

# IEEE SPECTRUM TOP 100 R&D SPENDERS

2002	2001	COMPANY NAME, COUNTRY	R&D EXPENDITURES (LESS IN-PROCESS)			SALES		R&D INTENSITY (%)		R&D EXPENDITURES PER EMPLOYEE (\$THOUS)	
			2002	2001	% CHANGE	2002 (\$ MIL)	% CHANGE	2002	2001	2002	2001
1	1	FORD MOTOR CO., U.S.	7700	7400	4.1	162 586	0.1	4.7	4.6	22	21
2	3	DAIMLERCHRYSLER AG, Germany	6446	6299	2.3	158 820	-2.2	4.1	3.9	17	17
3	2	SIEMENS AG, Germany	6178	7201	-14.2	89 204	-3.4	6.9	7.8	15	15
4	4	GENERAL MOTORS CORP., U.S.	5800	6200	-6.5	184 214	5.1	3.1	3.5	17	17
5	6	TOYOTA MOTOR CORP., Japan	5606	4946	13.3	134 001	6.3	4.2	3.9	21	20
6	7	PFIZER INC., U.S.	5176	4847	6.8	32 373	0.9	16.0	15.1	53	54
7	9	INTL. BUSINESS MACHINES CORP., U.S.	4750	4620	2.8	81 186	-5.5	5.9	5.4	15	14
8	12	GLAXOSMITHKLINE PLC, United Kingdom	4625	4228	9.4	33 832	3.5	13.7	12.9	44	39
9	8	MATSUSHITA ELECTRIC INDL. CO., Japan	4599	4720	-2.6	61 780	7.6	7.4	8.2	16	18
10	10	MICROSOFT CORP., U.S.	4307	4379	-1.6	28 365	12.1	15.2	17.3	85	92
11	14	INTEL CORP., U.S.	4034	3796	6.3	26 764	0.8	15.1	14.3	51	48
12	17	JOHNSON & JOHNSON, U.S.	3957	3591	10.2	36 298	10.0	10.9	10.9	37	36
13	11	MOTOROLA INC., U.S.	3754	4318	-13.1	26 679	-11.1	14.1	14.4	39	39
14	16	SONY CORP., Japan	3699	3616	2.3	62 380	-1.4	5.9	5.7	23	22
15	22	HONDA MOTOR CO., Japan	3646	3298	10.5	66 536	8.3	5.5	5.4	29	27
16	15	AVENTIS SA, France	3631	3696	-1.8	21 895	-10.1	16.6	15.2	46	40
17	13	CISCO SYSTEMS INC., U.S.	3448	3922	-12.1	18 915	-15.2	18.2	17.6	96	126
18	5	LM ERICSSON, Sweden	3402	5409	-37.1	16 906	-37.1	20.1	20.1	53	63
19	36	HEWLETT-PACKARD CO., U.S.	3312	2635	25.7	56 588	25.1	5.9	5.8	23	31
20	23	NIPPON TELEG. & TELEPH. Corp., Japan	3305	3263	1.3	91 172	-6.5	3.6	3.3	16	15
21	19	ROYAL PHILIPS ELECTRONICS NV, Netherlands	3244	3517	-7.8	33 785	-1.6	9.6	10.2	19	19
22	24	NOKIA CORP., Finland	3240	3169	2.2	31 869	-3.8	10.2	9.6	63	59
23	21	HITACHI LTD., Japan	3148	3468	-9.2	68 374	2.5	4.6	5.2	10	11
24	26	NOVARTIS AG, Switzerland	3099	2991	3.6	23 146	1.2	13.4	13.1	43	42
25	28	VOLKSWAGEN AG, Germany	3070	2824	8.7	92 317	-1.8	3.3	3.0	9	9
26	32	ASTRAZENECA PLC, United Kingdom	3069	2773	10.7	17 841	8.3	17.2	16.8	52	53
27	31	ROCHE HOLDING LTD., Switzerland	3040	2780	9.4	21 227	1.9	14.3	13.3	44	44
28	34	TOSHIBA CORP., Japan	2767	2722	1.6	47 207	4.9	5.9	6.0	17	15
29	35	BAYER AG, Germany	2688	2642	1.8	30 746	0.1	8.7	8.6	22	23
30	37	MERCK & CO., U.S.	2677	2456	9.0	51 790	8.5	5.2	5.1	35	31
31	29	BAE SYSTEMS PLC, United Kingdom	2557	2786	-8.2	12 881	-10.7	19.8	19.3	38	40
32	39	NISSAN MOTOR CO., Japan	2507	2188	14.6	56 996	10.2	4.4	4.2	21	19
