

**Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003**

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Worldwide .....	185	189	249	246	330	415	466	467	516	525	394	339	481	527	564	674	615	559	545	504	483	607	527	695
Equity .....	81	102	108	117	113	160	151	155	194	274	107	74	102	134	77	81	86	69	57	70	50	57	46	50
Nonequity .....	104	87	141	129	217	255	315	312	322	251	287	265	379	393	487	593	529	490	488	434	433	550	481	645
Information technologies .....	47	53	85	98	145	153	173	171	192	186	197	184	223	214	240	306	270	223	256	218	169	168	141	220
Equity .....	19	27	39	42	47	46	57	51	48	68	28	33	28	33	17	18	30	18	19	23	16	22	19	25
Nonequity .....	28	26	46	56	98	107	116	120	144	118	169	151	195	181	223	288	240	205	237	195	153	146	122	195
Biotechnology .....	31	38	53	42	65	111	103	110	98	66	45	36	98	124	161	164	177	182	147	190	200	355	332	368
Equity .....	4	11	9	12	12	34	14	24	16	17	20	8	18	25	22	13	18	18	10	16	12	13	10	8
Nonequity .....	27	27	44	30	53	77	89	86	82	49	25	28	80	99	139	151	159	164	137	174	188	342	322	360
New materials .....	8	23	24	32	28	50	87	62	61	46	35	21	35	59	33	43	37	29	36	23	22	23	21	22
Equity .....	6	17	19	17	15	19	37	17	30	25	19	8	16	28	3	11	8	5	3	7	2	7	5	1
Nonequity .....	2	6	5	15	13	31	50	45	31	21	16	13	19	31	30	32	29	24	33	16	20	16	16	21
Aerospace/defense .....	23	6	11	9	30	14	27	25	26	42	55	41	53	34	38	51	46	42	38	12	13	26	16	23
Equity .....	1	0	4	2	4	1	3	1	4	14	16	8	14	6	13	17	9	9	9	2	1	4	2	1
Nonequity .....	22	6	7	7	26	13	24	24	22	28	39	33	39	28	25	34	37	33	29	10	12	22	14	22
Automotive .....	15	7	9	8	8	20	22	22	45	49	12	3	4	15	25	25	37	43	32	39	50	22	22	43
Equity .....	6	1	5	5	2	10	11	14	32	38	6	1	0	2	4	4	12	11	14	14	10	12	10	9
Nonequity .....	9	6	4	3	6	10	11	8	13	11	6	2	4	13	21	21	25	32	18	25	40	10	12	34
Chemistry .....	34	25	24	27	25	35	18	33	48	64	44	35	38	63	46	60	29	59	73	35	40	24	10	25
Equity .....	31	21	14	23	20	31	14	30	38	55	22	13	21	28	17	15	10	11	7	8	7	3	2	3
Nonequity .....	3	4	10	4	5	4	4	3	10	9	22	22	17	35	29	45	19	48	66	27	33	21	8	22
U.S. owned worldwide																								
Total .....	118	120	177	160	226	224	268	302	351	329	282	271	367	413	449	526	488	448	444	413	385	447	340	491
Equity .....	52	70	78	85	77	86	93	91	121	137	57	56	63	79	45	33	51	45	33	42	38	26	20	20
Nonequity .....	66	50	99	75	149	138	175	211	230	192	225	215	304	334	404	493	437	403	411	371	347	421	320	471
Information technologies .....	29	34	62	68	97	86	100	128	140	130	156	152	181	184	214	269	229	183	222	183	133	117	92	149
Equity .....	13	17	30	34	29	26	32	34	27	37	17	26	17	21	11	8	19	15	14	11	10	5	10	8
Nonequity .....	16	17	32	34	68	60	68	94	113	93	139	126	164	163	203	261	210	168	208	172	123	112	82	141
Biotechnology .....	24	27	45	27	51	64	75	78	64	46	28	33	77	108	125	127	141	162	120	165	165	274	219	274
Equity .....	2	9	7	7	8	17	9	16	12	7	8	7	13	18	16	6	10	13	5	11	10	7	6	4
Nonequity .....	22	18	38	20	43	47	66	62	52	39	20	26	64	90	109	121	131	149	115	154	155	267	213	270
