INDEX

A
Abuse, exposing prototypes to, 134
Acceleration stage:
  for breakthrough innovations, 189–190
  knowledge management in, 192, 195, 198–199
Accountability, in future-friendly design, 343–344
Action step (CTN method), 244–246
Activists, 343
Acumen subdimension (CVPA), 326
Adoption rates, 298
Adventure Series, at GE, 168–169
Advertising, “look for,” 378
Aero chair, 297–298
Aesthetics, 320
Aesthetic preferences, 320.
  See also Consumer aesthetic preferences
Aesthetic value, 304
Affective uncertainty, 259
Age, consumer’s, 311
Agile development, 353
Airbus, 184
Aircraft, displays in military, 365
Airline industry, self-service in, 229–230
Air New Zealand, 231
Air Products, 193
Alessi coffeemaker, 304, 305, 308
Alignment, 277
Amazon, 126, 255, 355
Ambiguity, 10
American Express, 230
American Time Use Survey, 336
Amplification, intelligence, 192–194, 197, 199–200
Analog Devices, 194
Analogical thinking, 255, 259–261
Angst, 339
Animation, of information, 114
Anthony, S., 41
Anti-persona, 28, 31–37
Appearance, product:
  defined, 303
  quality cues from, 309–310, 312
  six roles of, 304–305
Apple, 260, 267, 282, 376, 377
Application migration, 193–194
Arbitrage, information, 192–193, 197
Architecture:
  of organization, 199, 200
  of prototypes, 96
Archives, pictorial, 257
Arnold, T. J., 325
Asia, 321. See also specific countries
“As is” customer experience maps, 43, 44, 50
Assumptions:
  about business model components, 298
  sustainability assumption testing, 394–395
Attention, drawing, 304, 309
Audio capability, 360
Auditory feedback, 354
Audits, idea, 256
Augmented reality, 355
Australia, 311
Authenticity, 337–338
Autonomy, 170

B
Backcasting, sustainability, 390–391
Background research, 126
Bain and Company, 285
Beckman, S., 23
Béhar, Yves, 214
Behavior, employee, 227
Beltagui, A., 232, 233
Bend (Design Heuristic), 77–79
Benefit uncertainty, 259, 260
Berstell, G., 41
Bertels, H., 286, 298
Best design, production of, 334
Best mode requirement, 372
BIs, see Breakthrough innovations
Bicycles, culture and design of, 322–323
Big data, 230–231
Biomax®, 197
Black Cloud scenario, 267, 268
Blank, S., 282, 285
Bloch, P. H., 325, 327
Blue ocean concept, 257
Bluetooth earpieces, 260–261
Board of directors, 207, 208
Boeing, 184, 193
Boldness, of business models, 277
Bolted-on sustainability, 383
Boot Camp phase (Menlo Innovation Ecosystem), 159, 162–165
Booz and Company, 126
Bosack, Leonard, 261
Bourdieu, Pierre, 323, 324
Brainstorming:
onboarding by, 153–154
personas in, 29
stories in, 91
sustainability, 390–393
tools for, 145
Brand, strength of, 217, 312
Brand image, 312
Branding, for early-stage ventures, 135
Braungart, M., 382, 384
Breakthrough innovations (BIs).
See also Knowledge management for breakthrough innovations; Lean start-up approach
and corporate myopia, 179
incremental vs., 188–190
lean start-up approach to developing, 281–282
Brown, T., 41, 47
Brunel, F. F., 325
Budget, for cultural transformations, 182
Build, Test, Iterate, and Refine phase:
for Orbit Baby, 99
of product development process, 87–89
stories and prototypes in, 96–97
Building to learn, 96, 167
Business model(s):
assumptions about, 298
of competitors, 271
defined, 265–267
defining your organization's, 271–272
free, 270
implementation of new, 276–277
innovating outside of, 285–286
in lean start-up approach, 286–289

Business model canvas:
- components of, 287–289
- lean and FEI canvases vs., 290–294, 296

Business model design, 265–278
- and definition of business model, 265–267
- and implementation of new business model, 276–277
- process of creating, 271–276
- selecting model for, 269–271
- triggers for, 267–268
- value from, 267–269

Business Model Strength Survey, 268

Business practitioners:
- “preparing the ground” for, 121–122
- relationships of design professionals and, 121

Business strategy. See also
- Strategically-embedded design thinking
- and business plan, 276–277
- leveraging Value Accelerators™ in, 275, 276

Buyers, users vs., 28

Buyer personas, 28, 30, 31

Buy-in, for design-based initiatives, 169, 171

C

Candi, M., 232, 233

Cannon, 282

Capital protection and renewal, 385, 386

Carlzon, Jan, 228

Case-study scenario exercises, 149–150

Categorization, 304, 309

Centrality of visual product aesthetics (CVPA), 311, 324–327

CEOs, see Chief executive officers

Certifications, 135–136

Challenger explosion, 289

Change, resistance to, 170, 179

Channel:
- in lean start-up approach, 298
- in six-cornerstone framework, 270

Chapman, Jonathan, 391

Charan, Ram, 273

Chesbrough, Henry, 265

Chief executive officers (CEOs):
- control by, 209
- support for design thinking by, 207, 208

Chief innovation officers (CIOs), 178–179

Children’s Hospital of Pittsburgh, 169

China, 321, 329

Christensen, C., 41, 266, 285–286

Ciesko, Mark, 164

CIOs (chief innovation officers), 178–179

Cisco, 261

Claims, patent, 369–370, 372–373

Clarity, of business models, 277

Class, social, 311, 323–324

Classicists, 327

Clay Street initiative, 169

Clean cut towel dispenser, 136–138

Climate, organizational, 212–215

Clorox, 183

Closed behaviors, 254

Closure step (CTN method), 247–248

Coca-Cola Company, 368, 377, 378
Co-creation:
- in future-oriented design, 340, 346
- of inspirational design briefs, 21–22
- as integral value, 334
- in Menlo Innovation Ecosystem, 166
- with stakeholders, 117
- sustainability via, 396

Cognitive process of idea generation, 72–73

Coherence, business model, 277

Collaboration:
- on design briefs, 217
- in design thinking, 9, 173, 174
- identifying purpose of, 242–243
- by UI and industrial designers, 363–364

Collages, 66

Collectivism, 321, 322

Collins, Jim, 267

Color, 308, 322

Commoner, Barry, 382

Common law trademark rights, 378

Communication:
- about radically new products, 254–256
- in CTN method, 247–248
- of global information, 343
- in Menlo Innovation Ecosystem, 162–163
- multimodal, 10
- personas for, 30, 32, 35, 36
- product development phase related to, 87–89, 97–98
- with prototypes, 102
- with stories, 89–90, 100, 102

Community first (emerging need), 340–341

Competitions, let the best idea win, 262

Competitive advantage, 268

Competitive Advantage (Michael Porter), 268

Competitive research, 126

Competitors, 176–178, 271

Complete product stories, 97–98

Complexity, product, 307

Concept development:
- design briefs in, 15
- sustainable, 393–394

Concept generation:
- Design Heuristics for, 77–80
- transitioning from insight collection to, 68–69

Conceptual separability, 377

Condensation, of information, 114

Connectivity, 340–341

Consistent design, 334

Constitution, U.S., 368

Consumer aesthetic preferences, 319–330. See also Consumer response to product form
- cultural factors in, 320–324
- individual factors in, 324–328
- and product developers, 329–330
- situational factors in, 328–329
- and social class, 323–324
- and user experience, 319–320

