

Index

- Abernathy, W., 177
Achilladelis, B., 108
Agency costs, 6, 46–50
Aghion, P., 48
Allen, R., 10, 78, 83, 86
Allen, T., 63
Amabile, T., 61
Antelman, K., 89
Antorini, Y., 174
Apache web server software, 5, 6, 19, 23, 38–42, 82, 83, 101, 102
Arora, A., 70, 84
Arrow, K., 89
Arundel, A., 84
Awad, N., 167
- Balachandra, R., 108
Baldwin, C., 56–60, 94
Bakke, G., 144
Barclay, I., 108
Barnes, B., 50
Baron, J., 63
Behlendorf, B., 126
Benkler, Y., 12, 115
Berners-Lee, T., 145
Bessen, J., 48, 114
Bijker, W., 17, 135, 172, 173
Boldrin, M., 115
Brand communities, 174
Bresnahan, T., 118, 119, 182
Brooks, F., 94
- Brown, J., 174
Buenstorf, G., 73
- Campbell, D., 137
Carson, R., 40
Chamberlin, E., 110
Christensen, C., 144
Churchill, J., 135
Clark, K., 59, 94
Coase, R., 57, 58
Cohen, W., 68, 84
Connell, J., 150
Conner, K., 99
Consumers, 19
Contracting, 48
Conway, C., 152
Cook, T., 137
Copyrights. *See* Intellectual property rights
Csikszentmihalyi, M., 61
Custom products
agency costs and, 6
Apache web server software and, 38–41
heterogeneity of user needs and, 5, 6, 33–43, 74, 93, 126, 162
innovation and, 127, 128
manufacturers and, 6, 14, 15, 51, 52, 117, 18, 127, 128, 145–164
market segmentation and, 37
product platforms and, 14, 15, 128–130, 172

- Custom products (cont.)
 suppliers and, 127, 128
 toolkits and, 14, 15, 147–164
 users and, 6, 7, 14, 15, 33–45, 121, 127, 128, 145, 172
- Dam, K., 89
- Danneels, E., 145
- Dasgupta, P., 168
- David, P., 168
- de Fraja, G., 87
- Dellarocas, C., 167
- Digital Millennium Copyright Act, 12, 117, 118
- Duguid, P., 174
- Duke, R., 56
- Economic benefit, expectations of
 by lead users, 4, 5, 22, 23, 31
 by manufacturers, 2–4, 6–10, 51, 52, 56, 128
 by users, 1–11, 51, 52, 56, 128
- Ehrenkrantz Group, 56
- Eisenberg, R., 113, 114
- Elrod, T., 108
- Enos, J., 22,
- Ettrich, M., 116
- Fetchmail, 102, 103
- Finkelstein, S., 10, 79, 136
- Fleming, L., 94
- Foray, D., 17, 76, 113, 168, 169
- Fosfuri, A., 84
- Franke, N., 4–6, 10, 11, 20, 23, 27–30, 37–42, 66, 79, 80, 103, 105, 135, 161, 162, 180
- Freeman, C., 22, 108
- Free revealing of innovation information, 78
 case for, 9, 10, 80, 81
 collective action model for, 11, 13, 89–91
 collective invention and, 78, 79, 83
 copyright protection and, 85, 89
 evidence of, 9, 10, 77–80, 83
 government policy and, 119
 in information communities, 9, 10, 13, 106, 166, 168
 innovation and, 124–126, 129
 incentives for, 85–88
 and information diffusion, 81–83
 intellectual property rights and, 9, 10, 13, 110–113, 129
 lead users and, 109–121
 and library information search system, 79
 manufacturers and, 9, 11, 80
 and open source software, 9–11, 80, 86, 87, 90
 and patent protection, 83–86, 89
 private-collective model for, 11, 90, 91, 106
 reuse and, 88, 89
 and sports equipment, 79, 80
 social welfare and, 110, 111, 119
 trade secrecy and, 89
 users and, 9, 10, 13, 17, 77–91, 109, 124
- Free software, 8, 11, 93, 96–99. *See also* Open source software
- Friar, J., 108
- Friedman, D., 90
- Gallini, N., 113
- Gambardella, A., 70, 84
- Gemunden, H., 127, 176
- General Electric, 130
- Goto, A., 84
- Government policy, 2, 107–119. *See also* Digital Millennium Copyright Act
 copyrights and, 12, 114, 115
 distribution channels and, 118
 free revealing and, 110–113, 129
 intellectual commons and, 113–117
 intellectual property rights and, 111–117, 129, 131
 licensing and, 12

