

Patent procedures and statistics: an overview

A short guide through the patent world

Statistics in focus

SCIENCE AND
TECHNOLOGY

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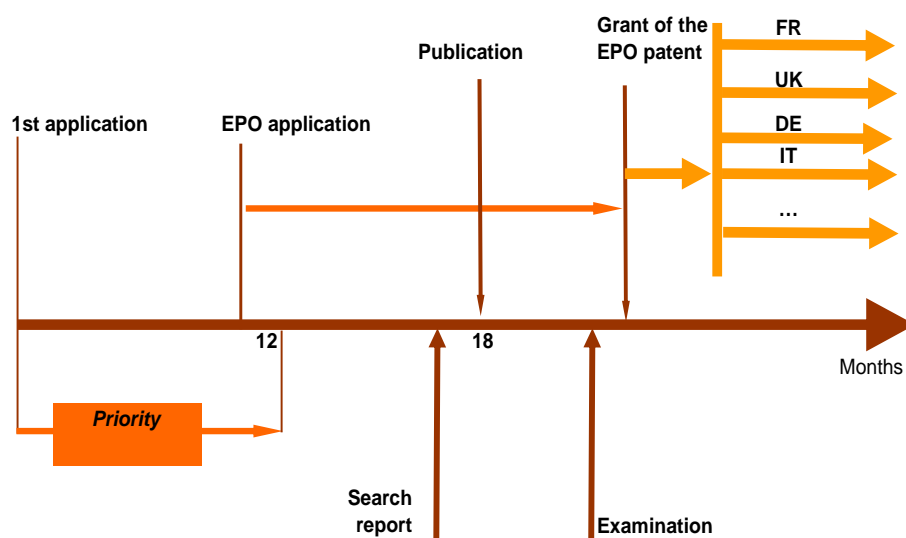
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Figure 1: Patent procedure (European Patent Office)



Source: based on "Chiffres clés 2005 – BREVETS", INPI, June 2006

Main findings

- There are three ways to apply for a patent: the national route, the European or regional route and the international route. In the latter case, applications are registered as PCT (Patent Cooperation Treaty) applications.
- In 2002, more than 38 000 PCT patent applications designated to the EPO came from applicants in the EU Member States; while close to 40 000 came from American applicants and more than 14 600 from Japanese applicants.
- Patent procedures are more expensive at the European Patent Office (EPO) than at the United States Patent and Trademark Office (USPTO) and the Japanese Patent Office (JPO). This is essentially due to translation costs.
- Calculation of the patent value is not straightforward, but with the help of indicators the value can be estimated. The value distribution of patents is skewed. The value is estimated to be very high for only a few patents.
- Discussion of the Community patent, deadlocked for several years, seems to have been revived in 2006.

National and European patent applications

Once an inventor or an applicant has decided to apply for a patent to protect an invention, he or she has the choice of three different patent procedures. If the aim is only to protect the invention on the national market, he or she will apply for a patent at the domestic (national) patent office. The patent application will take the "national route".

National patent procedures are in general very similar in all European countries. After filing the application, the applicant will receive a certificate of receipt containing the filing date or priority date as well as the filing number allotted to the application. This priority date remains effective for 12 months, which means that if the applicant seeks to protect the invention in another country during this period, the filing date for the second application will be the same as the priority date.

After receipt of the certificate, the application is examined to check whether the subject matter

- is susceptible of industrial application,
- constitutes by its nature an invention,
- concerns one invention having unity,
- is excluded from patent protection, and whether
- a claimed status of addition in respect of another patent application factually exists.

A search report citing relevant documents is sent to the applicant within a few months. The applicant is notified

of formal defects and obvious barriers to patenting, and is requested to remedy these defects or to withdraw the application within a specified period. If the defects are not remedied or if the application is not withdrawn, the applicant must expect rejection of the application already at this stage of the procedure.

