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# IEEE SPECTRUM

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## FEATURE

### Patent Power Scorecards: Japan Ascendant

Japanese companies rise to the top of *IEEE Spectrum's* Patent Power rankings thanks to shrinking U.S. innovation pipelines

BY PATRICK THOMAS, ANTHONY BREITZMAN // MARCH 2010

The surprise story of this edition of the *IEEE Spectrum* Patent Power Scorecards is the reemergence of Japan as a global leader in innovation. Based on data from 2009, out of the 323 leading organizations in the scorecards, 65 (20 percent) are Japanese. This percentage is markedly higher than in the 2007 scorecards, in which 45 out of 319 companies (14 percent) were Japanese.

The increasing prominence of Japanese companies is particularly clear in the electronics industry. Out of the top 10 companies in the Electronics scorecard, 7 are Japanese, headed by Hitachi, Sony, and Casio. In comparison, 5 out of the top 10 electronics companies in 2007 were Japanese. Ditto for the automotive industry, where 7 of the top 10 companies in the Automotive and Parts scorecard are Japanese, compared to five in 2007. This includes 4 of the top 5 automotive companies—Honda, Toyota, Denso, and Nissan. Honda is the big mover, improving from sixth place in 2007 to top position in 2009.

Many people are familiar with Japanese cars and electronics, so the presence of Japanese companies at the top of these scorecards is not surprising. Less well known is Japan's increasing strength in other technologies. For example, 12 of the 20 organizations in the 2009 Chemical scorecard are Japanese, compared to only 7 in 2007. Meanwhile, Japanese companies fill 2 of the top 3 places in the Semiconductor Equipment Manufacturing scorecard. Tokyo Electron has improved from No. 4 to No. 1 since 2007, while Disco Corp.—which makes laser and dicing saws for cutting semiconductor wafers—is a new entrant to the scorecard at No. 3.

If Japanese companies are the big winners in the 2009 scorecards, it is largely U.S. companies that are making way for them. The percentage of U.S. organizations in the scorecards fell from 63 percent (202 out of 319) in 2007, to 54 percent (173 out of 323) in 2009. Over the same period, the percentage of European organizations remained steady, increasing slightly from 15 percent in 2007 to 16 percent in 2009.

Clearly, the global recession seriously hampered innovation in the United States. In the last patent scorecard, based on data through 2007, we highlighted the seemingly endless rise in U.S. patent applications. The number of applications for utility patents reached a record of 456 000 in 2007, more than twice as many applications as filed in 1997, and 100 000 more than filed in 2004. Since the last scorecard, budget cuts across organizations both large and small have halted this trend. In 2008, the number of patent applications remained constant at 456 000, making it the first year since 1996 that there was not an increase in the number of applications filed.

Not only did the number of U.S. organizations in the scorecards fall by almost 30 between 2007 and 2009, some household names suffered in terms of their ranking. Xerox fell from third position in the

2007 Electronics scorecard all the way down to No. 15 in 2009. This left Microvision as the leading U.S. company in the 2009 Electronics scorecard, in thirteenth place.

Other U.S. companies to see double-digit declines in ranking include AOL (from fourth to fifteenth in Computer Software) and Micron (from third to nineteenth in Semiconductor Manufacturing). Meanwhile, leading U.S. companies that saw notable, although less dramatic, declines in ranking include General Motors (first to third in Automotive and Parts), 3M (first to sixth in Conglomerates), and Hewlett-Packard (second to fifth in Computer Systems).

The 2009 scorecards were not all bad news for U.S. companies. IBM still leads in Computer Systems by a wide margin, as does Microsoft in Computer Software. Cisco also continues to lead in Telecom/Communications Equipment and is one of three U.S. companies in the top four places in this scorecard, along with Motorola and Qualcomm.

There were also a number of U.S. companies that saw significant improvements in their ranking between 2007 and 2009. Oracle jumped from seventh to second in Computer Software, while Adobe moved from No. 12 to No. 4 in the same scorecard. Adobe has risen particularly rapidly, having entered the scorecards for the first time in 2007. Johnson & Johnson is another U.S. company that saw an improvement in ranking in 2009, rising from fourth place in Biotechnology and Pharmaceuticals to take over the top spot from Roche. KLA-Tencor is also on the rise and is now second only to Tokyo Electron in Semiconductor Equipment Manufacturing.

As large companies continue to jostle for position at the head of the scorecards, smaller specialist companies with innovative technologies are also well represented. For example, Super Talent Technology, a San Jose, Calif., company specializing in DDR (Double Data Rate) and flash memory, ranks fifth in 2009's Computer Peripherals and Storage scorecard. This is a remarkable performance, since Super Talent's patent portfolio is dwarfed in size by the portfolios of other companies in this scorecard, such as Seiko Epson, Ricoh, Fuji Xerox, and EMC. Super Talent's high ranking results from a very strong combination of patent metrics, encompassing Patent Impact, Originality, and Generality.

Microvision [see *In the Eye of the Beholder*, May 2004] is another smaller company whose high-impact patent portfolio puts it alongside leading names in the electronics industry. Microvision develops imaging and display solutions for mobile applications. It has particularly high-impact patents related to flat-panel optical displays and nonlinear optical materials (as reflected in its high Pipeline Impact score). The impact of these patents can be seen across a range of technologies, as reflected in Microvision's high Pipeline Generality number.

O2Micro is another company worth noting, having entered the Semiconductor Manufacturing scorecard for the first time in 2009. O2Micro specializes in power management and security ICs for electronics and communications applications. Its patent portfolio is much smaller than those of most of the companies in this scorecard, such as Samsung, Intel, and Broadcom. Despite its smaller portfolio, the impact and general applicability of O2Micro's patents, especially those related to power supplies for LCD panels and DC/AC power converters, puts it next to the leading companies in this year's scorecard.

Of all this year's scorecards, none has seen bigger changes than the Universities/Education/Training scorecard. In 2007, high-profile research universities—MIT, Caltech, the University of California system, Harvard, and Rice—headed the scorecard. Out of these five universities, only the University of California is still in the top five in 2009. Caltech has dropped to eleventh, MIT to twelfth, Harvard to fifteenth, and Rice is out of the scorecard altogether. In 2009, the top five are Texas, California, Central Florida, Iowa State, and Washington, suggesting that these are emerging sources of interesting innovations. It is also notable that the 2009 scorecard contains two non-U.S. universities—the University of Oxford and South Korea's Pohang University of Science and Technology—compared to none in 2007.

