Patent Cooperation Treaty

Procedural Aspects & Recent Trends

PG Diploma In Patents

NALSAR University of Law, Hyderabad

Contact Class; February, 2020.

WIPO PCT
The International Patent System

The Patent Cooperation Treaty is an agreement for international cooperation in the field of patents.

It is a treaty for rationalization and cooperation with regard to the filing, searching and examination of patent applications and the dissemination of the technical information contained therein.

The PCT does not provide for the grant of "international patents": the task of and responsibility for granting patents remains exclusively in the hands of the patent Offices of, or acting for, the countries where protection is sought (the "designated Offices").

WIPO | PCT
The International Patent System

The Patent Cooperation Treaty or "PCT" entered into force on 24 January 1978, and became operational on 01 June 1978, with an initial 18 Contracting States.

Presently 153 Contracting States had adhered to the PCT.

Came into force for India on
07 December, 1998.

Filing and not granting.

PCT Contracting States (153)

Regional Protection

EA Eurasian Patent

AM Armenia
AZ Azerbaijan
BY Belarus
KG Kyrgyzstan
KZ Kazakhstan
RU Russian Federation
TJ Tajikistan
TM Turkmenistan

EP European Patent

AL Albania[1]
AT Austria
* BE Belgium
BG Bulgaria
CH Switzerland
* CY Cyprus
CZ Czech Republic
DE Germany
DK Denmark
EE Estonia
ES Spain
FI Finland
* FR France
GB United Kingdom
* GR Greece
HR Croatia[1]
HU Hungary
* IE Ireland
IS Iceland
* IT Italy
LI Liechtenstein
* LT Lithuania
LU Luxembourg
* LV Latvia
* MC Monaco
MK The former Yugoslav Republic of Macedonia[1]
* MT Malta
* NL Netherlands
NO Norway
PL Poland
PT Portugal
RO Romania
RS Serbia[1]
SE Sweden
* SI Slovenia
SK Slovakia
SM San Marino
TR Turkey

European Patent Office

Regional patent only

Extension agreement continues to apply to applications filed before 1 January 2008 (for HR), 1 January 2009 (for MK), 1 May 2010 (for AL) or 1 October 2010 (for RS)

PCT Contracting States (153)

Regional Protection

AP ARIPO Patent

	BW	Botswana
	GH	Ghana
	GM	Gambia
	KE	Kenya
	LR	Liberia
	LS	Lesotho
	MW	Malawi
	MZ	Mozambique
	NA	Namibia
	RW	Rwanda
	SD	Sudan
	SL	Sierra Leone
	ST	Sao Tome and Principe
*	SZ	Swaziland
	TZ	United Republic of Tanzania
	UG	Uganda
	ZM	Zambia
	ZW	Zimbabwe

OA OAPI Patent

*	BF	Burkina Faso
*	BJ	Benin
*	CF	Central African Republic
*	CG	Congo
*	CI	Côte d'Ivoire
*	CM	Cameroon
*	GA	Gabon
*	GN	Guinea
*	GQ	Equatorial Guinea
*	GW	Guinea-Bissau
*	KM	Comoros
*	ML	Mali
*	MR	Mauritania
*	NE	Niger
*	SN	Senegal
*	TD	Chad
*	TG	Togo

* Regional patent only

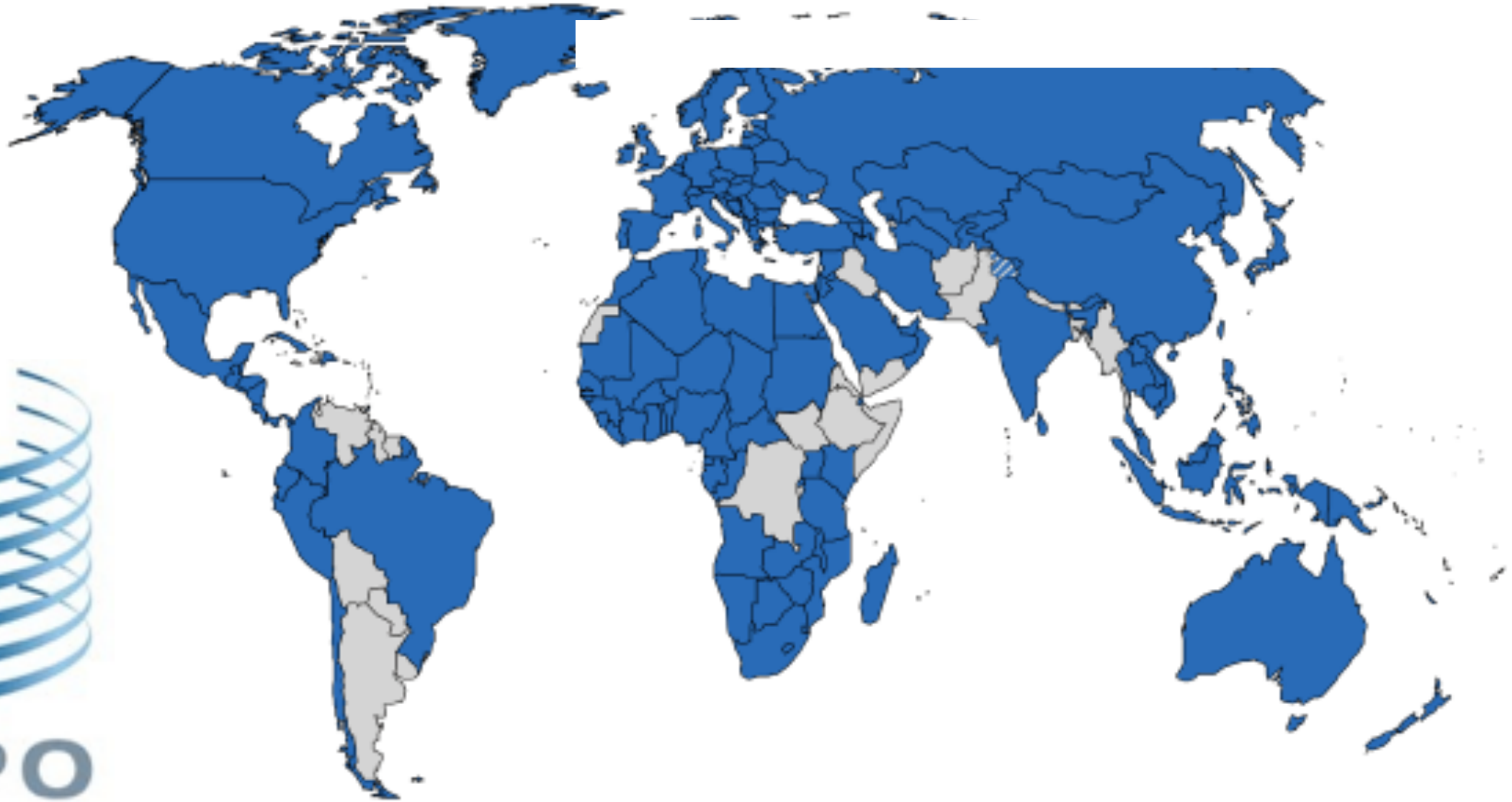
PCT Contracting States (153)