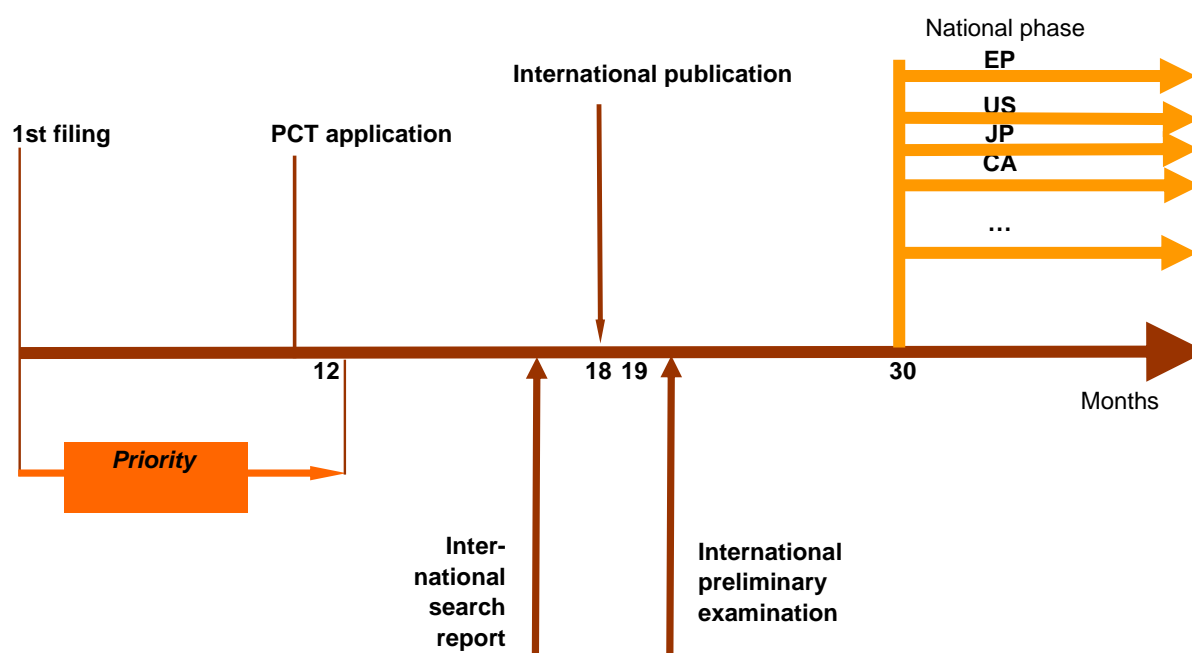
Irrespective of the state of procedure, the patent application is usually published eighteen months after the filing date or priority date. After publication of the patent application, the related files are open to public inspection.

Patents are granted 24 to 36 months after the priority date. The invention is protected for 20 years from the priority date onwards.

If the applicant seeks protection in several European countries (European route), he or she can apply first to the domestic patent office and, during the following twelve months, also to the European Patent Office (EPO) – see Figure 1. A direct application to the EPO without applying to the domestic patent office is also possible. At the moment of filing the application, applicants can designate as many states signatory of the European Patent Convention (EPC) as they want. In general, applicants designate six to eight different countries, because the higher the number of countries the higher the fees, even if it is much less expensive to apply via the EPO to several national patent offices than to apply directly to each of these offices.

PCT patent applications

Figure 2: Patent procedure (World Intellectual Property Organisation)



Source: based on "Chiffres clés 2005 – BREVETS", INPI, June 2006

A third possibility for protecting an invention consists in filing an international application under the Patent Cooperation Treaty (PCT) – see Figure 2. The PCT implements the concept of a single international patent application having legal effect in the countries (183 countries in March 2006) which are bound by the treaty and which are designated by the applicant. Within 12 months of the first filing, the inventor can file an international application with the World Intellectual Property Organization (WIPO).

Once such an application is filed, applicants receive valuable information about the potential patentability of their invention (through the international search report and the optional international preliminary examination report) and have more time than under the traditional patent system to decide in which of the designated countries or regions (all EPC member states) they will continue with the application. Thus, the PCT system consolidates and streamlines patenting procedures and reduces costs, while also providing applicants with a solid basis for important decision-making.

What is the Patent Cooperation Treaty (PCT)?

The PCT is an international treaty, administered by the World Intellectual Property Organization (WIPO), signed by 133 Paris Convention countries. The PCT makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing a single “international” patent application instead of filing several separate national or regional applications. The granting of patents remains under the control of the national or regional patent offices in what is called the “national phase”.

