

Patent Cooperation Treaty Yearly Review 2017

The International Patent System





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The International Patent System

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Acknowledgements Further information

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Online resources

The electronic version of the review, as well as the images and underlying data used to compile all figures and tables, can be downloaded at www.wipo.int/ipstats. This webpage also provides links to the IP Statistics Data Center – offering access to WIPO's statistical data – and the IP statistical country profiles.

The following other patent resources are available on the WIPO website:

- **PCT homepage** – WIPO's gateway to PCT resources for the public, applicants and offices
- **PCT newsletter** – PCT monthly publication containing information about the filing of PCT applications and news about changes relating to the PCT
- **PATENTSCOPE** – enables the search and download of published PCT applications and national/regional patent collections. Also provides access to related patent and technology information programs and services.

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Key numbers

Number (Trend) ¹	Description
618,500 (+3.8%)	PCT national phase entries ²
233,000 (+7.3%)	PCT applications filed
50,838 (+4.5%)	Applicants ³
125 (-7)	Countries in which PCT applications were filed
57% (-0.1 percentage points)	Share of PCT national phase entries in worldwide non-resident filings
30.5% (+0.9 percentage points)	Share of PCT applications with women inventors

1. Trends correspond to annual growth rates in percentages, in volume or in percentage points.
2. The latest available year for PCT national phase entry data is 2015.
3. "Applicants" refers to first-named applicants in published PCT applications.

Special theme: how applicants time their international patent filings

A large proportion of applicants wishing to have a short patenting process will likely choose to file their applications directly at foreign patent offices. However, the PCT route remains a relevant option for applicants wishing to file in a large number of countries as well as for those who may decide that they want more time before seeking patent protection in a foreign jurisdiction. The PCT System also allows applicants to defer their main patenting costs and will provide them with valuable information on the potential patentability of their inventions.

PCT applications are usually subsequent filings claiming priority on one or more patent applications filed, at most, 12 months earlier. A PCT application can also be an initial filing. In any case, the date of the initial or earlier filing is known as the priority date. The International Bureau (IB) publishes the PCT application shortly after the expiration of 18 months from the priority date, unless the applicant requested an early publication or the application has been withdrawn.

For the vast majority of PCT contracting states, applicants must have entered the national phase of the PCT before the end of the 30th month from the priority date. Some offices allow longer time limits; these include the European Patent Office (EPO; 31 months), the State Intellectual Property Office of the People's Republic of China (SIPO; 32 months) and the office of the Canadian Intellectual Property Office (CIPO; 42 months). Most patent offices also allow applicants, under certain conditions, to request a restoration or reinstatement of rights of priority in case applicants failure to file the PCT application or enter the national phase within prescribed time limits.

This special theme analyzes the proportions in which applicants accelerated part of their patenting process by filing a PCT application before the 12-month limit from the priority date or by entering the national phase before the 30-month limit. The vast majority of applicants take advantage of the additional time offered by the PCT. However, others do not, and prosecute their patents more quickly. In general, applicants face a trade-off in timing their PCT applications. On the one hand, they typically file patent applications at an early stage in the research and development process,

when the technological and commercial potential of inventions remains highly uncertain. By making full use of the 30-month limit, they can gain valuable information to reduce this uncertainty and make more informed decisions. On the other hand, applicants may be interested in fast patent grant processing in order to commercialize underlying technologies, including through licensing, or in order to be able to enforce their rights. Different applicants balance this trade-off differently, depending on the life cycle of their innovations, their business models and various kinds of institutional incentives.

Data for 20 countries of origin are presented in this special theme. In addition to the top 10 origins in terms of PCT filings, 10 countries were selected to increase the diversity in terms of world regions and income groups. Data for PCT national phase entries (NPEs) are taken from WIPO's PCT NPE data collection and EPO's PATSTAT database for offices for which NPE data were available over the past 20 years.⁴

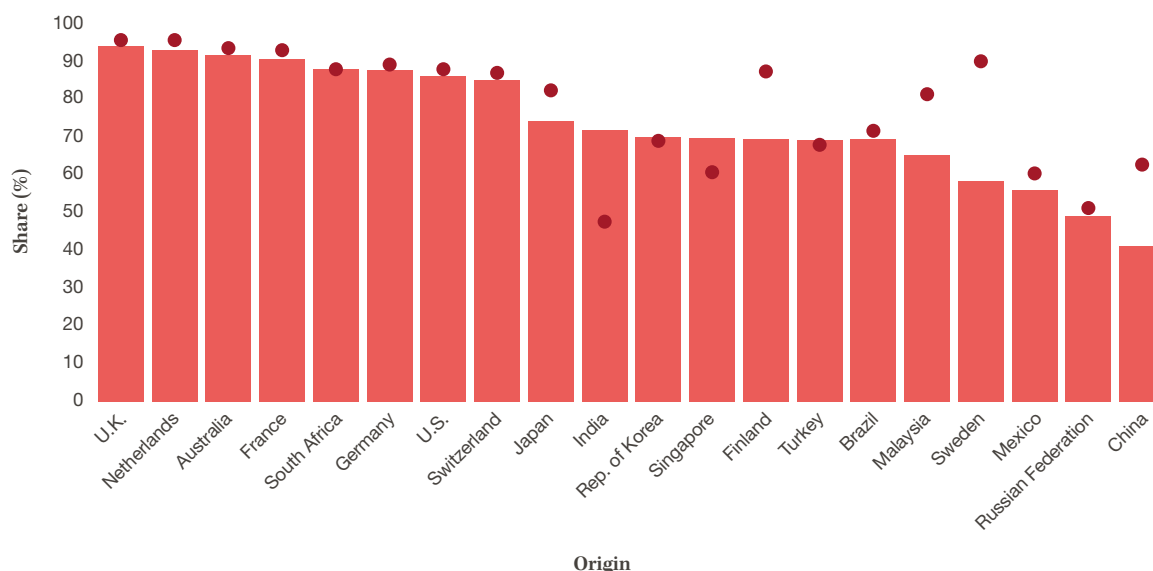
The international phase: from filing to publication

Generally, applicants seeking patent protection using the PCT System file a patent application with their national or regional office and then, 12 months later, file an international application under the PCT that claims the priority of the earlier application. These applications are published by the IB, usually between the sixth and seventh month from the date of filing of the PCT application (figure C4). When applicants file their PCT applications less than 12 months after the priority date, their applications will be published more than seven months after the international filing, unless the applicant requested an early publication.

4. Data for the following offices of PCT NPEs were used: Australia, Canada, Costa Rica, Cuba, Egypt, Eurasian Patent Organization, EPO, Georgia, Germany, India, Israel, Japan, Malaysia, Mexico, Morocco, New Zealand, Philippines, Republic of Korea, Russian Federation, South Africa, Thailand, Tunisia, Ukraine, United Arab Emirates, United Kingdom and United States of America.

Figure 1

Share of PCT applications published within seven months from the international filing date for selected origins



■ 2007 - 2016 ■ 1997 - 2006

Source: WIPO Statistics Database, April 2017.

Figure 1 shows, for a selection of 20 origins, the share of PCT applications published within seven months from the international filing date, for two periods of 10 years. For the period 2007–16, applicants from eight countries filed the vast majority of their PCT applications very near the deadline of 12 months from the priority date, as they had over 85% of PCT applications published within seven months. Among these countries, the United Kingdom (U.K.; 94%), the Netherlands (93%) and Australia (92%) had the highest shares. Their 2007–16 shares remained stable compared to their shares for 1997–2006. Changes in shares were more pronounced for most of the nine countries, with shares varying from 58% to 75% in the period 2007–16. For example, the shares for Sweden and Finland decreased by 32 and 18 percentage points, respectively, between the two periods, while the share for India increased by 24 percentage points. The countries with the lowest shares of applications published within seven months were China (41%), the Russian Federation (49%) and Mexico (56%). Compared to 1997–2006, their 2007–16 shares decreased.

Eight of the 10 countries with the highest shares in 2007–16 were high-income countries. In contrast, with the exception of Sweden, the seven countries with the lowest shares were all middle-income economies.

In both periods, all countries in Asia and in Latin America and the Caribbean (LAC) had shares below 80%, whereas, with the exception of Finland, the Russian Federation and Sweden, all countries in Europe had shares above 85%.

Almost 9% of PCT national phase entries are initiated before the time limit

The vast majority of applicants wait until the end of the time limit to enter the national phase (figure 2). For the period 2007–16, precisely 83% of NPEs were initiated between months 29 and 31. Among them, month 30 accounted for just over half (51%) of the total.

Figure 2

Distribution of PCT national phase entries per month from the priority date



■ 2007 - 2016 ■ 1997 - 2006

Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Those initiated before month 29 accounted for 8.8% of the total, of which about half took place between months 25 and 28.

Likewise, month 30 accounted for 53% of total entries in the period 1997–2006. The distribution across months remained almost unchanged between the two periods, except that the proportion of entries initiated between months 20 and 24 in the period 1997–2006 was much higher in 2007–16. This is mainly due to a PCT rule change that took effect in 2002 and increased the time limit to enter the national phase from 20 months to 30 months from the priority date for all PCT applications.⁵

Six of the 20 selected countries initiated over 10% of NPEs before month 29; among these countries, China (28%), the Russian Federation (23%) and Japan (21%) had by far the highest shares (figure 3). In contrast, France, Finland and the U.K. had less than 4% of the entries initiated within 28 months from the priority date.

For 18 of the 20 selected countries, the month which contributed the most to their cumulative shares was month 28. China had a high proportion of entries initiated within 12 months from the priority date. The Russian Federation had high proportions of entries initiated within 12 months and during month 19.

Shares of entries initiated before the time limit vary across fields of technology

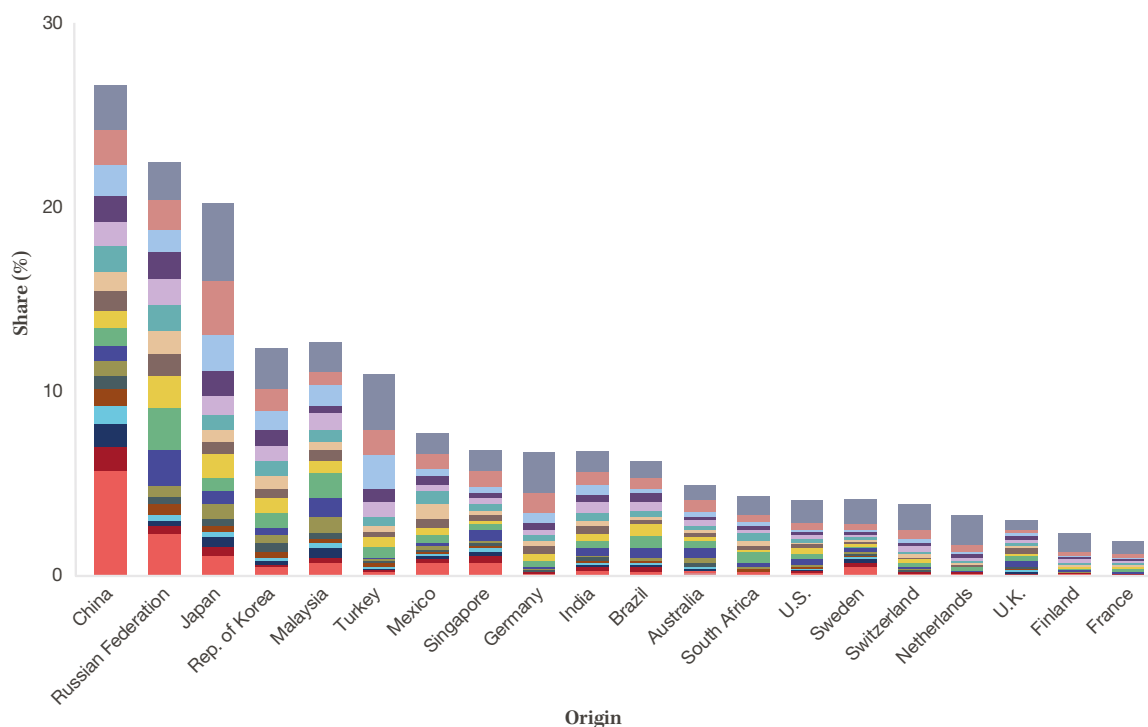
Figure 4 presents the cumulative share of entries initiated up to month 28 from the priority date for each of the 35 fields of technology.⁶ As indicated earlier, 8.8% of all entries were initiated before month 29 during the period 2007–16. Two-thirds of the 35 fields

5. Before this change, applicants had to file a Chapter II Demand to extend the time limit from 20 months to 30 months from the priority date.

6. Every patent application is assigned one or more International Patent Classification (IPC) symbols. If a patent application relates to multiple fields of technology, it is counted multiple times, once in each of the relevant fields of technology. Applications with no IPC symbol are not considered. Further details on the IPC technology concordance table are provided in an annex.

Figure 3

Cumulative shares of PCT national phase entries per month from the priority date for selected origins, 2007–16



were above this overall share. Optics, audio-visual technology, semiconductors, electrical machinery and basic communication were the fields with the highest shares of entries initiated before month 29, with shares ranging between 12.5% and 16%. With the exception of optics, all these fields belong to the electrical engineering sector; digital communication had the lowest share among the fields in this sector, with 8.5%.

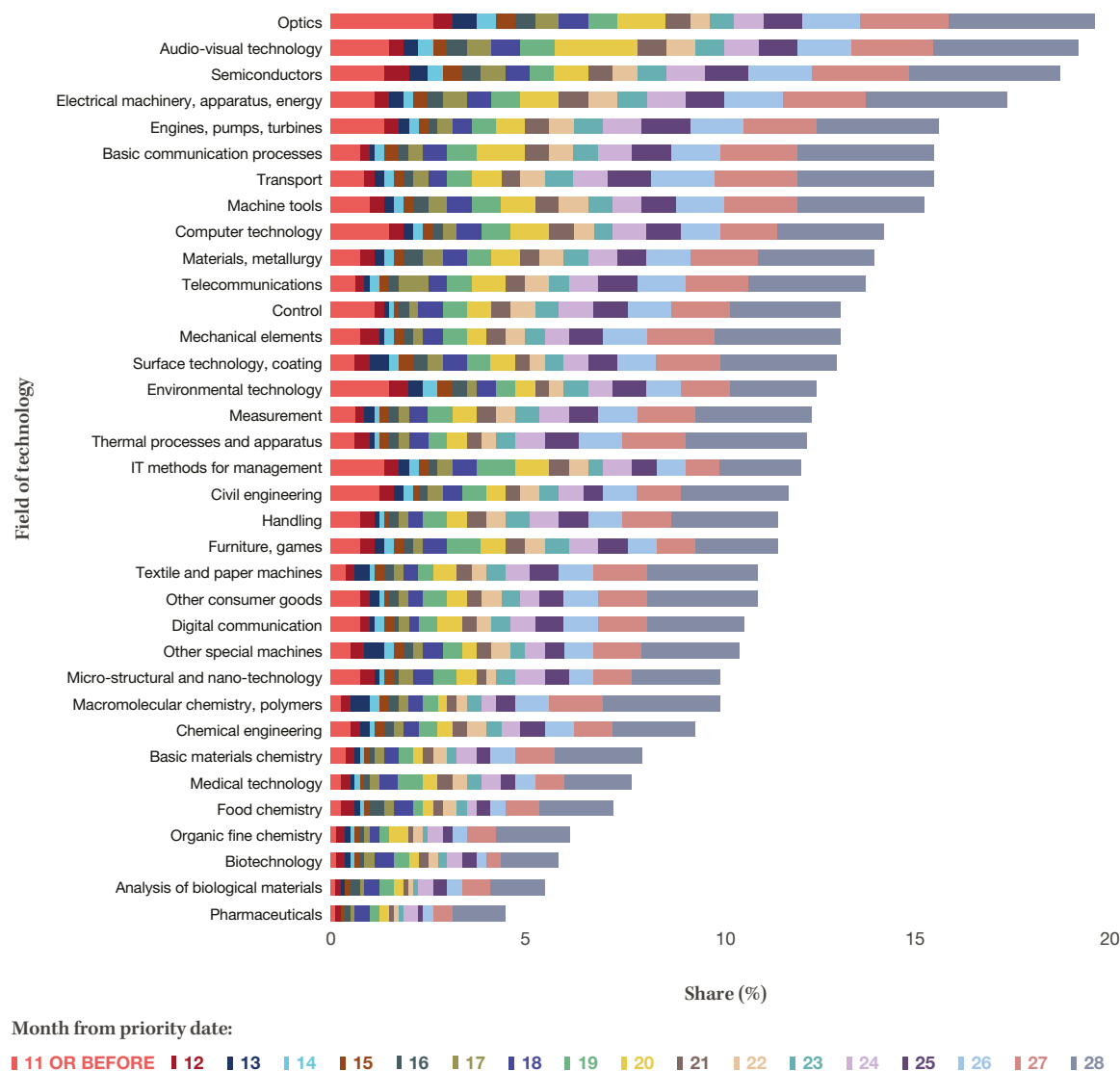
Eight of the 10 fields of technology with the lowest shares of NPEs initiated before month 29 belong to the chemistry sector, with shares varying from 3.5% to 8.1%. The two exceptions were analysis of biological materials (4.4%) and medical technology (5.9%), both from the instrument sector. In the chemistry sector, pharmaceuticals (3.6%), biotechnology (4.7%) and organic fine chemistry (4.7%) had the lowest shares.

For all fields of technology except pharmaceuticals, the shares of PCT NPEs before month 29 originating from China were above the overall average of 8.8% (figure 5). The three fields with the highest shares of entries initiated before month 29 were the same as for all origins combined, but their levels differed significantly. Applicants from China initiated the bulk of NPEs before month 29 for optics (70.4%) and for semiconductors (59.1%). More than a quarter of their entries were initiated earlier than month 29 for 21 of the 35 fields of technology. Most fields with shares below 25% belong to the chemistry sector; these include pharmaceuticals (8.5%), organic fine chemistry (10.1%) and biotechnology (11.7%).

In the case of Germany, the four fields with the highest cumulative shares belong to the mechanical engineering sector (figure 6). These fields are transport,

Figure 4

Cumulative shares of PCT national phase entries per month from the priority date by field of technology, 2007–16



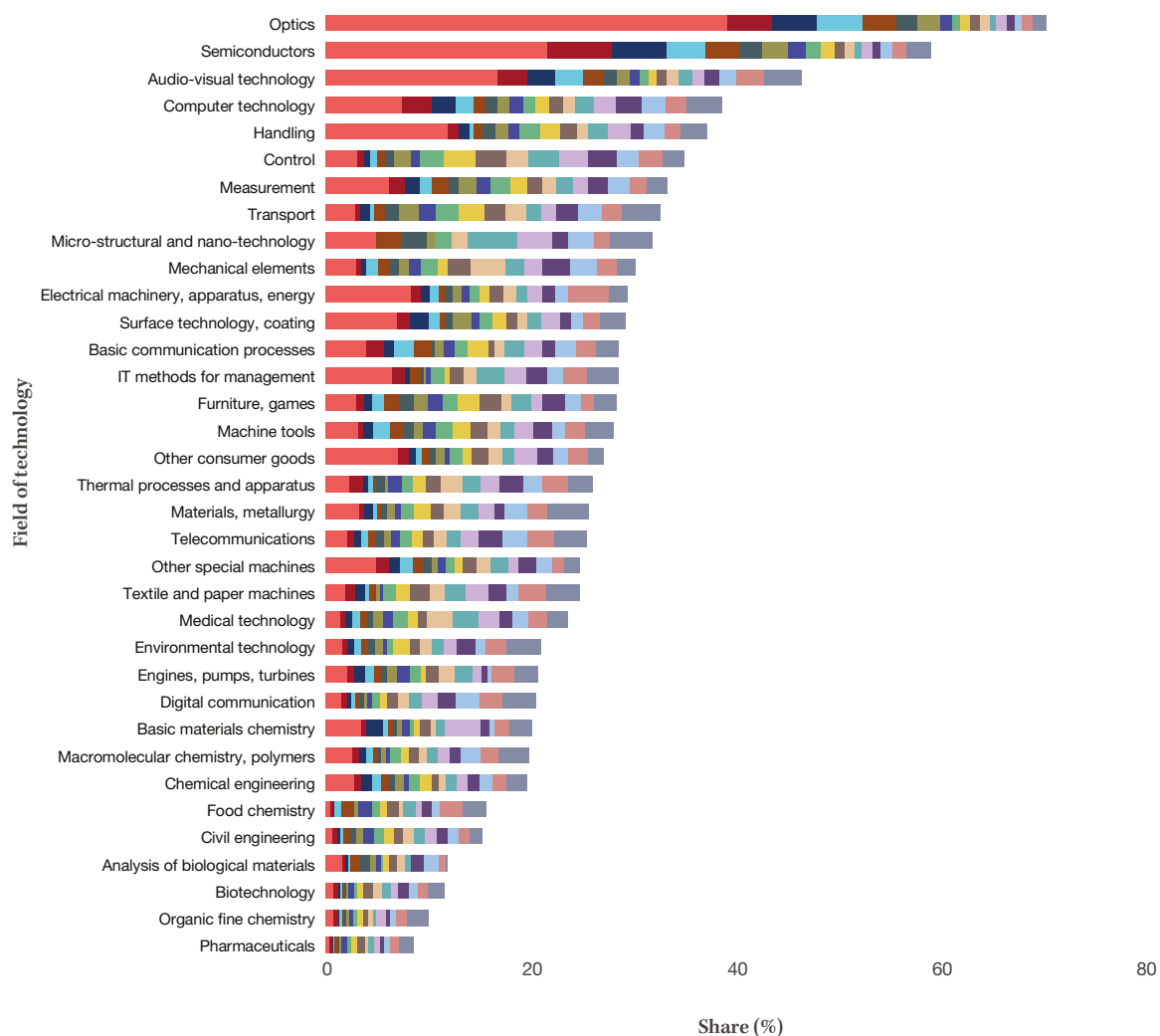
machine tools, engines, pumps, turbines and handling, and had shares ranging between 11.8% and 12.9%. Compared to all the selected origins combined, applicants from Germany have relatively low shares for optics (6.7%) and semiconductors (6.2%). The four fields with the lowest shares were macromolecular chemistry, food chemistry, pharmaceuticals and organic fine chemistry,

all of which belong to the chemistry sector and had shares ranging between 3% and 3.5% of total entries.

For nine fields of technology, applicants from Japan initiated more than a quarter of NPEs within 28 months (figure 7); among these fields, engines, pumps, turbines (30.3%) and civil engineering

Figure 5

Cumulative shares of PCT national phase entries per month from the priority date by field of technology for applicants from China, 2007–16



Month from priority date:

11 OR BEFORE 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

(29.9%) accounted for the highest shares of NPEs. These two fields were followed by four from the electrical engineering sector. Four of the five fields with the lowest shares were from the chemistry sector; these included pharmaceuticals (8.3%) and organic fine chemistry (10.4%). As with applications from China, all technologies except

pharmaceuticals had shares above the overall average share of 8.8%.

Applicants from the Republic of Korea had three fields of technology for which more than 20% of entries were initiated before month 29 (figure 8): electrical machinery (21.6%), macromolecular chemistry (21.5%) and chemical

Figure 6

Cumulative shares of PCT national phase entries per month from the priority date by field of technology for applicants from Germany, 2007–16



Month from priority date:

11 OR BEFORE 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

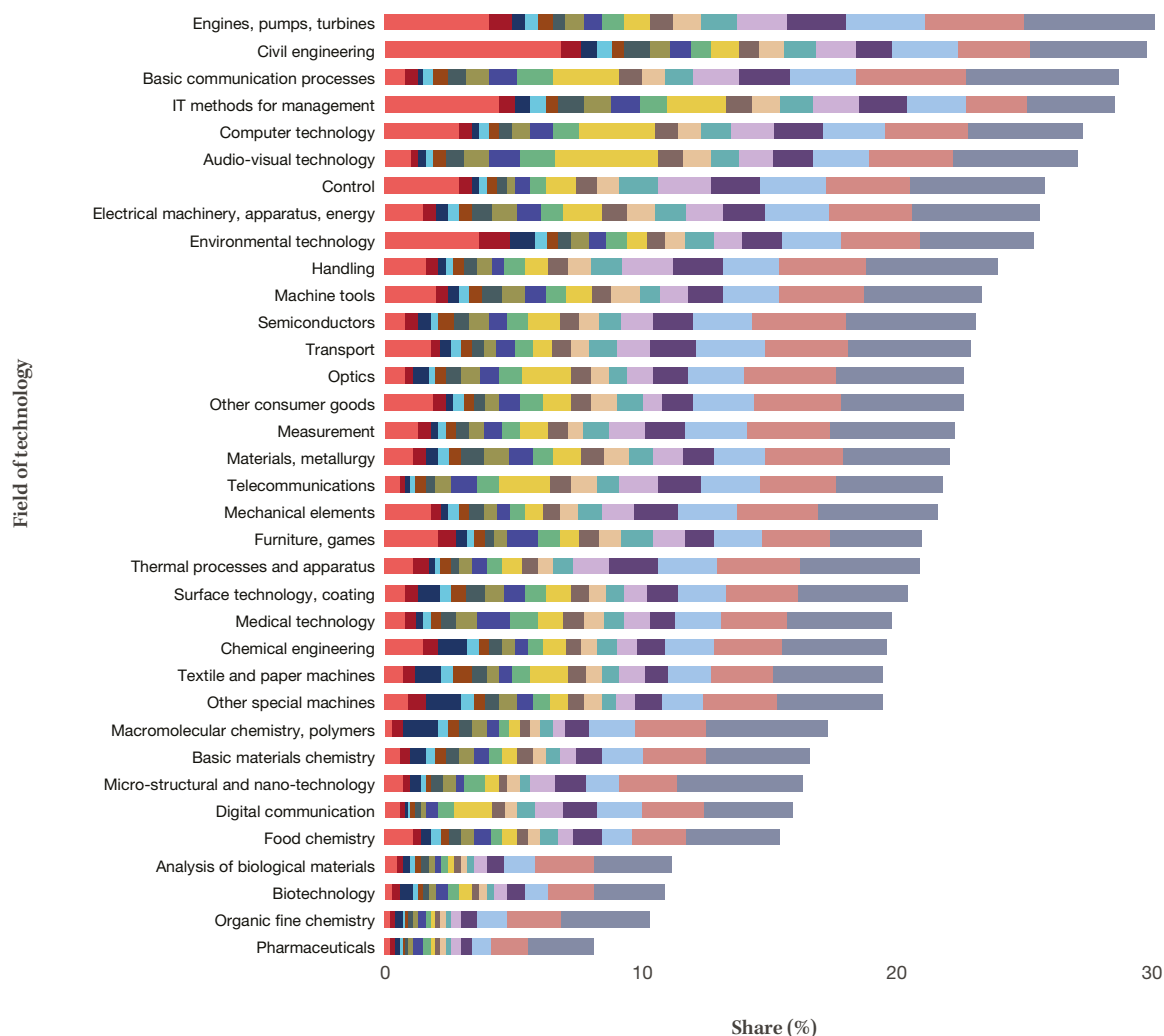
engineering (21.1%). The latter two fields, which belong to the chemistry sector, had much higher shares than their total shares for all 20 selected origins. The field with the lowest share was pharmaceuticals (5.3%), followed by audio-visual technology (7.5%) and telecommunications (9.5%), both from the electrical engineering sector.

Finally, applicants from the United States of America (U.S.) initiated less than 7% of entries before month

29 for all fields of technology except civil engineering (9.6%), and nearly a third of entries from this latter field were initiated during month 28 (figure 9). Civil engineering was followed by furniture, games (6.7%) and computer technology (6.5%). Fields in the chemistry sector mostly had shares below 5%, with pharmaceuticals (3%), organic fine chemistry (3.2%) and food chemistry (3.3%) having the lowest shares.

Figure 7

Cumulative shares of PCT national phase entries per month from the priority date by field of technology for applicants from Japan, 2007–16



Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Conclusion

Of the 20 selected origins, most countries in high-income economies and in Europe filed over 80% of their PCT applications within 12 months from the priority date. In contrast, most countries in middle-income economies or in Asia and LAC filed only between 40% and 80% of their PCT applications within this time limit.

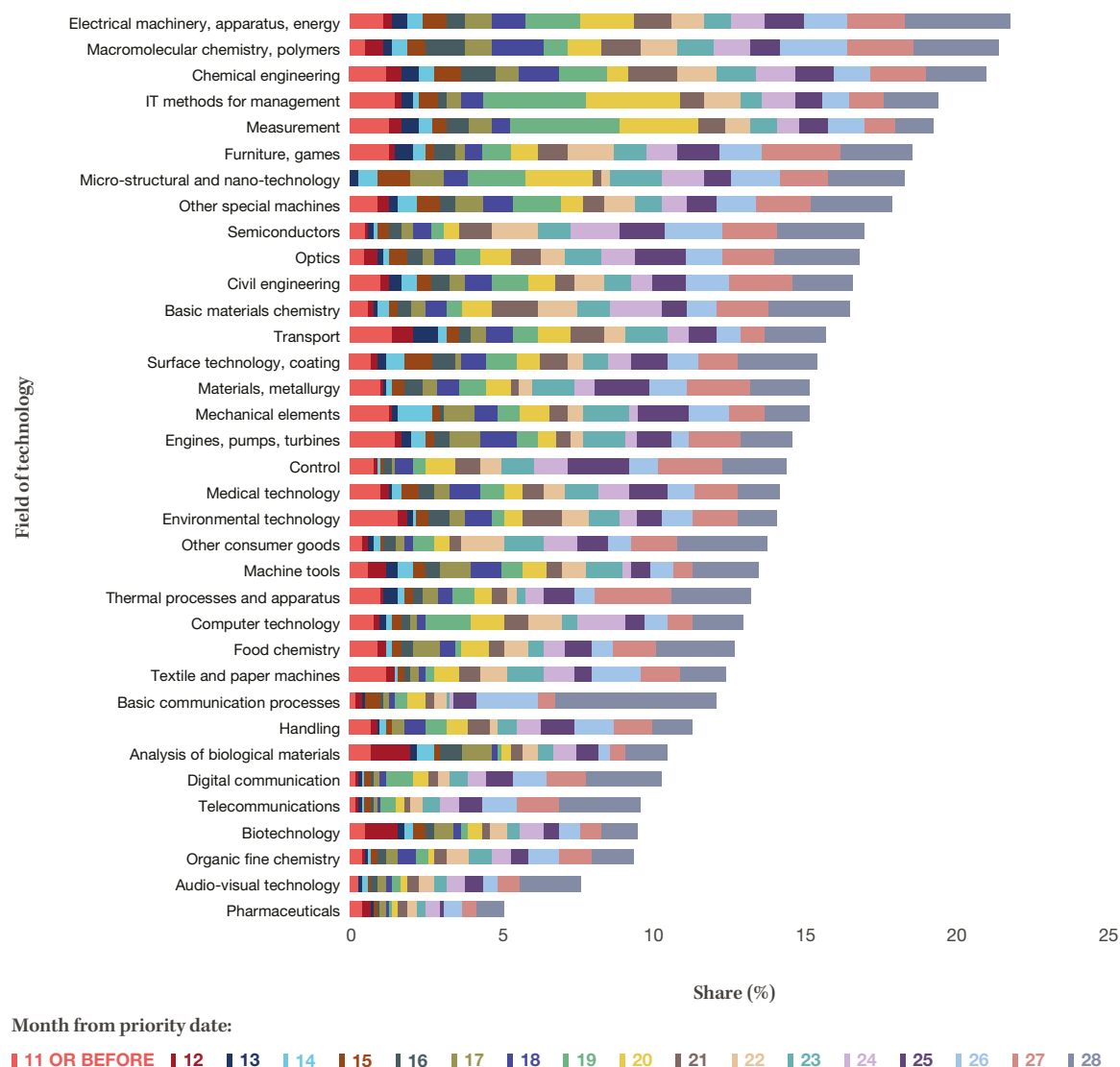
Overall, only 8.8% of NPEs during the period 2007–16 were initiated before month 29 from the priority date.

Six of the 20 selected origins had shares above this average, with China, Japan and the Russian Federation seeing between 21% and 28% of entries initiated on or before month 28. Whereas China and the Russian Federation had a high proportion of entries initiated within the first 12 months, all the other countries had a large proportion of entries initiated during month 28.

At the global level, four of the five fields of technology with the highest shares of NPEs initiated before

Figure 8

Cumulative shares of PCT national phase entries per month from the priority date by field of technology for applicants from the Republic of Korea, 2007–16



Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

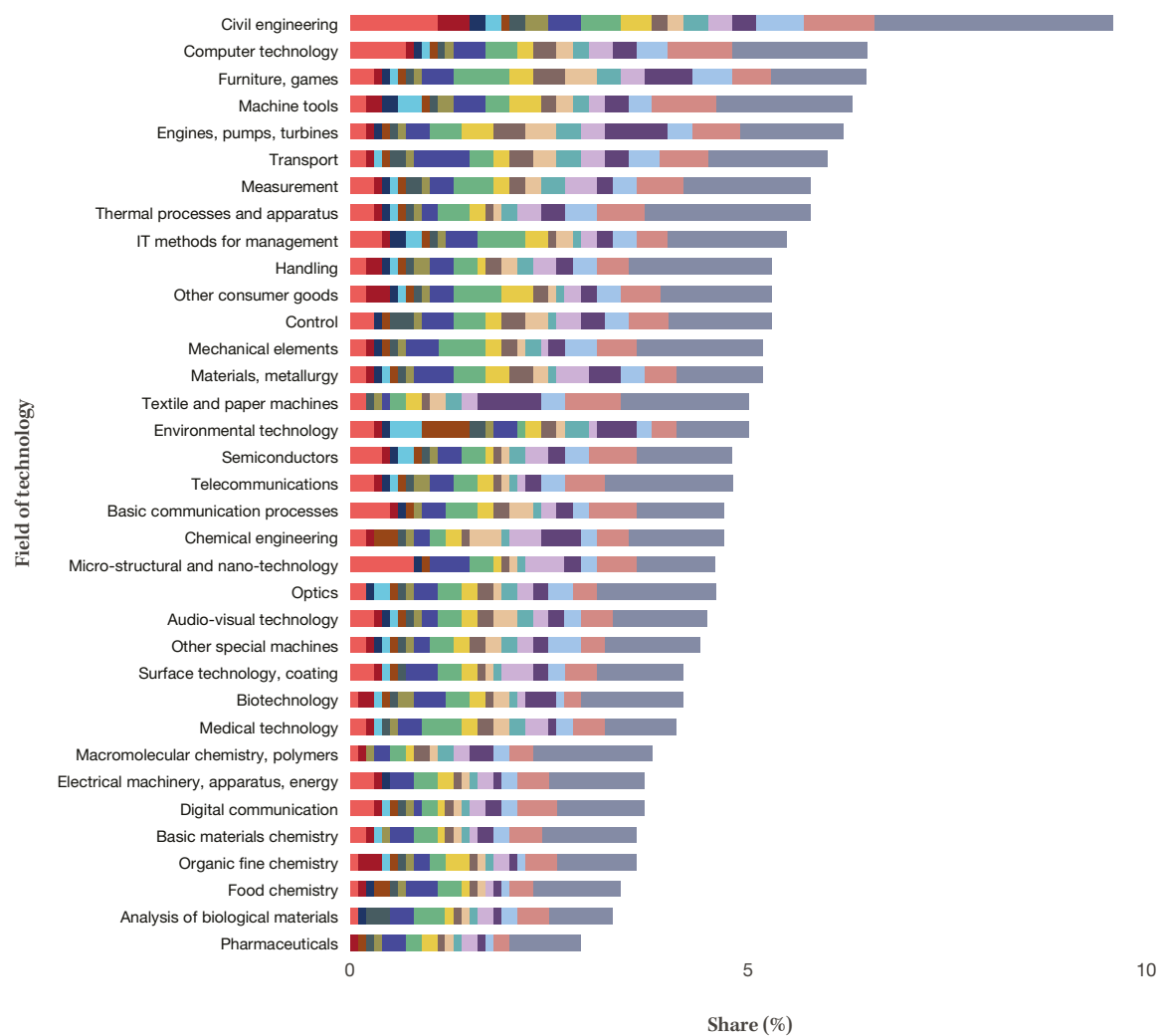
month 29 were from the electrical engineering sector. Optics, the field with the highest share overall, was the exception. In contrast, the chemistry sector accounted for eight of the 10 fields with the lowest shares. Pharmaceuticals and biotechnology, in particular, featured among the fields with the lowest shares overall and for each of the top five countries of origin of PCT NPEs individually. The explanation for this is likely to lie in the research and development cycles for these two technology sectors: commercializing a new

product usually takes much longer for pharmaceuticals than for audio-visual technology.

Among the top five origins, the three countries in Asia – China, Japan and the Republic of Korea – initiated a higher proportion of entries before month 29 for almost every field of technology than was initiated by either Germany or the U.S. This indicates that factors other than field of technology chiefly influence applicants' strategic decisions on when to enter the national phase of the PCT.