New materials .....	4	14	14	18	14	17	38	30	37	27	27	16	25	40	27	31	27	22	22	17	18	14	16	18
Equity .....	4	12	12	12	11	10	23	9	20	13	13	6	11	15	3	7	4	3	2	4	2	2	3	1
Nonequity .....	0	2	2	6	3	7	15	21	17	14	14	10	14	25	24	24	23	19	20	13	16	12	13	17
Aerospace/defense .....	15	3	8	4	19	7	10	14	18	23	36	25	34	17	16	28	30	21	29	10	9	18	10	14
Equity .....	0	0	3	1	2	0	2	1	2	6	8	5	7	2	4	6	5	1	3	1	0	2	0	0
Nonequity .....	15	3	5	3	17	7	8	13	16	17	28	20	27	15	12	22	25	20	26	9	9	16	10	14
Automotive .....	6	3	4	5	4	11	12	16	35	32	8	2	1	10	17	15	25	29	19	22	37	16	13	25
Equity .....	4	1	3	3	1	7	8	11	27	22	4	1	0	1	3	2	7	8	7	10	6	7	5	4
Nonequity .....	2	2	1	2	3	4	4	5	8	10	4	1	1	9	14	13	18	21	12	12	31	9	8	21
Chemistry .....	21	17	14	15	17	19	9	12	26	37	24	26	24	46	32	42	15	51	55	24	30	17	6	20
Equity .....	20	16	8	14	13	16	7	10	18	29	10	9	13	17	9	5	4	8	5	4	7	1	1	1
Nonequity .....	1	1	6	1	4	3	2	2	8	8	14	17	11	29	23	37	11	43	50	20	23	16	5	19

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Europe owned worldwide																								
Total .....	95	89	126	107	161	227	229	232	249	289	185	153	227	224	255	306	250	236	252	197	232	284	277	287
Equity.....	42	47	58	46	55	80	83	93	107	169	68	39	61	84	51	52	45	40	39	42	26	37	21	23
Nonequity.....	53	42	68	61	106	147	146	139	142	120	117	114	166	140	204	254	205	196	213	155	206	247	256	264
Information technologies .....	18	27	50	31	70	89	95	81	86	90	72	65	84	67	64	89	70	83	87	59	79	68	62	76
Equity.....	8	15	23	11	25	23	33	32	32	40	16	14	15	17	8	11	13	9	11	10	5	13	7	10
Nonequity.....	10	12	27	20	45	66	62	49	54	50	56	51	69	50	56	78	57	74	76	49	74	55	55	66
Biotechnology.....	15	14	15	21	25	61	35	52	51	36	26	18	61	53	95	98	101	76	81	83	91	171	176	177
Equity.....	3	5	4	6	4	20	6	10	7	12	13	5	13	15	14	7	12	12	7	11	5	11	2	3
Nonequity.....	12	9	11	15	21	41	29	42	44	24	13	13	48	38	81	91	89	64	74	72	86	160	174	174
New materials.....	8	13	15	20	15	20	34	22	23	28	21	8	14	37	14	23	13	14	22	8	7	12	9	6
Equity.....	6	9	13	12	7	10	21	11	15	18	11	4	8	22	0	7	3	2	3	2	0	4	2	1
Nonequity.....	2	4	2	8	8	10	13	11	8	10	10	4	6	15	14	16	10	12	19	6	7	8	7	5
Aerospace/defense.....	13	2	7	6	19	10	18	15	15	28	31	26	31	20	29	31	23	28	23	5	5	17	13	11
Equity.....	1	0	2	1	4	1	1	0	3	9	12	6	10	4	12	11	6	6	6	1	0	2	2	1
Nonequity.....	12	2	5	5	15	9	17	15	12	19	19	20	21	16	17	20	17	22	17	4	5	15	11	10
Automotive.....	12	5	6	4	6	10	12	8	16	20	4	0	0	5	13	13	18	19	17	28	28	12	12	18
Equity.....	4	0	2	2	2	3	5	4	10	15	2	0	0	2	2	3	6	6	8	11	7	9	5	6
Nonequity.....	8	5	4	2	4	7	7	4	6	5	2	0	0	3	11	10	12	13	9	17	21	3	7	12
Chemistry.....	16	12	14	13	12	18	12	23	29	36	29	23	21	33	26	43	23	29	47	22	30	10	4	8
Equity.....	13	8	10	11	9	14	9	22	23	32	15	8	11	19	13	11	9	7	7	5	5	1	1	0
Nonequity.....	3	4	4	2	3	4	3	1	6	4	14	15	10	14	13	32	14	22	40	17	25	9	3	8
Japan owned worldwide																								