- manufacturer innovation and, 2, 107, 108, 117–119
 and national competitive advantage, 170–172
 patents and, 12, 111–114
 patent thickets and, 12, 114
 provisioning biases and, 110, 111
 R&D subsidies and, 118, 119
 and social welfare, 2, 11–13, 107–113, 117–119
 trade secrets and, 10, 111, 117, 129
 user innovation and, 2, 11–13, 107–111, 114–119
 Green, P., 37
 Greenstein, S., 118, 119, 182
 Griffith, S., 103, 104, 125
 Grimm, C., 99
 Gum, E., 159–161

 Hackers, 8, 98, 99, 181
 Hall, B., 84, 114
 Hanson, C., 116, 124
 Harhoff, D., 77, 80, 81, 84, 87, 88
 Harsh, M., 130
 Hecker, F., 126
 Heller, M., 113, 114
 Henkel, J., 10, 11, 77, 80, 81, 84, 87, 88, 94, 107, 110, 111, 129
 Herrmann, S., 8, 60
 Herstatt, C., 20, 35–37, 72–75, 127, 143, 144, 176
 Hertel, G., 8, 60
 Hienerth, C., 127, 176
 Hirschleifer, J., 86
 Hollander, S., 21
 Honscheid, J., 1
 Horgan, M., 1
 Horwich, M., 173
 Hunt, R., 114

 IBM, 79, 130
 Information asymmetries, 8, 9, 48, 66–74, 109, 148–151
 Information commons, 1, 13, 17, 77–81, 85–88, 95, 96, 165–168, 172–174. *See also* Information communities; Innovation communities
 Information communities, 17, 165–168. *See also* Innovation communities
 Innovation. *See also* Innovation communities
 attractiveness of, 4, 5
 distributed process of, 9, 10, 93–95, 145, 146
 economic benefit of. *See* Economic benefit
 functional sources of, 3, 8, 94, 95, 145, 146
 and government policy, 107–119
 lead users and. *See* Lead users
 manufacturers and. *See* Manufacturers suppliers and. *See* Suppliers
 users and. *See* Users
 Innovation communities, 7, 10, 11, 14, 17, 93–106, 116, 126, 129, 131, 166. *See also* Information communities
 Apache web server software and, 101
 brand and, 174
 fetchmail and, 101, 102
 innovation and, 93–106
 kitesurfing and, 14, 103, 104
 open source software and, 11, 14, 96–102, 113, 124, 126, 129, 131, 172, 181
 physical products and, 11, 14, 103–105
 and social welfare, 7
 sociology of, 172–174
 and sources of innovation, 11, 17, 94, 95, 129, 131
 and sporting equipment, 11, 27–30, 103, 104
 user-to-user assistance and, 105, 106
 Innovation process, 7, 8, 31, 45, 60, 61, 123, 124
 Intellectual commons, 115–117