Figure 9

Cumulative shares of PCT national phase entries per month from the priority date by field of technology for applicants from the U.S., 2007–16



Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Section A

Statistics on the international phase: PCT applications

Highlights

A record year for PCT application filings in 2016

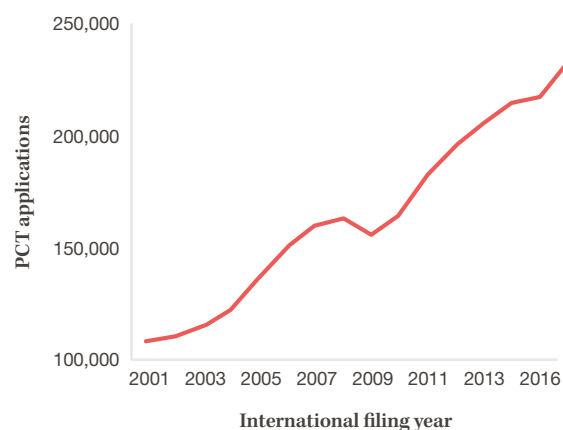
The number of international patent applications filed under WIPO's Patent Cooperation Treaty (PCT) grew by 7.3% in 2016 – the fastest increase since 2011 and the seventh consecutive year of growth. An estimated 233,000 PCT applications were filed (figure 10). More than 3.23 million international applications have been filed via the PCT System since it began in 1978. Filings have grown each year except 2009, when the global financial crisis caused a downturn.

The PCT System spans the globe

The PCT System included 151 member states in 2016. During that year, applicants based in 125 countries filed PCT applications, while 87 receiving offices (ROs) received at least one PCT application each, reflecting the wide geographical coverage of the System. The top 15 ROs – each with at least 1,000 PCT applications – accounted for 96% of all applications filed in 2016. With 56,679 filings, the United States Patent and Trademark Office (USPTO) received the highest number of PCT applications; it was followed by the Japan Patent Office (JPO) with 44,513, the State Intellectual Property Office of the People's Republic of China (SIPO) with 44,473 and the European Patent Office (EPO) with 35,309.

Figure 10

Trend in PCT applications



Source: Standard figure A1.

Who were the largest users of the PCT System in 2016?

Applicants based in the U.S. filed the largest number of PCT applications in 2016 with 56,595, followed by applicants from Japan (45,239), China (43,168), Germany (18,315) and the Republic of Korea (15,560) (figure 11). China has posted double-digit annual growth rates in applications since 2002 and, if the current trend continues, it will overtake the U.S. within the next two years to become the largest user of the PCT System.

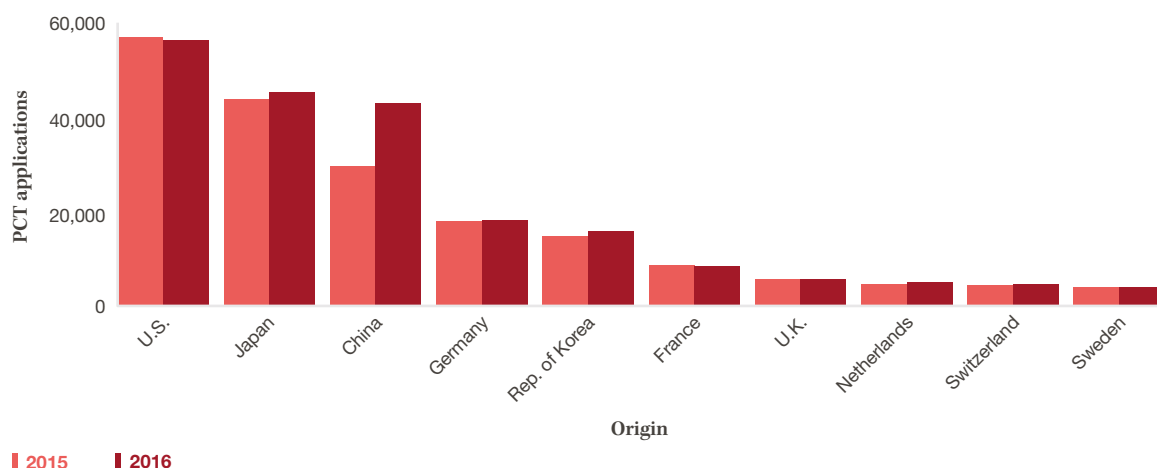
Although applicants from 125 countries filed PCT applications in 2016, most applications originated in just a few countries. Combined, applicants from China, Japan and the U.S. filed more than three-fifths of all PCT applications (62%). When filings from Germany and the Republic of Korea are added to that total, these top five countries filed 76.8% of all PCT applications. The share of the top five countries increased from 66.3% in 2002 to 76.8% in 2016, driven mainly by growth in filings by applicants from China and Japan.

The top 20 origins include 18 high-income countries – mostly European – and two middle-income countries, namely China and India (1,529 applications). Beyond the top 20 origins, other large middle-income countries with notable numbers of PCT applications were Turkey (1,068), the Russian Federation (851), Brazil (568), Mexico (288) and South Africa (287) (table A26). Applicants from low-income countries filed 18 PCT applications, with filings from Senegal (7) and the Democratic People's Republic of Korea (4) accounting for the highest numbers.

Fifteen of the top 20 origins received more PCT applications in 2016 than in 2015. China recorded extraordinary growth (+44.7%), while Italy (+9.3%), Israel (+9.1%), India (+8.3%) and the Netherlands (+8%) also saw strong increases (figure A8). In contrast, Canada (–17.3%) – for the second consecutive year – saw a substantial decline in filings, linked to declining numbers of applications filed by Research in Motion/Blackberry and Nortel. Finland reported a decline in filings for the fourth consecutive year, while filings in Sweden have declined in each of the past three years. Ending a record 34 years of continuous growth, France (–2.5%) saw a drop in filings. The U.S. (–0.9%) was the only origin among the top five that saw its filings decline in 2016, and this followed a 7.1% fall in 2015.

Figure 11

PCT applications filed for the top 10 origins



Source: Standard figure A8.

Among large middle-income origins, Ukraine (+17.3%), Thailand (+16.5%) and Colombia (+13.8%) exhibited double-digit growth, while Malaysia (–28.8%), Mexico (–9.1%) and South Africa (–8.3%) saw considerable declines in filings.

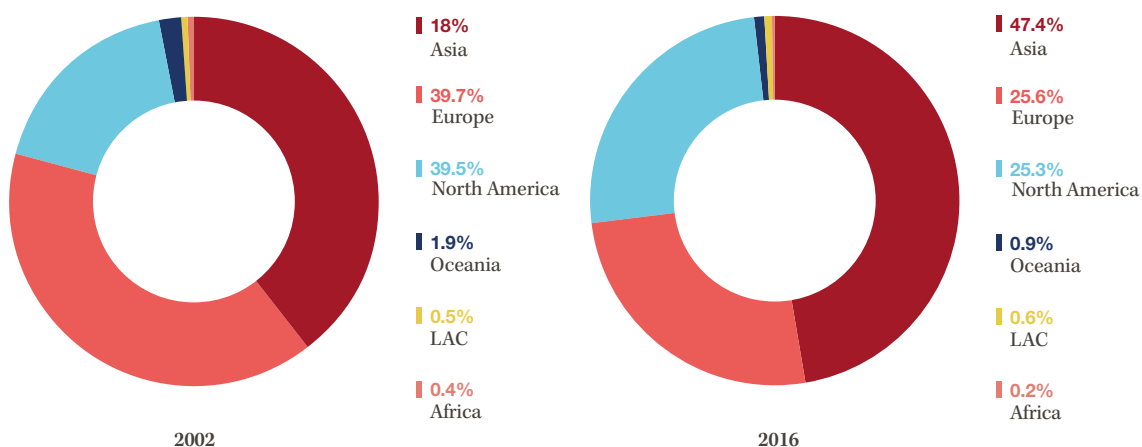
Shift toward Asia

Countries located in Asia accounted for 47.4% of all PCT applications in 2016, just short of the

combined share for Europe (25.6%) and North America (25.3%). The combined share for Africa (0.2%), Latin America and the Caribbean (0.6%) and Oceania (0.9%) was less than 2%. Asia's share increased from 18% in 2002 to 47.4% in 2016, mostly due to growth in filings from China, Japan and the Republic of Korea. Europe and North America each saw a 14-percentage-point decline in their shares over the same period (figure A3). If current trends continue, Asia will account for half of all PCT filings within the next two years.

Figure 12

PCT applications filed by region



Source: Standard figure A3.

The business sector accounted for the bulk of PCT filings

In total, 210,454 PCT applications were filed by 50,838 applicants and published by the International Bureau (IB) in 2016, representing 4.7% growth in published applications on the previous year. The business sector accounted for 85.5% of all published PCT applications, followed by individuals (7.5%), the university sector (5%) and the government sector (1.9%). Over the past 15 years, the shares of the business and university sectors have trended upward, while that of the government sector has remained more or less stable.

However, there are considerable variations between countries. Businesses accounted for more than 90% of all published applications from Sweden (97%), Japan (95.8%), the Netherlands (93.3%), Finland (93.1%), Switzerland (92.7%) and Germany (91.5%). In contrast, the business sector shares for India (57.2%), Spain (58.3%) and Australia (68.8%) – also listed among the top 20 origins – were relatively low.

Among the top 20 origins, universities accounted for a large share of applications in Spain (13.6%), Israel (9%), Australia (8.9%) and the U.K. (8.6%). Government and research institutions were responsible for high shares of applications originating from India (9.5%), France (9.3%) and Spain (5.7%). Individuals accounted for almost one-third of all PCT applications filed by residents of India (31%), and almost one-quarter of those from Spain (22.4%).

Who were the top PCT applicants in 2016?

Business sector

Shenzhen-based telecoms companies ZTE Corporation (4,123 published PCT applications) and Huawei Technologies (3,692) were the two leading PCT applicants in 2016, with ZTE moving up two places to claim the top spot from Huawei Technologies (figure 13). They were followed by Qualcomm Incorporated of the U.S. (2,466), Mitsubishi Electric Corporation of Japan (2,053) and LG Electronics of the Republic of Korea (1,888). Seven of the top 10 applicants were located in Asia, and three in the U.S. Ericsson of Sweden – ranked 11th – was the highest-ranked European company.

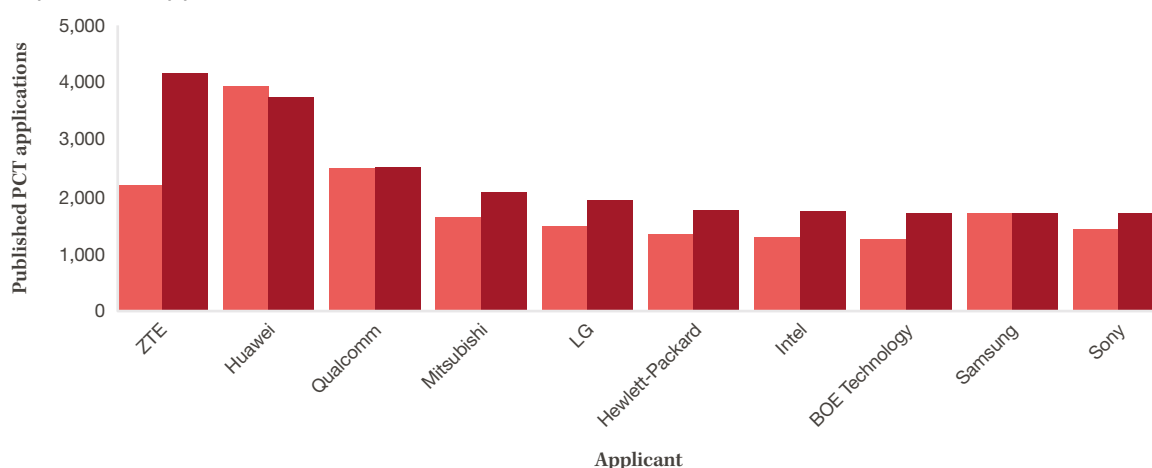
ZTE's 4,123 published applications in 2016 set a new record for the largest number of filings by an applicant in a single year. The growth in filings by Huawei and ZTE has been extraordinary: both companies only began using the PCT System in early 2000, and within a decade they have become its top applicants.

Applicants from just eight origins made up the top 50 list in 2016. Japan had the highest number from a single country with 18, followed by the U.S. (13), Germany (6), China (5), the Republic of Korea (3), two each from France and the Netherlands, and one from Sweden.

Field of technology data for the top 10 applicants show that Huawei Technologies of China, LG Electronics of the Republic of Korea, Qualcomm Incorporated of the U.S., Samsung Electronics of the Republic of Korea and ZTE of China filed mainly in digital communication;

Figure 13

Top 10 PCT applicants



■ 2015 ■ 2016

Source: Standard figure A15.

BOE Technology of China filed mainly in semiconductors; Hewlett-Packard and Intel Corporation (both of the U.S.) filed mainly in computer technology; Mitsubishi Electric Corporation of Japan filed mainly in electrical machinery; and Sony Corporation of Japan filed mainly in audiovisual technology. The combined share for the top three technologies for each of these 10 applicants ranged from 47.1% for Mitsubishi Electric Corporation to 87.8% for Huawei Technologies.

University sector

Among educational institutions, the University of California was the largest user of the PCT System with 434 published PCT applications. It has maintained that position since 1993. Massachusetts Institute of Technology (236) ranked second, followed by Harvard University (162), Johns Hopkins University (158) and the University of Texas System (152). Seven of the top 10 universities are located in the U.S. Seoul National University of the Republic of Korea (122) – in sixth position – was the highest ranking non-U.S. university, while Japan's University of Tokyo (108) ranked seventh.

While the top 10 is dominated by U.S.-based institutions, the top 20 list comprises 10 U.S. and 10 Asian universities. China's Shenzhen University was in joint 13th position with 87 published PCT applications, making it the highest ranking Chinese university.

Government and public research organization sector

For the sixth consecutive year, the Commissariat à l'Énergie Atomique et aux Énergies Alternatives of France was the top PCT applicant in the government and public research organizations (PROs) sector with 329 published PCT applications. It was followed by the Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung of Germany (252) and the Agency of Science, Technology and Research of Singapore (162).

Applicants from 12 countries were represented in the top 30 list for 2016. The Republic of Korea had the highest number of applicants with eight, followed by the U.S. (6), China (4), three each from France and Japan, two from Germany, and one each from Australia, India, Malaysia, the Netherlands, Singapore and Spain.

PCT applications related to digital communication accounted for the largest share of the total

PCT applications span a wide range of technologies. The tendency to file patent applications differs across technologies, as some technologies depend more on the patent system than others. Digital communication (17,776) was the most frequently featured technology field in published PCT applications, followed by computer technology (17,155), electrical machinery (14,468) and medical technology (14,265). Each of these fields had more than 14,000 published PCT applications in 2016. Digital communication overtook computer technology – which held the top position in 2014 and 2015 – to become the top technological field. The top five technology fields (the four fields mentioned above plus measurement) accounted for 34.7% of all published PCT applications in 2016, considerably higher than the 2002 share (25.6%).

Among the top 10 technologies, medical technology (+12.8%), optics (+12.7%) and digital communication (+10.7%) saw the fastest growth. Electrical machinery (–1.3%) was the only field for which filings declined.

Among the top 10 origins, China, the Republic of Korea and Sweden filed mainly in digital communication; France and Germany in transport; the Netherlands and the U.K. in medical technology; Japan in electrical machinery; Switzerland in handling; and the U.S. in computer technology. The combined share of the top three technologies for the top 10 origins ranged from 19% for the U.K. to 46% for Sweden.

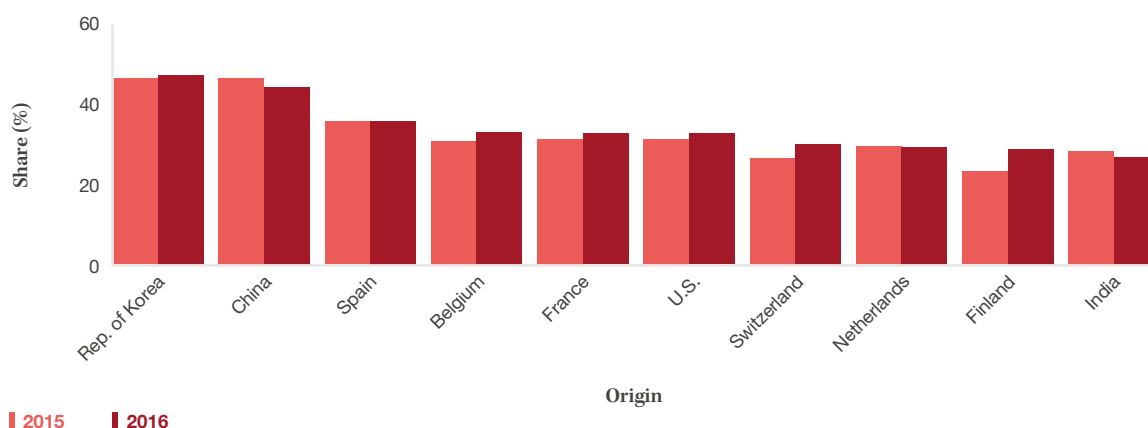
Among large middle-income countries, applicants residing in Brazil and South Africa filed mainly in civil engineering; India in pharmaceuticals; Malaysia in computer technology; Mexico in medical technology; the Russian Federation in engines, pumps and turbines; and Turkey in other consumer goods. For each of these seven origins, the combined share of the top three technologies ranged from 19% for Brazil to 42% for India.

The share of PCT applications with women inventors is rising

The share of PCT applications with women inventors increased from 21.9% in 2002 to 30.5% in 2016, but remains relatively low. In terms of volume, the total number of PCT applications with women inventors almost tripled between 2002 (24,184) and 2016 (70,857).

Figure 14

Share of PCT applications with women inventors for selected origins



Source: Standard figure A23.

Women's participation rate of 30.5% at the global level masks considerable variation in participation rates across countries. Among the top 20 origins, the Republic of Korea (46.6% of PCT applications with women inventors) and China (43.8%) were the most gender-equal (figure 14). Spain (35.4%), Belgium (32.8%), France (32.4%) and the U.S. (32.3%) also had high shares of PCT applications with women inventors. In contrast, Austria, Germany, Italy and Japan had the largest gender gaps among the top 20 origins.

Less than one-fifth of PCT applications from each of these countries included women inventors.

Technology fields related to the life sciences have high shares of women inventors in PCT applications. More than half of PCT applications in the fields of biotechnology (58.4%), pharmaceuticals (56.4%), organic fine chemistry (54.7%), food chemistry (51.1%) and analysis of biological materials (50.7%) included women inventors.

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Statistical table

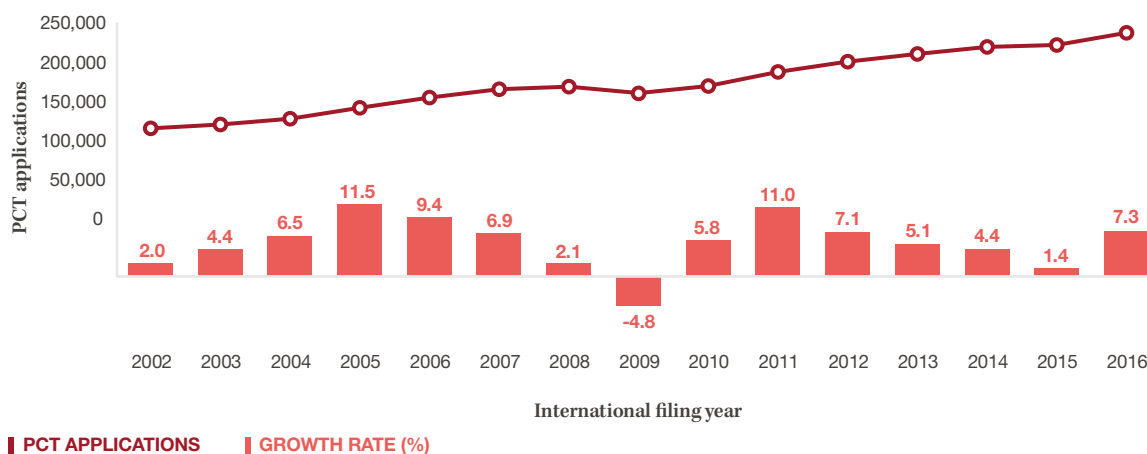
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Global trends in PCT applications

Figure A1

Trend in filings of PCT applications

PCT applications grew by 7.3% in 2016, the fastest growth since 2011.



■ PCT APPLICATIONS ■ GROWTH RATE (%)

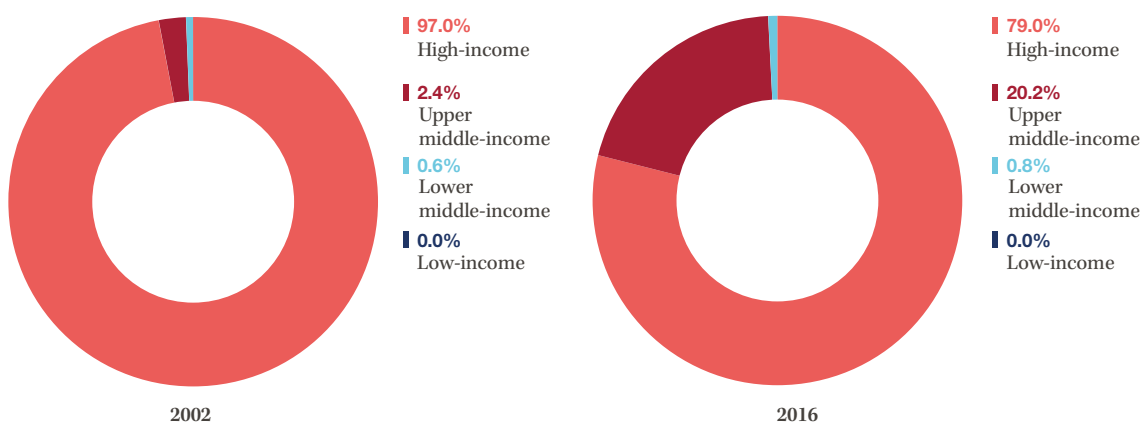
Note: Data for 2016 are WIPO estimates.

Source: WIPO Statistics Database, April 2017.

Figure A2

Distribution of PCT applications by income group

Upper middle-income countries have seen their share of all PCT applications increase considerably since 2002, mainly due to growth in filings from China.

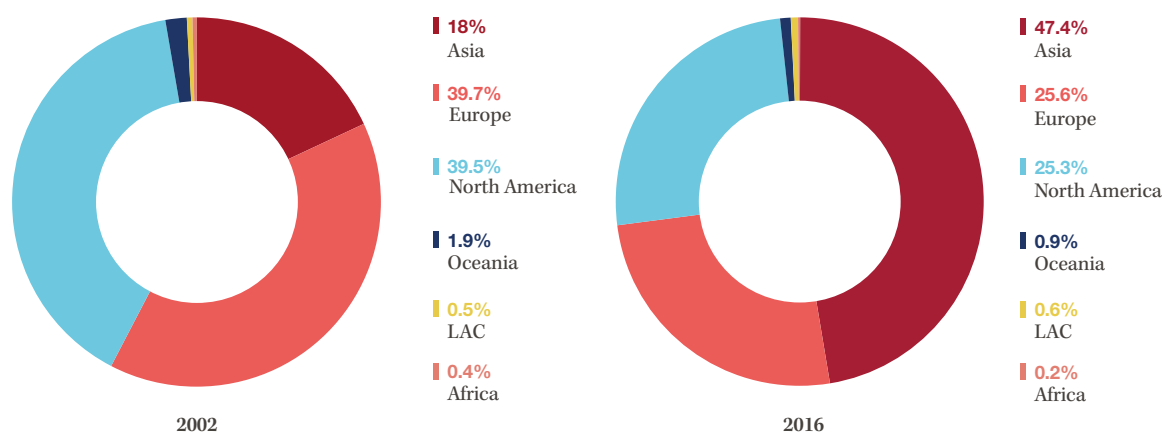


Note: Data for 2016 are WIPO estimates. Each category includes the following number of origins: high-income (55), upper-middle-income (39), lower-middle-income (30) and low-income (11). For information on income group classification, see the Data description section.

Source: WIPO Statistics Database, April 2017.

Figure A3

Distribution of PCT applications by region

Asia accounted for nearly half of all PCT applications filed in 2016.

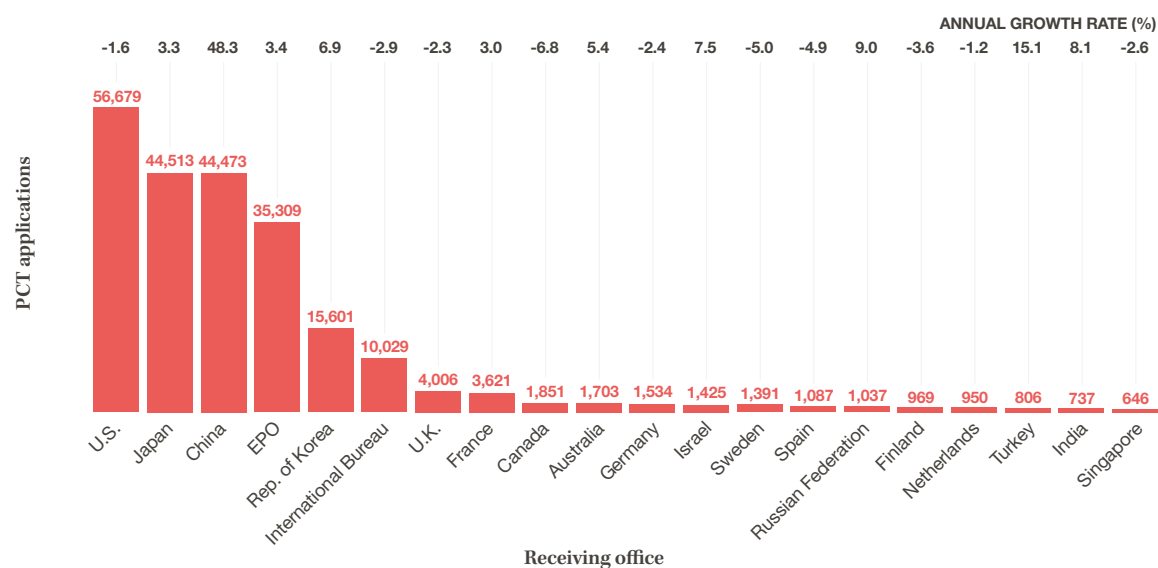
Note: Data for 2016 are WIPO estimates. Each region includes the following number of offices: Africa (29), Asia (35), Europe (43), Latin America and the Caribbean (LAC; 21), North America (2) and Oceania (5).

Source: WIPO Statistics Database, April 2017.

PCT applications by receiving office

Figure A4

PCT applications for the top 20 receiving offices, 2016

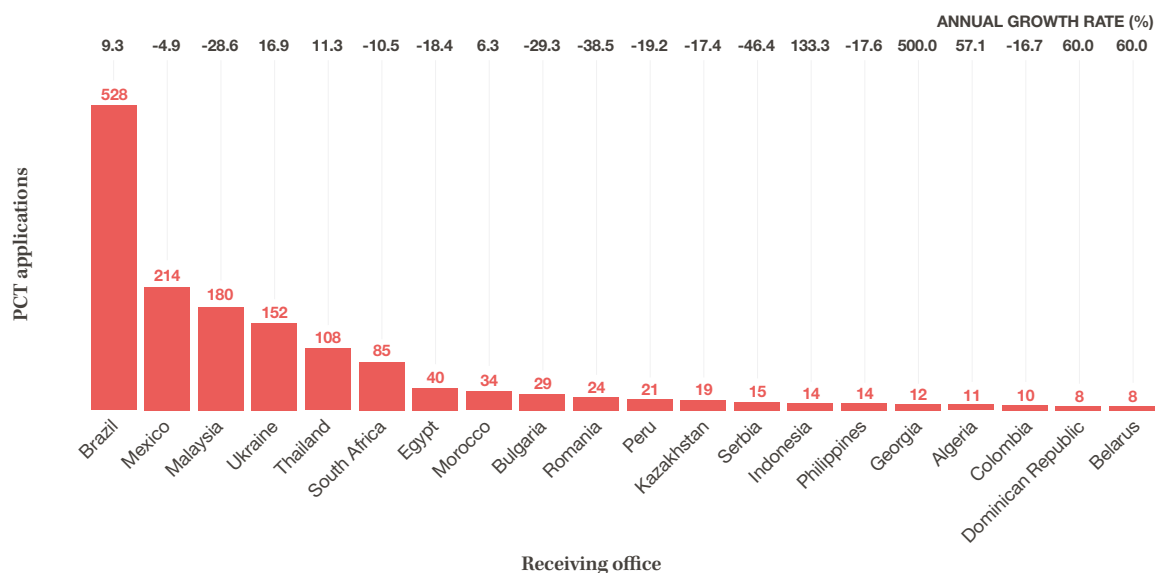
Despite a 1.6% decline on the previous year, the USPTO received more PCT applications in 2016 than any other office.

Source: WIPO Statistics Database, April 2017.

Figure A5

PCT applications for selected receiving offices of low- and middle-income countries, 2016

The office of Brazil received more than 500 PCT applications in 2016.



Note: The selected offices are from different world regions and income groups (low-income, lower-middle-income and upper-middle-income). Where available, data for all offices are presented in the statistical table A26.

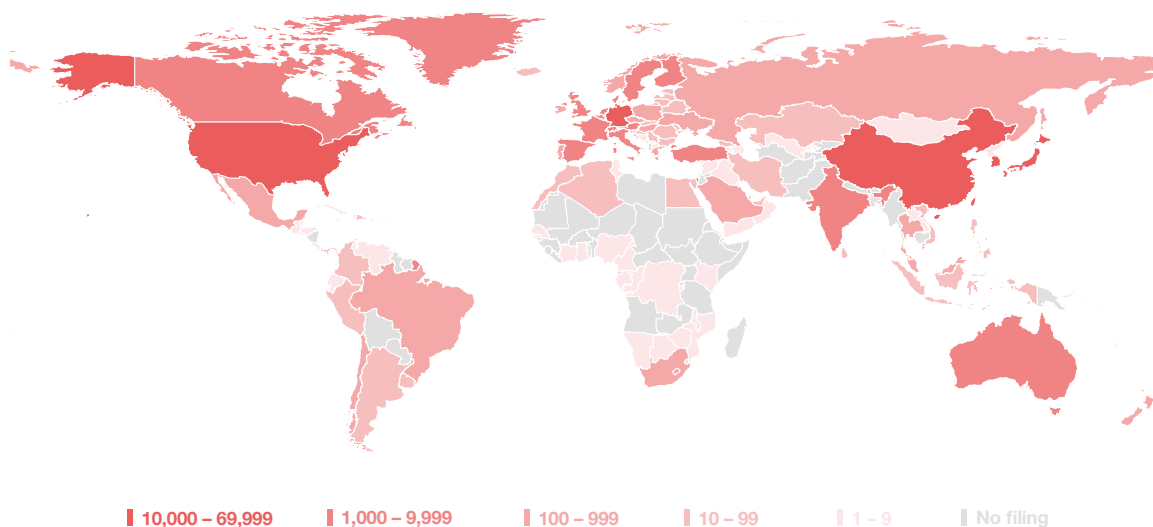
Source: WIPO Statistics Database, April 2017.

PCT applications by origin

Map A6

PCT applications by origin, 2016

PCT applications are highly concentrated among a few origins.



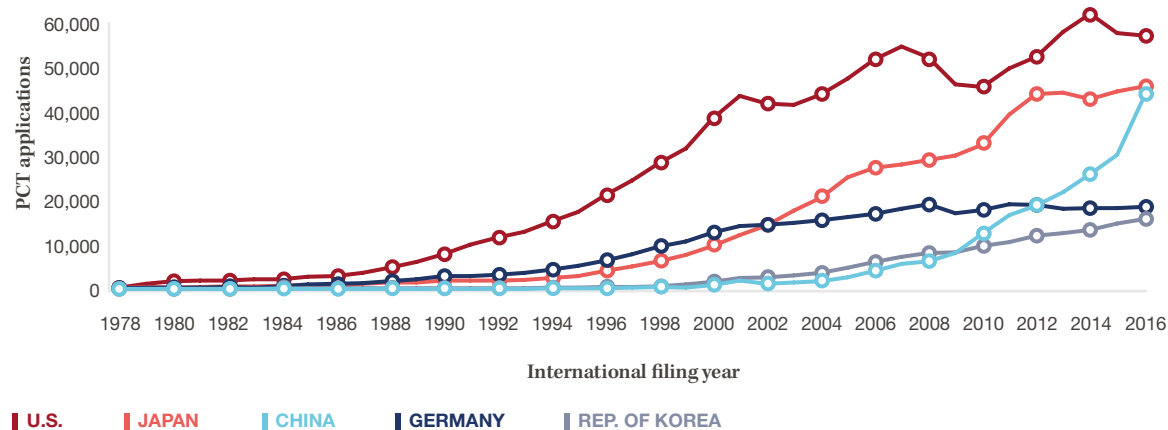
Note: Data for 2016 are WIPO estimates.

Source: WIPO Statistics Database, April 2017.

Figure A7

Trend in PCT applications for the top five origins

U.S.-based applicants have filed the largest number of PCT applications every year since the PCT System began in 1978.



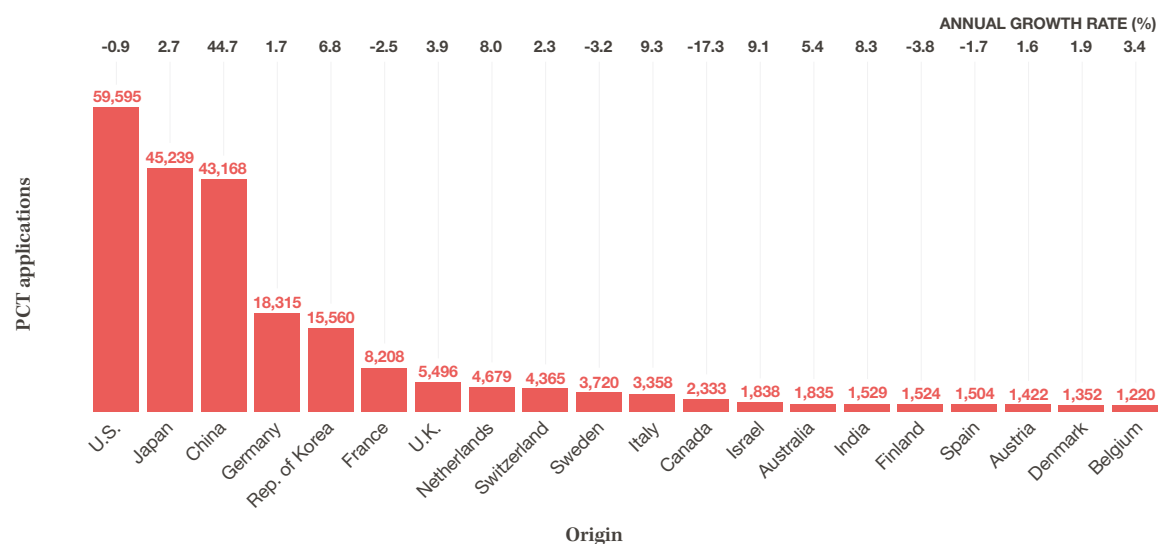
Note: Data for 2016 are WIPO estimates.

Source: WIPO Statistics Database, April 2017.

Figure A8

PCT applications for the top 20 origins by income group, 2016

China recorded extraordinary growth in PCT filings.



Note: Data for 2016 are WIPO estimates.

Source: WIPO Statistics Database, April 2017.

Table A9

PCT applications for the top countries by region

Among all regions, Asia and Latin America and the Caribbean saw the sharpest increases in PCT filings in 2016, with annual growth rates of 16.7% and 9.2%, respectively.

