icse

SCOTLAND 2004

26th international conference on
software engineering

23-28 May 2004, Edinburgh, Scotland

PROGRAM

icse conference series

sponsoring organizations

IEEE COMPUTER SOCIETY
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Technical Council on
Software Engineering

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Association for Computing Machinery
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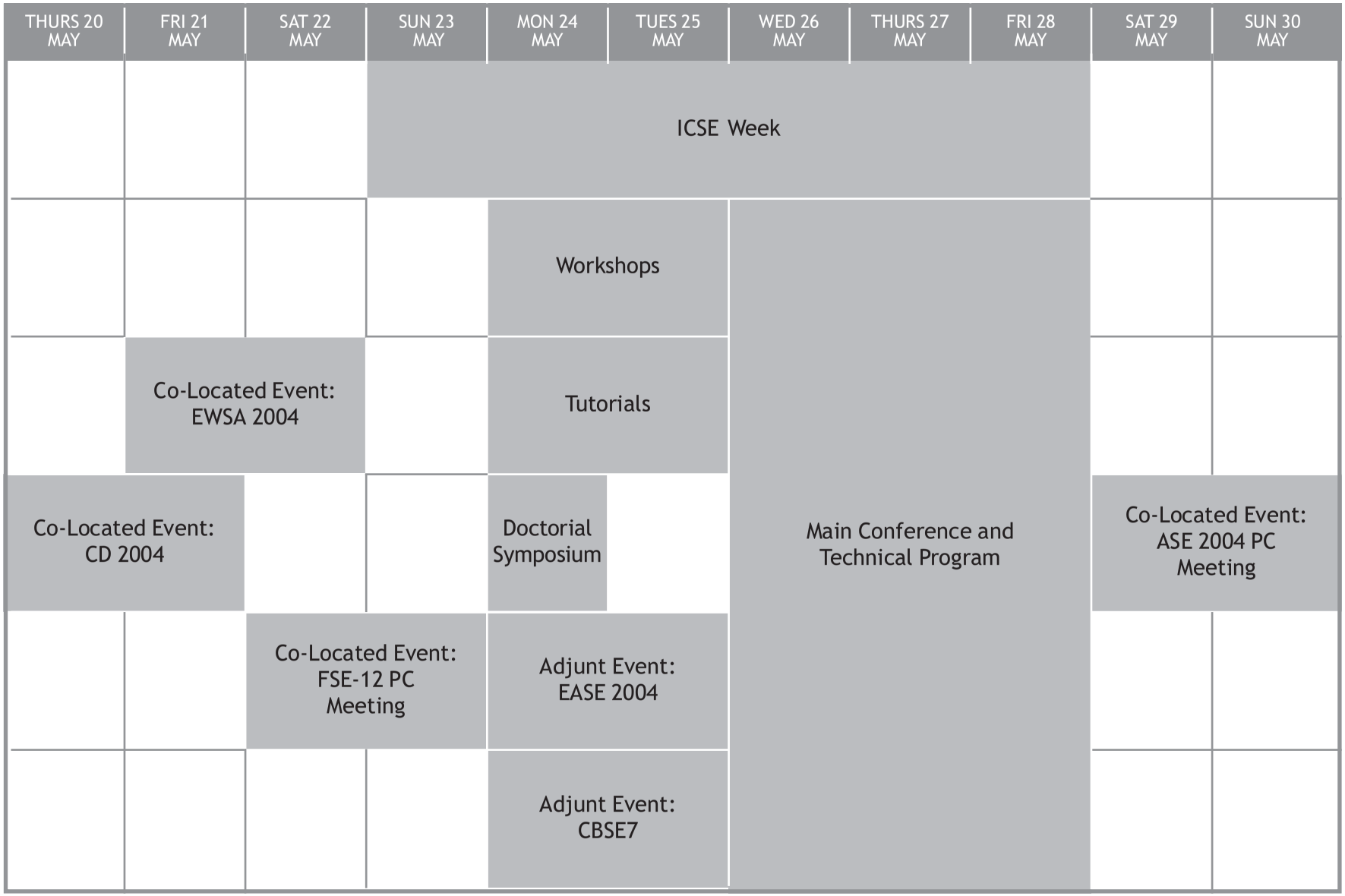
BCS

icse overview



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The 2nd International Working Conference on Component Deployment (CD 2004)
The First European Workshop on Software Architecture (EWSA 2004)
EC/NSF Workshop on Software Intensive Systems "Challenges,
Visions and Research Issues for Software-Intensive Systems"

program planner

TIME	SESSION	WEDNESDAY, 26 MAY	THURSDAY, 27 MAY	FRIDAY, 28 MAY
09:00	**A1**	**Welcome and Keynote 1** Richard Stallman *Room: Pentland Auditorium*	**Awards I and Keynote 2** Karl Lieberherr *Room: Pentland Auditorium*	**ICSE Future and Keynote 3** Janet Thornton *Room: Pentland Auditorium*
10:30	BREAK			
11:00	**B1**	**Testing I** *Room: Fintry*	**Testing II** *Room: Fintry*	**Slicing** *Room: Fintry*
11:00	**B2**	**Patterns and Frameworks** *Room: Sidlaw*	**Software Architecture I** *Room: Sidlaw*	**Software Architecture II** *Room: Sidlaw*
11:00	**B3**	**Requirements** *Room: Tinto*	**Process and Project Management Management and Deployment** *Room: Tinto*	**Software Configuration** *Room: Tinto*
11:00	**B4**	**Linkages 1 - John Pinkus** *Room: Pentland Auditorium*	**Linkages 3 - Ian Foster** *Room: Pentland Auditorium*	**Linkages 4 - Mark Handley** *Room: Pentland Auditorium*
11:00	**B5**	**Research (Formal) Demos Analysis and Visualization** *Room: Moorfoot*	**Research (Formal) Demos Design Tools** *Room: Moorfoot*	**Research (Formal) Demos Requirements and Specification** *Room: Moorfoot*
12:30	LUNCH			
14:00	**C1**	**Quality of Service** *Room: Fintry*	**Decentralized Systems** *Room: Fintry*	**Dynamic Reconfiguration** *Room: Fintry*
14:00	**C2**	**Verification** *Room: Sidlaw*	**Analysis Tools** *Room: Sidlaw*	**Static Analysis** *Room: Sidlaw*
14:00	**C3**	**Unified Modeling Language** *Room: Pentland Auditorium*	**Dynamic Analysis** *Room: Pentland Auditorium*	**Object-Oriented Programming** *Room: Pentland Auditorium*
14:00	**C4**	**Panel 1 - Design: Supporting Reflective Practitioners** *Room: Tinto*	**Panel 2 - MDA in Practice** *Room: Tinto*	**Panel 3 - Agile Development: Evaluation and Experience** *Room: Tinto*
14:00	**C5**	**RAE Report Back** *Room: Moorfoot*	**UK BOF** *Room: Moorfoot*	
15:30	BREAK			**Farewell** Room: Pentland Auditorium
16:00	**D1**	**Linkages 2 - Ken Birman** *Room: Pentland Auditorium*	**MIP and Awards II**	
16:00	**D2**	**Empirical Methods** *Room: Fintry*		
16:00	**D2**	**Feature-Based Software Engineering** *Room: Sidlaw*		
17:30	EVENT		Industrial Event **IBM eclipse Technology Exchange** Room: Cromdale Hall	
17:30	EVENT		Industrial Event **Microsoft Research** Room: Kilsyth	
evening	SOCIAL	**Whisky Tasting Reception** *Room: Cromdale Hall* 18:30 - 20:00	**Conference Reception** *Royal Museum of Scotland* 19:30 till late	

On behalf of the ICSE 2004 team, welcome!. In this program you will find a description of the very large number of events that are available to you. It also contains details of the many opportunities for social interaction and networking. To make the most of ICSE I advise you to plan ahead, the schedule is very packed! Please take the opportunity to attend talks or papers in unfamiliar areas and to chat to people you don't already know. The software engineering community has a reputation for being warm and welcoming and I hope that this ICSE will build on this reputation. The ICSE 2004 team is here to help in any way we can. Please ask us. Thanks to the professional societies and to our generous industrial supporters for their assistance.

Anthony Finkelstein
ICSE 2004 GENERAL CHAIR

conference committees

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On-site Help
Need directions? Technical assistance? Whatever your problem or query, there are people on site who'll be ready to help you. Aside from the staff at the EICC, look for the 'Orange Shirts'; members of the Organising Committee, ICSE Co-ordinators and our team of Student Volunteers will be wearing these to help you identify them.

On-site Facilities
The EICC hosts a first-class Business Centre, located on Level 0, offering everything from administrative support and multi-lingual services to telecommunications facilities. Private workstations and printers are provided, with all areas having Internet and ISDN facilities. Other services include:

- Colour photocopying
- Faxing
- Word-processing
- Public address system serving all areas of the Centre
- TV Information monitors
- Supply of phone cards, stamps, etc.
- Tourist information: bus timetables, tours, restaurants
- Hiring faxes and photocopiers
- Laminating
- Booking couriers by request
- Flight re-confirmation

Internet Access
Delegates will be able to use the EICC local wireless network to access the Internet using their laptops or PDA's. Cards with login details will be on sale at the registration desk from the morning of Monday 24th May at a cost of £5, and will be valid for the duration of the conference.
Use your wireless card to connect to the local network, open a browser and access any web page. You will be forwarded to a login screen to enter the username and password purchased, in order to gain full access to the Internet. All regular services (http, VPN, POP3 etc) are enabled. Alternatively, head to our Internet Café, with equipment kindly loaned by Apple. Located in the Strathblane Hall (Level O), 6 Mac Powerbooks will be made available for free use by delegates, with Internet connection.

Info on Edinburgh
Inside your delegate bag you'll find plenty of information to help you make the most of your stay in this historic city: maps, lists of things to do, local travel information, restaurant reviews and more. The staff of the EICC Business Centre (Level 0) can also provide you with a wealth of information on Edinburgh, Lothian and Scotland for any more extensive exploring you may have planned.

ICSE Social Events
Whisky Tasting Reception
18:30 – 20:00hrs on Wednesday, 26 May
EICC – Cromdale Hall

ICSE 2004 invites all delegates to an informative but enjoyable tutored tasting which will examine the factors that influence the taste, colour and bouquet of single malt whisky. Delegates will sample and examine malted barley, peat and single malt whiskies matured in bourbon casks, single malt matured in sherry casks and examine how peat plays a part in creating taste.

Our tutors will be setting their our own whisky still, to distill single malt whisky while the tasting is going on and delegates will be invited to sample both the initial distillation of low wines and the newly produced young spirit. The whisky still is unique as it is the only small whisky still to receive a licence from the government since small still were banned in Scotland in 1781.

