

TABLE S8-9

USPTO patents and patent families granted in basic communication processes, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families			
World	2,621	4,161	2,722	4,704	3,005	4,073	3,291	4,114	3,444	3,992	3,554	4,099	3,622	4,012	3,253	3,995	4,268	4,432	4,093	4,552	3,956	3,898	4,189	4,148	4,777	4,731	4,525	4,990	4,516	4,982	4,971	5,098	5,047	4,918	4,645	4,382	4,644	4,921	4,335	5,025	3,724	4,612	
North America	1,340	1,401	1,401	1,330	1,603	1,220	1,795	1,307	1,869	1,330	1,949	1,339	1,896	1,339	1,691	1,068	2,116	1,854	2,046	1,296	1,841	1,354	1,076	1,900	1,055	2,137	1,940	1,954	952	1,940	1,192	1,053	2,051	1,080	2,187	1,923	838	1,923	644	1,594	644		
Canada	37	27	39	38	61	48	62	51	59	39	62	32	74	51	67	27	62	36	76	41	67	38	57	37	89	47	82	37	93	45	129	70	128	56	121	57	96	40	104	44	72	25	
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	2	1	0	2	1	2	3	0	2	0	
Puerto Rico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	1,303	1,127	1,362	1,092	1,543	1,172	1,733	1,256	1,810	1,291	1,887	1,307	1,822	1,289	1,623	1,041	2,055	1,317	1,970	1,254	1,774	1,037	1,843	1,018	2,046	1,145	1,870	914	1,846	865	2,061	1,009	2,057	997	1,928	833	1,883	875	1,816	788	1,522	616	
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central and South America	2	2	2	0	0	1	0	0	0	0	1	0	0	0	0	0	2	2	1	1	1	2	1	3	4	5	3	3	4	7	6	4	6	4	6	4	5	8	6	4	5	8	6
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	4	0	
Brazil	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	2	3	4	2	1	3	4	6	5	4	4	4	3	5	4	3	5	4	6	6
All others	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	4	2	1	3	4	5	4	4	1	0	4	4	3	5	4	3	6	6
Europe	376	583	387	478	417	513	454	547	482	551	574	664	523	666	488	667	697	721	590	596	573	656	600	597	681	659	644	664	674	682	742	723	810	757	737	694	775	649	673	623	627	646	
EU	359	412	370	393	401	421	435	450	469	452	557	498	505	487	465	479	658	538	566	400	545	394	573	370	641	407	589	421	622	422	684	458	751	493	671	437	707	433	616	410	584	452	
Austria	4	5	6	9	7	2	6	8	5	24	16	23	26	18	24	34	42	34	26	20	41	18	42	31	56	45	43	35	32	28	32	49	45	45	43	40	47	40	51	39	44	31	
Belgium	2	3	3	1	6	1	7	3	7	2	6	2	8	1	10	7	8	3	9	8	6	7	9	4	14	6	10	5	17	3	11	5	10	3	13	6	13	6	10	4	16	9	
Denmark	1	2	5	1	3	3	4	3	8	4	8	4	11	4	5	6	15	9	5	16	4	5	10	7	10	12	8	3	8	4	11	4	14	2	11	7	13	4	17	4	19	4	