Briefly, the PCT procedure includes the following steps:

Filing: the applicant files an international application, complying with the PCT formality requirements, in one language, and pays one single fee.

International Search: an “International Searching Authority (ISA)” (one of the world’s major patent offices) identifies the published documents which may have an influence on whether the invention is patentable and establishes an opinion on the invention’s potential patentability.

International Publication: as soon as possible after the expiration of 18 months from the earliest filing date, the content of the international application is disclosed to the world.

International Preliminary Examination: an “International Preliminary Examining Authority (IPEA)” (one of the world’s major patent offices), at the applicant’s request, carries out an additional patentability analysis, usually based on an amended version of the application.

National Phase: after the end of the PCT procedure, the applicant starts to carry on the grant procedure of the patents directly at the national (or regional) patent offices of the countries in which he or she wants to obtain them.

Source: “Protecting your inventions abroad: frequently asked questions about the Patent Cooperation Treaty (PCT)”, WIPO

Table 3: PCT patent applications to the WIPO designated to the EPO

	1998	1999	2000	2001	2002	AAGR 1998-2002
EU-25	27 293	32 056	36 410	37 645	38 177	9.0
Euro area	19 758	23 459	26 593	28 237	29 194	10.4
BE	476	566	636	638	670	9.1
CZ	59	75	70	74	71	5.7
DK	703	763	887	946	978	8.7
DE	10 217	11 995	13 487	13 737	13 858	8.1
EE	2	3	11	12	7	82.7
EL	45	43	46	64	63	10.0
ES	395	495	534	658	741	17.3
FR	3 375	3 882	4 482	4 855	4 821	9.5
IE	179	226	234	301	288	13.6
IT	1 030	1 316	1 534	1 777	1 946	17.4
CY	5	18	36	26	27	77.6
LV	7	2	11	10	10	89.7
LT	1	0	3	5	9	9.4
LU	116	117	130	117	118	0.7
HU	91	130	129	136	143	13.2
MT	4	2	4	6	3	9.5
NL	2 226	2 728	3 278	3 800	4 335	18.2
AT	421	514	645	590	692	14.1
PL	46	75	96	92	141	35.4
PT	17	31	31	40	32	21.4
SI	36	31	41	35	61	19.2
SK	19	21	32	17	26	18.5
FI	1 261	1 548	1 557	1 659	1 632	7.1
SE	2 596	2 917	3 243	2 877	2 486	-0.3
UK	3 967	4 561	5 255	5 173	5 022	6.4
BG	20	30	22	21	31	16.3
HR	23	32	54	49	78	39.6
RO	21	19	13	25	19	6.2
TR	45	62	77	79	103	23.8
CN	276	604	1 487	810	1 139	65.1
IN	49	140	212	332	645	97.2
JP	6 071	8 002	10 613	12 133	14 671	24.9
KR	755	1 150	1 954	2 175	2 572	38.0
RU	370	454	459	492	472	6.7
US	30 070	36 296	41 575	40 643	39 932	7.8

Source: Eurostat – patent statistics

Table 3 shows the number of PCT patent applications for which the EPO were chosen as patent office for the years 1998 to 2002. The three main economies, the United States, the EU-25 and Japan account for the highest numbers of patent applications. In 2002, 39 932 PCT patent applications came from American applicants, 38 177 from applicants of the EU-25 Member States and 14 671 from Japanese applicants. Among the EU-25 Member States, Germany is the clear leader. More than 30% of the EU-25 PCT patent applications are German (13 858). A look at the annual average growth rate (AAGR) shows that Japan has, with 24.9%, the highest AAGR of the three leading economies. The AAGR for the EU-25 is 9.0% and for

the United States 7.8%. Some EU-25 countries are doing much better than the EU-25 average (only those countries with more than 100 patent applications).

