

Index

Symbols

- < > (angle brackets), 31, 36
- * (asterisk), 24, 42
- :
- (colon), 59
- / (forward slash), 31–32, 64
- () (parentheses), 42, 44
- + (plus sign), 42
- # (pound sign), 87
- ? (question mark), 24, 36
- [] (square brackets), 64–65
- | (vertical bar), 42, 44

A

- Abstraction frameworks, 157
- Accenture, 134
- Accounting, 53–62, 78–81
- Acrobat (Adobe), 160
- address attribute, 44
- Address element, 38, 62–63, 91, 80
- Addresses element, 47, 90
- AddressesType element, 90–91
- Address information, 38–39, 44, 62–65, 80, 90–84
- addressType attribute, 38, 48
- addType attribute, 63–65
- Administrators, 186–187, 196
- Adobe Systems
 - Acrobat, 160
 - PostScript, 78, 79, 274
- Adoption costs, 228
- Aggregation, 62, 244, 250–255
- Altova, 172
- Angle brackets (), 31, 36
- Antenna House, 148
- Apache Software Foundation, 147, 148
- Apache Web servers, 160
- APIs (application programming interfaces), 143–146, 196, 199–200, 202. *See also* Applications
 - basic description of, 267
 - enterprise applications and, 238
 - Java API for XML Messaging (JAXM), 157
 - Java API for XML Processing (JAXP), 157
 - SAX (Simple API for XML), 144–145, 275
- Application(s). *See also* APIs (application programming interfaces)
 - developers, 186, 189, 194, 195, 202
 - diversity of, 19
 - integration, 216, 233–237
 - “killer,” 135
 - logic, 144–145
 - processing, implementing, 191–192
 - servers, 18, 141, 151–152, 155–158, 164, 172–173
 - services, 244, 255–259
- Arbortext, 167, 168, 171
- Architects, 194–195, 205–206. *See also* Architecture
- Architecture, 74–75, 140–141. *See also* Architects
 - Common Object Request Broker (CORBA), 105
 - document-centric, 14
 - Java, for XML Binding (JAXB), 162
 - messaging, 109–115, 129
- Ariba, 132
- ASN.1 format, 202
- Asterisk (*), 24, 421
- Astoria (Chrystal), 150, 171

Asynchronous communication

- model, 110–112, 118

- ATTLIST keyword, 43–44

- <ATTLIST> tag, 43–44

- Attribute(s). *See also* Attributes

- (listed by name)

- additional context provided by, 34–35

- basic description of, 33–35, 267

- case sensitivity of, 34

- declarations, 43–45

- default values for, 44–45, 48

- names, 33–34, 44, 267

- namespaces and, 59

- rules, defining, 43–45

- specifications, 33–34, 44, 267

- values, 33–34, 267

- XLink and, 85, 86, 87

- Attributes (listed by name). *See also*

- Attributes

- address attribute, 44

- addressType attribute, 38, 48

- addType attribute, 63–65

- cardType attribute, 48, 51

- category attribute, 48

- currency attribute, 48

- dataType attribute, 35

- dbType attribute, 34–35, 44

- href attribute, 82, 85, 87, 270

- ID attribute, 39, 44, 48

- IDREF attribute, 44

- #IMPLIED attribute, 44–45

- lineOrder attribute, 39, 48, 91–92

- location attribute, 35

- processContents attribute, 94

- #REQUIRED attribute, 44–45

- xmlns attribute, 59, 60

- Authentication, 113

- <author> tag, 17

- Authoring tools, 141, 149–150,

- 160, 166–167

- Authorizations, multiple, 48

- Automated information processing,

- problem of, 6–7, 9

B

- Back-end systems, 157, 176, 194

- Backward compatibility, 82–83

- B-Bop Xfinity Designer, 163

- BEA, 134, 158, 164, 165

- Benefit-feature-design tables, 211

- Best-of-breed approach, 164

- Billing information, 48, 51, 62–65, 80, 90–94, 109

- BillShip element, 90

- Binding

- HTTP and, 107–108, 113, 116, 118

- SOAP and, 121–122, 133

- WSDL and, 131

- Bioinformatics, 88

- BizTalk, 103, 115, 121–124, 133, 231–232

- endpoint tags, 121–122

- Framework, 121–124

- Server, 121, 123, 124

- Books on tape format, 77, 82

- BPML (Business Process Management Language), 103, 137–138, 220, 232

- BPSS (Business Process Schema Specification), 127–128, 138

- Breeze Factor, 162

- Breeze XML Studio, 162

- Bristol Technology, 162

- BroadVision Publishing Center, 150, 171

- Broken links, 28

- Brooks, Frederick P., 205

- Browser(s)

