Many dynamic models lend themselves towards scenarios. Via use of scenarios it is possible to understand a design through concrete examples of object interactions. Furthermore it is possible to express use cases as scenarios. Many design methods employ use cases and scenarios as a central technique for describing requirements and for extracting relevant design information.

Several authors have recently proposed to visualize a running object-oriented system through scenarios. Hence scenarios are useful for reverse engineering as well. An existing system (e.g. a framework) and its behavioural patterns can be understood by following an example trace of the system in terms of the message flow between the objects, as represented by a scenario. On the basis of such scenarios, various design documents (e.g. state diagrams) can be possibly automatically produced for the system.

The idea with this workshop is to gather together researches who are interested in dynamic modelling and the use of scenarios in forward as well as reverse object-oriented software engineering.

W17 Object-Orientation and Operating Systems

Organizers: Henning Schmidt, Universitaet Potsdam
Frank Schubert,Technische Universitaet Chemnitz,Germany
Lutz Wohlrab, Technische Universitaet Chemnitz
Contact: fsc@informatik.tu-chemnitz.de
URL: http://www.tu-chemnitz.de/informatik/osg/ecoopooosws
Day: Tuesday

The aim of the workshop is to bring together researchers working on object-oriented operating systems, to provide a platform for discussing problems arising from the application of object-orientation to operating systems and solutions for them.

Suggested topics for position papers and discussions include, but are not limited to:

- adaptable and adaptive OOOS
- frameworks for OOOS
- distributed and parallel OOOS
- reusability and interoperability of OOOS components
- OOOS configurability, maintenance, tuning and optimizations
- real-time OOOS

The programme of the workshop consists of a talk given by an invited speaker, position paper presentations, discussions, and a summary session. The discussions will be held in subgroups, bringing together attendants working on similar problems.

W18 Dynamic Models in Forward and Reverse Engineering of Object Systems.

Organizers: Michael Christensen, Aarhus University, Denmark.
Kai Koskimies, University of Tampere, Finland.
Kurt Normark, Aalborg University, Denmark.
Elmer Sandvad, Aarhus University, Denmark.
Contact: normark@iesd.auc.dk
URL: http://www.daimi.aau.dk/~toby/ecoop97_workshop.html
Day: Monday

In object-oriented design, static models and dynamic models complement each other. However, when people discuss an object-oriented design they tend to draw informal dynamic models in which objects somehow interact with each other. Consequently, it seems to be the case that dynamic models are important to get a full understanding of an object system.

failure handling, persistence, communication, concurrency, and many other aspects of a system's behavior are not easily localizable to a single block of executable code—even though they can often be thought about relatively separately.

Because source code modules correspond so directly to blocks of executable code, and different aspects of concern must cross-cut the executable code, many modules end up being a tangled mess of lines of code for different purposes. This "tangling-of-aspects" phenomenon is at the heart of much of the complexity in existing software systems.

A number of researchers have begun working on approaches to this problem that allow programmers to first express each of a system's aspects of concern in a separate and natural form, and then automatically combine those separate descriptions into a final executable form using automatic tools. These approaches have been called Aspect-Oriented Programming (AOP). The purpose of this workshop is to bring together researchers and practitioners working on a wide range of AOP techniques, including languages, tools, frameworks, programming styles, etc.

W16 ECOOP'97 System Implementors' Workshop

Organizers:	Peter Dickman, University of Glasgow Huw Evans, University of Glasgow Eric Jul, DIKU, Copenhagen
Contact:	huw@dcs.gla.ac.uk
URL:	http://www.dcs.gla.ac.uk/~huw/siw97
Day:	Monday

The Systems Implementors' Workshop aims to bring together researchers and industrialists with significant experience and interest in the construction of Object Support Systems. Those wishing to attend will be required to submit a position paper describing both their past experience and one topic that they feel merits discussion and debate. The workshop organisers will select participants and run the structured discussion, as described overleaf. The workshop will NOT involve significant numbers of formal presentations. It may, however, involve break-out groups focussing on distinct topics of special interest, as well as the main discussion sessions covering issues of general interest.