Region	Name	Year of international filing					Regional share 2016 (%)	Change from 2015 (%)
		2012	2013	2014	2015	2016		
Africa	South Africa	313	351	313	313	287	67.2	-8.3
	Egypt	46	50	47	58	43	10.1	-25.9
	Morocco	39	54	60	34	39	9.1	14.7
	Algeria	4	8	7	8	12	2.8	50.0
	Others	51	55	51	75	46	10.8	-38.7
	Total*	453	518	478	488	427	0.2	-12.5
Asia	Japan	43,523	43,771	42,381	44,053	45,239	41.0	2.7
	China	18,620	21,515	25,548	29,839	43,168	39.1	44.7
	Republic of Korea	11,787	12,381	13,119	14,564	15,560	14.1	6.8
	Israel	1,374	1,607	1,581	1,685	1,838	1.7	9.1
	India	1,310	1,321	1,429	1,412	1,529	1.4	8.3
	Singapore	714	838	940	908	879	0.8	-3.2
	Turkey	536	805	853	1,010	1,068	1.0	5.7
	Saudi Arabia	286	187	381	274	296	0.3	8.0
	Malaysia	292	308	313	267	190	0.2	-28.8
	Thailand	65	69	68	133	155	0.1	16.5
	Others	280	267	333	367	353	0.3	-3.8
	Total*	78,787	83,069	86,946	94,512	110,275	47.4	16.7
Europe	Germany	18,750	17,920	17,983	18,004	18,315	30.8	1.7
	France	7,802	7,905	8,261	8,421	8,208	13.8	-2.5
	United Kingdom	4,917	4,848	5,268	5,290	5,496	9.2	3.9
	Netherlands	4,078	4,188	4,206	4,334	4,679	7.9	8.0
	Switzerland	4,222	4,372	4,100	4,265	4,365	7.3	2.3
	Sweden	3,600	3,946	3,913	3,842	3,720	6.2	-3.2
	Italy	2,845	2,868	3,059	3,072	3,358	5.6	9.3
	Finland	2,312	2,095	1,811	1,584	1,524	2.6	-3.8
	Spain	1,705	1,705	1,705	1,530	1,504	2.5	-1.7
	Austria	1,319	1,262	1,387	1,399	1,422	2.4	1.6
	Others	6,632	6,939	6,973	6,924	6,939	11.7	0.2
	Total*	58,182	58,048	58,666	58,665	59,530	25.6	1.5
Latin America and the Caribbean	Brazil	588	657	580	548	568	38.3	3.6
	Mexico	188	233	284	317	288	19.4	-9.1
	Chile	120	142	142	166	197	13.3	18.7
	Barbados	168	149	173	125	114	7.7	-8.8
	Colombia	71	82	101	87	99	6.7	13.8
	Argentina	25	26	33	29	47	3.2	62.1
	Panama	13	12	18	15	60	4.0	300.0
	Peru	11	13	17	27	20	1.3	-25.9
	Others	94	71	69	45	91	6.1	102.2
	Total*	1,278	1,385	1,417	1,359	1,484	0.6	9.2
North America	United States of America	51,861	57,459	61,483	57,123	56,595	96.0	-0.9
	Canada	2,738	2,846	3,072	2,821	2,333	4.0	-17.3
	Total*	54,599	60,305	64,555	59,944	58,928	25.3	-1.7
Oceania	Australia	1,710	1,604	1,723	1,741	1,835	85.5	5.4
	New Zealand	303	322	348	358	307	14.3	-14.2
	Others	2	4	2	6	3	0.1	-50.0
	Total*	2,015	1,930	2,073	2,105	2,145	0.9	1.9
Unknown		30	50	198	162	211	n.a.	n.a.
Total		195,344	205,305	214,333	217,235	233,000	n.a.	7.3

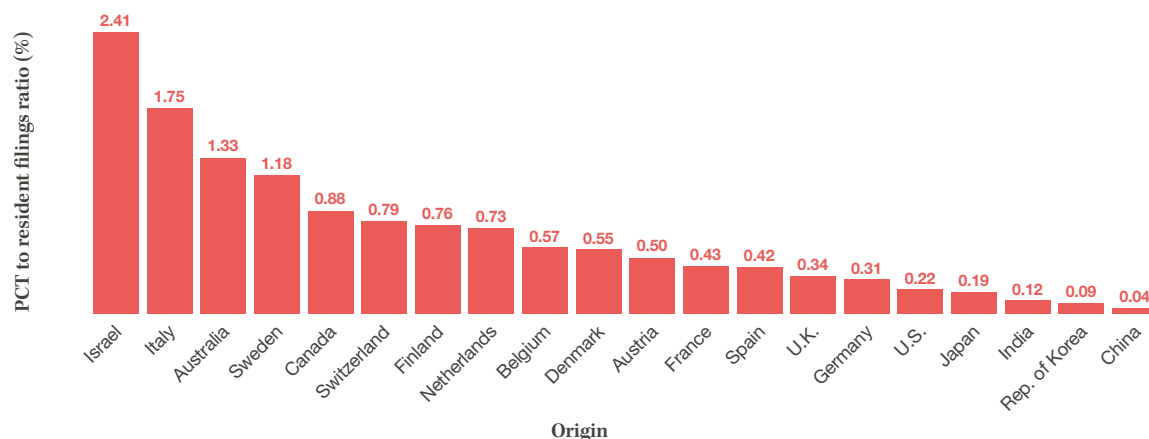
Note: * indicates share of world total, and n.a. indicates not applicable. Data for 2016 are WIPO estimates. This table shows the top countries in each region (with a maximum of 10 countries per region) whose applicants filed more than 20 PCT applications in 2016.

Source: WIPO Statistics Database, April 2017.

Figure A10

Conversion ratio of direct resident patent applications to PCT applications by origin, 2016

China, India and the Republic of Korea have low conversion rates of national/regional patent applications to PCT applications compared to European origins.



Note: Data for 2016 are WIPO estimates. This hypothetical “conversion ratio” reflects the proportion of direct resident patent applications converted into PCT applications. The ratio is defined for the top 20 origins in terms of PCT applications filed in 2016, divided by resident patent applications (including regional applications and excluding PCT NPEs) filed in 2015. In theory, the conversion ratio should be between zero and one. However, it may exceed one because some applications do not have priority claims associated with prior resident filings. For example, an Israeli applicant may forego filing an application at the Israel Patent Office and opt to file a first application at the USPTO, then convert that prior filing into a PCT application.

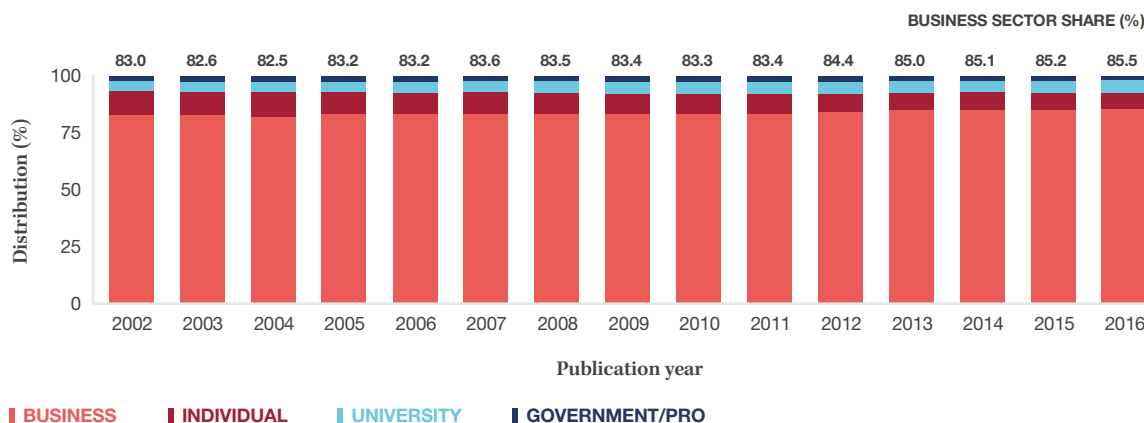
Source: WIPO Statistics Database, April 2017.

PCT applications by applicant type

Figure A11

Distribution of PCT applications by applicant type

The bulk of PCT applications are filed by businesses.



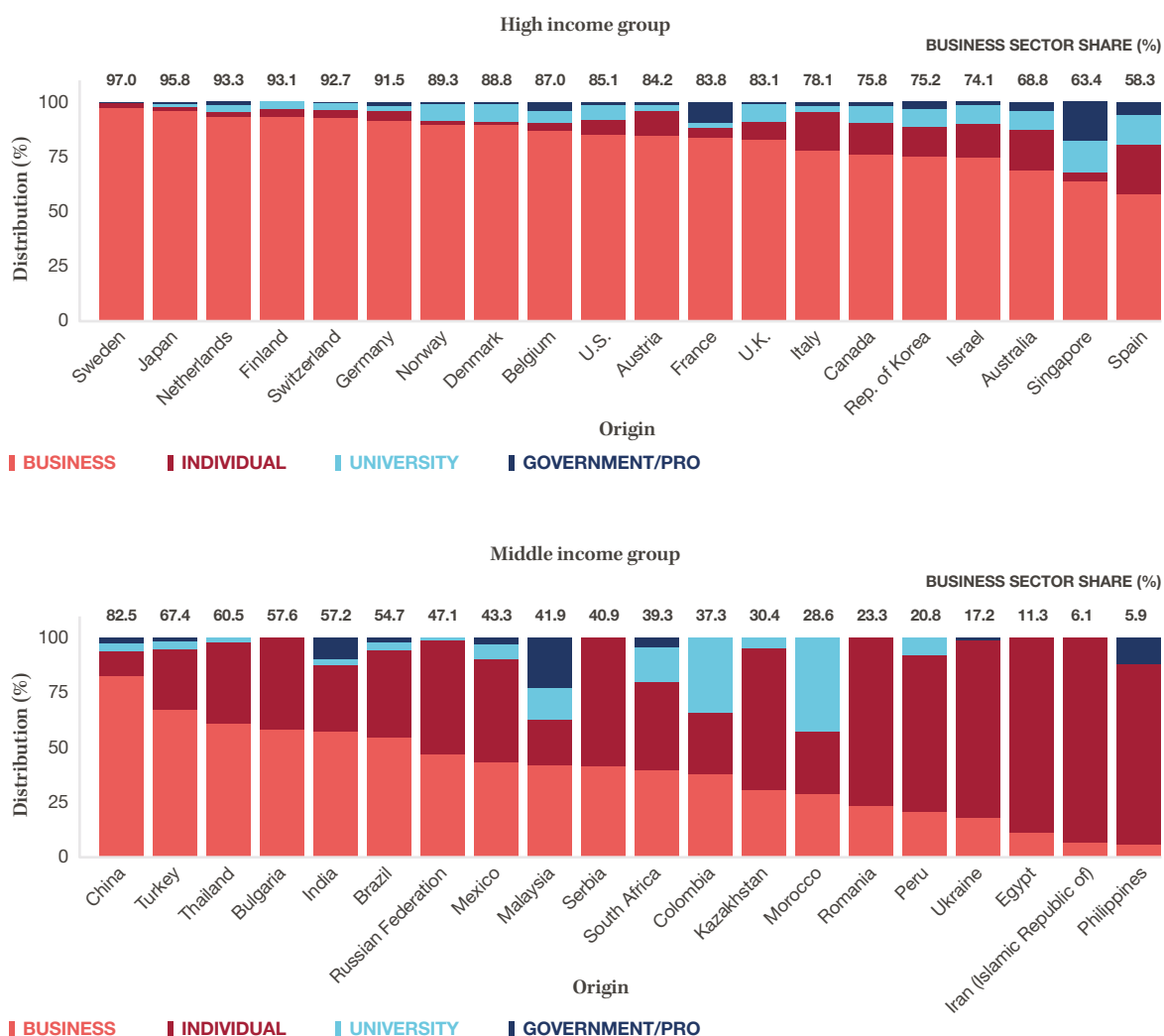
Note: The government and public research organizations (PROs) sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on the publication date.

Source: WIPO Statistics Database, April 2017.

Figure A12

Distribution of PCT applications by applicant type for the top 20 origins by income group, 2016

The share of the business sector in total PCT applications varies across origins.



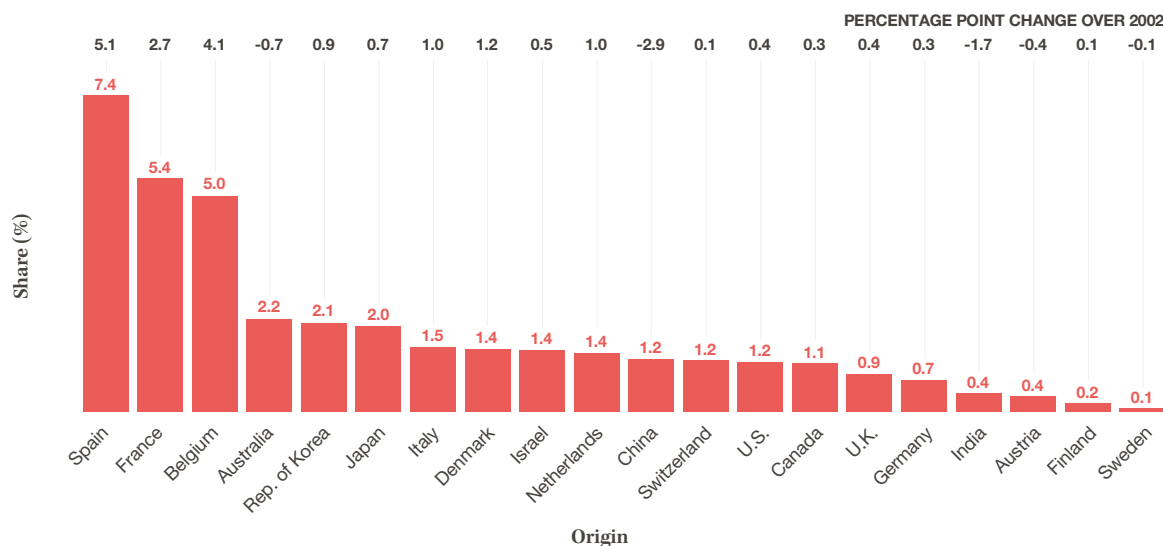
Note: The government and public research organizations (PROs) sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on the publication date.

Source: WIPO Statistics Database, April 2017.

Figure A13

Share of PCT applications with business and public sector co-applicants for the top 20 origins, 2016

Spain, France and Belgium exhibit high collaboration between the business and public sectors.



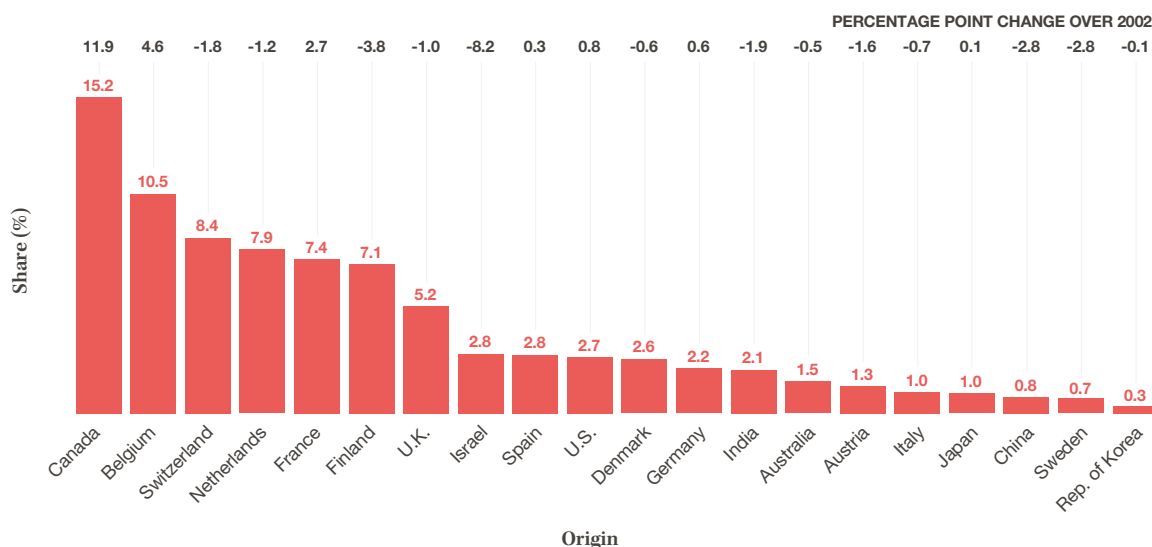
Note: The public sector comprises the universities sector and the government and public research organizations (PROs) sector. The government/PROs sector includes private non-profit organizations and hospitals. The university sector includes all educational institutions. For confidentiality reasons, data are based on the publication date.

Source: WIPO Statistics Database, April 2017.

Figure A14

Share of PCT applications with foreign co-applicants for the top 20 origins, 2016

A high proportion of PCT applications filed by applicants residing in Canada and Belgium include foreign co-applicants.



Note: Counts are based on corporate applicants only (excluding natural persons) and on all applicants named in PCT applications (not only the first-named applicant). For confidentiality reasons, PCT data are based on the publication date.

Source: WIPO Statistics Database, April 2017.

Top PCT applicants

Table A15

PCT applicants: top 50 businesses, 2016

ZTE set a new record for the largest number of filings by an applicant in a single year with 4,123 published applications in 2016.

Overall rank	Change in position from 2015	Applicant's name	Origin	Published applications	Change from 2015
1	2	ZTE CORPORATION	China	4,123	1,968
2	-1	HUAWEI TECHNOLOGIES CO., LTD.	China	3,692	-206
3	-1	QUALCOMM INCORPORATED	U.S.	2,466	24
4	1	MITSUBISHI ELECTRIC CORPORATION	Japan	2,053	460
5	2	LG ELECTRONICS INC.	Rep. of Korea	1,888	431
6	4	HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.	U.S.	1,742	432
7	5	INTEL CORPORATION	U.S.	1,692	442
8	6	BOE TECHNOLOGY GROUP CO., LTD	China	1,673	446
9	-5	SAMSUNG ELECTRONICS CO., LTD.	Rep. of Korea	1,672	-11
10	-2	SONY CORPORATION	Japan	1,665	284
11	-5	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,608	127
12	11	MICROSOFT TECHNOLOGY LICENSING, LLC	U.S.	1,528	668
13	0	ROBERT BOSCH CORPORATION	Germany	1,274	27
14	5	SHARP KABUSHIKI KAISHA	Japan	1,205	132
15	1	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,175	-10
16	11	SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY CO., LTD	China	1,163	453
17	-6	SIEMENS AKTIENGESELLSCHAFT	Germany	1,138	-154
18	-9	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	1,137	-241
19	-1	HALLIBURTON ENERGY SERVICES, INC.	U.S.	1,097	-24
20	12	OLYMPUS CORPORATION	Japan	1,077	463
21	1	NEC CORPORATION	Japan	1,056	161
22	-5	HITACHI, LTD.	Japan	1,047	-118
23	5	DENSO CORPORATION	Japan	986	282
24	-3	FUJIFILM CORPORATION	Japan	968	21
25	6	MURATA MANUFACTURING CO., LTD.	Japan	681	23
26	-2	LG CHEM, LTD.	Rep. of Korea	671	-68
27	2	3M INNOVATIVE PROPERTIES COMPANY	U.S.	653	-23
28	7	PROCTER & GAMBLE COMPANY	U.S.	624	78
29	-4	BASF SE	Germany	598	-137
30	-4	GOOGLE INC.	U.S.	584	-137
31	3	KABUSHIKI KAISHA TOSHIBA	Japan	484	-111
32	12	APPLE COMPUTER, INC.	U.S.	450	67
33	3	KONICA MINOLTA, INC.	Japan	449	-67
34	n.a.	ALIBABA GROUP HOLDING LIMITED	China	448	448
35	15	UNIVERSITY OF CALIFORNIA	U.S.	434	73
36	2	KYOCERA CORPORATION	Japan	427	-32
37	5	DOW GLOBAL TECHNOLOGIES INC.	U.S.	415	4
38	-5	SCHAEFFLER TECHNOLOGIES AG & CO. KG	Germany	406	-202
39	13	HITACHI AUTOMOTIVE SYSTEMS, LTD.	Japan	396	53
40	13	BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT	Germany	383	43
41	20	CORNING INCORPORATED	U.S.	379	61
42	5	NISSAN MOTOR CO., LTD.	Japan	375	7
43	4	MITSUBISHI HEAVY INDUSTRIES, LTD.	Japan	367	-1
44	-7	GENERAL ELECTRIC COMPANY	U.S.	364	-136
45	22	L'OREAL	France	361	76

(Continued)

(Continued)

Overall rank	Change in position from 2015	Applicant's name	Origin	Published applications	Change from 2015
46	52	SABIC GLOBAL TECHNOLOGIES B.V.	Netherlands	359	163
47	-32	TOYOTA JIDOSHA KABUSHIKI KAISHA	Japan	358	-856
48	9	CANON KABUSHIKI KAISHA	Japan	354	29
49	24	HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN	Germany	351	92
50	13	COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN - MICHELIN & CIE	France	343	30

Note: For confidentiality reasons, data are based on publication date.

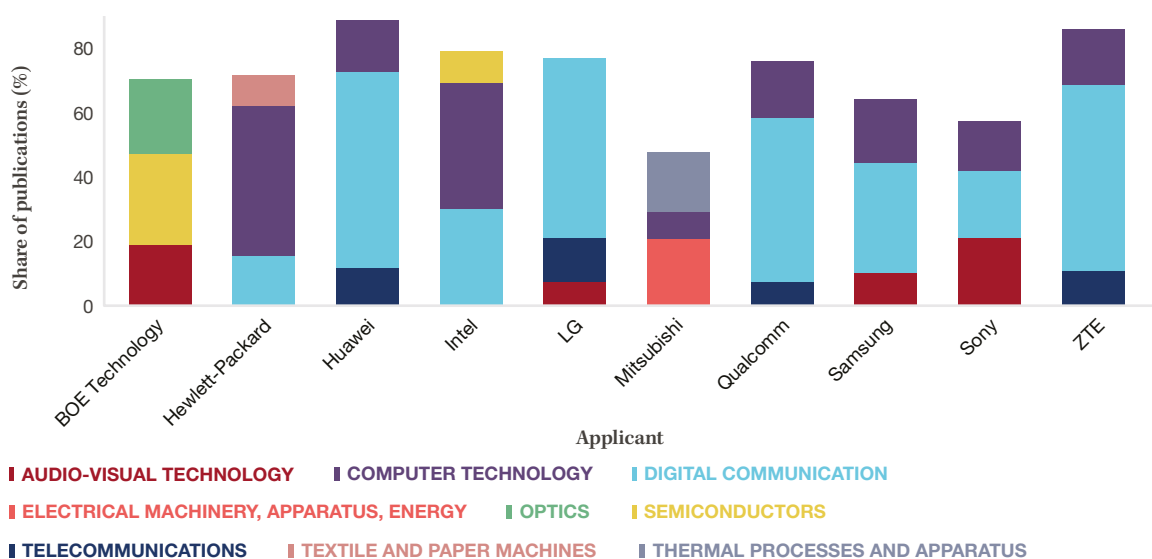
n.a. indicates not applicable.

Source: WIPO Statistics Database, April 2017.

Figure A16

Share of the top three technology fields for the top 10 business applicants, 2016

The bulk of PCT applications filed by Huawei, LG Electronics, Qualcomm, Samsung and ZTE relate to digital communication technology.

Note: For confidentiality reasons, data are based on publication date. WIPO's IPC technology concordance (available at: www.wipo.int/ipstats) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, April 2017.

Table A17

PCT applicants: top 50 universities, 2016

Since 1993, the University of California has been the top PCT applicant for the university sector.

Overall rank	Change in position from 2015	Applicant's name	Origin	Published applications	Change from 2015
35	15	UNIVERSITY OF CALIFORNIA	U.S.	434	73
83	8	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	U.S.	236	23
119	10	HARVARD UNIVERSITY	U.S.	162	4
125	-11	JOHNS HOPKINS UNIVERSITY	U.S.	158	-12
133	-12	UNIVERSITY OF TEXAS SYSTEM	U.S.	152	-11

(Continued)

(Continued)

Overall rank	Change in position from 2015	Applicant's name	Origin	Published applications	Change from 2015
172	63	SEOUL NATIONAL UNIVERSITY	Rep. of Korea	122	27
198	25	UNIVERSITY OF TOKYO	Japan	108	7
207	22	LELAND STANFORD JUNIOR UNIVERSITY	U.S.	104	5
220	118	HANYANG UNIVERSITY	Rep. of Korea	101	33
232	-23	UNIVERSITY OF FLORIDA	U.S.	97	-11
235	62	UNIVERSITY OF PENNSYLVANIA	U.S.	96	20
243	-57	UNIVERSITY OF MICHIGAN	U.S.	94	-22
262	42	KOREA UNIVERSITY	Rep. of Korea	87	12
262	480	SHENZHEN UNIVERSITY	China	87	58
262	120	KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	Rep. of Korea	87	30
270	-50	TSINGHUA UNIVERSITY	China	84	-18
270	228	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	China	84	41
307	3	CALIFORNIA INSTITUTE OF TECHNOLOGY	U.S.	73	-1
314	222	KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY	Saudi Arabia	72	32
314	-17	KYOTO UNIVERSITY	Japan	72	-4
321	421	NAGOYA UNIVERSITY	Japan	69	40
329	181	NORTHWESTERN UNIVERSITY	U.S.	67	25
329	-43	COLUMBIA UNIVERSITY	U.S.	67	-13
342	-20	OSAKA UNIVERSITY	Japan	65	-7
343	6	NANYANG TECHNOLOGICAL UNIVERSITY	Singapore	64	1
350	70	DUKE UNIVERSITY	U.S.	62	10
350	-40	DANMARKS TEKNISKE UNIVERSITET	Denmark	62	-12
361	116	UNIVERSITY OF NORTH CAROLINA	U.S.	60	15
361	137	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	Switzerland	60	17
396	-64	YONSEI UNIVERSITY	Rep. of Korea	56	-14
396	-14	KYUSHU UNIVERSITY	Japan	56	-1
396	-6	TOHOKU UNIVERSITY	Japan	56	0
411	-127	PEKING UNIVERSITY	China	54	-27
420	173	UNIVERSITY OF COLORADO	U.S.	52	15
435	9	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	China	50	1
435	-45	UNIVERSITY OF WASHINGTON	U.S.	50	-6
449	49	UNIVERSITY OF PITTSBURGH	U.S.	49	6
459	-166	ISIS INNOVATION LIMITED	U.K.	48	-30
468	155	UNIVERSITY OF MARYLAND	U.S.	47	12
468	375	INDIANA UNIVERSITY	U.S.	47	22
482	111	KYUNGPOOK NATIONAL UNIVERSITY	Rep. of Korea	46	9
486	-151	NATIONAL UNIVERSITY OF SINGAPORE	Singapore	45	-24
486	50	UNIVERSITY OF ARIZONA	U.S.	45	5
495	-64	STATE UNIVERSITY OF NEW YORK	U.S.	44	-7
495	15	YALE UNIVERSITY	U.S.	44	2
518	-222	CORNELL UNIVERSITY	U.S.	42	-35
530	6	IMPERIAL INNOVATIONS LTD.	U.K.	41	1
546	n.a.	UMM AL-QURA UNIVERSITY	Saudi Arabia	40	36
561	-51	YEDA RESEARCH AND DEVELOPMENT CO. LTD.	Israel	39	-3
571	-49	UNIVERSITY OF HOUSTON	U.S.	38	-3
571	106	UNIVERSITY OF ILLINOIS	U.S.	38	6

Note: The university sector includes all types of educational institutions. For confidentiality reasons, data are based on publication date.

n.a. indicates not applicable.

Source: WIPO Statistics Database, April 2017.

Table A18

PCT applicants: top 30 government and public research organizations, 2016

The top 30 PCT applicants among government and public research organizations came from 12 different countries.

Overall rank	Change in position from 2015	Applicant's name	Origin	Published applications	Change from 2015
52	-9	COMMISSARIAT A L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES	France	329	-80
81	-22	FRAUNHOFER-GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	Germany	252	-71
119	23	AGENCY OF SCIENCE, TECHNOLOGY AND RESEARCH	Singapore	162	14
143	12	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE (INSERM)	France	146	9
146	33	CHINA ACADEMY OF TELECOMMUNICATIONS TECHNOLOGY	China	145	27
156	-1	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)	France	135	-2
172	22	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY	Japan	122	10
194	7	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH	India	109	-1
273	56	KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY	Rep. of Korea	83	12
307	83	SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH	U.S.	73	17
324	50	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC)	Spain	68	9
403	-64	MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH	U.S.	55	-12
449	-5	BATTELLE MEMORIAL INSTITUTE	U.S.	49	0
459	283	RIKEN (THE INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH)	Japan	48	19
486	-309	MIMOS BERHAD	Malaysia	45	-76
495	27	KOREA ELECTRONICS TECHNOLOGY INSTITUTE	Rep. of Korea	44	3
495	128	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION	Australia	44	9
518	-173	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO	Netherlands	42	-22
518	252	MAX-PLANCK-GESELLSCHAFT ZUR FORDERUNG DER WISSENSCHAFTEN E.V.	Germany	42	14
561	-162	KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY	Rep. of Korea	39	-16
571	84	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE OF KOREA	Rep. of Korea	38	5
571	-197	JAPAN SCIENCE AND TECHNOLOGY AGENCY	Japan	38	-21
630	523	UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRETARY OF THE NAVY	U.S.	35	17
669	484	KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY	Rep. of Korea	33	15
688	-251	KOREA INSTITUTE OF ENERGY RESEARCH	Rep. of Korea	32	-18
708	-94	DALIAN INSTITUTE OF CHEMICAL PHYSICS, CHINESE ACADEMY OF SCIENCES	China	31	-5
708	445	SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY	China	31	13
727	43	CEDARS-SINAI MEDICAL CENTER	U.S.	30	2
727	-32	CLEVELAND CLINIC FOUNDATION	U.S.	30	-1
752	341	INSTITUTE OF AUTOMATION, CHINESE ACADEMY OF SCIENCES	China	29	10
752	213	KOREA INSTITUTE OF MACHINERY & MATERIALS	Rep. of Korea	29	7
752	-36	KOREA RESEARCH INSTITUTE OF STANDARDS AND SCIENCE	Rep. of Korea	29	-1

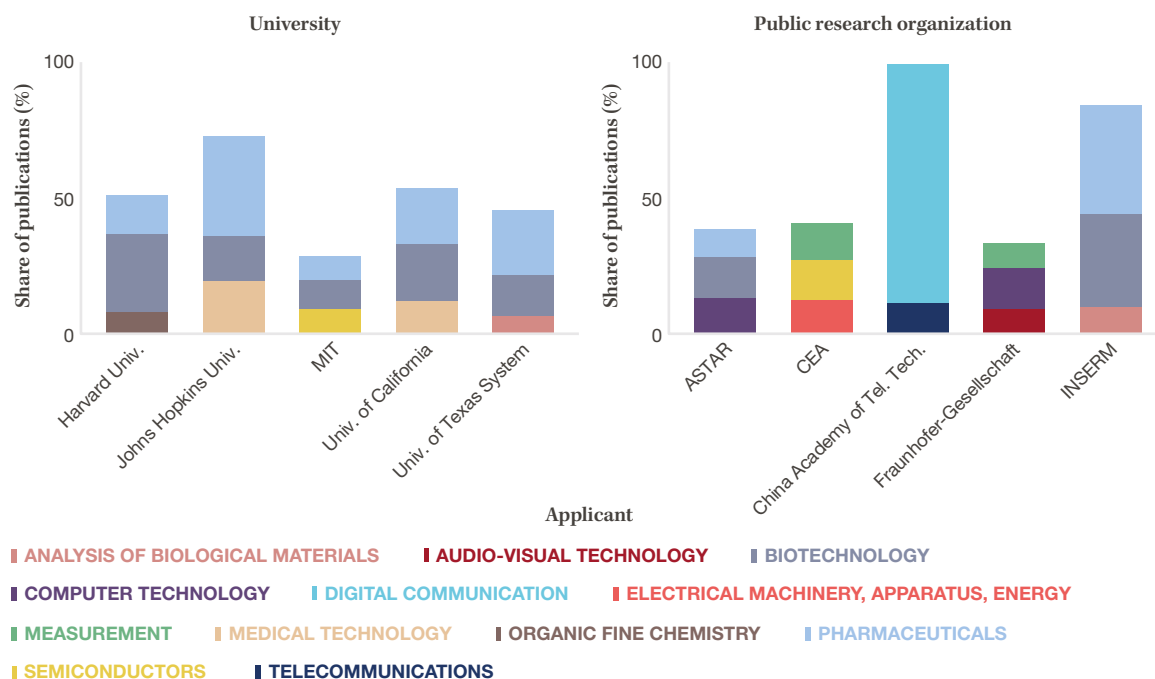
Note: The government and public research organizations (PROs) sector includes private non-profit organizations and hospitals. For confidentiality reasons, data are based on publication date.

Source: WIPO Statistics Database, April 2017.

Figure A19

Share of the top three technology fields for selected universities and PROs, 2016

Biotechnology and pharmaceuticals accounted for high shares of PCT applications filed by the top five universities.



Note: ASTAR is the Agency of Science, Technology and Research, CEA is the Commissariat à l'Énergie Atomique et aux Énergies Alternatives, INSERM is the Institut national de la santé et de la recherche médicale, MIT is the Massachusetts Institute of Technology. Public research organizations include private non-profit organizations and hospitals. For confidentiality reasons, data are based on publication date. WIPO's IPC technology concordance (available at: www.wipo.int/ipstats) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, April 2017.

PCT applications by fields of technology

Table A20

PCT applications by field of technology

Digital communication, computer technology and electrical machinery together accounted for nearly a quarter of all PCT applications published in 2016.

Technical field	Year					2016 share (%)	Change from 2015 (%)
	2012	2013	2014	2015	2016		
I Electrical engineering							
1 Electrical machinery, apparatus, energy	13,456	15,050	15,294	14,659	14,468	6.9	-1.3
2 Audio-visual technology	6,377	6,855	6,836	6,595	7,069	3.4	7.2
3 Telecommunications	4,996	5,269	5,437	4,865	5,201	2.5	6.9
4 Digital communication	12,636	14,124	16,217	16,065	17,776	8.5	10.7
5 Basic communication processes	1,300	1,292	1,296	1,261	1,379	0.7	9.4
6 Computer technology	12,458	14,791	17,757	16,416	17,155	8.2	4.5
7 IT methods for management	2,938	3,780	4,228	4,051	4,338	2.1	7.1
8 Semiconductors	6,909	7,332	7,197	6,441	6,545	3.1	1.6
II Instruments							
9 Optics	5,118	6,302	5,981	5,861	6,608	3.1	12.7
10 Measurement	7,314	7,995	9,035	8,610	9,338	4.4	8.5
11 Analysis of biological materials	1,724	1,855	1,841	1,662	1,741	0.8	4.8
12 Control	2,346	2,579	3,140	3,017	3,667	1.7	21.5
13 Medical technology	11,377	11,956	14,036	12,651	14,265	6.8	12.8
III Chemistry							
14 Organic fine chemistry	5,602	5,567	6,010	5,415	5,709	2.7	5.4
15 Biotechnology	5,317	5,527	5,901	5,624	5,969	2.8	6.1
16 Pharmaceuticals	7,816	7,742	8,601	7,702	8,216	3.9	6.7
17 Macromolecular chemistry, polymers	3,287	3,547	3,781	3,696	3,805	1.8	2.9
18 Food chemistry	1,736	1,760	1,879	1,823	1,947	0.9	6.8
19 Basic materials chemistry	4,976	5,123	5,716	5,453	5,473	2.6	0.4
20 Materials, metallurgy	3,425	3,764	4,068	3,769	3,891	1.8	3.2
21 Surface technology, coating	2,936	3,248	3,496	3,295	3,278	1.6	-0.5
22 Micro-structural and nano-technology	436	402	412	359	369	0.2	2.8
23 Chemical engineering	4,234	4,299	4,608	4,312	4,355	2.1	1.0
24 Environmental technology	2,648	2,719	2,771	2,549	2,584	1.2	1.4
IV Mechanical engineering							
25 Handling	4,020	4,269	4,800	4,705	5,042	2.4	7.2
26 Machine tools	3,381	3,511	3,773	3,627	3,631	1.7	0.1
27 Engines, pumps, turbines	5,590	6,171	6,906	6,201	5,606	2.7	-9.6
28 Textile and paper machines	2,160	2,251	2,291	2,408	2,530	1.2	5.1
29 Other special machines	4,664	4,862	5,377	5,615	5,752	2.7	2.4
30 Thermal processes and apparatus	2,731	2,993	3,008	3,015	3,145	1.5	4.3
31 Mechanical elements	4,799	5,152	5,882	5,927	5,755	2.7	-2.9
32 Transport	7,417	7,965	8,667	8,651	8,716	4.1	0.8
V Other fields							
33 Furniture, games	3,335	3,571	3,814	3,816	4,031	1.9	5.6
34 Other consumer goods	3,363	3,411	4,004	4,391	4,740	2.3	7.9
35 Civil engineering	5,339	5,547	6,494	6,366	6,256	3.0	-1.7

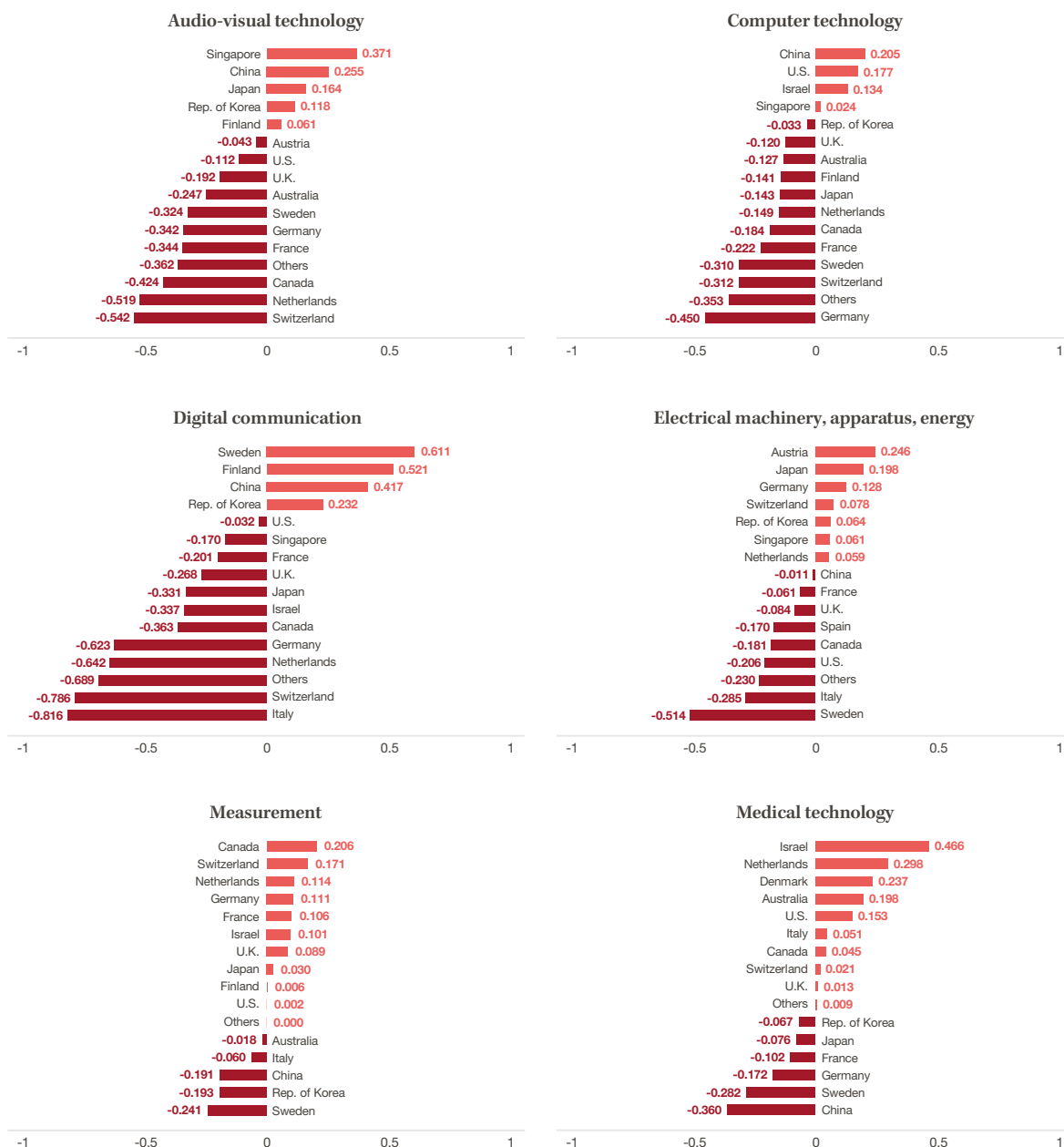
Note: For confidentiality reasons, data are based on publication date. WIPO's IPC technology concordance (available at: www.wipo.int/ipstats) was used to convert IPC symbols into 35 corresponding fields of technology.