National Protection

AE	United Arab Emirates
AG	Antigua and Barbuda
AO	Angola
AU	Australia
BA	Bosnia and Herzegovina
BB	Barbados
BH	Bahrain
BN	Brunei Darussalam
BR	Brazil
BZ	Belize
CA	Canada
CL	Chile
CN	China
CO	Colombia
CR	Costa Rica
CU	Cuba
DJ	Djibouti
DM	Dominica
DO	Dominican Republic
DZ	Algeria
EC	Ecuador
EG	Egypt
GD	Grenada
GE	Georgia
GT	Guatemala
HN	Honduras
ID	Indonesia
IL	Israel
IN	India
IR	Islamic Republic of Iran
JP	Japan
KH	***CAMBODIA (as from 8 Dec. 2016)***
KM	Union of the Comoros
KN	Saint Kitts and Nevis
KP	Democratic People's Republic of Korea
KR	Republic of Korea
KW	Kuwait
LA	Lao People's Democratic Republic
LC	Saint Lucia
LK	Sri Lanka
LY	Libya
** MA	Morocco
** MD	Republic of Moldova
* ME	Montenegro
MG	Madagascar
MN	Mongolia
MX	Mexico
MY	Malaysia
NG	Nigeria
NI	Nicaragua
NZ	New Zealand
OM	Oman
PA	Panama
PE	Peru
PG	Papua New Guinea
PH	Philippines
QA	Qatar
SA	Saudi Arabia
SC	Seychelles
SG	Singapore
ST	Sao Tome and Principe
SV	El Salvador
SY	Syrian Arab Republic
TH	Thailand
TN	Tunisia
TT	Trinidad and Tobago
UA	Ukraine
US	United States of America
UZ	Uzbekistan
VC	Saint Vincent and the Grenadines
VN	Viet Nam
ZA	South Africa