Total .....	42	61	79	81	91	121	145	121	100	105	67	70	70	80	72	86	90	54	59	72	54	74	84	106
Equity.....	20	37	31	37	31	56	55	46	44	78	27	18	19	17	6	9	14	5	6	16	10	16	14	16
Nonequity.....	22	24	48	44	60	65	90	75	56	27	40	52	51	63	66	77	76	49	53	56	44	58	70	90
Information technologies .....	15	15	29	37	48	31	43	31	31	31	35	46	34	43	40	44	47	28	32	43	31	42	35	50
Equity.....	7	8	8	13	12	16	19	10	7	19	9	11	5	6	4	3	5	3	1	10	6	10	7	10
Nonequity.....	8	7	21	24	36	15	24	21	24	12	26	35	29	37	36	41	42	25	31	33	25	32	28	40
Biotechnology.....	7	11	16	10	11	29	31	25	10	11	6	3	8	15	11	15	20	13	11	18	9	17	41	28
Equity.....	1	1	1	4	2	6	6	8	1	4	3	0	4	4	0	0	2	1	0	2	2	0	3	2
Nonequity.....	6	10	15	6	9	23	25	17	9	7	3	3	4	11	11	15	18	12	11	16	7	17	38	26
New materials.....	0	6	6	11	14	30	45	32	22	12	9	6	8	6	5	10	6	4	10	6	6	6	6	3
Equity.....	0	5	5	6	7	9	17	6	9	7	7	2	4	2	0	2	3	0	1	3	0	3	3	0
Nonequity.....	0	1	1	5	7	21	28	26	13	5	2	4	4	4	5	8	3	4	9	3	6	3	3	3
Aerospace/defense.....	6	1	0	1	1	0	4	1	0	2	3	6	1	0	0	1	2	2	1	1	3	2	0	2
Equity.....	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Nonequity.....	6	1	0	1	1	0	3	1	0	2	3	6	1	0	0	1	2	2	1	1	2	1	0	2
Automotive.....	2	3	3	3	2	10	10	11	18	24	2	2	3	7	6	5	7	2	6	5	9	4	4	9
Equity.....	1	1	3	2	0	5	5	8	13	23	1	1	0	1	1	3	0	3	2	2	4	3	1	8
Nonequity.....	1	2	0	1	2	5	5	3	5	1	1	1	3	6	5	4	4	2	3	3	7	0	1	8
Chemistry.....	8	8	9	12	8	14	5	14	11	15	11	5	9	8	5	6	6	8	4	3	2	5	2	5
Equity.....	8	7	5	9	7	14	5	12	8	15	6	3	5	4	0	3	3	1	0	1	0	2	1	2
Nonequity.....	0	1	4	3	1	0	0	2	3	0	5	2	4	4	5	3	3	7	4	2	2	3	1	3

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Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total NT owned worldwide																								
Total .....	19	26	24	20	25	40	30	43	77	98	43	14	47	69	58	77	82	70	40	58	72	87	94	153
Equity.....	12	20	12	16	17	33	18	32	51	79	19	5	23	29	19	17	22	12	10	7	6	10	15	24
Nonequity.....	7	6	12	4	8	7	12	11	26	19	24	9	24	40	39	60	60	58	30	51	66	77	79	129
Information technologies .....	1	3	9	7	8	10	11	9	24	30	16	6	15	17	19	35	42	30	20	28	27	33	29	63
Equity.....	0	3	6	6	5	6	6	6	13	23	3	1	7	6	5	4	11	1	2	2	3	4	6	15
Nonequity.....	1	0	3	1	3	4	5	3	11	7	13	5	8	11	14	31	31	29	18	26	24	29	23	48
Biotechnology.....	3	5	4	1	3	6	2	7	9	5	11	1	11	9	12	12	20	14	6	18	22	48	56	52
Equity.....	0	3	0	0	3	6	0	3	3	2	7	1	3	4	4	1	7	2	2	1	2	2	4	3
Nonequity.....	3	2	4	1	0	0	2	4	6	3	4	0	8	5	8	11	13	12	4	17	20	46	52	49
New materials.....	0	5	3	0	1	2	4	5	11	4	4	2	4	8	3	3	6	2	3	2	4	3	1	7
Equity.....	0	4	2	0	0	2	2	4	6	3	2	1	4	5	2	2	2	2	0	0	0	1	0	0
Nonequity.....	0	1	1	0	1	0	2	1	5	1	2	1	0	3	1	1	4	0	3	2	4	2	1	7
Aerospace/defense.....	1	1	1	1	1	3	2	1	2	5	2	5	11	19	12	15	9	12	6	1	2	5	3	5
Equity.....	0	0	0	0	0	0	0	0	0	3	1	0	5	5	4	6	2	3	1	1	0	2	0	0
Nonequity.....	1	1	1	1	1	3	2	1	2	2	1	5	6	14	8	9	7	9	5	0	2	3	3	5
Automotive.....	1	0	1	1	1	3	1	2	10	12	0	0	0	1	3	2	3	7	5	3	9	3	5	16
Equity.....	1	0	1	1	0	3	1	2	9	12	0	0	0	0	1	1	1	4	1	0	3	1	4	
Nonequity.....	0	0	0	0	1	0	0	0	1	0	0	0	0	1	3	1	2	6	1	2	9	0	4	12