The tasting will be conducted by Tim Steward who was formerly a brand ambassador for Allied Distillers and was responsible for training staff in the duty free sector to taste whisky in countries all around the Pacific Rim.

A whisky shop will be available so that delegates can purchase the whiskies included in the tasting.

Tickets for the Whisky Tasting will be provided at registration, where additional tickets for guests may also be on sale, subject to availability.

Main Conference Reception
19:30hrs – till late on Thursday, 27 May
Royal Museum of Scotland, Chamber Street, Edinburgh

All full conference delegates are invited to a buffet reception at the Royal Museum of Scotland, located a short distance from the EICC and most conference hotels. With entertainment from the locally renowned merry makers 'The Gutty Slippers' (aka 'The Pokey Hats'), the evening offers a further opportunity to catch up with old friends and make some new ones. In keeping with the informal theme of the evening, the buffet will be 'stand-up' in style, and a cash bar will be available.

Tickets for the Reception will be provided at registration, where additional tickets for guests may also be on sale, subject to availability.

A map will be made available for those wishing to attend the reception from the registration desk.

keynote speakers

This year we have three superb keynotes. Richard Stallman will present us with the challenges our discipline faces organisationally, legally and ethically. Karl Lieberherr speaks from within our research community on some of the immediate research challenges that we have to address. Janet Thornton looks at the particular challenges that the life sciences bring to software engineering. The talks are intended to stimulate discussion and set the tone for the conference.

Richard Stallman - *Against Software Patents*
Wednesday, 26 May
09:00 - 10:30hrs (Session a1)
Room: Pentland Auditorium

Richard Stallman will explain how software patents obstruct software development. Software patents are patents that cover software ideas. They restrict the development of software, so that every design decision brings a risk of getting sued. Patents in other fields restrict factories, but software patents restrict every computer user. Economic research shows that they even retard progress.

Brief Biography: The founder of the GNU project, developer of GNU Emacs and much else besides. 'Father' of the free software movement and campaigner for civil liberties. The holder of numerous awards and distinctions, including the ACM Grace Hopper medal and membership of the National Academy of Engineering.

Karl Lieberherr - *Controlling the Complexity of Software Designs*
Thursday, 27 May
09:00 - 10:30hrs (Session a1)
Room: Pentland Auditorium

Our research has focused on identifying techniques to develop software that is amenable to refactoring and change. The Law of Demeter (LoD): "Talk only to your friends" was one contribution in this effort. But it led to other problems. With the current state of the art focused on Aspect-Oriented Software Development (AOSD), it is useful to revisit the general objectives of the LoD and adapt it to the new ideas. Hence we introduce the Law of Demeter for Concerns (LoDC): "Talk only to your friends that share your concerns". We discuss the important intersection of LoD and LoDC with traversals and we explore the ramifications of the Laws of Demeter to achieve better separation of concerns through an improved software process.

Brief Biography: Distinguished software development researcher. Pioneer of software component research. Responsible for innovative early work in aspect-oriented and adaptive programming.

Janet Thornton - *Software Engineering Challenges in Bioinformatics*
Friday, 28 May
09:00 - 10:30hrs (Session a1)
Room: Pentland Auditorium

Data from biological research is proliferating rapidly and advanced data storage and analysis methods are required to manage it. We introduce the main sources of biological data available and outline some of the domain-specific problems associated with automated analysis. We discuss two major areas in which we are likely experience software engineering challenges over the next ten years: data integration and presentation.

Brief Biography: Director of the European Bioinformatics Institute (EBI). World leading researcher in bioinformatics and biomolecular structure. The effort to map the human genome sequence was unquestionably one of the extraordinary scientific achievements of the twentieth century. This revolution in biology brings profound challenges for computing.

tutorials at-a-glance

TUTORIAL HALF DAY: MONDAY, 24TH MAY 2004		VENUE / ROOM	TIME
T5	Formal Concept Analysis in Software Engineering	EICC – Carrick 2	09.30 – 12.30
T7	Software Variability Management	EICC – Carrick 2	14.00 – 17.30
TUTORIAL ONE DAY: MONDAY, 24TH MAY 2004			
T8	Software Architecture Reconstruction	EICC – Ochil 3	09.30 – 17.30
T13	Case Studies for Software Engineers	EICC – Carrick 1	09.30 – 17.30
TUTORIAL HALF DAY: TUESDAY, 25TH MAY 2004			
T6	An Overview of UML 2.0	Sheraton – 2	09.30 – 12.30
TUTORIAL ONE DAY: TUESDAY, 25TH MAY 2004			
T9	Software Modelling Techniques and the Semantic Web	The Point – Five	09.30 – 17.30
T10	Usability Supporting Architectural Patterns	The Point – Three	09.30 – 17.30
T12	Testing Object Oriented Software	Sheraton – 1	09.30 – 17.30
T14	Balancing Agility and Discipline: Evaluating and Integrating Agile and Plan-Driven Methods	EICC – Carrick 1	09.30 – 17.30

tutorials

ICSE 2004 is hosting 9 tutorials. Tutorials are aimed at providing in depth instruction on specific topics that are of interest to software engineering practitioners, researchers and students. This year's topics range from agile development processes and UML 2.0 to the semantic web, software architectures and usability. Tutorial instructors are recognized leaders in their fields and experienced presenters. This year tutorials were selected from 61 tutorial proposals.

Monday, 24 May - Half Day Tutorials

T5

Formal Concept Analysis in Software Engineering
Presenter: Paolo Tonella

09:30 – 12:30hrs
Room: EICC – Carrick 2

Concept analysis is a very general method to analyze a binary relationship between arbitrary objects and attributes. Its output is a lattice of so-called concepts, which offers non-trivial insights into the structure underlying the original relationship. Each lattice node (concept) contains maximal sets of objects sharing common attributes. The hierarchy of concepts in the lattice can be interpreted as the possibility to generalize or specialize a concept. In the analysis of software systems, several relationships among the composing entities emerge. For this reason, concept analysis found a very productive application area in software engineering. Static and dynamic relationships among software components can be subjected to concept analysis to obtain information useful during maintenance, for program comprehension, and in the execution of reengineering tasks. The objective of this tutorial is to provide background and methodological knowledge on concept analysis and on its usage in software engineering. This will be achieved by describing three recent, representative applications of concept analysis in detail. They concern respectively the re-organization of a legacy system into cohesive units, the inference of design patterns without any a-priori information, and the decomposition of a software system into computational units (decomposition slices), that may be strongly dependent, weakly dependent or independent with each other. Other examples of applications, presented more succinctly, include the reengineering of class hierarchies, feature location by means of dynamic analysis, and the derivation of a software configuration structure.

T7

Software Variability Management
Presenter: Jan Bosch

14:00 – 17:30hrs
Room: EICC – Carrick 2

In a variety of approaches to software development, software artifacts are used in multiple contexts or for various purposes. The differences lead to so-called variation points in the software artifact. During recent years, the amount of variability supported by a software artifact is growing considerably and its management is developing as a main challenge in the development, usage and evolution of software artifacts. Examples of approaches where the management of variability is evolving as a challenge include software product families, component-based software development, object-oriented frameworks and configurable software products such as enterprise resource planning systems. The tutorial presents insights gained, techniques developed and lessons learned in the European IST project ConIPF (Configuration in Industrial Product Families) and in other research performed by the software engineering research group at the University of Groningen. The tutorial first establishes the importance of software variability management, defines the concept of variability, discusses notational and visualization aspects, assessment of software artifacts for variability, design of architectures and components for variability, usage of variation points while configuring instantiated software artefacts and, finally, some advanced issues including variation versus composition.

Monday, 24 May – Full Day Tutorials

T8

Software Architecture Reconstruction
Presenters: Arie van Deursen, Claudio Riva

09:30 – 17:30hrs
Room: EICC – Ochil 3

A robust and clear software architecture is often the key discriminator for the success or failure of a software project. The description of software architecture should communicate the essential decisions that have been taken during the design of the software system. Architecture reconstruction is the reverse engineering activity that aims at recovering those decisions that either have been lost (because have not been documented or the original developers have left) or are unknown (because they originate from the system's evolution). The reconstruction is performed by examining the available artifacts (documentation, source code, experts) simulating the system behavior with dynamic analysis techniques and inferring new architectural information that is not immediately evident. This tutorial covers software architecture reconstruction. It addresses, amongst others, the following questions:
- How do we identify architecturally significant information?
- How can we extract, analyze and present it?
- What are the critical issues that have to be considered?
- How do we manage the reconstruction process in a product family?
- What tools and methods are available?
This tutorial will address these and other questions that are relevant for the development of large and complex software systems.

T13

Case Studies for Software Engineers
Presenters: Dewayne E Perry, Susan Elliot Sim, Steve Easterbrook

09:30 – 17:30hrs
Room: EICC – Carrick 1

The purpose of this full-day tutorial is to delineate and illustrate the correct use and interpretation of case studies. It will help software engineers identify and avoid common mistakes by giving them a solid grounding in the fundamentals of case studies as a research method. Using an equal blend of lecture and discussion, it aims to provide software engineers with a foundation for conducting, reviewing, and reading case studies. For researchers, this tutorial will provide a starting point for learning how to conduct case studies. They will be able to find, assess, and apply appropriate resources at their home institution. For reviewers, the tutorial will provide guidance on how to judge the quality and validity of reported case studies. They will be able to use the criteria presented in this tutorial to assess whether research papers based on case studies are suitable for publication, allowing them to raise the quality of publications and give appropriate feedback to authors. For practitioners, the tutorial will provide a better awareness of how to interpret the claims made by researchers about new software engineering methods and tools. Practitioners will also gain deeper insights into the roles they can play in designing and conducting case studies in collaborative research projects. As well, they will read case studies more effectively and be better able to identify results suitable for use in their workplace.

