

2015 IEEE/ACM 4th SEMAT Workshop on a General Theory of Software Engineering

(GTSE 2015)

**Florence, Italy
18 May 2015**



IEEE Catalog Number: CFP15ZAO-POD
ISBN: 978-1-4673-7053-0

Fourth SEMAT Workshop on General Theory of Software Engineering GTSE 2015

Table of Contents

Message from the Chairs	vii
Committees.....	viii
Sponsors and Supporters	x

Keynote

General Theories of Software Engineering (GTSE): Key Criteria and an Example	
GTSE 2015 Keynote Address Summary	1
<i>Barry Boehm - University of Southern California, USA</i>	

Development and Cognition

Towards a Design-Theoretic Characterisation of Software Development Process Models	3
<i>Jon G. Hall, Lucia Rapanotti — The Open University, UK</i>	
Exploring Theory of Cognition for General Theory of Software Engineering.....	15
<i>Pontus Johnson, Mathias Ekstedt — KTH Royal Institute of Technology, Sweden</i>	

Values and Complexity

An Approximate Theory for Value Sensitivity.....	25
<i>Balbir Barn, Ravinder Barn — Middlesex University, UK; Royal Holloway University of London</i>	
A Theory of Software Complexity	29
<i>Arbi Ghazarian — Arizona State University, USA</i>	
Essence-Based, Goal-Driven Adaptive Software Engineering	33
<i>June Sung Park — KAIST, Republic of Korea</i>	

Commentaries and Specific Theory

A Theory about the Structure of GTSEs	39
<i>Dewayne E. Perry, Don Batory — University of Texas at Austin, USA</i>	

The Unending Quest for Valid, Useful Software Engineering Theories.....	47
<i>Mark Staples — NICTA, Australia</i>	
Towards an Emerging Theory for the Diagnosis of Faulty Functions in Function-Call Traces.....	59
<i>Syed Shariyar Murtaza, Abdelwahab Hamou-Lhadj, Nazim H. Madhavji, Mechelle Gittens</i>	
<i>— Concordia University, Canada; University of Western Ontario, Canada</i>	
Author Index	69