Source: WIPO Statistics Database, April 2017.

Figure A21

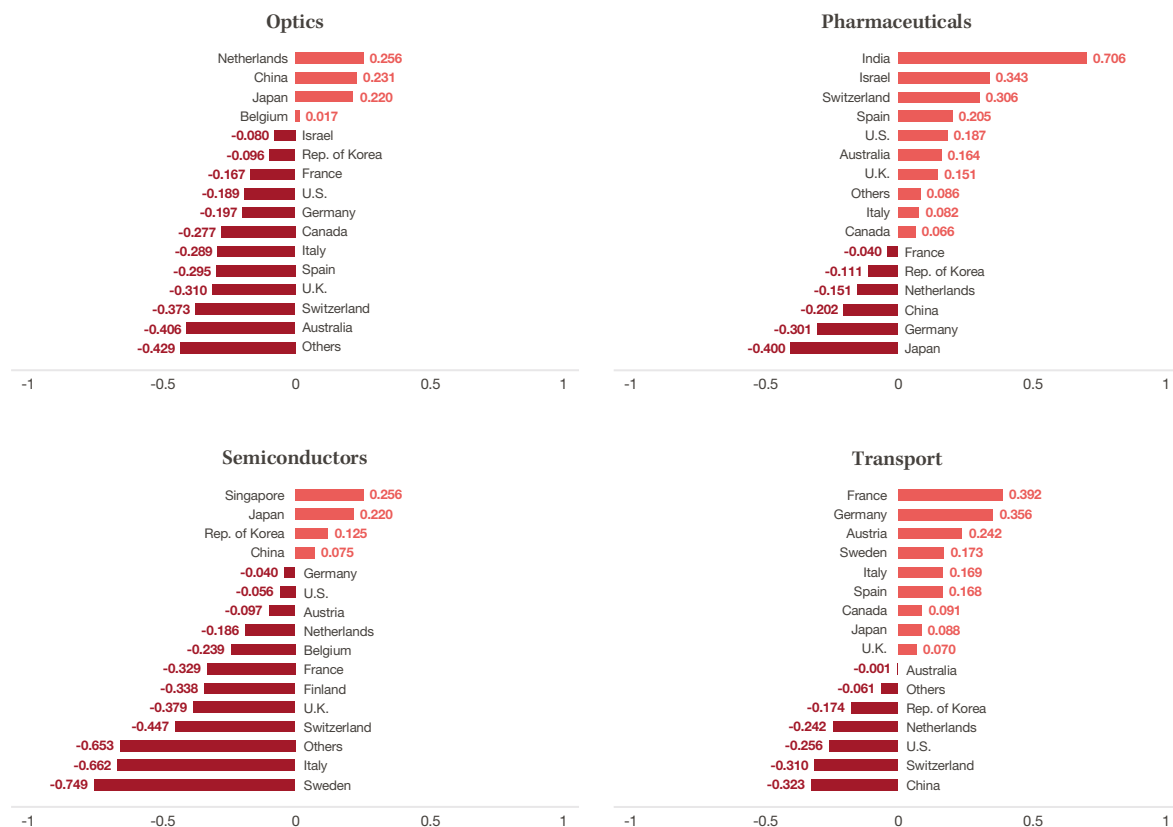
Relative specialization index for published PCT applications by selected fields of technology, 2016

A relatively high share of PCT filings from India, Israel and Switzerland related to pharmaceuticals, while many of those from Austria, France and Germany related to transport.



(Continued)

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Note: This index corrects for the effects of country size and focuses on concentration in specific technology fields; it captures whether applicants in a country tend to have a lower or a higher propensity to file in certain technology fields. It is calculated using the following formula: $RSI = \text{Log}(\frac{F_{cr} \sum F_{cr}}{\sum F_c \sum F_r})$

A positive value for a technology indicates that a country has a relatively high share of PCT filings related to that field of technology. For confidentiality reasons, data are based on publication date. WIPO's IPC technology concordance (available at: www.wipo.int/ipstats) was used to convert IPC symbols into 35 corresponding fields of technology.

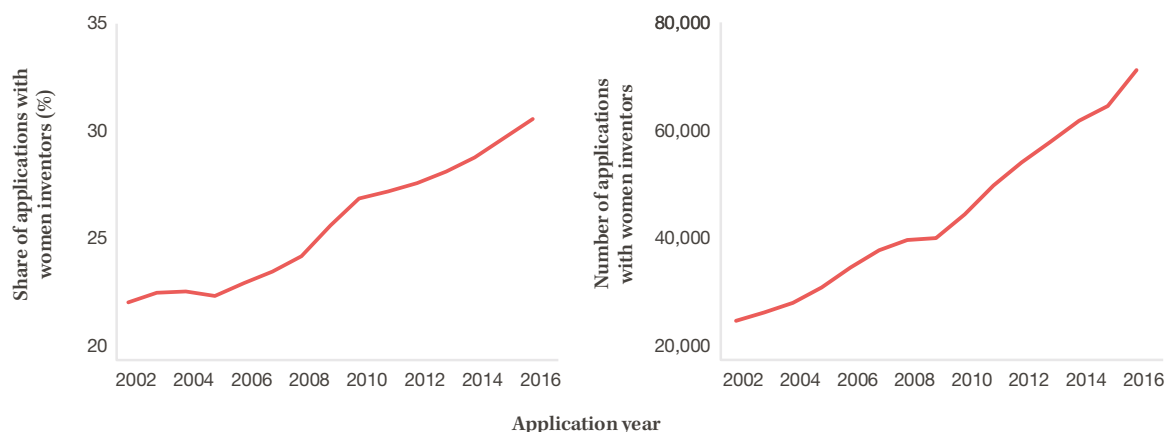
Source: WIPO Statistics Database, April 2017.

PCT applications by gender

Figure A22

Share and number of PCT applications with women inventors

In 2016, around 30% of all PCT applications included women inventors.



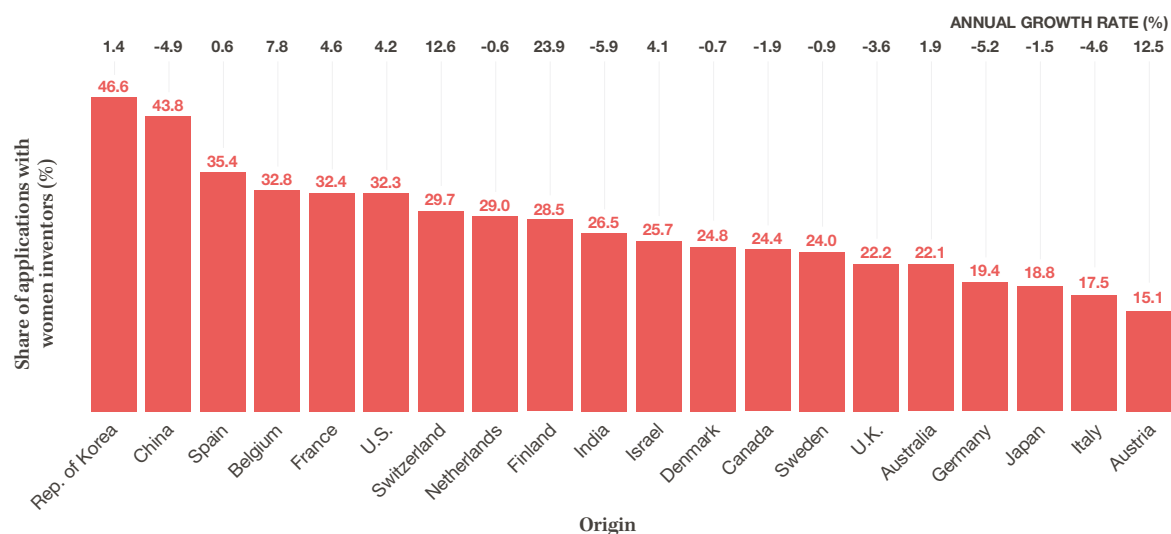
Note: For further details on methodology, refer to Economic Research Working Paper No. 33, *Identifying the Gender of PCT Inventors* (WIPO, 2016), available at: www.wipo.int/econ_stat/en/economics.

Source: WIPO Statistics Database, April 2017.

Figure A23

Share of PCT applications with women inventors for the top 20 origins, 2016

Women inventors were represented in notably high shares of PCT applications in the Republic of Korea and China.



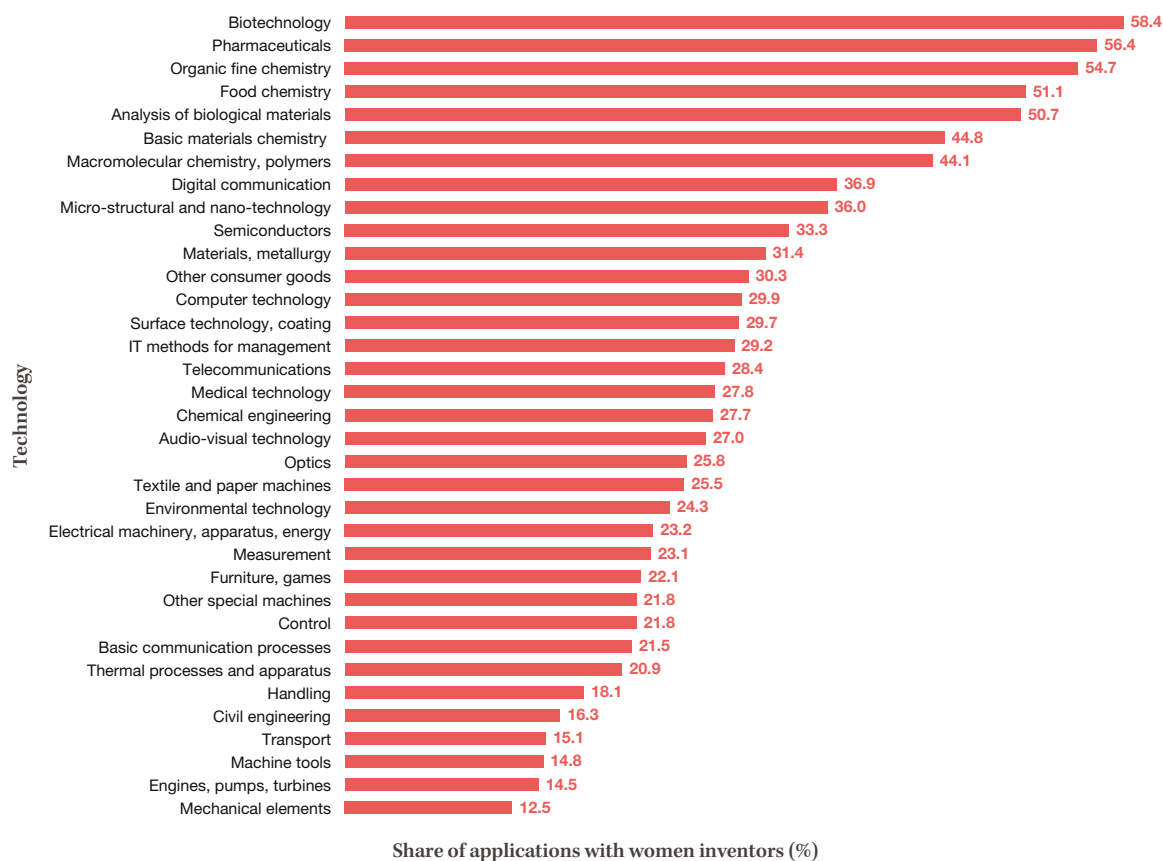
Note: For further details on methodology, refer to Economic Research Working Paper No. 33, *Identifying the Gender of PCT Inventors* (WIPO, 2016), available at: www.wipo.int/econ_stat/en/economics.

Source: WIPO Statistics Database, April 2017.

Figure A24

Share of PCT applications with women inventors for selected fields of technology, 2016

Women inventors were represented in high shares of PCT applications relating to biotechnology and pharmaceuticals.



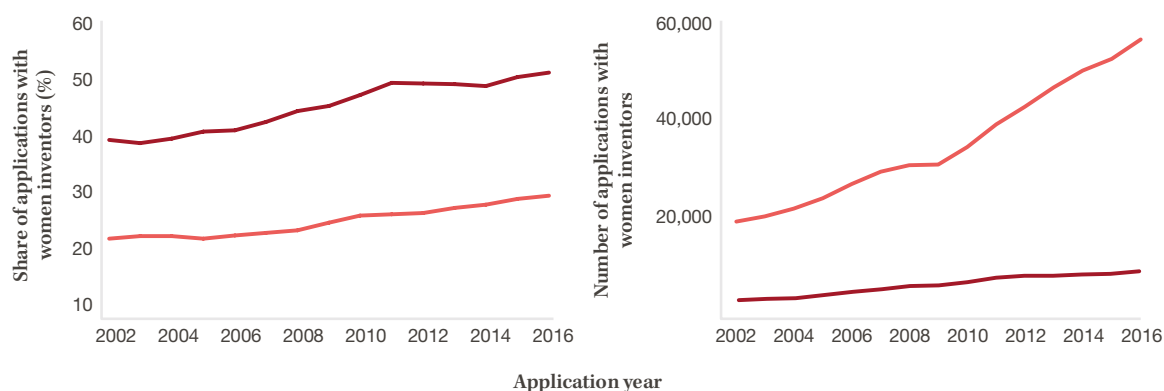
Note: For further details on methodology, refer to Economic Research Working Paper No. 33, *Identifying the Gender of PCT Inventors* (WIPO, 2016), available at: www.wipo.int/econ_stat/en/economics.

Source: WIPO Statistics Database, April 2017.

Figure A25

Share and number of PCT applications with women inventors by institutional sector

For the second consecutive year, more than half of all PCT applications filed by the academic sector listed one or more women inventors.



■ ACADEMIA ■ BUSINESS

Note: For further details on methodology, refer to Economic Research Working Paper No. 33, *Identifying the Gender of PCT Inventors* (WIPO, 2016), available at: www.wipo.int/econ_stat/en/economics.

Source: WIPO Statistics Database, April 2017.

Statistical table

Table A26

PCT applications by office and origin

Name	PCT applications filed in 2016 (international phase)		PCT applications filed in 2015 (international phase)	
	at receiving office	by country of origin	at receiving office	by country of origin
African Intellectual Property Organization	2	n.a.	1	n.a.
Albania	0	0	2	2
Algeria	11	12	7	8
Andorra	0	8	0	5
Angola (c)	n.a.	0	n.a.	1
Argentina	0	47	0	29
Armenia	4	9	4	5
Australia	1,703	1,835	1,615	1,741
Austria	507	1,422	492	1,399
Azerbaijan	2	3	3	3
Bahamas	0	5	0	10
Bahrain	0	6	0	5
Barbados (c)	n.a.	114	n.a.	125
Belarus	8	17	5	12
Belgium	55	1,220	71	1,180
Belize	0	4	0	0
Bosnia and Herzegovina	1	4	3	4
Botswana	0	1	0	0
Brazil	528	568	483	548
Brunei Darussalam	1	5	0	5
Bulgaria	29	63	41	57
Burundi	0	2	0	0
Cameroon (d)	n.a.	2	n.a.	1

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(Continued)

Name	PCT applications filed in 2016 (international phase)		PCT applications filed in 2015 (international phase)	
	at receiving office	by country of origin	at receiving office	by country of origin
Canada	1,851	2,333	1,987	2,821
Chile	163	197	136	166
China	44,473	43,168	31,045	29,839
Colombia	10	99	12	87
Congo (d)	n.a.	1	n.a.	1
Costa Rica	1	4	2	6
Côte d'Ivoire (d)	n.a.	2	n.a.	2
Croatia	27	39	22	28
Cuba	2	2	2	2
Cyprus	2	36	1	51
Czech Republic	180	199	165	191
Democratic People's Republic of Korea	4	4	6	6
Democratic Republic of the Congo	0	1	0	0
Denmark	523	1,352	464	1,327
Djibouti	1	0	0	0
Dominica	0	0	0	1
Dominican Republic	8	10	5	5
Ecuador	2	9	1	4
Egypt	40	43	49	58
El Salvador	1	1	0	1
Estonia	3	24	7	36
Eurasian Patent Organization	3	n.a.	2	n.a.
European Patent Office	35,309	n.a.	34,158	n.a.
Finland	969	1,524	1,005	1,584
France	3,621	8,208	3,515	8,421
Gabon (d)	n.a.	1	n.a.	1
Georgia	12	13	2	6
Germany	1,534	18,315	1,571	18,004
Ghana	0	2	1	1
Greece	68	111	65	121
Guatemala	0	2	0	2
Honduras	0	1	0	0
Hungary	148	178	105	148
Iceland	20	56	17	46
India	737	1,529	682	1,412
Indonesia	14	15	6	6
International Bureau	10,029	0	10,329	0
Iran (Islamic Republic of)	3	63	0	71
Iraq	0	1	0	2
Ireland	23	439	21	453
Israel	1,425	1,838	1,326	1,685
Italy	309	3,358	320	3,072
Jamaica	0	0	0	1
Japan	44,513	45,239	43,097	44,053
Jordan	0	0	0	1
Kazakhstan	19	24	23	24
Kenya	2	4	3	11
Kuwait	0	3	0	3
Kyrgyzstan	0	0	1	1
Lao People's Democratic Republic (c)	n.a.	2	n.a.	2
Latvia	3	23	9	28
Lebanon	0	6	0	7
Liberia	0	0	0	1
Libya	0	0	1	1
Liechtenstein (b)	n.a.	249	n.a.	241
Lithuania	2	28	9	39
Luxembourg	1	431	0	403

(Continued)

(Continued)

Name	PCT applications filed in 2016 (international phase)		PCT applications filed in 2015 (international phase)	
	at receiving office	by country of origin	at receiving office	by country of origin
Malawi	0	1	0	0
Malaysia	180	190	252	267
Malta	0	87	0	67
Marshall Islands	0	0	0	1
Mauritius	0	4	0	0
Mexico	214	288	225	317
Micronesia (Federated States of)	0	2	0	0
Monaco	0	13	0	35
Mongolia	0	1	0	1
Montenegro (c)	n.a.	2	n.a.	0
Morocco	34	39	32	34
Mozambique (a)	n.a.	1	n.a.	0
Namibia (a)	n.a.	2	n.a.	5
Netherlands	950	4,679	962	4,334
New Zealand	210	307	262	358
Niger (d)	n.a.	0	n.a.	1
Nigeria (c)	n.a.	4	n.a.	5
Norway	300	653	293	679
Oman	3	7	0	3
Pakistan	0	0	0	2
Panama	4	60	3	15
Paraguay	0	0	0	1
Peru	21	20	26	27
Philippines	14	29	17	27
Poland	219	343	303	439
Portugal	46	184	61	161
Qatar	8	14	4	19
Republic of Korea	15,601	15,560	14,592	14,564
Republic of Moldova	7	10	7	7
Romania	24	42	39	35
Russian Federation	1,037	851	951	876
Rwanda	0	0	0	1
Saint Kitts and Nevis	0	0	0	1
Saint Lucia (c)	n.a.	0	n.a.	1
Samoa	0	1	0	5
San Marino	6	8	0	3
Saudi Arabia	20	296	22	274
Senegal (d)	n.a.	7	n.a.	16
Serbia	15	15	28	38
Seychelles	0	3	0	7
Singapore	646	879	663	908
Slovakia	19	55	19	38
Slovenia	29	69	37	84
South Africa	85	287	95	313
Spain	1,087	1,504	1,143	1,530
Sri Lanka (c)	n.a.	16	n.a.	14
Sudan	0	0	0	5
Swaziland (a)	n.a.	0	n.a.	3
Sweden	1,391	3,720	1,464	3,842
Switzerland	160	4,365	190	4,265
Syrian Arab Republic	0	2	2	1
T F Y R of Macedonia	1	3	2	2
Thailand	108	155	97	133
Trinidad and Tobago	0	38	0	4
Tunisia	5	6	4	8
Turkey	806	1,068	700	1,010
Ukraine	152	163	130	139

(Continued)

(Continued)

Name	PCT applications filed in 2016 (international phase)		PCT applications filed in 2015 (international phase)	
	at receiving office	by country of origin	at receiving office	by country of origin
United Arab Emirates (c)	n.a.	81	n.a.	77
United Kingdom	4,006	5,496	4,100	5,290
United Republic of Tanzania (a)	n.a.	0	n.a.	2
United States of America	56,679	56,595	57,594	57,123
Uruguay	0	14	0	6
Uzbekistan	1	2	2	3
Venezuela (Bolivarian Republic of)	0	1	0	0
Viet Nam	6	10	15	21
Yemen	0	1	0	1
Zimbabwe	0	2	0	2
Others	0	211	0	162
Total	233,000	233,000	217,235	217,235

(a) The African Regional Intellectual Property Organization (ARIPO) is the competent receiving office.

(b) The Office of Switzerland is the competent receiving office.

(c) The International Bureau is the competent receiving office.

(d) The African Intellectual Property Organization (OAPI) is the competent receiving office.

n.a. indicates not applicable, as it is not an office of a PCT member state.

Total PCT applications for 2016 are WIPO estimates.

Source: WIPO Statistics Database, April 2017.



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Section B

Statistics on PCT national phase entries

Highlights

PCT national phase entries grew by 3.8% to 618,500

There were an estimated 618,500 PCT national phase entries (NPEs) in 2015⁷, representing 3.8% growth on the previous year (figure 15). This marks the sixth consecutive year of growth following a sharp drop in 2009, at the height of the financial crisis. Filings originating in China and the U.S. made the greatest contribution to overall growth.

NPEs initiated by non-resident applicants represented about 84% of the total in 2015. This share has tended to decrease slightly in recent years, mainly due to strong growth in resident NPEs at the Japan Patent Office (JPO) and the United States Patent and Trademark Office (USPTO). For example, the share of NPEs initiated at the USPTO by U.S.-resident applicants increased from 10.4% in 2001 to 20.4% in 2015.

The USPTO is still the most popular destination for PCT NPEs

The USPTO remained the office receiving the most applications via the PCT System in 2015, with 137,331 NPEs – 22.2% of all NPEs initiated worldwide.

The USPTO was followed by the European Patent Office (EPO; 98,278) and the State Intellectual Property Office of the People's Republic of China (SIPO; 81,866) (figure 16). Combined, the top three offices accounted for slightly more than half (51.3%) of all NPEs initiated in 2015.

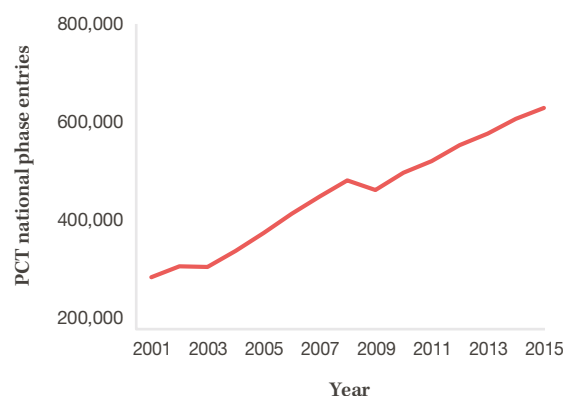
The top 20 list includes patent offices from 10 high-income countries and 10 middle-income countries. In addition to SIPO, the most popular offices among the middle-income countries were those of India (27,882), Brazil (22,468), Mexico (13,787) and the Russian Federation (12,951).

All six geographical regions were represented among the top 20 offices. Nine offices were located in Asia, four in Europe and one in Africa. Latin America and the Caribbean, North America and Oceania each counted two offices.

Of the top 20 offices, 15 received more applications in the form of NPEs via the PCT in 2015 than in 2014. The offices of Israel (+13.3%) and Viet Nam (+12.3%) exhibited double-digit growth. Several other offices experienced marked increases in NPEs, such as the offices of Australia (+9.7%), Mexico (+7.7%), the USPTO (+6.5%) and the EPO (+6.1%). In contrast, New Zealand (–9.4%), South Africa (–6.2%) and the Russian Federation (–3.7%) each saw falls in NPEs.

Figure 15

Trend in PCT national phase entries

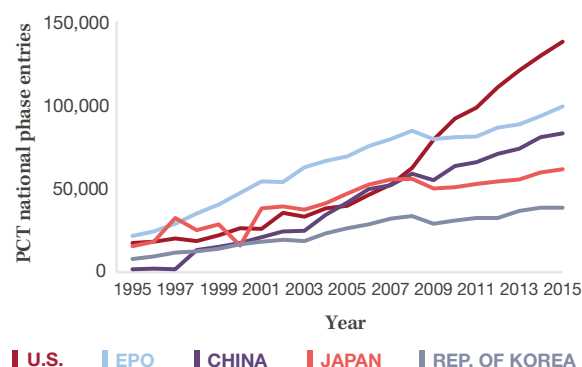


Source: Standard figure B1.

7. National phase data from national and regional IP offices are available only up to 2015.

Figure 16

Trends in PCT national phase entries for the top five offices



Source: Standard figure B11.

U.S.-based applicants initiated the largest number of NPEs

In 2015, applicants residing in the U.S. initiated about 192,000 NPEs (figure 17). They were followed by applicants from Japan (118,489), Germany (58,062), France (29,458) and China (27,550). Among the top five origins, China (+22.6%) and the U.S. (+12.3%) reported the fastest growth in NPEs.

Eleven of the top 20 origins saw decreases in NPEs in 2015. The largest declines were in Finland (−9.9%), Denmark (−6.2%) and Japan (−4.3%).

Among the 137,331 NPEs initiated at the USPTO, almost a quarter (31,088) originated from applicants residing in Japan and one-fifth (28,061) came from U.S. applicants. In addition, U.S. applicants accounted for the largest shares of NPEs at 16 of the top 20 offices, and applicants from Japan accounted for the largest shares at the remaining four offices. Specifically, U.S. applicants accounted for about half of all NPEs initiated at the offices of Australia, Canada and Mexico. Japanese applicants accounted for 45% of all NPEs initiated at the office of Germany and 35% of those initiated at the JPO.

PCT NPEs accounted for 57% of all non-resident filings

An estimated 521,000 non-resident NPEs were initiated worldwide in 2015 (the PCT route), representing an increase of 3.6% on the number of filings in 2014.

By comparison, about 393,700 patent applications were filed directly at offices by non-resident applicants (the Paris route), representing an increase of 4%. Thus, 57% of non-resident applications were filed via the PCT route; this is 9 percentage points higher than in 2002 (48%). The long-term trend shows that both routes have trended upward, although the PCT route has grown at a faster pace. On average, the Paris route grew by 1.6% per year from 2001 to 2015, whereas the PCT route grew by 5.6% per year over the same period.

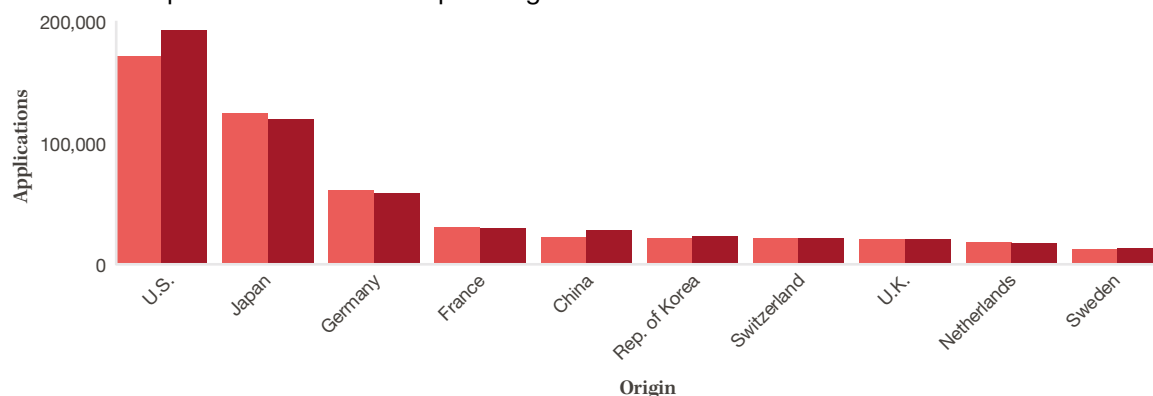
Among the top 20 offices in terms of non-resident patent applications, 17 received most of their non-resident filings via the PCT route, with the offices of Israel (95.8%), the Philippines (93.6%) and South Africa (89.1%) having the highest shares.

When looking at the top 20 origins of applications filed abroad, applicants from Sweden (71.5%), the U.S. (71.2%) and Australia (67.4%) relied most heavily on the PCT route when filing internationally, while those from the Republic of Korea (31.4%) and India (31.8%) had the lowest shares of filings abroad using the PCT route.

Applicants from Austria, Belgium, Denmark, the Netherlands and Switzerland tended to initiate a large number of PCT NPEs for each PCT application filed, with more than four NPEs per PCT application on average. In contrast, applicants from China and the Republic of Korea averaged 1.2 and 1.8 NPEs per PCT application in 2015, respectively.

Figure 17

PCT national phase entries for the top 10 origins



■ 2014 ■ 2015

Source: Standard figure B7.

Defining foreign-oriented patent families

A patent family is a set of interrelated patent applications filed in one or more offices to protect the same invention. The patent applications in a family are interlinked by one or more of the following: priority claim, PCT NPE, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing in an office that is not the applicant's home office.

Panasonic has the most foreign-oriented patent families using the PCT route

With 5,658 foreign-oriented patent families created between 2011 and 2013, Panasonic Corporation of Japan remained the company that created the largest number of foreign-oriented patent families using the PCT route. It was followed by Huawei of China and Toyota of Japan, each with about 4,100 families created using the PCT route during that same three-year period.

Between 2011 and 2013, nearly half (24) of the top 50 applicants in terms of foreign-oriented patent families mainly used the PCT route to protect their inventions abroad. Three Shenzhen-based companies – Shenzhen Huaxing Optoelect Tec, ZTE and Huawei – had the highest shares of foreign-oriented families using the PCT route among the top 50 applicants, with shares varying from 92% to 100%.

Standard figures and tables

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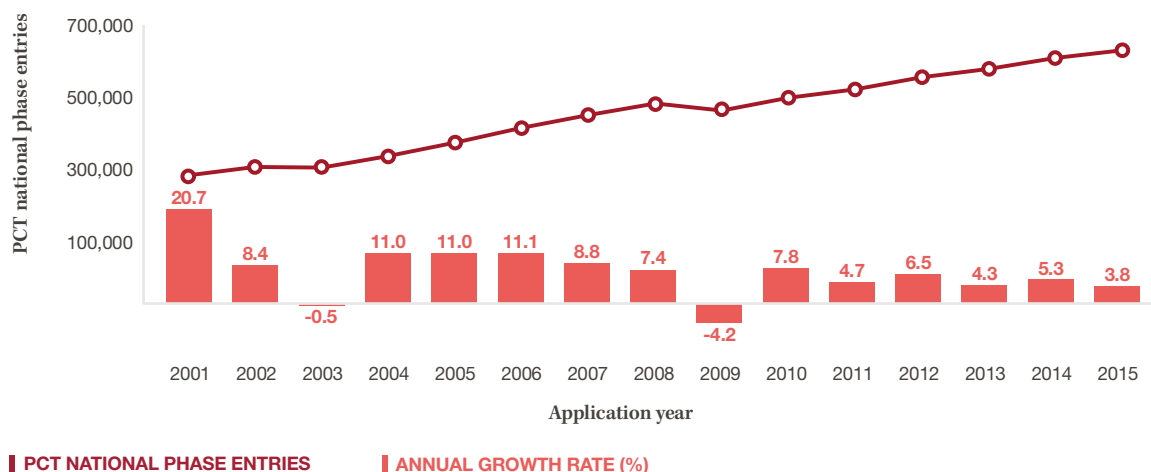
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Global trend in PCT national phase entries

Figure B1

Trend in PCT national phase entries

Sixth consecutive year of growth in PCT national phase entries.



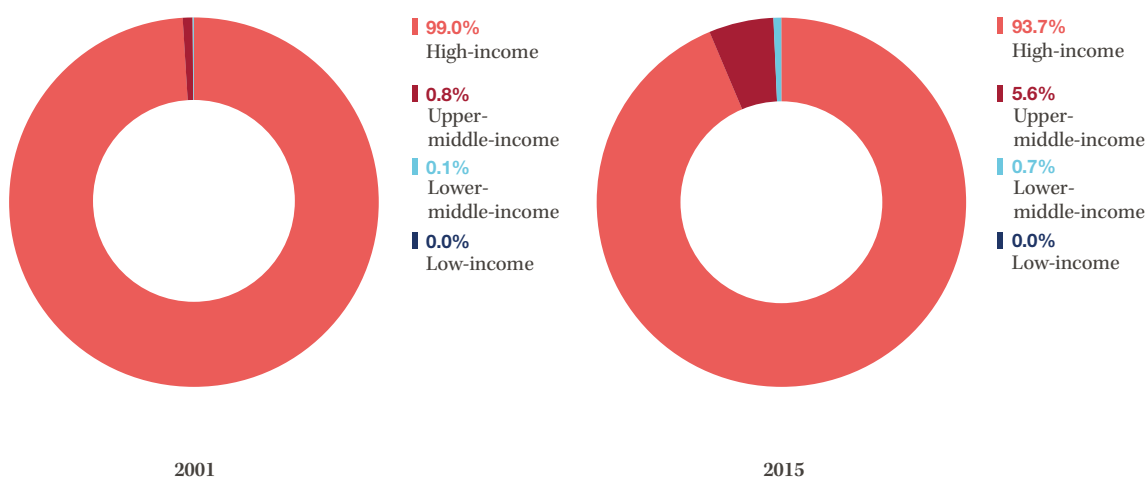
Note: These are WIPO estimates. National phase data from national and regional IP offices are available only up to 2015.

Source: WIPO Statistics Database, April 2017.

Figure B2

PCT national phase entries by income group

High-income economies initiated the bulk of national phase entries.

