Index

Symbols
3-D virtual world environment capabilities in education, gaps in 303
3-D virtual world environments, educational applications of 294
3-D virtual world environments in education, increased engagement 298
3-D virtual worlds, benefits of utilizing in education 295
3-D virtual worlds in education 292
3-D virtual worlds in education, enhanced collaboration and communication capabilities 298

A
action assertion 31
actions, customizing 257
active applications 250
active behaviors in applications, supporting 252
active database management systems 266
active middleware systems 267
active rules, specifying the 262
adaptive object model (AOM) 26
ADO-M (application-based domain modeling) 351
ADOM-UML, application layer in 358
ADOM-UML, dialect of ADOM 351
ADOM-UML, domain layer in 354
ADOM-UML, domain models guidance in 355
ADOM-UML, experimenting with 367
ADOM-UML, literature review 351
ADOM-UML, supporting with a CASE Tool 366
ADOM-UML, validating application models against domain models in 359
aggregation 208, 217
agile network, challenges are faced in ensuring 338
AK scheme, assumptions used in 3
alternative space for instruction and tasks, in 3-D virtual worlds in education 299
analysis phase, in BROOD 34
Apache Web server 235
application-based domain modeling (ADOM) 350, 351, 352
application-based domain modeling (ADOM) approach 351, 353, 370
application front end 179
application model guiding 366
application model validation 366
application programming interface (API) 179
approximate query answering 189
architecture development, emerging conflicts and problems 91
architecture, in systems development 84
ational Center for Supercomputer Applications (NCSA) 235
attribute, deletion and addition 13

B
BROCOM 25
BROOD approach 23
BROOD approach, motivation for the 28
BROOD (business rules-driven object oriented design) 24
BROOD metamodel 29, 45
BROOD process 34
BROOD support tool 43
business network of OSS firms, cooperating to deliver the ‘whole product’ 338
business rule beans (BRBeans) 27
business rules-driven object oriented design (BROOD) 24
Business Rules Group (BRG), 25
business rules, in conceptual modeling 25
business rules, in evolvable software evolution 26
business rules modelling 24

C
cardinality relationship 207
CASE (computer-aided software engineering) 106
CASE tool 350
CASE tools, traditional 119
changing markets-changing organization 89
class diagrams 272
class level, analysis on 140
cognitive load theory (CLT) 314
cognitive theory of multimedia learning (CTML) 314, 315
collaboration diagram 282
combination-based scheme 12
components-off-the-shelf (COTS) 135
comprehensive e-business system, architectural development process of 82
computation and inference rules, in BROOD 39
computer-aided software engineering (CASE) 106
conceptual modeling, comparative research in 311
conditions, customizing 257
confluence 265
constraint rules 30
content management systems (CMS) 335
controlled opportunism 86
coordination contract method 26
CORBA-based event-condition-action (ECA) 267
CORBA (common object request broker architecture) 176
covariates 321
CRM, and the threat of FOSS disruption 239
CRM application 225
customer relationship management (CRM) 226

D
database management systems (DBMSs) 250
Database Protection Act 1
database watermarking techniques 1
data mining, categories of resources of 376
data mining, ontology for 376
data mining, use of ontology for 378
data mining, with incomplete data 375
data mining with incomplete data, project of ontology for 381
data mining with incomplete data, unique resources in 378
data semantics from XML documents, determination of 209
data triangulation 89
depth in inheritance tree (DIT) 139
derivation rule 31
design phase, in BROOD 36
development context, changes and their effects in the 89
distributed software development 53
document type definition (DTD) 204
domain model creation 366
domain-specific language (DSL) 111
domain-specific modeling (DSM) 105, 106, 110
DSM (domain-specific modeling) 106
DTD graph, extended 206
DTD graph, with data semantics 204
duplicate problem 15
Dynapi 72
DynAPI 75