## AEROSPACE AND DEFENSE

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Honeywell International Inc., U.S.	849	1.08	1.38	56.5%	1.02	1.13	0.41	587	432
2	Lockheed Martin Corp., U.S.	290	0.94	0.92	12.2%	0.92	1.14	1.29	370	370
3	Rockwell Collins Inc., U.S.	119	1.86	1.59	48.4%	1.30	1.58	0.56	312	255
4	Boeing Co., U.S.	532	1.25	0.89	42.1%	0.78	0.99	0.48	284	250
5	EADS NV, Netherlands	218	1.20	0.56	19.3%	0.56	0.55	1.53	123	123
6	Raytheon Co., U.S.	191	1.14	0.91	11.8%	0.91	1.09	0.41	88	88
7	BAE Systems PLC, United Kingdom	91	1.28	0.99	18.7%	0.99	0.97	0.75	83	83
8	Airbus SAS, France	132	1.18	0.70	17.9%	0.70	0.60	1.26	82	82
9	Pratt & Whitney, U.S.	83	1.60	1.66	45.1%	1.41	1.63	0.25	90	76
10	Hamilton Sundstrand Corp., U.S.	63	1.31	1.22	30.3%	1.22	2.54	0.25	64	64
11	Teledyne Technologies Inc., U.S.	19	0.68	1.41	9.7%	1.41	2.19	1.27	51	51
12	Snecma, France	126	1.10	0.77	19.9%	0.77	0.72	0.63	48	48
13	Safran SA, France	148	1.17	0.66	20.3%	0.66	0.63	0.52	38	38
14	Smiths Group PLC, United Kingdom	39	1.50	1.27	5.4%	1.27	1.60	0.25	30	30
15	Rolls-Royce Group PLC, United Kingdom	101	0.95	0.57	18.8%	0.57	0.41	0.71	16	16
16	Eurocopter, France	37	1.19	0.36	35.0%	0.35	0.25	3.00	12	11
17	Goodrich Corp., U.S.	49	0.96	0.83	18.7%	0.83	1.09	0.25	11	11
18	MTU Aero Engines GmbH, Germany	23	1.77	0.70	15.0%	0.70	1.39	0.25	10	10
19	Northrop Grumman Corp., U.S.	136	0.84	0.64	6.0%	0.64	0.52	0.25	10	10
20	Finmeccanica SpA, Italy	25	1.32	0.56	3.0%	0.56	0.32	1.48	9	9

## AUTOMOTIVE AND PARTS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U>S> PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Honda Motor Co., <i>Japan</i>	786	1.02	0.86	23.1%	0.86	0.91	2.14	1339	1339
2	Toyota Motor Corp., <i>Japan</i>	685	1.17	0.96	22.0%	0.96	1.06	0.92	755	755
3	General Motors Co., <i>U.S.</i>	624	1.22	0.99	28.0%	0.99	1.00	0.77	583	583
4	Denso Corp., <i>Japan</i>	846	1.07	0.84	26.4%	0.84	0.92	0.76	531	531
5	Nissan Motor Co., <i>Japan</i>	334	1.10	1.00	17.9%	1.00	1.08	0.97	383	383
6	Ford Motor Co., <i>U.S.</i>	328	0.95	1.17	31.1%	1.16	1.41	0.61	315	311
7	Aisin Seiki Co., <i>Japan</i>	174	1.05	0.95	17.9%	0.95	0.98	1.77	300	300
8	Robert Bosch GmbH, <i>Germany</i>	535	1.11	0.65	15.0%	0.65	0.65	0.88	220	220
9	Mazda Motor Corp., <i>Japan</i>	45	0.87	1.00	11.0%	1.00	1.44	3.00	168	168
10	Stanley Electric Co., <i>Japan</i>	35	1.59	1.37	38.6%	1.25	1.43	1.51	165	151
11	JTEKT Corp., <i>Japan</i>	108	1.16	0.70	19.8%	0.70	0.82	2.06	149	149
12	Toyoda Gosei Co., <i>Japan</i>	92	1.15	1.02	15.6%	1.02	1.00	1.35	146	146
13	Fiat SpA, <i>Italy</i>	172	1.04	0.72	26.3%	0.72	0.83	1.26	135	135
14	Delphi Automotive LLP, <i>U.S.</i>	313	1.01	0.88	16.5%	0.88	1.01	0.43	122	122
15	Magna International Inc., <i>Canada</i>	151	0.93	2.15	64.0%	1.42	2.22	0.25	168	111
16	Yazaki Corp., <i>Japan</i>	159	0.84	0.63	22.2%	0.63	0.75	1.68	106	106
17	W.E.T. Automotive Systems AG, <i>Germany</i>	12	3.00	5.00	71.1%	3.30	3.27	0.25	147	97
18	Toyota Boshoku Corp., <i>Japan</i>	25	2.27	0.86	33.3%	0.83	0.68	3.00	100	97
19	Fuji Heavy Industries Ltd., <i>Japan</i>	42	1.14	0.78	6.4%	0.78	0.85	3.00	95	95
20	Automotive Technologies International Inc., <i>U.S.</i>	19	1.00	3.84	22.6%	3.84	5.00	0.25	91	91

