

Index

A

- Abbreviations, XPath, 106, *118–120*
- Absolute location paths, 104
- Absolute URIs, 101
- Access control, 20
- Accessibility issues, in XML-based systems, 219–220
- actuate = “onLoad” attribute, 47
- Actuate value, in XLink, 184–185
- Adaptive hypertext systems, 25
- ADSL. *See* Asymmetric digital subscriber line
- <A> element, 185
- <a> element, 9, 18, 39, 154, 169
- <A> links, 184
- AHM. *See* Amsterdam Hypermedia Model
- Aliases, Web server, 57
- All element types partition, 77
- Amaya authoring tool (W3C), link support through, 210
- Amsterdam Hypermedia Model, 17
- ancestor axis
 - and point, 145
 - in XPath, *107*, 109–110
- ancestor-or-self axis
 - and point, 145
 - in XPath, *107*, 110
- Anchors, 7, 10, 49, 50, 51. *See also* Links
 - and <a> element, 9
 - definition of, 39
 - lack of overlapping, 13–14
 - and nontextual links, 34
- overlapping, 45–46
 - and SMIL, 36
- Animation, 22, 43
- Application Programming Interface (API), 81
- Application-specific hyperlink
 - definitions, 169
- arc elements, 179, 183
- arcrole attribute, 54, 61, 195
 - and link semantics, 216
 - and link typing, 64, 65
 - in XLink, 183
- arcrole value, 194
- Arcs, 49, 52, 53, 54
 - inline extended link with, *175*
 - out-of-line extended link with, *176*
 - and presentation semantics, 202
 - roles, 54
 - titles and roles for, 63
 - and traversal attributes, 188
 - in XLink, 178, 183
- arc type, 175
- arc value, in type attribute, 181
- Association
 - and arcs, 52, 53
 - levels of viewing, 37–38
 - selection by, 22
 - and typed links, 64
- Association semantics, XLink support
 - of, 81
- Associative links, 18, 30
- “As We May Think” (Bush), 22
- Asymmetric digital subscriber line, 5
- attribute axis
 - of point, 145
 - in XPath, 110

Note: Italicized page locators refer to figures and/or tables.

- attribute information item, 83
 - Attribute-list declarations, 73
 - Attribute location, and covering range, 147
 - Attribute names, in XLink, 170
 - Attribute node, in XPath, 99, 100
 - Attributes
 - and Hyperwave document management, 33
 - and SMIL, 36
 - in XLink, 170
 - Audio, 22, 34
 - clips, 38
 - and RTP, 70
 - Audio data, pattern matching for, 41
 - author attribute, 117
 - Authoring
 - complex, 208–209
 - tools, 196
 - Authoring approaches, 213–220
 - accessibility and usability, 219–220
 - controlling linking and ensuring link integrity, 215
 - identifying things to link, 213–215
 - link semantics, 216–219
 - Authoring aspects
 - complex authoring, 208
 - lack of presentation semantics, 201–203
 - legal issues, 207–208
 - loss of context, 206–207
 - tool support, 206
 - unclear processing model, 203–206
 - Axes in XPath, 106–115
 - ancestor, 107, 109–110
 - ancestor-or-self, 107, 110
 - attribute, 110
 - child, 106, 107, 111
 - descendant, 107, 111–112
 - descendant-or-self, 108, 112
 - direction of, 106–107
 - following, 108, 112
 - following-sibling, 108, 112–113
 - namespace, 113
 - overview of, 106
 - parent, 108, 113–114
 - preceding, 109, 114
 - preceding-sibling, 109, 114
 - principal node type of, 107
 - self, 109, 114–115
- B**
- Bare names, 150–151, 153
 - base element, 79
 - Base URIs, rules for calculating, 79
 - begin attribute, 37
 - Behavior attributes, 184–187
 - actuate, 184–185
 - show, 185–187
 - XLink, 180, 184–187
 - Berners-Lee, Tim, xxvii, 7, 8, 69
 - Bidirectional associations between
 - information, 25
 - Big Bang approach, 234
 - Big Bang transition, 224, 225
 - body element, 73
 - book element, 193
 - Bookmarks, 213
 - Boolean functions, XPath, 125–126
 - boolean object type, 96
 - Boolean type, 146
 - Boolean values, and boolean functions, 125
 - Broken links, 13, 57, 141
 - Browsers
 - and content misuse, 238
 - and content negotiation, 232
 - copyright issues and design of, 208
 - support within, for XLink and XPointer, 210–211
 - XML supported by, 142
 - Bush, Vannevar, xv, xxvi, 22, 23
- C**
- Cable modem, 5
 - Cached resources, and XLink, 194–195
 - Cache identifiers, 182
 - Canonical XML, 87
 - Cascading Style Sheets (CSS), xxv, xxix, 48, 69, 90
 - and XSL-FO, 92
 - CC/PP. *See* Composite Capability/Preference Profiles
 - CDATA sections, 84, 102
 - CDF. *See* Channel Definition Format
 - ceiling function, 127