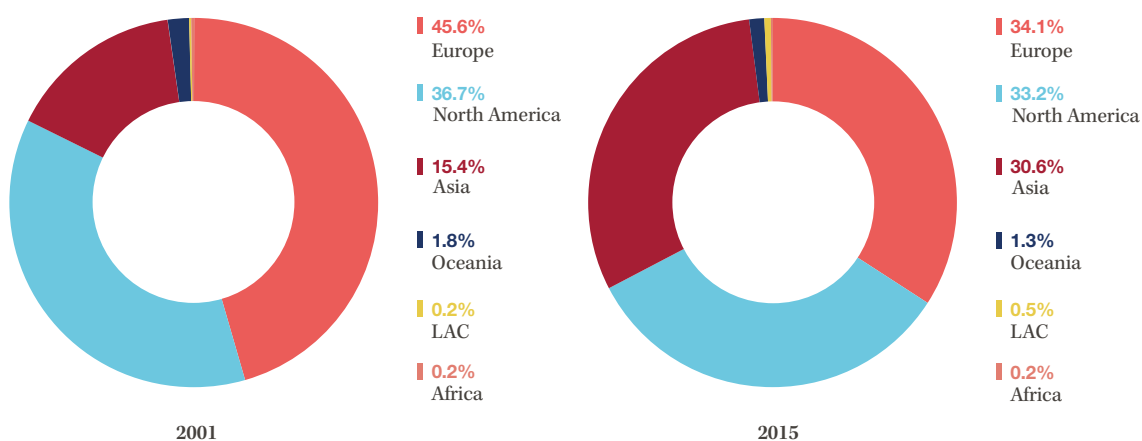


Note: These are WIPO estimates. Each category includes the following number of origins: high-income (67), upper-middle-income (49), lower-middle-income (42) and low-income (28). For information on income group classification, see Data description section.

Source: WIPO Statistics Database, April 2017.

Figure B3

PCT national phase entries by region

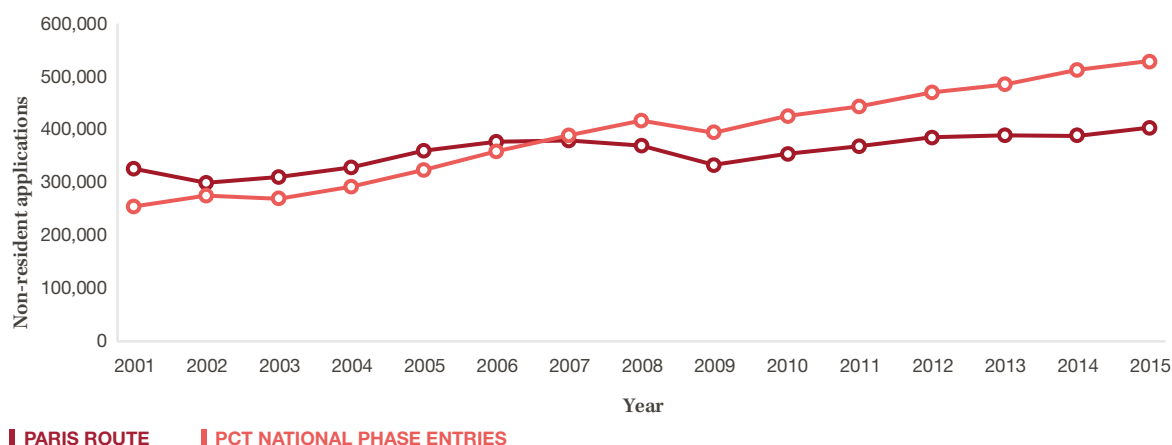
Europe and North America each accounted for a third of all PCT national phase entries in 2015.

Note: These are WIPO estimates. Each region includes the following number of offices: Africa (49), Asia (45), Europe (47), Latin America and the Caribbean (LAC; 33), North America (3) and Oceania (10).

Source: WIPO Statistics Database, April 2017.

Figure B4

Trend in non-resident applications by filing route

Most non-resident patent applications are filed using the PCT System.

Note: These are WIPO estimates.

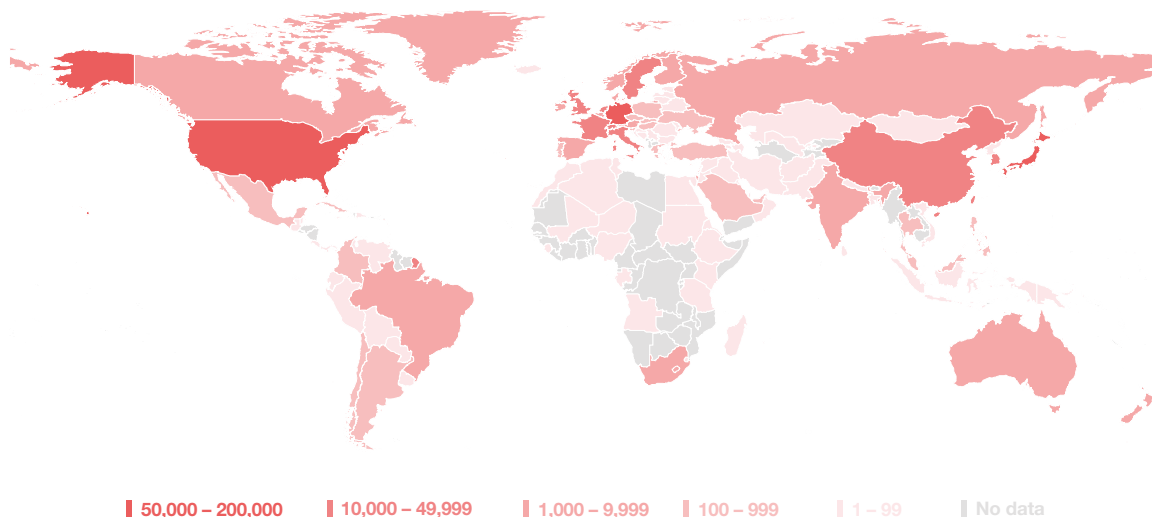
Source: WIPO Statistics Database, April 2017.

National phase entries by origin

Map B5

PCT national phase entries by origin, 2015

PCT national phase entries are concentrated among a few origins.

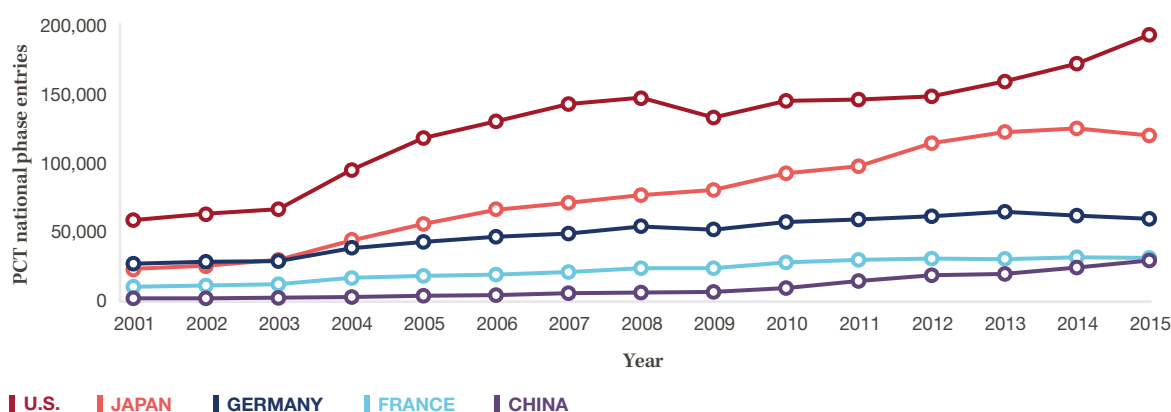


Source: WIPO Statistics Database, April 2017.

Figure B6

Trends in PCT national phase entries for the top five origins

The top five origins accounted for 69% of all national phase entries in 2015.

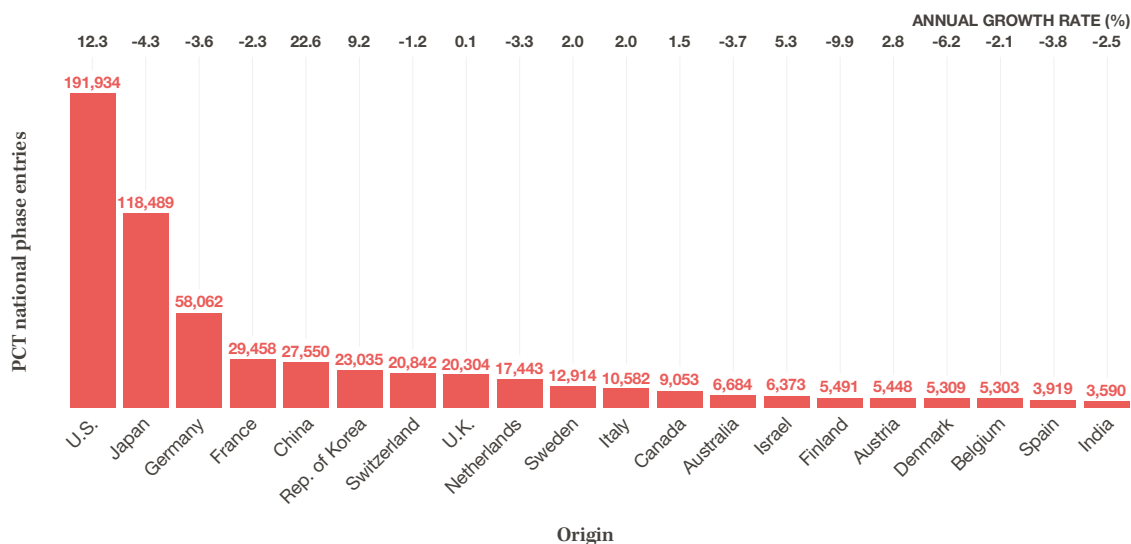


Source: WIPO Statistics Database, April 2017.

Figure B7

PCT national phase entries for the top 20 origins, 2015

Applicants residing in the U.S. accounted for the largest number of national phase entries. They were followed by applicants residing in Japan and Germany.



Source: WIPO Statistics Database, April 2017.

Table B8

PCT national phase entries for the top origins by region

North America – with 11.7% – was the region with the greatest increase in PCT national phase entries in 2015.

Region	Name	Year of national phase entry					Regional share 2015 (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
Africa	South Africa	984	934	1,140	1,364	1,017	85.6	-25.4
	Egypt	42	24	36	32	47	4.0	46.9
	Mauritius	11	4	14	17	21	1.8	23.5
	Others	143	143	201	223	103	8.7	-53.8
	Total*	1,180	1,105	1,391	1,636	1,188	0.2	-27.4
Asia	Japan	96,101	112,862	120,839	123,787	118,489	64.0	-4.3
	China	12,913	16,978	18,106	22,473	27,550	14.9	22.6
	Rep. of Korea	14,213	17,238	19,086	21,090	23,035	12.4	9.2
	Israel	4,967	5,527	5,498	6,055	6,373	3.4	5.3
	India	2,950	3,322	3,890	3,681	3,590	1.9	-2.5
	Singapore	1,950	2,009	2,368	2,581	2,578	1.4	-0.1
	Turkey	594	693	653	814	931	0.5	14.4
	Saudi Arabia	241	211	381	945	776	0.4	-17.9
	Malaysia	486	470	544	682	411	0.2	-39.7
	China, Hong Kong SAR	217	214	238	279	338	0.2	21.1
	Others	411	615	1,374	928	1,034	0.6	11.4
	Total*	135,043	160,139	172,977	183,315	185,105	29.9	1.0
Europe	Germany	57,814	59,966	63,173	60,224	58,062	28.1	-3.6
	France	28,039	28,943	28,534	30,153	29,458	14.3	-2.3
	Switzerland	17,971	19,428	21,913	21,095	20,842	10.1	-1.2

(Continued)

(Continued)

Region	Name	Year of national phase entry					Regional share 2015 (%)	Change from 2014 (%)
		2011	2012	2013	2014	2015		
	U.K.	19,771	18,748	19,020	20,277	20,304	9.8	0.1
	Netherlands	17,160	15,567	16,126	18,035	17,443	8.4	-3.3
	Sweden	11,636	11,365	11,795	12,663	12,914	6.2	2.0
	Italy	8,841	9,368	9,895	10,370	10,582	5.1	2.0
	Finland	5,089	5,774	5,528	6,093	5,491	2.7	-9.9
	Austria	4,161	4,698	5,113	5,302	5,448	2.6	2.8
	Denmark	5,255	4,975	5,550	5,662	5,309	2.6	-6.2
	Others	17,893	19,451	19,391	20,473	20,784	10.1	1.5
	Total*	193,630	198,283	206,038	210,347	206,637	33.4	-1.8
Latin America and the Caribbean	Brazil	1,169	1,167	1,250	1,292	1,220	38.7	-5.6
	Mexico	569	576	545	487	568	18.0	16.6
	Barbados	305	271	434	364	324	10.3	-11.0
	Chile	239	316	279	406	283	9.0	-30.3
	Colombia	145	115	79	147	190	6.0	29.3
	Argentina	104	121	79	124	130	4.1	4.8
	Cuba	91	103	151	134	119	3.8	-11.2
	Bahamas	73	69	63	39	52	1.7	33.3
	Uruguay	12	10	20	11	49	1.6	345.5
	Panama	40	11	47	43	39	1.2	-9.3
	Venezuela (Bolivarian Republic of)	4	16	4	12	39	1.2	225.0
	Others	113	104	137	104	138	4.4	32.7
	Total*	2,864	2,879	3,088	3,163	3,151	0.5	-0.4
North America	U.S.	144,598	146,988	157,943	170,928	191,934	95.5	12.3
	Canada	8,563	8,947	8,894	8,920	9,053	4.5	1.5
	Bermuda	71	61	95	77	74	0.0	-3.9
	Total*	153,232	155,996	166,932	179,925	201,061	32.5	11.7
Oceania	Australia	6,675	6,941	7,261	6,940	6,684	82.2	-3.7
	New Zealand	1,090	1,004	1,183	1,307	1,426	17.5	9.1
	Others	7	8	28	12	19	0.2	58.3
	Total*	7,772	7,953	8,472	8,259	8,129	1.3	-1.6
Unknown		16,179	16,545	7,102	9,255	13,229	n.a.	42.9
Total		509,900	542,900	566,000	595,900	618,500	n.a.	3.8

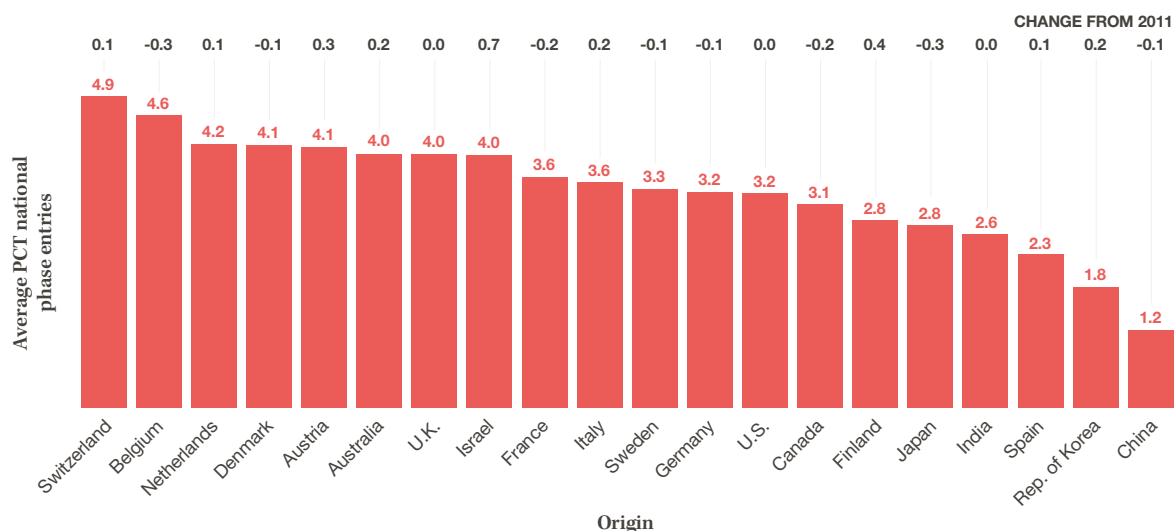
Note: World totals are WIPO estimates. * indicates share of world total. n.a. indicates not applicable. The table shows the top origins whose applicants filed at least 20 NPEs in 2015 for each region (with a maximum of 10 countries per region). Data for all origins are reported in statistical table B18.

Source: WIPO Statistics Database, April 2017.

Figure B9

Average number of national phase entries per PCT application for selected origins, 2015

Applicants residing in Switzerland and Belgium initiated the largest number of PCT national phase entries per PCT application filed.



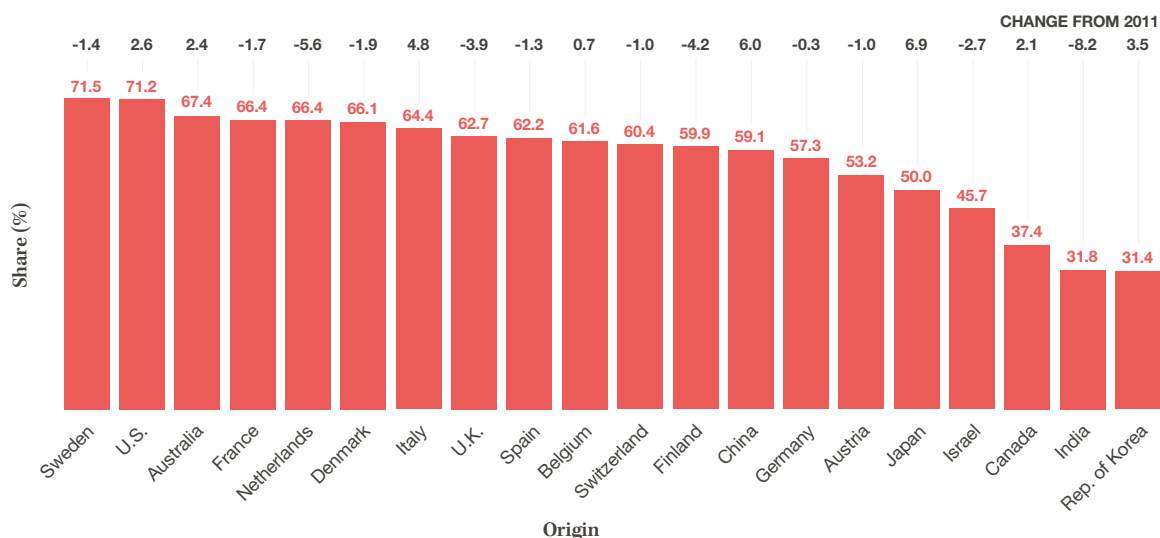
Note: The average is defined as the number of NPEs initiated in 2015 divided by the average number of PCT applications filed in the two preceding years.

Source: WIPO Statistics Database, April 2017.

Figure B10

Share of PCT national phase entries in total filings abroad for selected origins, 2015

Applicants from Sweden and the U.S. each filed 71% of their applications abroad using the PCT System.



Note: The share is defined as the number of PCT NPEs initiated abroad divided by the total number of patent applications filed abroad. It includes data from the 20 origins that filed the most applications abroad in 2015. Both these numbers are WIPO estimates.

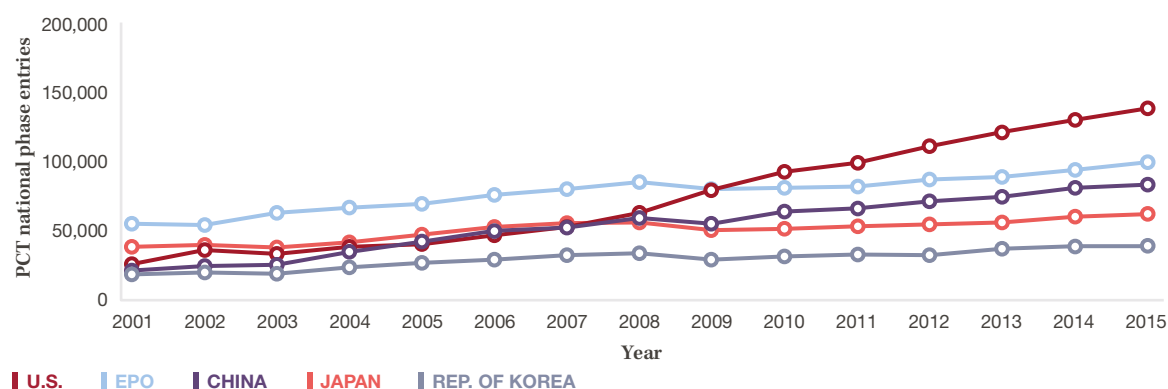
Source: WIPO Statistics Database, April 2017.

National phase entries by office

Figure B11

Trends in PCT national phase entries for the top five offices

The most popular destination for PCT national phase entries was the U.S., followed by the European Patent Office and China.

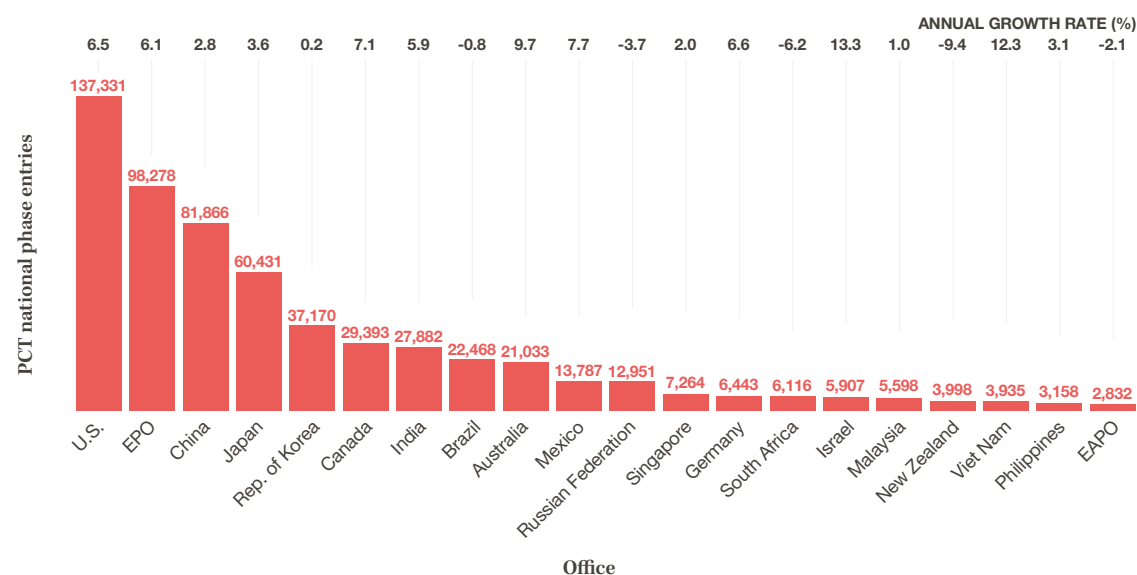


Source: WIPO Statistics Database, April 2017.

Figure B12

PCT national phase entries for the top 20 offices, 2015

Nine of the top 10 offices in PCT national phase entries experienced growth in 2015.

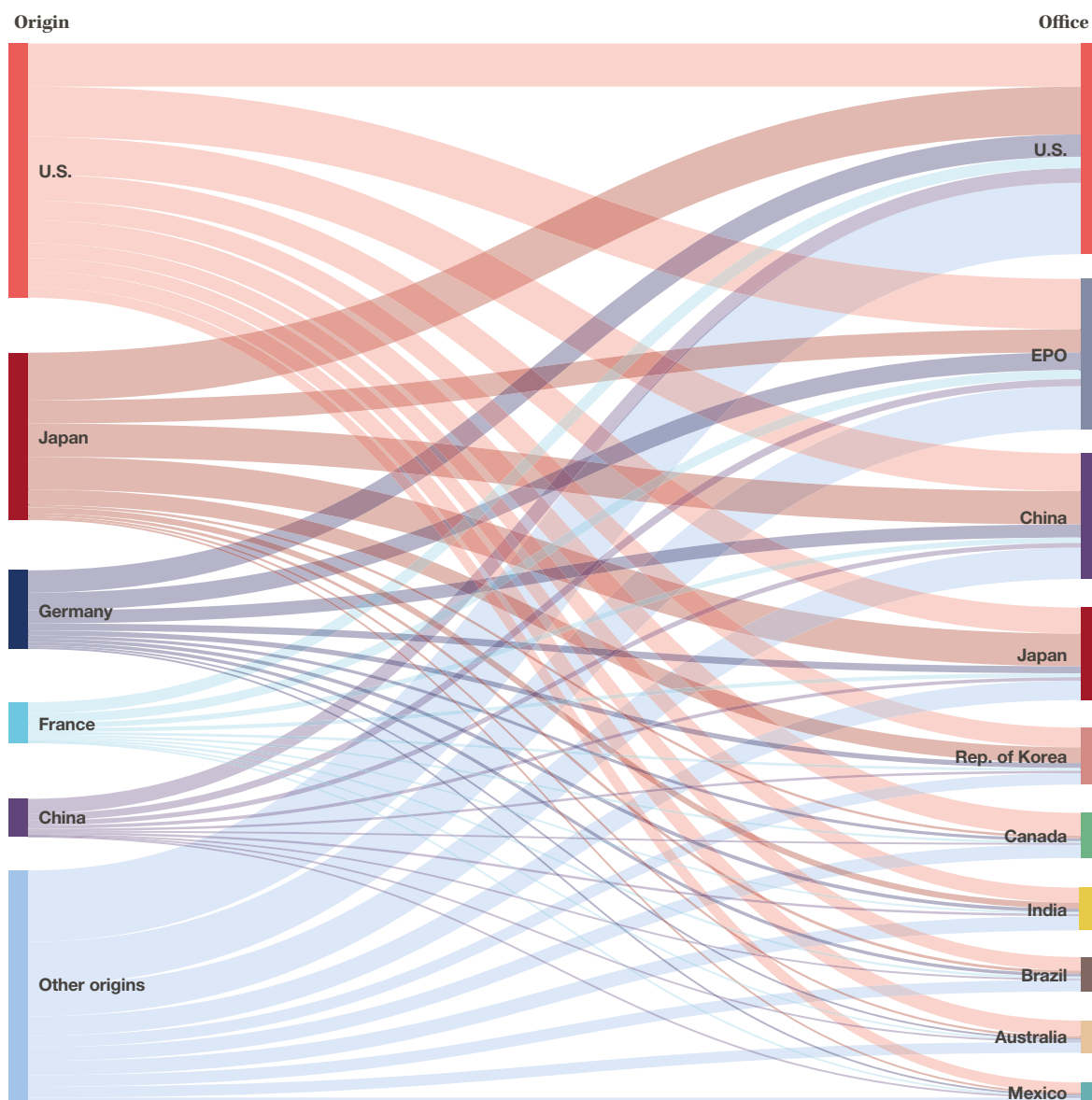


Source: WIPO Statistics Database, April 2017.

Figure B13

Flow of national phase entries for the top 10 offices and the top five origins, 2015

High shares of PCT national phase entries from U.S.-based applicants were destined for the European Patent Office and China.



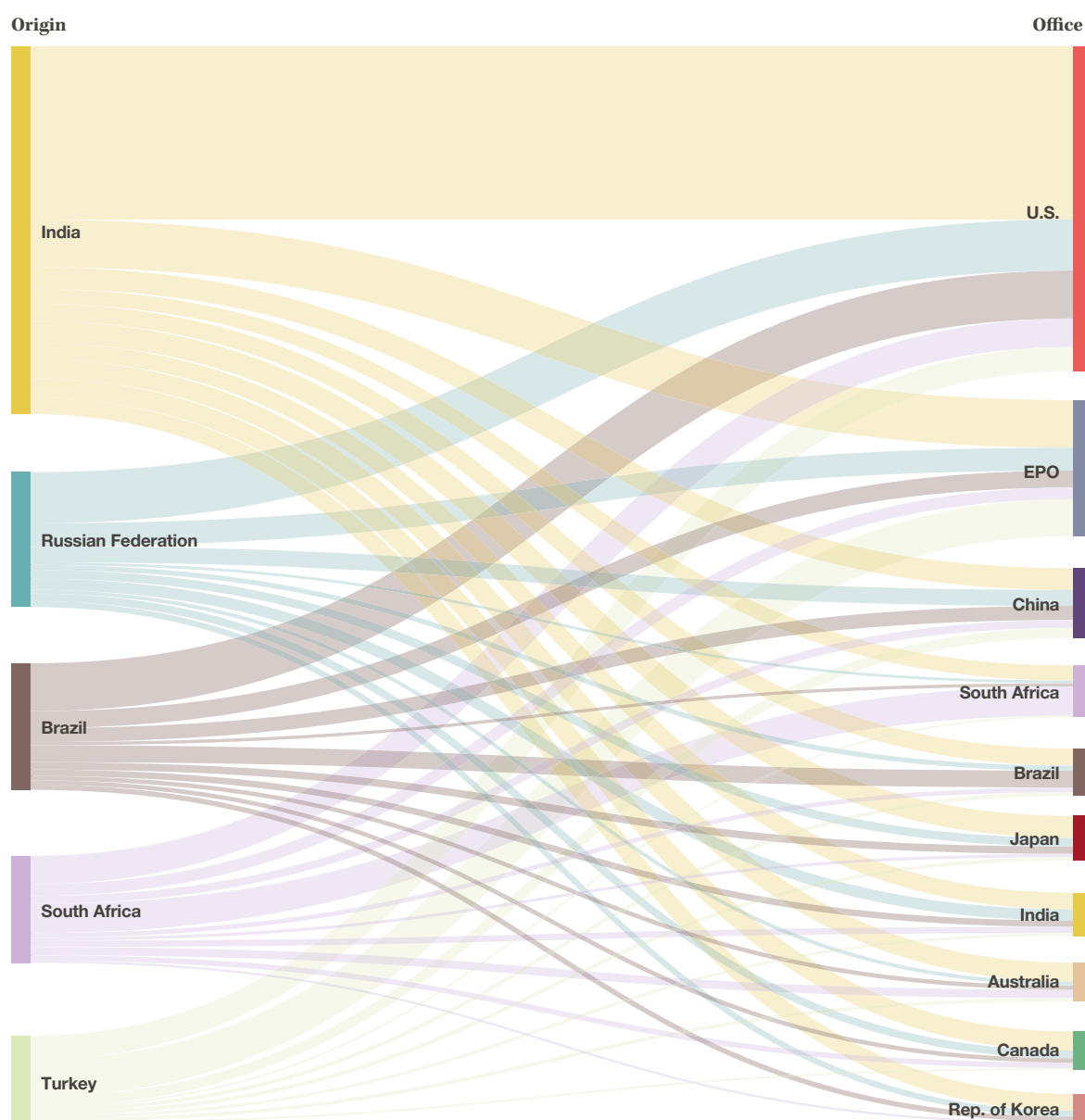
Note: This graph shows the top 10 offices for which NPE data by origin are available.

Source: WIPO Statistics Database, April 2017.

Figure B14

Flow of national phase entries for the top 10 offices in terms of number of middle-income country filings and the top five middle-income origins, 2015

PCT national phase entries initiated by applicants from India accounted for about half of all entries initiated by applicants from middle-income economies – other than China – at the USPTO.



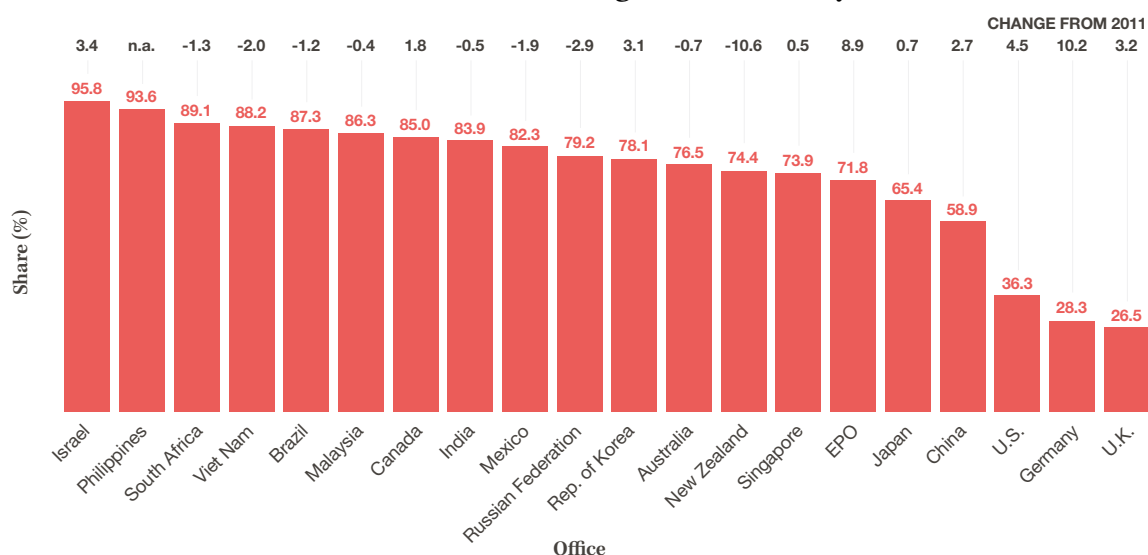
Note: This graph shows the top 10 offices in terms of middle-income country filings for which NPE data by origin are available. China, a top 10 origin, is not reported in this table, as it is included in standard figure B13.

Source: WIPO Statistics Database, April 2017.

Figure B15

Share of PCT national phase entries in total non-resident filings by office, 2015

Offices of middle-income countries such as the Philippines and South Africa received the bulk of their non-resident filings via the PCT System.



Note: The share is defined as non-resident PCT NPEs initiated, divided by the number of non-resident patent applications filed. It includes data from the 20 offices that received the most non-resident filings in 2015; that is, data from countries that are members of the PCT System and that provided data broken down by filing route.

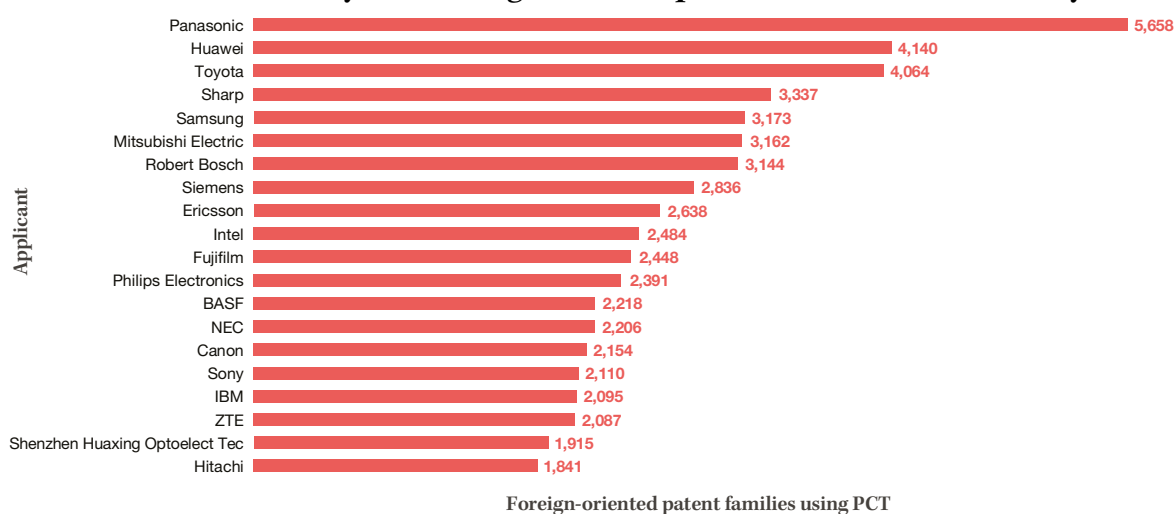
Source: WIPO Statistics Database, April 2017.

Top applicants in foreign-oriented patent families

Figure B16

Top 20 applicants in foreign-oriented patent families using the PCT System, 2011–13

Panasonic created nearly 5,700 foreign-oriented patent families via the PCT System.



Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2016 edition of PATSTAT may be incomplete for the most recent years. A patent family is a set of interrelated patent applications filed in one or more offices to protect the same invention. The patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing in an office that is not the applicant's home office.

Sources: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Table B17

Top 50 applicants in foreign-oriented patent families, 2011–13

Twenty-four of the top 50 applicants in foreign-oriented patent families relied mainly on the PCT System to protect their innovations abroad in the period 2011–13.

