

Peter Bernus • Kai Mertins  
Günter Schmidt (Eds.)

# Handbook on Architectures of Information Systems

With 277 Figures  
and 24 Tables



Springer

# Contents

1	Architectures of Information Systems <i>Peter Bernus, Gu'nter Schmidt</i> . . . . .	1
	<b>Part One: Techniques and Languages for the Description of Information Systems</b> . . . . .	<b>11</b>
2	Characterizing Information Modeling Techniques <i>John Mylopoulos</i> . . . . .	17
3	EXPRESS <i>Reiner Anderl, Harald John, Christian Putter</i> . . . . .	59
4	ORM/NIAM Object-Role Modeling <i>Terry Halpin</i> . . . . .	81
5	Database Language SQL <i>Jim Melton</i> . . . . .	103
6	Petri Nets <i>Jean-Marie Proth</i> . . . . .	129
7	State Transition Diagrams <i>Jules Desharnais, Marc Frappier, Alt Mili</i> . . . . .	147
8	PIF The Process Interchange Format <i>Jintae Lee, Michael Gruninger, Yan Jin, Thomas Malone, Austin Tate, Gregg Yost</i> . . . . .	167
9	GPN Generalised Process Networks <i>Giinter Schmidt</i> . . . . .	191
10	The IDEF Family of Languages <i>Christopher Menzel, Richard J. Mayer</i> . . . . .	209
11	The CIMOSA Languages <i>Francois Vernadat</i> . . . . .	243
12	ConceptBase <i>Manfred A. Jeusfeld, Matthias Jarke, Hans W. Nissen, Martin Staudt</i> . . . . .	265
13	Conceptual Graphs <i>John F. Sowa</i> . . . . .	287
14	GRAI Grid Decisional Modeling <i>Guy Doumeingts, Bruno Vallespir, David Chen</i> . . . . .	313

## Contents

15	SOM Modeling of Business Systems <i>Otto K. Perstl, Elmar J. Sinz</i> . . . . .	339
16	Workflow Languages <i>Mathias Weske, Gottfried Vossen</i> . . . . .	359
	<b>Part Two: Software Engineering Methods for Information System Construction</b> . . . . .	381
17	Software Engineering Methods <i>Wojtek Kozaczynski</i> . . . . .	385
18	Information Engineering Methodology <i>Clive Finkelstein</i> . . . . .	405
19	Object-Oriented Software Engineering Methods <i>Brian Henderson-Sellers</i> . . . . .	429
20	Euromethod Contract Management <i>Alfred Helmerich</i> . . . . .	463
	<b>Part Three: Tools for Analysis and Design</b> . . . . .	477
21	An Integrated Enterprise Modeling Environment <i>Florence Tissot, Wes Crump</i> . . . . .	481
22	WorkParty <i>Walter Rupietta</i> . . . . .	509
23	PROPLAN <i>Günther Schuh, Thomas Siepmann, Volker Levering</i> . . . . .	529
24	ARIS <i>August-Wilhelm Scheer</i> . . . . .	541
25	Bonapart <i>Herrmann Krallmann, Gay Wood</i> . . . . .	567
26	MO <sup>2</sup> GO <i>Kai Mertins, Roland Jochem</i> . . . . .	589
27	IBM VisualAge <i>Alois Hofinger</i> . . . . .	601

	<b>Part Four: Reference Models</b> . . . . .	615
28	IAA The IBM Insurance Application Architecture <i>Norbert Dick, Ju'rgen Huschens</i> . . . . .	619
29	Reference Models of Fraunhofer DZ-SIMPROLOG <i>Markus Rabe, Kai Mertins</i> . . . . .	639
30	Configuring Business Application Systems <i>Stefan Meinhardt, Karl Popp</i> . . . . .	651
31	The SIZ Banking Data Model <i>Daniela Krahl, Hans-Bernd Kittlaus</i> . . . . .	667
32	ODP and OMA Reference Models <i>Andy Bond, Keith Duddy, Kerry Raymond</i> . . . . .	689
	<b>Part Five: Selected Topics in Integrating Infrastructures</b> . . . . .	709
33	Architectural Requirements of Commercial Products <i>Ted Goranson</i> . . . . .	711
34	Integration Infrastructures for Agile Manufacturing Systems <i>Richard Weston, Ian Coutts, Paul Clements</i> . . . . .	733
35	Distributed Processing: DCE, CORBA, and Java <i>Andy Bond, Keith Duddy, Kerry Raymond</i> . . . . .	765
36	System Integration through Agent Coordination <i>Mihai Barbuceanu, Rune Teigen</i> . . . . .	797
	<b>List of Contributors</b> . . . . .	827
	<b>Index</b> . . . . .	831