**Index**

### A
- abstract state machine (ASM) 232
- Active Server Pages (ASP) 302
- adaptability and suitability assessment 72
- agile development, defined 30
- agile development, future trends 34
- agile development improves software productivity 31
- agile methodologies 28, 29, 30, 32, 34, 35
- agile practices 32, 35
- agile principles 31
- agile requirements engineering practices 1–14
- agile software development (ASD) methodology 66
- agile software engineering 28–37
- ASM 232, 233, 237, 238
- ASP 302, 303

### B
- B domain 314
- best practices guidelines 7
- B in a MDE process 319
- B model of the level crossing 322
- bug counts 442, 443, 444, 445, 446, 447, 448

### C
- capability maturity model (CMM) 64
- capability maturity model integration (CMMI) 44
- CBO 139, 143
- CBSE 351, 360, 363
- CBSE research 360
- center nodes 283
- CK metrics, empirical literature 140
- clustering sites 406
- clusters processing costs 291
- CMM 61, 62, 63, 64, 65, 66, 69, 73, 74, 75, 76, 80, 81
- CMMI 44, 62, 63, 65, 66, 72, 79, 80, 81, 132, 133, 134, 137, 138
- combinatorial models 240
- combinatorial testing 196–208
- combinatorial testing, approaches 203
- combinatorial test suites 196, 198, 199, 201, 203
- commercial off-the-shelf (COTS) 55
- commercial off the shelf products (COTS) 124
- commonality analysis and tool support 336
- commonality analysis process 333
- commonality analysis roadmap 335
- commonality analysis, success story 338
- component-based software engineering (CBSE) 351
- component development lifecycle 354
- component lifecycles 353
- comprehensive analysis model description 132
- comprehensive model, the need 133
- comprehensive software industry analysis model (CSIAM) 128–138
- concentric continuous integration testing 58
- context of use 176
- core asset repository 125
- core assets 122
- core assets, creating, mining and managing 123
- core assets, scoping 125
- COTS 54, 55, 56, 57, 58, 59, 124, 125, 352, 353, 356, 357, 359, 362, 363

Copyright © 2010, IGI Global, distributing in print or electronic forms without written permission of IGI Global is prohibited.
Index

coupling between object classes (CBO) 143

D

data allocation 410
database fragmentation 400
database relations 283, 284, 285, 288
DBMS 396, 397, 398, 399, 401, 410, 417, 419, 422
DBMS, centralized vs. distributed 398
DDBMS 280, 281, 282, 283, 284, 285, 290, 291, 295, 296, 297, 298, 299, 300, 302, 303, 304
DDBMS metrics 417
DDBMS network performance simulation 297
DDBMS QoS 417
DDBMS QoS, evaluating 418
DDBMS tool architecture 285
DDBMS, trends in improving performances 396–422
depth of inheritance tree (DIT) 143
detrended fluctuation analysis (DFA) 441
DFA 441, 442, 444, 445, 446, 447, 448
disaster recovery improvement model 465
disaster risks level categorisation model 464
distributed database management system (DDBMS) 280
distributed relational networking database management systems (DRDBMS) 401
distributed software development (DSD) 209
distributed software development research, trends 212
distributed software development, systematic review 209–225
DIT 139, 143
DOVE 153, 155, 157, 159, 162, 163, 166, 168, 172
DRDBMS 396, 401, 406, 419, 422
DSD 209, 210, 211, 212, 213, 214, 217, 220, 221
DSD success factors 220
DSS 393, 394