W14 Object-Oriented Technology and Real-Time Systems

Organizers: Leonor Barroca,The Open University, Milton Keynes, UK
Eugène Dürr, Utrecht University
François Terrier, Centre d'Etudes de Saclay,Gif sur Yvette
Contact: E.H.Durr@fys.ruu.nl
URL: http://www.fys.ruu.nl/~durr/ecoop.html
Day: Monday

As the advantages of object technology have become more widely known, objects are being applied more and more in Real-Time systems. This workshop treats in an OO-RT perspective:

- analysis and design aspects, like specification of time constraints
- implementation aspects,like languages, code generation, patterns and frameworks
- validation and testing of dynamic behaviour and meeting time constraints
- OO real time kernels and mapping of OO designs on existing kernels (RTOS)

Papers of prime interest are the ones which pay special attention to implementation experience.

Participants in the workshop should submit either

- a two pages position paper or experience report
- a 6 pages technical paper, on one of the above issues

Electronic submissions are strongly encouraged. Please inform us of your interest via email: durr@fys.ruu.nl. Accepted papers will be sent to the participants. Guidelines will be provided. Accepted technical papers are considered for publication.

W15 Aspect-Oriented Programming

Organizers: Cristina Videira Lopes, Xerox PARC
Gregor Kiczales, Xerox PARC
Carine Lucas, Free University of Brussels
Bedir Tekinerdogan, University of Twente
Contact: lopes@parc.xerox.com
URL: http://wwwtrese.cs.utwente.nl/aop-ecoop97
Day: Tuesday

To date, the primary idea for organizing software systems has been to break the system down into modular units such as subroutines, procedures, objects etc. Many systems have properties that cut across these abstraction mechanisms:

ated components to interoperate, like COM/OLE 2, CORBA/SOM/OpenDoc, and more recently Java/JavaBeans or Netscape ONE. Further, specifications are needed to put the composer into the position to decide what can be composed under which conditions. Open research questions raised by these isues include what kind of standards are needed and how they should be defined, what information specifications need to give, how this information should be provided, and how correct implementation and usage of specifications should be verified or enforced. WCOP'97 is a follow-up event to the successful WCOP'96, which took place in conjunction with ECOOP'96. WCOP'96 laid some foundations, including some term definitions, a review of the status quo, and hints at important areas for future research. WCOP'97 will build on its predecessor and thus aims at more focussed and specialized contributions and discussions.

W13 7th ECOOP Workshop for Doctoral Students in Object-Oriented Systems

Organizers: Erik Ernst, Denmark
Frank Gerhardt, Mercedes-Benz AG, Stuttgart
Lutz Wohlrab, Technische Universitaet Chemnitz-Zwickau, Chemnitz
Contact: eernst@daimi.aau.dk
URL: http://mbi.dkfz-heidelberg.de/PhDOOS
Day: Monday and Tuesday

The aim of the workshop is to bring together PhD students who are working on foundations, design, implementation, or application of object-oriented systems and methods. The workshop will provide an opportunity for PhD students to meet, to discuss their research, and to further develop their working skills. It will generally be interactive, focusing on active work in groups. The technical programme of the workshop will be held in subgroups, followed by a summary session of all attendants. In the subgroups, discussions on 3-4 related topics will be held, bringing together participants who work in related areas. The discussions will be based on position statements and paper presentations. The corresponding abstracts and papers will be electronically distributed among the participants in advance. The non-technical programme consists of two keynote talks by invited speakers about the PhD-getting process and conducting research, a writing workshop, and discussions about the results of the preECOOP initiative of the PhDOOS network, about further developments of the PhDOOS network, and about the social situation of PhD students.

W11 Second ECOOP Workshop on Prototype-based object-oriented programming

Organizers: James Noble, Macquarie University, Sydney
Ivan Moore, OTI UK Ltd, London
Contact: kjx@mri.mq.edu.au
URL: http://www.mri.mq.edu.au/~kjx/proto97.html
Day: Monday

Prototype-based programming is an alternative to the traditional class-based object-oriented model. In this paradigm there are no classes. Rather, new kinds of objects are formed more directly by composing concrete, fully-fledged objects, which are often referred to as prototypes. Prototype-based languages are conceptually simpler than class-based languages, and are especially appealing to the development of evolving, exploratory software systems. Yet prototypes are still relatively poorly known outside the research world, and the number of industrial applications relying on prototypes is minimal compared to the number of applications relying on more mainstream object technology.

