ACM SIGPLAN Erlang Workshop '02

A Satellite Event of PLI 2002

October 7, 2002
Pittsburgh, Pennsylvania, USA

Sponsored by

ACM SIGPLAN

The Association for Computing Machinery, Inc.
1515 Broadway
New York, New York 10036

Copyright © 2002 by the Association for Computing Machinery, Inc (ACM). Permission to make digital or hard copies of portions of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. **Copyrights for components of this work owned by others than ACM must be honored.** Abstracting with credit is permitted.

To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permission to republish from: Publications Dept. ACM, Inc. Fax +1-212-869-0481 or E-mail permissions@acm.org.

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Notice to Past Authors of ACM-Published Articles
ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that was previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform permissions@acm.org, stating the title of the work, the author(s), and where and when published.

ACM ISBN: 1-58113-592-0

Additional copies may be ordered prepaid from:

ACM Order Department	Phone: 1-800-342-6626
P.O. BOX 11405	(U.S.A. and Canada)
Church Street Station	+1-212-626-0500
New York, NY 10286-1405	(All other countries)
	Fax: +1-212-944-1318
	E-mail: acmhelp@acm.org

ACM Order Number 550021
Printed in the USA

ACM SIGPLAN Erlang Workshop '02

Foreword

Welcome to the second Erlang Workshop held as part of the federation of conferences on **P**rinciples, **L**ogics, and **I**mplementations of High-Level Programming Languages. Erlang workshops started with the millenium, so workshop numbers will match the date for a long while. Good timing, eh?

We look forward to a day as enlightening as that of the first workshop, which was held in Firenze a year ago. Phil Wadler will lead off with a talk (with a typically Wadlerian title) about things that type systems can contribute to software development. His invited presentation will be followed by nine talks on Erlang applications, implementations, enhancements, and tools.

These talks show how a functional language with a strong focus on multitasking can serve a variety of applications, and how tools, methodologies, and language features can improve the effectiveness of Erlang software developers. The story of Erlang is one of the great successes of functional languages, and this workshop provides an opportunity for practitioners to share their experiences with each other and with interested observers of the Erlang scene.

The organizing committee would like to thank ACM SIGPLAN for sponsoring this event, the PLI 02 organizers for their help along the way, the ACM staff for their prompt answers to our many questions, the referees for their well-considered critiques, and especially the authors who submitted papers. These authors left the program committee an abundance of difficult choices, but in the process provided many hours of interesting reading and learning.

Finally, we want to thank the workshop participants. We hope you enjoy the day and take home a new bit of Erlang.

Rex Page
Workshop Chair

John Hughes
Program Chair

Table of Contents

Erlang Workshop Committee v

Erlang Consulting vi

Hierarchical Module Namespaces in Erlang 1
Richard Carlsson *(Uppsala University)*

Native Code Compilation of Erlang's Bit Syntax 6
Per Gustafsson and Konstantinos Sagonas *(Uppsala University)*

Trace Analysis of Erlang Programs 16
Thomas Arts *(Göteborg IT University)* and Lars-Åke Fredlund *(SICS)*

World Class Product Certification Using Erlang 24
Gösta Ask, Kent Boortz, and Ulf Wiger *(Ericsson)*

The Evolution of Erlang Drivers and the Driver Writer's Toolkit 34
Scott Lystig Fritchie *(Snookles Music)*

OTP in Server Farms 45
Michael Bruening, Martin Logan, and Hal Snyder *(Vail Systems)*

Global Scheduler Properties derived from Local Restrictions 50
Thomas Arts *(Göteborg IT University)* and Juan José Sánches Penas *(LFCIA)*

On Reducing Interprocess Communication Overhead in Concurrent Programs 59
Erik Stenman and Konstantinos Sagonas *(Uppsala University)*

Getting Erlang to Talk to the Outside World 65
Joe Armstrong *(SICS)*

Erlang Workshop Committee

Program Committee Chair	John Hughes, *Chalmers Institute of Technology*
Workshop Chair	Rex Page, *University of Oklahoma*
Program Committee	Mark Feeley, *Université de Montréal*
	Garry Hodgson, *AT&T Labs, Florham Park*
	John Launchbury, *Oregon Graduate Institute*
	David Paul, *Dallas*
	Francesco Cesarini, *Cesarini Consulting Ltd*
	Bjarne Däcker, *Ericsson AB, Stockholm*

Erlang/OTP consulting!

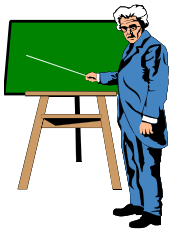
Sjöland & Thyselius, S&T, is the worlds largest independent Erlang consulting company. We have many experienced Erlang consultants ready to take your business to success where ever it is in the world. S&T can host your outsourced development projects, take responsibility for product sustaining, arrange training and reviews, and of course work as competence consultants at your premises.

Sjöland & Thyselius, S&T, offers advanced products and services in the area of technical computer systems. S&T was founded in 1989 and is now present in the Swedish cities of Stock-holm and Gothenburg. The S&T group has today in total approximately 75 employees. S&T has competence from programming embedded systems "upto" user interfaces and advanced 3D graphics. S&T also covers many aspects of software development, from pre-studies through implementation to project management and quality assurance/certification procedures.

Outsourced development and product sustaining,

reviews,

programming,



training,

… and general computer wizardry.

Sjöland&Thyselius

Creative Software Solutions

Sehlstedtsgatan 6 ▪ SE-115 28 STOCKHOLM ▪ SWEDEN
phone +46-8-587 623 00 ▪ fax +46-8-667 8230
http://www.st.se