Chemistry.....	10	9	3	4	5	10	1	9	15	19	6	3	7	11	8	7	2	3	3	7	4	0	1	4
Equity.....	10	8	1	4	4	10	1	9	14	18	5	3	5	7	6	5	1	2	1	2	1	0	0	1
Nonequity.....	0	1	2	0	1	0	0	0	1	1	1	0	2	4	2	2	1	1	2	5	3	0	1	3
United States only owned																								
Total .....	43	39	45	59	84	77	108	124	146	118	139	124	175	211	224	259	242	241	230	202	167	211	135	220
Equity.....	16	14	17	25	25	22	18	20	24	21	17	21	21	25	14	16	21	19	11	11	12	8	5	4
Nonequity.....	27	25	28	34	59	55	90	104	122	97	122	103	154	186	210	243	221	222	219	191	155	203	130	216
Information technologies .....	18	16	8	30	34	35	43	58	68	59	86	78	102	104	130	156	134	99	132	96	49	49	31	58
Equity.....	6	6	6	14	10	8	6	7	4	5	5	10	7	8	4	3	8	5	7	4	4	3	1	2
Nonequity.....	12	10	2	16	24	27	37	51	64	54	81	68	95	96	126	153	126	94	125	92	45	46	30	56
Biotechnology.....	6	11	21	11	27	25	38	33	34	20	11	16	27	53	52	51	51	84	56	79	87	135	94	135
Equity.....	0	4	4	2	4	8	2	6	5	3	3	3	2	3	4	5	2	4	2	3	4	2	2	1
Nonequity.....	6	7	17	9	23	17	36	27	29	17	8	13	25	50	48	46	49	80	54	76	83	133	92	134
New materials.....	0	2	4	4	4	4	12	10	12	7	7	7	13	17	11	13	14	12	10	8	8	5	6	8
Equity.....	0	1	2	0	4	2	4	1	4	2	4	3	4	4	1	3	2	3	0	2	2	0	0	0
Nonequity.....	0	1	2	4	0	2	8	9	8	5	3	4	9	13	10	10	12	9	10	6	6	5	6	8
Aerospace/defense.....	4	2	3	1	9	4	5	9	11	9	19	7	13	6	5	10	13	8	10	5	4	4	1	7
Equity.....	0	0	2	1	0	0	1	1	1	3	3	2	1	0	1	2	1	1	2	0	0	0	0	0
Nonequity.....	4	2	1	0	9	4	4	8	10	6	16	5	12	6	4	8	12	7	8	5	4	4	1	7
Automotive.....	1	1	0	1	0	1	3	5	6	6	6	1	1	4	8	6	12	18	9	6	12	8	4	8
Equity.....	1	0	0	0	0	0	2	3	3	1	3	0	0	0	2	0	3	4	2	1	2	1	2	1
Nonequity.....	0	1	0	1	0	1	1	2	3	5	3	1	1	4	6	6	9	14	7	5	10	7	2	7
Chemistry.....	4	1	1	4	6	2	4	3	5	11	9	9	10	21	14	13	3	23	24	9	9	11	5	9
Equity.....	4	1	0	3	5	2	3	2	4	6	3	3	6	4	1	2	0	3	0	1	1	1	1	0
Nonequity.....	0	0	1	1	1	0	1	1	1	5	6	6	4	17	13	11	3	20	24	8	8	10	4	9

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Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
United States-Europe owned																								
Total .....	38	35	67	44	78	82	100	114	111	115	87	92	125	129	158	178	151	138	165	135	151	151	128	147
Equity .....	16	21	31	20	27	25	43	41	45	51	23	22	26	34	22	9	17	18	19	25	18	14	5	4
Nonequity .....	22	14	36	24	51	57	57	73	66	64	64	70	99	95	136	169	134	120	146	110	133	137	123	143
Information technologies .....	5	12	31	12	31	29	37	46	43	39	38	38	48	45	49	60	39	49	62	40	51	35	35	36
Equity .....	3	7	16	4	11	6	16	18	16	13	6	8	6	8	5	3	5	6	7	4	2	2	4	0
Nonequity .....	2	5	15	8	20	23	21	28	27	26	32	30	42	37	44	57	34	43	55	36	49	33	31	36
Biotechnology .....	9	6	10	9	15	22	23	31	20	16	11	15	40	38	60	64	71	57	55	64	60	96	75	97
Equity .....	1	3	2	2	2	6	4	6	3	2	2	4	8	9	8	0	4	7	3	7	4	5	0	1
Nonequity .....	8	3	8	7	13	16	19	25	17	14	9	11	32	29	52	64	67	50	52	57	56	91	75	96
New materials .....	4	5	6	8	5	6	14	10	9	11	13	4	5	19	10	14	7	7	10	6	5	6	8	4
Equity .....	4	4	6	7	3	3	12	4	7	6	5	2	4	9	0	4	1	0	2	1	0	2	2	1