Finland	23	26	21	14	12	21	27	37	35	29	41	27	25	29	28	20	29	21	26	16	29	12	12	11	30	16	22	11	13	6	22	18	11	16	21	15	21	20	12	21	10	14	10
France	68	81	82	69	80	74	65	88	71	65	74	98	86	83	68	92	87	90	87	75	81	76	90	55	94	56	89	76	134	82	148	102	118	61	126	61	113	54	93	56	87	77	
Germany	90	127	93	119	111	135	107	142	117	163	175	146	145	163	146	173	215	208	186	160	196	155	194	135	209	152	162	147	157	193	187	176	158	193	158	177	198	177	136	165	163		
Hungary	1	0	0	0	0	0	0	0	0	0	1	2	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	2	1	2	1	1	1	0	1	1	1	1	2	0
Ireland	7	10	3	4	5	2	6	3	5	3	13	8	11	6	14	9	18	5	19	5	18	9	8	3	13	4	18	7	16	8	19	4	29	16	16	26	13	21	16	18	13	22	12
Italy	43	51	30	70	46	69	53	46	49	34	39	33	42	33	27	42	22	33	22	33	25	39	17	41	20	39	23	33	19	39	13	59	16	45	10	53	48	49	44	29	44	29	
Netherlands	38	11	30	8	34	11	38	13	49	13	54	8	45	10	29	5	59	12	58	9	45	5	41	12	47	11	61	7	58	10	75	19	71	20	53	19	57	40	19	41	23		
Spain	0	10	1	6	2	1	3	3	0	3	1	6	1	6	1	7	3	9	2	8	3	7	8	5	15	2	10	8	11	6	11	5	11	6	11	5	6	5	7	7	7	7	
Sweden	19	27	28	29	34	34	46	38	41	40	36	49	35	33	32	11	37	16	24	7	24	15	29	15	29	17	45	25	39	23	42	17	46	8	28	8	42	12	40	26	4	4	
United Kingdom	62	38	65	43	60	51	72	51	79	55	90	75	76	67	78	73	97	82	82	41	61	44	78	53	82	45	81	52	88	43	89	57	107	59	91	59	106	61	83	44	83	56	
All others	1	22	2	21	1	16	1	16	1	16	3	14	2	11	4	16	6	22	8	23	6	18	14	15	16	14	16	20	18	19	14	25	44	12	24	25	24	29	20	25	9	24	
Other Europe	17	170	17	85	17	92	20	96	14	99	17	166	18	179	23	188	38	183	28	262	28	262	27	227	39	253	56	243	52	260	59	265	59	264	66	257	58	216	68	213	44	194	
Former Soviet Union	1	4	0	2	0	1	1	1	0	3	0	10	0	16	0	1	7	0	15	0	18	0	19	0	33	1	22	5	18	5	39	2	10	4	39	2	10	4	9	4	12	17	
Norway	2	1	1	3	1	0	4	3	3	3	2	3	1	2	1	3	6	4	7	1	7	1	1	8	5	5	2	7	7	5	9	6	8	4	11	4	12	5	4	6	1	1	
Russia	5	156	4	74	4	78	6	85	2	90	3	147	2	134	4	158	3	152	6	227	6	184	7	207	6	201	16	216	6	204	9	223	6	204	9	175	10	178	6	160			
Switzerland	9	8	12	5	12	13	10	6	9	4	12	6	15	6	18	11	28	19	15	12	21	17	22	23	25	39	15	21	11	35	16	42	17	39	19	40	21	30	12	30	15		
All others	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	2	0	2	0	3	2	2	2	2	1	1	4	2	1	4	2	3	4	9	6	1	1	1	
Asia	869	2,383	913	3,054	955	2,285	1,014	2,218	1,061	2,081	983	2,059	1,166	1,977	1,025	2,212	1,400	2,325	1,404	2,626	1,488	2,133	1,640	2,452	1,895	2,839	1,863	3,339	1,839	3,351	1,939	3,257	1,945	3,061	1,761	2,760	1,797	3,306	1,654	3,518	1,418	3,281	