Tuesday, 25 May – Half Day Tutorials

T6

An Overview of UML 2.0
Presenter: Bran Selic

09:30 – 12:30hrs
Room: Sheraton - 2

Since its adoption as an industry standard in 1997, the Unified Modeling Language (UML) has been adopted widely by both industry and academia. This extensive experience has naturally led to demands for improvements and new capabilities. In September 2000, the Object Management Group - the industrial consortium that controls the UML, standard-issued a request for proposal for the first major revision of UML, UML 2.0. This new version was conceived as the basis for the coming generation of model-based development methods, such as OMG's Model-Driven Architecture (MDA). The distinguishing characteristic of these methods is that their primary focus is on the definition and evolution of models rather than programs-with programs being automatically generated from such models. The combination of higher-level abstractions defined in UML and the use of automation provide the potential for a dramatic improvement in productivity and software reliability. Attendees of this half-day tutorial will learn the salient aspects of UML 2.0-from the perspective of one of its primary authors.

tutorials

Tuesday, 25 May – Full Day Tutorials

T9

Software Modeling Techniques and the Semantic Web
Presenter: Jin Song Dong

09:30 – 17:30hrs
Room: The Point - Five

Following the success of XML, W3C envisions the Semantic Web (SW) as the next generation of web in which data are given well-defined and machine-understandable semantics so that they can be processed by intelligent software agents. SW can be regarded as an emerging area from the Knowledge Representation and the Web Communities. The Software Engineering community can also play an important role in the SW development. Modeling and verification techniques can be useful at many stages during the design, maintenance and deployment of SW ontology. We believe SW will be a new research and application domain for software modeling techniques and tools. For example, recent research results have shown that UML, Z and Alloy can provide modeling, reasoning and consistency checking services for SW. On the other hand, the diversity of various software specification techniques and the need for their effective combinations requires an extensible and integrated supporting environment. The success of the Semantic Web may have profound impact on the web environment for software design methods, especially for extending and integrating different software modeling techniques. This full-day tutorial (with no specific prerequisite) is aimed at both industrial and academic participants. The tutorial will include:

- A detailed introduction to Semantic Web languages (DAML+OIL and OWL) and Semantic Web tools (FaCT and RACER)
- An introduction to software modeling techniques Z, Alloy and UML and a demonstration on how they can facilitate modeling, checking and reasoning about web ontologies
- A military plan ontology case study where we discovered a number of errors in the original ontologies with the help of the combination of RACER, Alloy Analyser and Z/EVES tools
- An illustration on how DAML+OIL can be used to build a Semantic Web environment for supporting, extending and integrating various software specification languages

T10

Usability Supporting Architectural Patterns
Presenters: Len Bass, Bonnie E. John, Natalia Juristo, Maribel Sanchez-Segura

09:30 – 17:30hrs
Room: The Point - Three

Software architects have techniques to deal with many quality attributes such as performance, reliability, and maintainability. Usability, however, has traditionally been concerned primarily with presentation and not been a concern of software architects beyond separating the user interface from the remainder of the application. A usability-supporting architectural patterns (USAP) describes a usability concern that is not supported by separation alone. For each concern, a USAP provides the forces from the characteristics of the task and environment, the human, and the state of the software to motivate an implementation independent solution cast in terms of the responsibilities that must be fulfilled to satisfy the forces. Furthermore, each pattern includes a sample solution implemented in the context of an overriding separation based pattern such as J2EE Model View Controller. During the tutorial, the instructors will present the concept of a USAP and several examples. The instructors will also facilitate an exercise where attendees will develop their own USAP.

T12

Testing Object Oriented Software
Presenters: Mauro Pezze, Michal Young

09:30 – 17:30hrs
Room: Sheraton - 1

Object-oriented software requires reconsidering and adapting approaches to software test and analysis. Some traditional test and analysis techniques are easily adjusted to object-oriented software, but others require substantial revision, and yet others need to be introduced to cope with new problems of object-oriented software. This tutorial brings together process and technical aspects of testing object-oriented software in an overall coherent framework that considers what can be simply adapted from conventional test practices and what new and extended techniques are required. Topics include test planning, test design from specification and design documentation, adapting design and code inspection to object oriented software development, intra- and inter-class structural testing, testing programs with exception-handling and threading, test oracles for object-oriented programs, regression testing, and process improvement.

T14

Balancing Agility and Discipline: Evaluating and Integrating Agile and Plan-Driven Methods
Presenters: Barry Boehm, Richard Turner

09:30 – 17:30hrs
Room: EICC – Carrick 1

Rapid change and increasing software criticality are driving successful development and acquisition organizations to balance the agility and discipline of their key processes. The emergence of agile methods in the software community is raising the expectations of customers and management, but the methods have shortfalls and their compatibility with traditional plan-driven methods such as those represented by CMMI, ISO-15288, and UK-DefStan-00-55 is largely unexplored. Multiple sources of perplexity -- inconsistent definitions and interpretations, overgeneralization of successes and failures, confusing of methods' usage and misuse -- complicate the search for clarity of understanding. This tutorial pragmatically examines the aspects of agile and plan-driven methods through examples and case studies. We characterize "home grounds" where the approaches are most likely to succeed, identifying five critical dimensions that describe the agile/plan-driven spectrum. We present a risk-based method for developing balanced strategies that take advantage of the strengths and mitigate the weaknesses of both agile and plan-driven approaches, and that fit the objectives, constraints, and priorities of a particular project or organization. Step-by-step walkthroughs of several example projects show how the method is applied. Finally, we involve participants in an exercise involving hands-on evaluation of their current organizational balance of agility and discipline, identification of their likely directions of change, and development of strategies for evolving their balance of agility and discipline to meet their future objectives and challenges.

workshops at-a-glance

WORKSHOP ONE DAY: MONDAY, 24TH MAY 2004		VENUE / ROOM	TIME
W3S	Software Engineering for High Performance Computing System (HPCS) Applications	The Point - Four	09.30 - 17.00
W4S	1st International Workshop on Advances and Applications of Problem Frames (IWAAPF 2004)	EICC - Ochil 1	09.30 - 17.30
W12S	The Third International Workshop on Global Software Development (GSD2004)	The Point - Two	09.30 - 17.30
W13S	The Second Workshop on Software Quality	The Point - One	09.30 - 17.30
W15S	Second International Workshop on Remote Analysisand Measurement of Software Systems (RAMSS 04)	EICC - Ochil 2	09.30 - 17.30
WORKSHOP ONE DAY: TUESDAY, 25TH MAY 2004			
W2S	Workshop on Directions in Software Engineering Environments (WoDiSSE2004)	EICC - Ochil 3	09.30 - 17.00
W5S	Third International Workshop on Scenarios and State Machines: Models, Algorithms, and Tools (SCESM04)	The Point - Two	09.30 - 17.30
W6S	ACSE 2004: Fourth International Workshop on Adoption-Centric Software Engineering	EICC - Carrick 3	09.30 - 17.00
W7S	International Workshop on Models and Processes for the Evaluation of COTS Components (MPEC 2004)	EICC - Carrick 2	09.30 - 17.30
W8S	Collaboration, Conflict and Control: The 4th Workshop on Open Source Software Engineering	The Point - Four	09.30 - 17.30
W10S	Second International Workshopon Dynamic Analysis (WODA 2004)	The Point - Penthouse	09.30 - 17.00
W14S	Software Engineering for Automotive Systems	The EICC - Ochil 2	09.30 - 17.30
W17S	International Workshop on Mining Software Repositories (MSR 2004)	The Point - One	09.30 - 17.30
W19S	Third Workshop on Architecting for Dependable Systems (WADS)	EICC - Ochil 1	09.30 - 17.30
WORKSHOP TWO DAY: MONDAY, 24TH & TUESDAY, 25TH MAY 2004			
W1L	Bridging the Gaps II: Bridging the Gaps Between Software Engineering and Human-Computer Interaction	EICC - Tinto	09.30 - 17.00
W9L	Sixth International Workshop on Economics-DrivenSoftware Engineering Research (EDSER-6)	EICC - Harris 1	09.30 - 17.00
W11L	5th International Workshop on Software Process Simulation and Modelling (ProSim 2004)	EICC - Moorfoot	09.30 - 17.00
W16L	Third International Workshop on Software Engineering for Large-Scale Multi-Agent Systems (SELMAS'04)	EICC - Fintry	09.30 - 17.00
W18L	International Workshop on Distributed Event-Based Systems (DEBS 2004)	EICC - Kilsyth	09.30 - 17.30
ADJUNCT EVENTS **EASE 2004/CBSE7: MONDAY, 24TH & TUESDAY, 25TH MAY 2004**			
EASE	The 8th International Conference on Empirical Assessment in Software Engineering	EICC - Harris 2	09.30 - 17.00
CBSE7	International Symposium on Component-based Software Engineering	EICC - Sidlaw	09.30 - 17.00

workshops

The workshops program at ICSE 2004 is rich and varied. Its objective is to bring together world-class researchers and practitioners to share and discuss their latest work and ideas. This year, the offered workshops span traditional software engineering research areas (e.g. software engineering environments, software process modeling and simulation), current 'hot topics' (e.g. open-source software engineering and distributed event-based systems), emerging research areas (e.g. software engineering for high-performance computing and software engineering for automotive systems), and cross-disciplinary research such as software engineering and human-computer interaction, software engineering and multi-agent systems.

This range of topics suggests that software engineering has a bright future, full of novel and exciting challenges.

Monday, 24 May – I Day Workshops

W3S

Software Engineering for High Performance Computing System (HPCS) Applications
http://csdl.ics.hawaii.edu/se-hp

09:30 – 17:00hrs
Room: The Point – Four

High performance computing systems are used to develop software for wide variety of domains including nuclear physics, crash simulation, satellite data processing, fluid dynamics, climate modelling, bioinformatics, and financial modelling. Recent initiatives in the HPCS community, such as the DARPA High Productivity Computing Systems program, recognize that dramatic increases in low-level HPCS benchmarks do not necessarily translate into high-level increases in actual development productivity. This creates an opportunity for the software engineering community to apply our techniques and knowledge to a new and important application domain. This interdisciplinary workshop will bring together researchers and practitioners from the SE and HPCS communities to share perspectives and define a research agenda for improving HPC development productivity.

W4S

1st International Workshop on Advances and Applications of Problem Frames (IWAAPF 2004)
http://www.cse.unsw.edu.au/~karlc/ProblemFramesWorkshop.htm

09:30 – 17:30hrs
Room: EICC – Ochil 1

Michael Jackson's Problem Frames are a new and highly promising approach to problem description and requirements engineering. Their focus moves the engineer back to the problem to be solved rather than the software to solve an undefined problem. Problem Frames are patterns of known types of problem that are shaped to be easily referenced into the solution that best matches a problem or set of related problems; they are the design patterns of the problem world. The influence of the Problem Frames approach and related work is spreading in the fields of Domain Modelling, Process Modelling, Requirements Engineering and Software Architecture. It is widely recognised that the early lifecycle phases in a software project are crucial to its success. Poor requirements definition and process almost always leads to a poorer product or a cancelled project. The Problem Frames approach has the potential to have a major impact upon the way software engineering problems are thought about, described and later developed. The scope of this workshop is to address application and usage successes and issues with the Problem Frames approach to aspects of software engineering and to explore where new areas of research might arise.

workshops

W12S

The Third International Workshop on Global Software Development (GSD2004)
http://gsd2004.uvic.ca

09:30 – 17:30hrs
Room: The Point - Two

The goal of this workshop is to provide an opportunity for researchers and industry practitioners to explore both the state-of-the art and the state-of-the-practice in GSD. The workshop will foster interaction between practitioners and researchers and help grow a community of interest in this area. Practitioners experiencing challenges in GSD will share their concerns and successful solutions and learn from research about current investigations. Researchers addressing GSD will gain a better understanding of the key issues facing practitioners and share their work in progress with others in the field.