- Intellectual property rights. *See also*
 Private-collective innovation
 copyrights and, 10, 12, 81, 85, 89, 114, 115
 free revealing and, 9, 10, 13, 77–91, 110–113, 129
 information communities and, 13, 17, 168, 170
 innovation and, 2, 3, 17, 170
 intellectual commons and, 115–117
 licensing of, 10, 12, 85, 98, 115, 116, 170
 open source software and, 9, 10, 170
 patent thickets and, 12, 114
 patents and, 10, 12, 83–86, 89, 111–114
 trade secrets and, 10, 81, 89, 111, 117, 129
- Jensen, M., 6, 46
 Jeppesen, L., 105, 111, 129, 130, 148
 Jervis, V., 108
 Jokisch, M., 129
- Katz, R., 151
 Kelly, C., 72
 Kelman, A., 108
 Kitesurfing, 14, 93, 103, 104, 124–126, 172
 Kline, R., 173, 174
 Knight, K., 21
 Knowledge, production and distribution of, 17, 168–170
 Kollack, P., 126
 Kotabe, M., 72
 Kristensen, P., 149
- Lakhani, K., 8, 60, 61, 82, 83, 87, 106, 166
 Lead users, 4, 5, 15–31, 133–146
 Apache web server software and, 20, 23, 38–41
 characteristics of, 4, 5, 134
 commercial attractiveness of, 4, 5, 24, 26, 28
 economic benefit, expectations of, 4, 5, 22, 23, 31
 idea generation and, 15, 16, 133, 136–146
 identification of, 4, 5, 15, 16, 133–142
 innovation and, 4, 5, 15, 16, 19–31, 121, 127, 133–146
 library information search system and, 4, 20, 23–27, 34, 35, 79
 manufacturers and, 27, 127, 133–136, 144–146
 market research methodologies and, 133, 137, 138, 139, 142
 mountain biking and, 20, 35–37
 outdoor consumer products and, 20, 21
 pipe hanger hardware and, 20, 143, 144
 printed circuit CAD software and, 20, 23, 24, 142, 143, 172
 pyramiding and, 135, 136
 sporting equipment and, 19, 27–30, 127
 StataCorp statistical software and, 136
 surgical equipment and, 20, 30, 127
 theory of, 22, 23
 3M and, 15, 16, 133, 136–143
 toolkits and, 163
- Lerner, J., 86
 Lessig, L., 13, 115, 118
 Lettl, C., 127, 176
 Levin, R., 84
 Levine, D., 115
 Levinthal, D., 68
 Levy, S., 97, 151
 Library information search system, 10, 20, 23–27, 34, 35, 79
 Licensing. *See* Intellectual property rights
 Lilien, G., 16, 136–143
 Linux, 116, 124, 131, 181
 Lim, K., 10, 79

- Local information, 8, 9, 31, 66–76, 94
- Lopez, L., 99
- Lüthje, C., 20, 21, 30, 35–37, 72–75
- Machlup, F., 169
- Mansfield, E., 23, 67, 82–84, 107, 108, 118
- Manufacturers
- agency costs and, 46–50
 - characteristics of, 3
 - custom products and, 6, 14, 15, 33
 - innovation and, 13–15, 121–131, 147–164
 - dimensions-of-merit product improvements and, 146
 - expectations of economic benefit by, 2–9, 33, 51–52, 56
 - free revealing and, 9, 10, 80
 - government policy and, 2, 107, 108, 117–119
 - information asymmetries of, 8, 9, 70–72
 - innovation and, 1–3, 6–9, 14–17, 27, 33, 37, 45, 49–52, 56, 70–76, 107–119, 133, 136, 147–164, 174
 - lead users and, 4, 5, 27, 127, 133–136, 144–146
 - national competitive advantage and, 170–172
 - social welfare and, 7–13
 - transaction costs and, 55–57
 - innovate-or-buy decisions and, 6, 7
- Marketing research, 15, 16, 37, 133, 134, 167
- Marples, D., 63
- Martin, J., 150
- Marwell, G., 90
- Mathews, J., 25
- Maurer, S., 115
- McAdam, D., 90
- McCool, Rob, 101
- Mead, L., 152
- Means, R., 56
- Meckling, W., 6, 46
- Merges, Robert, 113, 114
- Merton, Robert, 168
- Meyer, M., 99
- Microsoft, 13, 128, 151
- Midgely, David, 23, 179
- Mishina, K., 79
- MIT Artificial Intelligence Laboratory, 97, 98
- Mitchell, R., 40
- Molin, M., 129
- Mollick, Ethan, 131
- Morrison, Pamela, 4, 10, 20, 23–27, 34, 35, 79, 136–143, 179
- Mountain biking, 20, 34–37, 72–75, 94
- Muniz, A., 174
- Nagata, A., 84
- Narver, J., 144
- National competitive advantage, 170–172. *See also* Government policy
- Nelson, R., 68, 84, 113, 114, 170
- Niedner, S., 8, 60
- Nuvolari, A., 10, 78, 79
- Ogawa, S., 8, 71, 72, 108
- O’Guinn, T., 174
- Oliver, P., 90
- Olson, E., 144
- Olson, M., 89, 90
- Open source software. *See also* Free software
- communities and, 172, 174
 - innovation and, 97–102, 126, 129–132
 - free revealing and, 9–11, 80, 86, 87
 - innovation communities and, 11, 93, 96–102, 111, 113, 124, 126, 129–132, 172, 181
 - intellectual commons and, 115–117
 - intellectual property rights and, 9, 10, 115–117
 - knowledge and, 169, 170
- Ostrom, E., 90
- Outdoor products, 20, 21