In this workshop we will examine the state-of-the-art in prototype-based object-oriented programming, focusing especially on the following questions

- what are the specific advantages or niches of the prototype-based paradigm which will make or break its widespread use?
- how is the prototype-based paradigm simpler to understand and use than the traditional class-based paradigm?
- what ultimately distinguishes prototype-based programming from class-based programming?

This workshop will build upon the results of the successful workshops on this topic held at ECOOP'96 and OOPSLA'96.

W12 Component-Oriented Programming (WCOP'97)

Organizers: Prof. Dr. Jan Bosch, University of Karlskrona,Ronneby
Prof. Dr. Clemens Szyperski, Queensland University of Technology, Australia
Dr. Wolfgang Weck, Åbo Akademi University, Finland
Contact: Wolfgang.Weck@abo.fi
URL: http://www.abo.fi/~wweck/WCOP97
Day: Monday

Component-oriented programming has been identified as producing software components for a component market and for late composition. Components are to be composed by third parties, possibly end users, who are not able to change the components. This requires standards to allow independently cre-

W10 Modeling Software Processes and Artifacts

Organizers: Klaas van den Berg, University of Twente
Mehmet Aksit, University of Twente
Pim van den Broek, University of Twente
Leon Osterweil, University of Massachusetts
Karl Lieberherr, Northeastern University, Boston
Francesco Marcelloni, University of Pisa
Contact: vdberg@cs.utwente.nl
URL: http://wwwtrese.cs.utwente.nl/ecoop97mspa
Day: Monday

Cost-effective realization of robust, adaptable and reusable software systems demands efficient and effective management of the overall software production process. Software process models aims at capturing the essential information about the production process and the manufactured products (called artifacts).

Current object-oriented methods are not fully formalized and lack the ability of reasoning about the quality of processes and artifacts. There is a need for new modeling formalisms which enable the quantification of the required quality attributes.

Object-oriented models for object-oriented software processes and artifacts have not been studied extensively. The object-oriented approach can provide new perspectives, since artifacts may be modeled as active objects and encapsulate the details of the manufacturing process.

Some relevant topics to be addressed in this workshop are

- which type of artifact and process models are suited for object-oriented software development?
- what are the process rules and how to capture these in artifacts?
- how to define adaptable and reusable process and product models and how to manage them?
- how to deal with uncertainty, concurrency and ambiguity?
- how to quantify desirable quality attributes with metrics?

W9 Mobile Object Systems

Organizers: Christian Tschudin, University of Zurich
Joachim Baumann, IPVR, University of Stuttgart
Marc Shapiro, INRIA, Domaine de Voluceau, Rocquencourt
Jan Vitek, University of Geneva
Contact: tschudin@ifi.unizh.ch
URL: http://cuiwww.unige.ch/~ecoopws
Day: Monday and Tuesday

The more implementations of mobile object systems are being developed, the more it becomes obvious that the underlying runtime software are proper operating systems for mobile computations. The first ECOOP workshop on mobile computations did a first investigation on mobile agents (we were among the very first to offer a public discussion forum on this topic!), the second ECOOP workshop in 1996 helped a lot to clarify positions and to make common viewpoints visible although participants came from the network, operating systems or programming language communities. In the proposed third ECOOP workshop we suggest to focus on the OS theme but to keep it explicitely open for the programming language viewpoint and for operational issues.