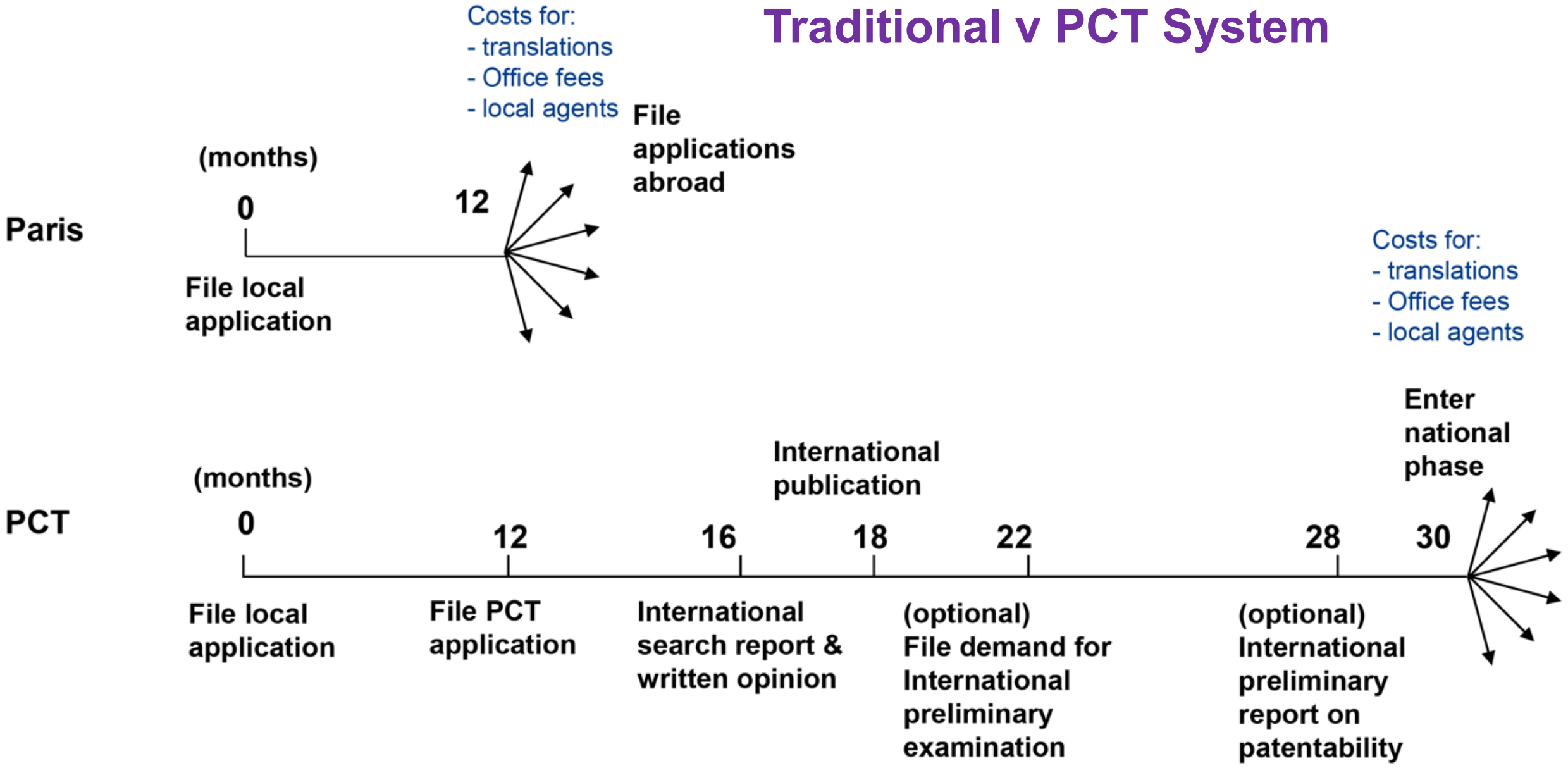
* Extension of European patent possible
** Validation of European patent possible