Table 4: Total PCT patent applications (WIPO)

	2000	2001	2002	2003	2004	AAGR 2000-2004
EU-25	32 873	37 140	38 442	39 046	39 497	4.8
Euro area	24 023	27 166	28 907	29 954	30 364	6.1
BE	554	645	654	702	678	5.4
CZ	90	76	67	76	93	2.1
DK	771	904	951	1 013	1 021	7.4
DE	12 242	13 700	14 001	14 326	14 731	4.8
EE	6	11	11	8	12	26.5
EL	45	48	68	64	69	12.6
ES	512	581	679	747	777	11.1
FR	4 034	4 600	4 938	5 081	5 048	5.9
IE	223	235	300	302	307	8.8
IT	1 360	1 585	1 931	2 103	2 105	11.8
CY	19	38	21	28	40	32.9
LV	3	8	7	12	12	56.4
LT	1	3	10	4	8	118.3
LU	132	111	128	108	114	-2.7
HU	130	121	178	106	125	4.4
MT	:	:	:	:	:	:
NL	2 881	3 347	3 910	4 342	4 166	10.0
AT	472	611	540	624	691	11.0
PL	103	94	106	148	88	0.8
PT	21	41	34	33	46	28.7
SI	37	37	41	63	60	14.9
SK	30	28	25	26	24	-5.3
FI	1 547	1 662	1 724	1 522	1 632	1.7
SE	3 017	3 344	2 912	2 551	2 778	-1.4
UK	4 643	5 310	5 206	5 057	4 872	1.5
JP	9 460	11 798	13 971	17 283	20 040	20.7
US	37 342	42 262	40 730	40 324	40 978	2.5
Other	11 562	15 026	15 246	16 545	20 121	15.4
Total	91 237	106 226	108 389	113 198	120 636	7.4

Euro area and EU-25 without Malta.

Source: WIPO - patents statistics

This is the case for Spain (17.3%), Italy (17.4%), the Netherlands (18.2%) and Austria (14.1%). Sweden has a slightly negative AAGR (-0.3%). Attention should also be paid to the AAGRs of China, India and Korea, which, at 65.1%, 97.2% and 38.0%, are very high.

Table 4 shows PCT patent applications to the WIPO by country of origin from 2000 to 2004 and the annual average growth rates. The data of Table 4 (WIPO) should not be compared with Table 3 (EPO data) because the sources are different and the criteria for compiling the data are not identical. Whereas fractional counting is used for the nationality of the application in the case of the EPO data, only the nationality of the first application is taken into account for the WIPO data – see also methodological notes.

At 4.8%, the AAGR of the EU-25 is nearly twice that of the United States (2.5%), but the AAGR of Japan (20.7%) is more than four times higher than that of the EU-25. Having regard only to countries with more than 100 patent applications, it can be seen that Spain, Italy, the Netherlands and Austria have an AAGR of 10% or more. At the other end of the scale are Luxembourg and Sweden. For these two countries the AAGRs are negative with rates of -2.7% and -1.4% respectively.

PCT patent applications used for nowcasts

Due to the length of patent procedures the timeliness of patent statistics is not very good. There is actually a time lag of three or four years for EPO patent applications. The calculation of nowcasts can improve the timeliness.

Based on the assumption that a constant share of PCT patent applications will enter the regional or national phase, the growth rates observed for PCT patent applications could be applied to the most recent years' available data for regional or national patent offices to allow the calculation of nowcasts for these years for regional or national patent applications.

Source: based on "Patente in Europa und der Triade – Strukturen und deren Veränderungen", R. Frietsch (Fraunhofer Institute)

The cost factor in patent systems

Each patent is by nature specific, depending on the industrial sector and other factors. Some patents need many years of research and a large amount of funds. Other inventions are done in quite a small space of time with only little investment.

Patents are very different, but so too are the patent offices. Table 5 compares the patent offices of the three major world economies. In terms of total staff, patent examiners and annual revenue, the Japanese Patent Office is the smallest of the three, but it ranks first in terms of the number of patent filings and second for the number of patents granted.