- compatibility with major, 88

- development process and, 182, 191, 195

- enterprise applications and, 223, 228–229

- information exchange problems and, 8

- metadata and, 13–14

- open source, 87–88

- plug-ins, 195
 - servers and, 152
 - stylesheets and, 182
 - vendor applications and, 247, 253, 256–257, 264
 - XLink and, 87–88
- BTP (Business Transaction Protocol), 98–99
- Budgeting, 177
- Business. *See also* Business documents; Business Processes; Business-to-business commerce
- analysts, 194
 - cards, 22–24, 30–31, 40–41
 - Collaboration, 125–126
 - concepts, standard definitions of, 6–7
 - focus, 210–211
 - logic, 151
 - modeling, 125, 137, 189, 267
 - Transaction Protocol (BTP), 98–99
- Business documents. *See also* Business; Business Processes; Business-to-business commerce
- basic description of, 175
 - development process and, 175–176, 187–196, 204
 - XML messaging and, 104–105, 108, 110–115, 125, 137
- Business Process(es). *See also* Business documents; Business-to-business commerce
- described, 125
 - Management Language (BPML), 103, 137–138, 220, 232
 - Schema Specification (BPSS), 127–128, 138
 - XML messaging and, 126–128, 137–138
- Business-to-business commerce, 9–10, 14–15. *See also* Business documents; Business Processes
- coordinating, difficulties involved with, 10
 - development process and, 210–212
 - enterprise applications and, 231, 232, 238, 240
 - messaging frameworks and, 157, 158
 - Web services and, 115
- Business-to-consumer commerce, 9, 15. *See also* Business documents; Business Processes; Business-to-business commerce
- Business Transactions, 125–126
- ## C
- C (high-level language), 202
- C++ (high-level language), 147–148, 162, 186, 196, 202, 205
- Caches, 240–241. *See also* Memory
- CAD (computer-aided design), 122
- CapeStudio (CapeClear), 166
- Card element, 48, 51
- Cardinality rules, 41–42, 91
- cardType attribute, 48, 51
- Cataloging, 104, 122–123, 141, 223–224
- category attribute, 48
- CDATA type specification, 44, 267
- CD-RW (CD-Rewritable) drives, 5–6, 9
- Chain integration, 70
- Characters, special. *See also* Symbols
- encoding rules with, 41–42
 - listing of, in DTDs, 24
- Chrystal, 150, 171
- city element, 80
- Client integrator, 195
- CMS (content management system), 149–151, 168–173. *See also* Content
- enterprise applications and, 217–219, 220
 - vendor applications and, 246

- Collections, 47–48, 63
 - Colon (:), 59
 - COM (Component Object Model), 105
 - Comments, 36–37
 - Communications models
 - asynchronous model, 110–112, 118
 - synchronous model, 110–112, 118–119
 - Community services, 15
 - Components
 - content-management, 168–171
 - content-oriented, 166–171
 - Core, 127–128
 - data-oriented, 161–166
 - distributed application, 164–166
 - fundamental, 139–140, 142–148
 - Conceptual model, 24–33
 - Configuration and logging application, 244, 259–262
 - Connectivity
 - challenges of, 5–7
 - key roll of, 1–2
 - shared context standards and, 15
 - Contact databases, 32–35. *See also* Databases
 - Content. *See also* CMS (content management system)
 - defining, 24, 25
 - documents, 175–176, 179–187, 204
 - elements as units of, 29–30
 - entities as fragments of, 49–50
 - management, 141, 168–171, 219
 - models, described, 30–31, 41, 268
 - oriented components, 166–171
 - path, 141
 - provision application, 244, 259–262
 - separation of, from relationships, 24, 28–29, 85
 - servers, 151–152, 158–161
 - Content Provisioning Components, 150
 - Content Suite (Vignette), 150, 171
 - Content Syndication Server (Vignette), 161
 - Contextual information, 108
 - Contracts, shared context standards as, 14
 - Conversion code, 89
 - Cooperation, staged, 212–213
 - CORBA (Common Object Request Broker Architecture), 105
 - Core Components, 127–128. *See also* Components
 - country element, 80
 - CPA (Collaboration Protocol Agreement), 127
 - CPP (Collaboration Protocol Profiles), 127
 - Credit-card information, 48, 51, 64–65
 - Cross-referencing technology, 83. *See also* XLink (XML Linking Language)
 - Cryptographic signatures, 98. *See also* Encryption
 - CSS (Cascading Style Sheets), 75
 - currency attribute, 48
 - Currency information, 48, 71–72
 - Customer element, 60
 - Customer service, 10–11
 - cXML (commerce eXtensible Markup Language), 129
- D**
- Data. *See also* Metadata
 - content model, 30–31, 41
 - conversion, 89
 - documents, 175–176, 197–202
 - formats, 39–40, 70–71, 74, 94
 - integration, 186, 195–196, 216, 233–237
 - servers, 149, 151–155
 - subsets of, need for, 62

- Database(s). *See also* DBMSs (database management systems); Tables
- access problem, 10–11
 - attributes and, 34, 43–45
 - contact, 32–35
 - data models, 11
 - design of, 11
 - development of, to store XML data, 18
 - ensuring compatibility with, 49
 - metadata and, 13–14
 - servers and, 153–161
 - shared context standards and, 15
 - tree structure for, 32–33
 - XML Schema and, 89
 - XML software infrastructure and, 147–148, 153–161
- Database element, 43, 44
- dataType attribute, 35
- Datebooks, electronic, 2
- DBMSs (database management systems), 89, 238. *See also* Databases
- development process and, 192–193, 196
 - vendor applications and, 259
 - XML software infrastructure and, 149–155, 158
- dbType attribute, 34–35, 44
- Debugging, 197–198, 264
- Default values
- for attributes, 44–45, 48
 - for namespaces, 59–60
- Delivery receipts, 122
- Deployment management, 170
- Description element, 63–64
- Design
- phase, 39, 178
 - tools, 141, 171–172
- Development focus, 210–211
- DevelopMentor, 116
- Development process
- basic description of, 175–213
 - enterprise applications and, 219–220, 224–225, 230–231, 236, 239–240
 - IDEs and, 161–162, 165, 172, 271
 - staffing and, 175–213
 - staged cooperation and, 212–213
 - vendor applications and, 247–249, 253–254, 257–258, 264–265
- DIME (Direct Internet Message Encapsulation), 134
- DiscountPolicy element, 47–48
- Distributed
- application components, 164–166
 - collaboration, 160
 - computing, XML messaging and, 101–138
 - objects, 13, 101–102
 - protocols application, 244, 262–265
- DocSoft, 159
- <!DOCTYPE> tag, 36
- Document(s). *See also* Business documents; Document life cycle; DTDs (document type definitions); XML documents
- authors, 186
 - centric architecture, 14
 - content, 175–176, 179–187, 204
 - development process and, 175–176, 187–196, 204
 - elements, 30, 268
 - management, implementing, 182
 - presentation, emphasis of HTML and, 29
 - relationships among, importance of, 28
 - separating content from relationships and, 24, 28–29, 85
 - XML messaging and, 104–105, 108, 110–115, 125, 137
- Document life cycle
- enterprise applications and, 220, 226, 232–233, 237, 240–241

