Lecture Notes in Computer Science 4716

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison
Lancaster University, UK

Takeo Kanade
Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler
University of Surrey, Guildford, UK

Jon M. Kleinberg
Cornell University, Ithaca, NY, USA

Friedemann Mattern
ETH Zurich, Switzerland

John C. Mitchell
Stanford University, CA, USA

Moni Naor
Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz
University of Bern, Switzerland

C. Pandu Rangan
Indian Institute of Technology, Madras, India

Bernhard Steffen
University of Dortmund, Germany

Madhu Sudan
Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos
University of California, Los Angeles, CA, USA

Doug Tygar
University of California, Berkeley, CA, USA

Moshe Y. Vardi
Rice University, Houston, TX, USA

Gerhard Weikum
Max-Planck Institute of Computer Science, Saarbruecken, Germany

Bertrand Meyer Mathai Joseph (Eds.)

Software Engineering Approaches for Offshore and Outsourced Development

First International Conference, SEAFOOD 2007
Zurich, Switzerland, February 5-6, 2007
Revised Papers

Springer

Volume Editors

Bertrand Meyer
ETH Zurich, Department of Computer Science
RZ Building, Clausiusstr. 59, 8092 Zurich, Switzerland
E-mail: bertrand.meyer@inf.ethz.ch

Mathai Joseph
Tata Consultancy Services
1 Mangaldas Road, Pune 411 001, India
E-mail: m.joseph@tcs.com

Library of Congress Control Number: 2007936130

CR Subject Classification (1998): D.2, K.6, K.4.2, J.1

LNCS Sublibrary: SL 2 – Programming and Software Engineering

ISSN 0302-9743
ISBN-10 3-540-75541-1 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-75541-8 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springer.com

© Springer-Verlag Berlin Heidelberg 2007
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12171392 06/3180 5 4 3 2 1 0

Preface

SEAFOOD for Thought

Headline-grabbing though it may be, the software industry's large-scale allocation of work to developing countries has not so far generated much technical analysis. Attention is usually limited to the possible political and economic consequences, in particular the fears of loss of employment in the West. The aim of the present volume is different. We recognize that offshore development is here to stay, and not just a result of cost considerations. It is – more accurately – a form of distributed development, relying on advances in communications to let the software industry, in our globalized world, benefit from the wide distribution of human talent. But it is also the source of a new set of challenges, to which accepted software engineering principles and techniques have not completely prepared us. Producing high-quality software on time and within budget is hard enough when the QA team is across the aisle from the core developers, and the customers across the street; what then when the bulk of the development team is across an ocean or two?

The first SEAFOOD – Software Engineering Advances For Outsourced and Offshore Development – conference (prompted by an earlier article[1]) was an attempt not only to bring software engineering to outsourcing but also to bring outsourcing into the collective consciousness of the software engineering community. This is beneficial to both sides: successful outsourcing requires strong software engineering guidance, but research in the field must for its part account for the new world of software development. Whatever direction outsourcing takes in the coming years, we will never be just in one location any more.

SEAFOOD was held at ETH Zurich on 5–6 February 2007 and provided an opportunity for participants from academia and industry to confront experiences, ideas and proposals. The articles that follow are the result of this encounter. As can be expected of the first conference in such a novel field, we are still in the process of defining what constitutes a proper object of study on the topic; but the contributions already show a number of promising developments, which we are sure will be taken further in future conferences, starting from SEAFOOD 2008 to be held in the same venue in the first week of July 2008. The conference site at http://seafood.ethz.ch includes information on this conference, as well as past and future SEAFOOD events.

We hope that you will enjoy the results of SEAFOOD 2007 and that this volume will give you many useful ideas to understand and improve the engineering of outsourced software.

[1] Bertrand Meyer: Offshore Development: The Unspoken Revolution in Software Engineering, IEEE Computer, January 2006, pages 124, 122-123.