Consumer consumption chain, 258

Consumer involvement, purchase risk and, 309–310

Consumer needs, 333–344. See also Customer needs; User needs

Consumer preferences, in
- future-friendly design, 333, 346

Consumer product evaluations, see Consumer response to product form
Consumer-related factors, in response to product form, 310–312
Consumer response to product form, 303–315
brand strength/image as factor in, 312
consumer-related factors in, 310–312
context-related factors in, 314
culture- and time-related factors in, 313
influence of visual design principles on, 307
phase of product life cycle as factor in, 312–313
practical implications of relationship, 314
product category-related factors in, 308–310
and six roles of product appearance, 304–305
and size, shape, and color of product, 307–308
and visual typicality/novelty of product, 306–307
Consumer-values framework, 333–335, 345
Consumption, subculture of, 324
Consumption chain, 258
Content distribution, 23–24
Context:
and consumer response to product form, 314
 corporative culture as, 174–175
 for customer experience mapping, 45
 in stories, 90
Context group (design quality criteria), 16, 18
Context mapping, 114
Context through Narratives (CTN) method:
action step in, 244–246
case illustration, 241–248
closure step in, 247–248
and designers as interpreters of stories, 240
preparation step in, 242–243
prerequisites for using, 249–251
processing step in, 246–247
and role of users/stakeholders in service design, 239–240
and servitization trend, 237–239, 248–249
Contextual immersion, 165
Contextual understanding, 240
Continuous improvement, 167–168
Continuum, 153
Contract manufacturing, 135
Contracts of ideas no longer open to debate, 151–152
Control:
by CEOs, 209
in service experiences, 225–226
Cooper, R., 206
Copyrights, 368, 376–377, 379
Copyright Act, 376
Coravin, 255
Corning, 281
Corporate culture, 173–186
as context for design work, 174–175
for creating radically new products, 254
default, 175–176
defined, 176–178
distinctive elements of, 176, 177
distinguishing your organization with, 176–178
and early-stage ventures, 125–126
Corporate culture (Continued)
forces that undermine design thinking in, 178–180
and four pillars of innovation, 180–184
impact on design thinking of, 173–176, 178–180
and knowledge management, 199, 200
for strategically-embedded design thinking, 174, 176, 212–215
transforming, 181–185
Corporate gravity, 178–179
Corporate immune system, 179
Corporate myopia, 179–180
Cost advantage, 268
Cost structure, in lean start-up approach, 298
Cradle to Grave design, 384
Create mode (design thinking framework), 6–7
Creative Problem Solving Group, 169
Creativity, 187
Creusen, M. E. H., 311
Cross-disciplinary teams, 9, 49
Crowdsourcing, 255, 261–262
CTN method, see Context through Narratives method
Cultural assessments, 182
Cultural conflict, 169–170
Culture:
and consumer aesthetic preferences, 320–324
and consumer response to product form, 313
corporate, see Corporate culture
national, 169–170, 320–323
regional, 320–323
Customer(s):
defined, 42
routine, 297, 298
in six-cornerstone framework, 270, 271
Customer development stage, 283–284
Customer engagement, 193, 198
Customer experience:
key elements of, 46–47
overmanagement of, 338
Customer experience maps, 41–56
best practices for using, 56
defined, 41–42
generating, 48–50
innovative solutions from, 50–55
inputs to, 43, 45–49
in physical therapy services example, 42–44
Customer immersion labs, 198
Customer insights:
collection of, 68–69
creating personas based on, 30–31
in CTN method, 247
in Define mode, 6
in Discover mode, 5
synthesizing information for, 47–48
Customer journey, moments in, 228
Customer journey mapping, 115, 116
Customer needs, 285, 303. See also Consumer needs; User needs
Customer operations, services supporting, 237, 238
Customer participation, 229–231
Customer surveys, 243
Customization, 340
Cutaneous stimulation, 354–355
CVPA (centrality of visual product aesthetics), 311, 324–327

D
Dance, service experience involving, 232–233
Day-to-day problems, solving, 255, 261
Deadlines, for cultural transformations, 182
Debate(s):
contracts of ideas no longer open to, 151–152
in design thinking, 146–147
dual-mode, 147–150
idea, 148–149
process, 148–149
Decision points, 359–365
Decline phase, response to products in, 313
Dedicated infrastructure (pillar of innovation), 181–183
Default culture, 175–176
Define mode (design thinking framework), 6
Definiteness requirement, 372–373
Definition and design loop (product development), 128–130, 137
Delker, Wayne, 183
DeMartino, R., 189
Dematerialization, design for, 385–386, 395
Demographic characteristics, consumer response and, 311
Derivative works, 376
Design. See also specific types, e.g.: Industrial design (ID)
corporate culture as context for, 174–175
and financial performance, 206
in intellectual property protection, 367–368
investment in, 217
next practices in, 41
personas in, 29
as service, 211–212
strengthening brand with, 217
sustainability as criteria for, 393
Design briefs. See also Inspirational design briefs
collaboration on, 217
defined, 15
length of, 24
sustainability as concern in, 393
time frames for writing, 23
Design competence, 251
Design concepts:
development of, 15, 393–394
generation of, 68–69, 77–80
personas for pitching, 30
Design directors, 208
Designers:
beliefs about idea generation of, 72
collaboration by UI and industrial, 363–364
design case discussions of engineering personnel and, 29–30
intellectual property protection for, 367
as interpreters of stories, 240
professional service, 251
roles of, in NPD, 206, 218
Design for Capital Protection and Renewal, 385, 386
Design for Dematerialization, 385–386, 395
Design for Detoxification, 385, 386
Design for Effectiveness (DfEffv):
- described, 384–385
- other design strategies vs., 398

Design for Environment (DfEnv):
- described, 385–386
- other design strategies vs., 398
- and sustainability assumption testing, 394
- and sustainability in concept development, 393

Design for Revalorization, 385, 386, 394–395

Design for Sustainability/Efficiency (DfS):
- described, 382–383
- integrating design thinking in, 386–397
- other design strategies vs., 398
- and sustainability in concept development, 393

Design Heuristics, 71–84
- and cognitive process of idea generation, 72–73
- defined, 71
- and designers’ beliefs about idea generation, 72
- generating design concepts with, 77–80
- generating ideas with, 74–77
- identifying, 73–74
- names and definitions of, 81–84
- value of, 80

Design journey, documentation of, 152–153. See also Journey mapping

Design patents, 373–376, 379, 380

Design practices:
- for information management, 112, 114
- for problem definition, 109–110
- for stakeholder management, 117

Design professionals. See also Designers
- in fuzzy front end of innovation, 120–122
- relationships of business practitioners and, 121

Design proposals, communicating, 35, 36

Design quality criteria (DQC):
- content distribution between, 23–24
- for inspirational design briefs, 16–21