Table 5: EPO, USPTO and JPO: Basic figures, total number if not stated otherwise, 2003

	EPO	USPTO	JPO
Total staff	5 821	6 723	2 479
Patent examiners	3 365	3 535	1 126
Annual revenue in EUR million	1 022	950	839
Total patent filings	116 613	342 441	413 092
Total patent granted	59 992	169 028	122 511
Geographical origins of patent filings in %			
USA	27	55	5
Japan	16	18	88
EPC States	50	15	3
Others	7	13	4

Source: "The cost factor in patent systems", Bruno van Pottelsberghe de la Potterie, Didier François

Only 12% of the patents filed with the JPO come from outside Japan, while 45% of the patent filings with the USPTO are not American and half of the patent filings with the EPO come from countries other than the EPC countries. Whereas the USPTO and the JPO are the national patent offices for the United States and Japan respectively, the EPO is a regional patent office. Most of the European countries have their own national offices. Even if a large share of European patent applications takes the national and the regional route, this is not the case for all of them. This means that a comparison between offices should always take these structural differences into account.

The average patenting fees range from EUR 10 330 for a patent granted by the USPTO to EUR 28 900 for an EPO patent. Japanese patents are positioned in-between, costing EUR 16 450 per patent granted.

Table 6: Comparison of average patenting fees at EPO, USPTO and JPO in euro

Geographical zone	Fees for procedure	Renewal tax	Costs of translation	Payment of the agent	Total
Territory covered by the EPC	4 300	8 900	10 200	5 500	28 900
United States	1 900	2 730	0	5 700	10 330
Japan	2 160	5 840	0	8 450	16 450

Source: Eurostat based on "La politique européenne de brevets", Barbara Pick

Patent Application Costs

The cost of a patent application depends on a number of factors, such as:

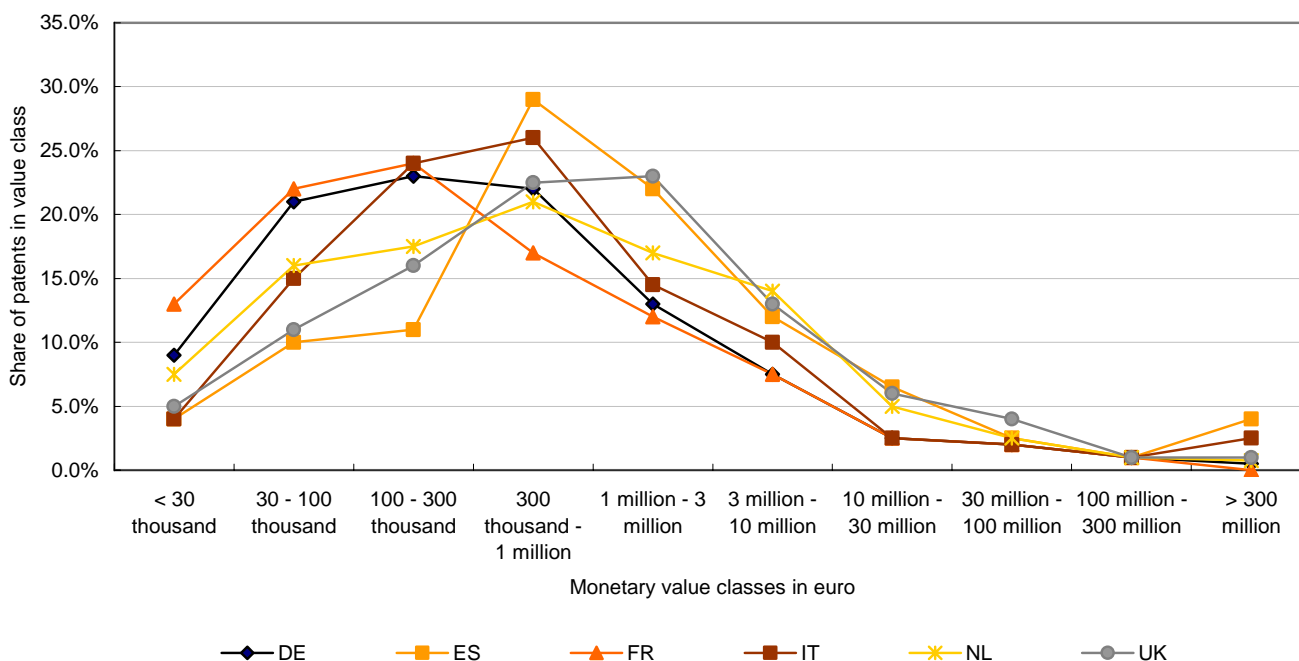
- Field of technology
- Nature of the invention
- Length of the application
- Number of claims
- Hourly rate of the patent agent, and total time taken to prepare and process the application
- Fees charged by the draftsman for preparing any drawings
- Number of countries to be covered
- Route used for filing in other countries
- Translation costs of foreign filings
- Number and nature of objections raised by the patent examiner, and whether there are any opposition proceedings or appeals