## BIOTECHNOLOGY AND PHARMACEUTICALS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U>S> PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Johnson & Johnson, U.S.	469	1.17	1.60	25.4%	1.60	1.29	1.30	1465	1465
2	ZymoGenetics Inc., U.S.	60	2.14	4.99	52.6%	3.86	3.85	0.52	1298	1005
3	Merck & Co., U.S.*	299	1.18	1.27	37.6%	1.18	1.24	1.37	762	704
4	Boehringer Ingelheim GmbH, Germany	117	1.41	1.77	63.3%	1.18	2.53	0.91	675	450
5	Vertex Pharmaceuticals Inc., U.S.	52	1.11	4.70	53.2%	3.61	3.89	0.54	570	437
6	Roche Holding Ltd., Switzerland	395	0.79	1.16	20.1%	1.16	0.99	1.22	437	437
7	Abbott Laboratories, U.S.	197	0.99	1.91	42.1%	1.68	1.68	0.75	472	415
8	Agensys Inc., U.S.	28	2.55	1.44	55.6%	1.07	3.61	1.34	496	369
9	Sanofi-Aventis, France	161	0.99	1.09	53.1%	0.84	1.66	1.34	387	298
10	Schering-Plough Corp., U.S.*	129	1.21	0.98	39.2%	0.89	1.30	1.48	293	266
11	Novartis AG, Switzerland	168	1.17	1.15	47.7%	0.94	1.13	1.20	307	252
12	Janssen Pharmaceutica NV, Belgium	106	1.61	0.84	68.1%	0.52	1.37	1.62	318	197
13	Bayer HealthCare AG, Germany	104	1.21	1.14	26.1%	1.14	1.39	0.97	192	192
14	Coley Pharmaceutical GmbH, Germany	10	3.00	5.00	57.9%	5.00	5.00	0.25	188	188
15	Bristol-Myers Squibb Co., U.S.	166	0.88	1.22	53.6%	0.93	2.29	0.50	205	157
16	GlaxoSmithKline PLC, United Kingdom	179	0.94	1.08	50.0%	0.87	1.29	0.78	182	145
17	Pfizer Inc., U.S.	316	1.01	0.96	38.7%	0.88	1.19	0.43	157	143
18	Elan Corp. PLC, Ireland	28	1.04	3.01	52.2%	2.35	5.00	0.41	181	141
19	Eli Lilly and Co., U.S.	83	1.09	0.74	37.4%	0.68	1.25	1.71	144	133
20	Bayer AG, Germany	233	1.10	0.76	25.5%	0.76	0.69	0.96	130	130

\*Merck & Co. and Schering-Plough Corp. merged in November 2009 and combined operations as Merck & Co.

## CHEMICAL

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Evonik Industries AG, <i>Germany</i>	136	1.28	1.30	61.9%	0.88	2.59	1.16	680	463
2	LyondellBasell Industries, <i>Netherlands</i>	54	1.69	2.42	71.5%	1.42	2.43	0.84	453	265
3	E.I. du Pont de Nemours and Co., <i>U.S.</i>	602	1.16	0.84	57.1%	0.61	0.97	0.63	362	264
4	BASF SE, <i>Germany</i>	412	0.99	0.73	38.8%	0.66	0.81	1.15	276	252
5	Showa Denko KK, <i>Japan</i>	92	1.80	0.75	29.9%	0.75	1.10	1.73	235	235
6	Sumitomo Chemical Co., <i>Japan</i>	144	1.24	0.71	36.7%	0.66	0.92	1.44	168	157
7	Mitsubishi Chemical Holdings Corp., <i>Japan</i>	97	0.93	0.92	15.5%	0.92	1.22	1.27	128	128
8	Ibiden Co., <i>Japan</i>	59	1.13	2.18	41.9%	1.92	3.92	0.25	143	126
9	Dow Chemical Co., <i>U.S.</i>	189	1.03	0.98	22.3%	0.98	1.25	0.53	126	126
10	Rohm and Haas Co., <i>U.S.</i>	15	1.15	1.50	62.5%	1.01	3.39	1.76	155	105
11	Teijin Ltd., <i>Japan</i>	31	1.00	0.95	8.9%	0.95	1.28	2.72	103	103
12	Shin-Etsu Chemical Co., <i>Japan</i>	175	1.42	0.89	42.5%	0.78	0.69	0.62	96	84
13	Mitsui Chemicals Inc., <i>Japan</i>	45	1.32	0.76	13.5%	0.76	1.12	1.62	82	82
14	Asahi Kasei Corp., <i>Japan</i>	77	1.83	0.80	16.0%	0.80	1.02	0.70	80	80
15	JSR Corp., <i>Japan</i>	37	0.82	1.13	15.9%	1.13	1.11	1.91	73	73
16	Nitto Denko Corp., <i>Japan</i>	122	1.14	0.79	22.9%	0.79	0.87	0.70	66	66
17	Adeka Corp., <i>Japan</i>	10	1.00	1.15	22.2%	1.15	1.33	3.00	46	46
18	Koninklijke DSM NV, <i>Netherlands</i>	71	1.22	0.51	31.5%	0.50	0.58	1.75	45	45
19	Linde AG, <i>Germany</i>	29	1.81	0.72	4.1%	0.72	1.17	0.89	39	39
20	Chisso Corp., <i>Japan</i>	37	1.16	1.03	65.0%	0.67	0.42	3.00	56	36

## COMPUTER PERIPHERALS AND STORAGE

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Seiko Epson Corp., <i>Japan</i>	1418	1.13	0.91	28.2%	0.91	1.03	1.31	1968	1968
2	Ricoh Co., <i>Japan</i>	1004	1.12	1.31	51.3%	1.03	1.45	0.69	1464	1152
3	Fuji Xerox Co., <i>Japan</i>	426	1.28	0.91	15.5%	0.91	1.09	2.04	1106	1106
4	EMC Corp., <i>U.S.</i>	280	1.30	1.51	12.1%	1.51	1.55	1.28	1095	1095
5	Super Talent Technology Corp., <i>U.S.</i>	20	0.87	3.43	13.3%	3.43	3.70	3.00	662	662
6	Konica Minolta Holdings Inc., <i>Japan</i>	426	0.96	0.80	14.9%	0.80	0.89	1.94	565	565
7	Symbol Technologies Inc., <i>U.S.</i>	102	0.86	2.05	5.0%	2.05	1.37	1.22	302	302
8	Brother Industries Ltd., <i>Japan</i>	531	1.15	0.89	49.3%	0.72	0.78	0.84	356	287
9	Hitachi Global Storage Technologies, <i>U.S.</i>	394	1.14	0.95	38.8%	0.87	0.78	0.65	219	200
10	QLogic Corp., <i>U.S.</i>	38	0.90	3.07	51.6%	2.41	1.93	1.25	254	199
11	NetApp Inc., <i>U.S.</i>	135	1.05	2.08	25.1%	2.08	2.28	0.25	169	169
12	E Ink Corp., <i>U.S.</i>	17	1.06	5.00	82.7%	5.00	5.00	0.25	113	113
13	Akamai Technologies Inc., <i>U.S.</i>	15	0.83	1.99	10.8%	1.99	1.47	3.00	110	110
14	Toshiba TEC Corp., <i>Japan</i>	234	0.98	0.67	29.9%	0.67	0.65	0.90	91	91
15	Mitsumi Electric Co., <i>Japan</i>	56	1.10	0.63	17.9%	0.63	0.80	2.90	90	90
16	AU Optronics Corp., <i>Taiwan</i>	260	1.28	0.65	17.4%	0.65	0.51	0.81	89	89
17	Seagate Technology LLC, <i>U.S.</i>	254	1.03	1.19	26.0%	1.19	1.05	0.25	81	81
18	Creative Technology Ltd., <i>Singapore</i>	14	1.00	1.18	3.1%	1.18	1.48	3.00	74	74
19	Hitachi Maxell Ltd., <i>Japan</i>	35	0.97	0.76	23.3%	0.76	1.04	1.59	43	43
20	Western Digital Corp., <i>U.S.</i>	84	0.95	1.42	24.9%	1.42	1.14	0.25	32	32