W13S

The Second Workshop on Software Quality
http://attend.it.uts.edu.au/icse2004

09:30 – 17:30hrs
Room: The Point - One

To develop software quickly, on time and within budget is not good enough if the product developed is full of defects and today, software stakeholders are demanding higher quality software than ever before. As the software market matures, users want to be assured of quality. They no longer accept the claims of the IT department at face value, but expect demonstrations of quality. In recent years, much of software engineering research has focussed on standards, methodologies and techniques for improving software quality, measuring software quality and software quality assurance. Most of this research is focused on an internal view of quality whereas few measures of the customer view of quality exist. The Second Workshop on Software Quality aims to bring together academic, industrial and commercial communities interested in software quality in order to discuss the different technologies that have been defined and used in the software quality area, with topics of interest to this discussion spanning the full range of software quality issues.

W15S

Second International Workshop on Remote Analysis and Measurement of Software Systems (RAMSS 04)
http://measure.cc.gt.atl.ga.us/ramss/

09:30 – 17:30hrs
Room: EICC – Ochil 2

The way software is produced and used is changing radically. Not so long ago software systems had only a few users, and ran on a limited number of mostly disconnected computers. Nowadays the number of software systems, computers, and users has dramatically increased. Moreover, most computers are connected through the Internet. Although these changes raise new issues for software engineers, they also represent new opportunities to greatly improve the quality and performance of software systems. The goal of this workshop is to bring together researchers and practitioners interested in exploring how the characteristics of today's computing environment can be leveraged to improve software quality and performance. In particular, the workshop aims to discuss how software engineers can shift substantial portions of their analysis and measurement activities to actual user environments, so as to leverage in-the-field computational power, human resources, and actual user data to investigate the behavior of their systems after deployment and to improve their quality and performance.

Tuesday, 25 May – 1 Day Workshops

W2S

Workshop on Directions in Software Engineering Environments
http://www.cs.auckland.ac.nz/~herm/WoDiSEE2004/

09:30 – 17:00hrs
Room: EICC – Ochil 3

Software engineering environments are an essential part of practising software engineering, given the complexity of today's software systems and diversity of software processes. Much conceptual or methodological work in software engineering requires adequate tool support in order for researchers and practitioners to make use of these software engineering advances. The goal of this workshop is to provide a forum for exchange of ideas on new software tool construction techniques; innovative software engineering environments; automation, intelligence and integration issues for software tools; novel software engineering environment interfaces and application domains; and innovative tool experience

reports. A key outcome will be a workshop summary of the state of the art in software engineering environments research and key directions for future tools research.

W5S

Third International Workshop on Scenarios and State Machines: Models, Algorithms, and Tools (SCESM04)
http://scesm04.upb.de

09:30 – 17:30hrs
Room: The Point - Two

Scenarios and state machines have emerged as two important modeling perspectives on the reactive behavior of complex systems. Scenarios typically represent a partial view on the interactions between multiple components; state machines typically represent the complete behavior of individual components. The methodological potentials of the combination of partial and complete behavior perspectives have yet to be fully exploited in the development process for complex, reactive systems. Automated tool support – based on algorithms relating scenarios and state machines for analysis, design, implementation or validation – offers great promise for improving the current practice of software engineering. These issues will be explored at the workshop in the context of realistic case studies.

W6S

ACSE 2004: Fourth International Workshop on Adoption-Centric Software Engineering
http://www.acse2004.cs.uvic.ca

09:30 – 17:00hrs
Room: EICC – Carrick 3

The key objective of this workshop is to explore innovative approaches to the adoption of software engineering tools and practices through the extension of Commercial-Off-The-Shelf Software (COTS) products and/or middleware technologies. The workshop aims to advance the understanding and evaluation of adoption of software engineering tools and practices by bringing together researchers and practitioners who investigate novel solutions to software engineering adoption issues.

W7S

International Workshop on Models and Processes for the Evaluation of COTS Components (MPEC 2004)
http://www.lsi.upc.es/events/mpec

09:30 – 17:30hrs
Room: EICC – Carrick 2

Commercial Off-The-Shelf (COTS) evaluation is one of the main activities carried out during the selection and implementation of COTS components. Its importance and also its complexity are growing more and more due to the increasing number of COTS domains and products available. As a consequence, models for representing the evaluation criteria and the evaluations themselves, as well as process to conduct the evaluation activity, are needed.

W8S

Collaboration, Conflict and Control: The 4th Workshop on Open Source Software Engineering
http://opensource.ucc.ie/icse2004/

09:30 – 17:30hrs
Room: The Point - Four

The main theme of the 4th workshop is "Collaboration, Conflict and Control." Specifically, the goal of the workshop is to bring together researchers and practitioners for the purpose of discussing the platforms and tools, the techniques and processes, and the organizational structures that are used to support and sustain:
- Communication and collaboration within and between developer and user communities
- The resolution of conflict within development projects (from deciding on improvements to be included in a particular release, to reconciling the goals of not-for-profit community organizations and their industrial collaborators)
- Effective leadership and control of development activities, and of the evolution of specific products (from the management of code commit privileges in a single project, to the roles played by non-governmental standards builders e.g. the Internet Engineering Task Force and the World Wide Web Consortium and governmental policy makers)

workshops

W10S

Second International Workshop on Dynamic Analysis (WODA 2004)
http://www.cs.virginia.edu/woda2004

09:30 – 17:00hrs
Room: The Point - Penthouse

WODA 2004 will bring together researchers and practitioners working in all areas of dynamic analysis. Dynamic analysis techniques reason over program executions and show promise in aiding the development of robust and reliable large-scale systems. It has become increasingly clear that limitations of static analysis can be overcome by integrating static and dynamic analyses, and that the performance and value of dynamic analyses can be improved by static analyses. Hence, a key focus of the workshop will be on hybrid analyses that involve both static and dynamic components.

W14S

Software Engineering for Automotive Systems
http://www4.in.tum.de/workshops/ase-icse04/

09:30 – 17:30hrs
Room: EICC – Ochil 2

The next generation of premium cars is expected to host a cumulated amount of up to one gigabyte of binary code of software To design, implement and manage the complexity of such a heterogeneous distributed system with increasingly short innovation cycles, the techniques and methods of classical embedded systems are not suitable, nor are the known ones in the desktop and business software domains. We see automotive software engineering as a massively emerging research field with heavy impact in industry. This workshop is intended to provide a discussion forum for researchers and practitioners working in the field. A particular goal is to discuss established software engineering concepts for their adoption to the automotive domain towards an explicit discipline of software engineering. Special focus of this workshop are models as well as specification and engineering techniques that support system integration in a field characterized by a sharp division of labor between original equipment manufacturers and different suppliers.

W17S

International Workshop on Mining Software Repositories (MSR 2004)
http://msr.uwaterloo.ca

09:30 – 17:30hrs
Room: The Point - One

The goal of this one-day workshop is to bring together researchers, and practitioners to consider methods to use the data stored in software repositories (such as source control systems, defect tracking systems, and archived project communications) to further understanding of software development practices. We expect the presentations and discussions in this workshop will facilitate the definition of challenges, ideas and approaches to transform software repositories from static record keeping repositories to active repositories used by researchers to gain empirically based understanding of software development, and by software practitioners to predict and plan various aspects of their project.

W19S

Third Workshop on Architecting Dependable Systems (WADS)
http://www.cs.kent.ac/wads

09:00 – 17:30hrs
Room: EICC – Ochil 1

Architectural representations of systems have shown to be effective in assisting the understanding of broader system concerns by abstracting away from details of the system. The dependability of systems is known as the reliance that can justifiably be placed on the service the system delivers. The architectural level reasoning about dependability is only just emerging as an important theme in software development, considering the current complexity of emerging applications and the trend of building trustworthy systems from existing untrustworthy systems. This is a twin workshop to another being organised during DSN (International Conference on Dependable Systems and Networks) 28 June to 1 July 2004, Florence, Italy (http://www.dsn.org/). The aim is to bring together researchers from both the software architectures and the dependability communities, and to have cross-fertilization from two different communities and to build strong collaboration possibilities among the participants.

Monday, 24 and Tuesday, 25 May – 2 Day Workshops

W1L

Bridging the Gaps II: Bridging the Gaps Between Software Engineering and Human-Computer Interaction
http://www.se-hci.org/bridging/ICSE04

09:30 – 17:00hrs
Room: EICC - Tinto

Almost half of software in systems being developed today and 37 - 50 percent of efforts throughout the software life cycle are related to the system's user interface. For this reason problems and methods from the field of human-computer interaction affect the overall process of software engineering tremendously, and vice versa. Yet despite these seemingly powerful incentives to practice and apply effective SE and HCI method there still exist major gaps of understanding both between suggested practice and how software is actually developed in industry, and between the best practices of each of the fields. The theme of this workshop - the second at ICSE and the fourth in a series over the past two years -is to bring together practitioners and academics in the two fields in an attempt to enumerate and understand these gaps of understanding and communication, with an eventual goal of proposing practical means, shared processes, shared architectures, shared notations etc, to bridge these gaps.

W9L

The Sixth International Workshop on Economics-Driven Software Engineering Research (EDSER-6)
http://www.soberit.hut.fi/edser-6/

09:30 – 17:00hrs
Room: EICC – Harris 1

Traditionally, the study of software engineering has been primarily a technical endeavour with minimal attention given to its economic context. Often technical decisions are made without adequate links to economic and business considerations. The goal of the EDSER workshops is to improve the quality of decision-making in software engineering based on sound economic justifications. EDSER-6 will provide an interactive forum to discuss and advance the state-of-the-art research and practice in economics-driven software engineering. Work in this area utilizes methods and theories from different disciplines, such as decision theory, game theory, economics, and finance to solve technical and managerial problems in software engineering. Participants are solicited in two categories: regular participants and student participants.

W11L

The 5th International Workshop on Software Process Simulation and Modeling (ProSim 2004)
http://www.prosim.pdx.edu/prosim2004/main.html

09:30 – 17:00hrs
Room: EICC - Moorfoot

Today, the software industry faces greater challenges than ever before. Customers are demanding more complex, fully functioned software that is easier to use. At the same time, customers want this software to be delivered more quickly and with higher levels of quality. These demands are set in a dynamic project environment of frequently changing technologies, short-staffed projects and globally distributed development teams. The goal of the workshop is to bring together academics and practitioners interested in the area of software process modeling and simulation as well as important industrial issues related to cost estimation and business process design. ProSim 2004 is an international forum for presenting current research themes and applications, for discussing various approaches and to discover underlying similarities at both the applied and theoretical levels. All areas related to software process modeling and simulation, using all applicable techniques and representations are encouraged.