PCT Contracting States

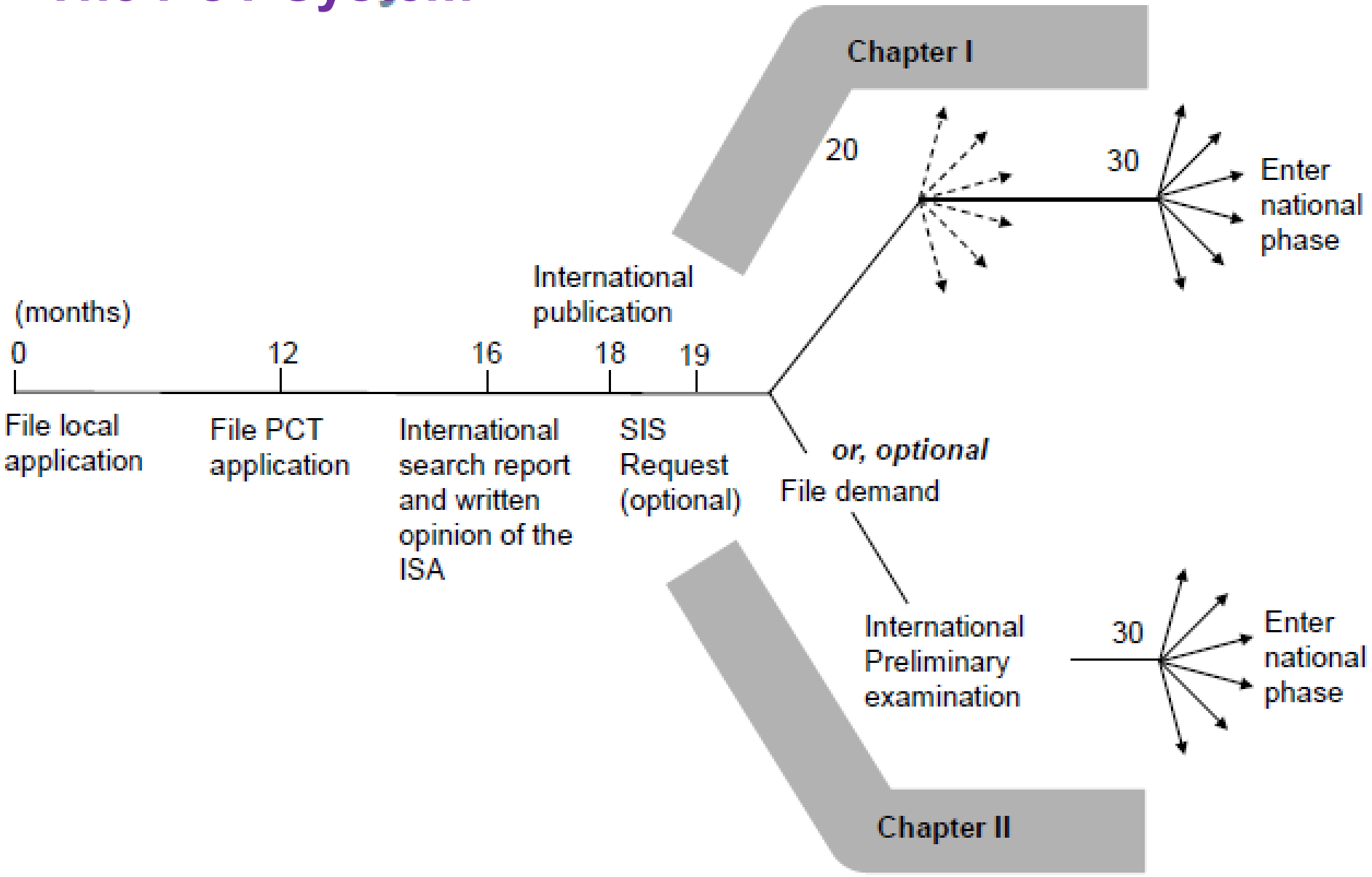


WIPO

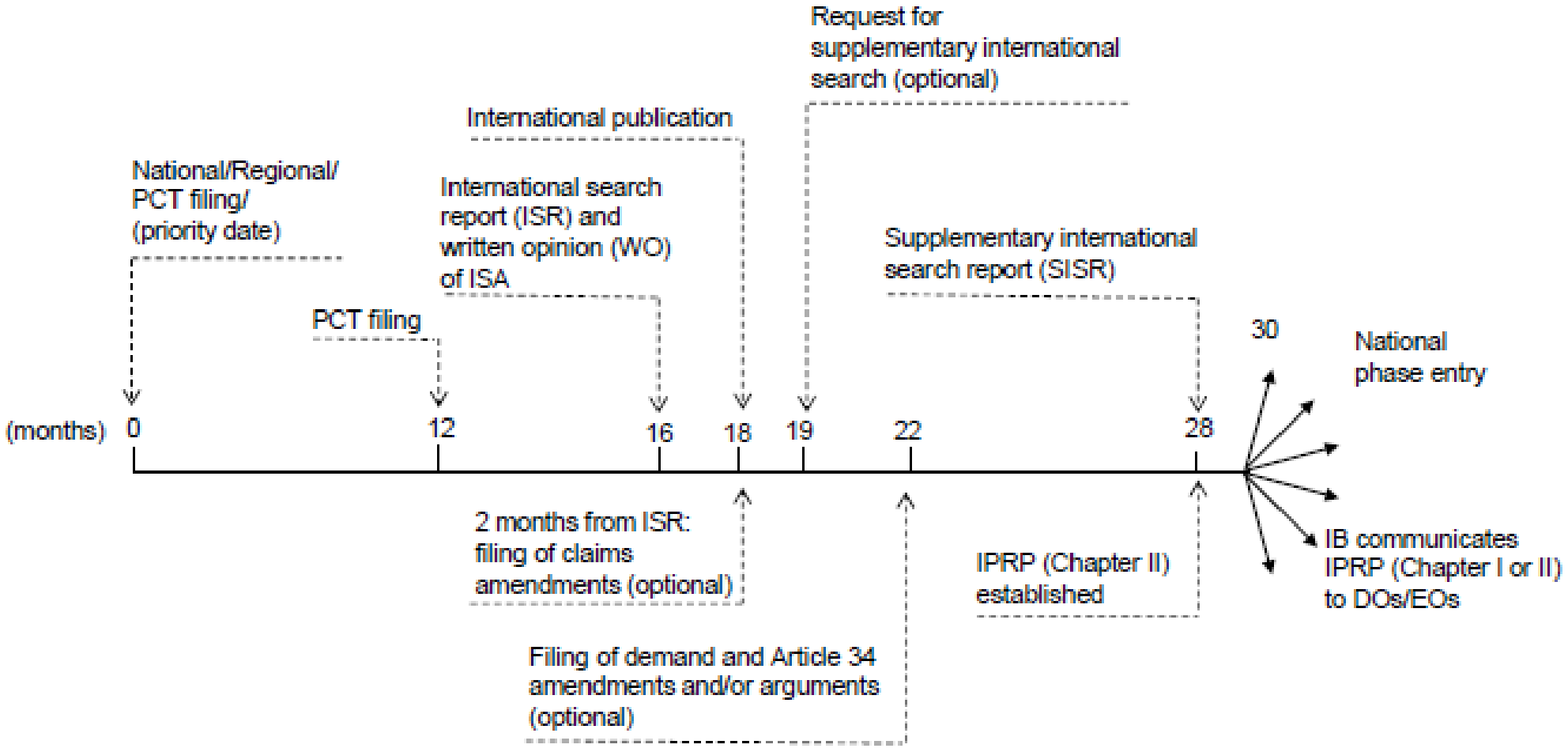
Traditional v PCT System



The PCT System



The PCT Timeline



Non-applicability of time limit of 30 months under Article 22(1)

- The Offices of the following States have notified the International Bureau that they will not apply the 30 month time limit under Chapter I, as of 1 April 2002, for as long as modified Article 22(1) is not compatible with their national law:

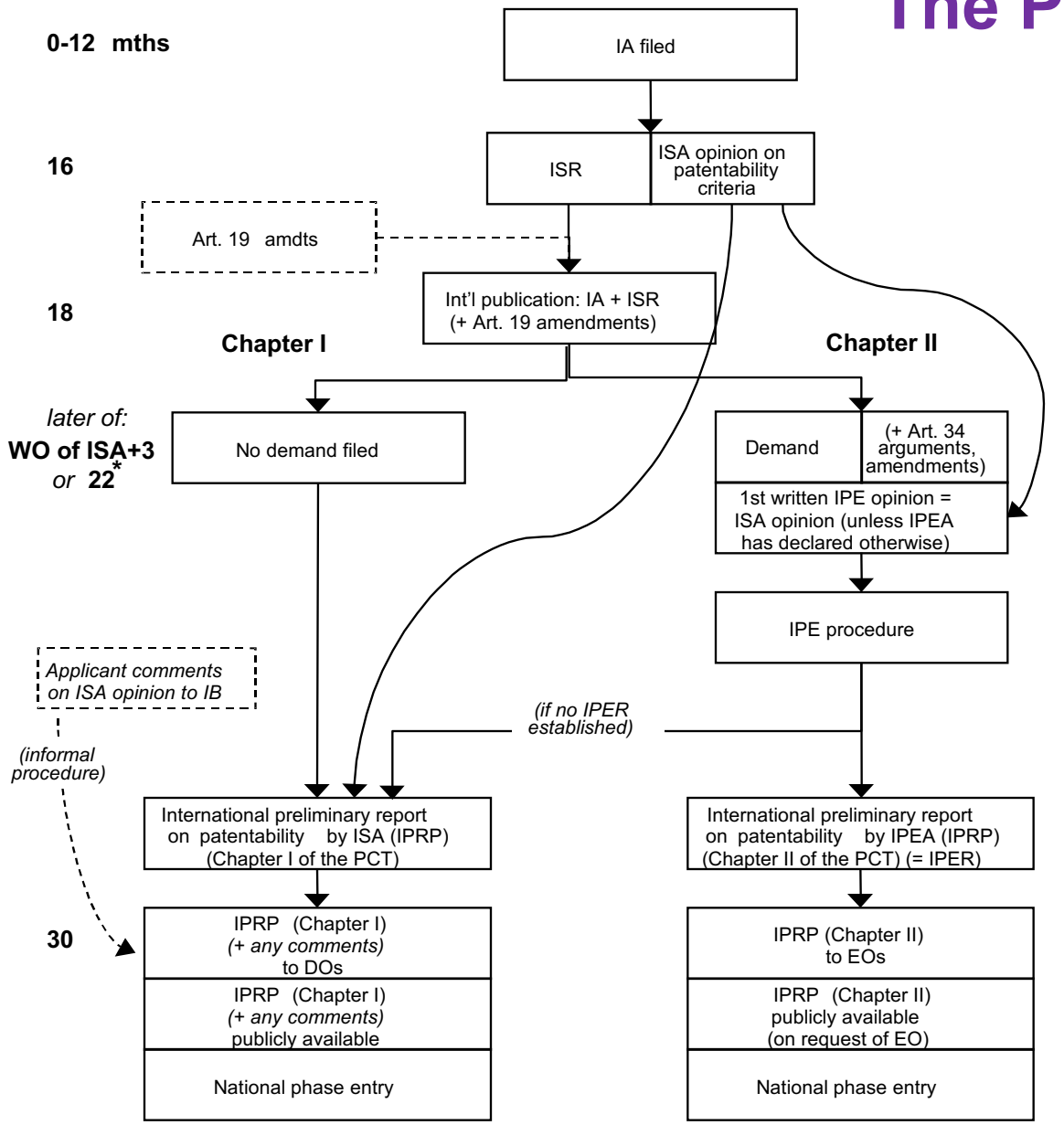
  LU Luxembourg
  TZ United Republic of Tanzania

- Where one of these States has been designated for the purposes of a regional patent, the applicable time limit is 31 months

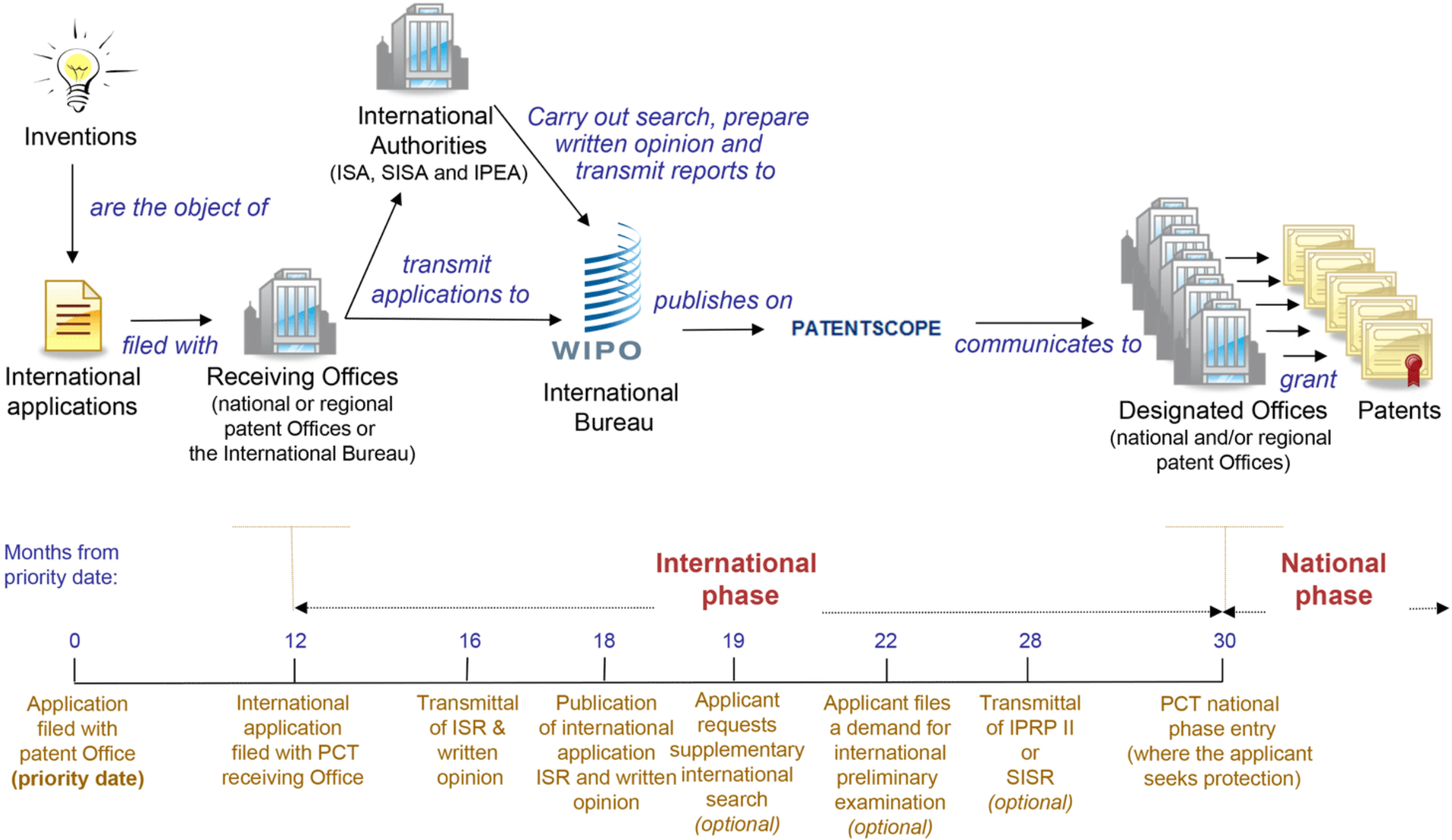
- If no demand for international preliminary examination is filed before the expiration of 19 months in respect of above States, the national phase will have to be entered before the expiration of 20 or 21 months from the priority date