## COMPUTER SOFTWARE

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Microsoft Corp., U.S.	2918	1.43	1.29	36.7%	1.20	1.32	1.12	7953	7422
2	Oracle Corp., U.S.	338	1.09	1.32	22.8%	1.32	1.38	1.49	994	994
3	BEA Systems Inc., U.S.	95	1.22	1.83	31.9%	1.79	1.95	1.08	444	435
4	Adobe Systems Inc., U.S.	152	1.65	1.00	22.8%	1.00	1.22	1.07	325	325
5	SAP AG, Germany	388	1.49	0.91	16.5%	0.91	0.95	0.61	306	306
6	Symantec Corp., U.S.	212	1.41	1.58	17.6%	1.58	1.90	0.32	289	289
7	Novell Inc., U.S.	43	1.26	1.27	5.0%	1.27	1.29	2.32	207	207
8	Synopsys Inc., U.S.	78	1.18	1.11	19.2%	1.11	1.43	0.89	129	129
9	Digimarc Corp., U.S.	58	1.02	3.12	67.7%	1.95	2.95	0.25	136	85
10	Nuance Communications Inc., U.S.	42	3.00	1.49	9.5%	1.49	1.56	0.25	73	73
11	Cadence Design Systems Inc., U.S.	99	1.24	1.32	37.9%	1.22	0.96	0.46	71	66
12	i2 Technologies Inc., U.S.*	21	1.00	1.25	5.5%	1.25	1.38	1.58	57	57
13	National Instruments Corp., U.S.	57	1.30	1.38	27.9%	1.38	1.68	0.25	43	43
14	Citrix Systems Inc., U.S.	23	2.30	1.48	7.4%	1.48	1.94	0.25	38	38
15	AOL Inc., U.S.	84	0.88	1.31	12.1%	1.31	1.55	0.25	38	38
16	Rovi Corp., U.S.	41	1.86	1.30	18.6%	1.30	1.38	0.25	34	34
17	McAfee Inc., U.S.	40	1.25	1.62	11.9%	1.62	1.54	0.25	31	31
18	CA Inc., U.S.	51	1.42	1.15	7.5%	1.15	1.42	0.25	30	30
19	First Data Corp., U.S.	56	1.06	1.32	27.1%	1.32	1.42	0.25	28	28
20	Autodesk Inc., U.S.	41	1.41	0.68	8.2%	0.68	0.85	0.63	21	21

\*i2 Technologies Inc. was acquired by JDA Software Group Inc. in February 2010.

## COMPUTER SYSTEMS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	International Business Machines Corp., U.S.	4916	1.17	0.89	18.9%	0.89	0.95	1.03	5048	5048
2	Fujitsu Ltd., Japan	1716	1.03	0.67	10.2%	0.67	0.69	1.38	1123	1123
3	Sun Microsystems Inc., U.S.	580	1.07	1.02	8.3%	1.02	1.13	1.51	1075	1075
4	NEC Corp., Japan	1052	1.15	0.62	5.9%	0.62	0.63	1.75	834	834
5	Hewlett-Packard Co., U.S.	1275	0.88	0.93	9.7%	0.93	1.00	0.54	564	564
6	Cray Inc., U.S.	16	1.07	1.99	50.0%	1.59	1.81	1.89	116	93
7	Asustek Computer Inc., Taiwan	65	1.20	0.78	2.8%	0.78	0.59	2.54	93	93
8	Dell Inc., U.S.	191	1.16	1.00	19.5%	1.00	1.25	0.25	69	69
9	Unisys Corp., U.S.	52	0.58	0.74	2.7%	0.74	0.96	2.02	43	43
10	Palm Inc., U.S.	59	1.51	1.09	24.1%	1.09	1.77	0.25	43	43
11	PSC Inc., U.S.*	10	1.67	5.00	7.4%	5.00	1.41	0.25	29	29
12	Compal Electronics Inc., Taiwan	20	1.00	1.14	1.6%	1.14	1.25	0.25	7	7
13	Acer Inc., Taiwan	31	0.82	0.80	1.1%	0.80	1.05	0.25	5	5
14	Silicon Graphics International Corp., U.S.	17	0.57	0.99	0.5%	0.99	0.95	0.25	2	2
15	Giesecke & Devrient GmbH, Germany	25	1.00	0.44	19.5%	0.44	0.67	0.25	2	2
16	Gateway Inc., U.S.	16	0.57	0.77	0.9%	0.77	1.01	0.25	2	2

\*Formerly an independent subsidiary, PSC Inc. was merged into its parent company, Datalogic SpA, in 2007.