- CERN, xxvii
- CGI programs, and dynamic links, 40
- Channel Definition Format (Microsoft), 93
- chap elements, 133
- chapter elements, 117
- @ character, and attribute axis, 110
- Character escaping, XPointer, 162–163
- character information item, 84
- Character points, 145, *146*, 148
- Checksums, 182
 - algorithms, 167
 - and XLink extension, 195
- child axis
 - of point, 145
 - in XPath, *107*, 111
- child elements, and prefixes, 77
- child information items, 82
- Child nodes, 99, 102, 145
- children locator, 63
- Child sequences, 151–153
- Client diversity, and authoring content, 231
- Client-side transformations, of XML resources, 203
- Cluster collection, 32–33
- Code libraries, XML, 211
- Coleridge, Samuel Taylor, 23
- Collapsed range, 146
- Collection head, 32
- Collection hierarchy, 31, 32
- Colon (:):
 - within qualified name, 75
 - and XML Namespaces, 78
- comment information item, 85
- Comment nodes
 - and child axis, 111
 - and XPath, 101
- Complex authoring, 208–209
- Complex links, and processing model, 204
- Composite Capability/Preference Profiles (W3C), 232
- Computed link filters, 30
- concat function, 128
- Conceptual associations, representation of, 37
- Container nodes, 144, 145, *146*
- contains function, 128
- Content
 - embedding, 47–48
 - link semantics and embedding of, 47–48
 - locating appropriate links, 213–215
 - transclusion of, with XLink, 206–207
 - in transitioning to new model, 223
- Content management
 - and linkbases, 195–198
 - and link checking, 215
- Content migration, and transitioning to new model, 233–235
- Content model, link data model
 - integrated with, 196
- Content negotiation
 - flexibility of, 233
 - and internal hybrid, external hybrid, 230
 - and transitioning to new model, 231–233
- Content structuring and management, restrictive, 18
- Context
 - controlling, 48
 - loss of, 206–207
 - in XPath, 97
- Context node, XPath, 97
- Context position, in XPath, 97
- Context size, in XPath, 97
- Contextualization, 11
- Convergence, xxv
- Conversion level, and XLinks, 196
- Cookies, xxviii
- coords attribute, 37
- Copyright issues, 220, 238–239
 - and conventional HTML pages, 44
 - with transclusion, 198, *205n*, 207–208
 - and XLink’s success, 198
- Cost-benefits analysis, with new model of handling hypermedia, 221
- count function, 131
- Covering range, 147
- Crosshatch character (#), and fragment identifier, 71, 139
- Cross-linking, rich, 42
- Cross-referencing, universal, 64
- Cross-site references, 30
- CSS. *See* Cascading Style Sheets

D

Data capture, and building new sites, 235, 236

Data creation, integration layer, migration strategy and, 234

Datagrams, 5, 6

Data model, versatility and power with, 239

date attribute, 117

DCS. *See* Document Control System

Deep linking, 198, 238

Default namespaces, 76, 77

defs.xml file, 45

descendant axis
of point, 145
in XPath, 107, 111–112

descendant-or-self axis
and point, 145
in XPath, 108, 112

Descendants, XPath, 99, 100

Design
browser, 208
data model, 236
of links, 214
usage-centered, 215

Destination anchors
and link semantics, 17
and simple Web links, 26

Destination links, xxvii

Development tools, for XLink and XPointer support, 213

Device Independence Activity, 239

DHTML. *See* Dynamic HTML

Dial-up connections, 4, 5

Dictionaries, universal cross-references in, 64

Digital fingerprints, fragment, 215

Digital Millennium Copyright Act, 239

Directional associations between information, 25

Directional links, 39

Direction of axis, 106–107

Discussion forums, 42

Displays, and content negotiation, 231, 232

dl element, 154

DMCA. *See* Digital Millennium Copyright Act

DNS. *See* Domain Name System

Document collections, 31

Document Control System, 28

document document type, 73

document function, 124

document information item, 82

Document management, Hyperwave, 31–33

Document Object Model, xxv, xxix, 48, 70, 81

Document order
determining in XPointer, 147
of XPath nodes, 98

Document Style Semantics and Specification Language, 90, 91

document type declaration information item, 85

Document Type Definition, xxix*n*, 73–74
document for sample, 74
and external entities, 80
for XLink content, 191

Document types, reuse of, 75

DOM. *See* Document Object Model

Domain Name System, 3, 6, 56

DSSSL. *See* Document Style Semantics and Specification Language

DTD. *See* Document Type Definition

dt element, 154

Dublin Core, 65
meta-data keywords, 92–93

Dynamic HTML, xxx, 48

Dynamic links, xxvi, 40
Web, 26, 27

E

EAI. *See* Enterprise Application Integration

ECMA. *See* European Computer Manufacturers Association

ECMAScript, 70*n*

e-commerce, xxv

Editor-type applications, 88*n*

Electronic mail (e-mail), 3, 4

element information item, 83

Element node, in XPath, 99–100

element node type, 107

Element type attribute, XLink, 180–181

- Element type declarations, 73
- Embedded anchors, 11, 41
- Embedded links, 46
- embed value, for show attribute, 186
- end attribute, 37
- Endpoint, 145, 149
- end-point function, in XPointer, 157
- Engelbart, Doug, xxvi, 23
- Enterprise Application Integration, 229
- ENTITY attribute type, 83
- Entity-Relationship Model, 235
- Escaping mechanisms, XPointer, 162
- ETags, 215
- European Computer Manufacturers Association, 70*n*
- Examples
 - selecting nodes from XML documents, 120–121
 - XPath, 133–136
- expanded-name, 98
 - for attribute nodes, 100
 - for namespace node, 101
 - for processing instruction node, 101
- Expressions, in XPath, 96, 121–123
- extended element, 178, 179
- Extended links
 - DTD declarations for, 192
 - and href attribute, 181
 - remote resources in, 178
 - XLink, 172, 174–177
- extended type element, 174, 175, 177, 181
- extended value, in type attribute, 181
- Extensible Hypertext Markup Language, xxix, 70, 88–89, 94
- Extensible Markup Language, xxv–xxvi, xvii, xxviii–xxx, 20, 49, 70, 94
 - and B2B scenarios, 238
 - and building new sites, 235
 - as catalyst for information management paradigm, 222
 - core standards, 71–74
 - design goals for, 72
 - escaping rules, 162
 - external entities, 80
 - and hypermedia implementation, 237
 - and linking, 50, 52
 - namespaces, 75–78
 - XLink built on top of, 188, 189
- Extensible Stylesheet Language, xxviii, 69, 89–92, 94
 - formatting semantics defined in, 74
 - XSL Formatting Objects, 92
 - XSL Transformations, 90–91
- External linkbases, 44
- External links, 46, 215
- External transition, to new model, 224
- F**
- False function, 125
- figure descendants, 117
- Filtering, 143, 165, 226
- Filter Manager, 28
- Filters, and XPath, 134
- #FIXED attributes, 191
- Floating-point arithmetic, 128
- floor function, 127
- Folders, bookmark, 213–214
- following axis
 - of point, 145
 - in XPath, 108, 112
- following-sibling axis
 - of point, 145
 - in XPath, 108, 112–113
- Formatting semantics, 74, 90
- Forward axis, 106, 111, 112, 113
- Fragment digital fingerprints, 215
- Fragment identification
 - development tools for support of, 213
 - XML, 167
- Fragment identifiers, 9, 71, 139, 141, 210
 - persistence of, 57, 59
 - and processing model, 204, 205
- Fragment reference, 59
- “Framing,” 198, 238
- from attribute, in XLink, 188
- Full XPointers, 150, 153–156
- Function library, XPath, 97
- Functions
 - boolean, 125–126
 - node set, 131–133
 - number, 125, 126–128
 - overview of XPointer, 157
 - string, 128–131
 - XPath, 96, 123, 124, 125
 - XPointer, 156–161