Overall rank	Applicant	Foreign-oriented patent families		Share of foreign-oriented patent families using the PCT route (in %)	
		2008-10	2011-13	2008-10	2011-13
1	SAMSUNG ELECTRONICS CO., LTD.	14,281	15,504	10.2	20.5
2	CANON INC	9,519	10,333	21.4	20.8
3	PANASONIC CORPORATION	9,929	8,807	60.4	64.2
4	HONGHAI PRECISION INDUSTRY CO., LTD.	6,978	8,412	0.3	0.2
5	TOSHIBA KK	7,772	7,933	15.9	21.3
6	ROBERT BOSCH GMBH	6,209	6,633	56.0	47.4
7	SIEMENS AG	5,090	6,441	44.5	44.0
8	SONY CORP	7,260	6,159	18.6	34.3
9	INTERNATIONAL BUSINESS MACHINES CORPORATION	6,034	6,104	34.8	34.3
10	FUJITSU LTD	5,555	5,690	25.3	25.7
11	TOYOTA JIDOSHA KABUSHIKI KAISHA	4,605	5,443	74.7	74.7
12	SHARP CORP	4,803	4,921	53.4	67.8
13	SAMSUNG DISPLAY CO LTD	162	4,886	63.0	0.6
14	GEN ELECTRIC	4,693	4,877	21.3	22.4
15	MITSUBISHI ELECTRIC CORP	3,653	4,857	54.2	65.1
16	SEIKO EPSON CORP	4,910	4,714	15.2	10.4
17	HUAWEI TECHNOLOGIES CO., LTD.	2,058	4,494	90.1	92.1
18	GM GLOBAL TECH OPERATIONS INC	4,031	4,328	4.2	0.5
19	RICOH CO LTD	3,955	4,272	28.1	26.1
20	FUJIFILM CORP	4,883	4,200	31.5	58.3
21	HONDA MOTOR CO LTD	4,192	4,094	30.8	28.6
22	DENSO CORP	3,233	4,078	15.0	32.6
23	HONGFUJIN PRECISION INDUSTRY (SHENZHEN) CO., LTD.	5,478	3,921	0.1	0.2
24	HITACHI LTD	3,713	3,539	29.2	52.0
25	NEC CORP	3,520	3,241	57.7	68.1
26	LG ELECTRONICS INC	3,761	3,241	41.9	29.0
27	KOREA ELECTRONICS TELECOMM	2,575	3,122	11.6	7.9
28	SAMSUNG ELECTRO MECH	2,039	3,056	2.5	2.7
29	KONINKLIJKE PHILIPS ELECTRONICS N.V.	4,886	3,003	85.0	79.6
30	HYUNDAI MOTOR CO LTD	1,579	2,987	3.0	2.9
31	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	2,371	2,938	92.4	89.8
32	INTEL CORP	1,161	2,846	57.7	87.3
33	FORD GLOBAL TECH LLC	1,408	2,790	5.0	1.5
34	BASF SE	1,501	2,713	83.7	81.8
35	BROTHER IND LTD	2,529	2,488	8.1	6.7
36	MICROSOFT CORP	2,558	2,244	47.8	77.1
37	SUMITOMO CHEMICAL CO	2,123	2,157	63.8	67.1
38	ZTE CORPORATION	2,281	2,120	99.2	98.4
39	ALCATEL LUCENT	2,060	2,075	52.3	51.2
40	SK HYNIX INC	256	2,065	4.3	0.1
41	HEWLETT PACKARD DEVELOPMENT CO	1,552	1,917	79.6	85.0
42	SHENZHEN HUAXING OPTOELECT TEC	38	1,916	100.0	99.9
43	BOE TECHNOLOGY GROUP CO., LTD.	135	1,822	4.4	74.9
44	FUJI XEROX CO LTD	1,935	1,801	5.4	6.5
45	NITTO DENKO CORP	1,206	1,795	41.5	56.1
46	NOKIA CORP	1,729	1,756	73.3	71.3
47	COMMISSARIAT ENERGIE ATOMIQUE	1,381	1,715	69.9	69.7
48	SUMITOMO ELECTRIC INDUSTRIES	1,355	1,704	59.9	67.2
49	SEMICONDUCTOR ENERGY LAB	1,064	1,701	63.3	66.7
50	TAIWAN SEMICONDUCTOR MFG	687	1,686	1.6	0.4

Note: The number of patent applications in foreign-oriented patent families as reported in the autumn 2016 edition of PATSTAT may be incomplete for the most recent years. A patent family is a set of interrelated patent applications filed in one or more offices to protect the same invention. The patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing in an office that is not the applicant's home office.

Sources: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Statistical table

Table B18

PCT national phase entries by office and origin, 2015

Name	PCT national phase entries in 2015		PCT national phase entries in 2014	
	at designated office	by country of origin	at designated office	by country of origin
Afghanistan	..	1	..	..
African Intellectual Property Organization	414	n.a.	149	n.a.
African Regional Intellectual Property Organization	738	n.a.	788	n.a.
Albania	2	..	2	3
Algeria	696	13	701	3
Andorra	..	..	..	1
Angola	..	3	..	..
Antigua and Barbuda	10	..	15	..
Argentina	..	130	..	124
Armenia	1	15	2	22
Aruba	..	..	..	1
Australia	21,033	6,684	19,181	6,940
Austria	487	5,448	462	5,302
Azerbaijan	4	10	1	4
Bahamas	..	52	..	39
Bahrain	185	13	196	3
Bangladesh	..	52	..	8
Barbados	45	324	38	364
Belarus	89	15	81	14
Belgium (c)	n.a.	5,303	n.a.	5,419
Belize	26	15	36	12
Benin (d)	n.a.	..	n.a.	6
Bermuda	..	74	..	77
Bolivia (Plurinational State of)	..	2	..	..
Bonaire, Sint Eustatius and Saba	..	..	..	1
Bosnia and Herzegovina	..	3	2	6
Botswana	..	..	5	1
Brazil	22,468	1,220	22,644	1,292
Brunei Darussalam	..	..	..	2
Bulgaria	1	96	6	75
Burkina Faso (d)	n.a.	..	n.a.	5
Cameroon (d)	n.a.	..	n.a.	26
Canada	29,393	9,053	27,451	8,920
Central African Republic (d)	n.a.	..	n.a.	4
Chad (d)	n.a.	..	n.a.	2
Chile	2,700	283	2,468	406
China	81,866	27,550	79,612	22,473
China, Hong Kong SAR	..	338	..	279
China, Macao SAR	..	1	..	10
Colombia	1,855	190	1,819	147
Comoros (d)	n.a.	..	n.a.	1
Congo (d)	n.a.	..	n.a.	9
Cook Islands	..	8	..	1
Costa Rica	569	28	530	5
Côte d'Ivoire (d)	n.a.	..	n.a.	22
Croatia	4	38	15	42
Cuba	..	119	118	134
Curaçao	..	5	..	11
Cyprus (c)	n.a.	166	n.a.	193
Czech Republic	22	496	24	347
Democratic People's Republic of Korea	..	20	..	29

(Continued)

(Continued)

Name	PCT national phase entries in 2015		PCT national phase entries in 2014	
	at designated office	by country of origin	at designated office	by country of origin
Denmark	82	5,309	79	5,662
Dominica	..	2	..	..
Dominican Republic	224	10	227	3
Ecuador	..	1	..	20
Egypt	..	47	1,353	32
El Salvador	193	..	182	..
Eritrea	..	1	..	..
Estonia	2	58	1	74
Ethiopia	..	1	..	..
Eurasian Patent Organization	2,832	n.a.	2,894	n.a.
European Patent Office	98,278	n.a.	92,627	n.a.
Finland	43	5,491	41	6,093
France (c)	n.a.	29,458	n.a.	30,153
Gabon (d)	n.a.	1	n.a.	5
Georgia	171	22	179	9
Germany	6,443	58,062	6,042	60,224
Ghana	..	..	..	1
Greece (c)	n.a.	273	n.a.	249
Grenada	..	..	1	..
Guatemala	326	2	279	1
Honduras	224	..	..	..
Hungary	10	493	31	468
Iceland	4	83	15	137
India	27,882	3,590	26,340	3,681
Indonesia	6	44	4,765	27
Iran (Islamic Republic of)	300	4	..	4
Iraq	..	1	..	2
Ireland (c)	n.a.	1,999	n.a.	1,784
Israel	5,907	6,373	5,215	6,055
Italy (c)	n.a.	10,582	n.a.	10,370
Jamaica	..	8	..	1
Japan	60,431	118,489	58,337	123,787
Jordan	..	54	..	6
Kazakhstan	..	29	..	11
Kenya	52	19	75	6
Kuwait	..	1	..	8
Kyrgyzstan	1	..	7	1
Lao People's Democratic Republic	..	..	..	1
Latvia (c)	n.a.	55	n.a.	33
Lebanon	..	16	..	12
Liechtenstein (b)	n.a.	553	n.a.	446
Lithuania (c)	n.a.	70	n.a.	46
Luxembourg	..	1,326	..	1,382
Madagascar	..	1	28	1
Malaysia	5,598	411	5,544	682
Mali (d)	n.a.	3	n.a.	9
Malta (c)	n.a.	215	n.a.	233
Marshall Islands	..	7	..	11
Mauritius	..	21	..	17
Mexico	13,787	568	12,801	487
Monaco (c)	n.a.	76	n.a.	54
Mongolia	115	1	..	1
Morocco	753	18	714	9
Mozambique	27	..	46	3
Namibia	..	..	..	1
Nepal	..	11	..	..

(Continued)

(Continued)

Name	PCT national phase entries in 2015		PCT national phase entries in 2014	
	at designated office	by country of origin	at designated office	by country of origin
Netherlands (c)	n.a.	17,443	n.a.	18,035
New Zealand	3,998	1,426	4,412	1,307
Nicaragua	..	..	140	..
Niger (d)	n.a.	2	n.a.	10
Nigeria	..	1	..	1
Norway	556	2,576	416	2,623
Oman	..	4	..	3
Pakistan	..	1	..	14
Panama	372	39	241	43
Papua New Guinea	41	1	..	..
Paraguay	..	9	..	2
Peru	1,117	32	1,089	16
Philippines	3,158	132	3,063	121
Poland	42	786	59	794
Portugal	11	401	13	334
Qatar	..	68	464	87
Republic of Korea	37,170	23,035	37,112	21,090
Republic of Moldova	58	3	62	2
Romania	7	60	17	95
Russian Federation	12,951	1,408	13,451	1,337
Rwanda	..	..	..	1
Saint Kitts and Nevis	..	3	..	3
Saint Lucia	..	2	..	..
Saint Vincent and the Grenadines	7	13	8	20
San Marino	..	3	..	5
Saudi Arabia	1,635	776	..	945
Senegal (d)	n.a.	..	n.a.	27
Serbia	4	30	5	25
Seychelles	..	16	..	37
Sierra Leone	..	1	..	3
Singapore	7,264	2,578	7,123	2,581
Slovakia	10	108	9	96
Slovenia (c)	n.a.	194	n.a.	169
South Africa	6,116	1,017	6,523	1,364
Spain	138	3,919	147	4,072
Sri Lanka	263	15	..	8
Sudan	..	1	8	2
Swaziland (a)	n.a.	3	n.a.	3
Sweden	73	12,914	64	12,663
Switzerland	82	20,842	76	21,095
Syrian Arab Republic	..	10	..	1
T F Y R of Macedonia	..	..	..	6
Thailand	..	126	6,113	206
Togo (d)	n.a.	..	n.a.	3
Trinidad and Tobago	165	1	180	2
Tunisia	407	18	394	19
Turkey	288	931	296	814
Uganda	..	..	3	2
Ukraine	1,992	142	2,138	100
United Arab Emirates	1,651	158	1,383	77
United Kingdom	2,418	20,304	2,330	20,277
United Republic of Tanzania	..	1	..	..
United States of America	137,331	191,934	128,934	170,928
Uruguay	..	49	..	11
Uzbekistan	213	2	209	15
Vanuatu	..	3	..	..

(Continued)

(Continued)

Name	PCT national phase entries in 2015		PCT national phase entries in 2014	
	at designated office	by country of origin	at designated office	by country of origin
Venezuela (Bolivarian Republic of)	..	39	..	12
Viet Nam	3,935	57	3,503	43
Zambia	..	..	22	..
Zimbabwe	2	..	..	1
Others	8,726	13,236	1,712	9,263
Total	618,500	618,500	595,900	595,900

(a) The African Regional Intellectual Property Organization is the competent designated or elected office.

(b) The Office of Switzerland is the competent designated or elected office.

(c) The European Patent Office is the competent designated or elected office.

(d) The African Intellectual Property Organization is the competent designated or elected office.

.. indicates data are unknown.

n.a. indicates not applicable.

PCT national phase entries by origin; world totals are WIPO estimates.

Offices of destination are designated and/or elected offices.

Source: WIPO Statistics Database, April 2017.



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Section C

Statistics on the performance of the PCT System

Highlights

The International Bureau

In addition to its role as a receiving office (RO), the International Bureau (IB) of WIPO is responsible for functions related to the international phase of the PCT System, including examining formalities, translating abstracts, titles and patentability reports and publishing PCT applications.

Electronic filings accounted for 95.5% of all PCT filings

Applicants filed 95.5% of their PCT applications electronically in 2016 – a rise of about 43 percentage points since 2007 (52.7%). The remaining 4.5% of applications were filed on paper.

Half of PCT applications (50.1%) were published in English, followed by Japanese (19.9%) and Chinese (12.4%). These three languages combined represented 82.3% of all applications published in 2016 (figure 18). Between 2002 and 2016, the share of PCT applications published in English decreased almost continually, from nearly 70% to 50%. In contrast, the share of PCT applications published in Chinese increased, from less than 1% to 12.4%. The share of applications published

in Japanese and in Korean – which became a language of publication in 2009 – also increased sharply over the past 10 years, by about 9 and 6 percentage points, respectively.

Three-quarters of all PCT applications are processed by the IB within a week

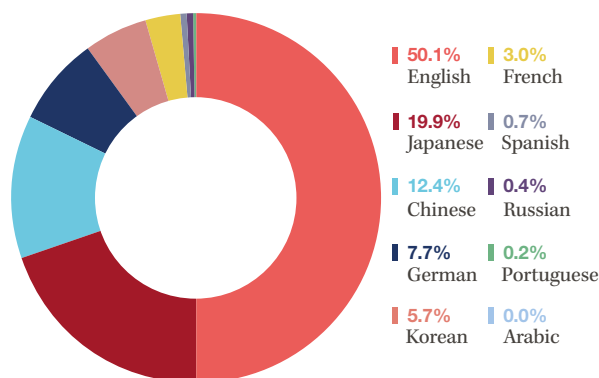
In 2016, the IB performed the formality examination of almost three-quarters of all PCT applications within a week of receiving the application, and it processed 95% within three weeks. These were the fastest processing times observed since 2007.

Almost four-fifths (79.1%) of publications occurred within a week after the expiration of the 18-month period, and nearly all publications (99.5%) occurred within two weeks. These were also the highest shares since 2007.

When the international search report is not available at the time of international publication, the application must be “republished” together with the search report once it does become available. The proportion of applications which required republication which were republished within two months from the receipt of the search report was 82.3% – the highest share in the past 10 years. Almost all republications (98%) occurred within three months of the IB receiving the international search report (ISR).

Figure 18

Languages of publication of PCT applications, 2016



Source: Standard figure C2.

ePCT-filing

By the end of 2016, 45 ROs were accepting PCT filings using the ePCT-filing portal. This figure includes the offices of 16 countries which announced that they were prepared to accept such filings in the course of the year: Brunei Darussalam, Bulgaria, Cuba, the Dominican Republic, Iceland, Indonesia, the Islamic Republic of Iran, Israel, Oman, Panama, the Philippines, Portugal, the Republic of Korea, the Russian Federation, Slovakia and the U.S.

ePCT for applicants

Updates to the ePCT system deployed in May 2016 incorporated a number of new features:

- A new function allows applicants to download a copy of their draft PCT application for review prior to filing.
- Bank transfer has been added as an additional payment method when PCT applications to the IB are filed using ePCT. An automated email is sent immediately after filing with the payment details required to make the transfer.
- Priority claims – where possible, the date of filing indicated is validated against the year component of the application number.
- It is now possible to remove all access rights to all PCT applications for a given user in one efficient operation. This includes access rights to applications that are filed or still pending and to any shared address books.
- It is now possible to add draft PCT applications to a portfolio prior to filing.

ePCT for offices

ePCT system functionality for offices was also updated and expanded:

- A new combined action allows user offices to generate the ISR and the written opinion (WOSA), either separately or at the same time.
- A new “Manage Fees” action has been added for ROs which allows users to manage fees through a single screen; for example, users can indicate amounts paid or set the right currency per fee.
- An action allows national offices to notify the IB about national phase events such as publication, grant, refusal or withdrawal. The national phase information submitted is made available to PATENTSCOPE and national phase information databases at the IB.
- A new management report has been added to the system for international preliminary examining authorities (IPEAs).
- International searching authority (ISA) users can now prepare the ISR and WOSA as well as a set of forms.

The receiving offices

A PCT application is filed with a receiving office (RO), which may be a national or regional patent office or the IB. ROs are responsible for receiving PCT applications, examining their compliance with PCT formality requirements, receiving the payment of fees, and transmitting

copies of the application for further processing to the IB and the international searching authority (ISA).

The use of electronic filing varies markedly between offices

The United States Patent and Trademark Office (USPTO), the Japan Patent Office (JPO) and the State Intellectual Property Office of the People's Republic of China (SIPO) had the highest shares of PCT applications filed electronically in 2016, each with more than 98%. In contrast, the offices of the Russian Federation, India and Turkey had the highest shares of PCT applications filed on paper, with 91%, 38% and 27%, respectively.

Finland and Singapore transmitted all their PCT applications to the IB within four weeks

Receiving offices transmitted, on average, 94.8% of their PCT applications to the IB within four weeks of the international filing date. Even faster, Finland and Singapore transmitted all their applications to the IB within four weeks. The offices of Australia, Japan and Sweden also had high transmittal rates – each sending more than 99.5% of their applications to the IB within a four-week period (figure 19). Compared with 2015, the share of applications transmitted within four weeks increased the most sharply at the offices of India (+30 percentage points), France (+18), Germany (+8) and the Netherlands (+7).

International searching authorities

Each PCT application must undergo an international search by an ISA. Once the ISA has performed the search, the applicant receives an ISR containing a list of documents relevant for assessing the patentability of the invention. The ISA also establishes a written opinion, providing a detailed analysis of the potential patentability of the invention in light of the documents found in the search.

The EPO remains the most selected ISA

In 2016, around 224,000 ISRs were issued by the 21 ISAs. The EPO issued around 80,000 ISRs, 35.7% of the total. It was followed by the JPO (44,319), SIPO (36,565), the Korean Intellectual Property Office (KIPO) (28,111) and the USPTO (21,311) (figure 20). These top five ISAs

combined accounted for 94% of all ISRs issued in 2016. Among the top 10 ISAs, SIPO (+32.7%) and the offices of Israel (+26.2%) and the Russian Federation (+16.2%) recorded the most pronounced growth.

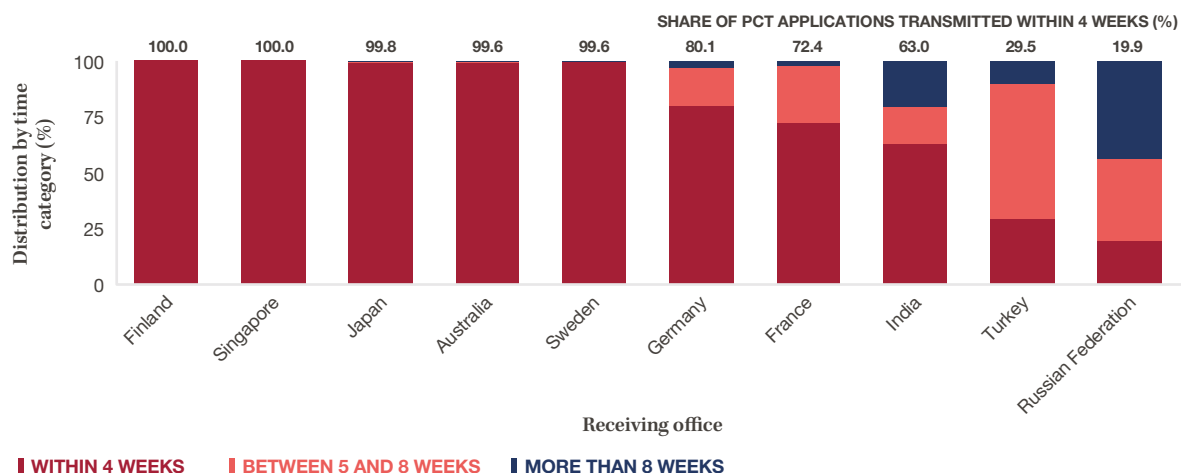
Of all ISRs that were required to be transmitted to the IB within three months from the date of receipt of the application, 80.6% were actually transmitted within this time frame in 2016. The office of Ukraine and the Visegrad Patent Institute transmitted all such ISRs within three months. In contrast, 77.1% of ISRs which were required to be transmitted to the IB within nine

months from the priority date were transmitted within this time frame in 2016.

On average, ROs transmitted 83.1% of their applications to ISAs within four weeks. The share of applications transmitted to ISAs within four weeks ranged from 97.7% for the JPO to 0.3% for the office of India. When compared with 2015, the share of applications transmitted within four weeks to ISAs improved at 13 of the top 20 ROs, with the IB (+19 percentage points) and the offices of France (+14) and Germany (+11) seeing the sharpest increases.

Figure 19

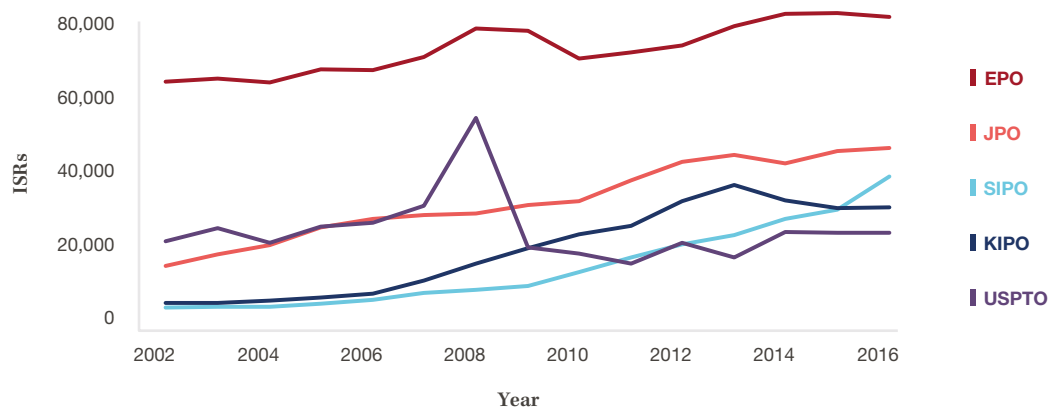
Transmission of PCT applications to the International Bureau of WIPO for selected receiving offices, 2016



Source: Standard figure C12.

Figure 20

International research reports established by the top five international research authorities



Source: Standard figure C14.

Standard figures and tables

PCT applications by filing medium and publication language

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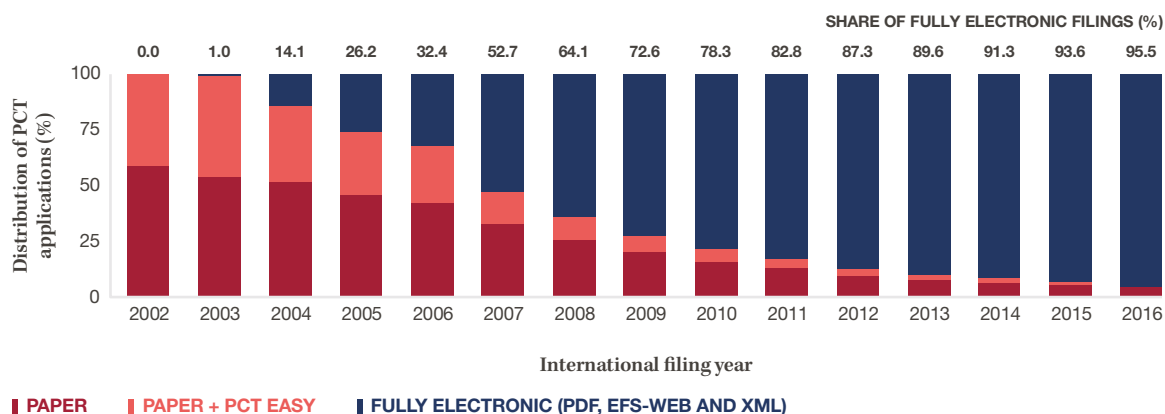
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PCT applications by filing medium and publication language

Figure C1

Distribution of PCT applications by filing medium

More than 95% of all PCT applications were filed electronically in 2016.

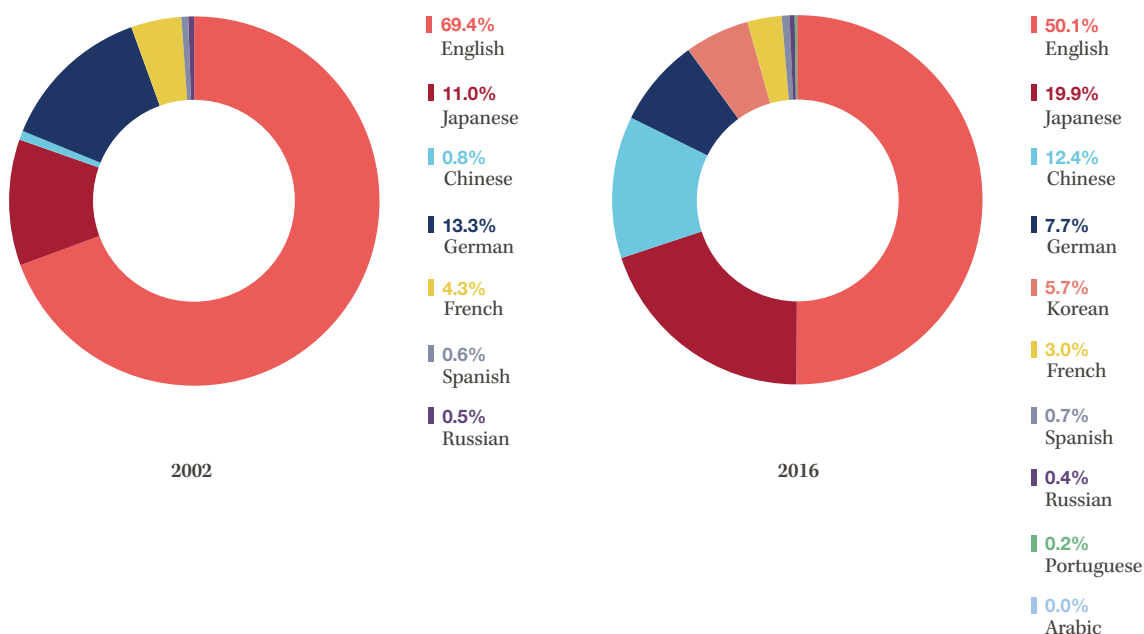


Source: WIPO Statistics Database, April 2017.

Figure C2

Distribution of PCT applications by language of publication and year of publication

In 2016, half of all PCT applications were published in English, while one-fifth were in Japanese.



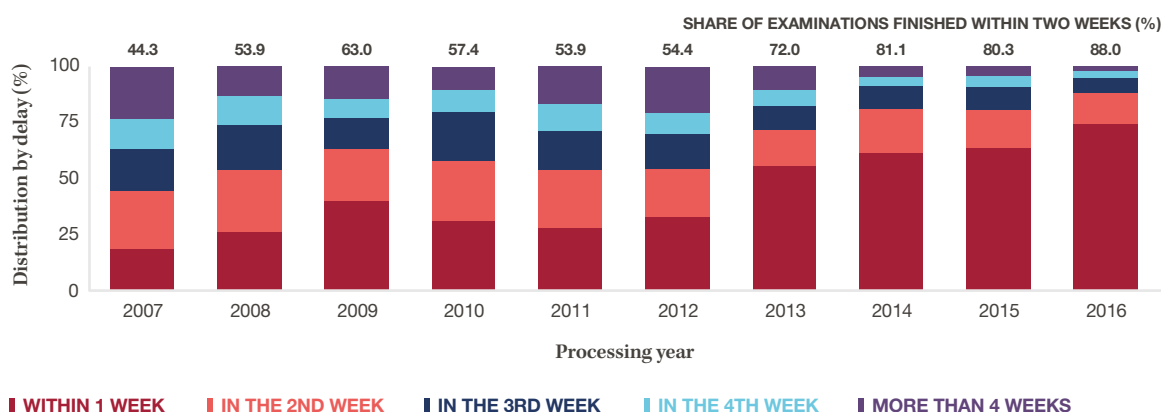
Source: WIPO Statistics Database, April 2017.

Timeliness in processing PCT applications by the International Bureau

Figure C3

Timeliness of formalities examination

The formalities examination was completed within two weeks for 88% of all PCT applications in 2016.



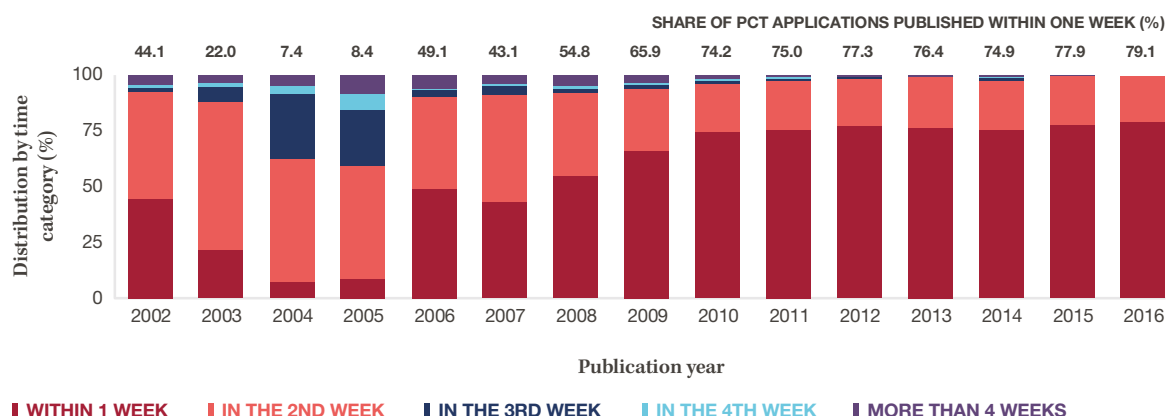
Note: The International Bureau (IB) performs a formality examination of PCT applications and related documents promptly after their receipt. Once the formality examination of a PCT application is completed, the IB sends a form to the applicant acknowledging receipt of the application. Timeliness is calculated as the time elapsed between the date of receipt of the record copy of the PCT application and the date of issuance of form PCT/IB/301.

Source: WIPO Statistics Database, April 2017.

Figure C4

Timeliness in publishing PCT applications

Around 80% of PCT applications were published within a week of the expiration of the 18-month limit – a vast improvement over the past 15 years.



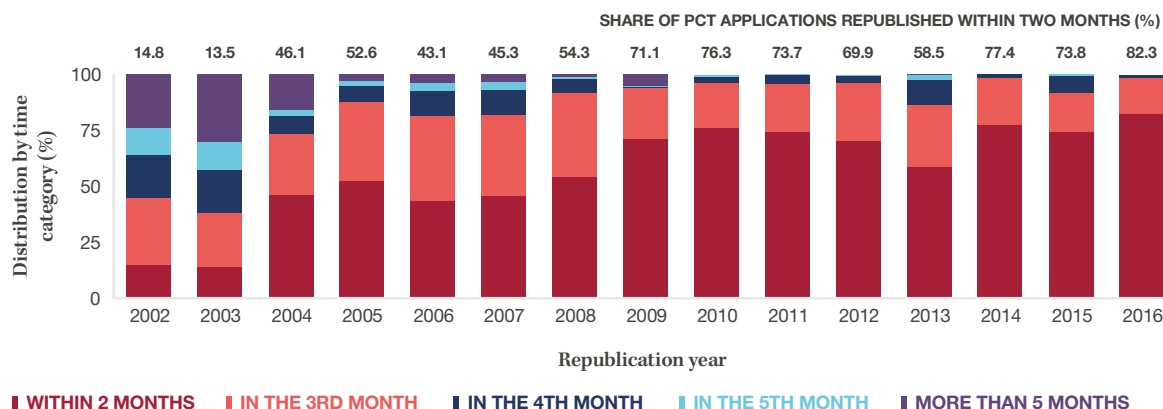
Note: PCT applications and related documents are to be published “promptly” after the expiration of 18 months from the priority date, unless the applicant requests early publication, or the application is withdrawn or considered withdrawn. Timeliness is calculated as the time elapsed between the time limit of 18 months from the priority date and the actual publication date.

Source: WIPO Statistics Database, April 2017.

Figure C5

Timeliness in republishing PCT applications with international search reports

The share of applications republished with international search reports within two months increased sharply in 2016.



Note: The International Bureau (IB) is required to publish applications even in the absence of an international search report (ISR). In such cases, the application is republished along with the ISR after the report is received. Timeliness is calculated as the time elapsed between the date of the receipt of the ISR at the IB and the date of republication by the IB.

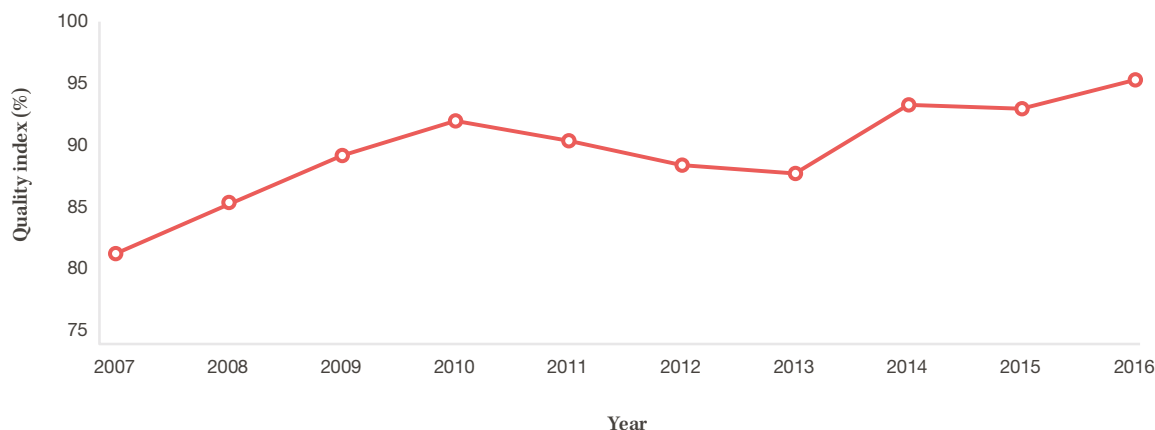
Source: WIPO Statistics Database, April 2017.

Efficiency in processing PCT applications by the International Bureau

Figure C6

Formalities examination quality index

The overall quality of formalities examination has improved markedly, from an average of 81% in 2007 to 95% in 2016.



■ QUALITY INDEX OF FORMALITIES EXAMINATION

Note: In order to measure the quality of the formalities examination by the International Bureau (IB) in a simple and comprehensive manner, the IB has developed an aggregate quality index, calculated as the average of four lead quality indicators. Three of these are based on the timeliness of key transactions. The quality index is the simple average of: (i) the percentage of forms PCT/IB/301 (notification of receipt of a PCT application) sent within five weeks of the IB receiving a PCT application; (ii) the percentage of PCT applications published within six months and three weeks after the international filing date; (iii) the percentage of republications with international search reports (ISRs) within two months after the IB receives the ISR; (iv) the percentage of corrections to bibliographic data in the published PCT application (from 2007 to 2011) and the PCT operation quality control error rate (from 2012 onwards).

Source: WIPO Statistics Database, April 2017.

Figure C7

Translation quality indicator

In 2016, the share of acceptable translations was 86%.



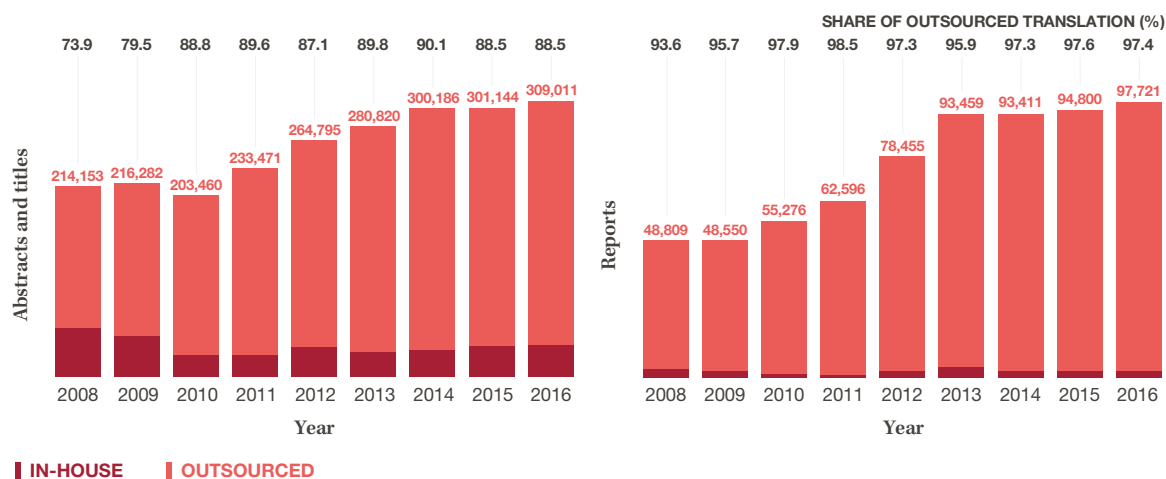
Note: The translation quality indicator shows the average quality of abstracts and reports translated by external suppliers and in-house translators combined, based on the results of the International Bureau (IB)'s regular quality control checks. This indicator aggregates the results of such quality control performed by the IB across all language combinations and document types.