The PCT System

WIPO | PCT
The International Patent System



** must in practice file demand by 19 months for Article 22 transitional reservation countries*


Inventions
are the object of
International applications
filed with
Receiving Offices
(national or regional patent Offices or the International Bureau)
International Authorities
(ISA, SISA and IPEA)
Carry out search, prepare written opinion and transmit reports to
transmit applications to
WIPO
International Bureau
publishes on
PATENTSCOPE
communicates to
Designated Offices
(national and/or regional patent Offices)
grant
Patents
Months from priority date:
International phase
National phase
0
12
16
18
19
22
28
30
Application filed with patent Office (priority date)
International application filed with PCT receiving Office
Transmittal of ISR & written opinion
Publication of international application ISR and written opinion
Applicant requests supplementary international search (optional)
Applicant files a demand for international preliminary examination (optional)
Transmittal of IPRP II or SISR (optional)
PCT national phase entry (where the applicant seeks protection)

ISA / IPEA

- AT – Austria
- AU – Australia
- BR – Brazil
- CA – Canada
- CL – Chile
- CN – China
- EG – Egypt
- ES – Spain
- FI – Finland
- IL – Israel
- IN – India
- JP – Japan
- KR – Republic of Korea
- RU – Russian Federation
- SE – Sweden
- SG – Singapore
- TR – Turkey
- UA – Ukraine
- US – United States of America
- EP – European Patent Office
- XN – Nordic Patent Institute (Denmark, Iceland, Norway)
- XV – Visegrad Patent Institute (VPI) (Czech Republic, Hungary, Poland, Slovakia)

22

ISA - Functions

- Checks unity of invention (Rule 40)
- Checks title (Rule 37); checks abstract (Rule 38)
- Searches claimed invention (Article 15(3), Rule 33.3)
- Authorizes rectification of obvious errors if the error is:
  - in any part of the international application other than the request or
  - in any paper submitted to that Authority (Rule 91.1(e))
- Establishes international search report (ISR) (Rules 42 and 43) and written opinion (WO) (Rule 43*bis*) and /or declaration that no international search report will be established (Article 17(2))

ISR – International Search Report

It contains:

- IPC (International Patent Classification) symbols
- Indications of the technical areas searched
- Indications relating to any finding of lack of unity
- A list of the relevant prior art documents
- Indications relating to any finding that a meaningful search could not be carried out in respect of certain (but not all) claims

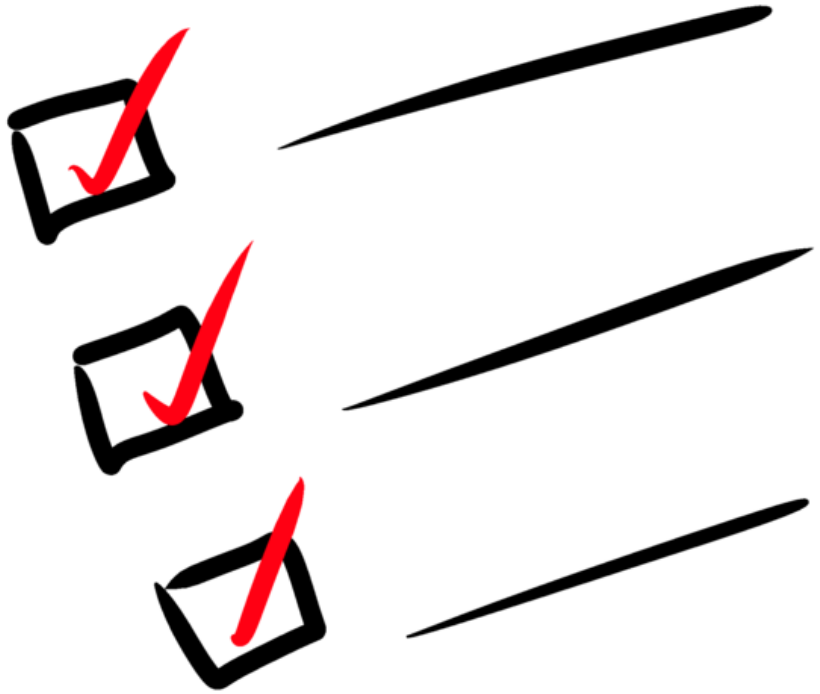
Prior Art

- Made available to public
- Anywhere in the world
- By written disclosure
- Assisting in determining the claimed invention is new and involves an inventive step
- Prior to international filing date