G

Gecko browser engine (Netscape), XML support through, 210

General hyperlink specification mechanism, 169

General model-XPath, 96–103

- attribute node, 100
- comment node, 101
- element node, 99–100
- namespace node, 100–101
- processing instruction node, 101
- root node, 99
- text node, 101–102

Generation level, and XLinks, 196

Generic anchors, 41

Generic links, xxvii, 27–30, 44–45, 46, 63–64, 66

- definition of, 40
- patterns for creation of, 41
- with simplification of Webcosm server, 28

Generic locators, 64

Global attribute partition, 77–78, 170

Global attributes, 77, 78

Glossaries

- example, 197
- universal cross-references in, 64

Gnome XML Library (*libxml*), XML support with, 212

Google, 13

Graphics, 22

GSM mobile communications

- standard, 237

Guided tours, 20

H

Hand-coding, XLink, XPointer and, 212–213

heading element, 73

Here function, in XPointer, 158

Hierarchies of linkbases, 61

Highlighting links, 64

href attribute, 9, 37, 181, 182

h3 element, 153, 154

HTML. *See* Hypertext Markup Language

HTML-capable clients with scripting capabilities, and content negotiation, 232–233

HTML clients with no scripting support, and content negotiation, 233

HTML Tidy, 88*n*

HTTP. *See* HyperText Transfer Protocol

HTTP cookies, and dynamic links, 40

http scheme, 56, 57

Hybrid systems

- migration strategy in, 234
- and transition to new model, 224, 225

Hypercard, xxviii, 23

Hyper-G, 23, 31

Hyperlinks

- semantics, 74
- used with XML documents, 169

Hypermedia, xvii, xviii, xxx, 237

- dearth of high-quality, 208–209
- definition of, 23–25
- description of, 21–22
- history of, 22–23
- new model of handling, 221–222
- systems, 20, 49
- and XPointer, 142–143

Hypermedia concepts, 25–42

- dynamic Web link, 26–27
- generic link, 27–30
- nontextual link, 34–37
- set-based association, 33–34
- simple Web link, 25–26
- spatial hypertext associations, 33
- structural links, 30–33

Hypertext, xv, xxvi, 21

- history behind, 23
- and nonlinearity, 24
- spatial, 34
- systems, xxvii

Hypertext Markup Language, xxvii, 8, 49, 71

- base element in, 79
- as common content format, 69–70
- and copyright lawsuits, 238
- difficulties with links supported by, 13
- and illegal links, 198
- links, 50, 214
- multiple-source links implemented in, 16
- and overlapping anchors, 13–14
- and success of Web, 20
- transition from, to XHTML, 89

- HyperText Transfer Protocol, xxvii, 6, 69, 70, 71
 - content negotiation supported by, 231–232
 - ETags provided by, 215
 - protocol, 7, 8
- Hyperties, 23
- Hyperwave, xxviii, 17, 23, 31, 38
 - server, 20
 - structural links in, 30–33
 - structural links with simplification of, 31
- Hyperwave Web page, structural links in, 32
- I**
- id attribute, 36
- Identifiers, 50, 51
 - persistence of, 56, 57, 66
- IDREF attribute type, 83
- IDs
 - and embedded anchors, 41
 - and fragment identifiers, 141, 142
 - and persistence, 166
 - “Illegal links,” 198
- Image data, pattern matching for, 41
- Image maps, and link anchor definition, 35–36
- Images, 11, 34, 38
- links, 184
- Immediately preceding node, 147
- #IMPLIED, 100
- Inbound links, 173
- include statement, 80
- Inclusion, 42, 208
 - definition of, 41
 - XML, 80–81
- Incremental development, with hybrid systems, 224, 225
- Incremental transitions with dual systems, 224, 225
- InDelv client, and XML support, 211
- Indexes, 22, 144, 145
 - linking, 13
 - of node point, 145
- Information architects, 222
- Information associations
 - conception of, 37
 - representing, 25
- Information items, XML
 - Infoset, 82–86
- Information linking, xxvi–xxvii
- Information management, richer user experience and, 48
- Information modeling, 235
- “Information trails,” 22
- Infrastructure, and transitioning to new model, 223
- Inline extended links, 174
 - with arcs, 175
- Inline links, 174
 - out-of-line links converted into, 211
- Inlining of content, xxx
- Input devices, and content negotiation, 231, 232
- Integration, and internal hybrid/external hybrid, 230
- Integration layer, and migration of content, 233–234
- Intellectual property rights, and XLink’s transclusion features, 238
- Interactive groupwork, 42
- Intermedia, 23
- Internal transition, 224
- Internationalization
 - and title elements, 180
 - and XLink, 193
- Internet. *See also* World Wide Web
 - connecting to, 4–5
 - datagram, 5
 - environment, 3–6
 - host names, 56
 - hosts, 6
 - way it works, 5–6
- Internet Explorer, 210
- Internet Protocol, 5, 6
- Internet protocol suite, 3
- Internet service provider, 4
- Interoperability issues, resolving, 222
- IP. *See* Internet Protocol
- IP addresses, 6, 56
- isbn prefix, 77
- ISOC. *See* Internet Society
- ISP. *See* Internet service provider

J

JavaScript, 18, 19, 70
 JScript, 70

K

key function, 134
 KMS, 23
 Knowledge Interchange Format (KIF), 93
 Knowledge representation, and
 RDF, 93

