migrating to the Web

Enabling technology for supporting the migration of legacy systems to the Web was the main focus of the 3<sup>rd</sup> Workshop on Net-Centric Computing (NCC'01). Twenty-four delegates from five countries engaged in lively discussions centered around nine papers grouped in the three “D-areas”: legacy system Decomposition, Development, and Deployment. In summary, the participants agreed that (a) in practice, Decomposition is determined by multiple non-functional requirements that might be partially contradicting; (b) Development techniques, like

component *wrapping*, are fast but might potentially have negative influences on the maintainability of the migrated systems; and (c) dynamic reconfiguration techniques are increasingly important in the Deployment of Net-Centric Systems. The organizers will publish a more comprehensive summary online at <http://mulford.cs.ucr.edu/stilley/ncc2001> and elsewhere.

— Jens H. Jahnke

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### WOW Wants You!

We want your ideas, opinion, and comments. We're in the beautiful Vice Regal Suite (South Tower, room 3523). Come on in!

### Don't forget the WOW Contest!

See the last page for an update and the prize!

### ASERC Contest!

Drop your business card at the ASERC booth and win an ASERC golf shirt!

### WOW Contact

[wow2001@varlet.uvic.ca](mailto:wow2001@varlet.uvic.ca)

### Weather Forecast

**Today**  
Sunny in the morning. Clouding over in the afternoon with scattered showers developing in the evening. High near 16.  
**Tomorrow**  
Cloudy with scattered showers. Low near 10. High near 18.

## TCSE Welcomes You to ICSE 2001

The International Conference on Software Engineering has become *THE* meeting place for the software engineering community world wide. This year, in Toronto, Hausi Müller and his team have created another spectacular event.

In the forty-odd years in which software development has existed, we have experienced a series of waves of new methodological technologies. Each brings with it promises that the problems of our world will be bypassed, and offers to be our (new) silver bullet. But, as others have said, there are no silver bullets. Today, we face a new challenge as web-based development appears to offer rapid deployment of applications, for, in the words of the spin doctors, little effort and less skill. But we've heard it all before. The over-arching belief

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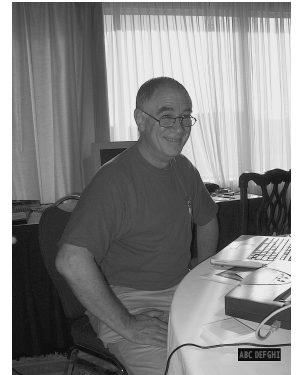
*I hope you will attend the TCSE General Meeting, Wednesday 16th,  
9:00pm-10:00pm @Pier 7 & 8.*

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that motivates ICSE is that of engineering of software systems, and the realisation of that goal. In each new phase, certain things change, and certain things remain the same. In addition, there will be patterns that, if we can find them will help us both strengthen our existing understanding, and extend it further. In a sense, ICSE provides the framework that makes this possible. Its long-term attendees and continuing workshops provide the continuity of experience. This, coupled with its constant influx of new attendees and workshops on new topics are the conditions for consolidation, renewal and progress. In all this, ICSE is a participant's

conference. The leaders of the field are here, and we'll present. However, the audience (that's you) can join the debate, challenge, reflect and contribute from the floor during the panels and question times. In this way, the field grows and the conference takes on additional life. Be a part of it!

— Karl Reed



## We Are On the Right Track ...

Three years ago, I made a presentation lamenting the state of software engineering education and tried to suggest possible directions for its improvement. At that time I was talking about the five Ps of Software Engineering:

**People** with proper general education, communication and team skills, as well as knowledge of professional ethics;

**Process** – ISO, CMM or any other of one's choosing;

**Physics** of SE – computer science, mathematics, basic engineering principles, domain knowledge; all of this supported by **Practice** – industrial apprenticeships, co-op programs; and

**Police** – professional associations, legislation certification and licensing bodies.

A lot has changed in those three years.

Software Engineering programs at both graduate and undergraduate levels are being opened everywhere. While the content of these programs may still be under development, there are a number of initiatives underway that will make a difference. The ACM/IEEE Guide to the Software Engineering Body of Knowledge (SWEBOK), for example, is available at [www.swebok.org](http://www.swebok.org). IEEE will offer Certified Software Engineering Professional examinations. A legal challenge issued by the Canadian Council of Professional Engineers (CCPE) against the Memorial University of Newfoundland has been settled out of court with an understanding that a Software Engineering Panel is created to make the recommendations.

There seems to be a genuine (forced?!) willingness to elevate Software Engineering

to the engineering profession. Organizations like the Consortium for Software Engineering Research (CSER) here in Canada help in advancing the cause since the Consortium's industrial members open their development environments to researchers and their students, exposing them to "real-world" issues.

