

THE PATENT SCORECARD 2003

| COMPANY | TECHNOLOGICAL STRENGTH/RANK | | NUMBER OF PATENTS | | CURRENT-IMPACT INDEX | | SCIENCE LINKAGE | | TECHNOLOGY CYCLE TIME | |
|---|-----------------------------|--------------------------------|-------------------|--------------------------------|----------------------|--------------------------------|-----------------|--------------------------------|-----------------------|--------------------------------|
| | 2002 | 1997-2001 AVERAGE ² | 2002 | 1997-2001 AVERAGE ² | 2002 | 1997-2001 AVERAGE ² | 2002 | 1997-2001 AVERAGE ² | 2002 | 1997-2001 AVERAGE ² |
| | AEROSPACE | | | | | | | | | |
| Northrop Grumman (U.S.) | 401/1 | 173/4 | 441 | 228 | 0.91 | 0.76 | 0.55 | 0.63 | 8.3 | 9.0 |
| Lockheed Martin (U.S.) | 340/2 | 300/1 | 309 | 315 | 1.10 | 0.95 | 1.75 | 2.01 | 8.5 | 8.7 |
| United Technologies (U.S.) | 258/3 | 219/2 | 318 | 342 | 0.81 | 0.64 | 0.27 | 0.38 | 10.9 | 10.5 |
| Boeing (U.S.) | 159/4 | 203/3 | 224 | 257 | 0.71 | 0.79 | 0.41 | 0.68 | 11.8 | 12.5 |
| Rockwell Automation (U.S.) | 111/5 | 147/5 | 105 | 148 | 1.06 | 0.99 | 0.50 | 0.57 | 6.5 | 7.7 |
| Rockwell Collins (U.S.) | 92/6 | 55/9 | 84 | 33 | 1.10 | 1.66 | 0.33 | 0.66 | 6.9 | 5.9 |
| BAE Systems (U.K.) | 87/7 | 19/12 | 124 | 35 | 0.70 | 0.54 | 0.26 | 0.40 | 10.3 | 11.3 |
| Thales (France) | 78/8 | 98/6 | 111 | 122 | 0.70 | 0.80 | 0.30 | 0.62 | 7.8 | 8.6 |
| EADS (Netherlands) | 72/9 | 69/7 | 131 | 132 | 0.55 | 0.52 | 0.34 | 0.36 | 10.8 | 11.7 |
| Textron (U.S.) | 70/10 | 56/8 | 90 | 71 | 0.78 | 0.79 | 0.74 | 0.12 | 12.1 | 11.4 |
| GKN (U.K.) | 30/11 | 26/11 | 46 | 38 | 0.65 | 0.69 | 0.45 | 0.08 | 9.6 | 10.1 |
| General Dynamics (U.S.) | 27/12 | 31/10 | 28 | 34 | 0.95 | 0.92 | 1.32 | 3.24 | 11.2 | 10.4 |
| AUTOMOTIVE | | | | | | | | | | |
| Delphi Automotive Systems (U.S.) | 903/1 | 196/12 | 654 | 183 | 1.38 | 1.07 | 0.19 | 0.24 | 7.1 | 6.8 |
| Honda (Japan) | 731/2 | 505/4 | 703 | 476 | 1.04 | 1.06 | 0.02 | 0.13 | 7.4 | 7.0 |
| Bosch (Germany) | 672/3 | 522/2 | 800 | 600 | 0.84 | 0.87 | 0.11 | 0.18 | 8.0 | 7.9 |
| Denso (Japan) | 629/4 | 503/5 | 557 | 458 | 1.13 | 1.10 | 0.12 | 0.24 | 6.7 | 6.9 |
| Toyota Motor (Japan) | 540/5 | 507/3 | 380 | 409 | 1.42 | 1.24 | 0.41 | 0.35 | 5.3 | 6.0 |
| Ford Motor (U.S.) | 511/6 | 400/7 | 433 | 404 | 1.18 | 0.99 | 0.44 | 0.34 | 6.4 | 8.2 |
| DaimlerChrysler (Germany) | 508/7 | 572/1 | 546 | 590 | 0.93 | 0.97 | 0.12 | 0.22 | 8.4 | 8.9 |
| General Motors (U.S.) | 417/8 | 502/6 | 353 | 469 | 1.18 | 1.07 | 0.53 | 0.62 | 6.7 | 7.5 |
| Nissan Motor (Japan) | 385/9 | 272/8 | 292 | 249 | 1.32 | 1.09 | 0.08 | 0.09 | 5.4 | 6.3 |
| Yazaki (Japan) | 274/10 | 272/8 | 334 | 299 | 0.82 | 0.91 | 0.05 | 0.02 | 7.3 | 6.7 |
| TRW (U.S.) | 260/11 | 223/10 | 190 | 155 | 1.37 | 1.44 | 0.06 | 0.08 | 6.1 | 6.7 |