L

label attribute, in XLink, 188
 lang function, 125
 LANs. *See* Local area networks
 last-call ID, 154
 last function, 132
 Leased lines, 5
 Legacy content, 223
 Legal issues, with transclusion, 198, 205*n*,
 207–208, 238
 Link-adding proxies, 44
 Link authoring, development tools for
 support of, 213
 Link anchors, 44–45
 Linkbase filter, 28
 Linkbases, 60–62, 66, 198, 201, 205
 access to, 197–198
 and arcrole attribute, 183
 and control of links, 215
 development tools for management
 of, 213
 richer, 209
 and XLink, 195, 196
 Link data model, behind processing
 model, 205
 linker function, 19
 Linking, xxix, xxvi–xxvii
 controlling, 215
 formalizing concepts of, 37–42
 identifying items for, 213–215
 indexes, 13
 Link lens, 220
 Links, 7, 50, 52, 53
 adding to read-only material, 44
 associative, 18, 30
 broken, 13, 57, 141
 complex, 204

 definition of, 39
 difficulty in backtracking through, 13
 directional, 39
 dynamic, xxvi, 40
 effective design of, 214
 embedded, 46
 embedded unidirectional, 11
 embedding into XML documents,
 170–171
 extended, 172, 174–177, 178, 181, 192
 external, 46, 215
 generic, 27–30, 40
 highlighting, 64
 information presentation, 37
 inline, 174, 211
 inline extended, 174
 integrity of, 215
 multidirectional, xxix–xxx, 173
 multiple-destination, xxx
 multiple-source, xxvi–xxvii, 16, 41
 multiple-source, single-destination, 27
 nontextual, 34–37
 number of, 219
 origin of, 220
 outbound, 173
 out-of-line, 173, 174, 195, 201, 211
 out-of-line extended, 173, 176, 212
 out-of-link, 212
 overlapping, 220
 placement of, 219–220
 references *vs.*, 49–54
 semantic, 10
 simple, 172, 173–174, 181, 212
 simple Web, 25, 26
 single-source, single-destination, 15–16,
 31, 26, 204
 and SMIL, 36
 specific, 30
 static, 40
 structural, 10, 17, 18, 30–33
 third-party, 44, 45, 59–61, 198, 204
 traversing in XLink, 184, 185
 typed, 64–66
 unidirectional, 11
 untyped, 12, 16–18
 and URI references, 139
 Web, 26, 27
 XLink support of, 171–172

- Link semantics, 74
 - controlling context, 48
 - definition of, 39
 - embedding content, 47–48
 - and untyped links, 17
- links.xml file, 216–217
- Link traversal, and processing model, 203–204
- Link typing, 64–66
- link.xml file, 45
- Local area networks, 5
- Localization, and title elements, 180
- Local link, 30
- local-name function, 132
- Local part, 75
- Local resources, in XLink, 178, 181
- Location, and covering range, 147
- Location paths
 - and XML documents examples, 120–121
 - and XPath abbreviations, 118–119
- Location paths in XPath, 96, 103–121
 - abbreviations, 118–120
 - axes, 106–115
 - examples, 120–121
 - location steps, 105–106
 - node tests, 115–116
 - predicates, 116–118
- Locations, XPointer, 143
- Location sets, 50
 - XPointer, 143, 144
- Location step predicates, location paths in, 117
- Location steps, in XPath, 105–106
- Location types, XPointer, 143
- Locator attribute, in XLink, 180, 181–182
- Locator elements, 52, 178, 179
- Locators, generic, 64
- locator type, 174, 175
- locator value, in type attribute, 181
- Lycos, 13
- M**
- Magic lens, 220
- mailto URLs, 57
- Mapping
 - and content negotiation, 233
 - and transition to new model, 222
- XML documents to relational structures, 228
- Market success, unpredictability of, 238
- Master linkbases, 61–62
- Mathematical Markup Language (MathML), 77, 89
- MCF. *See* Meta Content Framework
- MD5, 167
- Memex, xv, 22
- Menus, 30, 32
- Message passing, in Microcosm link service architecture, 29
- Meta Content Framework (Netscape), 93
- Meta-data, 11, 65, 66, 219
 - and building new sites, 235, 236
 - RDF definition of, 92
- meta element, 92
- Meta tags, 11
- Microcosm, 23
 - linkbases in, 30
 - link service, 28
- Microcosm link service architecture, message passing in, 29
- Micropayment systems, 23
- Microsoft, 7
 - and CDF, 93
- Microsoft Internet Explorer (version 6), XML support through, 210
- Microsoft XML implementation, to support XML-related functionality, 210
- Migration issues, and support of old data model to new, 228–229
- Migration of content, and transitioning to new model, 233–235
- MIME. *See* Multipurpose Internet Mail Extensions
- MIME types, XML documents associated with, 139
- Mobile phones, 231
- Modem, 4
- Modularization, advantages with, 89
- MSXML. *See* Microsoft XML implementation
- Multidirectional links, xxix–xxx, 173
- Multi-ended links, 62–63, 66, 198

- Multimedia
 - and link semantics, 17
 - pattern matching for, 41
- Multiple-destination links, xxx
- Multiple selections, making, 149–150
- Multiple-source anchors, supporting, 19
- Multiple-source links, xxvi–xxvii, 41
 - benefits with, 16
 - implementing in HTML, 16
 - lack of, 15
- Multiple-source, single-destination
 - links, 27
- Multi-property-set XSL-FO formatting
 - object, 48
- Multipurpose Internet Mail
 - Extensions, 139*n*
- Multi-switch XSL-FO formatting
 - object, 48
- N**
- “Name clashes,” 75
- name function, 132
- namespace axis
 - of point, 145
 - in XPath, 113
- Namespace conformance, 78
- Namespace declarations, 76
 - and namespace axis, 110, 113
 - in XML documents, 86
 - in XPath, 97
- namespace information item, 86
- Namespace location, and covering
 - range, 147
- Namespace nodes, in XPath, 99, 100–101
- Namespace partitions, 77
- Namespace prefixes, 75, 76, 83
- Namespaces
 - XML, 75–78
 - and XPointers, 163–164
- namespace-uri function, 132–133
- Name test, node test used as, 116
- NaN (Not a Number) value, 126, 129
- Negative infinity, 126, 129
- Negative sign-magnitude numbers, 126
- Negative zero, 126, 127, 129
- Nelson, Ted, xv, xvii, xxi, xxvi, 23, 42, 45
- Nested anchors, HTML support of, 13
- Nested collections, 34
- Netscape, 7
 - Meta Content Framework, 93
- Netscape Navigator (version 6), XML
 - support through, 210
- new value, for show attribute, 185
- Nielsen, Jakob, 219
- NLS. *See* oN-Line System
- Node points, 145, 146, 148
- Node relationships, XPath, 99
- Nodes, 51, 149
 - definition of, 38
 - examples of selecting from XML
 - document, 120–121
 - selecting text spanning number of, 149
- Node selection, and location paths, 117
- Node set functions, in XPath, 131–133
- node-set object type, 96
- Node-set of document, and location
 - paths, 104
- Node sets, 117, 146
- Node sizes, determining, 38
- Node test
 - in location step, 106
 - in XPath, 115–116
- node test*
 - and attribute axis, 110
 - and child axis, 111
 - and descendant axis, 111
 - and namespace axis, 113
- Node tree, in XPath, 103
- NodeType, extension of XPath’s
 - definition of, 144
- none value
 - for actuate attribute, 185
 - for show attribute, 187
 - for type attribute, 181
- Nontextual link, 34–37
- Non-zero index, 145
- normalize-space function, 129, 135
- NOTATION attribute type, 83
- notation information item, 84, 85
- NoteCards, 23
- not function, 126
- number function, 127
- Number functions, in XPath, 126–128
- Number object type, 96
- Number type, 146