## CONGLOMERATES

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Toshiba Corp., <i>Japan</i>	2045	1.05	0.82	21.1%	0.82	0.87	1.14	1750	1750
2	General Electric Co., <i>U.S.</i>	1218	1.03	1.06	29.9%	1.06	1.20	0.52	837	837
3	Mitsubishi Electric Corp., <i>Japan</i>	597	1.03	0.66	11.9%	0.66	0.62	1.87	471	471
4	Hitachi Chemical Co., <i>Japan</i>	66	1.94	1.06	45.7%	0.89	1.34	1.69	307	259
5	Cooper Industries PLC, <i>U.S.</i>	73	1.59	1.75	51.8%	1.37	1.84	0.59	220	172
6	3M Co., <i>U.S.</i>	325	0.80	1.34	34.8%	1.28	1.93	0.25	169	161
7	Dongbu Group, <i>South Korea</i>	301	1.37	0.39	30.8%	0.38	0.45	1.47	106	105
8	United Technologies Corp., <i>U.S.</i>	374	1.18	0.88	34.6%	0.84	1.07	0.25	104	99
9	Danaher Corp., <i>U.S.</i>	181	0.99	0.85	15.3%	0.85	0.64	0.78	76	76
10	PPG Industries Inc., <i>U.S.</i>	65	0.78	1.00	34.2%	0.96	1.60	0.38	31	30
11	Textron Inc., <i>U.S.</i>	22	0.58	0.86	6.7%	0.86	1.35	1.66	25	25

## ELECTRONICS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Hitachi Ltd., <i>Japan</i>	2265	0.94	0.81	20.1%	0.81	0.84	1.26	1846	1846
2	Hon Hai Precision Industry Co., <i>Taiwan</i>	1205	1.39	1.11	41.4%	0.98	0.96	1.10	1969	1745
3	Sony Corp., <i>Japan</i>	1837	1.13	0.68	14.2%	0.68	0.77	1.54	1683	1683
4	Casio Computer Co., <i>Japan</i>	180	1.86	1.21	16.9%	1.21	1.99	1.99	1592	1592
5	Panasonic Corp., <i>Japan</i>	1837	1.03	0.78	11.6%	0.78	0.77	1.19	1371	1371
6	Kyocera Corp., <i>Japan</i>	308	1.32	1.01	14.4%	1.01	0.83	2.57	877	877
7	LG Electronics Inc., <i>South Korea</i>	1080	1.32	0.87	29.1%	0.87	0.70	0.92	792	792
8	Sharp Corp., <i>Japan</i>	749	1.00	0.84	13.4%	0.84	0.81	1.40	712	712
9	Samsung Electro-Mechanics Co., <i>South Korea</i>	224	1.29	0.93	10.2%	0.93	1.05	2.35	658	658
10	TDK Corp., <i>Japan</i>	481	1.00	1.02	28.8%	1.02	1.12	1.17	639	639
11	LG Philips LCD Co., <i>South Korea</i>	596	1.14	0.73	24.5%	0.73	0.82	1.01	413	413
12	Funai Electric Co., <i>Japan</i>	230	1.56	0.52	19.7%	0.52	0.73	2.76	379	379
13	Microvision Inc., <i>U.S.</i>	31	1.55	2.28	5.5%	2.28	4.03	0.77	341	341
14	Apple Inc., <i>U.S.</i>	294	1.58	1.25	32.0%	1.23	1.26	0.42	308	302
15	Xerox Corp., <i>U.S.</i>	704	1.16	1.14	40.9%	1.01	1.42	0.25	331	295
16	Seiko Instruments Inc., <i>Japan</i>	141	1.53	0.72	22.0%	0.72	0.74	2.50	289	289
17	Sanyo Electric Co., <i>Japan</i>	440	0.97	0.59	11.9%	0.59	0.63	1.67	268	268
18	Koninklijke Philips Electronics NV, <i>Netherlands</i>	605	1.02	0.92	13.4%	0.92	0.87	0.52	258	258
19	Citizen Holdings Co., <i>Japan</i>	61	1.61	0.90	5.2%	0.90	0.94	3.00	251	251
20	Pioneer Corp., <i>Japan</i>	152	0.82	0.76	6.6%	0.76	0.82	2.18	170	170

## GOVERNMENT AGENCIES

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	U.S. Navy, <i>U.S.</i>	232	1.01	0.70	15.7%	0.70	0.72	2.18	255	255
2	U.S. Department of Health and Human Services, <i>U.S.</i>	111	0.94	0.79	11.6%	0.79	1.13	1.37	128	128
3	Japan Science and Technology Agency, <i>Japan</i>	104	0.72	0.66	5.2%	0.66	0.75	3.00	111	111
4	Ministry of Economy Trade and Industry, <i>Japan</i>	77	1.24	0.56	7.3%	0.56	0.83	2.18	97	97
5	Centre National de la Recherche Scientifique, <i>France</i>	105	1.38	0.45	28.9%	0.45	0.51	2.27	75	75
6	U.S. Department of Energy, <i>U.S.</i>	24	1.04	0.89	5.1%	0.89	1.11	3.00	74	74
7	U.S. Army, <i>U.S.</i>	119	0.90	0.78	12.8%	0.78	0.80	0.98	65	65
8	National Aeronautics and Space Administration, <i>U.S.</i>	79	1.18	0.95	8.9%	0.95	1.03	0.51	46	46
9	Commissariat à l'Énergie Atomique, <i>France</i>	147	1.44	0.43	14.4%	0.43	0.46	0.86	36	36
10	U.S. Air Force, <i>U.S.</i>	48	1.20	0.59	11.8%	0.59	0.54	1.43	26	26
11	U.S. Department of Agriculture, <i>U.S.</i>	26	0.74	0.46	12.1%	0.46	0.84	2.52	19	19
12	Agency for Science, Technology and Research, <i>Singapore</i>	32	0.97	1.28	0.6%	1.28	1.75	0.27	19	19
13	Ministry of Defence, <i>United Kingdom</i>	14	2.80	0.75	13.3%	0.75	0.36	1.60	17	17
14	Council of Scientific and Industrial Research, <i>India</i>	53	0.70	0.25	11.4%	0.25	0.25	2.91	7	7
15	National Research Council of Canada, <i>Canada</i>	19	0.53	1.00	2.4%	1.00	0.40	0.56	2	2
16	Israel Ministry of Defense, <i>Israel</i>	11	0.73	0.67	16.0%	0.67	0.30	0.25	0	0