Nonequity .....	0	1	0	1	2	3	2	6	2	5	8	2	1	10	10	10	6	7	8	5	5	4	6	3
Aerospace/defense .....	6	1	4	3	9	3	4	5	7	9	15	11	14	6	8	10	9	10	14	4	2	10	7	5
Equity .....	0	0	1	0	2	0	0	0	1	1	5	3	4	0	3	1	3	0	0	1	0	1	0	0
Nonequity .....	6	1	3	3	7	3	4	5	6	8	10	8	10	6	5	9	6	10	14	3	2	9	7	5
Automotive .....	3	1	1	2	3	6	5	4	9	8	1	0	0	3	7	6	9	7	7	12	16	6	5	6
Equity .....	2	0	0	1	1	3	3	3	6	4	1	0	0	1	1	1	2	3	3	7	3	4	1	1
Nonequity .....	1	1	1	1	2	3	2	1	3	4	0	0	0	2	6	5	7	4	4	5	13	2	4	5
Chemistry .....	4	5	6	3	6	7	3	3	10	13	10	14	7	18	13	25	10	21	29	12	20	5	1	5
Equity .....	3	4	4	3	4	4	2	3	6	10	4	4	3	9	5	1	3	4	5	2	5	0	0	0
Nonequity .....	1	1	2	0	2	3	1	0	4	3	6	10	4	9	8	24	7	17	24	10	15	5	1	5
United States-Japan owned																								
Total .....	25	31	51	47	51	51	49	50	60	66	35	46	41	45	40	47	50	38	31	41	27	34	34	40
Equity .....	12	21	22	30	16	28	24	20	30	45	10	9	7	7	1	2	2	5	0	3	4	1	5	3
Nonequity .....	13	10	29	17	35	23	25	30	30	21	25	37	34	38	39	45	48	33	31	38	23	33	29	37
Information technologies .....	6	5	18	22	30	17	18	20	19	22	23	32	22	29	23	29	31	19	17	26	15	16	12	20
Equity .....	4	3	5	12	7	10	9	6	2	13	5	7	2	4	0	0	1	3	0	2	2	0	2	2
Nonequity .....	2	2	13	10	23	7	9	14	17	9	18	25	20	25	23	29	30	16	17	24	13	16	10	18
Biotechnology .....	6	8	12	7	7	15	14	10	6	6	2	2	5	10	7	6	12	13	7	12	7	13	21	11
Equity .....	1	1	1	3	0	1	3	3	1	0	1	0	2	3	0	0	0	1	0	0	1	0	2	0
Nonequity .....	5	7	11	4	7	14	11	7	5	6	1	2	3	7	7	6	12	12	7	12	6	13	19	11
New materials .....	0	3	2	6	4	6	9	8	9	8	4	3	6	1	3	4	1	3	2	2	3	2	2	3
Equity .....	0	3	2	5	4	4	6	2	6	5	2	0	2	0	0	0	0	0	0	1	0	0	1	0
Nonequity .....	0	0	0	1	0	2	3	6	3	3	2	3	4	1	3	4	1	3	2	1	3	2	1	3
Aerospace/defense .....	5	0	0	0	0	0	1	0	0	2	1	5	0	0	0	1	1	1	1	1	1	2	1	0
Equity .....	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity .....	5	0	0	0	0	0	0	0	0	2	1	5	0	0	0	1	1	1	1	1	2	1	0	0
Automotive .....	1	1	2	1	1	2	4	7	13	16	1	1	0	2	2	2	3	0	1	2	4	0	2	3
Equity .....	0	1	2	1	0	2	3	5	12	15	0	1	0	0	0	1	1	0	0	1	1	0	2	0
Nonequity .....	1	0	0	0	1	0	1	2	1	1	1	0	0	2	2	1	2	0	1	1	3	0	0	3
Chemistry .....	7	5	5	6	4	7	2	5	7	8	4	1	2	2	0	3	1	6	2	2	0	1	0	2
Equity .....	7	5	3	6	3	7	2	4	5	8	2	0	0	0	0	1	0	1	0	1	0	0	0	0
Nonequity .....	0	0	2	0	1	0	0	1	2	0	2	1	2	2	0	2	1	5	2	1	0	1	0	2

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980-2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>United States-NT owned</b>																								
Total .....	12	15	14	10	13	14	11	14	34	30	21	9	26	28	27	42	45	31	18	35	40	51	43	84
Equity.....	8	14	8	10	9	11	8	10	22	20	7	4	9	13	8	6	11	3	3	3	4	3	5	9
Nonequity.....	4	1	6	0	4	3	3	4	12	10	14	5	17	15	19	36	34	28	15	32	36	48	38	75
Information technologies .....	0	1	5	4	2	5	2	4	10	10	9	4	9	6	12	24	25	16	11	21	18	17	14	35
Equity.....	0	1	3	4	1	2	1	3	5	6	1	1	2	1	2	2	5	1	0	1	2	0	3	4
Nonequity.....	0	0	2	0	1	3	1	1	5	4	8	3	7	5	10	22	20	15	11	20	16	17	11	31
Biotechnology.....	3	2	2	0	2	2	0	4	4	4	4	0	5	7	6	6	7	8	2	10	11	30	29	31