| Magma International (Canada) | 247/12 | 146/13 | 106 | 90 | 2.33 | 1.62 | 0.50 | 0.66 | 9.7 | 11.1 |
| Aisin Seiki (Japan) | 245/13 | 222/11 | 180 | 183 | 1.36 | 1.21 | 0.05 | 0.46 | 5.0 | 6.4 |
| Visteon (U.S.) | 220/14 | 53/14 | 202 | 53 | 1.09 | 1.00 | 0.04 | 0.08 | 8.0 | 8.8 |
| BIOTECHNOLOGY/PHARMACEUTICALS | | | | | | | | | | |
| Maxygen (U.S.) | 434/1 | 45/18 | 35 | 4 | 12.39 | 11.96 | 111.40 | 118.53 | 4.3 | 3.7 |
| Caliper Technologies (U.S.) | 404/2 | 84/14 | 50 | 15 | 8.09 | 5.54 | 12.46 | 12.18 | 5.8 | 5.1 |
| Synyx Technologies (U.S.) | 292/3 | 9/27 | 47 | 7 | 6.21 | 1.34 | 21.70 | 12.35 | 8.1 | 7.5 |
| Diversa (U.S.) | 245/4 | 35/22 | 17 | 8 | 14.43 | 4.37 | 13.58 | 5.45 | 4.8 | 3.9 |
| Pfizer (U.S.) | 188/5 | 163/4 | 285 | 239 | 0.66 | 0.68 | 7.40 | 6.47 | 8.8 | 9.4 |
| Affymetrix (U.S.) | 168/6 | 75/15 | 50 | 22 | 3.37 | 3.33 | 88.20 | 25.06 | 10.8 | 8.1 |
| Guilford Pharmaceuticals (U.S.) | 166/7 | 30/24 | 40 | 18 | 4.15 | 1.69 | 62.65 | 39.10 | 9.1 | 8.2 |
| GlaxoSmithKline (U.K.) | 140/8 | 185/3 | 292 | 319 | 0.48 | 0.58 | 6.30 | 5.58 | 7.5 | 8.7 |
| Aventis (France) | 123/9 | 227/1 | 316 | 494 | 0.39 | 0.46 | 11.70 | 7.91 | 9.1 | 9.6 |
| Merck (U.S.) | 115/10 | 187/2 | 234 | 256 | 0.49 | 0.73 | 14.50 | 11.19 | 6.7 | 6.5 |
| Pharmacia (U.S.) | 114/11 | 92/13 | 196 | 177 | 0.58 | 0.52 | 17.60 | 13.59 | 10.8 | 9.6 |
| F. Hoffmann-La Roche ³ (Switzerland) | 110/12 | 153/5 | 229 | 242 | 0.48 | 0.63 | 6.75 | 7.65 | 8.4 | 9.0 |
| Bristol-Myers Squibb (U.S.) | 95/13 | 139/6 | 154 | 178 | 0.62 | 0.78 | 11.93 | 14.10 | 8.6 | 8.6 |
| Abbott Laboratories (U.S.) | 91/14 | 124/9 | 138 | 172 | 0.66 | 0.72 | 6.92 | 7.03 | 8.3 | 9.6 |
| Isis Pharmaceuticals (U.S.) | 82/15 | 107/10 | 111 | 77 | 0.74 | 1.39 | 32.15 | 32.79 | 7.3 | 6.6 |
| Schering (Germany) | 74/16 | 94/12 | 77 | 96 | 0.96 | 0.98 | 5.90 | 6.08 | 8.7 | 8.5 |
| Emisphere Technologies (U.S.) | 74/16 | 31/23 | 14 | 10 | 5.29 | 3.18 | 85.57 | 146.53 | 12.8 | 12.9 |
| Genzyme (U.S.) | 66/18 | 41/19 | 47 | 40 | 1.40 | 1.04 | 15.74 | 19.66 | 8.7 | 9.0 |
| Astrazeneca (U.K.) | 65/19 | 97/11 | 141 | 195 | 0.46 | 0.50 | 6.04 | 6.98 | 8.4 | 8.6 |
| Eli Lilly (U.S.) | 64/20 | 130/7 | 125 | 185 | 0.51 | 0.70 | 6.00 | 8.86 | 10.3 | 8.5 |
| Novartis ⁴ (Switzerland) | 61/21 | 129/8 | 129 | 235 | 0.47 | 0.55 | 8.67 | 9.76 | 10.4 | 9.4 |
| Nektar Therapeutic ⁵ (U.S.) | 56/22 | 13/26 | 19 | 9 | 2.93 | 1.37 | 8.84 | 7.20 | 8.9 | 9.7 |
| Schering-Plough (U.S.) | 53/23 | 67/16 | 81 | 90 | 0.66 | 0.74 | 14.58 | 12.73 | 5.9 | 8.7 |
| Boehringer-Ingelheim (Germany) | 49/24 | 39/21 | 101 | 66 | 0.49 | 0.59 | 6.65 | 8.05 | 8.7 | 8.5 |
| Nanogen (U.S.) | 48/25 | 40/20 | 10 | 7 | 4.83 | 5.54 | 16.10 | 14.06 | 9.4 | 8.5 |