O

- Object-Oriented Hypermedia Design Model (OOHDM), 215
 - Object types, in XPath, 96
 - OmniMark, XML file processing with, 212
 - onclick event, 19
 - oN-Line System (NLS), 23
 - OnLoad value, for actuate attribute, 184
 - onRequest value, for actuate attribute, 185
 - Ontology, 93
 - Open eBook (OEB) format, 93
 - Opera browser, 10*n*, 210
 - Operands, in XPath expressions, 121, 122
 - Operators, in XPath, 121, 122, 123
 - origin function, in XPointer, 158
 - other value
 - for actuate attribute, 185
 - for show attribute, 187
 - Outbound links, 173
 - Out-of-line extended links, 176
 - with arcs, 176
 - support for, 212
 - Out-of-line links, 173, 175, 201
 - converting into inline links, 211
 - converting into simple links, 212
 - and XLink, 195, 198
 - Overlapping anchors, 11, 45–46
 - Overlapping links, 220
- P**
- Palm-top computers, 231
 - Paragraph nodes, 149
 - parent axis
 - of point, 145
 - in XPath, 108, 113–114
 - Parentheses, for grouping XPath expressions, 122, 123
 - Parent nodes
 - and parent axis, 113
 - XPath, 99, 102
 - parents locator, 63
 - Parsers, in XML, 211
 - part elements, 133
 - Participating resources, 172
 - Path notation, 96
 - Pattern matching, 41, 212
 - PDAs. *See* Personal digital assistants
 - PDF. *See* Portable Document Format
 - People element, 87, 102
 - Per-element-type partition, 78
 - Perl, 131
 - Permanent connection, 5
 - Permissions, and attributes, 33
 - Persistence, 162, 215
 - of identifiers, 57, 66
 - of references, 57–59
 - resource identifier, 59
 - of XPath, 134
 - of XPointers, 166–167
 - Persistent URLs, 56*n*
 - Personal digital assistants, 70*n*
 - PICS, xxv
 - PNG, xxv
 - Pointers, 41, 49, 50
 - Point location, and covering range, 147
 - Points, marking with document, 148
 - Point-to-Point Protocol (PPP), 4
 - Portable Document Format, and XSL-FO processors, 92
 - position function, 133
 - Positive infinity, 126, 129
 - Positive sign-magnitude numbers, 126
 - Positive zero, 126, 127, 129
 - preceding axis
 - of point, 145
 - in XPath, 109, 114
 - preceding-sibling axis
 - of point, 145
 - in XPath, 109, 114
 - Predicate2, 121
 - in location step, 106
 - in XPath, 116–118
 - Prefixes
 - namespace, 75, 76
 - and XPointer scheme parts, 164
 - Presentation level, and XLinks, 196–197
 - Presentation nodes, size of, 38
 - Presentation semantics, 211
 - lack of in XLink and XPointer, 201–203
 - Primitive link types, 30
 - Principal node type of axis, 107
 - Processing instruction information item, 84

- Processing instruction nodes, 102
 - in child axis, 111
 - in XPath, 101
- Processing model, unclear issues with in
 - XLink and XPointer, 203–206
- product element, 218
- products.xml file, 216
- products.xsl file, 217
- Profiles, 72
- Properties, in XML Infoset information
 - items, 82
- Proximity position, of node in node
 - set, 117
- Publishing by reference, 42
- PURLs. *See* Persistent URLs
- Q**
- QName definition, from XML
 - Namespaces recommendation, 116
- Qualified names, 75
- Quality control, 222
- query, 55
- R**
- Range, 49, 145–148, 149
- range function, in XPointer, 158
- range-inside function, in XPointer, 158–159
- Range location, and covering range, 147
- range-to function, in XPointer, 159
- RDF. *See* Resource Description Framework
- Read access to data, integration layer,
 - migration strategy and, 234
- Read-only material
 - inability to link from or into, 12–13
 - links added to, 44
- Real-time data transmission, 70
- Real Time Protocol, 70
- References
 - links *vs.*, 49–54
 - persistence of, 57–59
 - publishing by, 42
- Relational data model, and XML's data
 - model, 227–228
- Relative location paths, 104
- Relative URIs, 79, 101
- Remote resources
 - and href attribute, 182
 - in XLink, 178, 181
- replace value, for show attribute, 186
- resource attribute value, 174
- Resource Description Framework, xxv,
 - xxix, 8, 65, 92, 93, 94, 219
- resource element type, 178
- Resource errors, for XPointer, 155*n*
- Resource fragments, 57
- Resource identification, 54–56, 66
 - with URIs, 55
 - URLs as, 70–71
 - with URIs and URNs, 55–56
- Resource identifier persistence, 59
- Resources, 49, 50, 51, 52, 53, 57
 - and inclusions, 80
 - in link, 172
 - origin of, 220
 - and persistence, 166
 - separation of linking from, 201
 - short life span of, 141
 - and topic maps, 197
 - in XLink, 178
- resource type, 174, 175
- resource value, in type attribute, 181
- Reverse axis, 106, 114
- Reverse document order, XPath
 - nodes, 99
- Richer approach, example strategies for
 - achieving, 226–230
- Richer linking functionality, scripting
 - languages used for, 18–19
- Richly linked applications, approaches
 - to, 213–220
- Robustness
 - and fragment identifiers, 204
 - of XPath, 134
 - and XPointers, 165, 166
- role attribute
 - and link semantics, 216, 217, 219
 - and link typing, 64, 65
 - and traversal rules, 175
 - in XLink, 182–183
- Root location, and covering range, 147
- Root node, in XPath, 99
- round function, 128
- RTP. *See* Real Time Protocol