E
e-business development methods, technical requirements of 95
e-business system, observed objectives for the 90
e-business systems development methodology, derived requirements for 93
ECA (event-condition-action) 25, 251
Eclipse 236
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics of Technology Standards perspective</td>
</tr>
<tr>
<td>element-based scheme</td>
</tr>
<tr>
<td>element reduction</td>
</tr>
<tr>
<td>element unification</td>
</tr>
<tr>
<td>English as a second language (ESL)</td>
</tr>
<tr>
<td>enhanced data mining, instruments for</td>
</tr>
<tr>
<td>enterprise architect (EA)</td>
</tr>
<tr>
<td>enterprise resource planning (ERP)</td>
</tr>
<tr>
<td>enterprise service bus (ESB)</td>
</tr>
<tr>
<td>entity-relationship diagrams</td>
</tr>
<tr>
<td>entity relationship (ER)</td>
</tr>
<tr>
<td>ER diagrams</td>
</tr>
<tr>
<td>error-correcting code (ECC)</td>
</tr>
<tr>
<td>evaluation framework</td>
</tr>
<tr>
<td>event-condition-action (ECA)</td>
</tr>
<tr>
<td>events, customizing</td>
</tr>
<tr>
<td>evolution phase, in BROOD</td>
</tr>
<tr>
<td>execution cost (EC)</td>
</tr>
<tr>
<td>Ex Post prediction, FOSS case studies</td>
</tr>
<tr>
<td>extended DTD graph, application of</td>
</tr>
<tr>
<td>extensible markup language (XML)</td>
</tr>
<tr>
<td>extraneous cognitive load</td>
</tr>
<tr>
<td><strong>F</strong></td>
</tr>
<tr>
<td>false hit</td>
</tr>
<tr>
<td>false miss</td>
</tr>
<tr>
<td>FAR (FORO active rules)</td>
</tr>
<tr>
<td>FAR system</td>
</tr>
<tr>
<td>FLOSS, conceptual development</td>
</tr>
<tr>
<td>FLOSS, data analysis approach</td>
</tr>
<tr>
<td>FLOSS development, coordination in</td>
</tr>
<tr>
<td>FLOSS (free/libre open source software)</td>
</tr>
<tr>
<td>FLOSS phenomenon, a literature overview</td>
</tr>
<tr>
<td>FLOSS phenomenon, background of</td>
</tr>
<tr>
<td>FLOSS projects, research methodology</td>
</tr>
<tr>
<td>FOSS (free and open source software)</td>
</tr>
<tr>
<td>FOSS, predicting disruption by</td>
</tr>
<tr>
<td>fragile watermarking</td>
</tr>
<tr>
<td>free and open source software (FOSS)</td>
</tr>
<tr>
<td>FreeBSD</td>
</tr>
<tr>
<td>free/libre open source software (FLOSS)</td>
</tr>
<tr>
<td>generic modeling environment (GME)</td>
</tr>
<tr>
<td>germane cognitive load</td>
</tr>
<tr>
<td>GNOME</td>
</tr>
<tr>
<td><strong>H</strong></td>
</tr>
<tr>
<td>hard-coded meta-metamodel size</td>
</tr>
<tr>
<td>hierarchical data abstraction and distance metric</td>
</tr>
<tr>
<td>hierarchical quantified data abstraction</td>
</tr>
<tr>
<td>hierarchical quantified data abstraction (HQK)</td>
</tr>
<tr>
<td>hierarchical quantified knowledge (HQK)</td>
</tr>
<tr>
<td>historical inertia</td>
</tr>
<tr>
<td>home climate control (HCC)</td>
</tr>
<tr>
<td>HTTP (hypertext transfer protocol)</td>
</tr>
<tr>
<td>HTTPS (HTTP over secure socket layer)</td>
</tr>
<tr>
<td><strong>I</strong></td>
</tr>
<tr>
<td>IDEA method</td>
</tr>
<tr>
<td>ideology vs. pragmatism</td>
</tr>
<tr>
<td>IDREF(S) attribute</td>
</tr>
<tr>
<td>ID type attribute</td>
</tr>
<tr>
<td>information systems development (ISD)</td>
</tr>
<tr>
<td>internal rate of return (IRR)</td>
</tr>
<tr>
<td>intrinsic cognitive load</td>
</tr>
<tr>
<td>invertibility</td>
</tr>
<tr>
<td><strong>J</strong></td>
</tr>
<tr>
<td>J2EE standard</td>
</tr>
<tr>
<td><strong>K</strong></td>
</tr>
<tr>
<td>KDE</td>
</tr>
<tr>
<td>Kicq</td>
</tr>
<tr>
<td>knowledge management</td>
</tr>
<tr>
<td><strong>L</strong></td>
</tr>
<tr>
<td>language and library metaphors</td>
</tr>
<tr>
<td>language context, requirements from the</td>
</tr>
<tr>
<td>level-compaction technique</td>
</tr>
<tr>
<td>lines-of-code (LOCs)</td>
</tr>
<tr>
<td>logical levels, number of the user can manipulate</td>
</tr>
<tr>
<td>Gaim</td>
</tr>
<tr>
<td>Index</td>
</tr>
<tr>
<td>-------</td>
</tr>
</tbody>
</table>

**M**

McCabe’s definition of cyclomatic complexity (VG) 139  
MDE-based software development tools 105  
MDE (model-driven engineering) 106  
MDE tools 105, 118  
MDE tools, evaluation of 114  
MediNET 31, 37, 40  
MediNet application 30, 38  
MediNET software design 46  
MetaCase’s MetaEdit+ 106  
MetaEdit+ 120  
metamodeling 111  
metamodel specification, support for 116  
metaobject facility (MOF) 106, 108  
MetaSketch 119  
Microsoft’s DSL tools 120  
Microsoft’s DSL Tools (MSDSLTools) 106  
MidOn 383, 385  
MidOn, mining incomplete data based on the ontology 383  
mindful innovation 162  
model-driven architecture (MDA) 109  
model-driven development (MDD) 107  
model-driven engineering 107  
model-driven engineering (MDE) 106  
model matching 366  
model transformation framework 116  
MOF (MetaObject Facility) 106  
multiple bits, embedding 7  
multiple-bits scheme, robustness analysis for 7  
multiple-bits watermarking, embedding and detecting 7  
multiple watermarks, extension to 18  
MySQL relational database 236