| Wyeth (U.S.) | 44/26 | 56/17 | 84 | 93 | 0.52 | 0.61 | 15.72 | 10.46 | 8.6 | 8.2 |
| Ligand Pharmaceuticals (U.S.) | 43/27 | 16/25 | 24 | 16 | 1.81 | 0.95 | 28.62 | 21.00 | 7.6 | 7.8 |
| CHEMICALS | | | | | | | | | | |
| 3M (U.S.) | 722/1 | 642/2 | 564 | 522 | 1.28 | 1.23 | 2.80 | 2.46 | 11.8 | 10.8 |
| Procter and Gamble (U.S.) | 582/2 | 702/1 | 441 | 478 | 1.32 | 1.47 | 1.92 | 1.77 | 9.8 | 10.7 |
| BASF (Germany) | 300/3 | 297/4 | 626 | 646 | 0.48 | 0.46 | 1.49 | 2.07 | 11.1 | 10.3 |
| Bayer (Germany) | 298/4 | 275/5 | 620 | 612 | 0.48 | 0.45 | 2.65 | 3.21 | 10.8 | 9.7 |
| Bridgestone (Japan) | 226/5 | 136/8 | 193 | 170 | 1.17 | 0.80 | 0.71 | 0.72 | 9.5 | 10.0 |
| DuPont (U.S.) | 221/6 | 320/3 | 401 | 478 | 0.55 | 0.67 | 5.60 | 4.60 | 10.4 | 10.9 |
| Cabot (U.S.) | 185/7 | 83/13 | 56 | 28 | 3.30 | 2.99 | 3.53 | 4.88 | 12.6 | 10.9 |
| Shin-Etsu Chemical (Japan) | 166/8 | 134/9 | 213 | 200 | 0.78 | 0.67 | 0.60 | 0.49 | 6.5 | 7.4 |
| Dow Chemical (U.S.) | 160/9 | 202/6 | 213 | 258 | 0.75 | 0.78 | 4.72 | 4.44 | 11.3 | 10.4 |
| Goodyear Tire and Rubber (U.S.) | 154/10 | 70/14 | 195 | 105 | 0.79 | 0.67 | 0.13 | 0.16 | 13.4 | 12.5 |
| Henkel (Germany) | 144/11 | 97/12 | 141 | 171 | 1.02 | 0.57 | 0.44 | 1.17 | 11.8 | 11.9 |
| E.ON Energie (Germany) | 132/12 | 112/10 | 235 | 229 | 0.56 | 0.49 | 1.20 | 0.96 | 10.4 | 10.1 |
| Toyoda Gosei (Japan) | 115/13 | 69/15 | 88 | 63 | 1.31 | 1.09 | 0.90 | 0.24 | 6.9 | 6.7 |
| SpeedFam-IPEC (U.S.) | 111/14 | 61/17 | 33 | 21 | 3.35 | 2.86 | 0.12 | 0.33 | 5.5 | 5.6 |
| Rohm and Haas (U.S.) | 107/15 | 175/7 | 147 | 174 | 0.73 | 1.01 | 0.77 | 0.85 | 9.4 | 8.4 |
| Sumitomo Rubber (Japan) | 107/15 | 63/16 | 89 | 75 | 1.20 | 0.84 | 0.02 | 0.04 | 6.8 | 7.9 |
| Continental (Germany) | 106/17 | 49/18 | 120 | 69 | 0.88 | 0.71 | 0.17 | 0.65 | 7.8 | 8.5 |
| L'Air Liquide (France) | 96/18 | 98/11 | 130 | 117 | 0.74 | 0.84 | 0.77 | 0.88 | 10.3 | 9.8 |
| COMPUTERS | | | | | | | | | | |
| IBM (U.S.) | 5,668/1 | 5,535/1 | 3,334 | 2,727 | 1.70 | 2.03 | 0.78 | 1.10 | 5.3 | 5.7 |
| Hewlett-Packard (U.S.) | 2,240/2 | 2,502/2 | 1,391 | 1,226 | 1.61 | 2.04 | 0.69 | 1.05 | 5.7 | 5.8 |
| NEC (Japan) | 1,824/3 | 2,093/3 | 1,920 | 1,789 | 0.95 | 1.17 | 0.55 | 0.72 | 4.8 | 4.9 |
| Fujitsu (Japan) | 1,601/4 | 1,515/4 | 1,368 | 1,193 | 1.17 | 1.27 | 0.58 | 0.59 | 5.7 | 5.7 |
| Microsoft (U.S.) | 1,385/5 | 1,078/5 | 515 | 342 | 2.69 | 3.15 | 2.97 | 2.68 | 4.7 | 4.5 |
| Sun Microsystems (U.S.) | 1,060/6 | 1,048/6 | 505 | 411 | 2.10 | 2.55 | 2.31 | 2.06 | 5.3 | 4.7 |
| Xerox (U.S.) | 863/7 | 910/7 | 702 | 669 | 1.23 | 1.36 | 0.89 | 1.05 | 7.6 | 6.8 |
| Cisco Systems (U.S.) | 800/8 | 427/11 | 234 | 86 | 3.42 | 4.96 | 2.22 | 1.46 | 6.3 | 5.9 |
| Seiko Epson (Japan) | 753/9 | 514/8 | 633 | 357 | 1.19 | 1.44 | 0.57 | 0.92 | 6.1 | 7.3 |