Document life cycle (*cont.*)
 vendor applications and, 249,
 254–255, 258–259, 261–262,
 265

Documentum4i, 150, 171

DOM (Document Object Model),
 143, 268

Domain standards, 36, 53–56

DTDs (document type definitions),
 17, 27

 attributes and, 38–39, 48

 basic description of, 39–49, 268

 complexity of, 48–49

 constraint of document structure
 by, 23–24

 definition of attribute rules by,
 43–45

 definition of element structure
 by, 40–42

 drawbacks of, 88–89

 entities and, 49–51

 example, 45–49

 extensibility of, 47–48, 89

 power of, 45

 reuse of, 89

 XML Schema and, 88–89

 XML software infrastructure and,
 144, 147, 154, 162–163,
 167–171

 XML standard and, 21–22

 XSL and, 77

 XSLT and, 71–73

DynaBase (Red Bridge Interactive),
 150, 171

E

EAI applications, 212

ebXML, 103, 115, 133, 231–232

 basic description of, 124–129

 BPML and, 137–138

 business model, 125–127

 components, 127–128

 framework, 125

 registry, 126, 127

E-commerce. *See also* Business-to-
 business commerce; Business-
 to-consumer commerce

 described, 9–10

 the information exchange prob-
 lem and, 9–10

 namespaces and, 62

 shared context standards and, 15

EDI (electronic data interchange),
 101–102, 125, 129

EDS (electronic software distribu-
 tion), 197

80-20 rule, 95

Electric XML+, 162

Electronic

 book format, 77, 82

 date books, 2

Element(s). *See also* Elements (listed
 by name)

 basic description of, 23, 29–33,
 268

 content, 26, 29–31, 268

 declarations, 41, 268

 grouping, 42

 hierarchy of, 23, 26–28

 listing of, in DTDs, 24

 maximum number of, constraints
 on, 41–42, 91

 names, 29, 33, 34, 269

 namespaces and, 59

 nested, 32

 non-empty, 31–32

 overlapping, 32

 structure of, definition of, in
 DTDs, 40–42

 syntax rules and, 32

 wrapping collections in, 47–48

Element content model, 30, 41

<ElementName> tag, 31–32

Elements (listed by name). *See also*
 Elements

 Address element, 38, 62–63, 91, 80

 Addresses element, 47, 90

 AddressesType element, 90–91

- BillShip element, 90
 - Card element, 48, 51
 - city element, 80
 - country element, 80
 - Customer element, 60
 - Database element, 43, 44
 - Description element, 63–64
 - DiscountPolicy element, 47–48
 - firstname element, 80
 - LineItem element, 39, 47–48, 64
 - Order element, 47
 - OrderTracking element, 86–87
 - Payment element, 47, 48
 - Postal element, 80, 92, 93
 - state element, 80
 - Street element, 39, 80
 - UKPostal element, 93
 - USPostal element, 93
 - <ELEMENT> tag, 40–45, 48
 - E-mail. *See also* XML Messaging
 - attachments, 123
 - ebXML and, 128
 - enterprise applications and, 229
 - MIME types, 36, 108, 123, 134, 272
 - routing, 122
 - S/MIME and, 123
 - Empty content model, 30, 41
 - Encryption, 98, 108
 - Endpoint data, 121–122
 - End tags, 29, 31–32
 - Enterprise applications, 140–141, 215–241
 - Entities
 - basic description of, 49–51, 269
 - names of, 49–50, 269
 - types of, 49–51
 - <!ENTITY> tag, 49–50
 - Epic
 - E-Content Engine, 171
 - Editor, 167, 168
 - Error(s)
 - debugging, 197–198, 264
 - HTTP, 28
 - Event-based processors, 142, 144–146
 - eXactML, 162
 - eXcelon, 155, 163, 168
 - Execution phase, 39
 - Extended links, 85–88, 269
 - extend XML (DocSoft), 159
 - eXtensible Information Server (eXcelon), 155
- F**
- Feature
 - creep, 205
 - standards, 54–56, 61, 68
 - Feedback, 1, 193, 212
 - File systems
 - location of DTDs in, 36
 - storage systems and, 148–151
 - Filenames, of DTDs, 36
 - Finance industry, 55–56, 70
 - firstname element, 80
 - #FIXED keyword, 44–45
 - Flexible content provision
 - application, 244–249, 259
 - Flow language, 103
 - FLWR (FOR, LET, WHERE, RETURN) expression, 66
 - Fonts, 29, 77, 80
 - tag, 29
 - Footers, 80–81
 - Footprint solutions, 166
 - FOR clause, 66, 67
 - Format designer, 201–202
 - Formatting object tree, 79, 269
 - Forward slash (/), 31–32, 64
 - Front-end processing, 183, 190–191
 - FTP (File Transfer Protocol), 1, 104, 270
 - Fujitsu, 148
 - Fulfillment, 53–62, 78–81, 235. *See also* Orders
 - Fundamental components, 139–140, 142–148

G

Gateways, 113–114, 256–257
GET method, 108
GetStatusReponse function, 118
“Glue” code, 135
GLUE (The Mind Electric), 166
GoXML Search (XML Global), 159