I think that the tide has turned – in the not so distant future we will know what it means when someone calls him/herself a "Software Engineer" and who will be able to teach future Software Engineers. I am looking forward to participating in and looking at the results of the Workshops, Symposia and papers presented in Toronto at ICSE 2001.

— Anatol W. Kark

USER FRIENDLY by Illiad





## Would You Buy A Used Program From This Man?

Professional standards and methods have been adopted in most engineering disciplines to protect the public health, safety, and welfare. In recent years, software engineering has taken center stage as it strives to attain a level of professionalization on par with its more established engineering siblings.

This year nearly 8 billion microprocessors will be shipped, but a mere 2% of them will be in PCs. In other words, computers – and the software that runs on them – are disappearing into the fabric of our everyday lives. The ubiquity of computers in our lives underscores the importance of public safety issues in the push to accredit software professionals.

But how should software professionals be accredited, by licensing or certification?

Licensing is a legal means for governments to regulate accountability, while certification is granted by professional bodies to recognize a level of experience or education. In either case, accreditation is typically relative to an accepted body of knowledge (BOK).

A Software Engineering Body Of Knowledge (SWEBOK) has recently been proposed as a basis for professional accreditation in software engineering ([www.swebok.org](http://www.swebok.org)). The accreditation controversy also extends to the academic programs responsible for transferring this knowledge base to future software professionals.

Have we captured this body of knowledge yet? When asked how SWEBOK would affect SE curriculums, David Parnas commented during Tuesday's panel, "We

need a core body of knowledge. SWEBOK took that idea, but they left out 'core'." What do you think?

The foregoing issues are of topical interest at ICSE 2001, so come see what all the fuss is about! Piers 7 & 8 feature three sessions today related to accreditation. Session S6 addresses practical software engineering education at 10:30 am; session S14 covers degree programs for software engineering at 2:00 pm; and session S18 is a panel discussion about the aims of SWEBOK at 4:00 pm.

— **Scott M. Pike and Mike Godfrey**

## Yet Another Welcome: ACM SIGSOFT

As chair of ACM SIGSOFT, it is my greatest pleasure to welcome you to ICSE 2001! Hausi Müller, Mary Jean Harrold, Wilhelm Schäfer — and a cast of hundreds — have put together a fantastic program in a fantastic location: on behalf of SIGSOFT, I applaud their many years of hard work in bringing ICSE to Canada for the very first time. Make sure to pass your own thanks on to the ICSE 2001 team when you get a chance.

If I'm not mistaken, this is the seventh year of WOW: Michael Gorlick had the original idea, which Will Tracz implemented, at ICSE 1995 in Seattle. At meetings of the ACM SIG chairs I've talked several times about WOW, and their response has been wildly positive. I don't know if any of the SIGs have started their own version of WOW, but I wouldn't be surprised to see some clones in the near future. So I'd like to take this opportunity to thank all the WOW volunteers (past and, of course, present!): they probably get less sleep than anybody else at ICSE, since they burn the midnight oil in getting WOW laid out, printed, and distributed.

ICSE is intended to be a melting pot of software engineering educators, practitio-

ners, and researchers. I urge you to reach out and make this a reality of ICSE instead of merely a good intention: go to some sessions you wouldn't normally go to and mingle with some people you don't know. You'll take much more home that way, and ICSE will benefit enormously as well.

Enjoy the conference and don't forget to brush up on your Spanish so you can better enjoy ICSE 2002 in Buenos Aires next May!

— **David Notkin**

## Program Chairs at Work



## Burn Your Muffins II

From the South Tower of the Westin Harbour Castle we are afforded a beautiful view of Lake Ontario, and the Toronto Islands. The Toronto Islands are only a fifteen-minute ferry ride away, and make for an excellent excursion. The islands are mostly uninhabited, and have many beautifully maintained trails and gardens, suitable for walking, inline skating, or cycling. There are also beaches, restaurants, a small amusement park, and a farm with all sorts of animals sure to delight both children and adults. And the view of the city from the islands, particularly at sunset, is spectacular. There are three ferries leading to different islands and although all of the islands are connected, the Center Island is the most interesting. The Center Island ferry leaves its dock immediately behind the Westin every thirty minutes; round-trip tickets are \$5. For more information, check out <http://www.toronto.com>.

— **Ross McKegney**

# Spinal Tap Computing: An Interview with David M. Weiss



WOW caught up with David Weiss after his keynote

address that capped the David L. Parnas Symposium, and asked him to expand on a few of his points.