Design thinking, 1–10. See also Strategically-embedded design thinking
- corporate culture’s impact on, 173–176, 178–180
- and corporate myopia, 179–180
- defined, 1–2
- in design for sustainability/efficiency, 386–397
- and four pillars of innovation, 180–184
- framework for, 4–8
- at GE Healthcare, 168–169
- history of, 3–4
- idea generation in, 72
- managing transitions in, 150–152
- measuring and evaluating, 212, 217–218
- mindset for, 9–10, 140, 164
- in new product development, 2–3
- nonlinearity of, 8–9
- sustainability in, 381
by teams with non-designers, 145–147
training non-designers in, 143–145
wicked problems in, 228–229
“Design Thinking: Take It Home” worksheet, 165
Design Thinking for Sustainability (DThfS), 387–397
other design strategies vs., 397–398
**What if** phase, 390–394
**What is** phase, 387–390
**What works** phase, 396–397
**What wows** phase, 394–396
Design thinking tools, 144–146
for information management, 114–117
for problem definition, 111–113
for stakeholder management, 118–120
Detoxification, design for, 385, 386
Development process, personas in, 29–30. See also New product development (NPD)
Development timelines, 356–357
DfEffv, see Design for Effectiveness
DfEnv, see Design for Environment
DfS, see Design for Sustainability/Efficiency
Diageo, 208–209, 216, 217
Dietz, Doug, 168–171
Digital functions, assigning, 362
Digital products, physical vs., 352–354
Direction, prototypes for determining, 132
Disclosure requirements, 372–373
Discover mode (design thinking framework), 4–5
Discover phase (service design), 241
Discovery stage:
for breakthrough innovations, 189
knowledge management in, 192, 194–197
Display, defining, 362–363
Disruptive innovations, 285–287
Distinction: A Social Critique of the Judgment of Taste (Pierre Bourdieu), 323
“Distinctive Elements of Corporate Culture,” 176, 177
DIY production, 135
Documentation:
of customer stories, 244–246, 250
of design journey, 152–153
of Menlo Innovation activities, 165
Dollar coins, 260
Dove, 377–378
DQC, see Design quality criteria
Drawings, for design patents, 373–376
d.school, 145, 169
DThfS, see Design Thinking for Sustainability
Dual-mode debates, 147–150
DuPont, 197
Durability, emotional, 391
Dyson Cool™ fan, 304–306

**E**
Early adopters, 283, 297
Early prototyping, 118
Early-stage ventures, 125–140
clean cut towel dispenser example, 136–138
culture of, 125–126
defining and refining products at, 127
Early-stage ventures (Continued)
  intellectual property protection at, 127–128
  KidSmart smoke detector example, 129–131
  mistakes in, 138–140
  new product development at, 128, 131–136
  research in, 126–127
Early testing, 133–134
Ease of use, 304
Eco-efficiency, 383, 384
E-commerce, 230–231
Economic metrics, 397
Economic model, 266
Edge cases, 28–30
Edison, Thomas, 157, 162, 368
Education level, consumer response and, 311
Effectiveness, design for, see Design for Effectiveness (DfEffv)
Efficiency, see Design for Sustainability/Efficiency (DfS)
E Ink, 132
Einstein, Albert, 290
Electric Boat, 198
Electric vehicles, 384
Elsum, I., 286, 298
Embedded sustainability, 383
Emerging need(s), 336–343
  community first as, 340–341
  defined, 336
  glass houses as, 343–344
  keeping it real as, 336–337
  the [relentless] pursuit of happiness as, 338–340
  we [really] are the world as, 341–343
Emerging-technology focus, 255, 257–258
Emotional durability, 391
Empathize step (Visualize, Empathize, and Ideate method):
  activities in, 61–63
  in industrial design studio example, 66–67
  and order of Visualize and Ideate steps, 64
Empathy:
  in design thinking, 173, 174, 187
  in human-centered design process, 290
  interviewing for, 145
Employee behavior, service experience and, 227
Employee empowerment, 227, 231–232
Enablement requirement, 372
Energy usage metrics, 397
Engagement, 166, 193, 198
Engineering design, 73–74
Engineering loop (product development), 128, 130, 137–138
Engineering personnel:
  edge case discussions with, 29–30
  personas in work with, 36–37
Ensemble casting, 161
Entrepreneurs, see Early-stage ventures
Environment(s). See also Design for Environment (DfEnv)
  as design quality criteria, 16–19, 21
  for innovation lab, 169
  matching, 314
  for service experiences, 227
  for strategically-embedded design thinking, 217
  and user needs, 360
Environmental metrics, 397
Eternally Yours designs, 391
Ethnographic research:
   in creation of personas, 30
   in Visualize, Empathize, and
      Ideate method, 60, 62,
      64–66
Ethnographic stories, 240
Europe, 321. See also specific
   countries
European Union, 386
Evaluate mode (design thinking
   framework), 7–8
Evaluation. See also Consumer
   response to product form
   of design thinking, 212,
      217–218
   of prototypes, 96–97
   of radically new products, 256
Every Business is a Growth Business
   (Ram Charan), 273
Exclusive rights, of patents, 368
Experiential learning, 163
Experiential motivators, 270
Experimentation skills, 189
Expertise, 324
Exploration, prototypes for,
   131–132
Exploratory phase (Menlo
   Innovation Ecosystem), 159,
   161
Expression (design quality criteria),
   16, 17, 19
   content distribution for process
      vs., 23–24
   in design project brief, 20
   in research project brief, 21
Expressive motivation, 308–310
External resources, lean canvas and,
   290
Extreme users, 45

F
Facebook, 341
Facilitators:
   innovation, 273
   knowledge management, 194
Failing fast, 193, 198
Farming equipment and systems
   company, CTN method for,
   241–248
Features, limiting, 139
Feedback:
   auditory, 354
   from early testing, 133–134
   in Evaluate mode, 7–8
   on prototypes, 96–97, 133
FEI canvas, 290–294, 296
Feick, L., 321
Femininity, of culture, 321
Femininity, of culture, 322
Fender, 376
FFE of innovation, see Fuzzy front
   end of innovation
Fiksel, J., 387, 394, 397
Financial performance, design and,
   206
Find Partner quadrant, 275
Fire phone, 355
First concept prototypes, 96, 101
First move advantage, 140
Flash mobs, 232
Flexibility:
   of corporate culture, 178
   of design thinking, 10
Follow-Up phase (Menlo Innovation
   Ecosystem), 160, 167–168
Ford, Henry, 175
Ford Motor Company, 175
Four pillars of innovation,
   180–184
Four Seasons, 231
Fourth wall, breaking, 229
France, 322
Fraser, H., 47
Free business models, 270
Fresh Direct, 267
Fromkin, H. L., 327

Function:
Design Heuristics related to, 76–77
as design quality criteria, 16, 17, 19–21, 24
Functional features, design patents on, 375
Functionalities, appearance and, 304
Functional motivators, 270. See also Utilitarian motivation
Funding, attracting, 132
Future-friendly design, 333–346
accountability in, 343–344
authenticity in, 337–338
connectivity in, 340–341
consumer-values framework for, 333–335, 345
emerging consumer needs in, 333–335, 345
global responsibility in, 342–343
personas for, 337–344
pursuit of happiness in, 338–340
themes in, 345–346
tool kit for, 345
Fuzzy front end (FFE) of innovation, 107–124
activities in, 107
design challenges in, 108–109
design thinking in, 3
information management in, 108, 112, 114–117
knowledge management in, 188
problem definition in, 108–113
stakeholder management in, 108–109, 117–120
strategic integration of design professionals in, 120–122