Source: WIPO Magazine, October 2006

The large spread can also be explained by the fact that the EPO is a regional patent office which works in three languages — German, English and French. Translating the very specific documents linked to a patent, especially the claims, involves very high translation costs. The renewal taxes and the fees for procedure are also higher at the EPO than at the other two offices.

The value of European patents

Figure 7: The value of European patents across EU countries



Source: "Evaluating the knowledge economy – what are patents actually worth?", EU Commission study, 2005

How to measure the value of a patent? As the value of a patent cannot be measured directly, there are three different theories for assessing it:

- the cost theory,
- the market theory and
- the income theory.

The cost theory aims to evaluate the costs necessary for developing and patenting the same invention. The market theory attempts to give a price to a patent based on comparison with previous licence agreements or other indicators. The income theory looks closely at the income that can be derived from a patent or alternatively at savings in licensing fees. A case-by-case decision will determine which of the theories is used.

The distribution across the values of patents is skewed; there are few patents in the value classes of EUR 10 million and over. The majority of patents are somewhere

between EUR 30 thousand and EUR 3 million. Figure 7 shows the value of patents for six European countries: Germany, Spain, France, Italy, the Netherlands and the United Kingdom. The trend is similar for all these countries.

In the sample used in the study, on which Figure 7 is based, 7.2% of the patents are worth more than EUR 10 million, and 16.8% have a value higher than EUR 3 million. About 68% of the patents produce less than EUR 1 million, while 8% have a value lower than EUR 30 thousand.

The value of a patent is in some way also linked to the motivation for patenting. The six main reasons are: commercial exploitation of the innovation, licensing, cross-licensing, prevention of imitation, blocking rivals and reputation. One of the results of the same study is that the most important reasons for patenting are commercial exploitation of the innovation and prevention of imitation.

The future of the Community patent

Community patent

Basic principles which need to guide the patent system in Europe are:

- patent system must provide an incentive for innovation provided that patentability criteria are rigorously respected;
- it must ensure the dissemination of scientific knowledge and technologies through efficient, transparent and complete publication of patent documentation;
- it must facilitate the transfer of technology;
- it must be available to all players on the market;
- it must offer legal certainty to the patentee and the users.

Source: "Consultation on future patent policy in Europe – preliminary findings", 12 July 2006, Brussels

The European Patent Office is not a European Institution, even though all the EU Member States (Malta has been invited to accede) are members of the EPO. Patent protection in the EU is still provided by two systems: the national patent system and the European patent system. Neither of these systems is based on a Community legal instrument.

As explained before, the European patent system is more expensive than the American and Japanese ones. The costs represent an obstacle to patenting and also to innovation. For these reasons European decision-makers have for more than 10 years been discussing the idea of a Community patent but have failed to reach an agreement.

After long years of discussions and unsuccessful projects on the future of the European patent system, renewed efforts by the European Union resulted, in 2000, in a Community Patent Regulation proposal, whereby a patent application would be filed in only one language (English, French or German) and would be handled and examined by the European Patent Office. The claims of the patent, once granted, would then have to be translated into all the EU languages. However, the patent would not be enforceable against an entity until a copy of it is provided in that entity's own national language. The Community Patent Regulation would also establish a court holding exclusive jurisdiction to invalidate issued patents. Thus, a Community patent's validity would be the same in all the EU Member States.

Discussion regarding the Community patent made clear progress with a political agreement being reached on 3 March 2003. However, one year later in March 2004, the EU Competitiveness Council failed to agree on the details of the Regulation. In particular, the time needed for translating the claims, and the authentic text of the claims in cases of infringement remained problematic issues throughout the discussions and in the end proved insoluble.

However, on 16 January 2006 the European Commission successfully launched a public consultation on future patent policy in Europe. The Community patent was one of the issues the consultation focused on (see box).