**You mentioned that this was the David Parnas era in software engineering. What other eras are on the horizon?**

No single figure has, or indeed will have, as much influence in the field of software engineering as David Parnas. The field is expanding so explosively that it is simply too hard for one person to keep on top of it. As far as new themes go, in the applications area the next era will be defined by programs that interoperate *on their own*, without human involvement. Think of interconnected business networks populated by processes that communicate in an autonomous fashion. Problems of security and trust will have to be overcome before this can happen, of course. In the area of software development, we need tools that reflect the shift from computing to information processing, that are better integrated

with the way that development actually happens. Essentially, we need tools that create tools, like what has happened in the XML community. Software engineers are always the last people to develop tools for themselves.

**You mentioned the recurring nature of many software problems, that many issues today are simply old problems in new clothing. Are there any *brand new* problems out there?**

Yes there are. Your readers may think I'm crazy, but I'm convinced that a crucial problem for the future is how to connect users *directly* to computers, such as providing a direct connection to the optic nerve. We may think that current GUI technology is easy to use, but watch how a non-technical person uses a computer—they have an incredibly difficult time, at least initially! We need to find a way to merge computing with the natural human senses—sight, hearing, speaking—such that there is a seamless path between the two. If we can decode the human genome, then we can decode human sensory signals such that direct input and output is feasible.

— John M. Linebarger

## Brooks on Brooks



**First of all I would like to ask you what are your current projects?**

My whole research with my team is devoted to virtual reality graphics. My personal

research is devoted to working on a book on "Design on Design", which is on the design process which is independent of the medium in which one is designing.

**If you were to be at the beginning of your career right now, which area in software engineering would you like to be in?**

I started my career on computer architecture and I would again. Right now... the most exciting area of computer science is computer graphics.

**Why virtual reality?**

Why not? I think in the first place, it challenges everything we can do in computer science. Because we have to

generate two pictures every 50 ms. Because you have to have an output rate of at least 20 frames per second to get a smooth motion. And this means that you have to be able to update your world model of everything you're simulating. To update where you are, you rerender all the pictures and lighting and everything. We need to work on algorithms, and data structures. We need to work on rendering techniques, computerize them. We need special hardware and general hardware, and work on memory management. The most complicated model we are working on right now has 100 million polygons in it. For real time walkthroughs we have to roll things in and out of memory and we have to anticipate where we are going to be. It is an exciting application that really stresses the whole world of computer science.

— Daniela Damian



## The Parnas Era in SE



At the start of his talk, David Parnas related a short science fiction story. A time-traveler brought

Shakespeare back to modern times where the Bard chose to enter college. Shakespeare took a course on, of all things, Shakespearian literature. He failed. Shakespeare was shocked at how much people had read into his work! Of course, no one in Tuesday's David L. Parnas Symposium believed that for a moment. As Jon Bently said, "Thanks for the ideas, the engineering and the beauty."

Not everyone agrees with all of his ideas, but most would agree that they are important and have had a lasting impact on our discipline. The symposium was filled with talks exploring that impact. Jon Bently discussed the classic KWIC problem and the ideas of modularization and information hiding. Paul Clements and Stuart Faulk showed how the concept of program families has come into vogue as product line architectures, and is now showing payoffs for companies like Hewlett Packard and Motorola. Joanne Atlee described Parnas tables with some of their successes, and Jim Waldo talked on abstract interfaces.

Parnas himself isn't resting on his laurels. He offered up new ideas in his own talk, and participated vigorously in a panel on software engineering education.

David Parnas received a standing ovation from all of the ICSE participants as he went up to receive a symbol of recognition Tuesday evening, and that in itself says volumes about the man and his work.

— Garry Froehlich

## Grape Expectations: Book II

"Bring in the bottled lightning, a clean tumbler, and a corkscrew." A capital suggestion indeed! Today's column samples the white wines of Ontario. But first, a little geography.

The Niagara escarpment in lower Ontario creates a wonderful microclimate for grapes. Its cliffs and ridges trap the air rising from Lake Ontario, making for cooler days and warmer nights than would otherwise be the case. The growing season that results is much like the Burgundy region in France. Chardonnay abounds. But lesser-known varietals also prosper—Riesling, Gewürtztraminer, and Sauvignon Blanc, for example.

Two labels can generally be recommended as good combinations of quality, value, and approachability. Jackson-Triggs makes excellent everyday wines; try their Chardonnay and Sauvignon Blanc. The Ancient Coast label was explicitly created to market affordable VQA (Vintners Quality Alliance) wines, and currently consists of three red and three white bottlings.

For specific vintages, try these: Inniskillen 1997 Reserve Chardonnay (\$13.95), the canonical example of an Ontario Chardonnay. Jackson-Triggs 1998 Gewürtztraminer (\$9.45) is a spicy wine that pairs well with ham, sushi, and Thai cuisine. And Inniskillen 2000 Pinot Grigio is a refreshing alternative to Chardonnay—crisp and light, it is meant to be enjoyed during its wanton youth.

