

INDEX

A

adopting BIM. See Building Information Modeling
AEC industry, 150, 222, 230
AECO. See AEC industry
AGC BIM Forum, 92, 110
AIA. See American Institute of Architects
Allison, Markku, xiii, 22
ambiguity, 73, 105
American Institute of Architects, 22, 192
analytics. See Building Information Modeling
Antoine Predock Architect, 166–76, 178, 180–90
anxiety, 74
ArchiCAD. See Graphisoft ArchiCAD
architects
 arrogance, 73, 74
 as artists, 73
 vs. designer, 74
 identity, 43, 66, 99
 master facilitator, 162
 role, 74, 218
architecture firm, 81, 82
Arkin, Gregory, xiii, 7
Arup, 210, 216
Ashcraft, Howard, xiii, 133, 137, 203
attitude, 7, 84, 98, 162, 235
Aubin, Paul, xiii
AUGI, 102
Autodesk, 4, 83, 102, 142, 152, 218, 220
AutoCAD, 26, 47, 59, 66, 82, 83, 177, 208, 220

B

Ecotect, 112, 114
Navisworks, 61, 84, 87, 143, 167, 177
Revit, xix, 29, 34, 35, 36, 46, 47, 53, 56, 59, 66, 82, 83, 84, 92, 102, 111, 114, 115, 118, 177, 202, 203, 204, 201, 217, 229
University, 104, 203
autonomy, 99

Banham, Reyner, 211
Beck, Bradley, xiii, xxi, 42, 96, 101, 102, 104, 171–90
Bedrick, Jim, 22
Bernstein, Phil, xiii, xxii, 4, 93, 128, 166, 168, 203, 218–33
bidirectional associativity, 14, 34
Big BIM, little bim, 92, 133
big room. See collaboration
BIM. See Building Information Modeling
BIM Forum. See AGC BIM Forum
BIM monkey, 113
Brand, Stewart, 87
Boeker, John, xiii
Boyer, Ernest, 92
Brown, Tim, 220
Building Information Modeling, ix, 32
 adoption 3, 4, 5, 7, 9, 10, 21, 25, 109, 147, 235
 age, 71
 analytics, 6, 13, 37, 61, 66, 78, 122
 auditability, 122
 authoring tools, 171
authorship, 110
benefits, 4, 9, 13, 14, 15, 16, 17, 18, 41, 42, 186, 223
best practices, 33, 53, 98
coaching, 42
challenges, 19, 21, 42, 43, 46, 56
champion, 69, 196
co-benefits, 11, 13, 14, 15, 16, 17, 18, 93, 94, 143, 223
competitive advantage, 120, 123, 203
coordination, 34, 61, 142, 143, 147, 176, 186
coordinator, 63
definition, ix, xvii, 13, 22
documentation, 57, 142, 151
facilitator, 101, 205
FAQs, 138
for Principals, 114
implementation, x, 4, 6, 29, 31, 32, 37, 128, 231, 235, 236
interoperability, 20, 87, 94, 115, 153, 196
learning curve, 22, 40, 207
manager, 63, 66, 67, 85, 144, 147, 171
manual, 68
misconceptions, 11
model manager, 144
modeler, 63, 67
model(s), 108, 109, 169
operator, 20, 63, 121, 181
pilot project, 5, 26, 36, 41, 53, 204, 205
plan, 40
process, 12, 22, 29, 32, 79, 115, 128, 148, 154, 202, 235

Building Information Modeling (*Cont.*)
 product, 12
 right of reliance, 146
 ROI. *xvi*, 4, 7, 15, 19, 23, 39,
 40, 43, 54, 98, 119, 120, 147
 roles, 63–88
 self-assessment, 39
 social benefits. *See* co-benefits
 social implications, *xviii*, *xix*,
 4, 15
 standard of care, 85
 standards, 38
 tool, 4, 22, 58, 79, 122, 148,
 154, 181, 189, 190, 202,
 220, 235
 training, *xviii*, 22, 23, 39, 40, 41,
 42, 82, 112, 162, 191, 201,
 204–6, 219
 value proposition, 116
 visualization, 37, 147, 212
 workflow, 33, 36, 39, 95, 96,
 97, 135, 136, 175, 176