The following topics are recommended areas of interest

- operating systems for mobile computations
- programming language support for mobility
- litegration of programming languages and operating systems
- resource management techniques
- innovative scheduling strategies
- security mechanisms and policies for mobile computations
- portable intermediate representations
- linking issues
- communication mechanisms
- management of mobile object systems
- experience reports

complex distributed applications. Such applications are often made of legacy software pieces, implemented with heterogeneous languages and executed on a variety of computer and system platforms. Object-based technology has become a cornerstone of distributed systems implementations and distributed software engineering methods. Standardization efforts of the Open Distributed Processing (ODP) and especially the Object Management Group (OMG) tends to prove this assertion. In particular, the Common Object Request Broker Architecture. (CORBA) promoted by the OMG, seems to be a solution to the problem of having distributed software, and especially distributed objects interoperate in heterogeneous environment. This workshop aims at confronting practical issues and experience reports in using the CORBA technology, as well as outlining limitations and/or promising use of CORBA-like systems.

W8 FAMOOS Workshop on Object Oriented Software Evolution and Re-Engineering

Organizers: Thomas Lindner, Forschungszentrum Informatik,Germany
Eduardo Casais, Nokia Research Center, Finland
Ari Jaaksi, Nokia Telecommunications, Finland
Contact: lindner@fzi.de
URL: http://www.fzi.de/ecoop97ws8
Day: Tuesday

This workshop focuses on the re-engineering of object-oriented software. The general goal is to bring together researchers, practitioners, and tool providers in order to synchronize their efforts on advancing object-oriented software evolution. Therefore, it is intended to create a forum for generating and exchanging ideas for how to deal with large-scale, mature object-oriented systems and frameworks.

Issues to be covered in the workshop include, but are not limited to

- documentation and re-use of object-oriented systems
- analysis of object-oriented systems with respect to re-usability and flexibility
- abstract models of object-oriented systems that help to understand and re-engineer large programs
- methodological support for the transformation of object-oriented systems into frameworks
- design metrics that help to measure progress/improvement of object-oriented designs during or after re-engineering
- tool support for all of the above topics

This workshops builds upon the lessons learnt at the workshop on Object-Oriented Software Evolution and Re-Engineering held at OOPSLA'96.

W6 Models, Formalisms and Methods for Distributed Object-Oriented Computing

Organizers: Rémi Bastide, LIS - Université Toulouse I
Didier Buchs, Swiss Federal Institute of Technology, Lausanne
Contact: bastide@cict.fr
URL: http://lis.univ-tlse1.fr/ecoop-ws
Day: Monday

The emergence of enabling technologies such as CORBA or Java RMI makes it possible to develop industrial scale Object-based distributed systems at a fraction of the cost that they would require using more conventional techniques. However, it seems that these technologies still lack a firm ground to develop on: no model of 0distributed object-oriented computation is widely agreed upon. It is not quite clear how existing formal notations for distributed and concurrent systems (such as Petri Nets, Estelle, LOTOS, ...) can support the object paradigm, and methodological practice for this kind of systems is still at its early stages. Furthermore considering the growing interest in distributed embedded critical systems, questions arise on how object-orientation can be used to develop reliable systems at the early stages of the development process. The purpose of this workshop is to bring together researchers interested in the foundations of concurrent and distributed object-oriented computing.

Specific areas of interest include, but are not limited to

- fundamental models of concurrent and distributed object systems
- formal notations for the analysis, design, validation and verification of concurrent and distributed OO systems.
- methodological issues, notably the inclusion of formal approaches within semi-formal methods such as OMT, Fusion, etc.

W7 CORBA : Implementation, Use, and Evaluation

Organizers: Luc Bellissard, INRIA Rhone Alpes,France
Rachid Guerraoui, DI-LSE, EPFL IN-Ecublens,Lausanne
Thomas Jell,Siemens AG, Munich
Douglas C. Schmidt, Washington University, Missouri
Steve Vinoski,Hewlett-Packard, Chelmsford
Contact: Luc.Bellissard@inrialpes.fr
URL: http://sirac.inrialpes.fr/~bellissa/wecoop97
Day: Tuesday

Progress in telecommunication technologies, along with the evolution of the structure and the organization of companies have led to the emergence of

main. Further, design patterns can be supported by special language constructs, extending general-purpose languages. It is also interesting to note that language engineering benefits from language implementation frameworks, allowing the rapid development of new domain-oriented languages based on reused architectures and components. Although many researchers have identified the above topics and recognised their importance, these issues still are relatively little understood and need to investigated further. To support this process, we believe a workshop would provide the appropriate platform, since it balances the presentation of new ideas with considerable amounts of discussion.