33	30	NEC CORP., Japan	2473	2785	-11.2	39 188	-8.0	6.3	6.5	17	20
34	27	FUJITSU LTD., Japan	2385	2920	-18.3	38 542	-7.8	6.2	7.0	15	17
35	25	ALCATEL SA, France	2363	3044	-22.4	17 569	-34.7	13.5	11.3	31	31
36	18	LUCENT TECHNOLOGIES INC., U.S.	2310	3520	-34.4	12 321	-42.1	18.7	16.5	49	46
37	20	NORTEL NETWORKS CORP., Canada	2287	3516	-35.0	11 182	-40.4	20.4	18.7	62	66
38	41	EADS NV, Netherlands	2225	2172	2.4	31 747	-2.9	7.0	6.6	21	21
39	40	BRISTOL-MYERS SQUIBB CO., U.S.	2218	2183	1.6	18 119	-0.5	12.2	12.0	50	108
40	44	GENERAL ELECTRIC CO., U.S.	2215	1980	11.9	130 685	4.0	1.7	1.60	7	6
41	38	LILLY (ELI) & CO., U.S.	2149	2235	-3.8	11 078	-4.0	19.4	19.4	49	59
42	50	BAYERISCHE MOTOR. WERKE AG, Germany	2135	1766	20.9	44 893	9.9	4.8	4.3	23	18
43	46	WYETH, U.S.	2080	1870	11.3	14 584	3.2	14.3	13.2	39	36
44	47	PSA PEUGEOT CITROEN SA, France	1980	1840	7.6	57 978	5.3	3.4	3.3	10	NA
45	48	CANON INC., Japan	1950	1825	6.9	24 540	1.1	7.9	7.5	20	19
46		FIAT SPA, Italy	1856	-	-	58 850	-3.7	3.2	0.0	10	NA
47	43	SUN MICROSYSTEMS INC., U.S.	1832	2016	-9.1	12 496	-31.5	14.7	11.0	46	48
48	52	DELPHI CORP., U.S.	1700	1700	0.0	27 427	5.1	6.2	6.5	9	9
49	45	BOEING CO., U.S.	1639	1936	-15.3	54 069	-7.1	3.0	3.3	10	10
50	53	TEXAS INSTRUMENTS INC., U.S.	1618	1598	1.3	8 383	2.2	19.3	19.5	47	46

2002	2001	Company Name, Country	R&D Expenditures (Less In-Process)			Sales		R&D Intensity (%)		R&D Expenditures per Employee (\$Thous)	
			2002	2001	% Change	2002 (\$ Mil)	% Change	2002	2001	2002	2001
			51	49	Procter & Gamble Co., U.S.	1601	1769	-9.5	40 169	2.4	4.0
52	33	Hoechst AG, Germany	1585	2738	-42.1	9 734	-35.8	16.3	18.1	45	43
53	55	Abbott Laboratories Inc., U.S.	1562	1578	-1.0	17 685	8.6	8.8	9.7	22	41
54	56	Denso Corp., Japan	1526	1549	-1.5	19 471	-2.8	7.8	7.7	17	18
55	51	Mitsubishi Electric Corp., Japan	1498	1708	-12.3	30 374	-0.3	4.9	5.6	14	15
56	59	Schering-Plough Corp., U.S.	1425	1312	8.6	10 180	3.9	14.0	13.4	47	44
57	63	Fuji Photo Film Co., Japan	1328	1226	8.3	20 914	4.4	6.4	6.1	18	17
58	68	Sanofi-Synthelabo, France	1293	1095	18.1	7 908	14.8	16.4	15.9	40	36
59	54	Du Pont (E.I.) de Nemours, U.S.	1264	1588	-20.4	24 134	-3.9	5.2	6.3	16	20
60	65	Matsushita Commun. Indl. Co., Japan	1258	1144	9.9	6 542	-26.1	19.2	12.9	75	69
61	62	Unilever Group (GBP), United Kingdom	1238	1251	-1.0	51 251	-6.3	2.4	2.3	5	4
62	42	Renault Group, France	1214	2054	-40.9	38 580	0.0	3.1	5.3	9	13
63	58	BASF AG, Germany	1205	1324	-9.0	34 205	-0.9	3.5	3.8	13	14
64	61	United Technologies Corp., U.S.	1191	1254	-5.0	28 215	1.1	4.2	4.5	8	8