| | | | | | | | | | | |
|--------------------------------------|--------|--------|-----|-----|------|-------|-------|-------|-----|-----|
| Hon Hai (Taiwan) | 739/10 | 432/10 | 432 | 209 | 1.71 | 2.07 | 0.00 | 0.00 | 3.5 | 4.3 |
| Seagate Technology (U.S.) | 495/11 | 344/14 | 344 | 218 | 1.44 | 1.58 | 1.02 | 0.92 | 6.5 | 6.6 |
| 3Com (U.S.) | 475/12 | 361/13 | 198 | 116 | 2.40 | 3.10 | 0.54 | 0.50 | 5.5 | 4.9 |
| Oki Electric (Japan) | 357/13 | 257/16 | 361 | 224 | 0.99 | 1.15 | 0.31 | 0.44 | 5.1 | 5.2 |
| Ricoh (Japan) | 319/14 | 487/9 | 351 | 412 | 0.91 | 1.18 | 0.35 | 0.33 | 5.3 | 6.0 |
| Silverbrook Research (Australia) | 312/15 | 86/22 | 121 | 25 | 2.58 | 3.42 | 0.05 | 0.16 | 4.6 | 4.0 |
| EMC (U.S.) | 251/16 | 213/18 | 103 | 73 | 2.44 | 2.93 | 1.13 | 1.70 | 5.4 | 5.4 |
| Dell Computer (U.S.) | 226/17 | 300/15 | 108 | 104 | 2.09 | 2.90 | 0.12 | 0.07 | 5.4 | 5.0 |
| NCR (U.S.) | 225/18 | 248/17 | 161 | 153 | 1.40 | 1.62 | 0.62 | 0.76 | 7.2 | 6.7 |
| Oracle (U.S.) | 213/19 | 159/21 | 86 | 59 | 2.48 | 2.67 | 2.36 | 1.38 | 4.0 | 3.8 |
| Unisys (U.S.) | 188/20 | 161/20 | 119 | 106 | 1.58 | 1.52 | 0.42 | 0.63 | 4.7 | 6.1 |
| Digimarc (U.S.) | 166/21 | 65/23 | 28 | 7 | 5.93 | 8.84 | 29.35 | 29.24 | 8.9 | 7.8 |
| International Game Technology (U.S.) | 142/22 | 40/24 | 45 | 13 | 3.16 | 2.96 | 0.08 | 0.01 | 5.0 | 7.1 |
| Immersion (U.S.) | 137/23 | 193/19 | 21 | 18 | 6.53 | 10.51 | 25.09 | 23.47 | 7.5 | 6.6 |
| Apple Computer (U.S.) | 130/24 | 408/12 | 77 | 166 | 1.69 | 2.45 | 1.58 | 1.29 | 5.6 | 5.4 |