W16L

Third International Workshop on Software Engineering for Large-Scale Multi-Agent Systems (SELMAS'04)
http://www.teccomm.les.inf.puc-rio.br/selmas2004/

09:30 – 17:00hrs
Room: EICC - Fintry

With advances in Internet technologies, multi-agent systems (MASs) are undergoing a transition from closed monolithic architectures into open architectures composed of a huge number of autonomous agents that operate and move across different environments. Large-scale open systems involve perhaps thousands of agents not necessarily co-designed to share a common goal. Agents can dynamically leave and enter the system and as most agents are unknown a priori, cannot be supposed to be benevolent to each other. The dynamic arrival and exit of unknown agents, and the possibility of self-interested behavior in the course of the interactions

adjunct events

must be taken into account. Moreover, as multiple software agents become collaborative and operate in networked environments, they must be context-aware and deal with environment uncertainty. It makes their coordination and management more difficult and increases the likelihood of the occurrence of exceptional situations, such as security holes, privacy violations, and unexpected global effects. In this context, the goal of the 3rd edition of SELMAS is to bring together researchers and practitioners to discuss the current state and future direction of research in software engineering for open MASs.

W18L

International Workshop on Distributed Event-Based Systems (DEBS 2004)
http://www.cs.colorado.edu/~carzanig/debs04/

09:30 – 17:30hrs
Room: EICC - Kilsyth

DEBS provides a forum for the presentation and discussion of original and innovative ideas in the area of distributed event-based systems. Event-based systems are software systems that use the implicit invocation or publish/subscribe communication style. The focus of DEBS extends from the architectures and algorithms that implement distributed event-based infrastructures, to the principles and methodologies that support the design of event-based applications, to the issue of event correlation and analysis in the presence of high volumes of events from several sources.

ICSE 2004 is pleased to host the following adjunct events as part of the main conference program:

Monday, 24 and Tuesday, 25 May 2004

The 8th International Conference on Empirical Assessment in Software Engineering (EASE 2004)

09:30 – 17:00hrs
Room: EICC – Harris 2

This conference is a unique forum dedicated to the presentation and discussion of research and practical experiences addressing all aspects of empirical assessment and evaluation in software engineering. We welcome papers addressing all aspects of the area, especially where the experiences relate to the problems that arise from the use of emerging technologies within new application domains.

International Symposium on Component-based Software Engineering (CBSE7)

09:30 – 17:00hrs
Room: EICC - Sidlaw

The premise of the CBSE workshops was that the long-term success of component-based development depends on the viability of an established science and technology foundation for achieving predictable quality in component-based systems. The intent of this symposium is to build on this premise, and to provide a forum for more in-depth and substantive treatment of topics pertaining to predictability. The symposium will bring together researchers and practitioners from a variety of disciplines related to CBSE to help establish cross-discipline insights and to provide a forum for presenting and discussing innovative approaches to CBSE.

Monday, 24 May

08:30 – 18:00hrs
Room: The Point - Penthouse

The Doctoral Symposium is a forum for Ph.D. students to publicly discuss their research goals, methods, and results at an early stage in their research. The Symposium aims to provide useful guidance for completion of the dissertation research and initiation of a research career.

The Symposium and ICSE provide an opportunity for student participants to interact with other students at a similar stage in their careers, established researchers, and the broader software engineering community. We encourage everyone to find the Doctoral Symposium students, initiate a conversation with them, and share research ideas, advice, career stories, and so on.

Invited Participants:

A Model Driven Approach for Software Systems Reliability
Genaína Nunes Rodrigues

Component-based Self-Adaptability in Peer-to-Peer Architectures
Sascha Alda

One More Step in the Direction of Modularized Integration Concerns
Hridesh Rajan

Parametric Analysis of Real-Time Embedded Systems with Abstract Approximation Interpretation
EunYoung Kang

Empirical studies on Requirement Management Activities
Annabella Loconsole

Agile Process Tailoring and probLem analYsis (APTLY)
Frank Keenan

Subjective Evaluation of Software Design Quality
Mika Mäntylä

Research Abstract: Semantic Concepts for the Specification of Non-functional Properties of Component-Based Software
Steffen Zschaler

Visualization of Test Information to Assist Fault Localization
James Jones

A Flexible Model for Software Process Simulation
Diane Kirk

Toward a Software Testing and Reliability Early Warning Metric Suite
Nachiappan Nagappan

Software Visualisation for Object-Oriented Program Comprehension
Michael Pacione

A Weakly Constrained Approach to Software Change Coordination
Ciaran O'Reilly

Calculating Architectural Reliability via Modeling and Analysis
Roshanak Roshandel

chi-SCTL/MUS: A Formal Methodology to Evolve Multi-Perspective Software Requirements Specifications
Ana Belén Barragáns Martínez

Improving UML Design Tools by Formal Games
Jennifer Tenzer

Behavior Capture and Test for Verifying Evolving Component-Based Systems
Leonardo Mariani

A Constraint Architectural Description Approach to Self-Organising Component-Based Software Systems
-- an Extended Abstract
Pakorn Waewsawangwong

technical program

This year the main technical program comprises 3 keynote presentations, 3 panel sessions, 8 formal research demonstrations, a track of presentations on Linkages to Other Disciplines, and 58 technical papers. The Linkages track includes invited talks from 4 internationally renowned speakers in other areas of computer science who will identify important issues and problems from their own areas that may offer opportunities for contributions from the software engineering community. The program of technical papers was selected by a committee of 47 of the leading experts in software engineering, who reviewed the near-record 436 submissions received this year. The program committee met in London in December 2003 for two full days and selected 58 technical papers for presentation at the conference.

The accepted papers reveal that software engineering remains a vibrant research discipline producing a broad range of scientific work of the highest quality. On the one hand, it is regrettable that submissions addressing some emerging "hot" topics such as agile methods, aspect-oriented development, and the OMG's Model Driven Architecture did not pass muster with the program committee. On the other hand, it is noteworthy that researchers are accelerating the breakdown of artificial boundaries between the sub-disciplines within software engineering and are also producing results that are increasingly relevant to a range of disciplines that are often considered to be outside the domain of software engineering, including programming languages, distributed systems, networks, databases.

Win an iPod!

During the conference, our team of student volunteers will judge and nominate the best speaker from the Technical Paper presentation track. The lucky winner will be awarded the prize of an iPod (generously donated by Apple Education), to be presented during the Farewell address on Friday, 28th May.

Speakers will be assessed according to the following criteria: clear and creative delivery of their presentation, command of their subject matter, quality of slides used, appropriate use of English and their ability to arouse curiosity and engage the audience.

Technical Paper Presentations

Wednesday, 26 May

Testing I
Chair: Alessandro Orso

11:00 – 12:30hrs (Session b1)
Room: Fintry

Using Simulation to Empirically Investigate Test Coverage Criteria
Lionel Briand, Yvan Labiche & Yunlan Wang

Automated Generation of Test Programs From Closed Specifications of Classes and Test Cases
Wee Kheng Leow, Siau Cheng Khoo & Yi Sun

Bi-Criteria Models for All-Uses Test Suite Reduction
Jennifer Black, Emanuel Melachrinoudis & David Kaeli

Patterns and Frameworks
Chair: André van der Hoek

11:00 – 12:30hrs (Session b2)
Room: Sidlaw

The Dublo Architecture Pattern for Smooth Migration of Business Information Systems
Wilhelm Hasselbring, Ralf Reussner, Holger Jaekel, Jürgen Schlegelmilch, Thorsten Teschke & Stefan Krieghoff

Comparison of Software Product Line Design Methods: COPA, FAST, FORM, KobrA and QADA
Mari Matinlassi

Oil and Water? High Performance Garbage Collection in Java with JMTk
Stephen Blackburn, Perry Cheng & Kathryn McKinley

Requirements
Chair: Jean-Marc Jezequel

11:00 – 12:30hrs (Session b3)
Room: Tinto

Eliciting Security Requirements by Construction of Intentional Anti-Models
Axel van Lamsweerde

Theme: An Approach for Aspect-Oriented Analysis and Design
Elisa Baniassad & Siobhan Clarke

Visual Timed Event Scenarios
Victor Braberman, Alejandra Alfonso, Nicolas Kisillof & *Alfredo Olivero*

Quality of Service
Chair: Carlo Ghezzi

14:00 – 15:30hrs (Session c1)
Room: Fintry

An Empirical Study of Software Reuse vs. Reliability and Stability
Parastoo Mohagheghi, Reidar Conradi, Ole M. Killi & Henrik Schwarz

Precise Service Level Agreements
James Skene, Davide Lamanna & Wolfgang Emmerich

GlueQoS: Middleware to Sweeten Quality-of-Service Policy Interactions
Eric Wohlstadter, Stefan Tai, Thomas Mikalsen, Isabelle Rouvellou & Premkumar Devanbu

Verification
Chair: Michael Ernst

14:00 – 15:30hrs (Session c2)
Room: Sidlaw

Verifying DAML+OIL and Beyond in Z/EVES
Jin Song Dong, Chew Hung Lee, Yuan Fang Li & Hai Wang

Assume-guarantee Verification of Source Code with Design-Level Assumptions
Dimitra Giannakopoulou, Corina Pasareanu & Jamieson Cobleigh

Compositional Verification of Middleware-Based Software Architecture Descriptions
Patrizio Pelliccione, Paola Inverardi & Mauro Caporuscio

Unified Modeling Language
Chair: Kokichi Futatsugi

14:00 – 15:30hrs (Session c3)
Room: Pentland Auditorium

The Evaluation of Large, Complex UML Analysis and Design Models
Brian Berenbach

Revisiting Statechart Synthesis with an Algebraic Approach
Tewfik Ziadi, Loic Helouet & Jean-Marc Jézéquel

Precise Specification of Design Patterns in UML
Jeffrey K. H. Mak, Clifford S. T. Choy & Daniel P. K. Lun

Empirical Methods
Chair: Annie Antón

16:00 – 17:00hrs (Session d2)
Room: Fintry

Team-based Fault Content Estimation in the Software Inspection Process
Thomas Thelin

Evidence-based Software Engineering
Barbara Kitchenham, Tore Dybå & Magne Jørgensen

technical program

Feature - Based Software Engineering
Chair: Jim Whitehead

16:00 – 17:00hrs (Session d2)
Room: Sidlaw

SNIAFL: Towards a Static Non-Interactive Approach to Feature Location
Wei Zhao, Lu Zhang, Yin Liu, Jiasu Sun & Fuqing Yang