H

<H1> tag, 29
Hardware
 categorization of, at online stores, 5–6, 9
 CD-RW (CD-Rewritable) drives, 5–6, 9
 network, 19
 orders for, creating, 35–39
 routers, 19
Headers, 36, 80–81, 119–121, 133
Hewlett-Packard, 134
Hierarchy
 constraints on, 27
 as a powerful organizational strategy, 24
 processors and, 142–143
 the separation of content from relationships and, 28–29
 of tagged data, 24
 use of, to relate elements, 23, 26–28
 XPath and, 62–63
Home search service, 8, 13–15
href attribute, 82, 85, 87, 270
HTML (HyperText Markup Language)
 basic description of, 270
 data exchange problems and, 8
 emphasis of, on document presentation, 29
 form layout, 98–99
 href syntax, 82, 85, 87, 270
 information analysis and, 8
 links, backward compatibility with, 82–83

SGML and, 16
shortcomings of, 8
syntax, similarity of XML to, 17
transforming XML into, 74
vendor applications and, 245
XHTML and, 74
XLink and, 88
XML conceptual model and, 24
XML software infrastructure and, 158, 168
XSLT and, comparison of, 76
HTTP (HyperText Transfer Protocol), 160, 265
 200 Return response, 118, 270
 “404-Object Not Found” errors, 28
 basic description of, 1, 270
 binding, 107–108, 113, 116, 118
 GET method, 108
 POST method, 108, 116, 118, 270
 Secure (HTTPS), 108, 133
 SOAP and, 116
 tunneling, 264, 270
 XML messaging and, 107–108

I

IBM (International Business Machines), 132–134, 136, 158, 163, 165, 207
 XSL Stylesheet Editor, 168
 SGML and, 16
 WebServices, 164
ICE (Information and Content Exchange), 160–161, 271
ID attribute, 39, 44, 48
IDEs (integrated development environments), 161–162, 165, 172, 271
IDREF attribute, 44
ID type specification, 44
IETF (Internet Engineering Task Force), 160, 271, 272
IIS (Internet Information Services), 160
Implementation phase, 178

- #IMPLIED attribute, 44–45
 - Indentation, 77
 - Induslogic, 163
 - Information. *See also* Data;
Information exchange
 - address, 38–39, 44, 62–65, 80, 90–84
 - aggregation, 62, 244, 250–255
 - billing, 48, 51, 62–65, 80, 90–94, 109
 - contextual, 108
 - credit-card, 48, 51, 64–65
 - currency, 48, 71–72
 - designers, 185
 - engineering, 189, 271
 - food chain, 252–253
 - invoice, 85–86, 104, 109, 128, 188
 - processing, automated, problem of, 6–7, 9
 - shipping, 70, 80, 86, 90–94, 109, 116–118, 128, 130
 - Information exchange. *See also* Information
 - data formats for, 39–40, 70–71, 74, 94
 - convergence of, 7–13
 - metadata and, 13–14
 - shared context standards and, 14–15
 - spontaneous, problem of, 7
 - XML messaging and, 102–103
 - Infrastructure standards, 54–55, 96–99
 - Integration Broker (Mercator), 163
 - Integration Engine (Data Junction), 163
 - Integration tools, 163–165
 - Intel, 134
 - International Business Machines.
See IBM (International Business Machines)
 - Internet. *See also* Paradigms
 - basic description of, 271
 - crisis, 1–19
 - software paradigm, 21–22
 - standardized connectivity
 - delivered by, 1
 - Interoperability, 89, 94
 - formats, 55–56
 - Web services and, 114, 132–133
 - XML messaging and, 102
 - Interwoven, 150, 161, 171
 - Intranets, 2, 184, 271
 - Invoice information, 85–86, 104, 109, 128, 188
 - Ipedo, 151
 - ISO (International Organization for Standardization), 16, 277
 - IXIASOFT, 151
- J**
- Java, 147, 148, 186, 196, 202
 - API for XML Messaging (JAXM), 157
 - API for XML Processing (JAXP), 157
 - Architecture for XML Binding (JAXB), 162
 - Database Connectivity (JDBC), 154, 238, 272
 - Enterprise Edition (J2EE), 156–157, 204–205, 260, 271
 - Javascript, 74, 76, 148
- K**
- Killer applications, 135
 - Knowledge
 - engineers, 224–225
 - management application, 216, 221–226
 - sharing, 12–13, 15
- L**
- Layout
 - designers, 185–186
 - tools, 141, 149–150, 166–168
 - LDAP (Lightweight Directory Access Protocol), 62, 272

- Leading, 77
- Legal research, 83
- LET clause, 66, 67
- Library developer, 202
- Licensing agreements, 207
- Life cycle, document
 - enterprise applications and, 220, 226, 232–233, 237, 240–241
 - vendor applications and, 249, 254–255, 258–259, 261–262, 265
- LineItem element, 39, 47–48, 64
- lineOrder attribute, 39, 48, 91–92
- Line spacing, 77
- Links. *See also* XLink (XML Linking Language)
 - broken, 28
 - extended, 85–88, 269
 - simple, 82–83, 275
- LOBs (Large Objects), 151, 272
- location attribute, 35
- Logic
 - application, 144–145
 - business, 151
- Lower camel case, 34, 272
- M**
- Mailing lists, creating, 66–67
- Mail servers, 122
- manifest tags, 121
- Manufacturing, 6–7, 9, 11
 - Web services and, 137
 - XSLT and, 70
- Mapping data structures, 155, 162–163, 261
- Margins, 80–81
- MathML (Mathematics Markup Language), 55, 272
- Memory, 68. *See also* Caches
- Mercator, 163
- Messaging
 - architecture, 109–115, 129
 - basic description of, 101–138
 - business document, 104–105, 108, 110–115, 125, 137
 - contextual information and, 108
 - how it works, 106–108
 - message flow languages and, 135–136
 - motivation for, 104–105
 - paradigms, choosing, 103–104
 - protocols and, 105, 106–108
 - remote interface, 104–105, 109–115
 - servers, 122
 - standards, 18
 - transport binding and, 107–108, 120
 - vendor applications and, 262–265
 - wrapper formats and, 106–107
- Metadata
 - attributes and, 34, 43
 - content definition and, 26
 - content servers and, 158
 - described, 13, 272
 - Semantic Web and, 159
 - shared context standards and, 14–15
 - XML approach to, overview of, 16–19
- Meta-incompatibility problem, 70
- Microsoft, 105, 132, 136, 158
 - BizTalk and, 121
 - Office, 160
 - .NET, 164, 205
 - SOAP and, 116
 - VBScript, 74
 - Visual Studio .NET, 162
 - WS-I and, 134
- Middleware, 147
- MIME (Multipurpose Internet Mail Extensions) types, 36, 108, 123, 134, 272. *See also* S/MIME (Secure MIME)
- Mixed content model, 30, 41