G
GE, see General Electric
GE Healthcare. See also Menlo Innovation Ecosystem
Global Design group at, 158, 166
impact of design thinking for, 168–169
innovation at, 158
Gender, consumer response and, 311
General Electric (GE), 157, 163, 168, 281, 282. See also GE Healthcare
General Motors, 143
Generative sessions, for stakeholder management, 118
Georgiv, Emil, 164
Gestural interfaces, 355
Gillette, 126
Gladwell, Malcolm, 270, 335
Glass houses (emerging need), 343–344
Global responsibility, 342–343
Goals:
of creating radically new products, 254–256
for prototypes, 94–95, 364
Going vertical, 171
Golden Rule, 231
Google, 198, 255, 267
Google Glass, 257
Google Patents, 128
Google X, 125–126, 255, 256
GoPro, 354
Goths, 324
Grace period, for prior art, 370–371
Gravity, corporate, 178–179
Gripple, 215
Group genius, 163, 164
Growth mindset, 10
Growth phase, consumer response to products in, 312–313
Growth-related challenges, for innovation labs, 170
“Guide for Developing Powerful Value Accelerators,” 272

H
Hannover Principles, 382, 383, 393
Happiness, pursuit of, 338–340
Haptic technology, 354–355
Hardware, characteristics of, 362–363
Hardware development:
and entrepreneurial culture, 125
integrating user interface and, 355–365
separation of software development from, 352–353
Hawkins, Jeff, 147
Healthymagination campaign, 169
Hedonic motivation, 308, 309
Hei, Joseph, 98–100
Henderson, P. W., 321
Hennala, L., 261–262
Herman Miller, 209, 212–214, 216
Hero camera, 354
Hertenstein, J. H., 206
Heuristics, design, see Design Heuristics
High-performance quality, 304
Hoeffler, S., 259
Hofstede, G., 321, 322
Holbrook, M. B., 324, 329, 327
Holistic thinking:
about problem definition, 109–110
design thinking as, 9
mind maps for, 111–112
Hollow core trap, 233
Holmberg, J., 390
Honda, 162
“How might we” questions, 51, 145
“How the Mighty Fall” (Jim Collins), 267
Human-centered design, 41, 289–296
Human factors, 360, 361
Hypotheses, for solutions, 95–96

I
IBM, 143–144, 193, 194, 196
ID, see Industrial design
IDEA (International Design Excellence Awards), 158
Idea audits, 256
Idea debates, 148–149
IDea Fan Deck, 128
Idea generation:
challenges with, 59–60
cognitive process of, 72–73
in Create mode, 7
designers’ beliefs about, 72
with Design Heuristics, 74–77
Idea jams, 194, 196
Ideate step (Visualize, Empathize, and Ideate method):
activities in, 61–63
in industrial design studio example, 67–68
order of other steps and, 64
Ideation:
and corporate culture, 173, 174
in Menlo Innovation Ecosystem, 167
prototypes in, 97
stories in, 95
Ideators, 261–262
Identify User Needs and Find the Value Proposition phase:
  in product development process, 87–89
  stories in, 95–96
Identity tests, 371
IDEO, 145, 290, 296
Ignore quadrant, 275
IKEA, 230
“The IKEA effect,” 230
Immersion, contextual, 165
Immune system, corporate, 179
Implement stage (cultural transformation), 185
Importance of product, 309–310
Improvisation, in service experience, 227
Income, consumer response and, 311
Incremental innovations. See also Sustaining innovations breakthrough vs., 188–190
design thinking for, 2
at GE Healthcare, 168
knowledge management for, 191
Incubation stage:
  for breakthrough innovations, 189
  knowledge management in, 192, 195, 197–198
InCycle collection, 385
Independent writing, 22
Individual factors, in consumer aesthetic preferences, 324–328
Individualism, 321, 322
Industrial design (ID):
  decision points for guiding teams in, 359–365
developing best practices for, 365–366
identification of Design Heuristics in, 73–74
integration of user interface design and, 355–366
separation of user interface design from, 352–354
Industrial Design Society of America, 15
Industrial design studio example, 64–68
Influencer (six-cornerstone framework), 270
Information:
  animation of, 114
  communication of global, 343
  condensation of, 114
  from narratives, 248–249
  seeking, 171
  sensorial, 90
  synthesizing, 47–48
  translation of, 114
Information arbitrage, 192–193, 197
Information management:
  as design challenge, 108
design practices for improving, 112, 114
design tools for improving, 114–117
in fuzzy front end of innovation, 108, 112, 114–117
personas for, 115, 117
Informative stories, 118
Infosys, 144
Infrastructure, as pillar of innovation, 181–183
Initial exploration, prototypes for, 131–132
Innovation(s). See also Breakthrough innovations; Fuzzy front end (FFE) of innovation
corporate culture’s impact on,
174–176
as design quality criteria, 16–19, 21
disruptive, 285–287
four pillars of, 180–184
at GE Healthcare, 158
incremental, 2, 168, 188–191
role of design thinking in, 2–3
sustaining, 282, 285–287
technology and use knowledge for, 238–239
transformational, 285–287
Innovation Camp phase (Menlo Innovation Ecosystem), 160, 166–167
Innovation facilitators, 273
Innovation requirements, 371
Innovative solutions, from customer experience maps, 50–55
Insights, see Customer insights
Inspiration, 117, 171
Inspirational design briefs, 15–25
design quality criteria for, 16–21
distribution of content for process vs. expression in, 23–24
pitfalls with, 24
for product design project, 17, 19–20
for research project, 20–21
writing, 21–23
Inspiring stories, 118
Integral values, 334, 335, 337, 346
Integration, of stakeholder perspectives, 117
Integrative design thinking, 9
Intel, 285
Intellectual property protection,
367–380
in copyright system, 376–377
definition of “design” in, 367–368
design patents for, 373–376
at early-stage ventures, 127–128
strategic considerations with selecting, 379–380
trademark rights for, 377–379
utility patents for, 368–373
Intelligence amplification:
in discovery stage, 197
intelligence leveraging vs., 190–194
organizational requirements for implementation of, 199–200
Intelligence leveraging:
in amplification stage, 199
for breakthrough innovations, 200
intelligence amplification vs., 190–194
Interaction design (IxD), 352
Interactive simulations, 198
Internal capacity, for service design, 251
International Design Excellence Awards (IDEA), 158
Internet of Things, 353
Interpretation, of narratives, 250
Interviews, 101, 145
Intrapreneurs, 125–126
Introduction phase, consumer response to products in, 312
Intuit, 282
Intuition—rational approach to FFE, 121–122
Inventions, 368
Invent stage (cultural transformation), 185
Investment, in design, 217
Involvement, consumer, 309–310
iPhone, 354, 365
iPod, 260, 267
Iteration(s):
  in design thinking and corporate culture, 173, 174
  in integrated UI and ID projects, 365
  in lean start-up approach, 281, 283
  product development phase related to, 87–89, 96–97, 99
Iterative approach:
  to design thinking, 8–9
  to service design, 233
iTunes, 260, 267, 282
IxD (interaction design), 352

J
James Cropper PLC, 386
Jams, 121–122, 194, 196
Japan, 321, 322
Jet Propulsion Laboratory (JPL), 23
Job to be done perspective, 41, 42
Johnson, Mark, 266
Jones, C., 206
Journey mapping:
  customer, 115, 116
  sustainability, 388
  for teams with non-designers, 145
JPL (Jet Propulsion Laboratory ), 23
JWD-Creative, 162