Source: WIPO, April 2017.

Figure C8

Distribution of translation work

The shares of outsourced translations in 2016 remained largely unchanged from 2015.



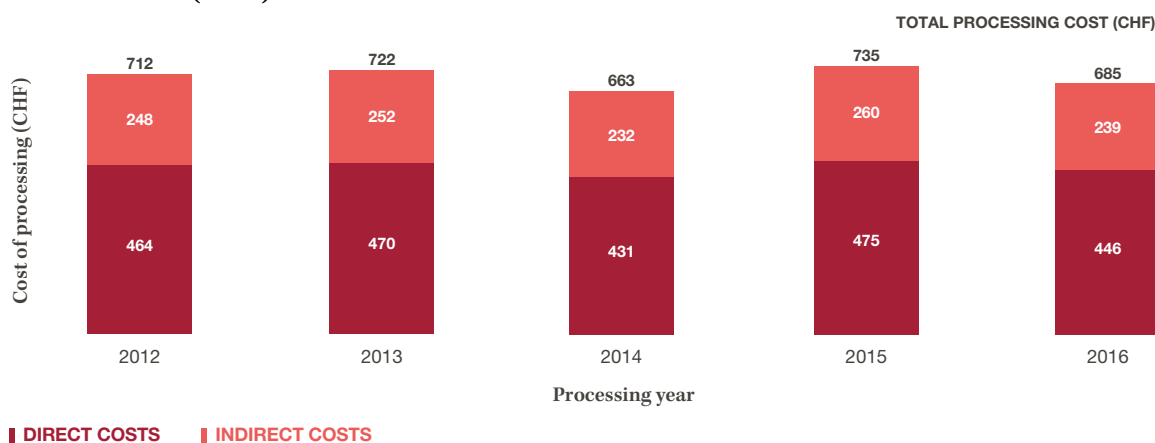
Note: Translations by the International Bureau (IB) are intended to enhance the patent system's disclosure function by making the technological information in PCT applications accessible in languages other than the languages in which the original documents were filed. In order to meet this objective, the IB ensures that all titles and abstracts of PCT applications are available in English and French, and all international search and preliminary examination reports are available in English.

Source: WIPO, April 2017.

Figure C9

Unit cost of processing a published PCT application

The average cost of processing a published PCT application in 2016 was 685 Swiss francs (CHF).



Note: The International Bureau (IB)'s efficiency in processing PCT applications can be measured by the unit cost of processing, defined as the average total cost of publishing a PCT application. Average total cost is determined by total PCT System expenditure, plus a proportion of expenditure on support and management activities. The unit cost includes the cost of all PCT activities, including translation, communication, management, etc. Costs have direct and indirect components. Direct costs reflect expenditure incurred by the IB in administering the PCT System and related programs. Indirect costs reflect expenditure for supporting activities (such as buildings and information technology). Indirect costs are weighted in order to take into account only the share that is attributable to the PCT System. The unit cost is calculated by dividing the total cost of production by the number of PCT applications published.

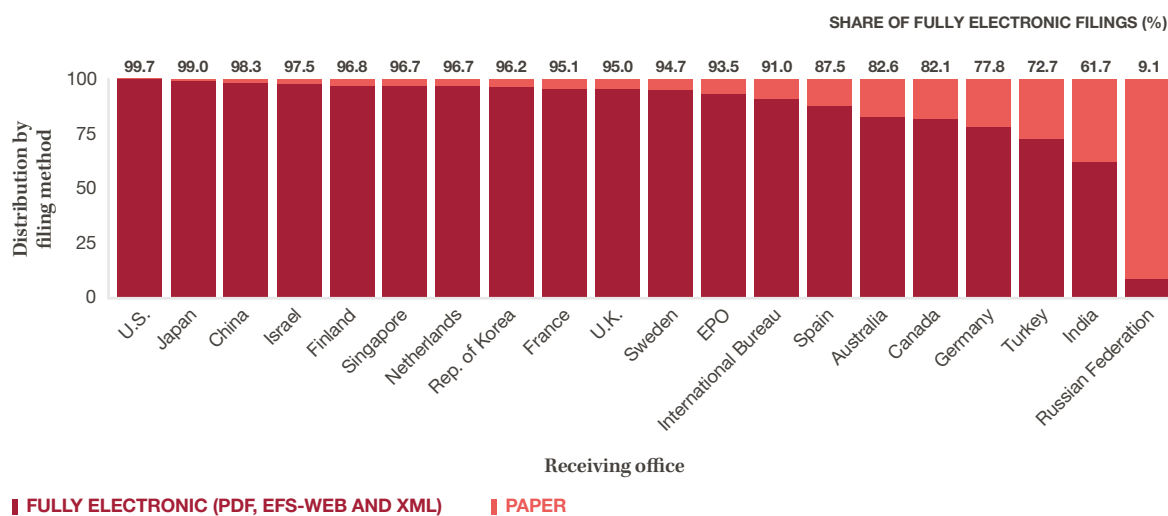
Source: WIPO Statistics Database, April 2017.

Receiving offices

Figure C10

Distribution of PCT applications by filing medium and receiving office, 2016

The offices of Japan and the U.S. received almost all their PCT filings electronically.

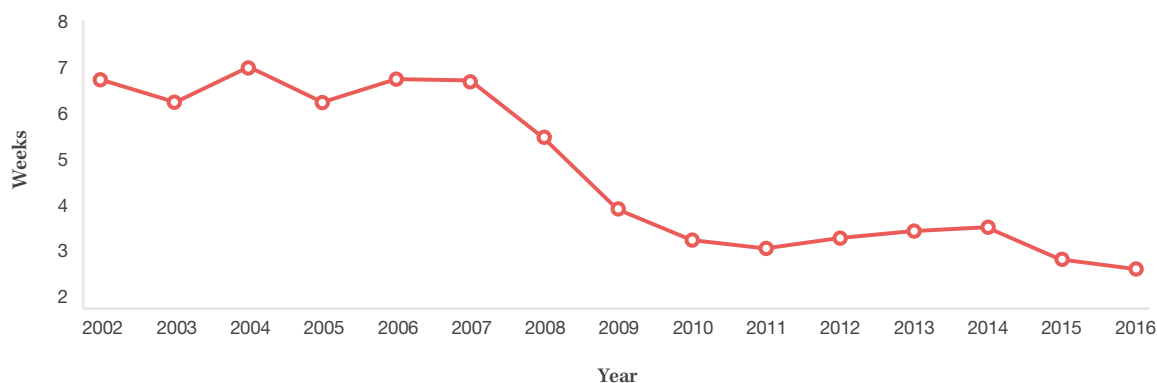


Source: WIPO Statistics Database, April 2017.

Figure C11

Average timeliness in transmitting PCT applications to the International Bureau

Receiving offices' timeliness in transmitting PCT applications to the International Bureau improved for the second year in a row.



AVERAGE TIMELINESS IN TRANSMITTING PCT APPLICATIONS

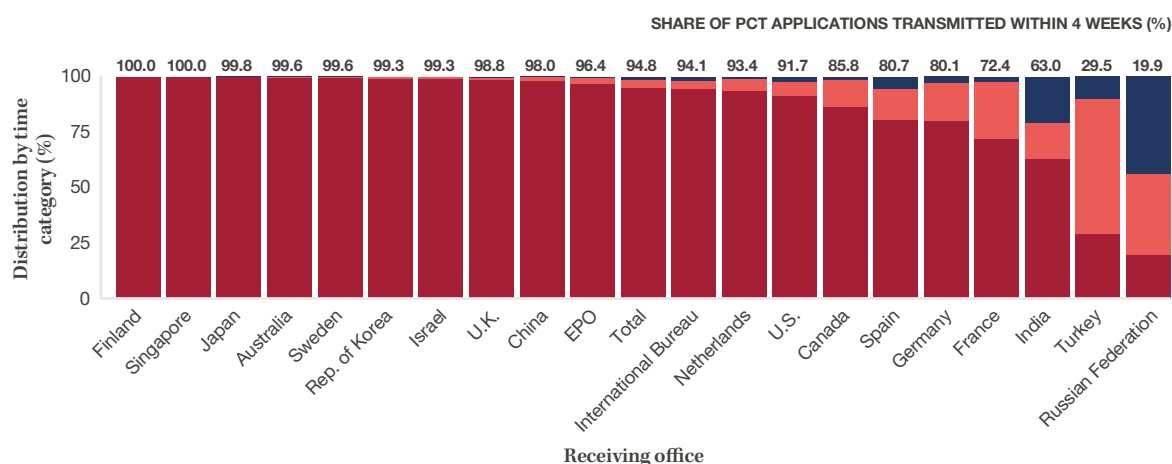
Note: The copy of the PCT application – known as the record copy – sent by the receiving office (RO) must reach the International Bureau (IB) before the expiration of the 13th month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. Where this occurs, the IB should receive the application within one month of the international filing date. Timeliness is calculated as the time elapsed between the international filing date and the date on which the IB received the PCT application from the RO. Applications transmitted under PCT Rule 19.4 are excluded.

Source: WIPO Statistics Database, April 2017.

Figure C12

Timeliness in transmitting PCT applications to the International Bureau by receiving office, 2016

Finland and Singapore transmitted all their PCT applications to the International Bureau within four weeks.



WITHIN 4 WEEKS BETWEEN 5 AND 8 WEEKS MORE THAN 8 WEEKS

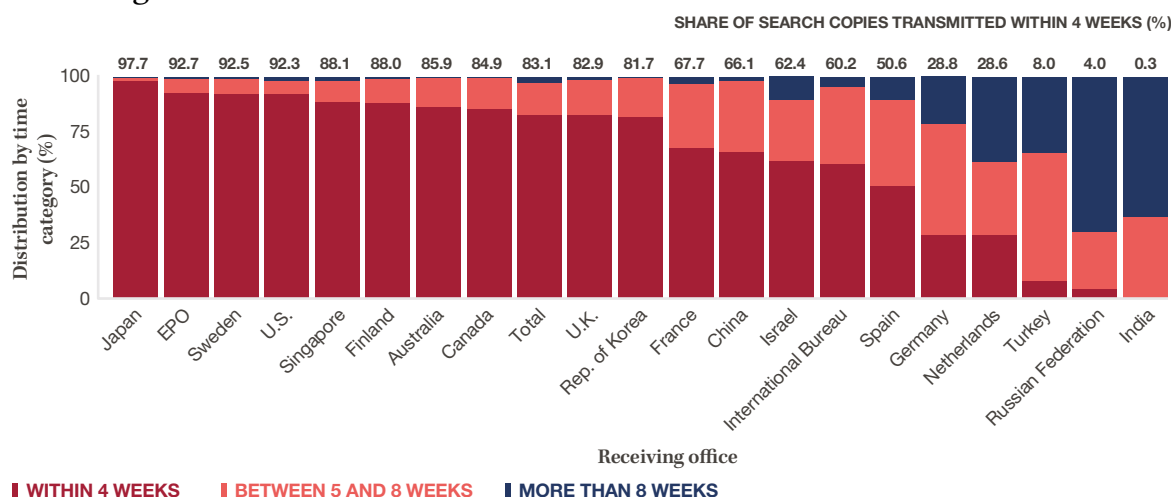
Note: The copy of the PCT application – known as the record copy – sent by the receiving office (RO) must reach the International Bureau (IB) before the expiration of the 13th month from the priority date. PCT applications are usually filed before the expiration of 12 months from the priority date. Where this occurs, the IB should receive the application within one month of the international filing date. Timeliness is calculated as the time elapsed between the international filing date and the date on which the IB received the PCT application from the RO. Applications transmitted under PCT Rule 19.4 are excluded.

Source: WIPO Statistics Database, April 2017.

Figure C13

Timeliness in transmitting PCT applications to international searching authorities by receiving office, 2016

The Japan Patent Office transmitted nearly all PCT applications to international searching authorities within four weeks.



Note: Timeliness is calculated as the time elapsed between the international filing date and the date on which the international searching authority received the PCT application – known as the search copy – from the receiving office. Dates of search fee payments are not used, due to the unavailability of data. Applications transmitted under the terms of PCT Rule 19.4 are excluded.

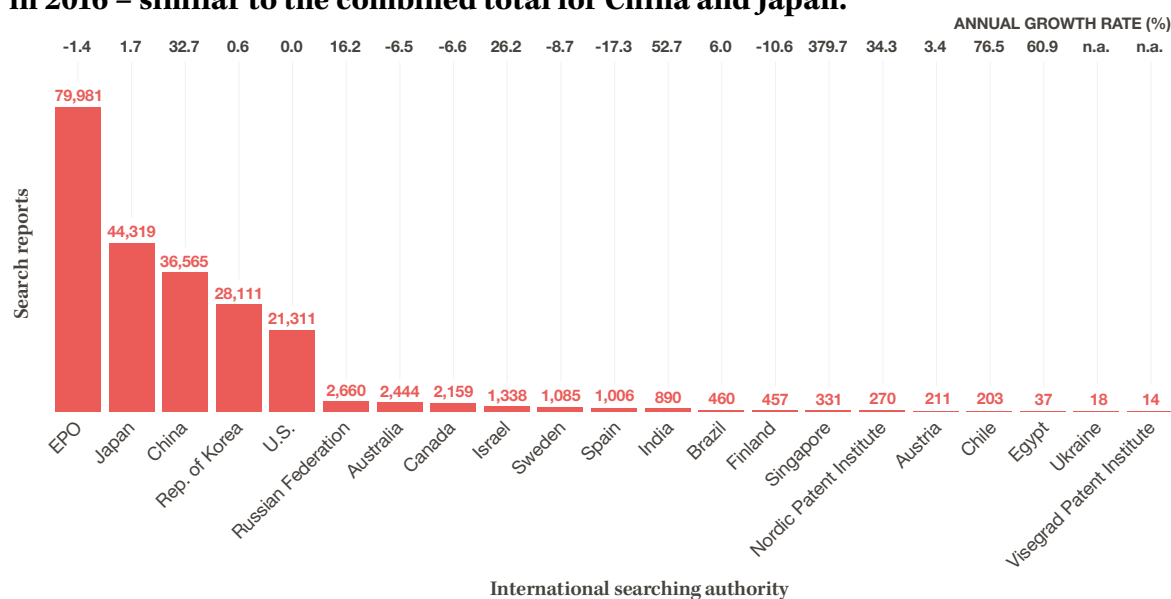
Source: WIPO Statistics Database, April 2017.

International searching authorities

Figure C14

International search reports issued by international searching authority, 2016

The European Patent Office established nearly 80,000 international search reports in 2016 – similar to the combined total for China and Japan.



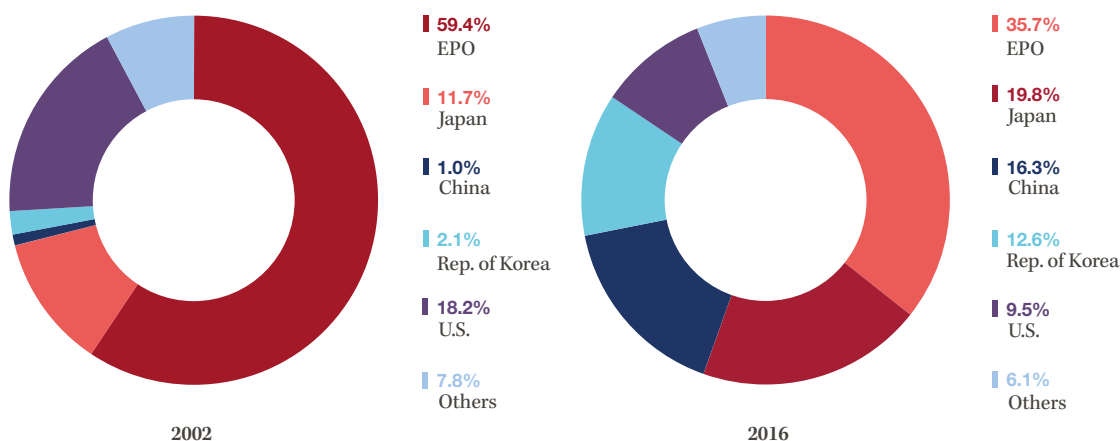
Note: n.a. indicates not applicable.

Source: WIPO Statistics Database, April 2017.

Figure C15

Distribution of international search reports issued by international searching authority

The top five international searching authorities established 94% of all international search reports in 2016.

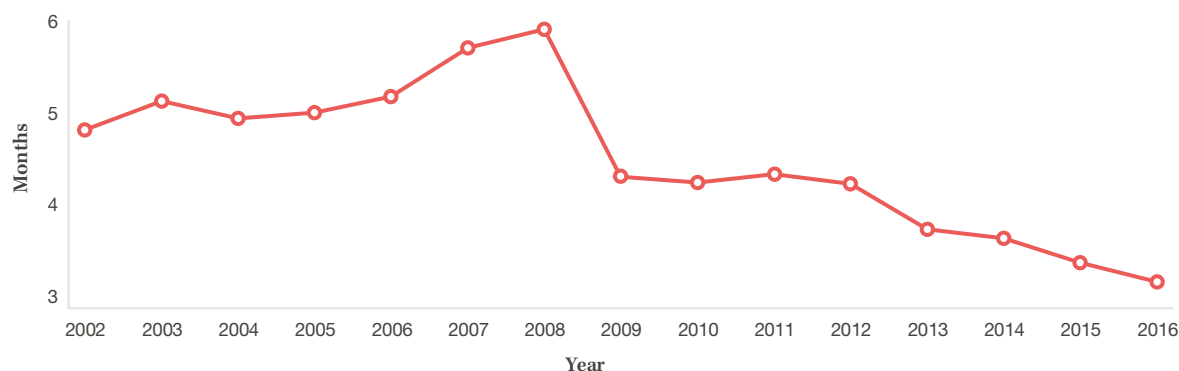


Source: WIPO Statistics Database, April 2017.

Figure C16

Average timeliness in transmitting international search reports to the International Bureau, measured from the date of receipt of the search copy

Since 2009, there has been a near continuous improvement in timeliness in transmitting international search reports to the International Bureau.



AVERAGE TIMELINESS IN TRANSMITTING ISRS (FROM RECEIPT OF SEARCH COPY)

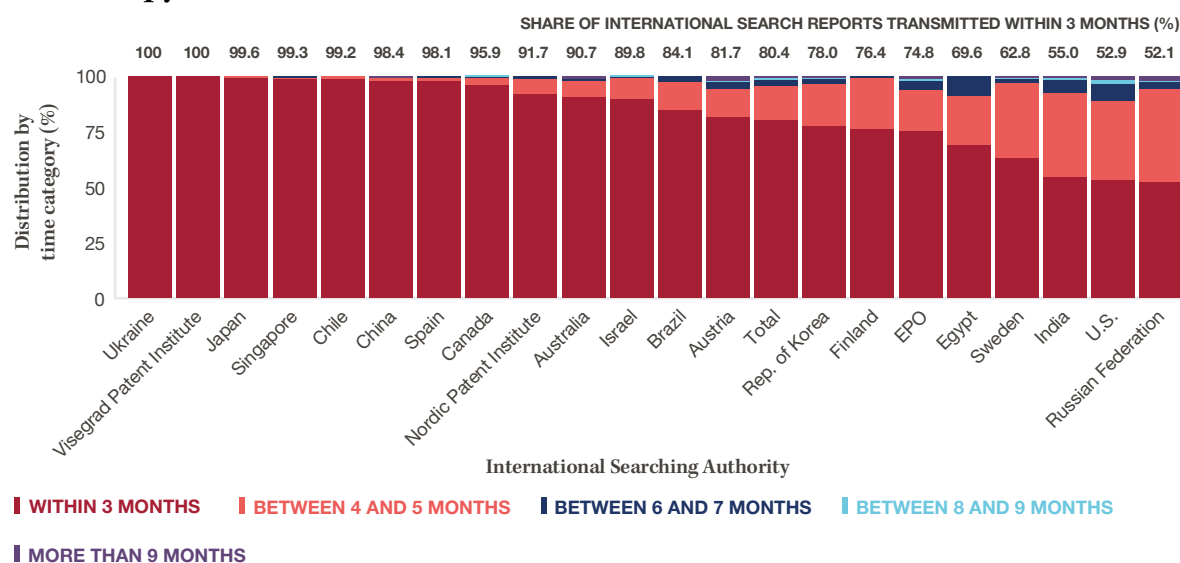
Note: The international searching authority must establish the ISR within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time between the date when the ISA receives a copy of the PCT application and the date when it transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). The figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is three months after the date of receipt of the search copy.

Source: WIPO Statistics Database, April 2017.

Figure C17

Timeliness in transmitting international search reports to the International Bureau, measured from date of receipt of the search copy by international searching authority, 2016

More than 80% of those international search reports that should be transmitted to the International Bureau within three months from the date of receipt of the search copy met this deadline.



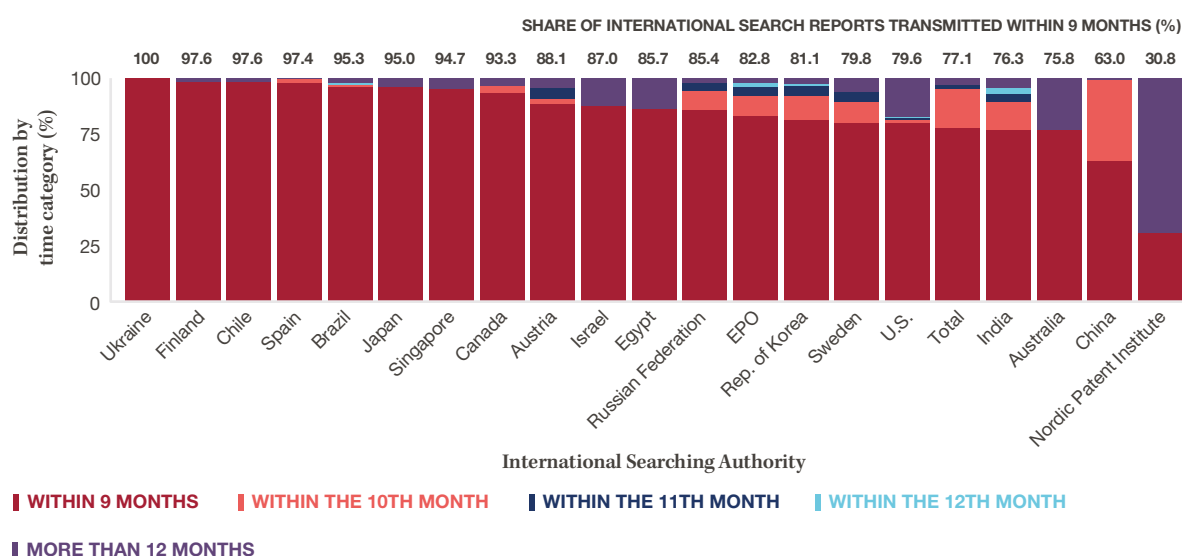
Note: The international searching authority must establish the ISR within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time between the date when the ISA receives a copy of the PCT application and the date when it transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)). The figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is three months from receipt of the search copy.

Source: WIPO Statistics Database, April 2017.

Figure C18

Timeliness in transmitting international search reports to the International Bureau, measured from priority date by international searching authority, 2016

More than 77% of those international search reports that should be transmitted to the International Bureau within nine months from the priority date met this deadline.



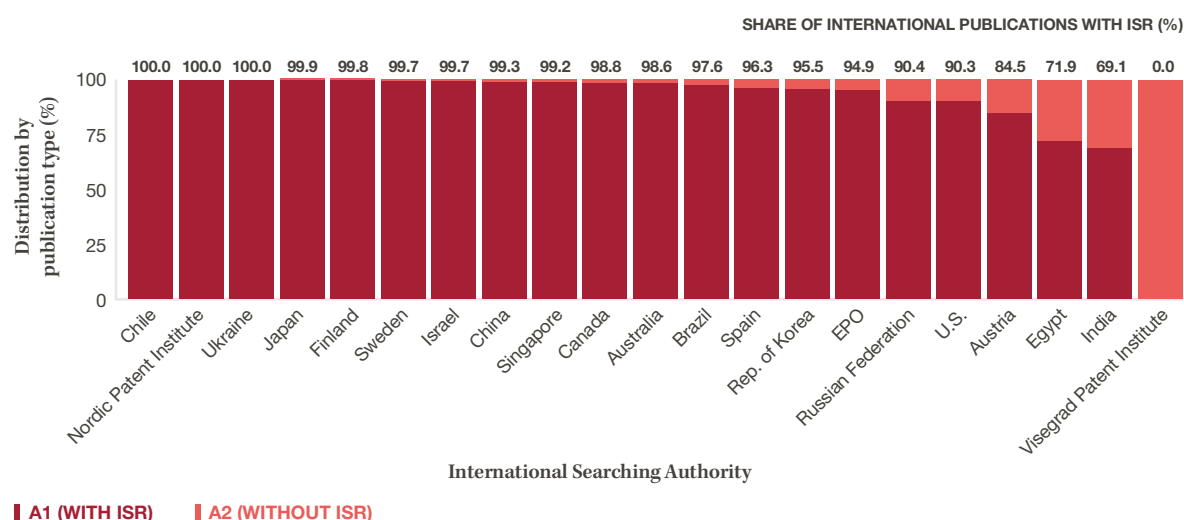
Note: The international searching authority must establish the ISR within three months of receiving a copy of the application – known as the search copy – or nine months from the priority date (or, if no priority is claimed, from the international filing date), whichever expires later. Timeliness is calculated as the time elapsed between the priority date and the date on which the ISA transmits the ISR to the International Bureau (or, if applicable, the date of receipt of the declaration under Article 17(2)(a)) for ISRs where the deadline is nine months from the priority date. The figure shows timeliness in establishing the ISR where the applicable time limit for establishing the ISR under Rule 42 is nine months from the priority date (or international filing date if no priority is claimed).

Source: WIPO Statistics Database, April 2017.

Figure C19

Share of published PCT applications with and without international search reports by international searching authority, 2016

For nine international searching authorities, the share of PCT applications published with the international search report by the International Bureau in 2016 exceeded 99%.



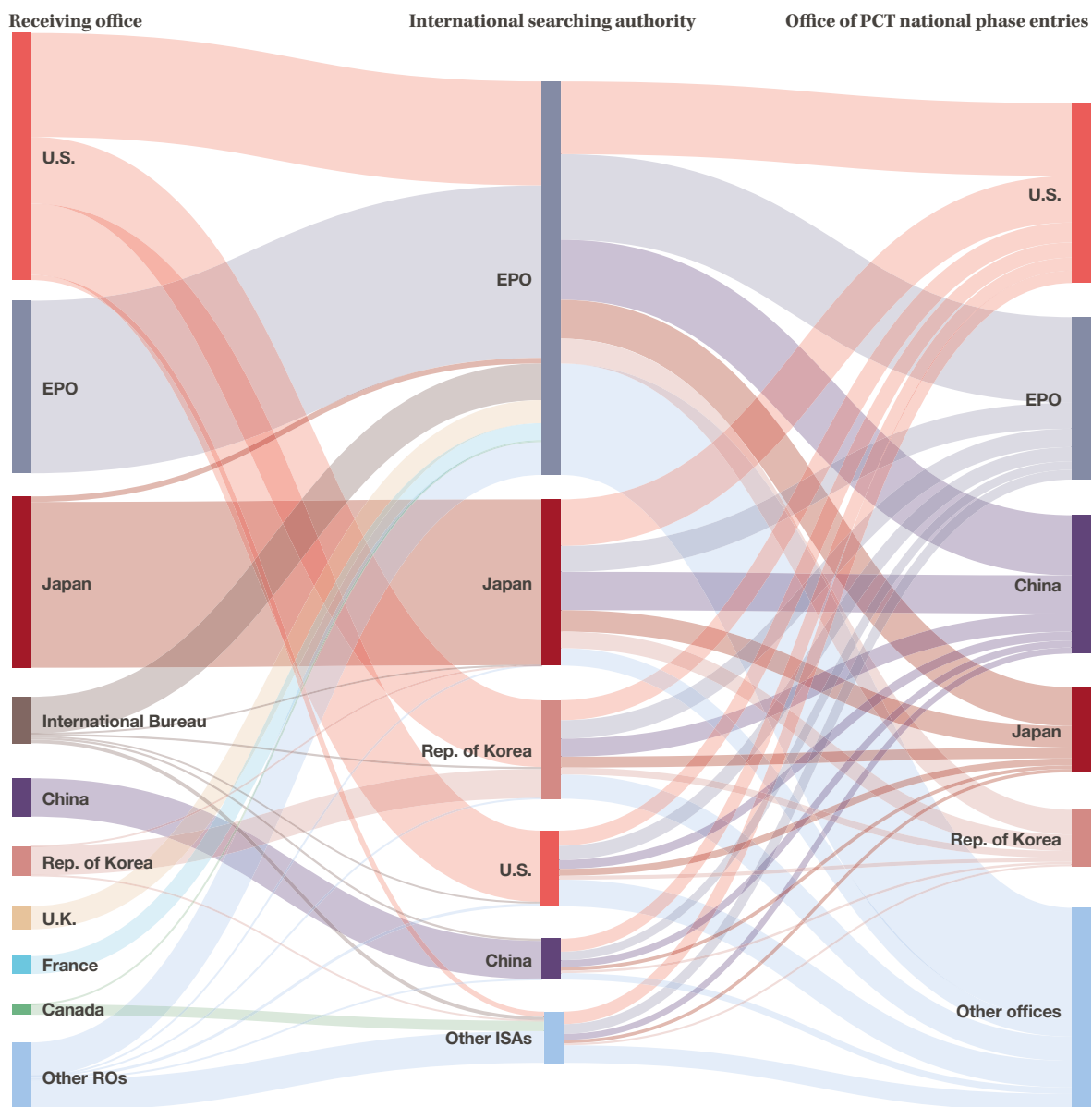
Note: A further measure of the performance of an international searching authority is the proportion of international search reports that are transmitted to the International Bureau (IB) in time for publication with the PCT application – known as A1 publication. Only one PCT application with an ISR established by the Visegrad Patent Institute – which started operation on July 1, 2016 – was published by the IB in 2016.

Source: WIPO Statistics Database, April 2017.

Figure C20

Selected receiving offices and international searching authorities for PCT national phase entries initiated at the top five offices of destination, 2011–13

Of the 285,500 PCT applications filed at the Japan Patent Office over the 2011–13 period, about 80,000 entered the national phase in the U.S.



Note: NPE data between 2011 and 2013 may be incomplete. This figure shows the flow of PCT applications between selected receiving offices, international searching authorities and offices of national phase entries.

Source: WIPO Statistics Database and EPO PATSTAT Database, April 2017.

Supplementary international searching authorities

Table C21

Distribution of supplementary international search reports by supplementary international searching authority

The number of supplementary international search reports issued declined for the second consecutive year.

Supplementary international searching authority	Year				
	2012	2013	2014	2015	2016
Austria	2	2	2	2	
European Patent Office	21	30	61	40	44
Finland	1				
Nordic Patent Institute	3				
Russian Federation	19	32	46	22	2
Singapore					1
Sweden		3			
Total	46	67	109	64	47

Note: The figures for 2016 may be incomplete.

Source: WIPO Statistics Database, April 2017.

International preliminary examining authorities

Table C22

Distribution of international preliminary reports on patentability by international preliminary examining authority

The European Patent Office issued nearly two-thirds of all international preliminary reports on patentability.

International preliminary examining authority	Year					2016 share (%)	Change from 2015 (%)
	2012	2013	2014	2015	2016		
Australia	818	653	640	617	598	4.2	-3.1
Austria	14	28	16	6	5	0.0	-16.7
Brazil	45	47	48	43	47	0.3	9.3
Canada	360	255	249	291	232	1.6	-20.3
Chile					5	0.0	n.a.
China	450	433	335	419	381	2.6	-9.1
Egypt			1	4		0.0	n.a.
European Patent Office	7,745	7,305	7,639	9,057	9,102	63.2	0.5
Finland	115	91	104	104	59	0.4	-43.3
India				6	25	0.2	316.7
Israel		9	40	79	72	0.5	-8.9
Japan	2,741	2,470	2,232	2,478	2,021	14.0	-18.4
Nordic Patent Institute	37	48	41	45	33	0.2	-26.7
Republic of Korea	254	253	259	239	209	1.5	-12.6
Russian Federation	76	123	93	68	71	0.5	4.4
Singapore					26	0.2	n.a.
Spain	106	85	76	66	60	0.4	-9.1
Sweden	332	249	251	295	208	1.4	-29.5
United States of America	2,626	2,645	1,709	1,814	1,242	8.6	-31.5
Total	15,719	14,694	13,733	15,631	14,396	100.0	-7.9

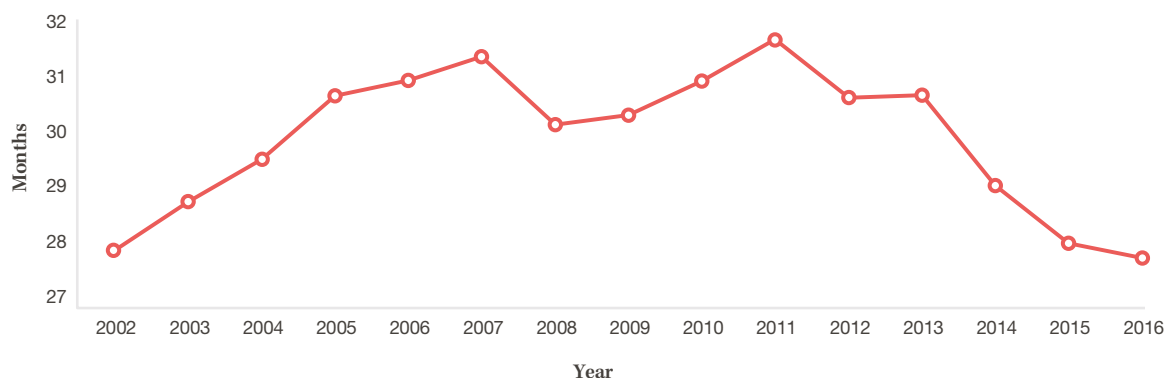
Note: The figures for 2016 may be incomplete. n.a. indicates not applicable.

Source: WIPO Statistics Database, April 2017.

Figure C23

Average timeliness in transmitting international preliminary reports on patentability to the International Bureau

Timeliness in transmitting international preliminary reports on patentability to the International Bureau has improved markedly since 2011.



AVERAGE TIMELINESS IN TRANSMITTING INTERNATIONAL PRELIMINARY REPORTS ON PATENTABILITY (FROM PRIORITY DATE)

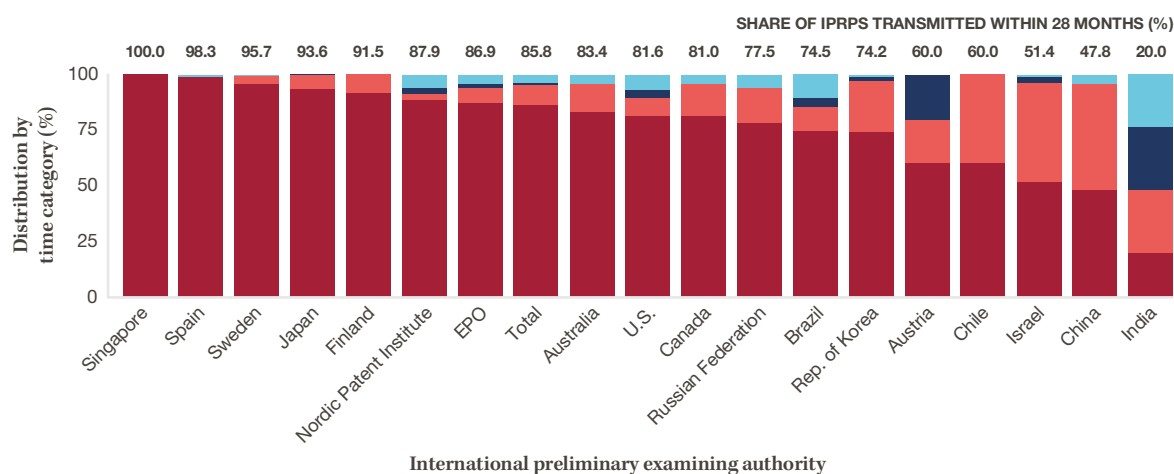
Note: Timeliness is calculated as the time elapsed between the priority date and the date on which the International Bureau received the international preliminary report on patentability from the international preliminary examining authority.

Source: WIPO Statistics Database, April 2017.

Figure C24

Timeliness in transmitting international preliminary reports on patentability to the International Bureau and the international preliminary examining authority, 2016

The office of Singapore transmitted all international preliminary reports on patentability to the International Bureau within 28 months.



WITHIN 28 MONTHS **BETWEEN 29 AND 30 MONTHS** **BETWEEN 31 AND 32 MONTHS** **MORE THAN 32 MONTHS**

Note: Figure C24 presents the same timeliness information for 2016 as that presented in figure C23, but breaks it down by international preliminary examining authority. Timeliness is calculated as the time elapsed between the priority date and the date when the International Bureau received the international preliminary report on patentability (IPRP) from the international preliminary examining authority.