65	57	Agilent Technologies Inc., U.S.	1169	1349	-13.3	6 010	-28.4	19.5	16.1	32	33
66	60	Infineon Technologies AG, Germany	1125	1262	-10.8	5 529	-8.2	20.4	21.0	37	37
67	71	Sharp Corp., Japan	1120	1051	6.5	16 720	11.1	6.7	7.0	24	23
68	80	Amgen Inc., U.S.	1117	865	29.1	5 523	37.5	20.2	21.5	111	112
69	66	Oracle Corp., U.S.	1076	1139	-5.5	9 673	-10.9	11.1	10.5	26	27
70	69	3M Co., U.S.	1070	1084	-1.3	16 332	1.6	6.6	6.7	16	15
71	70	Dow Chemical Co., U.S.	1066	1072	-0.6	27 609	-0.7	3.9	3.9	21	22
72	81	NTT Docomo Inc., Japan	1054	837	25.8	40 140	-7.0	2.6	1.9	51	43
73	64	Applied Materials Inc., U.S.	1052	1199	-12.2	5 062	-31.1	20.8	16.3	65	70
74	82	Takeda Chemical Industries Ltd., Japan	1037	837	23.9	8 731	4.1	11.9	10.0	71	58
75	73	STMicroelectronics NV, Switzerland	1022	978	4.5	6 270	-0.5	16.3	15.5	24	24
76	79	Sanyo Electric Co., Japan	1009	893	12.9	18 979	7.7	5.3	5.1	13	11
77	77	Schering AG, Germany	1005	917	9.6	5 333	3.7	18.9	17.8	38	37
78	78	Akzo Nobel NV, Netherlands	968	899	7.7	14 867	-0.8	6.0	6.0	14	14
79	74	SAP AG, Germany	966	954	1.2	7 871	1.0	12.3	12.2	34	34
80	72	Xerox Corp., U.S.	917	997	-8.0	15 849	-6.8	5.8	5.9	14	13
81	67	Visteon Corp., U.S.	902	1119	-19.4	18 395	3.1	4.9	6.3	12	14
82	84	Nestle SA, Switzerland	863	830	4.0	63 671	5.3	1.4	1.4	3	4
83	100	Advanced Micro Devices Inc., U.S.	816	651	25.4	2 697	-30.7	30.3	16.7	67	45
84	76	EMC Corp., U.S.	781	929	-15.9	5 438	-23.3	14.4	13.1	45	46
85	86	Eastman Kodak Co., U.S.	762	779	-2.2	12 835	-3.0	5.90	5.9	11	10
86	91	Mitsubishi Chemical Corp., Japan	760	706	7.6	15 754	6.0	4.8	4.8	20	18
87	83	Honeywell International Inc., U.S.	757	832	-9.0	22 274	-5.8	3.4	3.5	7	7
88		Medtronic Inc., U.S.	749	646	16.0	7 665	19.6	9.8	10.1	25	34
89	88	Cie Financiere Michelin, Switzerland	747	757	-1.3	16 884	-2.3	4.4	4.4	6	6
90	89	Cie Gen Des Etablis Michelin, France	747	745	0.3	16 611	-0.8	4.5	4.4	6	6
91	85	Mazda Motor Corp., Japan	733	793	-7.5	19 736	12.9	3.7	4.5	20	21
92	95	Sankyo Co. (Pharmaceutical), Japan	723	681	6.2	4 757	3.8	15.2	14.9	62	61
93	87	Broadcom Corp., U.S.	714	768	-7.0	1 083	12.6	65.9	79.9	285	322
94	97	Ricoh Co., Japan	697	674	3.4	14 510	3.9	4.8	4.8	9	9
95	90	Syngenta AG, Switzerland	697	723	-3.6	6 197	-2.0	11.2	11.4	31	32
96	75	Agere Systems Inc., U.S.	693	951	-27.1	2 177	-46.6	31.8	23.3	65	66
97		Altria Group Inc., U.S.	686	647	6.0	62 182	-14.8	1.1	0.9	4	4
98		AB Volvo, Sweden	681	625	8.9	21 594	-1.6	3.2	2.8	10	9
99		Aisin Seiki Co., Japan	668	565	18.3	11 752	15.2	5.7	5.5	15	14
100	96	Computer Associates Intl. Inc., U.S.	664	678	-2.1	3 116	5.1	21.3	22.9	42	41