K
Kagerman, Henning, 266
Keeping it real (emerging need), 337–338
Kelleher, Herb, 178, 184
Kelley, David, 174
Kellogg Company, 333
Kelly, David, 93
Kennedy, John F., 255
Keurig Green Mountain, 381
Key personnel, in strategically-embedded design thinking, 207–209
Keystone Project Team, 182–183
Kick Out the Ladder philosophy, 162
Kickstarter, 134
KidSmart smoke detector, 129–131
Kinesthetic sense, 355
Knowledge:
  consumer response and product, 312
  technology, 238
  use, 238–239
Knowledge brokering, 114, 194, 240
Knowledge management (in general):
  facilitators of, 194
  function of, 191
  history of, 188
Knowledge management for breakthrough innovations, 187–202
  in acceleration stage, 198–199
  in discovery stage, 194–197
  and incremental vs. breakthrough innovations, 188–190
  in incubation stage, 197–198
  and intelligence leveraging vs. amplification, 190–194
  organizational implications of, 199–200
  with technology market mind maps, 202
  with technology transfer tool, 200–202
Kodak, 193, 282
Koen, P. A., 286, 298
Konsti-Laakso, S., 261–262
Kotchka, Claudia, 181
Kumar, V., 47

L
Lab126 (Amazon), 126
Lafley, A. G., 181
Landscaping method, 243, 245
Large enterprises, lean start-up approach for, see Lean start-up approach
Laszlo, C., 383
Launch, product, 135–136
Leadership, of integrated UI and ID projects, 359–360
Leadership mandate, 180, 181
Lead users, 283, 297
Lean canvas, 290–291, 293–294, 296
Learning:
building to learn, 96, 167 experiential, 163 from prototypes, 101 sustainability learning launch, 396 Learning cost uncertainty, 259, 260 LEGO, 17, 19–20
Length, design brief, 24
“Let the best idea win” competitions, 262
Leveraging:
intelligence, 190–192, 199, 200 of Value Accelerators™, 275, 276
Levitt, Theodore, 226
Liedtka, J., 387, 388, 390, 396
Life-cycle analysis, 393–394
Lifestyle, culture and, 322
Liquid lens concept, 200–202
Lockheed Martin Skunk Works, 255
Logical stories, 266
Logo design, 329
Long-term orientation, 321, 322 “Look for” advertising, 378
Low-fidelity prototypes, 145, 395–396
Low-resolution prototypes, 7, 131

M
McDonough, W., 382, 384
Magretta, Joan, 266
Maker Movement, 335
Malkewitz, K., 312
Management:
alignment of, 277 communication with, 254–256
Manufacturing:
contract, 135 prototypes for facilitating, 133 in six-cornerstone framework, 270
Market needs, 196–197, 202
Market research:
for early-stage ventures, 126 for Visualize, Empathize, and Ideate method, 65, 66
Martin, Roger, 174
Masculinity, of culture, 321, 322
Masstige, 268
Matching environments, 314
Material burden metrics, 397
Maturity phase, consumer response to products in, 313
Maurya, A., 290, 291, 293–294, 296
Mavens, 270
Meaning, secondary, 378
Medtronic, 150
Membership, teams with changing, 147, 152–154
Menlo Innovation Ecosystem, 157–172
about, 158–161
Boot Camp phase in, 159, 162–165
challenges with, 170
Exploratory phase in, 159, 161
Follow-Up phase in, 160, 167–168
and GE Healthcare’s Global Design group, 158
and impact of design thinking for GE Healthcare, 168–169
Innovation Camp phase in, 160, 166–167
lessons from, 171
Research Plan phase in, 159, 166
success factors for, 169–170
Menlo Innovation Lab, 162
Menlo Park research laboratory, 157
Meredith, Mukara, 169
Metaphors, 112
Metrics:
for idea and process debates, 148–149
for sustainability, 396–397
Migration, application, 193–194
Military aircraft, displays in, 365
Mind maps:
generating problem definition with, 111–112
sustainability, 390
technology market, 196–197, 202
Mindset:
of design thinking, 9–10, 140, 164
growth, 10
for training in design thinking, 145
Minimum viable prototype (MVP), 282–285
Mobile devices, in Menlo Innovation Ecosystem, 162
Modern values, 334, 335, 339
Moments of truth, 228
Mood boards, 112
Motivators and motivation:
expressive, 308–310
functional, 270
hedonic, 308, 309
symbolic, 270, 308, 309
utilitarian, 308, 310
Multimodal communication, 10
Multivoting, 6
Murphy, Lawrence “Murph,” 162, 169
MVP (minimum viable prototype), 282–285
Myopia, corporate, 179–180

N
Naming, of early-stage ventures, 128, 135
Narratives. See also Context through Narratives (CTN) method; Story(-ies)
benefits of using, 248–249
interpretation and analysis of, 250
in service process, 227–229
National culture:
conflict due to, 169–170
and consumer aesthetic preferences, 320–323
NBC Universal, 169
Need(s):
consumer, 333–344
customer, 285, 303
emerging, 336–343
market, 196–197, 202
for uniqueness, 311, 327
user, 77, 87–89, 95–96, 360–361
Need Seekers, 189, 192
Nespresso, 180, 262, 286, 324
Nestlé, 180, 286
Nest Learning Thermostat, 259
Netherlands, 311, 322
Netherlands Design Institute, 391
Netnography, 230
“A New Era of Sustainability” report, 20
New product development (NPD):
in Design for Environment, 385
at early-stage ventures, 128, 131–136
prototypes and stories in phases of, 87–89
for radically new products, see
Radically new products
role of design thinking in, 2–3
roles of designers in, 206, 218
total customer experience in, 42
Newton, 289
Next practices, in design, 41
Nike, 126, 376, 377
Nikon, 282
Nintendo Wii, 257–258
Nitterhouse, D., 41
Nokia, 260–261
Non-cost differentiation advantage, 268
Non-designers, see Teams with non-designers
Nonlinearity, of design thinking, 8–9
Nonobviousness requirement, 371, 375
Nonusers, in customer experience mapping, 45
Non-user personas, 28, 31
Nordstrom, 224
Novel technology, 197, 202
Novelty, visual, 306–307
Novelty requirement, 371, 375
NPD, see New product development
O
Observational research, 46
O’Connor, G. C., 189
Office of transformation, 182
Off-the-rack creative processes, 183
Ogilvie, T., 387, 388, 390, 396
Ohga, Norio, 183
Olay, 268
Onboarding, 152–154
One-year grace period, for prior art, 370–371
Online customer communities, 230–231
Open behaviors, 254
Open Business Models (Henry Chesbrough), 265
OpenOffice.org, 231
Open source software movement, 231
Operations (six-cornerstone framework), 270
Opportunity statements, 166–167
Opposite surface, Design Heuristics related to, 75
Optimal stimulation level (OSL), 328
Orbit Baby, 98–100
Organizational architecture,
knowledge management and, 199, 200
Organizational practices, for strategically embedding
design thinking, 210–212
Organizational procedures, routine, 254–255
Orth, U. R., 312
OSL (optimal stimulation level), 328
Osterwalder, A., 287–290, 293–294, 296