Written Opinion of the ISA

Non binding opinion on:

- Novelty
- Inventive Step
- Industrial Applicability



Sent to the applicant with the ISR

Not published with the application

No provision of formal response

Demand not filed - IPRP established on the basis of WO of ISA

Demand Filed - WO of ISA treated as the first WO of the IPEA

International Preliminary Examination

- The purpose of the international preliminary examination is to provide a preliminary non-binding opinion on
  - novelty (not anticipated) (Article 33(2) and Rule 64)
  - inventive step (not obvious) (Article 33(3) and Rule 65)
  - industrial applicability (Article 33(4))
- Relevant prior art: absolute novelty (Rule 64, see also Rule 33)
- Only claims relating to the invention(s) searched by the ISA will be examined by the IPEA (Rule 66.1(e) and 66.2(a)(vi)
- Finding of lack of unity of invention (Rule 68)
  - Same criteria as for international search (Rule 13 and Annex B of the Administrative Instructions)
  - Invitation by the IPEA to restrict the claims or to pay additional fees (which can be paid under protest)
  - Applicant can select invention as “main invention” and those inventions for which additional fees are paid

IPRP - International Preliminary Report on Patentability

- Must be established by the IPEA within:
  - 28 months from the priority date
  - 6 months from date of payment of fees
  - 6 months from date of receipt by IPEA of translation under Rule 55.2, whichever expires last (Rule 69.2)
- May contain “annexes” which comprise all sheets containing amendments or rectifications (that is, rectifications of obvious errors authorized under Rule 91 by the IPEA) which have been used as a basis for the report (Rule 70.16)
- Correspondence (such as letters) or copies of amendments superseded by later amendments are not annexed to the report (Rule 70.16)

IPRP - International Preliminary Report on Patentability

- No provisions for appeal or further proceedings during the international phase before the International Authorities
- Sent to the applicant and the IB (Rule 71.1)
- IB forwards copies of the report, and any required translation of the report into English (prepared by the IB), to the elected Offices (Article 36(3)(a) and Rule 72.1)
- The annexes are not translated by the IB (Article 36(3)(b))

PCT System – The Extra Edge

- Control Cost - Delay filing decision
- Growing geographical interests
- Finalize/develop the market
- Study probable competition

COST
 # Filing
 # Issuing
#Attorney
#Maintenance

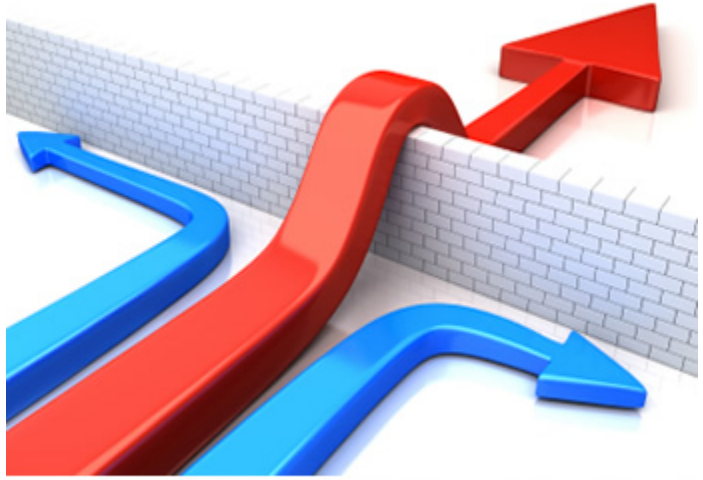
Cost of Obtaining & Maintaining Patents in 40+ major countries is > US$ 700,000

PCT System - Benefits

- Single filing procedure for all countries
- Sufficient time for translations
- Drafted in accordance to PCT is valid everywhere
- Flexibility of payment of fees
- Advantage of maximum designation
- Transmittal of Priority needn’t be monitored
- Provision for withdrawals
- Quality ISR and IPRP
- Provision of amendments
- Last minute foreign filings

PCT System - Challenges

- The prosecution needs to be known
- Fully time line depended
- Often calls for clarifications and reminders