E

EASE project 39, 40, 47
EAST-ADL overviews 16
Eclipse 440, 441, 442, 446, 455, 456, 457
Eclipse bugs 442
embedded automotive software, requirements engineering 15–27
empirical approach to software engineering (EASE) 40
empirical software engineering 38, 39, 40, 44, 46
engineering high-quality mobile applications 174
engine knock controller, case study 19
enterprise modeling 428
enterprise resource planning (ERP) system 86
entropy concept 144
ERP 86, 157
ERP 5 423, 424, 425, 426, 427, 428, 429, 431, 432, 434, 435, 436, 437
ERP adoption, framework 374
ERP implementation 390
ERP project management 388
ERP software selection 391
ERP system implementation, ground up 423–438
ERP system, research framework 384
ERP systems, directed basic reasearch 382–395
ERP systems for SMEs 373–381
ERP systems, performance measurement 387
evolving software, testing techniques 50
exception policies 156
extreme programming (XP) 68
extreme programming (XP), 'insert' process 4
extreme (XP) programming 2

F

federated database 397
finite state machine (FSM) 232
FireEye 199, 200, 201, 202, 206
FireEye tool 200, 201, 206
flow graphs 235
FOS-ERP 373, 374, 375, 376, 377, 378, 379, 380, 424

521
FOS-ERP and P-ERP differences 378
fragmentation algorithm 403
fragment life cycle (FLC) 403
free/open source ERP (FOS-ERP) 374
free/open source ERP systems (FOS-ERP) 424
free software 381
FSM 232, 233, 234
FSP in a MDE process 314

G

generalized enterprise reference architecture and methodology (GERAM) 374
GERAM 374, 375, 380, 424, 425, 426, 427, 428, 430, 436
GERS 463
global emergency response system (GERS) 463
global software development 49, 50, 58
global software development (GSD) 210
goal-driven metrics 39
graphical models 234
growth model 130
GSD 209, 210, 219

H

Harmony project 54
horizontal fragmentation 401
hybrid fragmentation 405

I

inconsistent traceability metrics (ITM) 110
information design 185
information system model for global emergency-response system 460–467
IPOG overview 200
ITM 110

K

key process area (KPA) 65
knowledge based best agile practices 75
knowledge flow management 217
KPA 65, 74, 75, 77

L

labeled transition system (LTS) 321

lack of cohesion of methods (LCOM) 142
LCOM 139, 142
Linux 446, 450, 452, 454, 455
Linux Kernel mailing list 446
logical database 397
LTS 313, 314, 321

M

macro-architecture design 178, 183, 184
Markov chain 231, 232, 246, 247
MBD 16
MBT, benefits and problems 228
MDA 226, 236, 241, 246, 248
MDE process 319
MeMVaTEx stereotype 20
meta-model for ontology registration 94
meta-model framework for interoperability (MFI) 92
meta-modeling 85, 88, 89, 90, 91, 98
meta-modeling technique 89
meta-modeling theory 90
metric evaluation criteria 140
metrics 102, 105, 110, 112, 115, 118, 119
MFI 92, 93, 94, 96, 100, 101
MFI overview 92
micro-architecture design 174, 185
mission reconstruction system (MRS) 51
mobile application development, methodology 179
mobile applications, definitions and characteristics 175
mobile applications, engineering view 176
mobile applications, patterns 177
mobile social web 174, 189
model-based development (MBD) 16
model based testing (MBT), tools and techniques 226–249
model based testing methods 229
model based testing tools 241
model-checker 204
model-checking domain 313
model driven architecture (MDA) 236
model driven engineering 309
model-driven exception management case study 153–173
model-driven exception management frame-
work 155
modeling domain: UML 311
modeling technique 282
modifiable-off-the-shelf (MOTS) 352
MOTS 352
MRS 51, 52, 53, 54

N
natural disasters and catastrophic failures classification 462
natural disasters in Qatar 364–371
navigation design 186
NDI 352
nearshoring 210, 211
network system delay 300
network system load 298
network topology 297, 298
nightly/daily builds 51
non-developmental item (NDI) 352
number of children (NOC) 143