Feature-Based Decomposition of Inductive Proofs Applied to Real-Time Avionics Software
Vu Ha, Murali Rangarajan, Darren Cofer, Harald Ruess & Bruno Dutertre

Thursday, 27th May

Testing II
Chair: John C. Knight

11:00 – 12:30hrs (Session b1)
Room: Fintry

Applications of Data Versioning in Database Application Development
Ramkrishna Chatterjee, Gopalan Arun, Sanjay Agarwal, Ben Speckhard & Ramesh Vasudevan

Generating Tests from Counterexamples
Adam Chlipala, Thomas Henzinger, Ranjit Jhala & Rupak Majumdar

Automated Support for Development, Maintenance, and Testing in the Presence of Implicit Control Flow
Saurabh Sinha, Alessandro Orso & Mary Jean Harrold

Software Architecture I
Chair: Volker Gruhn

11:00 – 12:30hrs (Session b2)
Room: Sidlaw

Towards Safe Distributed Application Development
Patrick Eugster, Christian Damm & Rachid Guerraoui

Design of Large-Scale Polylingual Systems
Mark Grechanik, Don Batory & Dewayne Perry

A Hybrid Architectural Style for Distributed Parallel Processing of Generic Data Streams
Alexandre François

Process and Project Management
Chair: Philippe Kruchten

11:00 – 12:30hrs (Session b3)
Room: Tinto

Breaking the Ice for Agile Development of Embedded Software
Peter Manhart & Kurt Schneider

Unifying Artifacts and Activities in a Visual Tool for Distributed Software Development Teams
Jon Froehlich & Paul Dourish

Making Resource Decisions for Software Projects
Norman Fenton, William Marsh, Martin Neil, Patrick Cates, Simon Forey & Manesh Tailor

Decentralized Systems
Chair: Cecilia Mascolo

14:00 – 15:30hrs (Session c1)
Room: Fintry

Using Event-Based Translation to Support Dynamic Protocol Evolution
Nathan Ryan & Alexander Wolf

Efficient Decentralized Monitoring of Safety in Distributed Systems
Koushik Sen, Abhay Vardhan, Gul Agha & Grigore Rosu

Extending the Representational State Transfer (REST) Architectural Style for Decentralized Systems
Rohit Khare & Richard Taylor

Analysis Tools
Chair: Lori Clarke

14:00 – 15:30hrs (Session c2)
Room: Sidlaw

Validating the Unit Correctness of Spreadsheet Programs
Tudor Antoniu, Paul Steckler, Shriram Krishnamurthi, Erich Neuwirth & Matthias Felleisen

A Tool for Writing and Debugging Algebraic Specifications
Johannes Henkel & Amer Diwan

Skoll: Distributed Continuous Quality Assurance
Atif M. Memon, Adam Porter, Cemal Yilmaz, Adithya Nagarajan, Douglas C. Schmidt & Bala Natarajan

Dynamic Analysis
Chair: Andreas Zeller

14:00 – 15:30hrs (Session c3)
Room: Pentland Auditorium

DiscoTect: A System for Discovering Architectures from Running Systems
Hong Yan, David Garlan & Bradley Schmerl

Finding Latent Code Errors via Machine Learning over Program Executions
Yuriy Brun & Michael Ernst

An Empirical Comparison of Dynamic Impact Analysis Algorithms
Alessandro Orso, Taweesup Apiwattanapong, James Law, Gregg Rothermel & Mary Jean Harrold

Friday, 28th May

Slicing
Chair: Mary Jean Harrold

11:00 – 12:30hrs (Session b1)
Room: Fintry

Efficient Forward Computation of Dynamic Slices Using Reduced Ordered Binary Decision Diagrams
Xiangyu Zhang, Rajiv Gupta & Youtao Zhang

Using Compressed Bytecode Traces for Slicing Java Programs
Tao Wang & Abhik Roychoudhury

A Fast Assembly Level Reverse Execution Method via Dynamic Slicing
Tankut Akgul, Vincent Mooney & Santosh Pande

Software Architecture II
Chair: Nazim H. Madhavji

11:00 – 12:30hrs (Session b2)
Room: Sidlaw

Polyphony in Architecture
Bas van der Raadt, Jasper Soetendal, Michiel Perdeck & Hans van Vliet

Architecting in the Face of Uncertainty: An Experience Report
Ian Gorton & Jereme Haack

Using Web Service Technologies to Create an Information Broker
Mark Turner, Fujun Zhu, Ioannis Kotsiopoulos, Michelle Russell, David Budgen, Keith Bennett, Pearl Brereton, John Keane, Paul Layzell & Michael Rigby

Software Configuration Management and Deployment
Chair: Alexander Wolf

11:00 – 12:30hrs (Session b3)
Room: Tinto

Mining Version Histories to Guide Software Changes
Thomas Zimmermann, Peter Weissgerber, Stephan Diehl & Andreas Zeller

An Experimental, Pluggable Infrastructure for Modular Configuration Management Policy Composition
Ronald van der Lingen & André van der Hoek

Imposing a Memory Management Discipline on Software Deployment
Eelco Dolstra, Eelco Visser & Merijn de Jonge

Dynamic Reconfiguration
Chair: Wolfgang Emmerich

14:00 – 15:30hrs (Session c1)
Room: Fintry

An Open Framework for Dynamic Reconfiguration
Jamie Hillman & Ian Warren

Dynamic Configuration of Resource-Aware Services
Vahe Poladian, David Garlan, Mary Shaw & Joao Sousa

Autonomous Adaptation to Dynamic Availability Using a Service-Oriented Component Model
Humberto Cervantes & Richard Hall

Static Analysis
Chair: Mary Lou Soffa

14:00 – 15:30hrs (Session c2)
Room: Sidlaw

DMS: Program Transformations for Practical Scalable Software Evolution
Ira Baxter, Christopher Pidgeon & Michael Mehlich

Heuristic-Based Model Refinement for FLAVERS
Jianbin Tan, George Avrunin & Lori Clarke

Static Checking of Dynamically Generated Queries in Database Applications
Carl Gould & Zhendong Su & Premkumar Devanbu

Object-Oriented Programming
Chair: Harold Ossher

14:00 – 15:30hrs (Session c3)
Room: Pentland Auditorium

Evaluating Object-Oriented Designs with Link Analysis
Alexander Chatzigeorgiou, Spiros Xanthos & George Stephanides

Responsibilities and Rewards: Reasoning About Design Patterns
Neelam Soundarajan & Jason Hallstrom

Programming with Traits
Andrew Black & Nathanael Schärli

technical program

Linkages

The Linkages track is an opportunity to hear about the engineering challenges faced in software disciplines related to software engineering from preeminent workers in those disciplines. The four talks address the topical issues of Security and Privacy, Highly Available web Services, Grid environments and the Internet.

Graceless Degradation, Measurement, and Other Challenges in Security and Privacy

Jon Pincus

11:00 – 12:30hrs (Session b4)
on Wednesday, 26 May
Room: Pentland Auditorium

Security and privacy issues shine an intense spotlight on areas that are problematic for software engineering in general. One major problem is the lack of graceful degradation; today, it often appears that virtually any security or privacy vulnerability can lead to catastrophic consequences. Obviously, a system that degrades more gracefully – where only a small amount of security and privacy is lost - is preferable; while there have been several successful applications of this principle, it is still hard to generalize. Another significant challenge is measurement of security and privacy; even post-release statistics such as the number of vulnerabilities, patches, or exploits are difficult to interpret meaningfully, but software vendors really need metrics that can be computed much earlier in the engineering process. In both of these areas, approaches focused on attacking subsets of the overall problem show promise, but significant work is needed at both the engineering and research level.

Adding High Availability and Autonomic Behavior to Web Services

Ken Birman

16:00 – 17:30hrs (Session d1)
on Wednesday, 26 May
Room: Pentland Auditorium

A new wave of Web Services systems are soon to be rolled out, and when this happens, the software engineering community will experience a sea-change. For the first time, we are building distributed, Web-based applications that truly interoperate and that are likely to play very sensitive roles for the organizations that deploy them. Yet the Web Services architecture inherits a legacy from the Internet: one of best-effort message delivery, inconsistent and unreliable failure detection, ad-hoc end-to-end fault-tolerance mechanisms, and a pervasive lack of information about the state of the network. Internet applications routinely operate in the dark with respect to even the most elementary properties of the environment! In this talk, we'll ask whether it might not be possible to "light up the dark", enabling applications on the client side of a Web Services system to share state, to sense the global state of the system and data centers, and to use this information to greatly improve availability, reliability, self-configuration and management. The Astrolabe system, a novel peer-to-peer technology, could help open the door to a new way of thinking about the client side, and in so-doing contribute to a radical reduction in cost of ownership for large Web Services applications and big advances in autonomic behavior. Astrolabe is part of QuickSilver, a platform tackling many aspects of Web Services availability and "autonomic behavior."

Grid Small and Large: Distributed Systems and Global Communities

Ian Foster

11:00 – 12:30hrs (Session b4)
on Thursday, 27 May
Room: Pentland Auditorium

Grid technologies seek to enable collaborative problem solving and resource sharing within distributed, multi-organizational "virtual organizations." Two characteristics of Grid environments make the engineering of systems and applications particularly challenging. First, we face the familiar difficulties that arise when developing software that must provide reliability, performance, and security in an environment that may be heterogeneous, unpredictable, unreliable, and hostile; second, we must allow this software to be deployed, operated, and evolved in an environment characterized by multiple participants with different and perhaps conflicting views on system function and design. I introduce work that is being done to address these challenges. I speak first to "Grids in the small," and describe the work being performed within the Open Grid Services Architecture framework to define a standard set of Grid protocols layered on Web Services. I explain the relationship of OGSA to Web Services, the evolution of OGSA to better exploit emerging Web Services standards, requirements Grid is placing on those emerging Web Services standards, and the landscape of protocols that are being defined upon Web Services to meet Grid requirements. I then turn to problems associated with "Grids in the large" and discuss how Grid technologies can evolve to address the challenges associated with community development of complex software systems.

Evolving the Internet: Changing the Engines in Mid-Flight

Mark Handley

11:00 – 12:30hrs (Session b4)
on Friday, 28 May
Room: Pentland Auditorium

The Internet has grown very rapidly in the last decade; this phenomenal growth continues today despite the bursting of the .com bubble. At the same time, greater reliability and performance are being demanded, as the Internet becomes mission-critical for many businesses. In this talk I will discuss the hard research problems currently being faced by the Internet, and speculate on some possible solutions. Key to many of these problems

is the difficulty of evolving a system of 200 million machines whilst simultaneously keeping it running. The analogy of attempting to change the engines on an aircraft in mid flight is unfortunately an apt one. It is worth noting that Software Engineering researchers and Networking researchers rarely pay much attention to each other's problems and potential solutions. In particular, networking protocol design often lacks the rigour that good software engineering methods could bring to the process. At the same time, much distributed systems middleware attempts to abstract away the fundamental limitations of the network. In passing, this talk will touch on why this may be and what we can do about it.