S

- Satellite connections, 5
- Scalable Vector Graphics, xxv, 89
- Schema definitions, for XLink elements and attributes, 192
- Scheme parts, evaluating in XPointer, 156
- Schemes, XPointer, 154–155
- Scripting, 212
- Scripting languages, 15, 48, 69, 70
 - richer linking functionality with, 18–19
- Search engines, 13
- section elements, 73
- self axis
 - and point, 145
 - in XPath, 109, 114–115
- Semantic associations, 25
- Semantic attributes
 - arcrole, 183
 - role, 182–183
 - title, 183–184
 - XLink, 180, 182–184
- Semantic links, 10
- Semantic net, 197
- Semantics
 - formatting, 74
 - link, 17, 39–40, 74, 216–219
- Semantic Web, 8
 - emerging vision of, xxv
- Semistructured data, XML representation of, 228
- Sequence collection, 33
- Servers, 5, 20
- Server session variables, xxviii
- Server-side transformations, of XML resources, 203
- Set-based association, xxvi, 33–34
- SGML. *See* Standard Generalized Markup Language
- SGML tools, and XML support, 212
- Short Message Service, 237, 238
- show attribute, 36, 185–187
- show = “embed” attribute, 47
- show = “other” attribute value, 48
- simple element type, 177, 183, 191, 192
- Simple links
 - and href attribute, 181
 - out-of-link links converted into, 212
 - and XLink, 172, 173–174
- Simple Mail Transfer Protocol, 6
- simple value, in type attribute, 181
- Simple Web link, 25, 26
- Single-destination anchors, 39, 52
- Single-source anchors, 39, 52
- Single-source, single-destination links,
 - xxvii, 26, 204
 - problems related to, 15–16
 - structural, 31
- Site maps, 20
- Slash characters, and location steps, 106
- SMIL. *See* Synchronized Multimedia Interchange Language
- SMS. *See* Short Message Service
- SMTP. *See* Simple Mail Transfer Protocol
- Software reuse, with XPath, 95
- Sophistication, and specialization, 231
- Source anchors, 9
 - and Linkbase filter, 28
 - and link semantics, 17
 - and onclick event, 19
 - overlapping, 14
 - and simple Web links, 26
- span element, 77
- Spatial hypertext, 34
- Spatial hypertext associations, 33
- Specific link, 30
- Standard Generalized Markup Language,
 - xxviii, 72, 91, 228
- Startpoint, 149
 - of range, 145, 146
- start-point function, 156, 160
- starts-with function, 129
- Static link, definition of, 40
- Storage level, and XLinks, 196
- Storyspace, xxviii
- string function, 129
- String functions, in XPath, 128–131
- string-length function, 130
- string-range function, 156, 160
- String type, 146
- String-value, 98
 - of comment node, 101
 - of element node, 100
 - of namespace node, 101
 - of root node, 99
 - of text node, 101
- string value object type, 96

- Structural associations, 25
 - Structural links, 10, 17, 18, 30–33
 - in example Hyperwave Web page, 32
 - with simplification of Hyperwave, 31
 - Structural relationships, 30
 - Structured text, pattern matching for, 41
 - Style sheet languages, 69
 - Style sheets, 10, 11, 48
 - little XSLT programs as, 91
 - and nodes, 38
 - Subfolders, bookmark, 213
 - Subresources, 50, 63, 143, 162
 - errors, 155
 - and processing model, 204
 - substring-after function, 130
 - substring-before function, 130
 - substring function, 130
 - SVG. *See* Scalable Vector Graphics
 - Synchronized Multimedia Interchange Language, xxv, 18, 36
 - Syntax
 - for child sequence, 152
 - for fragment identifiers, 141
 - full XPointer, 153
 - of location paths, 104–105
 - for XPath expressions, 121
 - Syntax errors, for XPointer, 155*n*
- T**
- table descendants, 117
 - table element, 89
 - TCP. *See* Transmission Control Protocol
 - Technology stability, and transitioning to new model, 224
 - TEX/LaTeX, 92
 - Text
 - anchors, 9
 - files, 38
 - selecting for spanning number of nodes, 149
 - selecting within one node, 149
 - Text nodes, 149
 - and child axis, 111
 - in XPath, 101–102
 - Third-party links, 44, 45, 59–61, 198, 204
 - title attribute, 193
 - and link semantics, 216
 - and link typing, 64, 65
 - in XLink, 183–184
 - title elements, 193
 - multiple, appearing as children, 180
 - XLink, 178
 - title element type, 178
 - title value, in type attribute, 181
 - to attribute, in XLink, 188
 - Tool support, with XLink and XPointer, 206
 - Topic maps, 197
 - Transclusion, xvii, xxvi, 12*n*, 23, 43, 44–45
 - definition of, 41
 - and embed value, 186
 - legal issues with, 198, 205*n*, 207–208, 238
 - and linking control, 215
 - and origin of resources, 220
 - and processing model, 205
 - supporting access to source, 47
 - supporting composition, 46–47
 - and XLink’s success, 198
 - Transcopyright, xvii, 23, 208
 - Transitioning to new model, 221–236
 - alternative approaches, 222–226
 - building new sites, 235–236
 - content negotiation, 231–233
 - example strategies, 226–230
 - external transition, 224
 - internal: Big Bang—external: Big Bang, 225
 - internal: Big Bang—external: no change, 225
 - internal: dual system—external: no change, 225
 - internal: hybrid—external: hybrid, 226, 230
 - internal: hybrid—external: no change, 225, 226–229
 - internal transition, 224
 - issues in, 222–224
 - migration of content, 233–235
 - translate function, 130
 - Translets (Sun Microsystems), 91
 - Transmission Control Protocol, 4, 6
 - Traversal, 52, 53, 54
 - and arc elements, 178
 - and multi-ended links, 62