Burns, Joe, 78
 business case, *xvi*
 buying seats, 7

C

CAD. *See* computer aided design
 CAD monkey, 113
 Calvino, Italo, 22
 case studies. *See* Integrated
 Project Delivery
 CATIA, 215
 change, *xviii*, *xix*, 7, 8, 14, 21, 23,
 32, 74, 77, 82, 92, 93, 99,
 116, 141, 148, 150, 171,
 208, 214, 218, 233
 managing, 8, 98
 resistance, 141, 146
 change orders, 172
 Charles River Software, 84
 Chief Information Officer, 118
 CIO. *See* Chief Information Officer
 citizen-architect, 191, 192

clash detection, 10, 14, 194
 cloud computing, 123
 coercion, 69, 148, 198
 Cohen, Jonathan, *xiii*, *xxi*,
 148–55, 208
 collaboration, 24, 33, 48, 69, 87,
 91, 92, 93, 95, 96, 97, 98,
 99, 100, 101, 104, 110, 115,
 133, 135, 137, 140, 145,
 153, 163, 167, 191, 194,
 196, 203, 209, 201, 215,
 223, 224, 226, 235
 cost, 109
 intelligence, 111
 obstacles, 94
 rooms, 149
 tools, 23, 106
 collocation, 114
 communication, 21, 24, 46, 53,
 55, 96, 102, 104, 105, 106,
 107, 119, 135, 137, 141,
 144, 145, 153, 154, 159,
 174, 175, 194
 complexity, 132, 133, 141, 143,
 166, 167
 computer aided design, 12, 21,
 25, 39, 40, 42, 43, 53, 55,
 59, 63, 96, 99, 118, 121,
 170, 185, 187, 203, 207, 208
 construction
 adversarial relationships,
 153, 179
 culture, 191
 industry, 80, 98, 101, 127, 142,
 197, 226
 knowledge, 23, 41, 177,
 182, 189
 means and methods, 22, 80,
 177, 179, 195
 process, 164
 Construction Users Roundtable,
 122, 191, 192, 194
 contract. *See* contractual
 agreement

contractors, 61, 72, 80, 82, 87,
 94, 96, 106, 108, 116, 122,
 131, 138, 144, 147, 155,
 163, 167, 172, 173, 179,
 186, 194, 227
 contractual agreement, 137,
 148, 153
 convergence, 123
 coordination. *See* Building
 Information Modeling
 cooperation. *See* collaboration
 Cramer, James, *xiii*
 crowdsourcing, 93, 130
 critical thinking, 20
 culture. *See* firm culture
 CURT. *See* Construction Users
 Roundtable

D

decision making, 34, 43, 134, 173
 design, 12
 design-bid-build, 115
 design-build, 115, 138, 140, 144,
 146, 163, 164
 design intent, 191
 design thinking, 215, 220,
 221, 228
DesignIntelligence, 98
 desktop virtualization, 123
 digital fabrication, 233
 digital prototype, 145
 drafting. *See* hand drafting
 drawing, 8
 Durand, Paul, *xiii*, *xx*, 46–53, 162
 Dzambazova, Tatjana, *xiii*

E

education, *xvii*, 20, 99, 100, 162,
 189, 191, 196, 201, 203, 204
 emerging professionals, 63, 181,
 187, 202
 emotional intelligence, 104, 133
 energy analysis, 12
 engineers, 94, 102, 137, 143, 222

Erdy McHenry, 107, 161
etiquette, 108
expectations
managing, 13, 24, 43, 205

F

Fallon, Kristine K., xiii, xxi, 69, 76–87, 95, 206
firm culture, x, xvi, 51, 98, 115, 121, 140, 201
force. See coercion
followership, 160

G

Gehry, Frank, 73, 215, 216
Gehry Technologies, 215
General Services Administration, 69, 78, 79, 87, 109, 191–98
Ghafari Associates, 19
Gladwell, Malcolm, 225, 231
Google SketchUp, 172
Graham, Bruce, 77
Graphisoft ArchiCAD, xix, 66, 83, 115, 118, 202, 203
green IT, 123
Greven, Aaron, xiii, xx, 35, 53–61, 95, 106, 163
GSA. See General Services Administration