- Patents. *See* Intellectual property rights
- Pavitt, K., 22
- Penning, C., 73
- Perens, B., 98
- Pinch, T., 17, 172–174
- Pine, J., 163
- Pipe hanger hardware, 20, 142, 143
- Polanyi, M., 67, 68
- Poolton, J., 108
- Porter, M., 17, 170–172
- Pottinger, T., 173
- Prahalad, C., 99
- Printed circuit CAD software, 20, 23–34, 142, 143, 172
- Private-collective model, 11, 90, 91, 106
- Product development, 2, 165, 174–177
- Project SAPPHO, 108
- Prügl, R., 135, 161
- Punj, G., 37, 180
- Pyramiding. *See* Lead users
- Raymond, E., 9, 10, 86, 94, 98, 101, 102, 126, 181, 182
- Redmond, W., 108
- Reisinger, H., 5, 37
- Riggs, W., 70, 71, 95
- Roberts, J., 4, 10, 20, 23–27, 34, 35, 79, 179
- Robertson, A., 108
- Rosenberg, N., 21, 22, 68
- Rothwell, R., 108
- SAPPHO study, 108
- Sattler, H., 84
- Schaffer, C., 37
- Schau, H., 174
- Schmidt, G., 173
- Schmookler, J., 23
- Schrage, M., 151
- Schreier, M., 161, 162
- Scientific instruments, 70–72, 94, 95
- Scotchmer, S., 113
- Searls, K., 136–143
- Shafer, L., 150
- Shah, S., 1, 2, 10, 11, 22, 27–30, 79, 80, 85, 95, 103, 105, 127, 176
- Shapiro, C., 12, 114
- Silberston, Z., 84
- Singleton, S., 90
- Slater, S., 144
- Slaughter, S., 52–56, 59, 60, 83–85
- Smith, A., 21
- Smith, G., 99
- Social welfare
 free revealing and, 89
 and government policy, 2, 11–13, 107, 108
 innovation and, 2, 3, 110–112, 121–131
 manufacturer innovation and, 7–13
 private-collective model and, 11, 90, 91, 106
 user innovation and, 2, 3, 7–13
- Sonnack, M., 135–143
- Spaeth, S., 88, 100
- Spence, M., 110
- Sporting equipment
 free revealing and, 79, 80
 innovation communities and, 94, 95, 105, 106
 lead users and, 19, 20, 22, 27–30, 176
 user-to-user assistance and, 105, 106
- Stallman, R., 97–99
- Stanley, L., 1, 2
- Stewart, D., 37, 180
- Stressed-skin panels, 52–56, 59, 60
- StataCorp statistical software, 128–131, 136
- Sticky information, 8, 67, 68
 dimensions-of-merit product improvements and, 146
 innovation and, 8, 9, 16, 57, 66–70, 93, 108, 146
 and scientific instruments, 70, 71
 toolkits and, 20, 30, 109, 112, 148–151, 176
- Suppliers, 3, 127, 128