Research (Formal) Demos

The Formal Research Demos Track is intended to give the community an opportunity to learn more about mature research systems through brief presentations and hands-on live demonstrations. The tools presented in this track are often in their second generation of development (or later), typically with a growing user community. Many of the systems have been applied to industrial-strength applications.

This year, we have tools that broadly cover the spectrum of software development tasks. First, we have two tools that present complementary techniques for detecting software errors, both of which are based on static analysis of information generated from program executions. Next, we have three design-oriented tools that support designs with cross-cutting features and domain-specific customization. With all three tools, flexibility for the design and the user are emphasized, while not sacrificing a rigorous design process. Finally, three tools to support requirements engineering and system specification are presented. These tools all emphasize facilitating the requirements engineering process, but at different stages, ranging from convenient tool support for RE tasks in the field to providing graphical environments for specifying distributed systems. In summary, this outstanding collection of tools all have the potential to make a significant impact in helping software developers tackle the many challenges that we face.

Analysis and Visualisation
Chair: Mauro Pezzè

11:00 – 12:30hrs (Session b5)
on Wednesday, 26 May
Room: Moorfoot

JDBC Checker: A Static Analysis Tool for SQL/JDBC Applications
Carl Gould, Zhendong Su & Premkumar Devanbu

GAMMATELLA: Visualization of Program-Execution Data for Deployed Software
Alessandro Orso, James Jones & Mary Jean Harrold

Design Tools
Chair: Hausi Müller

11:00 – 12:30hrs (Session b5)
on Thursday, 27 May
Room: Moorfoot

Feature-Oriented Programming and the AHEAD Tool Suite
Don Batory

AcmeStudio: Supporting Style-Centered Architecture Development
Bradley Schmerl & David Garlan

Design and Implementation of Distributed Crosscutting Features with DADO
Eric Wohlstadter, Stoney Jackson & Premkumar Devanbu

Requirements and Specifications
Chair: Betty H.C. Cheng

11:00 – 12:30hrs (Session b5)
on Friday, 28 May
Room: Moorfoot

The CommUnity Workbench
Cristsvco Oliveira & Michel Wermelinger

Statestep: A Tool for Systematic, Incremental Specification
Michael Breen

Requirements Engineering Tools Go Mobile
Norbert Seyff, Paul Grunbacher, Neil Maiden & Amit Tosar

Panels

In this year's panel sessions, panelists will debate three topics of increasing importance and interest for the software engineering community: the OMG's framework for Model Driven Architecture; experiences with agile development methods; and understanding the role of the practitioner in software design. The panels will be highly interactive, with a minimum of formal presentation by panelists and a maximum of discussion and audience participation.

Design: Supporting Reflective Practitioners
Headed by David Redmiles
Panelists: David Redmiles, Kumiyo Nakakoji, Gerhard Fischer, Yunwen Ye, Alistair Sutcliffe & Sol Greenspan

14:00 – 15:30hrs (Session c4)
on Wednesday, 26 May
Room: Tinto

technical program

MDA in practice
Headed by Jean-Marc Jezequel & Wolfgang Emmerich
Panelists: Jean-Marc Jezequel, Wolfgang Emmerich, Jim Arlow, Nicolas Farcet & Bran Selic

14:00 – 15:30hrs (Session c4)
on Thursday, 27 May
Room: Tinto

Agile Development: Evaluation & Experience
Headed by Walter Tichy
Panelists: Walter F. Tichy, Pekka Abrahamsson, Philippe Kruchten, Matthias Müller, David Putman & Matt Stephens

14:00 – 15:30hrs (Session c4)
on Friday, 28 May
Room: Tinto

RAE Report Back: The Challenges of Complex IT Projects

Chair: John McDermid

14:00 – 15:30hrs (Session c5)
on Wednesday, 26 May
Room: Moorfoot

The Royal Academy of Engineering (RAEng), the UK counterpart to the US National Academy of Engineering, has recently completed a study of the issues affecting large-scale software projects. (See http://www.raeng.org.uk/) Many studies have analysed failures and produced statistics on success and failure rates. The RAEng study took a different approach, seeking to understand some of the underlying causes of failure, and key factors in achieving success. It took written evidence, but also interviewed practitioners and experts from a wide range of sectors - including aerospace, automotive, defence, finance, government, and the health service.

The study has produced a better understanding of a number of issues, e.g. the influence of customer (client) competence on project success, the difficulties of establishing and communicating risks and feasibility of projects by comparison with other engineering disciplines, and failure to apply best practice.

The session will present the key findings and recommendations of the study, and lead into a debate with speakers from the USA and other countries on the differences between the problems, and potential solutions, in different National and commercial cultures.

UK BoF: New Directions in UK Software Engineering Research

Presenters: Dave Bustard, Mike Holcombe, Ian Sommerville

14:00 – 15:30hrs (Session c5)
on Thursday, 27 May
Room: Moorfoot

What are the Grand Challenges in software engineering? How can experimental research in software engineering be facilitated? What would be the benefits of broadening the focus of software engineering to the wider system in which the software is used? These are just a few of the many open topics to be discussed in the Birds of a Feather session on New Directions in UK Software Engineering Research at ICSE 2004. As the title suggests, the session will have a UK national focus. All are welcome, however, because most of the discussion points will be relevant to every conference delegate. The first part of the session will look at the factors influencing UK software engineering research. This is then followed by a discussion of possible ways to increase the impact of that research, concluding with a summary of the strategy recommendations that emerge.

Award Announcements and Presentations

The presentation and announcement of various community awards will be made during four sessions of the main conference:

09:00 – 10:30hrs
(Session a1 – Welcome and Keynote 2)
on Thursday, 27 May
Room: Pentland Auditorium

This session will include the presentation of the Harlan D Mills Award to Elaine Weyuker, with a response from the recipient. The award will be presented by Karl Reed (Chair of IEEE TSE) and Gene Hofnagle (Chair of award committee).

The award was established in Harlan D. Mills' name to recognize researchers and practitioners who have demonstrated long-standing, sustained, and meaningful contributions to the theory and practice of the information sciences, focusing on contributions to the practice of software engineering through the application of sound theory.

The SIGSOFT ICSE Distinguished Papers announcement will also be will be made during this session, to be presented by Jacky Estublier and David Rosenblum (ICSE 2004 Program Committee Chairs)

16:00 – 17:00hrs
(Session d1 – MIP and Awards II)
on Thursday, 27 May
Room: Pentland Auditorium

Awards presented in this session will include the Software Process Achievement Award (presented by Bill Riddle, Chair of SPA award committee), the ACM SIGSOFT Distinguished Service Plaque and the ACM SIGSOFT Outstanding Research Award (to be presented by Alexander Wolf, ACM SIGSOFT Chair), each with a short response from the recipient. The Award for the Most Influential Paper of ICSE 1994 will be presented by Dewayne Perry (MIP Award Committee Chair) to David Garlan and Robert Allen, who will give a talk about the work reported in that paper.

The IEEE CS Software Process Achievement Award is presented to a software process professional or team of software professionals responsible for a sustained, measured, and significant improvement to their organization's software process.

The SIGSOFT Distinguished Service Plaque is presented to an individual who has contributed dedicated and important service to the software engineering community.

The SIGSOFT Outstanding Research Award is presented to an individual who has made significant and lasting research contributions to the theory or practice of software engineering.

The ICSE MIP Award is presented to the author(s) of the paper from ICSE 1994 that has had the most influence on the theory or practice of software engineering during the 10 years since its original publication.

Alexander Wolf will also announce the new ACM Fellows from the Software Engineering community during this session.

09:00 – 10:30hrs
(Session a1 - ICSE Future & Keynote 3)
on Friday, 28 May
Room: Pentland Auditorium

In this session Carl Chang, President of the IEEE Computer Society, will present an IEEE Fellowship Award to Pankaj Jalote, who will give a short response.

15:30 – 16:00hrs
(Session break – Farewell)
on Friday, 28 May
Room: Pentland Auditorium

In this session AMC SIGSOFT and IEEE Computer Society Awards will be presented to the key organizers of ICSE 2004. The session will also include a short talk by Carl Chang, President of the IEEE Computer Society, closing the ICSE 2004 Programme.

Industrial Events

Thursday, 27 May
IBM eTX Reception
17:30 – 19:00hrs
Room: EICC – Cromdale Hall

eclipse
TECHNOLOGY EXCHANGE
www.eclipse.org sponsored by IBM

The eclipse Technology eXchange (eTX) reception will be hosted by IBM, and is open to all ICSE 2004 attendees. Session chair will be Andreas Zeller. Food and drink will be served during the reception, which includes a poster session of Eclipse projects.

Brief Biography: Andreas Zeller is a computer science professor at Saarland University, Germany, since 2001. His research concerns the analysis of large software systems and their histories. Most of Zeller's work is based on Eclipse: In 2003, he won an Eclipse Innovation Grant from IBM for his contributions to automated isolation of failure causes; in 2004, he won another Eclipse Innovation Grant for mining version archives to identify related changes.