O
Object Management Group (OMG) 16
object oriented database management systems (OODBMS) 398
Object-Z 229, 230, 239, 243, 246
offshoring 210, 211, 222, 224
OMG 16, 17, 27, 155
ontology, defined 88
ontology theory 85–101
OODBMS 398
OO design metrics 139, 142, 148
OO-specific metrics 142
open source 180
open source software 381
open-source software systems 439–459
OSS systems, predicting bugs 440

P
pairwise testing 198, 199, 207
partial-multidatabase 397
pattern-oriented mobile web engineering methodology (POMWEM) 175
P-ERP 373, 374, 375, 376, 377, 378, 379, 380
P-ERP adoption 376
Petrinets 234
POMWEM 175, 179, 180, 189, 190
POMWEM extensions 189
POMWEM in perspective 189
power law 444, 445, 458
presentation design 186
primary studies 211, 212, 213, 214, 215, 216, 220
product lines, beginning 342–350
product line, shift towards 337
project Tracker case study 159
proprietary ERP (P-ERP) 373
purchaser-centered 38, 39, 44, 46
purchaser-centered software engineering 38–48

Q
query processing 417

R
RAD 351
railway level crossing example, case study 319
rapid application development (RAD). 351
rapid productivity and quality 341–350
Rationales 105, 109, 111
recovery management information system, model 366
requirements engineering 15–27
requirements management 102, 104, 112, 388
requirements traceability 102–120
response for a class (RFC) 142
RFC 139, 142
role of IT managers 364–371

S
SaaS 376, 378, 379, 380, 381
safety-critical software systems 305
safety integrity level (SIL) 307
safe UML 308
SCM 389, 393, 395
search design 186
segmentation 282, 283, 288
segmentation algorithm 403
semantic interoperability enabler 85–101
Index

semantic interoperation 85, 88, 89, 93, 94, 95
Shannon’s entropy properties 145
Shannon’s entropy relationship 146
small and medium-sized enterprises (SMEs) 373
SMEs 373, 374, 378, 380, 381
SMM 61, 63, 69, 70, 71, 72, 73, 74, 78, 79
SMM, software process improvement roadmap 71
SMM (Story card maturity model) 61
smoke testing loop 58
smoke tests 53
software artifacts 105, 116, 119
software as a service (SaaS) 381
software components 351–363
software components, characteristics 353
software component usage, implications 356
software factories 209
software metrics evaluation based on entropy 139–151
software productivity 30
software product line 331–340
software product lines 121–127
software product lines, defining 342–350
software SIL (SSIL) 307
software tag 40, 41, 42, 44, 46, 47
software testing 227, 228, 231, 232, 233, 234, 235, 241, 249
software traceability and accountability for global software engineering (STAGE) 38
SSIL 307
STAGE 38, 39, 40, 41, 42, 44, 46, 48
stakeholder 174, 179, 181, 182
story card process improvement framework 61–84
story cards based requirements engineering process assessment method 73
story card structure 7
success factors of DSD 220
systematic reviews, importance of 211
system modeling language 17

T
testing techniques for evolving software 50
testing technologies for globalization of software engineering 49–60
theory of ontology and meta-modeling 88
traceability classifications 106
traceability links 108, 110, 115, 116, 118, 120
traceability metrics 110
traceability models 113
traceability techniques 107
transactions definition 284
transactions processing costs 285
transparency 38, 39, 42
t-way combinatorial testing, algorithms 202

U
ubiquitous, networked software 45
UML in a MDE process 313
undefined traceability metrics (UTM) 110
unfederated database 397
unified modeling language (UML) 236
UTM 110

V
valuing customer collaboration, improving productivity 33
valuing individuals and interactions, improving productivity 32
valuing response to change, improving productivity 33
valuing working software, improving productivity 32
vertical fragmentation 400
v-model 19, 20, 23, 24
Index

W
weighted methods per class metric (WMC-CK metric) 139
weighted methods per class (WMC) 142
WMC 139, 142, 144, 145, 147, 148, 149
WMC-CK metric 139

X
XP 61, 62, 68, 81, 83

Z
Z specification language 229