Modular paradigms, 21–22. *See also* Paradigms
Mythical Man Month, The (Brooks), 205

N

Namespace(s)
 basic description of, 56–62, 273, 277
 default, 59–60
 how they work, 53–59
 identifiers, 59
 names, 59
 policies, coordinating, 62
 practical usage of, 61–62
 XLink and, 85
 XSL and, 79
 XSLT and, 70, 72
 Naming collisions, 57–58, 60, 273
 Native XML, 151, 155
 NeoCore XMS, 151
 Network(s)
 hardware, 19
 protocols, 35
 software, emerging XML standards for, 18
 Web services and, 101–138
 XML messaging and, 101–138
 Nodes
 matching, specifying constraints on values in, 64
 vendor applications and, 262, 265
 XPath and, 62–64
 Nonempty elements, 31–32
 Non-repudiation, 112, 113, 273

O

OASIS (Organization for the Advancement of Structure Information Standards), 95, 98–99, 124, 128
 Object(s). *See also* DOM (Document Object Model)

DBMSs (Object Database Management Systems), 152–153
 distributed, 101, 103–104
 Large (LOB), 151, 272
 -oriented programming (OOP), 47, 93, 163, 176
 Object Management Group (OMG), 105, 276
 ODBC (Open Database Connectivity), 154, 238, 273
 ODBMSs (Object DBMSs), 152–153. *See also* DBMSs (database management systems), 89, 238
 Office (Microsoft), 160
 OmniMark Technologies, 150, 171
 OOP (object-oriented programming), 47, 93, 163, 176
 Open Applications Group, 233–234
 Open source
 management, 206–208
 processors, 147
 OpenSyndicate (Interwoven), 161
 Operations, described, 131
 Oracle, 155, 158, 160–162, 234
 Orchestration technologies, 135–138, 150–151
 Order(s), 35–39, 45–49, 188. *See also* Transactions
 data formats for, 39
 documents, building mailing lists from, 66–67
 element hierarchy and, 26–28
 enterprise applications and, 234–235
 fulfillment, 53–62, 78–81, 235
 namespaces and, 53–62
 searching for specific, 63
 separating content from relationships and, 28–29
 shared context standards and, 14–15
 three sub-elements of, 38

- Order(s) (*cont.*)
 - Web services and, 116–117
 - XLink and, 84–88
 - XML messaging and, 102, 106–110
 - XML Schema and, 90–94
 - XPath and, 63–64
 - XSL and, 79–81
 - XSLT and, 71–74
- Order.dtd, 66–67, 94
- Order element, 47
- OrderTracking element, 86–87
- Organizational charts, 62
- P**
- Page layout
 - the emergence of XML and, 3
 - HTML and, 8
 - paginated output and, 73–82
 - XSL and, 73–82
- Paradigm(s)
 - distributed object, 101, 103–104
 - EDI, 101, 102, 103–104
 - the separation of content from relationships and, 28–29
 - wiring, 135, 136
 - XML, 21–24, 28–29, 53–56, 139, 142, 164, 179, 252
- Parentheses, 42, 44
- Parsers, 147
- PassiveTeX, 148
- Payment element, 47, 48
- PCDATA (parsed character data), 41, 273
- PDF (Portable Document Format), 76–78, 274
- Peoplesoft, 234
- Perl, 148, 186, 196
- Perspectives, different, problem of, 5–6
- Platforms, 53–54, 77, 82
- PL/SQL processors, 147–148
- Plus sign (+), 42
- Plug-ins, 195
- Pointers, 68
- Polar Lake, 166
- Polymorphism, 93
- Portability, 136
- Portal servers, 153, 160
- Postal element, 80, 92, 93
- POST method, 108, 116, 118, 270
- PostScript (Adobe), 78, 79, 274
- Pound sign (#), 87
- Printing press format, 77, 82
- Process
 - collaboration, 109
 - management tags, 121, 123
 - notes, 121
 - Templates, 127–128
- processContents attribute, 94
- Processing instructions, 36, 274
- Processors
 - attributes and, 44–45
 - described, 32, 142, 278
 - development process and, 206–207
 - event-based, 142, 144–146
 - SAX-based, 144–145
 - tree-based, 142–144, 146
 - XML Schema and, 89
 - XML software infrastructure and, 139, 142–146, 156
 - XSL and, 78, 81
- Producers, 184–185
- Product
 - descriptions/comparisons, 3–6
 - press releases, formatting, 78–82
- Profile design, 247–249
- Programming languages, 49, 89
 - Web services and, 130, 135–136
 - XML messaging and, 110–111
- Project management, 177–178, 196
- Prolog, 35–36, 274
- Protocol(s), 1, 35. *See also* Protocols (listed by name)
 - profiles, 127
 - requirements, 110–113
 - stack, 133–135