Many people contributed to making SEAFOOD 2007 a success. We are particularly grateful to the authors who submitted their work in a new and quickly evolving area; to the Program Committee members who reviewed the papers in time and through sometimes extensive discussions. (We extend our special wishes to Gio Wiederhold, who suffered an accident while in Zurich.) The role of Andrei Voronkov's excellent EasyChair conference system is gratefully acknowledged.

The conference benefited from four outstanding keynote presentations by Krishnamurti Ananthkrishnan, Chief Technology Officer of Tata Consultancy Services, Stuart Feldman, Vice President for computer science of IBM, Watts Humphrey from the Software Engineering Institute and Andrey Terekhov, from the State University of Saint Petersburg.

Martin Nordio from ETH played a key role in organizing the conference and helping prepare this volume; we are also grateful to Claudia Günthart for outstanding organizational support and to Christian Hunziker from ELCA for his work in publicizing the conference throughout Switzerland.

August 2008

Mathai Joseph
Bertrand Meyer

Organization

Program Co-chairs

Mathai Joseph, Tata Consultancy Services, India
Bertrand Meyer, ETH Zurich, Switzerland and Eiffel Software, California, USA

Program Committee

Manfred Broy, Technische Universität München, Germany
Kokichi Futatsugi, JAIST, Japan
Victor Gergel University of Nizhnyi-Novgorod, Russia
Koichi Kishida, SRA Key-Tech Lab, Japan
Qiaoyun Li, Motorola, USA
Mingshu Li, Chinese Academy of Sciences, China
Andrey Terekhov, State University of Saint Petersburg and TEPKOM, Russia
Gio Wiederhold, Stanford University, USA

Publicity Chair

Christian Hunziker, ELCA, Switzerland

Organizing Committee

Claudia Günthart, ETH Zurich, Switzerland
Martin Nordio, ETH Zurich, Switzerland

Table of Contents

Offshore Software Development: Transferring Research Findings into the Classroom 1
Kay Berkling, Michael Geisser, Tobias Hildenbrand, and Franz Rothlauf

Meeting the Challenge of Communication in Offshore Software Development 19
Henrik Munkebo Christiansen

Testable Requirements for Offshore Outsourcing 27
Jean-Pierre Corriveau

Introducing Global Supply Chains into Software Engineering Education 44
Olly Gotel, Vidya Kulkarni, Long Chrea Neak, Christelle Scharff, and Sopheap Seng

Turn on Lean Governance... for Return on Outsourcing 59
Mohan Kancharla

Making IT Offshoring Work for the Japanese Industries 67
Sakura Kojima and Makoto Kojima

Mastering Dual-Shore Development – The Tools and Materials Approach Adapted to Agile Offshoring 83
Andreas Kornstädt and Joachim Sauer

Evaluating Collaboration Platforms for Offshore Software Development Scenarios 96
Felix Rodriguez, Michael Geisser, Kay Berkling, and Tobias Hildenbrand

Outsourcing and Offshoring: The Consultancies' Estimates 109
Christian Sommer and Georg Troxler

Questionnaire-Based Risk Assessment Scheme for Japanese Offshore Software Outsourcing 114
Hiroshi Tsuji, Akito Sakurai, Ken'ichi Yoshida, Amrit Tiwana, and Ashley Bush

An Evaluation Method for Offshore Software Development by Structural Equation Modeling 128
Yoshihisa Wada, Daiki Nakahigashi, and Hiroshi Tsuji

The Value of Outsourced Software 141
Gio Wiederhold, Amar Gupta, Rajat Mittal, and Erich Neuhold

Reducing the Cost of Communication and Coordination in Distributed Software Development 152
Yunwen Ye, Kumiyo Nakakoji, and Yasuhiro Yamamoto

Survey on Japan-Oriented Offshore Software Development in China 170
Lei Zhang, Meiping Chai, Xuan Zhang, Shigeru Miyake, and Ryota Mibe

Toward Visualization and Analysis of Traceability Relationships in Distributed and Offshore Software Development Projects 182
Cleidson R.B. de Souza, Tobias Hildenbrand, and David Redmiles

Author Index 201