Equity.....	0	1	0	0	2	2	0	1	3	2	2	0	1	3	4	1	4	1	0	1	1	0	2	2
Nonequity.....	3	1	2	0	0	0	0	3	1	2	2	0	4	4	2	5	3	7	2	9	10	30	27	29
New materials.....	0	4	2	0	1	1	3	2	7	1	3	2	1	3	3	0	5	0	0	1	2	1	0	3
Equity.....	0	4	2	0	0	1	1	2	3	0	2	1	1	2	2	0	1	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	1	0	2	0	4	1	1	1	0	1	1	0	4	0	0	1	2	1	0	3
Aerospace/defense.....	0	0	1	0	1	0	0	0	0	3	1	2	7	5	3	7	7	2	4	0	1	3	2	2
Equity.....	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	3	1	0	1	0	0	1	0	0
Nonequity.....	0	0	1	0	1	0	0	0	0	1	1	2	5	3	3	4	6	2	3	0	1	2	2	2
Automotive.....	1	0	1	1	0	2	0	0	7	2	0	0	0	1	0	1	1	4	2	2	5	2	2	8
Equity.....	1	0	1	1	0	2	0	0	6	2	0	0	0	0	0	0	1	1	2	1	0	2	0	2
Nonequity.....	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	3	0	1	5	0	2	6
Chemistry.....	6	6	2	2	1	3	0	1	4	5	1	2	5	5	5	1	1	1	0	1	1	0	0	4
Equity.....	6	6	1	2	1	3	0	1	3	5	1	2	4	4	3	1	1	0	0	0	1	0	0	1
Nonequity.....	0	0	1	0	0	0	0	0	1	0	0	0	1	1	2	0	0	1	0	1	0	0	0	3
<b>Europe only owned</b>																								
Total .....	44	30	36	42	55	97	87	72	86	104	59	40	66	43	58	79	60	60	55	42	45	88	93	80
Equity.....	17	12	18	19	16	26	20	22	32	60	21	8	15	30	18	31	13	15	13	11	5	10	10	5
Nonequity.....	27	18	18	23	39	71	67	50	54	44	38	32	51	13	40	48	47	45	42	31	40	78	83	75
Information technologies .....	9	8	9	12	25	48	40	27	27	29	22	17	25	8	6	14	12	20	11	13	15	13	13	20
Equity.....	3	4	4	5	10	10	11	10	8	10	5	3	4	5	1	6	1	3	2	3	2	4	2	1
Nonequity.....	6	4	5	7	15	38	29	17	19	19	17	14	21	3	5	8	11	17	9	10	13	9	11	19
Biotechnology.....	6	5	3	11	10	29	10	17	26	14	7	1	12	9	26	24	17	14	19	13	22	59	69	58
Equity.....	2	0	2	4	2	8	2	3	4	6	5	0	1	5	6	7	3	4	3	3	0	4	2	1
Nonequity.....	4	5	1	7	8	21	8	14	22	8	2	1	11	4	20	17	14	10	16	10	22	55	67	57
New materials.....	4	5	5	9	4	8	13	5	7	12	2	2	6	9	4	3	5	4	4	2	0	4	1	0
Equity.....	2	3	4	4	1	3	3	2	4	7	1	0	1	8	0	0	1	0	0	1	0	2	0	0
Nonequity.....	2	2	1	5	3	5	10	3	3	5	1	2	5	1	4	3	4	4	4	1	0	2	1	0
Aerospace/defense.....	6	1	3	3	10	4	12	9	6	17	16	13	14	3	13	15	13	10	7	1	2	5	5	4
Equity.....	1	0	1	1	2	1	1	0	2	7	7	3	4	1	5	8	3	5	6	0	0	0	2	1
Nonequity.....	5	1	2	2	8	3	11	9	4	10	9	10	10	2	8	7	10	5	1	1	2	5	3	3
Automotive.....	8	2	4	1	2	1	3	2	3	4	3	0	0	0	3	6	7	10	8	13	5	1	4	5
Equity.....	1	0	1	1	1	0	0	0	2	3	1	0	0	0	0	1	3	3	4	3	3	0	3	2
Nonequity.....	7	2	3	0	1	1	3	2	1	1	2	0	0	0	3	5	4	7	4	10	2	1	1	3
Chemistry.....	8	3	5	4	1	3	5	5	8	9	8	4	5	7	6	9	8	4	13	4	5	3	1	2
Equity.....	6	2	4	4	1	2	3	5	7	9	4	0	2	5	5	4	3	1	1	2	0	0	0	0
Nonequity.....	2	1	1	0	0	1	2	0	1	0	4	4	3	2	1	5	5	3	12	2	5	3	1	2

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Europe-Japan owned																								
Total .....	9	17	17	17	19	29	31	25	18	21	20	17	20	23	16	23	18	9	19	10	15	23	19	21
Equity.....	6	10	8	3	7	14	14	14	6	17	13	8	9	8	2	3	6	0	4	4	2	8	1	3
Nonequity.....	3	7	9	14	12	15	17	11	12	4	7	9	11	15	14	20	12	9	15	6	13	15	18	18
Information technologies .....																								