- Surgical equipment, 20, 30, 109, 112, 176
- Suzlanski, G., 67
- Task partitioning, 13–15, 150–153. *See also* Toolkits
- Taylor, C., 84
- Taylor, M., 90
- Technical communities, 165, 172–174
- Technicon Corporation, 79, 136
- Tedd, L., 25
- Teece, D., 67
- Thies, S., 129
- Thomke, S., 63, 66, 128, 135, 138, 148, 151
- 3M Corporation, 15, 16, 133, 136–143
- Tirole, J., 48, 86, 111
- Toolkits, 16, 128–130, 147–164
 - characteristics of, 147, 148, 153, 154
 - GE and, 130, 148
 - innovation and, 147–164
 - International Flavors and Fragrances and, 148
 - lead users and, 163
 - manufacturers and, 13–15, 148–164
 - module libraries for, 159
 - Nestle and, 159–161
 - open source software and, 100, 101
 - platform products and, 14, 15, 128–130, 172
 - semiconductor manufacture and design and, 16
 - sticky information and, 148–151
 - StataCorp and, 128–131
 - solution spaces and, 156, 157
 - task partitioning, 13–15, 152, 153
 - trial-and-error learning in, 148, 149, 154–156
 - user-friendly tools for, 13, 147, 157–161
 - users and, 13–15, 148–164
- Trade secrets. *See* Intellectual property rights
- Transaction costs, 45, 46, 50–60, 114. *See also* Agency costs
- Trevithick, R., 78, 79
- Trial-and-error problem solving, 63–66, 148, 149, 152–156, 161
- Tripsas, M., 127
- Tyre, M., 63, 68–70, 149, 150
- Ulin, D., 50
- Urban, G., 20, 23, 24, 142, 143
- User innovation. *See* Innovation; Innovation communities; Users
- User need, 5, 6, 13, 33–43, 74, 93, 121, 126, 162
- Users. *See also* Lead users
 - agency costs and, 6, 46–50
 - characteristics of, 3
 - co-invention and, 118, 119
 - custom products and, 14, 15, 33–43, 127, 128, 172
 - expectations of economic benefit by, 1–9
 - free revealing by, 9, 10, 13, 17, 77–91, 168
 - government policy and, 2, 107–119
 - innovation and, 13–15, 121, 131
 - information asymmetries of, 8, 9, 48, 66–74, 109
 - information communities and, 11, 168
 - innovate-or-buy decisions by, 5–8, 45–63, 72–75, 94, 123, 124, 176
 - innovation and, 1–9, 14–16, 33–45, 49–51, 63–76, 93, 107–119, 133–164, 174–177
 - innovation communities and, 105, 106, 131
 - innovation process and, 7, 8, 31, 45, 60, 61, 123, 124
 - knowledge and, 168–170
 - low-cost innovation niches of, 8, 9, 31, 63–76, 93, 94, 176
 - national competitive advantage and, 170–172
 - needs of, 5, 6, 33–43, 74

Users (cont.)

and paying for innovations, 38–41, 45,
121

process improvements by, 21, 22

social welfare and, 11–13, 107, 110, 111

toolkits and, 147–164

transaction costs and, 46, 50–56

Utterback, J., 177

Van der Plas, R., 72

Varian, H., 12, 117

von Hippel, E., 4–6, 10, 11, 20–27,

34–42, 63, 66, 67–84, 87, 90–91,

95–111, 121–123, 128, 135–144,

148–151, 166, 171, 175, 180

von Krogh, G., 11, 88–91, 100

Wagner, S., 107, 108, 118

Walsh, J., 84

Watt, J., 78

Weber, S., 17, 116, 169, 170

Wellman, B., 96

Wenger, E., 174

Wikipedia, 17, 166

Wind, Y, 37

Windsurfing, 1, 2, 127, 176

Winter, S., 67

Wolf, B., 8, 60, 61, 87

Young, G., 99

Zeroprestige.com, 103, 104, 125

Zhang, X., 167

Ziedonis, R., 114