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Self-star Properties in Complex Information Systems

Conceptual and Practical Foundations

Springer

Volume Editors

Ozalp Babaoglu
Márk Jelasity
Alberto Montresor
Università di Bologna
Departimento di Scienze dell'Informazione
40126 Bologna, Italy
E-mail: {babaoglu,jelasity,montresor}@cs.unibo.it

Christof Fetzer
Technische Universität Dresden
Fakultät Informatik
01062 Dresden, Germany
E-mail: christof.fetzer@inf.tu-dresden.de

Stefano Leonardi
Università di Roma "La Sapienza"
Dipartimento di Informatica e Sistemistica
00198 Rome, Italy
E-mail: leon@dis.uniroma1.it

Aad van Moorsel
University of Newcastle upon Tyne
School of Computing
Newcastle upon Tyne, NE1 7RU, UK
E-mail: aad.vanmoorsel@newcastle.ac.uk

Maarten van Steen
Vrije Universiteit Amsterdam
Department of Computer Science
1081 HV, Amsterdam, The Netherlands
E-mail: steen@cs.vu.nl

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Preface

Information systems can be complex due to numerous factors including scale, decentralization, heterogeneity, mobility, dynamism, bugs and failures. Deploying, operating and maintaining such systems can be not only very difficult, but also very costly. A flurry of recent activity has been directed at this problem, and future information systems are envisioned as self-configuring, self-organizing, self-managing and self-repairing. Collectively, we call these properties self-$\star$ properties.

This book is a "spin-off" of a by-invitation-only Bertinoro workshop on self-$\star$ properties in complex systems which was held in summer 2004 in Bertinoro, Italy. The Self-star workshop brought together researchers and practitioners from different disciplines and with different backgrounds to discuss complex information systems. The theme of the workshop was to identify the conceptual and practical foundations for modeling, analyzing and achieving self-$\star$ properties in distributed and networked systems. Partly based on these discussions, we solicited papers from the workshop participants and a set of invitees for this book.

We sought original contributions in which authors explicitly take a position concerning requirements, usefulness, potential and limitations of technologies for self-$\star$ properties of complex systems. This position needed to be founded on research results that were put clearly in context with respect to the position statement. We strongly encouraged visionary statements, thought-provoking ideas, and exploratory results that will help the reader form her or his own opinions on the importance of self-$\star$ properties in current and future complex information systems.

We structured the book according to our goal of having such visionary statements. The first part of this book contains a set of separate 1-page summaries of the positions taken by the various authors. This gives the reader a chance to get a quick overview of the various positions. The second part of the book contains the full papers that explain in more detail the positions taken by the different authors.

Without further ado, we wish you a pleasant and stimulating read.

Bologna, Dresden, Rome,
Newcastle upon Tyne, Amsterdam
February 2005

Ozalp Babaoglu
Márk Jelasity
Alberto Montresor
Christof Fetzer
Stefano Leonardi
Aad van Moorsel
Maarten van Steen

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Table of Contents

Self-awareness vs. Self-organization

Supporting Self-⋆

Peer-to-Peer Algorithms