Equity.....	2	3	2	0	1	3	3	1	2	3	3	3	1	2	1	1	1	0	1	2	1	5	0	2
Nonequity.....	2	3	6	5	8	4	11	3	5	3	3	6	6	7	6	7	6	4	8	2	7	9	5	6
Biotechnology.....																								
Equity.....	0	1	1	1	0	7	1	4	1	5	2	1	3	4	3	6	6	0	4	2	1	2	11	8
Nonequity.....	0	1	1	1	0	4	1	3	1	1	1	1	1	4	3	6	4	0	4	1	1	2	11	8
New materials.....																								
Equity.....	0	2	3	3	6	5	7	4	3	2	5	2	1	4	0	3	1	1	6	0	1	1	0	0
Nonequity.....	0	0	0	2	3	2	1	1	2	0	0	0	0	2	0	2	0	1	5	0	1	1	0	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
Automotive.....																								
Equity.....	1	0	1	0	0	0	1	1	0	3	0	0	0	1	1	0	1	0	1	1	1	4	0	1
Nonequity.....	0	2	0	1	0	3	2	1	2	0	0	0	0	1	1	0	0	1	1	2	3	0	1	1
Chemistry.....																								
Equity.....	1	1	2	2	2	5	3	7	1	4	3	3	5	3	0	2	3	0	0	0	0	1	1	0
Nonequity.....	0	1	0	2	0	0	0	1	1	0	3	1	2	1	4	1	2	2	2	1	2	1	0	1
Europe-NT owned																								
Total .....	4	7	6	4	9	19	11	21	34	49	19	4	16	29	23	26	21	29	13	10	21	22	37	39
Equity.....	3	4	1	4	5	15	6	16	24	41	11	1	11	12	9	9	9	7	3	2	1	5	5	11
Nonequity.....	1	3	5	0	4	4	5	5	10	8	8	3	5	17	14	17	12	22	10	8	20	17	32	28
Information technologies .....																								
Equity.....	0	1	1	2	3	4	3	3	6	14	2	0	4	2	1	1	6	0	1	1	0	2	1	7
Nonequity.....	0	0	1	0	2	1	1	1	3	2	4	1	0	3	1	6	6	10	4	1	5	4	8	5
Biotechnology.....																								
Equity.....	0	2	0	0	0	3	0	0	0	0	5	1	2	1	0	0	3	1	1	0	1	2	0	1
Nonequity.....	0	0	1	0	0	0	1	0	4	1	1	0	4	1	6	4	4	4	2	4	7	12	21	13
New materials.....																								
Equity.....	0	0	0	0	0	1	0	2	3	3	0	0	2	3	0	2	0	2	0	0	0	0	0	0
Nonequity.....	0	1	1	0	0	0	1	1	0	1	0	0	0	2	0	1	0	0	2	0	1	1	0	2
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	1	0	0	2	3	4	2	0	1	0	0	0	1	0	0
Nonequity.....	0	0	0	0	0	3	2	1	2	1	0	2	0	8	4	4	1	6	2	0	1	1	1	2
Automotive.....																								
Equity.....	0	0	0	0	0	0	1	0	2	5	0	0	0	0	1	0	0	0	0	0	0	1	1	2
Nonequity.....	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	0	1	3
Chemistry.....																								
Equity.....	3	1	0	2	2	3	1	7	9	9	4	1	1	2	3	4	0	2	1	1	0	0	0	0
Nonequity.....	0	1	1	0	1	0	0	0	0	1	1	0	1	2	0	2	0	0	2	4	3	0	1	0

## Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Japan only owned																								
Total .....	7	11	9	17	18	39	61	39	18	3	11	6	7	7	10	11	12	3	5	16	6	13	24	34
Equity.....	2	4	0	4	5	12	14	6	6	1	4	1	1	1	1	3	5	0	0	9	3	6	5	7
Nonequity.....	5	7	9	13	13	27	47	33	12	2	7	5	6	6	9	8	7	3	5	7	3	7	19	27
Information technologies .....																								
Equity.....	1	1	0	1	3	3	6	3	3	1	1	1	1	0	1	1	3	0	0	6	2	4	4	3
Nonequity.....	3	2	2	9	5	4	4	4	1	0	5	3	3	2	5	3	2	2	5	5	2	4	12	12
Biotechnology.....																								