Microsoft Research Reception
17:30 – 19:00hrs
Room: EICC - Kilysth

Microsoft® Research

Microsoft Research Cambridge invites all ICSE 2004 delegates to this session to learn a little more about current and future Microsoft Research and Microsoft technologies related to software engineering. Damien Watkins will speak on some interesting technologies after which there will be plenty of time for questions and socialising. Drinks and nibbles will be provided after the talk. Posters related to the Common Language Infrastructure, or the Microsoft .NET framework will be presented at the reception.

community meetings

DATE	TIME	MEETING	LOCATION
Sat, 22 & Sun, 23 May		Program Committee Meeting for the ACM SIGSOFT 12th International Symposium on the Foundations of Software Engineering (FSE-12)	The Point Hotel
Wed, 26 May	11:00 - 12.00	ITEA press conference: "Building the digital future - ITEA Technology Roadmap for Software-Intensive Systems, 2nd edition"	EICC - Ochil Suite
Wed, 26 May	12.30 - 14.00	TCSE Executive Meeting & Lunch	EICC - Carrick 1
Wed, 26 May	13:00 - 14.00	ITEA Lunch time Presentation - "Building the digital future - ITEA Technology Roadmap for Software-Intensive Systems, 2nd edition"	EICC - Kilsyth Room
We, 26 May	13:00 - 14.00	SIGSOFT Executive Meeting	EICC - Carrick 3
Wed, 26 May	17.00 - 18.30	Harlan D. Mills Award Committee Meeting	EICC - Carrick 1
Wed, 26 May	20.00 - 22.00	ICSE Steering Committee Meeting	EICC - Harris 1
Wed, 26 May	20.00 - 22.00	TSE Editorial Board Meeting	Local Restaurant
Thurs, 27 May	12.30 - 14.00	IEEE-CS Software Engineering Lead Activists Meeting	EICC - Carrick 1
Thurs, 27 May	13.00 - 14.00	ICSE 2005 Program Committee Meeting	EICC - Harris Suite
Thurs, 27 May	13:00 - 14:00	Computing Curriculum: Software Engineering	EICC - Ochil Suite
Fri, 28 May	12.30 - 14.00	TCSE Professional Certification Leaders Meeting	EICC - Harris 1
Fri, 28 May	12.30 - 14.00	ICSE 2005 Organising Committee Meeting	EICC - Harris 2
Fri, 28 May	16.00 - 18.00	ICSE 2004 Organising Committee Wash-up Meeting	EICC - Harris Suite
Sat, 29 May	09.00 - 12.00	ICSE 2006 Organising Committee Meeting	The Point Hotel
Sat, 29 & Sun, 30 May		Program Committee Meeting for the 19th IEEE International Conference on Automated Software Engineering 2004 (ASE 2004)	The Point Hotel

The 2nd International Working Conference on Component Deployment (CD 2004)
Thursday, 20 and Friday, 21 May
National e-Science Centre, Edinburgh

What do we do with components after they have been built? How do we deploy them into their execution environment? How can we evolve them once they have been deployed? While several tools exist to support deployment, the underlying principles are only beginning to emerge. CD 2004 will bring together researchers and practitioners with the goal of developing a better understanding of how deployment takes place in the wider context. Papers relating theory to practice are particularly welcome.

The First European Workshop on Software Architecture (EWSA 2004)
Friday, 21 and Saturday, 22 May
John Honey Building, School of Computer Science, University of St Andrews, St Andrews, Scotland.

The role of software architecture in the engineering of software-intensive applications has become more and more important and widespread. Dynamic software architectures are key to the design, development and evolution of large applications. The purpose of the workshop is to bring together researchers and practitioners from academia and industry who are interested in software architecture technology. It addresses both practical and theoretical advances.

EC/NSF Workshop on Software Intensive Systems "Challenges, Visions and Research Issues for Software-Intensive Systems"
Saturday, 22 and Sunday, 23 May 2004
The Point Conference Centre, Edinburgh.

The workshop is jointly supported by the European Commission's Information Society Technologies Programme, Future and Emerging Technologies Activity, and the US National Science Foundation, Directorate for Computer and Information Science and Engineering. It is part of a series of strategic workshops to identify key research challenges and opportunities in Information Technology, and has three broad aims:
∑ To discuss the state of the art in engineering software-intensive systems, and evaluate and analyse potential or partial solutions
∑ To propose and discuss innovative approaches and solutions to the problems and challenges of software-intensive systems and present visionary and explorative perspectives, bold ideas for modeling and programming languages, and construction, validation and verification methods
∑ To show how pragmatic methods in software-intensive Systems Engineering can be integrated with and enhanced by the results of foundational research to handle the new problems posed by embedded systems, different levels of component and system granularity, heterogeneity, distribution, mobility and communication, and appropriate human-interface support.

27th International Conference on Software Engineering

St Louis, Missouri, USA, 15-21 May 2005

http://www.icse-conferences.org/2005/

Sponsored by ACM SIGSOFT and IEEE Computer Society-TCSE

Software Everywhere is the theme of ICSE 2005. It acknowledges the increasingly important role software plays in the life of our society through the technology that sustains it. The theme also highlights the growing level of responsibility our profession and its members are expected to assume. As such, an important goal of this meeting will be to reach out to other disciplines that have an impact upon or benefit from software engineering know-how.

Lasting Impact on our profession and the society at large is the overarching goal that shaped the programmatic agenda for ICSE 2005. Format changes, novel initiatives, exceedingly high expectations, an exceptionally talented team, and an unprecedented level of support by the local corporate community are some of the ingredients bound to facilitate a fertile exchange of ideas and experiences likely to affect the professional life of each participant. The conference will offer an exciting program of events, including keynote talks by leaders in the field, invited talks along specialized themes, tutorials, workshops, and technical paper presentations on innovative research, the cutting edge of practice, and new developments in software engineering education.

High Quality Submissions are invited for papers describing original unpublished research results, meaningful experiences, and novel educational insights. Proposals for tutorials, workshops, research demonstrations, and exhibits are also welcome.

Conference Information will be available on the conference web site, which has been designed to be a living document offering up-to-date news on all conference events, submission instructions and deadlines, hotel information, registration, tourist information, travel, etc. The continuously updated web pages will help you plan your involvement in the conference. We encourage you to leave your own mark on this important event.

Important Submission Dates

Research, experience, and education papers	1	September	2004
Tutorial and workshop proposals	4	October	2004
Doctoral symposium	6	December	2004
Research demonstrations	6	December	2004

ICSE 2006

28th International Conference on Software Engineering

May 20-28, 2006 **Pudong, Shanghai, China**

We are pleased to announce that ICSE 2006 will be held in Shanghai, China, the epicenter of one of the fastest-growing software communities in the world. Shanghai is a fascinating and invigorating blend of both the ancient and the modern, the Western, and the distinctly Oriental. A high-speed Maglev train, one of the fastest in operation anywhere in the world, connects an ultramodern international airport (Pudong International) with a thriving metropolis whose skyline is punctuated by a growing proliferation of ultramodern skyscrapers.

The conference venue will be the new Shanghai International Conference Center, which recently hosted the Asian Pacific Economic Conference, attended by the leaders of many Asian nations. The Conference Center is located on the banks of the Huang Pu river, continually traversed with bustling traffic. The Conference Center looks across the river to the historic Bund, a row of historic buildings built by the European powers at the turn of the 20th century, and to a modern city intermixed with the considerable charm of the ancient Chinese culture and traditions.

We invite you to start planning now to attend ICSE 2006, and the many technical and social events that will be associated with the main conference.

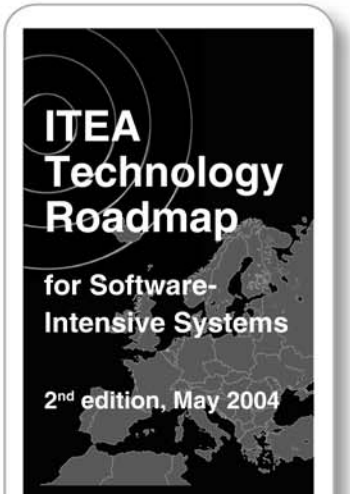
Please mark your calendar!

On behalf of the entire organizing committee,

Leon J. Osterweil (USA), General Chair
Mary Lou Soffa (USA) and Dieter Rombach (Germany) Program CoChairs
Kouichi Kishida (Japan) and Dehua Ju (China), Conference Coordination Committee CoChairs

Sponsored by the Shanghai Informationization Commission, ACM SIGSOFT, and IEEE TCSE.

http://www.isr.uci.edu/ICSE2006/



For more information and details, visit us at ICSE 2004:

Press conference
Wednesday 26 May
11:00
Ochil Suite (1st oor)

Lunchtime presentation
Wednesday 26 May
13:00 - 14:00
Kilsyth Room (ground oor)

The ITEA Technology Roadmap is available at:
www.itea-office.org

ITEA
INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

ITEA Technology Roadmap for Software-Intensive Systems edition 2

ITEA – Information Technology for European Advancement – the premier transnational R&D programme in Europe for software-intensive systems is pleased to announce the launch of its 2nd edition of the ***ITEA Technology Roadmap for Software-Intensive Systems*** at ICSE 2004, with a press conference at 11:00 on Wednesday 26 May, followed by a lunchtime presentation by ITEA's vice-chairman at 13:00.

The first edition of this Roadmap, which was published in March 2001, has been widely recognised as a landmark document in the field of software-intensive systems. We anticipate even wider recognition for this second, updated and enlarged edition.

After the launch, the roadmap can be downloaded free of charge from the ITEA website (www.itea-office.org). Print copies, which include a CD, are also available for € 200 from the ITEA Office.

About ITEA

ITEA is a Europe-wide cooperative programme for pre-competitive research and development in embedded and distributed software. It was established in 1998 as a EUREKA strategic cluster programme to support coordinated national funding submissions and provide the link between those who supply finance, technology and software engineering. By issuing annual Calls for Projects, evaluating projects and helping bring research partners together, ITEA plays a prominent role in European software development. Some 8,000 person-years of R&D have been invested in the programme so far.

ITEA-labelled projects build vital middleware and prepare standards, laying the foundations for the next generation of products, systems, appliances and services. ITEA projects are industry-driven, involving complementary R&D from at least two companies in two countries. The programme is open to partners from large industrial companies, small and medium-sized enterprises (SMEs), as well as public research institutes and universities.

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Journal of Functional Programming (JFP)

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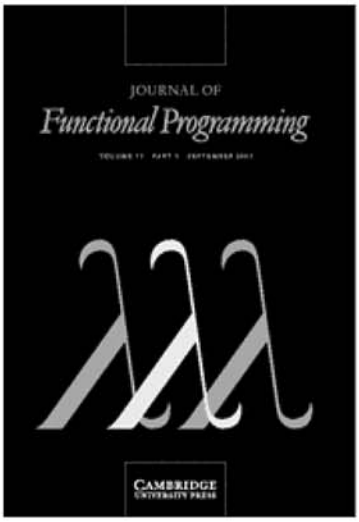

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The scope of JFP is anything related to functional programming. Topics of interest include the following:

Foundations of functional programming includes topics such as formal semantics, abstract interpretation, combinators and lambda calculi, term and graph rewriting, logic, type theory, and category theory.

Implementation of functional languages includes compilation strategies for both uniprocessors and parallel processors; design of novel architectures such as dataflow and graph reduction machines; systems issues such as garbage collection and I/O; and environment issues such as debugging, profiling, and configuration management.

Linguistics includes the study of specific functional languages and language features such as non-determinism, side effects, and logical variables; methodologies that facilitate reasoning, proof and transformation of programs, including partial evaluation and program synthesis; and the relationship to other programming paradigms.

Finally, under **Applications** we consider the use of functional languages in solving real-world problems, either in isolation or as a basis for embedded systems, reports of practical experience, programming techniques, prototyping, and uses of functional languages in education.

Of course, this list is not exhaustive. In particular, although the hallmark of functional programming is perhaps its emphasis on sound principles, it is also true that these very same principles have had significant influence on other programming paradigms, and we see this as a Good Thing. Thus we include articles on both "pure" and "impure" functional languages, as long as the principles are evident and rthy in their own right.

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