TABLE S8-9

USPTO patents and patent families granted in basic communication processes, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families		
China	2	9	5	5	4	25	5	20	7	32	9	76	8	130	10	116	20	114	20	163	42	209	41	610	67	607	75	746	112	947	123	902	148	857	157	1,084	196	1,526	184	2,061	188	1,891
India	1	1	3	2	3	3	6	7	9	6	19	13	18	10	36	21	37	23	18	40	15	48	23	76	34	49	24	60	92	62	99	67	97	55	135	102	102	51	84	43		
Japan	694	1,803	729	1,813	739	1,680	806	1,787	855	1,659	756	1,463	876	1,287	713	1,055	907	1,182	853	1,443	886	1,256	916	1,320	966	1,506	1,016	1,721	988	1,598	1,014	1,525	953	1,358	886	908	819	791	723	737	623	808
Malaysia	0	0	1	1	4	3	1	1	3	3	1	1	2	5	5	6	9	11	10	8	7	5	6	11	12	11	8	11	9	10	11	17	18	10	13	10	20	20	12	15		
Singapore	10	10	6	6	16	15	10	8	10	7	12	6	17	12	10	6	19	12	28	15	23	8	34	10	38	17	25	8	22	11	21	7	31	9	29	9	22	8	27	14	18	
South Korea	109	480	119	1,162	128	487	128	245	115	239	116	341	136	334	144	722	225	796	235	755	277	467	319	278	386	314	379	440	333	433	343	354	347	379	302	292	319	457	345	426	262	357
Taiwan	52	79	49	66	59	73	56	149	62	136	70	158	109	200	106	286	186	190	218	221	211	169	274	206	351	348	307	388	313	319	349	372	278	396	294	412	278	248	207	229	158	
All others	1	1	0	0	2	0	2	2	0	0	0	0	1	0	1	0	0	0	1	1	0	1	1	0	1	1	3	0	1	1	1	1	2	1	1	1	4	3	3	2		
Middle East	26	24	17	20	23	23	24	21	23	19	32	29	27	18	35	27	39	18	36	25	32	25	37	29	51	26	45	25	52	26	81	29	83	34	74	22	72	35	69	33	59	28
Israel	26	24	17	19	23	22	24	21	22	18	31	28	26	17	33	26	38	18	36	25	31	25	35	27	50	26	43	20	49	20	71	21	71	67	15	64	29	60	28	55	27	
All others	0	0	0	1	0	2	1	0	1	1	0	1	1	2	2	1	1	1	0	1	0	2	2	0	1	2	5	2	5	8	8	11	7	7	7	8	7	9	5	4	0	
Africa	0	1	1	2	3	2	1	1	0	3	1	1	1	2	1	2	1	2	1	2	1	2	0	1	0	2	4	1	2	2	5	0	6	4	3	4	3	5	4	4		
South Africa	0	0	0	0	2	1	0	1	0	0	1	0	1	0	1	0	2	0	1	1	0	2	1	0	2	1	0	2	1	0	0	2	0	0	0	1	1	0	0	1	1	
All others	0	1	1	2	1	1	1	0	0	3	1	1	0	2	0	0	1	0	1	1	0	0	1	0	2	1	0	1	0	2	4	0	5	4	2	1	2	3	4	4		
Australia and Oceania	8	2	4	2	3	2	2	3	7	6	14	6	9	7	12	6	14	8	16	7	19	5	11	10	9	8	11	5	6	7	12	5	10	7	10	7	9	6	8	5	12	2
Australia	5	2	4	2	3	1	2	3	5	5	12	5	8	6	13	7	13	6	14	7	17	5	9	10	6	5	8	3	5	9	4	7	8	7	9	6	7	5	11	2		
New Zealand	3	0	1	0	0	1	0	0	2	1	3	1	1	1	2	1	1	1	3	1	2	0	2	0	3	3	3	1	2	1	0	1	0	2	0	0	0	1	1	1	0	
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Unclassified	0	13	0	19	0	28	1	17	1	2	0	1	0	2	0	13	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	2	0	0	0	0		

EU = European Union; USPTO = U.S. Patent and Trademark Office.

Note(s)

USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2012) is used to fill in missing information on priority patents using information in successive filings within the patent families (see technical documentation for details). Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in the year for which its output is accounted. The EU includes 28 member countries. China includes Hong Kong.

Source(s)

Science-Metrix; PATSTAT, accessed April 2019; PatentsView, USPTO, accessed June 2019.