ELECTRICAL/ELECTRONICS

| | | | | | | | | | | |
|---|----------|---------|-------|-------|------|------|------|------|------|------|
| Hitachi (Japan) | 2,390/1 | 1,662/2 | 1,882 | 1,340 | 1.27 | 1.24 | 0.61 | 0.73 | 6.7 | 6.7 |
| Canon (Japan) | 1,840/2 | 1,950/1 | 1,937 | 1,823 | 0.95 | 1.07 | 0.47 | 0.55 | 7.3 | 7.7 |
| General Electric (U.S.) | 1,832/3 | 697/11 | 1,681 | 860 | 1.09 | 0.81 | 6.11 | 0.61 | 10.0 | 9.9 |
| Matsushita Electric (Japan) | 1,678/4 | 1,410/6 | 1,712 | 1,294 | 0.98 | 1.09 | 0.45 | 0.57 | 6.0 | 6.0 |
| Toshiba (Japan) | 1,636/5 | 1,585/5 | 1,352 | 1,248 | 1.21 | 1.27 | 0.49 | 0.61 | 5.6 | 5.9 |
| Mitsubishi Electric (Japan) | 1,607/6 | 1,245/7 | 1,474 | 1,112 | 1.09 | 1.12 | 0.40 | 0.60 | 5.3 | 5.9 |
| Sony (Japan) | 1,553/7 | 1,600/3 | 1,601 | 1,322 | 0.97 | 1.21 | 0.46 | 0.39 | 5.6 | 5.6 |
| Samsung (South Korea) | 1,485/8 | 1,597/4 | 1,563 | 1,452 | 0.95 | 1.10 | 0.24 | 0.19 | 5.2 | 5.5 |
| Koninklijke Philips Electronics (Netherlands) | 1,238/9 | 1,034/9 | 1,276 | 975 | 0.97 | 1.06 | 0.57 | 0.62 | 5.6 | 6.0 |
| Siemens (Germany) | 1,221/10 | 1,105/8 | 1,357 | 1,242 | 0.90 | 0.89 | 0.55 | 0.94 | 7.3 | 7.2 |
| Sharp (Japan) | 695/11 | 667/12 | 626 | 575 | 1.11 | 1.16 | 0.70 | 0.83 | 5.3 | 5.3 |
| Eastman Kodak (U.S.) | 558/12 | 826/10 | 706 | 908 | 0.79 | 0.91 | 0.36 | 0.35 | 8.3 | 8.2 |
| Tokyo Electron (Japan) | 462/13 | 325/14 | 250 | 150 | 1.85 | 2.17 | 0.44 | 0.34 | 5.5 | 6.1 |
| Agilent Technologies (U.S.) | 428/14 | 147/19 | 327 | 103 | 1.31 | 1.42 | 1.08 | 2.11 | 6.1 | 6.6 |
| Tyco International (Bermuda) | 409/15 | 624/13 | 356 | 499 | 1.15 | 1.25 | 0.48 | 0.70 | 9.9 | 9.8 |
| Murata (Japan) | 403/16 | 237/15 | 443 | 252 | 0.91 | 0.94 | 0.18 | 0.25 | 6.5 | 7.4 |
| Sanyo Electric (Japan) | 302/17 | 234/17 | 378 | 244 | 0.80 | 0.96 | 0.26 | 0.46 | 5.3 | 5.9 |
| LG Electronics (South Korea) | 296/18 | 236/16 | 384 | 281 | 0.77 | 0.84 | 0.14 | 0.20 | 5.0 | 5.5 |
| Emerson Electric (U.S.) | 248/19 | 170/18 | 197 | 200 | 1.26 | 0.85 | 2.08 | 1.45 | 9.9 | 10.6 |
| LG Philips LCD (South Korea) | 222/20 | 34/20 | 149 | 16 | 1.49 | 2.10 | 1.65 | 2.14 | 4.9 | 4.6 |