Source: WIPO Statistics Database, April 2017.

A brief presentation of the Patent Cooperation Treaty

The Patent Cooperation Treaty (PCT) is an international treaty administered by the World Intellectual Property Organization (WIPO). Since entering into force in 1978, the PCT has served as an alternative to the Paris Convention route for pursuing patent rights in different countries. The PCT System makes it possible to seek patent protection for an invention simultaneously in multiple countries by filing a single “international” patent application instead of filing several separate national or regional patent applications. When it was first established, the PCT System comprised 18 members. By the end of 2016, it comprised 151 contracting states (figure A). A table listing all PCT contracting states is provided as an annex.

Advantages of the Patent Cooperation Treaty

Applicants and patent offices of contracting states benefit from uniform formality requirements, international search, supplementary international search and preliminary examination reports, and centralized international publication.

Compared with the Paris Convention route, applicants can delay examination procedures at national

patent offices as well as the payment of associated legal fees and translation costs. By deferring national and regional procedures, applicants gain time to make decisions on the potential commercialization of their invention and the markets in which to seek patent protection.

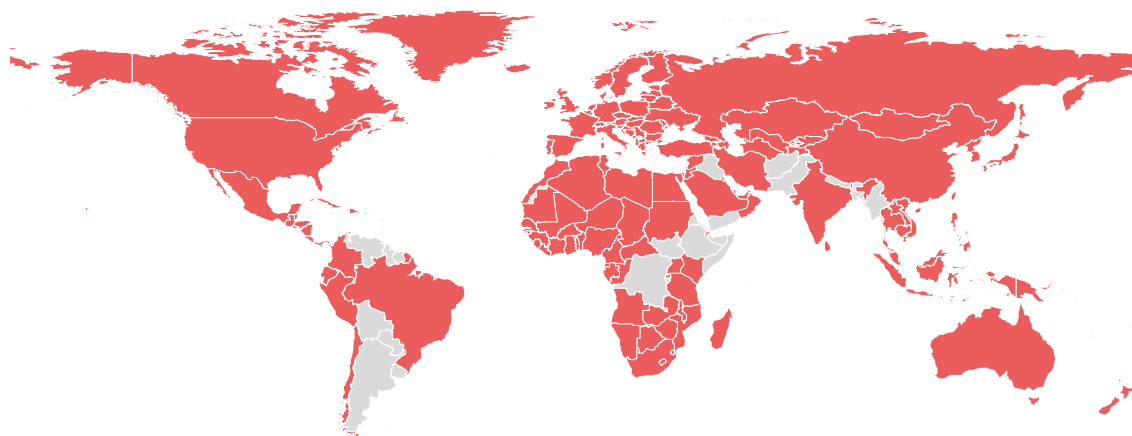
The reports produced by the international authorities that applicants receive during the international phase – about relevant prior art and the potential patentability of their inventions – help them make well-informed decisions.

In addition, the PCT System is intended to reduce unnecessary duplication among patent offices and to support work-sharing between those offices.

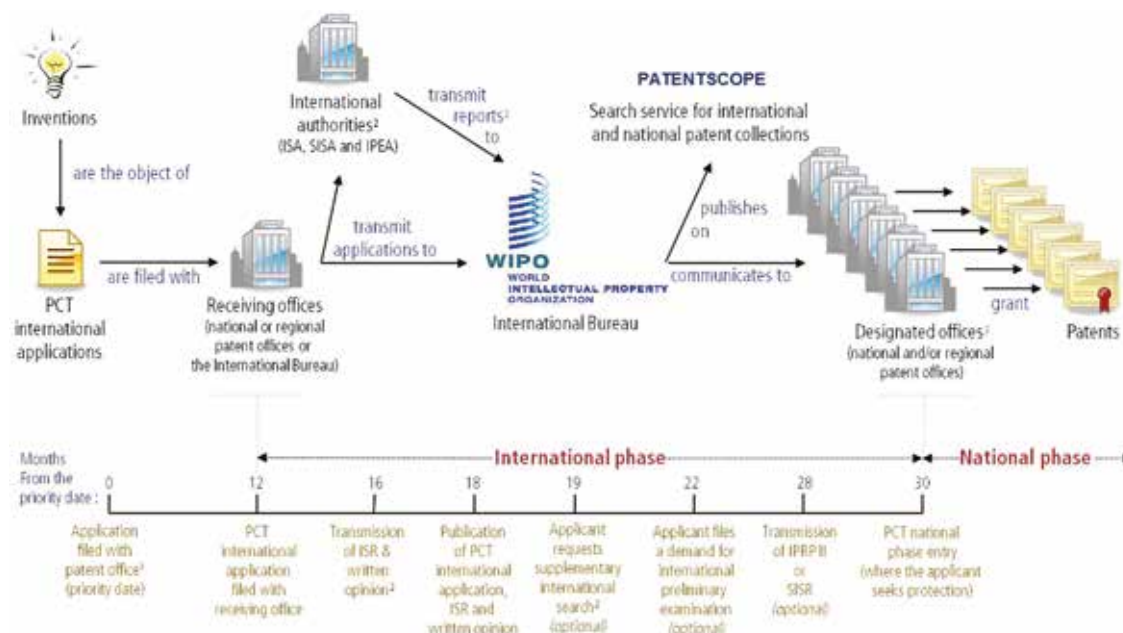
Under the PCT System, an applicant must file a patent application with a receiving office (RO) and choose an international searching authority (ISA) to provide an international search report (ISR) and a written opinion on the potential patentability of the invention (figure B). The International Bureau (IB) of WIPO then publishes the application in PATENTSCOPE, its online search database. Following receipt of the ISR and written opinion, the applicant can choose to request a supplementary international search (SIS) by a supplementary international searching authority (SISA),

Figure A

Contracting states in 2016



Source: WIPO, December 2016.

Figure B**Overview of the PCT System****Notes:**

1. Generally, applicants first file a national or regional patent application with their patent office, and within 12 months from priority date, file a PCT application.

2. International searching authorities (ISAs) transmit international search reports (ISRs) and written opinions; authorities specified for supplementary search (SISA) transmit supplementary international search reports (SISRs); international preliminary examining authorities (IREAs) transmit international preliminary reports on patentability (IPRP II).

3. Called elected applicants who have filed a demand for international preliminary examination.

Source: WIPO, April 2016.

have an international preliminary examination (IPE) undertaken on this application by an international preliminary examining authority (IPEA) or take no further action. The applicant generally has at least 30 months from the earliest filing (priority) date to decide whether to enter the national phase in the countries or regions in which protection is sought.

International phase

The international phase usually continues for a period of 18 months and mainly involves the filing and formal examination of the application, international search, international publication, optional SIS and optional IPE. Published applications are accessible free of charge through PATENTSCOPE, WIPO's online search system.

Filing applications

Typically, applicants seeking to protect an invention in more than one country first file a national or regional

patent application with their national or regional patent office. Within 12 months from the filing date of that first application (a time limit set by the Paris Convention), they file an international application under the PCT with an RO – the respective national or regional patent office, or the IB – thus beginning the international phase. Only a national or resident of a PCT contracting state can file a PCT application. If there are several applicants named in the PCT application, only one of them needs to comply with this requirement.

Because the application has legal effect in all contracting states, applicants can effectively postpone the requirement to pay certain substantial fees and costs, such as the cost of translating the application into national languages.

The RO transmits a copy of the application to the IB, which is responsible for:

- receiving and storing all application documents;
- performing a second formalities examination;

- translating the title and abstract of the application and certain associated documents into English and/or French, where necessary;
- publishing the application and related documents in PATENTSCOPE; and
- communicating documents to offices and third parties.

International search

Applications are subject to an international search by one ISA, which identifies the prior art relevant to the patentability of the invention, establishes an international search report and provides a written opinion on the invention's potential patentability. That opinion can assist the applicant in deciding whether to continue to seek protection for the invention. If the written opinion is unfavorable, the applicant may choose to amend the application to improve the probability of obtaining a patent, to withdraw the application before international publication and before incurring additional costs or to do nothing.

Supplementary international search

Since January 1, 2009, the SIS service has offered applicants the option of requesting additional searches from ISAs other than the one that carried out the initial search. This service aims to give applicants the option of obtaining a more complete overview of the prior art in the international phase by allowing them to have an additional search performed in an ISA's specialty language. Applicants can request an SIS report by an SISA up to 19 months from the filing (priority) date; from July 1, 2017, this period will be extended to 22 months.

International preliminary examination

After receiving the ISA's written opinion, applicants can request an optional IPE – a second evaluation of the invention's patentability – to be carried out by an IPEA, usually on an amended version of the application (all ISAs are also IPEAs). The resulting international preliminary report on patentability (IPRP) further assists the applicant in determining whether to enter the national phase and contains useful information for elected offices in the national phase.

National phase

Applicants have at least 18 months from the filing date of their applications before entering the national phase at individual patent offices. This delay affords additional time – compared with that allowed under the Paris Convention – to evaluate the chances of obtaining a patent and to plan how to use the invention commercially in the countries in which protection is sought. In the national phase, each patent office is responsible for processing the application in accordance with its national patent laws, and for deciding whether to grant patent protection, while certain PCT protections continue to apply. The time required for that processing varies across patent offices.

Patent Prosecution Highway

The PCT Patent Prosecution Highway (PCT-PPH) pilots comprise bilateral agreements between patent offices to enable applicants to request a fast-track examination procedure. Under these agreements, an applicant receiving a written opinion or an IPRP indicating that at least one claim in the PCT application has novelty, inventive step and industrial applicability may request that the other patent offices fast-track the examination of corresponding claims in corresponding applications. The applicant may request the PCT-PPH procedure when entering the national phase of the PCT in a participating designated state. The advantage for PCT applicants is that patent applications are processed faster and more efficiently by designated (or elected) offices. Participating offices also benefit from a reduced examination workload and additional knowledge sharing.

The Global Patent Prosecution Highway (GPPH) was launched in 2014. The GPPH pilot is a single multilateral agreement between a group of offices. It enables applicants to make a request for accelerated processing at any participating office, based on work products (including PCT reports) from any of the other participating offices, using a single set of qualifying requirements.

For more information on the PCT, please visit www.wipo.int/pct.

Data description

Data presented in this review were drawn from the WIPO Statistics Database. Due to the delay in transmitting PCT applications to WIPO, the figures for 2016 are estimates. For top filing countries, estimates are made using several statistical and econometric models. For other countries, the estimates adjust actual received applications according to each country's share of the estimated total PCT filings.

In 2015, the number of published PCT applications decreased by nearly 5%. This was partly due to the fact that in 2014 – as happens every five to six years – the number of weeks of publication was 53 instead of 52, which resulted in an increase in the number of publications recorded that year. This may affect the annual growth rates presented in indicators based on published PCT applications.

For confidentiality reasons, the lists of top applicants and PCT applications by fields of technology are based on the publication date.

For the national phase of the PCT System, statistics are based on data supplied to WIPO by national and regional patent offices – data which WIPO often receives six months or more after the end of the year in question. Therefore, the latest year for which data

are available is 2015. Data may be missing for some offices and may be incomplete for some origins. Data are available for the majority of larger offices. With the 2015 data supplied to WIPO corresponding to 99.3% of the world total, only a small proportion of the total is estimated. Missing data are estimated using such methods as linear extrapolation and averaging adjacent data points. The equivalent patent application concept for patent statistics by origin is not used in this review. National phase entry data by origin may therefore differ slightly from other sources, such as WIPO's IP Statistics Data Center.

Income groups correspond to those used by the World Bank⁸ and groupings by region are based on the United Nations (UN) definition of regions.⁹

The figures in this review are subject to change.¹⁰

8. Available at <http://data.worldbank.org/about/country-and-lending-groups>

9. Available at <https://unstats.un.org/unsd/methodology/m49/>. Although the geographical terms used by WIPO may differ slightly from those defined by the UN, the composition of regions and sub-regions remains identical.

10. Regular updates are available at www.wipo.int/ipstats

List of acronyms and abbreviations

ARIPO	African Regional Intellectual Property Organization	PCT-PPH	Patent Cooperation Treaty-Patent Prosecution Highway
EAPO	Eurasian Patent Organization	PDF	portable document format
EPO	European Patent Office	PRO	public research organization
GPPH	Global Patent Prosecution Highway	Rep. of Korea	Republic of Korea
IB	International Bureau of WIPO	RO	receiving office
IP	intellectual property	SIPO	State Intellectual Property Office of the People's Republic of China
IPC	International Patent Classification		
IPE	international preliminary examination	SIS	supplementary international search
IPEA	international preliminary examining authority	SISA	authority specified for supplementary search
IPRP	international preliminary report on patentability		(supplementary international searching authority)
ISA	international searching authority	SISR	supplementary international search report
ISR	international search report		
JPO	Japan Patent Office	U.K.	United Kingdom
KIPO	Korean Intellectual Property Office	U.S.	United States of America
LAC	Latin America and the Caribbean	USPTO	United States Patent and Trademark Office
NPE	national phase entry		
OAPI	African Intellectual Property Organization	WIPO	World Intellectual Property Organization
PCT	Patent Cooperation Treaty	XML	extensible markup language

Glossary

Applicant: An individual or legal entity that files a patent application. There may be more than one applicant in an application. For PCT statistics, the place of residence of the first-named applicant is used to determine the origin of a PCT application.

Application: The procedure for requesting IP rights at a patent office which then examines the application and decides whether to grant protection. Also refers to a set of documents submitted to an office by the applicant.

Application abroad: See “Filing abroad”.

Authority specified for supplementary international search (SISA): An international searching authority (ISA) that provides a supplementary international search service – also known as a supplementary international searching authority (SISA).

Chapter I of the PCT: The provisions in the PCT that regulate the filing of PCT applications, the international searches and written opinions of ISAs, and the international publication of PCT applications – and that provide for the communication of PCT applications and related documents to designated offices.

Chapter II of the PCT: The provisions in the PCT that regulate the optional international preliminary examination procedure.

Designated office: A national or regional office of, or acting for, a state designated in a PCT application under Chapter I of the PCT.

Designated state: A contracting state in which protection for the invention is sought, as specified in the PCT application.

Elected office: The national or regional office of, or acting for, a state elected by the applicant under Chapter II of the PCT where the applicant intends to use the results of the international preliminary examination.

Filing abroad: For statistical purposes, an application filed by a resident of a given state or jurisdiction with an IP office of another state or jurisdiction. For example, an application filed by an applicant domiciled in France with the Japan Patent Office (JPO) is considered an application abroad from the perspective of France. This differs from a “non-resident application”, which describes an application filed by a resident of a foreign state or jurisdiction from the perspective of the office

receiving the application, so the example above would be a non-resident application from the JPO’s point of view.

Foreign-oriented patent families: A patent family is a set of interrelated patent applications filed in one or more offices to protect the same invention. The patent applications in a family are interlinked by one or more of the following: priority claim, PCT national phase entry, continuation, continuation-in-part, internal priority, and addition or division. Foreign-oriented patent families have at least one filing in an office that is not the applicant’s home office.

Global Patent Prosecution Highway (GPPH): The GPPH pilot is a single multilateral agreement between a group of offices. It allows applicants to make a request for accelerated processing at any participating office, based on work products from any of the other participating offices (including PCT reports), using a single set of qualifying requirements.

International application: See “PCT application”.

International authority: A national or regional patent office or intergovernmental organization that fulfills specific tasks, as prescribed by the PCT.

International Bureau (IB) of WIPO: In the context of the PCT, the IB of WIPO acts as a receiving office for PCT applications from all contracting states. It also handles certain processing tasks for all PCT applications filed with all receiving offices worldwide.

International filing date: The date on which the receiving office receives a PCT application, provided certain formality requirements have been met.

International Patent Classification (IPC): An internationally recognized patent classification system, the IPC has a hierarchical structure of language-independent symbols and is divided into sections, classes, subclasses and groups. IPC symbols are assigned according to the technical features in patent applications. A patent application that relates to multiple technical features can be assigned several IPC symbols.

International phase of the PCT: The international phase consists of five main stages:

1. Filing of a PCT application by the applicant and its processing by the receiving office.
2. Establishment of an ISR and a written opinion by an ISA.

3. Publication of the PCT application and related documents, as well as their communication to designated and elected offices by the IB.
4. Optional establishment of an SISR by a SISA.
5. Optional establishment of an IPRP by an IPEA.

For further details on the international phase, see “A brief presentation of the Patent Cooperation Treaty”.

International preliminary examining authority (IPEA): A national or regional patent office or intergovernmental organization appointed by the PCT Assembly to carry out international preliminary examinations. Its task is to establish the IPRP (Chapter II of the PCT).

International preliminary report on patentability (Chapter II of the PCT) (IPRP): A preliminary non-binding opinion, established by an IPEA at the request of the applicant, on whether the claimed invention appears to be novel, to involve an inventive step (i.e., is not obvious) and to be industrially applicable. Prior to January 1, 2004, this report was known as the “International Preliminary Examination Report”.

International search report (ISR): A report established by an ISA containing citations of documents (prior art) considered relevant for determining, in particular, the novelty and inventive step of the invention as claimed. The ISR also includes the classification of the subject matter of the invention and an indication of the fields searched as well as any electronic databases searched.

International searching authority (ISA): A national patent office or intergovernmental organization appointed by the PCT Assembly to carry out international searches. ISAs establish ISRs and written opinions on PCT applications.

Invention: A new solution to a technical problem. To obtain patent rights, an invention must be novel, involve an inventive step and be industrially applicable, as judged by a person skilled in the art.

National phase entry (NPE): The national phase under the PCT follows the international phase of the PCT procedure and consists of the entry and processing of the international application in the individual countries or regions in which the applicant seeks protection for an invention. The entry must in general take place within 30 months from the priority date of the application, although longer time periods are allowed by some offices. NPE involves the payment

of fees and, where necessary, the submission of a translation of the PCT application.

Non-resident filing: For statistical purposes, a “non-resident” application refers to an application filed with the IP office of, or acting for, a state or jurisdiction in which the first-named applicant in the application is not domiciled. For example, an application filed with the Japan Patent Office by an applicant residing in France is considered a non-resident application from the perspective of the JPO. Non-resident applications are sometimes referred to as foreign applications.

Origin: For statistical purposes, the origin of an application means the country or territory of residence (or nationality, in the absence of a valid residence) of the first-named applicant in the application.

Paris Convention: The Paris Convention for the Protection of Industrial Property is an international convention signed in Paris (France) on March 20, 1883. It is one of the first and most important intellectual property treaties. The Paris Convention establishes, among other things, the “right of priority” principle, which enables a patent applicant to claim a priority of up to 12 months when filing an application in countries other than the original country of filing.

Paris route: Applications for patent protection filed directly with the national/regional office of, or acting for, the relevant state or jurisdiction (as opposed to the “national phase under the PCT”). The Paris route is also called the “direct route” or “national route”.

Patent: An exclusive right granted by law to an applicant for an invention for a limited period of time (generally 20 years from the date of filing). The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, which enable them to appropriate the returns from their innovative activity. In return, the applicant is obliged to disclose the invention to the public in a manner that enables others skilled in the art to replicate it. The patent system is also designed to balance the interests of applicants (exclusive rights) with the interests of society (disclosure of the invention). Patents are granted by national or regional patent offices and are limited to the jurisdiction of the issuing authority. Patent rights can be sought by filing an application directly with the relevant national or regional office(s), or by filing a PCT application.

Patent Cooperation Treaty (PCT): An international treaty administered by WIPO, the PCT allows applicants

to seek patent protection for an invention simultaneously in a large number of countries (PCT contracting states) by filing a single PCT international application. The granting of patents, which remains under the control of national or regional patent offices, is carried out in what is called the “national phase under the PCT”.

PATENTSCOPE search system: Provides access, free of charge, to all published PCT applications along with their related documents, and to the national or regional patent collections from numerous offices worldwide. Since April 2006, the PATENTSCOPE search system is the authentic publication source of PCT applications.

PCT application: A patent application filed through the WIPO-administered PCT, also known as an international application.

PCT-Patent Prosecution Highway pilots (PCT-PPH): A number of bilateral agreements signed between patent offices that enable applicants to request an accelerated examination procedure because of positive patentability findings made by the international searching and/or international preliminary examining authority, in the written opinion by an international searching authority, the written opinion of an international preliminary examining authority or the international preliminary report on patentability.

PCT route: The procedure outlined in the Patent Cooperation Treaty, as opposed to the Paris route.

Prior art: All information disclosed to the public about an invention, in any form, before a given date. Information on the prior art can assist in determining whether the claimed invention is new and involves an inventive step (i.e., is not obvious) for the purposes of international searches and international preliminary examination.

Priority date: The filing date of the application on the basis of which priority is claimed.

Publication of PCT application: The IB publishes the PCT application and related documents promptly after the expiration of 18 months from the priority date. If the PCT application is withdrawn or considered withdrawn before the technical preparations for publication are

completed, the application is not published. An applicant can request early publication of a PCT application.

Receiving office (RO): A patent office – or the IB – with which the PCT application is filed. The role of the RO is to check and process the application in accordance with the PCT and its regulations.

Resident filing: For statistical purposes, a resident application refers to an application filed with the IP office of, or acting for, the state or jurisdiction in which the first-named applicant in the application has residence. For example, an application filed with the Japan Patent Office by a resident of Japan is considered a resident application for the JPO. Resident applications are sometimes referred to as “domestic applications”.

Supplementary international searching authority (SISA): See “Authority specified for supplementary international search”.

Supplementary international search report (SISR): A report, similar to the ISR, established during the supplementary international search, that allows the applicant to request, in addition to the main international search, one or more supplementary international searches, each to be carried out by an international authority other than the ISA that carries out the main international search. The SIS primarily focuses on the patent documentation in the language in which the SISA specializes.

World Intellectual Property Organization (WIPO): A United Nations specialized agency dedicated to the promotion of innovation and creativity for the economic, social and cultural development of all countries through a balanced and effective international IP system. Established in 1967, WIPO’s mandate is to promote the protection of IP throughout the world through cooperation among states and in collaboration with other international organizations.

Written opinion of the ISA (WOSA): For every PCT application filed on or after January 1, 2004, an ISA establishes, at the same time that it establishes the ISR, a preliminary and non-binding written opinion on whether the claimed invention appears to be novel, to involve an inventive step and to be industrially applicable.

IPC technology concordance table

Sector/field of technology	IPC codes
Electrical engineering	
Electrical machinery, apparatus, energy	F21H%, F21K%, F21L%, F21S%, F21V%, F21W%, F21Y%, H01B%, H01C%, H01F%, H01G%, H01H%, H01J%, H01K%, H01M%, H01R%, H01T%, H02B%, H02G%, H02H%, H02J%, H02K%, H02M%, H02N%, H02P%, H02S%, H05B%, H05C%, H05F%, H99Z%
Audio-visual technology	G09F%, G09G%, G11B%, H04N 3%, H04N 5%, H04N 7%, H04N 9%, H04N 11%, H04N 13%, H04N 15%, H04N 17%, H04N 19%, H04N 101%, H04R%, H04S%, H05K%
Telecommunications	G08C%, H01P%, H01Q%, H04B%, H04H%, H04J%, H04K%, H04M%, H04N 1%, H04Q%
Digital communication	H04L%, H04N 21%, H04W%
Basic communication processes	H03B%, H03C%, H03D%, H03F%, H03G%, H03H%, H03J%, H03K%, H03L%, H03M%
Computer technology	G06C%, G06D%, G06E%, G06F%, G06G%, G06J%, G06K%, G06M%, G06N%, G06T%, G10L%, G11C%
IT methods for management	G06Q%
Semiconductors	H01L%
Instruments	
Optics	G02B%, G02C%, G02F%, G03B%, G03C%, G03D%, G03F%, G03G%, G03H%, H01S%
Measurement	G01B%, G01C%, G01D%, G01F%, G01G%, G01H%, G01J%, G01K%, G01L%, G01M%, G01N 1%, G01N 3%, G01N 5%, G01N 7%, G01N 9%, G01N 11%, G01N 13%, G01N 15%, G01N 17%, G01N 19%, G01N 21%, G01N 22%, G01N 23%, G01N 24%, G01N 25%, G01N 27%, G01N 29%, G01N 30%, G01N 31%, G01N 35%, G01N 37%, G01P%, G01Q%, G01R%, G01S%, G01V%, G01W%, G04B%, G04C%, G04D%, G04F%, G04G%, G04R%, G12B%, G99Z%
Analysis of biological materials	G01N 33%
Control	G05B%, G05D%, G05F%, G07B%, G07C%, G07D%, G07F%, G07G%, G08B%, G08G%, G09B%, G09C%, G09D%
Medical technology	A61B%, A61C%, A61D%, A61F%, A61G%, A61H%, A61J%, A61L%, A61M%, A61N%, H05G%
Chemistry	
Organic fine chemistry	A61K 8%, A61Q%, C07B%, C07C%, C07D%, C07F%, C07H%, C07J%, C40B%
Biotechnology	C07G%, C07K%, C12M%, C12N%, C12P%, C12Q%, C12R%, C12S%
Pharmaceuticals	A61K 6%, A61K 9%, A61K 31%, A61K 33%, A61K 35%, A61K 36%, A61K 38%, A61K 39%, A61K 41%, A61K 45%, A61K 47%, A61K 48%, A61K 49%, A61K 50%, A61K 51%, A61K 101%, A61K 103%, A61K 125%, A61K 127%, A61K 129%, A61K 131%, A61K 133%, A61K 135%, A61P%
Macromolecular chemistry, polymers	C08B%, C08C%, C08F%, C08G%, C08H%, C08K%, C08L%
Food chemistry	A01H%, A21D%, A23B%, A23C%, A23D%, A23F%, A23G%, A23J%, A23K%, A23L%, C12C%, C12F%, C12G%, C12H%, C12J%, C13B 10%, C13B 20%, C13B 30%, C13B 35%, C13B 40%, C13B 50%, C13B 99%, C13D%, C13F%, C13J%, C13K%
Basic materials chemistry	A01N%, A01P%, C05B%, C05C%, C05D%, C05F%, C05G%, C06B%, C06C%, C06D%, C06F%, C09B%, C09C%, C09D%, C09F%, C09G%, C09H%, C09J%, C09K%, C10B%, C10C%, C10F%, C10G%, C10H%, C10J%, C10K%, C10L%, C10M%, C10N%, C11B%, C11C%, C11D%, C99Z%
Materials, metallurgy	B22C%, B22D%, B22F%, C01B%, C01C%, C01D%, C01F%, C01G%, C03C%, C04B%, C21B%, C21C%, C21D%, C22B%, C22C%, C22F%
Surface technology, coating	B05C%, B05D%, B32B%, C23C%, C23D%, C23F%, C23G%, C25B%, C25C%, C25D%, C25F%, C30B%
Micro-structural and nano-technology	B81B%, B81C%, B82B%, B82Y%
Chemical engineering	B01B%, B01D 1%, B01D 3%, B01D 5%, B01D 7%, B01D 8%, B01D 9%, B01D 11%, B01D 12%, B01D 15%, B01D 17%, B01D 19%, B01D 21%, B01D 24%, B01D 25%, B01D 27%, B01D 29%, B01D 33%, B01D 35%, B01D 36%, B01D 37%, B01D 39%, B01D 41%, B01D 43%, B01D 57%, B01D 59%, B01D 61%, B01D 63%, B01D 65%, B01D 67%, B01D 69%, B01D 71%, B01F%, B01J%, B01L%, B02C%, B03B%, B03C%, B03D%, B04B%, B04C%, B05B%, B06B%, B07B%, B07C%, B08B%, C14C%, D06B%, D06C%, D06L%, F25J%, F26B%, H05H%
Environmental technology	A62C%, B01D 45%, B01D 46%, B01D 47%, B01D 49%, B01D 50%, B01D 51%, B01D 52%, B01D 53%, B09B%, B09C%, B65F%, C02F%, E01F 8%, F01N%, F23G%, F23J%, G01T%
Mechanical engineering	
Handling	B25J%, B65B%, B65C%, B65D%, B65G%, B65H%, B66B%, B66C%, B66D%, B66F%, B67B%, B67C%, B67D%
Machine tools	A62D%, B21B%, B21C%, B21D%, B21F%, B21G%, B21H%, B21J%, B21K%, B21L%, B23B%, B23C%, B23D%, B23F%, B23G%, B23H%, B23K%, B23P%, B23Q%, B24B%, B24C%, B24D%, B25B%, B25C%, B25D%, B25F%, B25G%, B25H%, B26B%, B26D%, B26F%, B27B%, B27C%, B27D%, B27F%, B27G%, B27H%, B27J%, B27K%, B27L%, B27M%, B27N%, B30B%
Engines, pumps, turbines	F01B%, F01C%, F01D%, F01K%, F01L%, F01M%, F01P%, F02B%, F02C%, F02D%, F02F%, F02G%, F02K%, F02M%, F02N%, F02P%, F03B%, F03C%, F03D%, F03G%, F03H%, F04B%, F04C%, F04D%, F04F%, F23R%, F99Z%, G21B%, G21C%, G21D%, G21F%, G21G%, G21H%, G21J%, G21K%
Textile and paper machines	A41H%, A43D%, A46D%, B31B%, B31C%, B31D%, B31F%, B41B%, B41C%, B41D%, B41F%, B41G%, B41J%, B41K%, B41L%, B41M%, B41N%, C14B%, D01B%, D01C%, D01D%, D01F%, D01G%, D01H%, D02G%, D02H%, D02J%, D03C%, D03D%, D03J%, D04B%, D04C%, D04G%, D04H%, D05B%, D05C%, D06G%, D06H%, D06J%, D06M%, D06P%, D06Q%, D21B%, D21C%, D21D%, D21F%, D21G%, D21H%, D21J%, D99Z%
Other special machines	A01B%, A01C%, A01D%, A01F%, A01G%, A01J%, A01K%, A01L%, A01M%, A21B%, A21C%, A22B%, A22C%, A23N%, A23P%, B02B%, B28B%, B28C%, B28D%, B29B%, B29C%, B29D%, B29K%, B29L%, B33Y%, B99Z%, C03B%, C08J%, C12L%, C13B 5%, C13B 15%, C13B 25%, C13B 45%, C13C%, C13G%, C13H%, F41A%, F41B%, F41C%, F41F%, F41G%, F41H%, F41J%, F42B%, F42C%, F42D%

(Continued)

(Continued)

Thermal processes and apparatus	F22B%, F22D%, F22G%, F23B%, F23C%, F23D%, F23H%, F23K%, F23L%, F23M%, F23N%, F23Q%, F24B%, F24C%, F24D%, F24F%, F24H%, F24J%, F25B%, F25C%, F27B%, F27D%, F28B%, F28C%, F28D%, F28F%, F28G%
Mechanical elements	F15B%, F15C%, F15D%, F16B%, F16C%, F16D%, F16F%, F16G%, F16H%, F16J%, F16K%, F16L%, F16M%, F16N%, F16P%, F16S%, F16T%, F17B%, F17C%, F17D%, G05G%
Transport	B60B%, B60C%, B60D%, B60F%, B60G%, B60H%, B60J%, B60K%, B60L%, B60M%, B60N%, B60P%, B60Q%, B60R%, B60S%, B60T%, B60V%, B60W%, B61B%, B61C%, B61D%, B61F%, B61G%, B61H%, B61J%, B61K%, B61L%, B62B%, B62C%, B62D%, B62H%, B62J%, B62K%, B62L%, B62M%, B63B%, B63C%, B63G%, B63H%, B63J%, B64B%, B64C%, B64D%, B64F%, B64G%
Other fields	
Furniture, games	A47B%, A47C%, A47D%, A47F%, A47G%, A47H%, A47J%, A47K%, A47L%, A63B%, A63C%, A63D%, A63F%, A63G%, A63H%, A63J%, A63K%
Other consumer goods	A24B%, A24C%, A24D%, A24F%, A41B%, A41C%, A41D%, A41F%, A41G%, A42B%, A42C%, A43B%, A43C%, A44B%, A44C%, A45B%, A45C%, A45D%, A45F%, A46B%, A46C%, A49Z%, B42B%, B42C%, B42D%, B42F%, B43K%, B43L%, B43M%, B44B%, B44C%, B44D%, B44F%, B68B%, B68C%, B68F%, B68G%, D04D%, D06F%, D06N%, D07B%, F25D%, G10B%, G10C%, G10D%, G10F%, G10G%, G10H%, G10K%
Civil engineering	E01B%, E01C%, E01D%, E01F 1%, E01F 3%, E01F 5%, E01F 7%, E01F 9%, E01F 11%, E01F 13%, E01F 15%, E01H%, E02B%, E02C%, E02D%, E02F%, E03B%, E03C%, E03D%, E03F%, E04B%, E04C%, E04D%, E04F%, E04G%, E04H%, E05B%, E05C%, E05D%, E05F%, E05G%, E06B%, E06C%, E21B%, E21C%, E21D%, E21F%, E99Z%

Note: For definitions of IPC symbols, see www.wipo.int/classifications/ipc. For an electronic version of the IPC technology concordance table, visit www.wipo.int/ipstats.

Source: WIPO.

PCT contracting states

During 2016, three new contracting states acceded to the PCT, namely Cambodia (effective September 8), Djibouti (effective June 23) and Kuwait (effective June 9), bringing the total number to 151.

Albania (EP)	Djibouti	Libya	Saint Vincent and the Grenadines
Algeria	Dominica	Liechtenstein (EP)	San Marino (EP)
Angola	Dominican Republic	Lithuania (EP)	Sao Tome and Principe (AP) ⁵
Antigua and Barbuda	Ecuador	Luxembourg (EP)	Saudi Arabia
Armenia (EA)	Egypt	Madagascar	Senegal (OA) ²
Australia	El Salvador	Malawi (AP)	Serbia (EP)
Austria (EP)	Equatorial Guinea (OA) ²	Malaysia	Seychelles
Azerbaijan (EA)	Estonia (EP)	Mali (OA) ²	Sierra Leone (AP)
Bahrain	Finland (EP)	Malta (EP) ²	Singapore
Barbados	France (EP) ²	Mauritania (OA) ²	Slovakia (EP)
Belarus (EA)	Gabon (OA) ²	Mexico	Slovenia (EP) ²
Belgium (EP) ²	Gambia (AP)	Monaco (EP) ²	South Africa
Belize	Georgia	Mongolia	Spain (EP)
Benin (OA) ²	Germany (EP)	Montenegro ¹	Sri Lanka
Bosnia and Herzegovina ¹	Ghana (AP)	Morocco ³	Sudan (AP)
Botswana (AP)	Greece (EP) ²	Mozambique (AP)	Swaziland (AP) ²
Brazil	Grenada	Namibia (AP)	Sweden (EP)
Brunei Darussalam	Guatemala	Netherlands (EP) ²	Switzerland (EP)
Bulgaria (EP)	Guinea (OA) ²	New Zealand	Syrian Arab Republic
Burkina Faso (OA) ²	Guinea-Bissau (OA) ²	Nicaragua	Tajikistan (EA)
Cambodia	Honduras	Niger (OA) ²	Thailand
Cameroon (OA) ²	Hungary (EP)	Nigeria	The former Yugoslav Republic of Macedonia (EP)
Canada	Iceland (EP)	Norway (EP)	Togo (OA) ²
Central African Republic (OA) ²	India	Oman	Trinidad and Tobago
Chad (OA) ²	Indonesia	Panama	Tunisia
Chile	Iran (Islamic Republic of)	Papua New Guinea	Turkey (EP)
China	Ireland (EP) ²	Peru	Turkmenistan (EA)
Colombia	Israel	Philippines	Uganda (AP)
Comoros (OA) ²	Italy (EP) ²	Poland (EP)	Ukraine
Congo (OA) ²	Japan	Portugal (EP)	United Arab Emirates
Costa Rica	Kazakhstan (EA)	Qatar	United Kingdom (EP)
Côte d'Ivoire (OA) ²	Kenya (AP)	Republic of Korea	United Republic of Tanzania (AP)
Croatia (EP)	Kuwait	Republic of Moldova ⁴	United States of America
Cuba	Kyrgyzstan (EA)	Romania (EP)	Uzbekistan
Cyprus (EP) ²	Lao People's Democratic Republic	Russian Federation (EA)	Viet Nam
Czech Republic (EP)	Latvia (EP) ²	Rwanda (AP)	Zambia (AP)
Democratic People's Republic of Korea	Lesotho (AP)	Saint Kitts and Nevis	Zimbabwe (AP)
Denmark (EP)	Liberia (AP)	Saint Lucia	

Notes: 1. Extension of European patent possible. 2. May only be designated for a regional patent (the national route via the PCT has been closed). 3. Validation of European patent possible for international applications filed on or after March 1, 2015. 4. Validation of European patent possible for international applications filed on or after November 1, 2015. 5. Only PCT applications filed on or after August 19, 2014 will include the designation of Sao Tome and Principe for an ARIPO patent.

Where a state can be designated for a regional patent, the two-letter code for the regional patent concerned is indicated in parentheses (AP = ARIPO patent, EA = Eurasian patent, EP = European patent, OA = OAPI patent).

Source: WIPO, January 2017.



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