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

1. Patent statistics - Eurostat

The production of patent statistics at Eurostat was reorganised in 2005. This means that the data shown in this Statistics in Focus publication and on the Eurostat webpage are no longer entirely comparable with the data published previously.

In 2005, only one single raw database – mainly compiled on the basis of input from the European Patent Office (EPO), the US Patent and Trademark Office (USPTO) and the Japanese Patent Office (JPO) – was used to produce an extended set of tables and indicators on the Eurostat webpage. This will also be done in the years to come. The aggregated patent statistics are produced on a raw data set delivered by the OECD. This raw data set will be replaced by PATSTAT for the next data productions.

Eurostat continues to produce the patent statistics (source: Eurostat/EPO) it started some years ago. However, these statistics are now produced using the priority year of the application, and not the year of filing as previously. The data values are, however, similar. These data are in general less extensive than the data released by Eurostat. This is because all PCT applications filed to the EPO (i.e. applications made in accordance with the procedure under the Patent Cooperation Treaty) are taken into consideration by Eurostat, whereas the OECD datasets do so only in part. Eurostat has implemented the changes described above, as only one single data source is now used (see above) and as the data produced provide a better reflection of the innovation and R&D performance of an economy.

Users should note that data on PCT applications to the EPO are not compiled using the nationality of the inventor but the nationality of the applicant.

Counting patents with multiple applicants

Where a patent lists several applicants from different countries, the respective contributions from each country are taken into account. This is done in order to eliminate multiple counting of such patents. For example, a patent that lists the applicants as 1 French, 1 American and 2 German residents will be counted as 1/4 of a patent for France, 1/4 for the USA and 1/2 for Germany. The method is called fractional counting.

Counting patents with multiple IPC codes

When several IPC codes are attributed to a patent, only the main IPC code is used for counting. In this database the first-mentioned IPC code is considered to be the main IPC code.

Since 2004 the interinstitutional Patent Statistics Task Force has developed the concept of a worldwide patent statistics database (PATSTAT). PATSTAT has to be understood as one single patent statistics raw database, held by the European Patent Office (EPO) and developed in cooperation with the World Intellectual Property Organisation (WIPO), the OECD and Eurostat.

PATSTAT should fulfil the user needs of the various international organisations which will use this raw database for production. Designed to be sustainable over time, PATSTAT will become operational in 2006 and will concentrate on raw data, leaving the indicator production mainly to PATSTAT users such as the OECD, Eurostat and others.

For further details, please see the Eurostat metadata on patent statistics posted on the webpage.

Source: Eurostat, patent statistics

2. Patent statistics - WIPO

The World Intellectual Property Organization (WIPO) collects and publishes annual statistics on patents, by country and in accordance with the international patent classification (IPC) system administered by WIPO.

Counting patents with multiple applicants

Where a patent lists several applicants from different countries, only one country is taken into account. Country of Origin is the residence indicated for the first named applicant.

Counting patents with multiple IPC codes

WIPO uses all of the IPC codes attributed to a patent application and reports the number of PCT applications in each IPC subclass. In other words, an application which is classified in G06F and in H04L is reported as one application under each of those classes.

Source: WIPO

3. Study on evaluating the knowledge economy – what are patents actually worth? – DG Internal Market

The study deals with the economic value of European patents and offers a comprehensive analysis of the “state of play” on the matter. The literature survey in the first main part of the study provides a comprehensive overview of the existing publications on the direct and indirect benefits of patents. The second main part uses the Patval-EU database to present tables of descriptive statistics. The Patval-EU dataset contains information from inventors of European patents applied to the EPO from 1993 to 1997. The inventors are from six EU countries: Germany, France, Spain, Italy, the Netherlands and the United Kingdom. EPO patent statistics in general are the subject of the third main part of the study.

Source: European Commission, DG Internal Market, May 2005


Symbols

: not available

Data presented in this Statistics in Focus reflect availability in Eurostat's reference database as at September 2006.

Further information:

Data: [EUROSTAT Website/Home page/Science and technology/Data](#)

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Eurostat has set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all the Member States as well as in some EFTA countries.

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