Equity.....	0	0	0	1	1	2	3	2	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2
Nonequity.....	1	2	2	1	2	5	12	6	2	0	0	0	0	0	1	1	0	0	0	1	0	2	6	5
New materials.....																								
Equity.....	0	0	0	0	0	2	4	1	2	0	0	0	0	0	0	1	1	0	0	2	0	2	2	0
Nonequity.....	0	1	1	2	4	17	24	19	8	2	0	1	0	1	2	2	2	0	1	1	1	0	1	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Nonequity.....	0	1	0	1	1	0	3	1	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	2
Automotive.....																								
Equity.....	0	0	0	1	0	2	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1
Nonequity.....	0	0	0	0	1	2	2	0	2	0	0	1	3	3	0	3	1	0	0	0	0	0	0	3
Chemistry.....																								
Equity.....	0	0	0	1	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nonequity.....	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0
Japan-NT owned																								
Total .....	1	2	2	0	3	2	4	7	4	15	1	1	2	5	6	5	10	4	4	5	6	4	7	11
Equity.....	0	2	1	0	3	2	3	6	2	15	0	0	2	1	2	1	1	0	2	0	1	1	3	3
Nonequity.....	1	0	1	0	0	0	1	1	2	0	1	1	0	4	4	4	9	4	2	5	5	3	4	8
Information technologies .....																								
Equity.....	0	1	1	0	1	0	1	0	0	2	0	0	1	0	2	1	0	0	0	0	1	1	1	3
Nonequity.....	1	0	0	0	0	0	0	0	1	0	0	1	0	3	2	2	4	3	1	2	3	3	1	4
Biotechnology.....																								
Equity.....	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Nonequity.....	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	2	2	0	0	2	0	0	2	2
New materials.....																								
Equity.....	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0
Aerospace/defense.....																								
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Automotive.....																								
Equity.....	0	0	0	0	0	1	0	2	1	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	3	0	1	0	0	1
Chemistry.....																								
Equity.....	0	1	0	0	1	1	0	1	1	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

**Industrial technology alliances classified by country of ultimate parent company, by technology and type (equity/nonequity): 1980–2003**

Technology alliances	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
NT only owned																								
Total .....	2	2	2	6	0	5	4	1	5	4	2	0	3	7	2	4	6	6	5	8	5	10	7	19
Equity.....	1	0	2	2	0	5	1	0	3	3	1	0	1	3	0	1	1	2	2	2	0	1	2	1
Nonequity.....	1	2	0	4	0	0	3	1	2	1	1	0	2	4	2	3	5	4	3	6	5	9	5	18
Information technologies .....	0	0	1	1	0	0	4	1	4	2	1	0	1	3	1	1	1	1	3	3	0	6	4	9
Equity.....	0	0	1	0	0	0	1	0	2	1	0	0	0	3	0	0	0	0	1	0	0	1	1	1
Nonequity.....	0	0	0	1	0	0	3	1	2	1	1	0	1	0	1	1	1	1	2	3	0	5	3	8
Biotechnology.....	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4	1	1	2	3	4	3	5
Equity.....	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Nonequity.....	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	3	4	2	5
New materials.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Aerospace/defense.....	1	1	0	1	0	0	0	0	0	0	1	0	2	3	1	2	1	3	0	1	0	0	0	1
Equity.....	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2	0	1	0	0	0	0
Nonequity.....	1	1	0	1	0	0	0	0	0	0	0	0	1	3	1	1	0	1	0	0	0	0	0	1
Automotive.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2
Equity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2
Chemistry.....	1	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
Equity.....	1	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Nonequity.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

NT = non-Triad (country or region other than United States, Europe, or Japan)

NOTES: Data are annual counts of new technology alliances formed by domestic and multinational corporations worldwide. Alliances may be classified in more than one technology. Biotechnology includes biotechnological pharmaceuticals. Chemistry excludes biotechnology and includes nonbiotechnological pharmaceuticals. Country assignment based on headquarters of ultimate parent company of alliance members, not on location of members. Total number of alliances at top of table is sum of following exclusive ownership categories: U.S. only, U.S.-Europe, U.S.-Japan, U.S.-NT, Europe only, Europe-Japan, Europe-NT, Japan only, Japan-NT, and NT only. Special groupings: U.S. owned worldwide = sum of U.S. only, U.S.-Europe, U.S.-Japan, U.S.-NT; Europe owned worldwide = sum of Europe only, U.S.-Europe, Europe-Japan, Europe-NT; Japan owned worldwide = sum of Japan only, U.S.-Japan, Europe-Japan, Japan-NT; NT owned worldwide = sum of NT only, U.S.-NT, Japan-NT, Europe-NT.

SOURCE: Maastricht Economic Research Institute on Innovation and Technology, Cooperative Agreements and Technology Indicators (CATI-MERIT) database, special tabulations.