P
Packaging, 135
Pain points:
identifying, 50
reframing, 51, 52
in Visualize, Empathize, and Ideate method, 62–64, 66–67
Palm Computer, 147
Parallel design briefs, 22
Parallel paths of prototyping, 101
Parjanen, S., 261–262
Participation, in service process, 229–231
Participatory design, 334
Patents:
design, 373–376, 379, 380
for early-stage ventures, 127–128
prototypes for defining, 133
utility, 368–373, 379
Patent Act, 369, 372
Patent claims, 369–370, 372–373
Patent pending products, 373
People-centric orientation, 9
Performance group (design quality criteria), 16, 19
Performance testing, 134
Perks, H., 206
Personas, 27–38
anti-, 28, 31–37
buyer, 28, 30, 31
communicating with, 30
creating, 30–32, 37
in customer experience mapping, 48
defining, 28
in design process, 29
in development process, 29–30
for future-friendly design, 337–345
for information management, 115, 117
limitations of using, 37–38
non-user, 28, 31
prioritization of, 32, 37–38
in software product example, 31–37
in stories, 90–92
for user-centric products, 27
visual maps vs., 66
Personality:
and aesthetic response, 327
and consumer response to product form, 311
Petersen, S., 23
Peterson, Donald, 175
Philips Alessi coffeemaker, 304, 305, 308
Philosophy (design quality criteria), 16–18, 20, 24
Physical context, for aesthetic preferences, 328
Physical factors, in successful innovation labs, 169
Physical functions, assigning, 362
Physical products, digital vs., 352–354
Physical therapy services example:
customer experience maps in, 42–44, 49
enhancing user value in, 52–54
generating personas for, 48
identifying pain points in, 50
identifying touch points in, 47
observational research on user experience in, 46
reframing pain points in, 51, 52
testing and refining solutions in, 54–55
types of users of, 45
Pictorial archives, 257
Pigneur, Y., 287–290, 293–294, 296
Pile of Rocks exercise, 162–163
Platt, M. B., 206
Playstation products, 150
PLC, see Product life cycle
Point of view (POV) of the user, 296–297
Poling, Harold “Red,” 175
Polishing prototypes, 101
PO-PSS (product-oriented PSS), 392
Porter, Michael, 268
Postmodern values, 334, 335, 337, 338, 340, 346
POV (point of view) of the user, 296–297
Prahalad, C. K., 41
Preparation step (CTN method), 242–243
“Preparing the ground,” for business practitioners, 121–122
Price, L. J., 321
Prior art, 370–371, 375
Priorities quadrant, 275, 276
Prioritization:
of personas, 32, 37–38
of product features, 139
of Value Accelerators™, 273–275
Problem definition:
as design challenge, 108
design practices for improving, 109–110
design tools for improving, 111–113
in fuzzy front end of innovation, 108–113
in lean start-up approach, 289–290, 296–297
 personas in, 29, 32
stories for, 89–90
Problem identification, 4
Problem solving, 4
Problem statements, 6
Process (design quality criteria), 16, 17
cost distribution for
expression vs., 23–24
in design project brief, 19
in research project brief, 21
Process debates, 148–149
Processing step (CTN method), 246–247
Process phase check-ins, 150–151
Procter & Gamble, 169, 181, 386
Product(s):
appearance of, see Appearance, product
patent pending, 373
radically new, see Radically new products
refining, see Refining products
scraping of, 139–140
services supporting, 237, 238
simplification of, 138
in six-cornerstone framework, 269–271
social significance of, 310
user-centric, 27
user interfaces for physical vs. digital, 352–354
Product category-related factors, in
consumer response, 308–310
Product definition, 127
Product design, service vs., 223–224, 226, 239
Product design project, brief for, 17, 19–20
Product developers, influence of aesthetic preferences on, 329–330

Product Development Institute Inc., 126

Product evaluations by consumers, see Consumer response to product form

Product form. See also Consumer aesthetic preferences; Consumer response to product form
characteristics of, 305–308 defined, 303

Production, DIY, 135

Production loop (product development), 128, 130–131, 134–135

Product knowledge, 312

Product launch, 135–136

Product life cycle (PLC):
consumer response and products’ phase in, 312–313 life-cycle analysis for sustainable concept development, 393–394

Product managers, 136

Product-oriented PSS (PO-PSS), 392

Product-service system (PSS) approach, 391–393

Product testing, for early-stage ventures, 133–134

Product usage, 237, 238

Professional service designers, 251

Project teams:
for cultural transformations, 182–183
for integrated UI and ID projects, 359–360

Proportions (of product), 307

Proprietary creative process (pillar of innovation), 183–184

Prototypes:
combining stories and, 95–98 communication with, 102 in Create mode, 6–7 defined, 92–95 early, 118 for early-stage ventures, 130–133 first concept, 96, 101
goals of building, 94–95, 364 hardware vs. software, 353 for integrated UI and ID projects, 364–365 in lean start-up approach, 298 low-fidelity, 145, 395–396 low-resolution, 7, 131 minimum viable, 282–285 in Orbit Baby example, 98–100 parallel, for hardware and software, 358–359 pitfalls with, 101 in product development framework, 87–89 from rapid prototyping, 198, 395–396 requirements before building, 101 role of, in design thinking, 87 simulations as, 92–93 undesigned, 96

PSS (product-service system) approach, 391–393

PTO, see U.S. Patent and Trademark Office

PUMA, 385

Purchase motivation, 308, 309

Purchase risk, 309–310

Pursuit of happiness, 338–340
Quality cues, from product appearance, 309–310, 312
Quick Hits quadrant, 275
Quirky.com, 255

Radically new products, 253–263
analogue thinking in development of, 259–261
communication about goal of creating, 254–256
crowdsourcing in development of, 261–262
defined, 253
emerging-technology focus for developing, 257–258
solving day-to-day problems with, 261
time frames for developing, 256–257

Raju, P. S., 328, 329
Rangaswamy, V., 41
Rapid prototyping, 198, 395–396
Rationality, 187
Raynor, M. E., 285–286
Readiness, for design thinking, 164
Recognition, for crowdsourced ideas, 262
Recovery and reuse materials, 397
Refining products:
  based on customer experience maps, 54–55
  at early-stage ventures, 127
  product development phase related to, 87–89, 96–97, 99

Reflection:
  in Menlo Innovation Ecosystem, 163–164
  in Visualize, Empathize, and Ideate method, 62, 63

Reframing:
  customer experience maps for, 51
  mind maps for, 111–112
  for problem definition, 109
Regional culture, aesthetic preferences and, 320–323
Registration:
  copyright, 377
  trademark, 378–379
"Reinventing Your Business Model" (Johnson, Christensen, and Kagerman), 266
The [relentless] pursuit of happiness (emerging need), 338–340
Repeat a component (Design Heuristic), 74
Repurposing, 138–140
Research:
  background, 126
  competitive, 126
  in early-stage ventures, 126–127, 133–134
  ethnographic, 30, 60, 62, 64–66
  market, 65, 66, 126
  observational, 46
  on strategically-embedded design thinking, 206–207
  technical, 64–66
  user, 65, 66, 126
Research Plan phase (Menlo Innovation Ecosystem), 159, 166
Research projects, design briefs for, 20–21
Resistance to change, 170, 179
Resources:
  external, 290
  for innovation labs, 170
Response subdimension (CVPA), 326
Responsibility:  
  global, 342–343  
  social, 341, 343  
Results-oriented PSS, 392, 393  
Revalorization, design for, 385, 386, 394–395  
Reveal stage (cultural transformation), 184–185  
Revenue (six-cornerstone framework), 270  
Reward system, for cultural transformation, 183  
Riedel, J., 232, 233  
Risk:  
  prioritizing Value Accelerators™ based on, 273–275  
  purchase, 309–310  
  and value of business model design, 269  
Ritz-Carlton, 224, 231  
Robinson, John, 336  
*Rocky Horror Picture Show* (film), 229  
Romanticists, 327  
Routine customers, 297, 298  
Routine organizational procedures, 254–255  
Routine users, 283  
Royal Canadian Mint, 260  
Ryanair, 229–230  