- Web services and, 114, 130–135
XML messaging and, 105,
106–108
- Protocols (listed by name). *See also*
HTTP (HyperText Transfer
Protocol); SOAP (Simple
Object Access Protocol)
BTP (Business Transaction
Protocol), 98–99
FTP (File Transfer Protocol), 1,
104, 270
LDAP (Lightweight Directory
Access Protocol), 62, 272
SMTP (Simple Mail Transfer
Protocol), 275
TCP/IP (Transmission Control
Protocol/Internet Protocol), 1,
264, 265, 276
XML Protocol, 54–55, 116
- Publishing industry, 77, 81–82
Python, 148
- Q**
- Question mark (?), 24, 36
- R**
- RDBMs (Relational DBMSs),
152–153. *See also* DBMSs (data-
base management systems)
- RDF (Resource Definition Format),
159, 274
- Readability, 24, 25, 26, 128
- Red Bridge Interactive, 150, 171
- Registry, 126
- Relationships
among documents, importance
of, 28
separation of, from content, 24,
28–29, 85
- RELAX NG, 95
- Remote interface messaging,
104–105, 109–115
- RenderX, 148
- Repository, 126, 168–169
- #REQUIRED attribute, 44–45
- RETURN clause, 66, 67
- Roles, 125–127
- RosettaNet, 129
- Routers, 19
- RPC (remote procedure call), 110
- S**
- SAML (Security Assertion Markup
Language), 98
- SAP, 234
- SAX (Simple API for XML), 144–145,
275
- Scalability, 140
- Scheduling, pessimistic assumptions
in, 205
- Schema
compilers, 162
content models and, 31
criticism of, 95
described, 17, 56, 88–95, 278
development process and, 175,
189–190, 198–199, 209
ebXML and, 127, 131
ensuring compatibility with, 67
enterprise applications and, 220,
226, 231–232, 236–237, 240
extending existing definitions
with, 92
extensibility features, 93
how they work, 90–94
practical usage of, 94–95
specifying rules with, 90–94
vendor applications and, 249,
251, 254, 258, 261–262, 265
XML software infrastructure and,
142, 144–145, 147, 154,
162–163, 167–168, 171
XPath and, 67
XQuery and, 67
XSLT and, 73
- Scope, of initiatives, 115
- Scripting languages, 70–71. *See also*
Java; JavaScript

- SCSI (Small Computer System Interface), 9, 274
- Search techniques. *See also* XQuery (XML Query Language)
 - content servers and, 158–159
 - enterprise applications and, 222–226
 - information exchange problems and, 7–8
 - metadata and, 13–14
 - with search engines, 158–159
- Security
 - authentication and, 113
 - BizTalk and, 123
 - contextual information and, 108
 - for e-mail, 123
 - encryption and, 98, 108
 - non-repudiation and, 112, 113
 - Secure HTTP (HTTPS) and, 108, 133 SOAP and, 119
 - XML messaging and, 112–113, 108, 123
- Security Assertion Markup Language. *See* SAML (Security Assertion Markup Language)
- Semantic Web, 159
- Server(s)
 - application, 18, 141, 151–152, 155–158, 164, 172–173
 - authentication and, 113
 - content, 151–152, 158–161
 - data, 149, 151–155
 - heavy processing loads on, 8
 - infrastructures, 140–141, 149, 151–161
 - layer, 141
 - mail, 122
 - portal, 153, 160
 - rendering of documents on, by XSLT, 74
 - types of, 151–152
 - vendor applications and, 247, 253
 - Web services and, 133
 - XLink and, 88
 - XSL and, 82
- S-expressions, 202
- SGML (Standard Generalized Markup Language), 16–17, 24, 150, 168
- Shared context, 14–15, 17, 274
- SharePoint Portal Server (Microsoft), 160
- Shopping agents, 6–7, 9
- Shipping information, 70, 80, 86, 109
 - Web services and, 116–118, 128, 130
 - XML Schema and, 90–94
- SiberLogic, 150, 171
- SiberSafe, 150, 171
- Simple links, 82–83, 275
- Single sign on, 98
- SMIL (Synchronized Multimedia Integration Language), 55, 275
- S/MIME (Secure MIME), 123, 275.
 - See also* MIME (Multipurpose Internet Mail Extensions) types
- SMTP (Simple Mail Transfer Protocol), 275
- SOAP (Simple Object Access Protocol), 97, 103, 129, 133–134
 - basic description of, 115–121
 - binding, 121–122, 133 BizTalk and, 121, 124
 - development process and, 200
 - enterprise applications and, 234, 236
 - Envelopes, 116
 - extensions, 120
 - Headers, 119–121, 133
 - provision of a standardized communications pipe by, 130–131
 - shortcomings of, 115–116
 - vendor applications and, 258, 262, 264–265
 - Web services and, 115