**O**

object constraint language (OCL) 26  
Object Management Group (OMG) 107, 177  
object-oriented analysis and design (OOAD) 271  
object-oriented programming languages (OOPLs) 112  
object-oriented software engineering 271  
Object Technology International (OTI) 236  
observer triangulation 89  
OES, events in 255  
OES rule engine 255  
OES, security in 265  
OES system 254  
OES system, customizing the 257  
OMG’s approach, to MDE 107  
ontology, description of 376  
ontology, for data mining 375  
ontology for data mining, construction of 377  
OpenChimera and the rule engine, customizing 259  
OpenChimera conditions, syntax of 257  
OpenChimera language 254  
OpenOffice 237  
open source adoption and disruption, a dynamic model of 232  
open source movement, common ideology 160  
open source production, review of 230  
open source production, two requirements for 230  
open source server software, adoption of 164  
open source software (OSS) 133, 160  
open source software person month (OSSPM) 138  
organization context, requirements from the Organization for the Advancement of Structured Information Standards (OASIS) 177  
OSS ideology 161  
OSS network, how does it affect the business models of participant organisation 338  
OSS network model 341  
OSS networks 335
Index

P
partial participation 207
peer debriefing and support 89
Phpmyadmin 74
pirated copying 1
pirated data 1
platform-independent model (PIM) 109
platform-specific model (PSM) 109
previous domain knowledge (PDK) 323
process control systems (PCS) 356
processes, as theories 55
processes, coordination of 55
process metrics, description of 136
product metrics, description of 138
public watermarking 6

Q
query relaxation 194
query relaxation algorithm 195
query relaxation example 197
query-views-transformations (QVT) 108

R
reduced model 362
remote procedure call (RPC) 180
resource description framework (RDF) 376
resources, relations between the 377
return on investment (ROI) 176
reverse engineering methodology 210
robust watermarking 3
robust watermarking scheme for embedding a multiple-bits watermark 1
RUBRIC project 25
rule engine, unbundling the 263
rule management elements 32
rule phrase, in BROOD 32

S
Second Life 297, 305
Second Life education (SLED) listserv 302
selective coding 86
service bus (SB) 178
service-oriented architecture 178
service-oriented architecture, background and history of 177
service-oriented architecture definitions 178
service-oriented architecture (SOA) 176, 178
service-oriented computing (SOC) 176
service repository 179
small-to-medium size businesses (SMB) 240
SMTP (simple mail transfer protocol) 180
SOA and SOC success, measuring 185
SOA development or deployment patterns, Blueprints and the meta-approach 183
SOA framework 181
SOAP (simple object access protocol) 176
SOA, research-based perspectives on 184
social network metamodel 121
software development, coordination in 57
software process engineering metamodel (SPEM) 34
s-stage improvement, mechanisms for 242
Stallman, Richard M. 160
static pattern specification (SPS) 352
SugarCRM 225, 227, 242, 244
supply chain management (SCM) 226
supported standard exchange formats 115

T
technology adoption, innovation and 227
technology, adoption of 226
technology, disruptive 226
termination, of active system 264
theoretical sampling 86
theoretical saturation 86
theoretical sensitivity 86
three-dimensional (3-D) virtual world technology 291
three-dimensional virtual world environments 291
traceability, between requirements and system designs 23
triangulation 89
tuple, deletion and insertion 10

U
UDDI (universal description, discovery, and integration) 176
UML diagram 271
UML diagram, overall usage 275
UML diagrams, information provided by 279
Index

UML diagrams, role of 280
UML diagram usage patterns 277
UML (unified modeling language) 106
UML usage, organizational 278
unary relation 219
unified architecture 92
unified modeling language (UML) 34, 106, 107, 271
University of California-Irvine KDD Archive 16
description diagrams 272
description modeling 273
description case narratives 272
V
value modification 9
verifiable model 362
virtual-primary-key-based schemes, robust analysis for 12
visualization for difficult content, in 3-D virtual worlds in education 299

W
water level control (WLC) 358
watermaking, without primary key 11
Web services 176
Web services management layer (WSML) 185
weighted methods per class (WMC) 139
workflow management systems 267
workflow management systems (WfMSs) 250

X
XML documents, referential integrity in 205
XML elements, implementation of inheritance among 209
XML (extensible markup language) 4, 108, 176
XML, implementations of various data semantics in 210
XML schema, determination of 208

Z
Zea Partners 344
Zea Partners network 340
Zope Europe Association (ZEA) 339