## MEDICAL EQUIPMENT/INSTRUMENTS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Medtronic Inc., U.S.	401	1.39	1.56	19.9%	1.56	1.72	0.25	374	374
2	Siemens Healthcare, Germany	210	1.13	0.65	22.1%	0.65	0.74	2.47	282	282
3	Covidien Ltd., Ireland	167	1.27	2.90	62.4%	1.96	1.28	0.46	359	243
4	Boston Scientific Corp., U.S.*	459	1.23	0.88	33.8%	0.85	1.13	0.25	140	135
5	Varian Medical Systems Inc., U.S.	32	1.03	1.63	16.6%	1.63	1.85	0.95	94	94
6	St. Jude Medical Inc., U.S.	125	0.89	0.95	19.2%	0.95	1.01	0.83	89	89
7	Becton, Dickinson and Co., U.S.	63	0.95	1.87	40.8%	1.67	1.18	0.71	94	84
8	Cochlear Ltd., Australia	17	1.06	0.98	9.1%	0.98	1.75	2.61	80	80
9	Stereotaxis Inc., U.S.	15	3.00	2.90	82.8%	1.37	5.00	0.25	163	77
10	Lifescan Inc., U.S.	17	1.42	5.00	0.8%	5.00	2.53	0.25	76	76
11	Masimo Corp., U.S.	17	0.77	5.00	66.8%	5.00	4.22	0.25	69	69
12	Cardiac Pacemakers Inc., U.S.*	182	1.22	1.12	64.2%	0.74	1.63	0.25	102	67
13	GE Healthcare, UK	142	0.88	0.81	22.9%	0.81	0.78	0.78	61	61
14	Align Technology Inc., U.S.	15	0.79	0.88	63.3%	0.58	2.38	3.00	74	49
15	Oticon A/S, Denmark	14	1.17	0.73	8.3%	0.73	1.37	3.00	49	49
16	Guidant Corp., U.S.*	186	1.15	0.92	56.7%	0.68	1.33	0.25	65	48
17	Pacesetter Inc., U.S.	81	0.95	1.07	24.4%	1.07	1.03	0.56	48	48
18	Pelikan Technologies Inc., U.S.	11	1.83	4.33	62.7%	2.92	3.17	0.25	69	47
19	Advanced Cardiovascular Systems Inc., U.S.	62	0.93	2.16	58.1%	1.55	2.01	0.25	62	45
20	Hill-Rom Co., U.S.	44	1.07	1.91	32.9%	1.86	1.97	0.25	44	43

\*Cardiac Pacemakers Inc. was a subsidiary of Guidant Corp., which was acquired by Boston Scientific Corp. in 2005.

## SCIENTIFIC INSTRUMENTS

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Advantest Corp., <i>Japan</i>	116	1.04	1.01	14.9%	1.01	1.03	1.51	190	190
2	Fisher Scientific Co. LLC, <i>U.S.</i>	51	2.68	1.56	11.0%	1.56	2.37	0.25	127	127
3	Mitutoyo Corp., <i>Japan</i>	46	0.85	0.71	37.4%	0.66	1.02	2.18	62	58
4	Agilent Technologies Inc., <i>U.S.</i>	184	0.69	0.84	5.0%	0.84	0.84	0.48	43	43
5	Tektronix Inc., <i>U.S.</i>	43	0.90	0.71	14.2%	0.71	0.60	2.39	40	40
6	Thermo Fisher Scientific Inc., <i>U.S.</i>	103	1.23	1.09	20.8%	1.09	1.09	0.25	37	37
7	Shimadzu Corp., <i>Japan</i>	56	1.17	0.53	16.0%	0.53	0.33	3.00	34	34
8	Dionex Corp., <i>U.S.</i>	13	1.86	2.05	60.0%	1.44	3.74	0.25	46	32
9	Trimble Navigation Ltd., <i>U.S.</i>	52	1.49	1.21	20.5%	1.21	1.07	0.25	25	25
10	Nanometrics Inc., <i>U.S.</i>	14	0.88	2.62	11.7%	2.62	3.05	0.25	25	25
11	Orbotech Ltd., <i>Israel</i>	10	1.11	0.75	16.7%	0.75	1.31	2.09	23	23
12	Jeol Ltd., <i>Japan</i>	19	0.83	0.87	9.7%	0.87	0.50	3.00	20	20
13	Hexagon AB, <i>Sweden</i>	24	1.50	0.94	14.3%	0.94	1.67	0.25	14	14
14	Caliper Life Sciences Inc., <i>U.S.</i>	15	1.15	1.39	38.9%	1.27	2.34	0.25	14	13
15	LeCroy Corp., <i>U.S.</i>	13	1.08	2.21	14.0%	2.21	1.27	0.25	10	10
16	Danfoss A/S, <i>Denmark</i>	42	0.71	0.85	40.3%	0.76	1.66	0.25	11	9
17	Garmin International Inc., <i>U.S.</i>	21	0.78	1.27	15.3%	1.27	1.45	0.25	8	8
18	Millipore Corp., <i>U.S.</i>	24	1.71	0.75	21.4%	0.75	0.81	0.25	6	6
19	Varian Inc., <i>U.S.</i>	26	0.79	0.58	28.3%	0.58	0.25	1.89	6	6
20	PerkinElmer Inc., <i>U.S.</i>	26	0.62	0.68	9.4%	0.68	0.50	0.86	5	5