- wrappers, 116, 118, 265
- XML software infrastructure and,
 - 154, 156, 157, 164
- SoftQuad, 167
- Software AG, 151
- Software stacks, 115, 129–133
- Special characters. *See also* Symbols
 - encoding rules with, 41–42
 - listing of, in DTDs, 24
- Spreadsheets, 3–4, 8. *See also*
 - Databases
- Staffing
 - changes in, addressing, 176–179
 - common issues related to,
 - 203–213
 - development teams, 175–213
 - required staff, 179, 184–187,
 - 193–196, 201–202
- Standard(s). *See also* W3C (World Wide Web Consortium)
 - basic description of, 53–100
 - bearer, 194, 201
 - categories of, 53–56
 - feature, 54–56, 61, 68
 - horizontal, 54, 55–56
 - infrastructure, 54–55, 96–99
 - relevant to your needs, identifying, 53
 - technical, 53–55, 95–96
 - vertical, 54, 55–56
- Standard Generalized Markup Language. *See* SGML (Standard Generalized Markup Language)
- Start tags, 29, 31–34
- state element, 80
- Status keyword, 58
- Storage systems, 139–140,
 - 148–151, 168–169, 183–184,
 - 192–193
- Street element, 39, 80
- Strings
 - attributes and, 44–45
 - described, 13, 275
 - metadata and, 13
 - XPointer and, 65
- Structure. *See also* Hierarchy; Tree structure
 - defining, 24, 26–28
 - presentation and, separation of,
 - 24, 29
- Stylesheets. *See also* XSL (Extensible Stylesheet Language)
 - applying different, for different users, 78–79
 - described, 36, 275
 - designing, 181–182, 185, 190,
 - 191
 - enterprise applications and, 225
 - processing instructions and, 36
 - vendor applications and,
 - 247–249, 253, 259
- Stylus Studio (eXcelon), 163, 168
- Subsets, of data, need for, 62
- Substitution groups, 93
- Sun Microsystems, 162, 164, 158,
 - 165, 207. *See also* Java
- Supply chains, 70, 253–254
 - problem of automated information processing and, 6–7
 - vendor applications and, 246
 - Web services and, 137
- SVG (Scalable Vector Graphics), 55,
 - 228, 238, 276
- Symbols. *See also* Special characters
 - <> (angle brackets), 31, 36
 - * (asterisk), 24, 42
 - : (colon), 59
 - / (forward slash), 31–32, 64
 - () (parentheses), 42, 44
 - + (plus sign), 42
 - # (pound sign), 87
 - ? (question mark), 24, 36
 - [] (square brackets), 64–65
 - | (vertical bar), 42, 44
- Synchronous communication
 - model, 110–112, 118–119

- Syndication, 160–161
- Syntax rules
 - basic description of, 31–32
 - for defining element structure, 40–42
 - XLink and, 84
 - XML Schema and, 89
- T**
- Tables. *See also* Databases
 - attribute rules and, 43–45
 - hierarchy and, 24
 - XSL and, 77
- Tags. *See also* Tags (listed by name)
 - described, 276
 - endpoint, 121
 - end tags, 29, 31–32
 - hierarchical, 24
 - manifest, 121
 - process management, 121
 - service tags, 121
 - start tags, 29, 31–34
 - XML and HTML, similarity of, 23
- Tags (listed by name). *See also* Tags
 - <ATTLIST> tag, 43–44
 - <author> tag, 17
 - <!DOCTYPE> tag, 36
 - <ElementName> tag, 31–32
 - <ELEMENT> tag, 40–45, 48
 - <!ENTITY> tag, 49–50
 - tag, 29
 - <H1> tag, 29
- Tamino (Software AG), 151
- Targets, 36, 87, 106, 118
- Task frameworks, 157–158
- TCP/IP (Transmission Control Protocol/Internet Protocol), 1, 264, 265, 276
- TeaLeaf Technologies, 260
- TeamSite, 150, 171
- Technical standards, 53–55, 95–96
- Telecommunications, 55–56, 70, 137
- Templates, 127–128
- Text
 - between two points, indicating, 64–65
 - Encoding Initiative, 148
- TEXTML Server, 151
- TIBCO, 163
- Time
 - as a barrier in business-to-consumer commerce, 9
 - stamps, 121
- TiVo, 250
- Tracking documents, 85–86
- Trading partners, 4, 71–74
 - coordination application for, 216, 226–233
 - EDI and, 101–102
 - XML messaging and, 122–125, 126–127
- Trailing spaces, 77
- Transaction(s), 108, 112–114, 125–126. *See also* Orders
 - boundaries, 113, 276
 - non-repudiation and, 112, 113
 - semantics, 98–99
 - Web services and, 119, 133
 - XML messaging and, 108
- Transformation tools, 162–163
- Translation programs, 6–7
- Transmission Control Protocol/Internet Protocol. *See* TCP/IP (Transmission Control Protocol/Internet Protocol)
- Transport binding, 107–108, 120
- Tree structure, 142–145, 171–172. *See also* Hierarchy; Structure
 - attributes and, 34–35
 - construction of, by XML processors, 32–33
 - document elements and, 30–31
 - specification of, by DTDs, 40
- Trust, 212
- Tunneling, 264, 270

- Type
 checking, 89
 derivation, 93
- U**
- UBL (Universal Business Language), 128, 129
- UDDI (Universal Description, Discovery, and Integration), 103, 129, 131–133
- UKPostal element, 93
- UML (Unified Modeling Language), 125, 276
- UN/CEFACT, 124
- Uniform Resource Identifiers. *See* URIs (Uniform Resource Identifiers)
- Uniform Resource Locators. *See* URLs (Uniform Resource Locators)
- Unit testing phase, 178
- Upper camel case, 34, 276
- URIs (Uniform Resource Identifiers), 59, 276
- URLs (Uniform Resource Locators), 17, 131. *See also* Links
- User interface design, 186, 194, 195
- Userland Software, 116
- USPostal element, 93
- V**
- Validating processors, 147, 277
- Validation, 39, 93–94, 147, 277
- Valid documents, 147, 277
- VARs (value-added resellers), 250
- VBScript (Microsoft), 74
- Vendor applications, 243–266
- Versant enJin, 155
- Version
 control, 169
 skew, 208–210
- Vertical bar (|), 42, 44
- Vignette, 150, 161, 171
- Visual Basic (Microsoft), 162, 205
- Visual Studio .NET (Microsoft), 162
- Visual XML Transformation Tool, 163
- Visual XSLT (ActiveState), 163
- VoiceXML, 74, 82, 158
- W**
- Web browser(s)
 compatibility with major, 88
 development process and, 182, 191, 195
 enterprise applications and, 223, 228–229
 information exchange problems and, 8
 metadata and, 13–14
 open source, 87–88
 plug-ins, 195
 servers and, 152
 stylesheets and, 182
 vendor applications and, 247, 253, 256–257, 264
 XLink and, 87–88
- Web-DAV (Web Distributed Authoring and Versioning), 160, 169, 277
- Web File Server (Xythos), 160
- Web service(s), 141, 164, 166
 basic description of, 101–138
 coarse-grained, 109
 fine-grained, 110
 initiatives, major, 114–129
 messaging architectures and, 110–114
 stack, 129–133
 vendor applications and, 255–259
- Well-formed documents, 31–32, 39, 89, 147, 277
- WHERE clause, 66, 67
- Whitehill <xsl>Composer, 168
- Whitespace, 96
- Wiring applications, 135, 136