H

Hagen, Stephen, 197
hand drafting, 47, 172, 179, 212
Handler, Laura, xiii
Hardin, Brad, xiii, 108, 109
Hardy, Charles, xi, xiii, xxi, 191–98, 202
hardware, 43, 47
Harrison, Phil, 111, 113, 116, 118
healthcare, 11, 150
high-performance building, 136
HOK, 84, 149, 151
HR. See human resources
human bandwidth, 112

human nature, 102
human resources, 201
Hungerford, Jack, xiii, xxi, 69–76

I

IDEO, 220
IFCs, 196
implementation. See Building Information Modeling
information sharing. See knowledge sharing
information management, 193
information technology, 86, 116, 119, 148, 216
innovation 193
insurance, 110
integrated design, xvii, 30, 33, 48, 69, 70, 71, 72, 79, 86, 91, 93, 103, 106, 127, 129, 138
definition, xvii
FAQs, 138
phases, 130, 131
Integrated Project Delivery, xviii, 19, 48, 115, 116, 118, 122, 131, 133, 146, 148–55, 193, 195, 203, 218, 220, 225, 227, 229, 230
case studies, 148, 150, 154, 155
due diligence, 70, 76
facilitator, 152
integrative design, 138
intern architects. See emerging professionals
interoperability. See Building Information Modeling
iRoom. See collaboration
IT. See information technology
Ivey, David, 53
Invisible Cities, 22
IPD. See integrated project delivery

J

Jernigan, Finith, 92, 133
Jersey Devil, 165

K

Kahn, Fazlur, 77
Kahn, Louis, 216
Kaizen, 25
Keepers of the Geometry, 98, 99, 170, 209, 213, 214, 218
Kendsersky, Joe, 210–13, 215
Khemlani, Lachmi, xiii
KieranTimberlake, 165
Kiker, Mark, xiii, 103
Klancnik, Dan, xiii
KlingStubbins, 68, 193, 195, 197, 198, 210–13, 215, 219–21, 223–32
knowledge sharing, 99, 104, 129, 132, 133, 137, 150, 191, 196
Kristine Fallon Associates, Inc.
See Fallon, Kristine K.
Kron, Zach, ix, xiii, xv, 3, 29, 63, 91, 127, 159, 166
Kumbaya, xi, 71, 148

L

LCI. See Lean Construction Institute
Le Corbusier, 216
leadership, 66, 118, 119, 144, 155, 159, 160, 162, 183, 187, 190, 192, 194, 216
Leadership by Design, 191
lean construction, 19, 155
Lean Construction Institute, 152
Lapatner, Barry, xiii
Lawson, Bryan, xiii, 128
LEED, 36, 229
level of detail, 21, 38
liability, 22, 110, 115, 137, 143, 173, 183
life-cycle cost, 116
LOD. See level of detail
Loukassis, Yanni, xiii, xxii, 98, 99, 170, 209–18

M

Mar, David, 106
 master architect. See master builder
 master builder, 138, 159–70
 master builder team, 161, 167–70
 mastery, 41
 Matta, Charles, 79
 McGraw-Hill, 87, 141, 142, 143, 220
 mentoring, 48, 100, 175, 177, 205, 206, 207, 208
 MEP consultants, 106, 177, 190
 metrics, 137
 Miller, Rex, 6
 mindset, 7, 20, 33, 142, 162, 177, 179, 206, 209, 235
 Mockbee, Samuel, 165
 Morris Architects, 64
 Mortenson Construction, xxi, 68, 131, 140–47, 164, 166, 167, 169
 Mueller, Dean, xiii
 mutual mentorship. See mentoring

N

Neeley, Dennis, 4
 New Trier Township High School, Winnetka, IL, 71
 Nitzsche, Rich, xiii, xxi, 111–23, 204

O

O&M. See operation and maintenance
 O’Neil, WE, 95
 Onuma, Kimon, xiii, 161, 164, 165, 201
 operation and maintenance, 116, 192, 194, 196
 Optima, 53