## SEMICONDUCTOR EQUIPMENT MANUFACTURING

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Tokyo Electron Ltd., <i>Japan</i>	347	1.26	1.99	40.6%	1.78	1.90	0.54	886	792
2	KLA-Tencor Corp., <i>U.S.</i>	122	0.87	2.19	28.5%	2.19	2.20	1.05	536	536
3	Disco Corp., <i>Japan</i>	54	1.23	1.17	61.7%	0.80	2.02	3.00	472	322
4	FormFactor Inc., <i>U.S.</i>	40	1.25	5.00	10.9%	5.00	5.00	0.25	312	312
5	Applied Materials Inc., <i>U.S.</i>	339	1.12	1.94	56.2%	1.43	1.97	0.25	361	266
6	Teradyne Inc., <i>U.S.</i>	37	1.32	1.51	13.0%	1.51	1.78	1.49	196	196
7	Lam Research Corp., <i>U.S.</i>	94	1.27	0.89	31.0%	0.88	1.40	0.65	97	96
8	ASM International NV, <i>Netherlands</i>	72	1.36	2.04	31.0%	2.02	1.78	0.25	89	88
9	ASML Holding NV, <i>Netherlands</i>	262	0.79	1.22	50.2%	0.98	1.65	0.25	104	83
10	Novellus Systems Inc., <i>U.S.</i>	49	0.92	2.57	42.4%	2.25	2.39	0.25	70	61
11	Cree Inc., <i>U.S.</i>	65	0.98	1.68	33.2%	1.62	2.01	0.25	54	52
12	Advanced Semiconductor Engineering Inc., <i>Taiwan</i>	61	1.00	0.78	5.8%	0.78	0.90	1.17	50	50
13	Veeco Instruments Inc., <i>U.S.</i>	17	1.13	2.35	13.9%	2.35	3.34	0.25	38	38
14	STATS ChipPac Ltd., <i>Singapore</i>	58	1.16	1.59	21.8%	1.59	1.34	0.25	36	36
15	Amberwave Systems Corp., <i>U.S.</i>	10	0.71	3.38	40.3%	3.04	3.58	0.25	22	19
16	MKS Instruments Inc., <i>U.S.</i>	26	1.18	1.10	24.7%	1.10	1.88	0.25	16	16
17	Dainippon Screen Manufacturing Co., <i>Japan</i>	56	0.75	1.19	9.7%	1.19	1.12	0.25	14	14
18	Faraday Technology Corp., <i>Taiwan</i>	24	0.80	0.53	3.2%	0.53	0.48	2.30	11	11
19	ATMI Inc., <i>U.S.</i>	20	0.56	1.34	29.7%	1.34	2.56	0.25	10	10
20	Varian Semiconductor Equipment Associates Inc., <i>U.S.</i>	34	1.10	1.00	34.1%	0.96	1.06	0.25	10	9

## SEMICONDUCTOR MANUFACTURING

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Samsung Electronics Co., <i>South Korea</i>	3657	1.03	0.89	19.7%	0.89	0.88	1.15	3409	3409
2	Nantero Inc., <i>U.S.</i>	23	1.77	5.00	61.2%	3.93	5.00	1.95	1981	1558
3	Intel Corp., <i>U.S.</i>	1550	0.87	1.02	14.5%	1.02	1.08	0.91	1340	1340
4	Broadcom Corp., <i>U.S.</i>	725	1.12	1.18	22.0%	1.18	1.30	0.84	1046	1046
5	Rohm Co., <i>Japan</i>	312	1.90	0.66	16.0%	0.66	0.78	2.73	830	830
6	SanDisk Corp., <i>U.S.</i>	321	1.26	4.36	66.1%	2.78	2.46	0.25	1085	693
7	Hynix Semiconductor Inc., <i>South Korea</i>	588	1.34	0.76	37.0%	0.71	0.74	1.38	613	570
8	Semiconductor Energy Laboratory Co., <i>Japan</i>	547	1.14	1.91	71.1%	1.12	2.84	0.25	843	497
9	Texas Instruments Inc., <i>U.S.</i>	675	0.87	0.89	9.0%	0.89	0.91	1.04	492	492
10	Xilinx Inc., <i>U.S.</i>	262	1.08	1.91	29.0%	1.91	2.35	0.39	489	489
11	Nvidia Corp., <i>U.S.</i>	280	1.50	1.18	33.5%	1.14	1.37	0.69	471	455
12	Elpida Memory Inc., <i>Japan</i>	147	1.40	0.79	13.2%	0.79	0.96	2.20	345	345
13	Marvell Technology Group Ltd., <i>Bermuda</i>	323	1.31	1.31	31.4%	1.29	1.39	0.42	324	320
14	Avago Technologies Ltd., <i>U.S.</i>	237	1.09	1.01	24.5%	1.01	1.64	0.72	309	309
15	NXP BV, <i>Netherlands</i>	274	1.42	0.57	5.1%	0.57	0.71	1.88	297	297
16	Sanken Electric Co., <i>Japan</i>	54	1.38	1.28	46.2%	1.07	1.52	2.24	325	273
17	O2Micro International Ltd., <i>Cayman Islands</i>	42	1.05	2.01	7.9%	2.01	1.45	2.12	271	271
18	LSI Corp., <i>U.S.</i>	408	0.94	0.75	7.2%	0.75	0.79	1.18	267	267
19	Micron Technology Inc., <i>U.S.</i>	968	0.77	1.39	57.3%	1.01	1.31	0.25	340	247
20	System General Corp., <i>Taiwan</i>	34	1.62	1.98	25.0%	1.98	1.21	1.60	212	212

## TELECOMMUNICATION SERVICES

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Siemens AG, <i>Germany</i>	1333	1.01	0.60	19.9%	0.60	0.71	1.14	662	662
2	AT&T Inc., <i>U.S.*</i>	820	1.00	1.04	31.1%	1.03	1.02	0.75	661	654
3	Sony Ericsson Mobile Communications AB, <i>Sweden</i>	169	1.67	1.15	8.3%	1.15	1.28	1.31	543	543
4	Verizon Communications Inc., <i>U.S.</i>	100	1.00	1.44	2.8%	1.44	1.69	1.53	372	372
5	Research in Motion Ltd., <i>Canada</i>	325	1.40	1.06	20.3%	1.06	1.21	0.62	365	365
6	Nippon Telegraph and Telephone Corp., <i>Japan</i>	285	1.19	0.69	8.3%	0.69	0.66	1.60	246	246
7	Sprint Nextel Corp., <i>U.S.</i>	214	1.04	0.94	19.8%	0.94	1.15	0.78	188	188
8	NTT DoCoMo Inc., <i>Japan</i>	209	1.24	0.65	9.6%	0.65	0.76	1.45	186	186
9	Securus Technologies Inc., <i>U.S.</i>	10	3.00	2.69	34.2%	2.58	4.04	0.25	82	78
10	Telecom Italia SpA, <i>Italy</i>	26	1.18	0.78	2.5%	0.78	1.22	2.21	64	64
11	InterDigital Inc., <i>U.S.</i>	187	1.34	0.68	34.7%	0.65	0.97	0.25	42	40
12	British Telecommunications PLC, <i>United Kingdom</i>	50	1.11	1.00	3.6%	1.00	1.15	0.61	39	39
13	BT Group PLC, <i>United Kingdom</i>	51	1.11	0.99	3.6%	0.99	1.13	0.60	38	38
14	SK Telecom Co., <i>South Korea</i>	18	1.64	0.49	0.0%	0.49	0.53	3.00	23	23
15	Deutsche Telekom AG, <i>Germany</i>	27	0.96	0.55	7.2%	0.55	0.50	2.82	20	20
16	France Telecom SA, <i>France</i>	59	1.20	0.58	5.9%	0.58	0.70	0.55	16	16
17	KT Corp., <i>South Korea</i>	25	1.67	0.72	3.9%	0.72	0.73	0.25	5	5
18	Qwest Communications International Inc., <i>U.S.</i>	20	1.05	0.80	1.3%	0.80	0.88	0.25	4	4
19	Swisscom Ltd., <i>Switzerland</i>	11	0.73	1.22	0.0%	1.22	1.08	0.25	3	3
20	SBC Communications Inc., <i>U.S.*</i>	26	0.48	0.96	54.1%	0.73	0.94	0.25	3	2