**S**  
Safmarine Shipping, 395  
SAS (airline), 228  
Sauber, Sean, 169  
Save the Food from the Fridge Project, 390  
SAYL® chair, 214  
Scaling tools, 198–199  
Scaling up innovation labs, 171  

Scenarios:  
  analyzing process options with, 149–150  
  building, 101  
  in CTN method, 247–248  
Scenario thinking, 259  
Schwartz, Bob, 169  
Scraping products, 139–140  
Searle, 281  
Secondary meaning, 378  
Segway, 289  
Self-construal, 321  
Self-service, 229–231  
Sensing trends, 112  
Sensorial information, in stories, 90  
Sensors, usage, 199  
Separability, conceptual, 377  
Service, design as, 211–212  
Service blueprint, 228  
Service design, 223–240. See also  
  Context through Narratives (CTN) method  
  and control of service experience, 225–226  
  examples of, 232–233  
  as ongoing process, 233–234  
  product vs., 223–224, 226, 239  
  role of users/stakeholders in, 239–240  
  service process in, 227–232  
  stories in, 240  
  theatrical production and, 224–225  
Service experiences:  
  control of, 225–226  
  designing compelling, 227–232  
  ongoing design of, 233–234  
  with song and dance, 232–233
Service process, 227–232
  narrative in, 227–229
  participation in, 229–231
  surprise in, 231–232
Servitization:
  steps in, 237–238
  as trend, 237–239, 248–249
Shape, product, 307–308
Short-term orientation, 321, 322
Simon, Herbert, 224
Simplification, of product, 138
Sims, P., 3
Simulations, 92–93, 198
Singapore, 329
Singing, service experiences involving, 232
Situational factors, in aesthetic preferences, 328–329
Six-cornerstone business model framework:
  benefits of using, 276–277
  components of, 269–271
  designing business models with, 271–276
  identifying cornerstones for improvement, 272
Size, product, 308
SMART Venture Concepts, 136–138
Snyder, C. R., 327
Social acceptance uncertainty, 260–261
Social class, 311, 323–324
Social context, for aesthetic preferences, 328
Social/human (design quality criteria), 16–19, 21
Social responsibility, 341, 343
Social significance of product, 310
SoftSoap, 378
Software development, 352–353, 355–359
Software products, personas for, 31–37
Solo, 378
Solution attributes maps, 297
Sony, 183, 282, 286
Source volume metrics, 397
Southwest Airlines, 177–178, 224, 231
Specifications: for integrated UI and ID projects, 365
  in patent applications, 372
SPICE framework, 50
Spiral Dynamics, 334
Sprints, 363, 364
Stage-Gate™, 2, 3, 9
  design process for breakthrough innovations vs., 188–190
  for hardware development, 352–353, 356
  for sustaining innovations, 282, 287
  Technology, 285, 287
Stakeholders:
  co-creation with, 117
  communication with, 35, 36, 247–248
  integrating perspectives of, 117
  in service design, 239–240
  value pursuit maps for, 119–120
Stakeholder interviews, 101
Stakeholder management:
  as design challenge, 108–109
  design practices for improving, 117
  design tools for improving, 118–120
  in fuzzy frontend of innovation, 108–109, 117–120
Stakeholder mapping, 118–120
Stakeholder value maps, 54–55
INDEX

Stanford University, 145, 169
Start-ups, see Early-stage ventures
Steelcase, 297–298
Steinert, M., 23
Stimulation level, optimal, 328
Story(-ies). See also Narratives
  combining prototypes and, 95–98
  communication with, 89–90, 100, 102
  complete product, 97–98
  defined, 89–92
  designers as interpreters of, 240
  in design thinking, 87
  ethnographic, 240
  in future-oriented design, 346
  informative, 118
  inspiring, 118
  logical, 266
  in Orbit Baby example, 98–100
  organizing, in CTN method, 245–246
  pitfalls with, 101
  in product development
    framework, 87–89
    putting your organization in, 101
  in service design, 240
  tips for creating, 100–101
Storyboards:
  in fuzzy front end of innovation, 118, 119
  for integrated UI and ID projects, 363, 364
  personas in, 29, 32, 35
Story fragments, 91, 96, 101
Storytelling, 89–91, 118
Strategically-embedded design thinking, 205–218
  climate associated with, 212–215
  connections of techniques in, 206, 215–216
  and corporate culture, 174, 176, 212–215
  key personnel in, 207–209
  organizational practices for, 210–212
  practical implications of, 217–218
  research on, 206–207
Strategic integration of design professionals, in FFE, 120–122
Strategy Execution Survey, 276
Strategy group (design quality criteria), 16, 18
Strict identity tests, 371
Structure (design quality criteria), 16–18, 20
Stuart, F. I., 229
Subculture of consumption, 324
Success(es):
  of Menlo Innovation Ecosystem, 169–170
  relying on present, 101
Sungard, 255
Supply chain, issues with, 134–135
Supportive corporate culture
  (pillar of innovation), 184
Surprise, in service process, 231–232
Surveys, customer, 243
Sustainability, 381–398
  bolted-on vs. embedded, 383
  comparison of design strategies for, 397–398
  in concept development, 393–394
  defined, 382
  in Design for Effectiveness, 384–385
  in Design for Environment, 385–386
in Design for Sustainability/Efficiency, 382–383, 386–397
Design Heuristics related to, 77
embedded, 383
emotional durability vs., 391
in Eternally Yours designs, 391
inspirational design brief for research project on, 20–21
and integrating design thinking in DfS, 386–397
metrics for, 396–397
visualization of, 387, 388
in What if phase, 390–394
in What is phase, 387–390
in What works phase, 396–397
in What wows phase, 394–396
Sustainability assumption testing, 394–395
Sustainability backcasting, 390–391
Sustainability brainstorming, 390–393
Sustainability journey mapping, 388
Sustainability learning launch, 396
Sustainability mind maps, 390
Sustainability value chain analysis, 388–390
Sustaining innovations, 282, 285–287. See also Incremental innovations
Switching costs, 260
Symbolic motivation, 270, 308, 309
Symbolic (affective) uncertainty, 259
Symbolic value, of product appearance, 304
Symmetry, 307

