Component-Oriented Programming
Report on the 12th Workshop WCOP at ECOOP 2007

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Abstract. This report covers the twelfth Workshop on Component-Oriented Programming (WCOP). WCOP has been affiliated with ECOOP since its inception in 1996. The report summarizes the contributions made by authors of accepted position papers as well as those made by all attendees of the workshop sessions.

1 Introduction

WCOP 2007, held in conjunction with ECOOP 2007 in Berlin, Germany, was the twelfth workshop in the successful series of workshops on component-oriented programming. The previous workshops were held in conjunction with earlier ECOOP conferences in Linz, Austria; Jyväskylä, Finland; Brussels, Belgium; Lisbon, Portugal; Sophia Antipolis, France; Budapest, Hungary; Málaga, Spain, Darmstadt, Germany, and Oslo Norway, Glasgow, Scotland, and Nantes, France.

The first workshop, in 1996, focused on the principal idea of software components and worked towards definitions of terms. In particular, a high-level definition of what a software component is was formulated. WCOP97 concentrated on compositional aspects, architecture and gluing, substitutability, interface evolution and non-functional requirements. In 1998, the workshop addressed industrial practice and developed a major focus on the issues of adaptation. The next year, the workshop moved on to address issues of structured software architecture and component frameworks, especially in the context of large systems. WCOP 2000 focused on component composition, validation and refinement and the use of component technology in the software industry. The year after, containers, dynamic reconfiguration, conformance and quality attributes were the main focus. WCOP 2002 had an explicit focus on dynamic reconfiguration of component systems, that is, the overlap between COP and dynamic architectures. 2003, the workshop addressed predictable assembly, model-driven architecture and separation of concerns. The 2004 instance of the workshop focused on various technical issues and also on issues of industrialization of component-orientation. WCOP 2005 revolved around different aspects of trustworthiness.
with component-oriented programming. Considered were analyzing, asserting, and verifying functional and non-functional properties of individual components as well as of assembled systems. A central theme of WCOP 2006 was the composition and deployment of components, including component selection and adaptation. A minor focus was the relation between components and aspects, that is between COP and AOP.

WCOP 2007 was reasoning on the nature of components, specifically its black-box property. Talks and discussions argued on the blackbox property from a model-driven, performance, and aspects point of view.

WCOP 2007 had been announced as follows:

WCOP seeks position papers on the important field of component-oriented programming (COP). WCOP 2007 is the twelfth event in a series of highly successful workshops, which took place in conjunction with every ECOOP since 1996.

COP has been described as the natural extension of object-oriented programming to the realm of independently extensible systems. Several important approaches have emerged over the recent years, including component technology standards, such as CORBA/CCM, COM/COM+, J2EE/EJB,.NET, and most recently software services, but also the increasing appreciation of software architecture for component-based systems, as in SOA, and the consequent effects on organizational processes and structures as well as the software development business as a whole.

COP aims at producing software components for a component market and for late composition. Composers are third parties, possibly the end users, who are not able or willing to change components. This requires standards to allow independently created components to interoperate, and specifications that put the composer into the position to decide what can be composed under which conditions. On these grounds, WCOP’96 led to the following definition:

A component is a unit of composition with contractually specified interfaces and explicit context dependencies only. Components can be deployed independently and are subject to composition by third parties.

After WCOP’96 focused on the fundamental terminology of COP, the subsequent workshops expanded into the many related facets of component software.

WCOP 2007 will discuss the black-box nature of components. On the one hand, for many, components became synonymously with the black-box building blocks of software. Technically, this means a component is described by the interfaces it provides and requires. On the other hand, for many reasons, an abstract description of specific aspects of the component’s behaviour in addition to the mere interface specification is needed. These reasons include architectural dependency analysis, the description of non-functional properties or the verification of the absence