W5 Precise Semantics for Object-Oriented Modeling Techniques

Organizers: Haim Kilov, IBM T J Watson Research Center, Hawthorne
Bernhard Rumpe, Technische Universität München
Contact: rumpe@informatik.tu-muenchen.de
URL: http://www4.informatik.tu-muenchen.de/~rumpe/ecoop
Day: Tuesday

Currently there is an ongoing standardization process for object-oriented modeling techniques (OOMT) initiated by the OMG. A standardization of OOMT does not only include a precise syntax, but a precise semantics as well. This is essential for unambiguous understanding business and system specifications modeled with OOMT. A precise semantics allows us to detect inconsistencies and inaccuracies both in OOMTs themselves (meta-modeling), and in specifications written using these OOMTs (modeling), as well as to compare different OOMT on a more precise way, improving the notation and also enables interoperability between different OOMT. But it also allows us to use a notation in a more standardized way, thus leading to better and unambiguous understanding and therefore supporting true reuse of specifications and design, a more accurate definition of context conditions or (code) generators. Furthermore, requirement decisions could be traced more precisely to produced code.

The scope of the workshop includes, but is not limited to

- precise semantics for OOMT
- integration of semantics for a heterogeneous set of OOMT
- formal development and refinement techniques for OOMT
- comparisons of existing semantics models
- ways to achieve preciseness
- concurrency and OOMT
- tool support
- existing standards (e. g. ISO) and OOMT

W3 Reflective Real-time Object-Oriented Programming and Systems

Organizers: Dr. S. E. Mitchell, University of York
Dr. R. J. Stroud, University of Newcastle upon Tyne, Newcastle
Contact: stuart@minster.york.ac.uk
URL: http://www.cs.york.ac.uk/~stuart/ecoop_workshop.html
Day: Tuesday

In recent years the separate topics of reflective object-oriented programming and real-time have undergone significant developments. This workshop is aimed at combining these topics and thus exploring the advantages that the disciplined separation of concerns offered by a reflective system can provide within a real-time system. There has already been some published work related to this area (for example, the Spring Kernel, FLEX, RTC++, RT Java, DROL) and the organisers are both members of "Design for Validation", an ESPRIT Long Term Research project which is exploring the use of reflection as a structuring mechanism for building dependable validatable real time distributed systems. We therefore believe that there is both the demand for a workshop on the subject of combining reflection and real-time as well as considerable benefit to be gained from the resulting collaboration between interested researchers and practitioners.

W4 Language Support for Design Patterns and Frameworks

Organizers: Jan Bosch, University of Karlskrona, Ronneby
Görel Hedin, Lund University
Kai Koskimies, University of Tampere, Finland
Contact: Jan.Bosch@ide.hk-r.se
URL: http://www.ide.hk-r.se/~bosch/lsdf
Day: Tuesday

Languages (textual or graphical) are related to design patterns and frameworks in many ways which we only are beginning to understand. The concepts of an application domain are traditionally modelled as classes and their relationships and behaviour. Another approach, used e.g. in 4GL systems, is to map domain concepts to special language structures. In this sense, a framework corresponds to a language, and its instantiation corresponds to a program written in this language. By studying the relationships of (domain-oriented) languages and frameworks, it seems feasible to develop attractive tools for the difficult activity of framework instantiation. Also other interactions between languages, patterns, and frameworks exist. A collection of domain-oriented patterns constitutes a language that is the basis of design of applications and frameworks in that do-

W1 Object Oriented Technology for Telecommunications Services Engineering

Organizers: Prof. Simon Znaty, Ecole Nationale Superieure des Télécommunication de Bretagne (ENST-B), France
Prof. Jean-Pierre Hubaux, Swiss Federal Institute of Technology, Lausanne
Contact: znaty@tcom.epfl.ch
URL: http://www.rennes.enst-bretagne.fr/~znaty/ECOOP97.html
Day: Monday and Tuesday

Long term trends in the telecommunications market calls for Integrated Service Engineering to promote rapid introduction of new and enhanced services, their management and the management of the underlying networks that are used to provide those services. One of the main technologies that needs to be applied to master the service engineering complexity is object orientation. Authors are invited to submit either original research contributions, or experience reports that provide new insight into the use of object-oriented technology for telecommunications services engineering.