- and out-of-line extended links, 176
 - and typed links, 64
 - with XLink, 174
 - Traversal attributes
 - from, 188
 - to, 188
 - label, 188
 - XLink, 180, 188
 - Traversal semantics, XLink support
 - of, 81
 - true function, 126
 - type attribute, 180–181, 191
 - TypeB element type, 171
 - Typed associations, 25
 - Typed links, 64–66
 - Types, nodes tested for, 116
- U**
- unexpanded entity reference information item, 84
 - Unidirectional associations between information, 25
 - Unidirectional links, 173
 - embedded, 11
 - Unified Modeling Language (UML), 235
 - Uniform Resource Identifiers, xix, 8, 51, 55, 56, 79, 162, 189
 - Uniform Resource Locators, xvii, 7, 55, 56, 57, 69, 70–71
 - Uniform Resource Names, 55, 56, 57
 - Unique identifiers, for element nodes, 100
 - Universal cross-referencing, 64
 - Universal resource identifier, 7, 50, 71
 - unparsed entity information item, 85
 - Untyped associations, 25
 - Untyped links, 12, 16–18
 - URI Infoset property, base, 79
 - URI references, 139
 - namespace prefix mapped onto, 75
 - semantics specified with, 182
 - XInclude support of, 80
 - URIs. *See* Universal Resource Identifiers
 - url-path, 55
 - URLs. *See* Uniform Resource Locators
 - URNs. *See* Uniform Resource Names
 - Usability
 - and content sophistication, 231
 - engineering, 219
 - Usability issues, in XML-based systems, 219–220
 - Usage-centered design, 215
 - Usage scenarios: hypermedia support for information utilization, 42–48
 - adding links to read-only material, 44
 - generic links, 44–45
 - link semantics-controlling context, 48
 - link semantics-embedding content, 47–48
 - overlapping anchors, 45–46
 - scenario description, 42–43
 - transclusion-supporting access to source, 47
 - transclusion-supporting composition, 46–47
 - User-defined schemas, RDF, 93
- V**
- Values, in type attribute, 181
 - Variable bindings, XPath, 97
 - Video, 22, 34, 41, 70
 - VIKI, 34, 35
 - Virtual Reality Modeling Language (VRML), 33
- W**
- WAP. *See* Wireless Application Protocol
 - Warwick Framework, 93*n*
 - W3C. *See* World Wide Web Consortium
 - Web Accessibility Initiative (WAI), xxv, 219
 - Web browsers, 6
 - bookmarks in, 213–214
 - Web content
 - accessibility and usability of, 219–220
 - and transitioning to new model, 221–236
 - Webcosm, xxviii, 20, 27, 30, 38, 64
 - Webcosm server, generic link using simplification of, 28
 - Web links
 - dynamic, 26–27, 27
 - simple, 25–26, 26
 - Web Markup Language (WebML), xxv, 215

- Web metadata, RDF for definition of, 92
 - Web pages, 6
 - assisting technologies for, 69–70
 - Hyperwave, 32
 - transition issues with, 221
 - Web scenarios, 222
 - Web server aliases, 57
 - Web servers, enhancing, 20
 - Web sites, 10
 - building new, 235–236
 - link-poor, 209, 213
 - Whitespace, 88, 102
 - Wireless Application Protocol, xxv, 70, 238
 - World Wide Web, xxvii–xxviii, 3–4, 7–8
 - basic linking components, 9
 - broader view of linking in, 10–11
 - current solutions to linking problems, 18–20
 - growth of, xxv
 - information linking in, 8–20
 - and link destination unpredictability, 14–15
 - linking model, 8–10
 - as open hypermedia system, 239
 - overwhelming success of, 69
 - resource, 50
 - shortcomings of linking model, 11–18
 - World Wide Web Consortium, xxv, xxviii, 7, 72, 141
 - Composite Capability/Preference Profiles, 232
 - and device independence, 239
 - and RDF generation from XLink, 93
 - snapshot of technical reports page, 140, 165
 - WAI group in, 219
 - and XLink processing model, 203
 - and XML Infoset, 88
 - XML introduced by, 71
 - XML Linking Working Group within, xxix
- X**
- Xanadu, xvii, xxvi, 23, 208
 - XForms, xxix
 - XHTML. *See* Extensible Hypertext Markup Language
 - XInclude, 81–88, 94, 212
 - XLink, xv, xvii, xviii, xxix, xxx, 12, 13, 15, 20, 21, 44, 49, 66, 69, 94, 221
 - attributes, 180–188
 - built on top of XML, 188
 - as catalyst for information management paradigm shift, 222
 - conformance described by, 189–190
 - cross-referencing with, 227
 - embedding links into XML documents in, 170–171
 - emerging support for, 209–213
 - extending, 194–195
 - future of, 198, 237–239
 - and global attributes, 78
 - hand-coded support, 212–213
 - interpretation of, 188–190
 - and linkbases, 195, 196
 - link flexibility in, 39
 - link types and element types, 171–180
 - multi-ended links supported by, 62–63
 - and namespace conformance, 78
 - parsers and code libraries, 211–212
 - processing, 188–189
 - and publishing by reference, 42
 - RDF generated from, 93
 - relation between link and element types, 172
 - richness of link semantics in, 40
 - show=“other” attribute supported by, 48
 - support in existing browsers, 210–211
 - and third-party links, 59–61
 - transclusion features with, 80–81, 206–207
 - traversing links in, 184, 185
 - typed links supported by, 64–66
 - usage, 190–198
 - XML as foundation of, 189
 - XML Base required by, 80
 - and XML Infoset, 86
 - XLink attributes
 - behavior, 180, 184–187
 - element type, 180–181
 - locator, 180, 181–182