- WML (Wireless Markup Language), 74, 82, 158
- Workflow management, 121, 123, 187–188, 218
- Workforce automation application, 216–220
- World Wide Web Consortium.
See W3C (World Wide Web Consortium)
- Wrappers, 106–107, 116, 118, 265
- WSDL (Web Services Definition Language), 103, 129–132, 154
- WSFL (Web Services Flow Language), 103, 136, 220, 232
- WS-I (Web Services Interoperability Organization), 134
- WS-Routing, 133
- W3C (World Wide Web Consortium). *See also* Standards described, 16, 277
DOM and, 143
infrastructure standards and, 97
RDF and, 159
SGML and, 16–17
SOAP and, 97, 115–116
XForms and, 98
XHTML and, 74, 97
XML Namespaces and, 57
XML Schema and, 17, 94
XML Signatures and, 98
XPointer and, 63
XSL and, 81
XSLT and, 73–74
- X**
- Xalan processor, 148, 156
- XCBL (XML Common Business Library), 129
- XEP Rendering Engine, 148
- Xerces processor, 156, 206–207
- X.500 standard, 62, 277
- XForms, 54, 98–99
- XHTML (Extensible HyperText Markup Language), 54, 74–75, 97
- XLANG format, 103, 123, 136, 220, 232
- XLink (XML Linking Language), 61, 68, 142, 148. *See also* Links basic description of, 56, 82–88, 277
backward compatibility of, with HTML links, 82–83
how it works, 83–84
vendor applications and, 252
- XMetaL (SoftQuad), 167
- XML Database (Ipedo), 151
- XML document(s). *See also* Documents; DTDs (document type definitions)
prolog, 35–36, 274
validity of, 39, 147, 93–94, 277
well-formed, 31–32, 39, 89, 147, 277
XML standard and, 21–22
- XML Encryption standard, 55
- XML Fragment Interchange, 96
- XML Include, 96
- XML Infoset, 54, 96
- XML messaging
architecture, 109–115, 129
basic description of, 101–138
business document, 104–105, 108, 110–115, 125, 137
contextual information and, 108
how it works, 106–108
message flow languages and, 135–136
motivation for, 104–105
paradigms, choosing, 103–104
protocols and, 105, 106–108
remote interface, 104–105, 109–115
servers, 122

- standards, 18
- transport binding and, 107–108, 120
- vendor applications and, 262–265
- wrapper formats and, 106–107
- XML Namespace(s)
 - basic description of, 56–62, 273, 277
 - default, 59–60
 - how they work, 53–59
 - identifiers, 59
 - names, 59
 - policies, coordinating, 62
 - practical usage of, 61–62
 - XLink and, 85
 - XSL and, 79
 - XSLT and, 70, 72
- xmlns attribute, 59, 60
- XML Path Language, 278
- XML Processors
 - attributes and, 44–45
 - described, 32, 142, 278
 - development process and, 206–207
 - event-based, 142, 144–146
 - SAX-based, 144–145
 - tree-based, 142–144, 146
 - XML Schema and, 89
 - XML software infrastructure and, 139, 142–146, 156
 - XSL and, 78, 81
- XML Protocol, 54–55, 116
- XML Schema
 - compilers, 162
 - content models and, 31
 - criticism of, 95
 - described, 17, 56, 88–95, 278
 - development process and, 175, 189–190, 198–199, 209
 - ebXML and, 127, 131
 - ensuring compatibility with, 67
 - enterprise applications and, 220, 226, 231–232, 236–237, 240
 - extending existing definitions with, 92
 - extensibility features, 93
 - how they work, 90–94
 - practical usage of, 94–95
 - specifying rules with, 90–94
 - vendor applications and, 249, 251, 254, 258, 261–262, 265
- XML software infrastructure and, 142, 144–145, 147, 154, 162–163, 167–168, 171
- XPath and, 67
- XQuery and, 67
- XSLT and, 73
- XML Signatures, 98
- XMLSpy, 167, 168, 172
- XMLTransform (TIBCO), 163
- XPath (XML Path Language), 56, 142, 144, 209
 - basic description of, 62–69
 - how it works, 63–69
 - practical usage of, 68–69
 - revisions of, 67
 - XSLT and, 69, 73
- XPointer (XML Pointer Language), 63–65, 87, 278
- XQuery (XML Query Language), 56, 63, 66–69
- XSL (Extensible Stylesheet Language), 56, 72, 180, 252.
 - See also* Stylesheets
 - basic description of, 76–82, 269
 - enterprise applications and, 231, 236
 - Formatter, 148
 - how it works, 78–81
 - practical usage of, 81–82
 - Stylesheet Editor, 163
 - XSLT and, 69–70, 76–82
- XSLT (XSL Transformation), 56, 142, 148, 156–158, 160–163
 - addition of presentation properties to, 76–82

- XSLT (XSL Transformation) (*cont.*)
 - basic description of, 69–76, 278
 - criticisms of, 75–76
 - debugging with, 197–198
 - development process and, 188, 192, 197–198, 209
 - enterprise applications and, 217–218, 234
 - how it works, 71–74
 - practical usage of, 74–76
 - processors, 78
 - vendor applications and, 258
 - Web services and, 135–136
 - XSL and, 69–70, 76–82
- Xyθος, 160
- XYZFind Server, 151