



## Third International Workshop on Composition Languages

In conjunction with  
17th European Conference on Object-Oriented Programming (ECOOP)  
Darmstadt, Germany  
July 22, 2003

### Abstract:

The goal of this workshop is to bring together researchers and practitioners in the area of component-based software development in order to address problems concerning the design and implementation of composition languages and to develop a common understanding of the corresponding concepts. We would also like to determine the strengths and weaknesses of composition languages and compare it with similar approaches in related fields. In this workshop, we intend to continue the fruitful discussions started at previous workshops on composition languages, which were held in conjunction with ESEC/FSE 2001 and ECOOP'02.

The main focus of the workshop will be on software composition on an architectural level, and not on component-based systems in general. In particular, we would like to emphasize the important issues of (i) the design and implementation of higher-level models and languages for component-based software development, (ii) approaches that combine architectural description, component configuration, and component composition, (iii) paradigms for the specification of reusable software assets, (iv) expressing applications as compositions of software components, and (v) the derivation of working systems using composition languages and components. Furthermore, we would particularly like to encourage authors to submit position statements focusing on formal aspects of the issues mentioned above and case studies of using composition languages for real-world applications.

All submissions will be peer-reviewed by at least two members of the workshop paper selection committee. Based on the quality and originality, a selection of the best position statements will be presented at the workshop.

The workshop will be organized in several sessions. After an initial presentation session, where all participants can formulate one or more, possibly provocative, working hypotheses, we intend to split the workshop into task forces to foster the discussion a particular subject of common interest. At the end of the workshop the task forces will reunite and we will assemble the results and formulate future work, which we intend to present to the rest of the ECOOP community in the form of a poster at the conference.

## Call for Papers:

The Third International Workshop on Composition Languages seeks position statements addressing the design and implementation of higher-level languages suitable for component-based software development.

A component-based software engineering approach mainly consists of two development steps: (i) the specification and implementation of components and (ii) the composition of components into composites or applications. Currently, there is considerable experience in component technology and many resources are spent for the first step, which resulted in the definition of component models and components such as CORBA, COM, JavaBeans, and more recently EJB and .NET. However, much less effort has been spent in investigating appropriate composition environments and languages, which allow application developers to express applications flexibly as compositions of components and, therefore, offer support for component-based software engineering.

Most available composition environments focus mainly on special application domains and offer at best rudimentary support for the integration of components that were built in a system other than the actual deployment environment. Furthermore, these systems do not enforce a clear separation of computational elements (i.e., components) and their relationships, which is needed to address the flexibility and maintainability of component-based systems. The reason for this situation is not only the lack of well-defined (or standardized) component interfaces, but the ad-hoc way the semantics of the underlying language models are defined.

In the recent past we observed a paradigm shift from component-centric development to model-centric and architecture-centric development. One of the recent developments in this area is the Model Driven Architecture™ (MDA) defined by OMG. MDA is considered to be the next step in solving software integration problems. MDA introduces a separation between application logic and infrastructure by encapsulating infrastructure specific aspects as far as possible in code generators. This separation allows for the architecture specification and software composition on a conceptual level and thus reduces architectural mismatches usually introduced by dependencies to infrastructure.

The goal of this workshop is to bring together both researchers and practitioners. By focusing on important aspects of the design and implementation of composition languages, this workshop aims to address the specific problems of existing composition systems. Suggested topics of interest include, but are not limited to:

### **Model-centric and architecture centric development**

- Support for the specification of software architectures and architectural assets
- Interoperability support
- Design and implementation strategies for cross-platform development
- Programming paradigms for software composition
- Model-centric and architecture-centric development and composition methods (e.g., MDA)

- Using existing components in model-centric and architecture-centric approaches, model extraction
- Modeling of components, specifically component behavior
- Mapping of architectural models to applications, model transformations
- Benefits of model-centric and architecture-centric approaches
- Case studies and success stories of model-centric and architecture-centric development
- Tool support for model-centric and architecture-centric development

### **Compositional reasoning**

- Representation strategies for functional and non-functional properties
- Prediction of properties of compositions from properties of the involved components
- Reasoning about correctness of compositions
- Specifying and checking of architectural guidelines

### **Aspect of Composition languages**

- Higher-level abstractions for composition languages
- Implementation techniques for composition languages
- Scalability and extensibility of the language abstractions
- Analysis of runtime efficiency of compositional abstractions
- Formal semantics of composition languages
- Type systems for composition languages
- Domain-specific versus general composition languages
- Case studies of composition language design
- Case studies of system development using composition languages
- Tool support for composition languages
- Taxonomy of composition languages

All submissions will be peer-reviewed by at least two reviewers of the workshop paper selection committee. Based on the quality and originality, the best position statements will be presented at the workshop.

The workshop will be organized in several sessions. After an initial presentation session, where all participants can formulate one or more, possibly provocative, working hypotheses, we intend to split the workshop into task forces to foster the discussion a particular subject of common interest. At the end o the workshop the task forces will reunite and we will assemble the results and formulate future work, which we indent to present to the rest of the ECOOP community in the form of a poster at the conference.

Authors are encouraged to address any aspects of the design and implementation of composition languages in their position statements. We solicit submissions on original research in the form of extended abstracts. Submissions should not exceed 8 pages (with a minimum 11pt font) and must have a cover page including the paper title, abstract, names and affiliations of authors, postal contact addresses, email addresses, and telephone numbers. In addition, we ask the authors to include a list of critical questions and/or some, perhaps provocative, statements at the end of their submission which will assist the organizers to define topics for discussion in advance. Submissions

should be sent in an electronic format (PDF or Postscript) to [lumpe@cs.iastate.edu](mailto:lumpe@cs.iastate.edu) and preferably prepared for letter or A4 sizes using [Springer LNCS-style](#).

All selected submissions will be made available online prior to the workshop and be published by one of the affiliated organizations. Aspects of the best position statements as well as the workshop results will be discussed in a chapter of the ECOOP Workshop reader. The results of the workshop will also be presented to the rest of the ECOOP community in the form of a poster at the conference. We are investigating having a special issue of a journal for revisions of selected papers after the workshop.

#### Workshop Home Page:

For further information about the workshop, please refer to the workshop home page at <http://www.cs.iastate.edu/~lumpe/WCL2003>.

#### Important Dates:

- Extended abstract submission: April 25, 2003
- Notification of acceptance: May 23, 2003
- Camera ready copy: June 16, 2003
- Workshop: July 22, 2003

#### Workshop Organizers:

Markus Lumpe – Iowa State University, USA  
Thomas Genßler – FZI, University of Karlsruhe, Germany  
Jean-Guy Schneider – Swinburne University of Technology, Australia  
Markus Bauer – FZI, University of Karlsruhe, Germany  
Bastiaan Schönhage – Compuware Europe B.V., The Netherlands

#### Paper Selection Committee:

Markus Lumpe – Iowa State University, USA  
Jean-Guy Schneider – Swinburne University of Technology, Australia  
Thomas Genßler – FZI, University of Karlsruhe, Germany  
Markus Bauer – FZI, University of Karlsruhe, Germany  
Bastiaan Schönhage – Compuware Europe B.V., The Netherlands  
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