- semantic, 180, 182–184
 - traversal, 180, 188
- XLink-capable clients, and content negotiation, 232
- XLink element types, 177–180
 - arcs, 178
 - attribute use patterns for, 179
 - locators, 178
 - relationships, 177
 - resource, 178
 - title elements as children of, 179
 - titles, 178–180
- xlinkit.com, 212
- XLink locators, XPointers used in
 - definition of, 51–52, 54
- XLink namespace URI, official, 170
- XLink standard, comments on definitions in, 53–54
- xlink:type attribute, 171
- XLink usage, 190–198
 - extending XLink, 194–195
 - using XLink for linkbases, 195–198
- XLink element and attribute
 - declaration, 190–194
- XML. *See* Extensible Markup Language
- XML Base, 79–80, 94
 - support for, 212
 - XLink applications implementing, 189
- xml:base attribute, 79
- XML documents
 - embedding links into, 170–171
 - examples of selecting nodes from, 120–121
 - hyperlinks used with, 169
 - Infoset information items with, 86
 - and MIME types, 139
 - and nodes, 38
 - node types illustrated in, 102–103
 - XLink attributes for embedding link formation in, 180
- XML DTDs, 81
- XML editor, 73
- XML fragment identifiers, XPointer
 - goal of defining mechanism for, 143–144
- XML Inclusions. *See* XInclude
- xmlinfo link, 19
- XML Information Set (Infoset), xxix, 81–88, 94, 143
 - Information items, 82–86
- xml:lang attribute, 100, 180
- XML Linking Language. *See* XLink
- XML Namespaces, 69, 94
 - effect of naming rules on, 78
 - recommendation, conforming to, 86
 - XLink’s use of, 189
 - and XML names, 170
- xmlns, 154–155
- xmlns attribute, 101
- xmlns:html attribute, 75
- xmlns prefix, 75
- xmlns scheme, 163, 164
- xmlns:xlink attribute, 171
- XML Path Language. *See* XPath
- XML Pointer Language. *See* XPointer
- XML Query (XQuery), xxix, 95, 136–137
- XML resources, transformation of by XSLT style sheet, 203
- XML Schema, xxix, 136
 - information models specified in, 235
 - for XLink content, 191
 - XPath used by, 95
- xml:space attribute, 100
- xml:xlink:href attribute, 171
- XPath, xv, xxix, xxx, 20, 21, 49, 51, 66, 69, 91, 95–137, 165
 - abbreviations, 118–120
 - axes in, 106, 107–115
 - document order of nodes, 98
 - example node tree, 103
 - examples, 133–136
 - expressions, 121–123
 - functions, 123–133
 - future developments with, 136–137
 - general model, 96–103
 - location paths, 103–121
 - and namespace conformance, 78
 - node set functions in, 131–133
 - node sets and XPointer location set, 144
 - node tree example, 103
 - number functions in, 126–128
 - operators, 121, 122, 123
 - overview of XPath functions, 124

- XPath (*continued*)
 - and pattern definitions, 41
 - performance suggestions about, 133–134
 - string functions in, 128–131
 - and XML Infoset, 86, 87
 - and XPointer, 165
 - XPointer built on top of, 156, 168
 - and XSLT, 165
- XPath 1.0, 136, 137, 167
- XPath 2.0, 136, 137, 167
- XPath data model, XPointer’s extension of, 147, 156
- XPath object types, in XPointer, 146
- XPath specification, location path syntactically described in, 104
- XPath Visualiser, 212
- XPointer, xv, xvii, xviii, xxix, xxx, 20, 21, 49, 66, 69, 91, 139–168, 221
 - built on top of XPath, 156, 168
 - capabilities of, 50–52
 - as catalyst for information management paradigm shift, 222
 - character escaping (examples 1 and 2), 163
 - emerging support for, 209–213
 - end-point function in, 157–158
 - error types defined by, 155*n*
 - escaping rules, 162
 - evaluating scheme parts in, 156
 - extensions of to XPath data model, 147
 - fragment identifiers, 39
 - functions, 156–161
 - future developments with, 167–168, 237–239
 - general model, 143–150
 - generating for point within document, 148
 - and generic links, 44–45, 63–64
 - hand-coded support, 212–213
 - here function in, 158
 - and namespace conformance, 78
 - origin function in, 158
 - overview of functions in, 157
 - parsers and code libraries, 211–212
 - and pattern definitions, 41
 - and publishing by reference, 42
 - range function in, 158
 - range-inside function in, 158–159
 - range-to function in, 159–160
 - requirements for using, 139, 141–142
 - schemes, 154–155
 - standardization problems with, 167–168
 - startpoint function in, 160
 - string-range function in, 160
 - support in existing browsers, 210–211
 - XLink complementary with, 198
 - and XML Infoset, 86
 - XPath object types in, 146
 - XPath used by, 95
- XPointer data model
 - point, 144–145
 - range, 144, 145–148
- XPointer data model examples, 148–150
 - making multiple selections, 149–150
 - marking point within document, 148
 - selecting text that spans a number of nodes, 149
 - selecting text within one node, 149
- XPointer forms, 150–153
 - bare names, 150–151
 - child sequences, 151–153
- xpointer keyword, 154
- XPointers
 - client support of, 142
 - composing, 165–166
 - as fragment identifiers for XML resources, 71
 - and namespaces, 163–164
 - persistence of, 166–167
- xpointer scheme, 163
- XPointer specification, container nodes, node points, and character points, 146
- XPointer usage, 161–167
 - composing XPointers, 165–166
 - persistence, 166–167
 - XPointer character escaping, 162–163
 - XPointers and namespaces, 163–164
- XQuery, 136
- XSL. *See* Extensible Stylesheet Language
- XSL Formatting Objects (XSL-FO), xxix, 90, 94

Index

269

- xsl:key element, 134
 - XSL style sheets
 - and nodes, 38
 - XML documents formatted by, 187
 - XSL Transformations (XSLT), xxviii, 51,
 - 90–91, 94, 136, 197
 - evolution of, 136
 - support for, 212
 - and XPath, 95, 165
 - XSL Transformations style sheets, 210
 - and hand-coded support, 212
 - and link semantics, 217–218
 - transformation of XML resources
 - by, 203
 - XSLT Virtual Machine (Oracle), 91
 - XTooX, XLink linkbases supported
 - with, 211
 - X2X, XML support with, 212
- Z**
- Zero, dividing zero by, 126
 - Zero index, 145
 - ZOG, 23