SEMICONDUCTORS

| | | | | | | | | | | |
|---|---------|---------|-------|-------|------|------|------|------|------|-----|
| Micron Technology (U.S.) | 3,943/1 | 2,813/1 | 1,851 | 1,078 | 2.13 | 2.61 | 2.65 | 1.86 | 6.5 | 5.6 |
| Advanced Micro Devices (U.S.) | 1,993/2 | 1,672/3 | 1,152 | 760 | 1.73 | 2.20 | 0.53 | 0.92 | 4.4 | 4.8 |
| Intel (U.S.) | 1,893/3 | 1,720/2 | 1,088 | 714 | 1.74 | 2.41 | 0.74 | 0.93 | 5.0 | 5.2 |
| Applied Materials (U.S.) | 1,334/4 | 695/6 | 517 | 295 | 2.58 | 2.36 | 1.62 | 1.65 | 7.4 | 7.2 |
| Texas Instruments (U.S.) | 1,056/5 | 1,100/4 | 744 | 705 | 1.42 | 1.56 | 0.85 | 1.32 | 6.4 | 6.6 |
| Semiconductor Energy Laboratory (Japan) | 840/6 | 449/11 | 253 | 159 | 3.32 | 2.83 | 3.28 | 2.79 | 6.7 | 6.3 |
| Taiwan Semiconductor (Taiwan) | 823/7 | 879/5 | 465 | 363 | 1.77 | 2.42 | 0.19 | 0.24 | 4.2 | 4.0 |
| Hynix Semiconductor (South Korea) | 599/8 | 676/8 | 599 | 524 | 1.00 | 1.29 | 0.47 | 0.37 | 4.8 | 5.0 |
| LSI Logic (U.S.) | 562/9 | 691/7 | 309 | 303 | 1.82 | 2.28 | 0.90 | 1.34 | 5.3 | 5.5 |
| Infineon Technologies (Germany) | 521/10 | 67/19 | 532 | 77 | 0.98 | 0.86 | 0.43 | 0.47 | 5.0 | 5.0 |
| STMicroelectronics (France) | 519/11 | 544/10 | 603 | 486 | 0.86 | 1.12 | 0.69 | 0.93 | 6.0 | 6.6 |
| Chartered Semiconductor (Singapore) | 388/12 | 203/14 | 151 | 67 | 2.57 | 3.02 | 0.22 | 0.18 | 3.9 | 3.8 |
| Amkor Technology (U.S.) | 326/13 | 64/20 | 76 | 21 | 4.29 | 3.10 | 0.22 | 0.46 | 4.9 | 5.3 |
| National Semiconductor (U.S.) | 310/14 | 316/12 | 208 | 197 | 1.49 | 1.60 | 0.64 | 1.28 | 5.5 | 5.8 |
| United Microelectronics (Taiwan) | 297/15 | 640/9 | 286 | 379 | 1.04 | 1.69 | 0.10 | 0.14 | 3.6 | 3.8 |
| Xilinx (U.S.) | 282/16 | 240/13 | 146 | 94 | 1.93 | 2.56 | 1.80 | 1.42 | 5.1 | 5.5 |
| Lam Research (U.S.) | 259/17 | 161/15 | 107 | 63 | 2.42 | 2.57 | 0.33 | 1.38 | 6.1 | 6.5 |
| Conexant Systems (U.S.) | 256/18 | 85/17 | 143 | 60 | 1.79 | 1.42 | 0.64 | 0.85 | 5.6 | 4.6 |
| Macronix International (Taiwan) | 198/19 | 71/18 | 123 | 28 | 1.61 | 2.51 | 0.13 | 1.30 | 3.5 | 5.1 |
| Tessera Technologies (U.S.) | 185/20 | 131/16 | 49 | 35 | 3.78 | 3.80 | 0.57 | 0.48 | 10.3 | 8.6 |