W2 Introducing Object-Orientation through Team-Oriented Projects - What makes introductory projects successful

Organizers: Juergen Boerstler, Dept of Computing Science, Deutsche Krankenversicherung AG, Köln
Thorsten Janning, Umeå University
Contact: jubo@cs.umu.se
URL: http://www.cs.umu.se/~jubo/ECOOP/CFP.html
Day: Monday

The workshop will bring together people from industry and academia to discuss team project oriented introductions to object-oriented technology. The areas of interest range from teaching team-oriented projects courses in both industry and academia to project-oriented migration strategies to object technology.

The (main) goals of the workshop are

- to create an initial checklist with recommendations for the organization of a team project oriented introduction to object technology
- to work out a classification scheme for migration strategies based on scenarios of an information technology environment and a list of success factors
- to set-up an infrastructure for the discussion of concrete examples, which may later be used as reference projects.

All workshop participants are required to submit a position paper together with project's success.

WORKSHOPS

As in previous years, ECOOP '97 will host a number of workshops addressing different areas of object-oriented technology. Workshops serve as a forum for exchanging emerging, late-breaking research ideas, and they typically focus either on in-depth or cross-domain areas related to object-oriented technology and its applications.

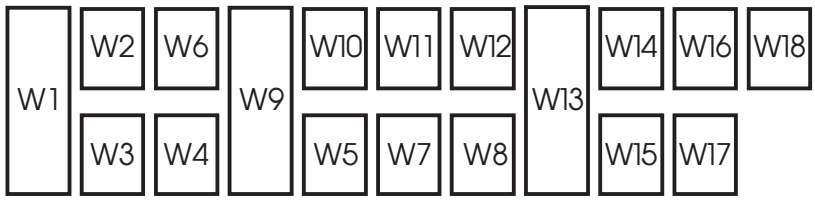
In this year's ECOOP there will be 18 workshops in total: 3 two-day workshops and 15 one-day workshops. We were happy to receive a large number of high-quality workshop proposals, and we are looking forward to an interesting workshop programme.

Antero Taivalsaari
Workshop Chair

Workshops at a glance

MONDAY, JUNE 9
8:15 - 16:15

TUESDAY, JUNE 10
8:15 - 16:15



W1 Object Oriented Technology for Telecommunications Services Engineering
W2 Introducing Object-Orientation through Team-Oriented Projects - What makes introductory projects successful
W3 Reflective Real-time Object-Oriented Programming and Systems
W4 Language Support for Design Patterns and Frameworks
W5 Precise Semantics for Object-Oriented Modeling Techniques
W6 Models, Formalisms and Methods for Distributed Object-Oriented Computing
W7 CORBA : Implementation, Use, and Evaluation
W8 FAMOOS Workshop on Object Oriented Software Evolution and Re-Engineering
W9 Mobile Object Systems
W10 Modeling Software Processes and Artifacts
W11 Second ECOOP Workshop on Prototype-based object-oriented programming
W12 Component-Oriented Programming (WCOP'97)
W13 7th ECOOP Workshop for Doctoral Students in Object-Oriented Systems
W14 Object-Oriented Technology and Real-Time Systems
W15 Aspect-Oriented Programming
W16 ECOOP'97 System Implementors' Workshop
W17 Object-Orientation and Operating Systems
W18 Dynamic Models in Forward and Reverse Engineering of Object Systems

For participation in any workshop, please communicate directly with the announced contact person, or have a look at the appropriate WWW pages. There is a page for each workshop N (for N from 1 to 18) named http://www.ecoop97.jyu.fi/Workshops/workshopN. The URL of the actual home page maintained by the workshop organizers is listed in each workshop description.

The workshop sessions are planned to begin earlier than usually, at 8:15, and to end at 16:15. This is in order to give workshop participants an opportunity to attend late-afternoon tutorials (see **Tutorials**).