P

pair programming, 96, 208
 parametric modeling, 215

Parsons, Christopher, xiii
 people issues, xvi, 9, 107
 Perkins+ Will, xxi, 111–23, 204
 personality, 186
 plot weasel, 113
 Pollard, Kell, 92
 Practice, 41
 Predock, Antoine, 98, 186
 Antoine Predock Architect, 166–76, 178, 180–90
 Pressman, Andrew, xiii, 203
 productivity, 36, 45, 46, 77, 101, 132, 172, 174, 208
 project delivery methods, 130, 131
 prototype, 145
 public sector projects, 192

Q

questions, xi

R

Read, Phil, xiii
 Reed, Bill, 167
 responsibility, 110, 183
 Revit. See Autodesk Revit
 RFI, 80
 Rhino, 217
 right of reliance. See Building information Modeling
 risk, 36, 71, 133, 141, 149, 150
 roles. See Building Information Modeling
 Roman, Howard xiii
 Rumpf, Peter, xiii, xxi, 68, 140–47, 167, 169
 Rural Studio, 165

S

Salmon, James, xiii
 schedule, 45
 Schultz, Ryan, 65
 Scott, Allison, xiii, xx, 46–53
 Seletsky, Paul, 98
 sharing, 33
 shelfware, 119

sigmoid curves, 146, 147
 simulation, 209–18
Sketches of Frank Gehry, 73
 SketchUp. See Google SketchUp
 Skidmore, Owings and Merrill LLP, 77, 142
 Smith-Carter, 97, 166–76, 178, 180–90
 Smith, Deke, xiii, 97
 social benefits. See co-benefits
 social media, 52, 123, 143
 social networking. See social media
 sociology, x
 software, xvi, 6, 21, 23, 53, 58, 64, 118, 171, 183, 189, 202, 207
 interoperable, 94, 95
 learning, 201–9
 legacy, 7, 22, 116
 resellers, xvii
 SOM. See Skidmore, Owings and Merrill LLP
 Spata, Sam, xiii, 78, 79, 81, 82, 83, 84, 85, 86
 staffing, 34, 35, 43, 55, 57
 Stafford, Steve, xiii, 67
 Stapleton, Andy, xiii, xxi, 131, 140–47, 164, 166
 Stassi, Lauren, 64, 65
 strategy, 118
 sustainability, 116, 132, 153, 194, 219
 Swett, Richard N., 191
 synthesis, 219
 systems thinking, 138

T

talent, 112, 118
 Tardiff, Michael, xiii
 team size. See staffing
 technology, xvi, 80, 85, 87, 93, 98, 107, 142, 187, 204, 209, 216

ability, 121
challenges, 100, 163
curve, 81
disruptive, 99, 208
evangelist, 144
implementation, 32
managing, 23, 80, 118
Teicholz, Paul, xiii, 19, 77, 78, 100
teleconferencing, 101, 152
Thomson, Dr. Derek, 105
Thornton Tomasetti, 78
Tocci Building Companies, 68,
193, 195, 197, 198, 215,
219–21, 223–32
Tocci, John, 92
Toyota manufacturing system, 148
tradition, 7, 8
training, See Building Information
 Modeling
training decay, 204
transparency, 137

trust, 23, 70, 72, 73, 128, 133,
137, 139
T-shaped teammates, 160,
162, 164
Turkle, Sherry, 211

U

unlearning, xvii, 40, 42, 75,
137, 141, 187, 194,
202, 203, 206, 207, 208,
217, 232

urgency, 73, 143, 235

V

Vandezande, James, xiii
VDC. See Virtual Design and
 Construction
Vekaszy, Sara, 229
videoconferencing. See
 teleconferencing
virtual builders, 175, 202

Virtual Design and Construction, 44,
47, 140, 142, 143, 145, 147
Virtual Master Builder, 92, 160, 163

W

Wexler, Milton, 73
Wheeler, Dan, xiii
Winter Street Architects, xx,
46–53, 54, 55, 56, 57, 58,
59, 60, 61
workflow. See Building Information
 Modeling
worksets, 41

Y

Yudelson, Jerry, xiii

Z

Zweig, Mark, 131
ZweigWhite, 131
Zyskowski, Pete, 26

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>