TELECOMMUNICATIONS

| | | | | | | | | | | |
|--|---------|---------|-----|-------|------|------|------|------|-----|-----|
| Ericsson (Sweden) | 1,197/1 | 1,146/3 | 767 | 567 | 1.56 | 2.02 | 0.94 | 1.08 | 5.6 | 5.5 |
| Motorola (U.S.) | 1,120/2 | 1,955/1 | 778 | 1,178 | 1.44 | 1.66 | 1.64 | 0.88 | 5.4 | 5.4 |
| Lucent Technologies (U.S.) | 1,035/3 | 1,938/2 | 690 | 1,101 | 1.50 | 1.76 | 1.40 | 1.51 | 4.7 | 5.5 |
| Nokia (Finland) | 834/4 | 470/6 | 439 | 258 | 1.90 | 1.82 | 0.48 | 0.50 | 5.1 | 5.3 |
| Nortel Networks (Canada) | 822/5 | 679/4 | 459 | 333 | 1.79 | 2.04 | 1.69 | 0.91 | 4.7 | 4.7 |
| Qualcomm (U.S.) | 631/6 | 453/7 | 203 | 108 | 3.11 | 4.19 | 0.84 | 1.10 | 7.4 | 6.5 |
| AT&T (U.S.) | 621/7 | 647/5 | 293 | 230 | 2.12 | 2.81 | 1.13 | 1.12 | 5.2 | 4.6 |
| Alcatel (France) | 498/8 | 413/8 | 445 | 366 | 1.12 | 1.13 | 0.68 | 0.86 | 5.7 | 6.5 |
| Agere Systems (U.S.) | 432/9 | 88/14 | 419 | 75 | 1.03 | 1.18 | 1.30 | 1.30 | 5.1 | 5.1 |
| JDS Uniphase (U.S.) | 322/10 | 167/13 | 145 | 87 | 2.22 | 1.92 | 2.44 | 2.61 | 6.5 | 6.9 |
| Verizon Communications (U.S.) | 321/11 | 307/9 | 87 | 94 | 3.69 | 3.26 | 1.62 | 1.45 | 5.6 | 6.1 |
| WorldCom (U.S.) | 299/12 | 220/10 | 109 | 88 | 2.74 | 2.51 | 1.18 | 1.09 | 4.4 | 4.7 |
| Nippon Telegraph and Telephone (Japan) | 159/13 | 194/11 | 113 | 131 | 1.41 | 1.48 | 1.44 | 2.02 | 6.1 | 4.9 |
| Avaya (U.S.) | 155/14 | 176/12 | 128 | 38 | 1.21 | 4.60 | 0.32 | 0.17 | 6.3 | 6.0 |
| Ciena (U.S.) | 153/15 | 59/15 | 39 | 15 | 3.92 | 4.04 | 0.92 | 1.95 | 5.0 | 4.6 |

Indexing Innovation

Technology Review has teamed with CHI Research of Haddon Heights, NJ, to produce the Patent Scorecard, an industry-by-industry ranking of corporate patent portfolios. CHI combines the number of patents a company receives with other indicators to flesh out this deeper picture of innovation. Here are the specifics:

TECHNOLOGICAL STRENGTH: This figure, the basis of the rankings, provides an overall assessment of a company's intellectual property power. It is calculated by multiplying the number of a company's U.S. patents by its Current-Impact Index (see below).

NUMBER OF PATENTS: This total equals the number of U.S. patents awarded, excluding design and other special-case inventions.

CURRENT-IMPACT INDEX: This measure showcases the broader significance of a company's patents by examining how often its U.S. patents from the previous five years are cited as prior art in the current year's batch. A value of 1.0 represents average citation frequency, so, for example, a value of 1.4 would indicate a company's patents were cited 40 percent more often than the average.

SCIENCE LINKAGE: Some patents cite scientific papers as prior art. This value shows the average number of scientific references listed in a company's U.S. patents. A high figure indicates a company closer to the cutting edge than its competitors with lower values.

TECHNOLOGY CYCLE TIME: This indicator of a firm's speed in turning leading-edge technology into intellectual property is defined as the median age (in years) of the U.S. patents cited as prior art in the company's patents.

1. Unless otherwise noted, figures for each company include all subsidiaries and wholly owned companies. In some cases, subsidiaries would have made the list independently.

2. These figures are averages that cover a five-year span.

3. This excludes figures for Genentech, which is wholly owned by Roche.

4. This excludes figures for Syngenta, which is wholly owned by Novartis.

5. Nektar Therapeutic was formerly Inhale Therapeutic Systems.

An expanded version of the scorecard lists more companies and is available at <http://www.technologyreview.com/scorecards/>.