\*SBC Communications Inc. acquired AT&T Corp. in 2005 and changed the name of the combined company to AT&T Inc.

## TELECOM/COMMUNICATIONS EQUIPMENT

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	Cisco Systems Inc., U.S.	950	1.26	1.28	21.2%	1.28	1.32	0.36	724	724
2	Alcatel-Lucent, France	737	0.99	0.81	6.6%	0.81	0.88	1.26	655	655
3	Motorola Inc., U.S.	508	0.92	1.23	5.3%	1.23	1.18	0.88	598	598
4	Qualcomm Inc., U.S.	389	1.30	1.44	18.4%	1.44	1.43	0.55	572	572
5	Nokia Corp., Finland	702	1.08	1.03	7.8%	1.03	1.16	0.62	563	563
6	Nortel Networks Corp., Canada	245	0.90	1.12	4.2%	1.12	1.17	1.36	397	397
7	Telefonaktiebolaget LM Ericsson, Sweden	285	0.92	0.86	4.2%	0.86	0.94	1.46	309	309
8	Nokia Siemens Networks, Finland	54	1.64	0.85	1.5%	0.85	1.01	3.00	226	226
9	Infinera Corp., U.S.	30	2.00	1.87	43.7%	1.62	1.87	1.02	214	185
10	SkyTerra Communications Inc., U.S.	31	1.41	5.00	84.5%	2.43	1.16	1.29	326	159
11	Finisar Corp., U.S.	127	0.86	1.49	39.6%	1.35	2.44	0.41	165	149
12	Polycom Inc., U.S.	16	1.78	1.14	8.1%	1.14	1.44	3.00	140	140
13	Mobile Satellite Ventures LP, U.S.	24	2.40	5.00	89.8%	3.92	1.98	0.25	143	112
14	Avaya Inc., U.S.	82	1.06	1.11	12.1%	1.11	1.02	1.07	105	105
15	Juniper Networks Inc., U.S.	138	1.72	1.21	23.1%	1.21	1.38	0.25	100	100
16	Corning Inc., U.S.	176	1.21	1.46	20.9%	1.46	1.16	0.25	91	91
17	ADC Telecommunications Inc., U.S.	177	1.10	1.82	57.5%	1.32	1.39	0.25	123	89
18	John Mezzalingua Associates Inc., U.S.	19	0.73	1.65	15.3%	1.65	2.32	1.58	84	84
19	Plantronics Inc., U.S.	14	1.00	1.55	6.3%	1.55	1.35	2.71	80	80
20	Hitachi Kokusai Electric Inc., Japan	36	1.24	0.62	7.2%	0.62	0.87	3.00	72	72

## UNIVERSITIES/EDUCATION/TRAINING

RANK	COMPANY/ORGANIZATION, COUNTRY	2009 U.S. PATENTS	PIPELINE GROWTH INDEX	PIPELINE IMPACT	SELF-CITATIONS	ADJUSTED PIPELINE IMPACT	PIPELINE GENERALITY	PIPELINE ORIGINALITY	PIPELINE POWER	ADJUSTED PIPELINE POWER
1	University of Texas, U.S.	112	1.24	1.54	22.0%	1.54	1.80	1.73	667	667
2	University of California, U.S.	271	1.08	1.05	15.1%	1.05	1.48	1.03	469	469
3	University of Central Florida, U.S.	56	1.37	1.49	22.9%	1.49	2.32	1.74	458	458
4	Iowa State University of Science and Technology, U.S.	32	2.67	1.30	13.7%	1.30	2.07	1.93	444	444
5	University of Washington, U.S.	54	1.15	1.65	30.2%	1.64	2.75	1.34	376	375
6	State University of New York (SUNY), U.S.	56	1.27	1.51	8.1%	1.51	1.87	1.74	352	352
7	Tufts University, U.S.	14	2.00	2.88	21.2%	2.88	4.13	0.91	304	304
8	University of Wisconsin, U.S.	118	1.33	1.04	19.2%	1.04	1.15	1.52	285	285
9	Northwestern University, U.S.	39	1.30	1.47	26.4%	1.47	2.65	1.39	276	276
10	Virginia Polytechnic Institute and State University, U.S.	28	1.75	1.18	9.7%	1.18	1.42	2.55	208	208
11	California Institute of Technology, U.S.	93	0.88	1.82	12.3%	1.82	2.53	0.53	201	201
12	Massachusetts Institute of Technology, U.S.	141	1.03	1.68	19.8%	1.68	2.49	0.30	179	179
13	Stanford University, U.S.	120	0.92	1.22	11.2%	1.22	1.63	0.75	165	165
14	University of Colorado, U.S.	21	0.88	3.38	25.2%	3.38	5.00	0.52	160	160
15	Harvard University, U.S.	38	0.75	2.19	26.1%	2.19	3.86	0.66	158	158
16	University of Massachusetts, U.S.	44	1.57	1.23	16.1%	1.23	1.95	0.90	149	149
17	Purdue University, U.S.	47	2.14	1.40	10.3%	1.40	1.75	0.58	143	143
18	University of Oxford, United Kingdom	19	2.71	1.17	13.5%	1.17	1.23	1.82	135	135
19	Pohang University of Science and Technology, South Korea	30	1.67	0.95	2.2%	0.95	0.99	2.85	134	134
20	University of Maryland, U.S.	39	0.91	1.52	6.5%	1.52	1.63	1.48	130	130