Tomorrow, the red wines of Ontario. Salut!

— John M. Linebarger and Scott M. Pike

## Exhibits Opened Yesterday



## An Interview with Steve Easterbrook



Audience feedback at the 2<sup>nd</sup> Workshop on Living with Inconsistency, as summarized by workshop chair Steve Easterbrook:

**What is the ongoing problem that you are trying to solve?**

The workshop is inspired by the observation that inconsistency is inevitable in the large sets of descriptions that software engineers need to deal with. Prevention (of inconsistency) is generally agreed to be impractical as it places serious limitations on how software descriptions can be accessed and modified, and restrictions on how the process of building descriptions can be distributed. Hence, the central problem posed in the workshop is how do we cope with inconsistencies in our descriptions.

**Is there any problem or issue that you solved this year?**

Previous workshops have tackled the general questions about the process of detecting and managing inconsistency, and we have explored how inconsistency arises and is handled in different parts of software engineering. A noticeable difference at this year's workshop was a clear shift towards the question of reasoning in the presence of inconsistency. In particular, there is now recognition that we need tools to tell us what the consequences of different inconsistencies are, so that we can determine which inconsistencies matter and which do not. All of the papers presented this year included formal frameworks for expressing and reasoning about inconsistency, ranging from a logic for expressing consistency checking rules in XML, to work on multi-valued logics for capturing disagreements.

— Daniela Damian

## The New SE Faculty Symposium



I was in the right place at the right time! As a new PhD, I find myself pondering many arduous questions about a life in academia, so the Symposium on New Faculty in Software Engineering could not have come at a better time. The Symposium was structured as a set of presentations and a panel session on a range of topics including

teaching, research, and funding, as well as intellectual property and *how to have a life*. The invited speakers were a mix of experienced SE faculty, younger faculty who are a few years into their careers, and a few who have just received tenure. The audience seemed to enjoy the advice and resulting discussions. Ken Wong, one of the Symposium organizers, said "It went very well. We had plenty of interest, and although we did not have enough time for a detailed discussion we had much to learn. This should definitely become a regular event at ICSE!" Afterwards, I interviewed several of the presenters who had these comments:

Lee Osterweil on 'What Every Young SE Faculty Member Should Know': "You should become an academic only if you feel a passion for research and have an educational mission. That's what will make you successful. You need to be aware of what gives you personal satisfaction."

Debra Richardson on 'How to Get Tenure': "What really matters? Evidence and perception of scholarly distinction and impact, a coherent body of work with a significant theme showing growth as a scholar, and respect by acknowledged experts in your field."

Wilhelm Schaefer on 'Publication Strategies': "Take it very seriously, but don't forget that it's not a matter of life and death."

Paul Sorenson on 'Balancing Research, Teaching, and Life': "Look after your career but not to the exclusion of other fundamental things in life, such as relationships with your family, with your close friends, and (in my case) with God."

Don't miss it next year!

— Daniela Damian





## Internet Cafés

There are two Internet Cafés at the conference where it is possible to get online, read email, or browse the Web. One is in the Bay room on the street level of the Conference Centre side, with 10 Microsoft Windows-based PCs, while the second consists of four walk-up PCs in the exhibits area in Pier 2 & 3. Attendees beware: given the size of the conference and the number of seats available in the Cafés, long line-ups should be expected, as can be seen in this photo taken yesterday outside one of the Cafés. To keep the line-ups to a minimum, please be considerate and try to use the computer for 15 minutes or less when others are waiting.

— Davor Cubranic



## WOW! A Contest!

So we told you about Ada yesterday. Did you know that Java really expands to Just Another Version of Ada? Come on, you creative software engineers find a similar expansion for TORONTO. Here's the bottle of wine that you could win.

A bottle of the type of wine that made Ontario famous: A 1997 Ancient Coast Vidal Icewine.



## Receptions

Tuesday night's reception, sponsored by ACD systems, kicked off ICSE 2001's party circuit with a fantastic ICSE photo slide show. People had plenty of time to catch up on news of the day as they waited for food. A magician delighted guests, despite the rumoured disappearing act he performed with the vegetarian food.



Party continues tonight at 7:00 pm in the Harbour Ballroom, Harbour Foyer, and Piers 2&3. Sponsored by IBM, the reception of the opening day of the conference's technical program will feature a live band. Enjoy chatting with your colleagues while the Harvey Seigel's "Speak-Easy Jazz Band" plays jazz and ragtime tunes. As usual, food and drinks will be served during the reception, including a cash bar at which all attendees can receive a complimentary drink using the ticket that came in the registration package.

— Davor Cubranic

## WOW Press

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