T
Target, 268
Target group of consumers, testing with, 314–315
Taste:
of designers vs. consumers, 314–315
and expertise, 324
and social class, 323–324
Tax, S., 229
Teams:
creation of personas in, 37
cultural transformation, 182–183
decision points for, 359–365
Design Heuristics for, 80
for integrated UI and ID projects, 359–360
measuring effectiveness of, 256
Teams with non-designers, 143–154
adapting to changing membership of, 147, 152–154
challenges with design thinking on, 145–147
dual-mode debates for, 147–150
managing design thinking transitions on, 150–152
and training non-designers in design thinking, 144–145
Technical research, 64–66
Technology Drivers, 189, 192
Technology enablers, 194
Technology knowledge, 238
Technology market mind maps, 196–197, 202
Technology Stage-Gate™, 285, 287
Technology transfer tool, 200–202
Technology translation tables, 196
Tele-PT concept, 52–55
Templates, design brief, 22
Testing:
in early-stage ventures, 133–134
of integrated UI and ID projects, 365
performance, 134
Testing (Continued)
of product aesthetics with target group, 314–315
product development phase related to, 87–89, 96–97, 99
of prototypes, 93–94
of solutions based on customer experience maps, 54–55
with strict identity tests, 371
sustainability assumption, 394–395
with target group of consumers, 314–315
validating personas with, 37
Theatrical production, service design and, 224–225
Threadless Tee Shirt Company, 271
3M, 192–193
Three-dimensional printing, 198
Three Steps to Assessing Your Current Business Model Strength, 271, 272
Threshold ornamentality requirement, 375
Tide, 386
Time for Life (John Robinson), 336
Time frames:
  for developing radically new products, 255, 256–257
  for stories, 90
  for writing design briefs, 23
Timelines:
  in customer experience mapping, 49
  development, 356–357
  merging hardware and software, 356–357
Time orientation, 321, 322
Time pressure, for early-stage ventures, 140
Time-related factors, in consumer response, 313
“To be” experience maps, 53–55
Total customer experience, 41–42
Touch points, 46–47, 228
Touch screens, 354
Toyota, 153, 268
Trademarks, 128, 368, 377–380
Traditional values, 334, 335, 339
Training, of non-designers, 143–145
Train the trainer model, 170, 171
Transformational innovations, 285–287
Transformation leadership team, 182
Transitions in design thinking, managing, 150–152
Transition specialists, 194
Translation, of information, 114
Transparency, 344
Troiano, Richard, 261
Trunki, 209
Trust, 121
Truth, 228, 344
Tufte, Edward, 289, 291
Twinings, 231
Typicality, visual, 306–307

U
UI design, see User interface design
UL (Underwriters Laboratories), 130
Uncertainty(-ies):
  affective, 259
  benefit, 259, 260
  consumer, 259–261
  with designing breakthrough innovations, 188–190
  in fuzzy front end of innovation, 107
  learning cost, 259, 260
  social acceptance, 260–261
  symbolic, 259
Understanding:
  between business practitioners and design professionals, 121
contextual, 240
importance of understanding users, 60–61
Underwriters Laboratories (UL), 130
Undesigned prototypes, 96
UNEP (United Nations Environment Programme), 393–394
Unhook stage (cultural transformation), 185
Unilever, 386
Uniqueness, need for, 311, 327
United Kingdom, 322
United Nations Environment Programme (UNEP), 393–394
United States:
  culture and aesthetic preferences in, 321, 329
  income/education level and consumer response in, 311
  lifestyle and role of bicycles in, 322
U.S. Mint, 260
U.S. Patent and Trademark Office (PTO), 128, 378, 379
Unity (of design), 307
Unsupported use cases, 101
UO-PSS (use-oriented PSS), 392
Usage contexts, 45
Usage sensors, 199
Use knowledge, 238–239
Use-oriented PSS (UO-PSS), 392
Use packaging as functional component (Design Heuristic), 76, 77
User(s):
  anti-personas vs. personas for, 28
  buyers vs., 28
  ethnographic research on, 60, 62, 64–66
  experience mapping for, 42, 45.
    See also Customer experience maps
  extreme, 45
  importance of understanding, 60–61
  lead, 283, 297
  non-, 45
  for personas, 30
  point of view of, 296–297
  role of, in service design, 239–240
  routine, 283
User-centered design, 319
User-centric products, 27
User experience:
  and aesthetic preferences, 319–320
  in service design, 240
  user interface vs., 352
User-facing solutions, 28
User-inspired ideas, 63
User interface(s):
  defined, 351, 352
  for digital vs. physical products, 352–354
  elements of, 362–363
  emerging technologies for, 354–355
  in video game industry, 353
User interface (UI) design, 351–366
decision points for guiding teams in, 359–365
developing best practices for, 365–366
emerging technologies in, 354–355
integration of industrial design and, 355–366
User interface (UI) design

Continued

separation of industrial design from, 352–354

User needs:
Design Heuristics related to, 77
in integrated UI and ID projects, 360–361
product development phase related to, 87–89, 95–96
User persona, 31–37. See also Personas
User research:
for early-stage ventures, 126
for Visualize, Empathize, and Ideate method, 65, 66
User tasks, in integrated UI and ID projects, 361–362
User testing:
with prototypes, 93–94
of solutions based on experience maps, 54–55
validating personas with, 37
Utilitarian motivation, 308, 310.
See also Functional motivators
Utility patents, 368–373, 379
disclosure requirements related to, 372–373
novelty and nonobviousness requirements for, 371
and patent claims, 369–370
prior art for, 370–371
Utilize opposite surface (Design Heuristic), 75

V
Validate and Communicate Broadly phase:
of product development process, 87–89
stories and prototypes in, 97–98
Validation, of minimum viable prototype, 284
Values (ethics):
consumer-values framework for future-friendly design,
333–335, 345
integral, 334, 335, 337, 346
modern, 334, 335, 339
postmodern, 334, 335, 337, 338, 340, 346
prioritizing Value Accelerators™ based on, 273–275
stakeholder value maps, 54–55
traditional, 334, 335, 339
Value (worth):
aesthetic, 304
of business model design, 267–269
customer perceptions of, 314
of Design Heuristics, 80
in human-centered design process, 290
symbolic, 304
using customer experience maps to enhance user, 51–54
Value Accelerators™, 272–276
developing, 272–273
leveraging, in business strategy, 275, 276
prioritizing, 273–275
strategic planning based on, 276, 277
Value chain analysis, 101, 388–390
Value creation metrics, 397
Value networks, new, 285–286
Value proposition, 87–89, 95–96
Value proposition canvas, 290, 291, 295, 296
Value pursuit maps, stakeholder, 119–120
Value subdimension (CVPA), 326
Verbalizers, 327
Veryzer, R. W., 206, 320
Viability (design quality criteria), 16–19, 21
Video game industry, user interfaces in, 353
Virgin Atlantic, 209–212, 216, 218
Vision, in early-stage ventures, 138
Visual design principles, 307
Visualization:
in discovery stage, 197
in incubation stage, 198
and intelligence amplification, 193
sustainability, 387, 388
Visualize, Empathize, and Ideate method, 59–69
and challenges with idea generation, 59–60
components of, 61–63
and importance of understanding users, 60–61
industrial design studio example, 64–68
order of phases in, 63–64
Visualizers, 327
Visualize step (Visualize, Empathize, and Ideate method):
activities in, 61–63
in industrial design studio example, 66
order of other steps and, 63–64
Visualizing tendency, 327
Visual maps, 63, 66, 67
Visual novelty, 306–307
Visual product aesthetics, centrality of, 311, 324–327
Visual simulations, 198
Visual typicality, 306–307

W
Walkman, 282, 286
Wal-Mart, 268
War rooms, 153
Water usage metrics, 397
“We Are the World” (song), 341
We [really] are the world (emerging need), 341–343
What-if financial models, 265–266
What if phase, 390–394
What is phase, 387–390
What We Wish We Knew activity, 165
What works phase, 396–397
What wows phase, 394–396
White, Bryan, 98
White Cloud scenario, business model design in, 267, 268
Whitney, Patrick, 174
“Why Business Models Matter” (Joan Magretta), 266
Wicked problems, 163, 187, 228–229
Wii, 257–258
Wikipedia, 15, 231
Wirtz, B. W., 287
World Business Council for Sustainable Development, 383
World Values Survey, 334
Written description, in patent application, 372

X
Xerox, 377, 395

Z
Zhang, Y., 321, 328
Zhexembayeva, N., 383
Zip Car, 267