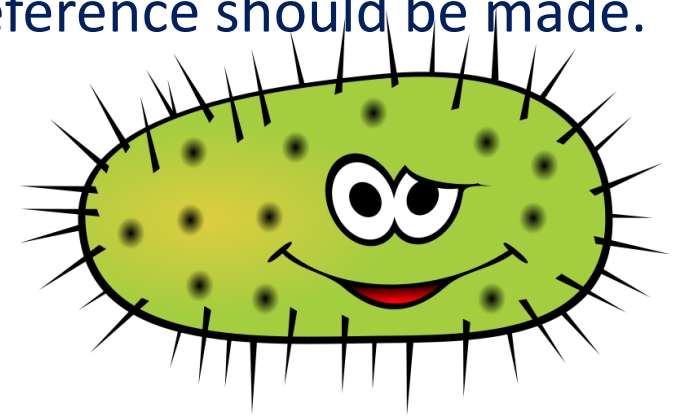


Docketing should be an habit

Reference to Deposited Microorganism or Other Biological Material

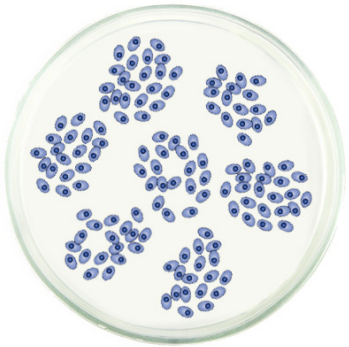
- Required in a PCT application only when the national law of a designated State provides for it. Usually needed for full disclosure of the invention.

- Annex L of Volume I of the *PCT Applicant's Guide* contains the list of the designated States whose national law provides for a reference to deposited microorganisms or other biological material and indicates when and how such reference should be made.

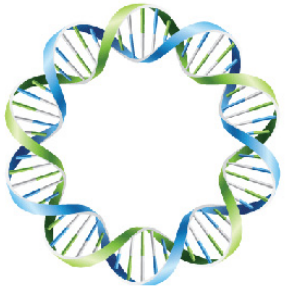


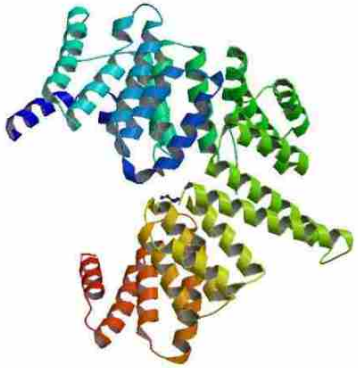
- The reference must indicate:
  - the name and address of the depositary institution
  - the date of deposit of the microorganism/biological material with that institution
  - the accession number given to the deposit by that institution
  - any additional indication, if applicable (see Annex L)

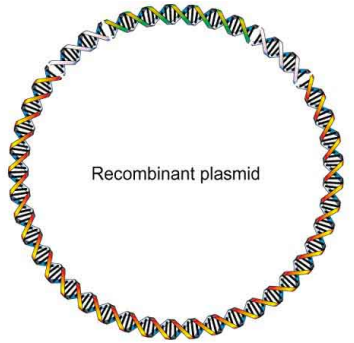
Reference to Deposited Microorganism or Other Biological Material



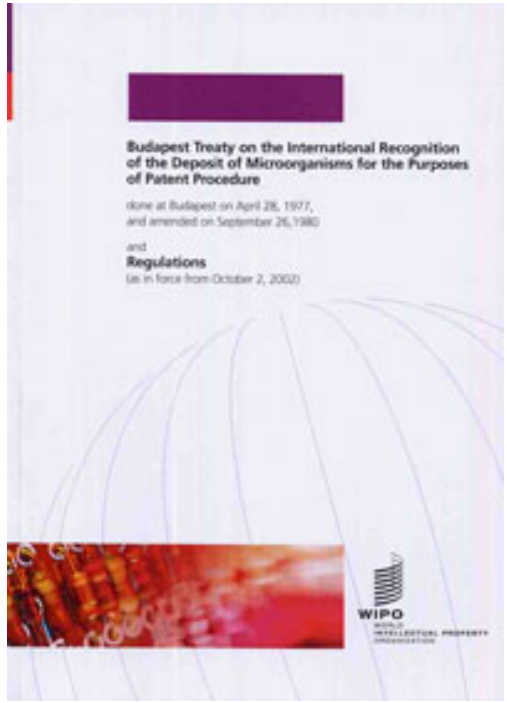
- The indications may be made in the description or on form PCT/RO/134.
- Certain designated Offices require that such indications be part of the description. In such a case, if form PCT/RO/134 is used, it should be numbered as a sheet of the description.
- In respect of certain designated Offices, the applicant is entitled to request that a sample be issued only to an expert nominated by the requester (a space is provided in form PCT/RO/134 to make such indication).







IDA Status



AU (NMI)
BE (BCCM)
BG (NBIMCC)
CA (NMLHC)
CL (CChRGM)
CN (CCTCC; CGMCC)
CZ (CCM)
DE (DSMZ)
ES (BNA; CECT)
FI (VTTCC)
FR (CNCM)
IN (MTCC)

23 Countries

HU (NCAIM)
IT (ABC; DBVPG)
JP (IPOD; AIST)
KR (KCLRF; KCTC; KCCM)
LV (MSCL)
NL (CBS)
PL (IAFB; PCM)
RU (NRCA; VKM; VKPM)
SK (CCY)
UK (CCAP;ECACC; IMI; NIBSC;NCTC;NCYC; NCIMB)
US (NRRL; ATCC)

39 Authorities

PCT Sequence Listing Standard

- Where the sequence listing is filed together with the international application, it:
  - must be presented as a separate “Sequence Listing Part” of the description
  - must be placed at the end of the application
  - must begin on a new page
  - should preferably have independent page numbering

- The Standard provides further details as to:
  - the symbols and the format which must be used for the presentation of nucleotide and/or amino acid sequences
  - with regard to other available information to be included in the sequence listing, the mandatory items which must, and the optional item which may, be included, and the order in which those items must appear
  - the presentation of features of sequences
  - the presentation of “free text”

PCT Sequence Listing Standard

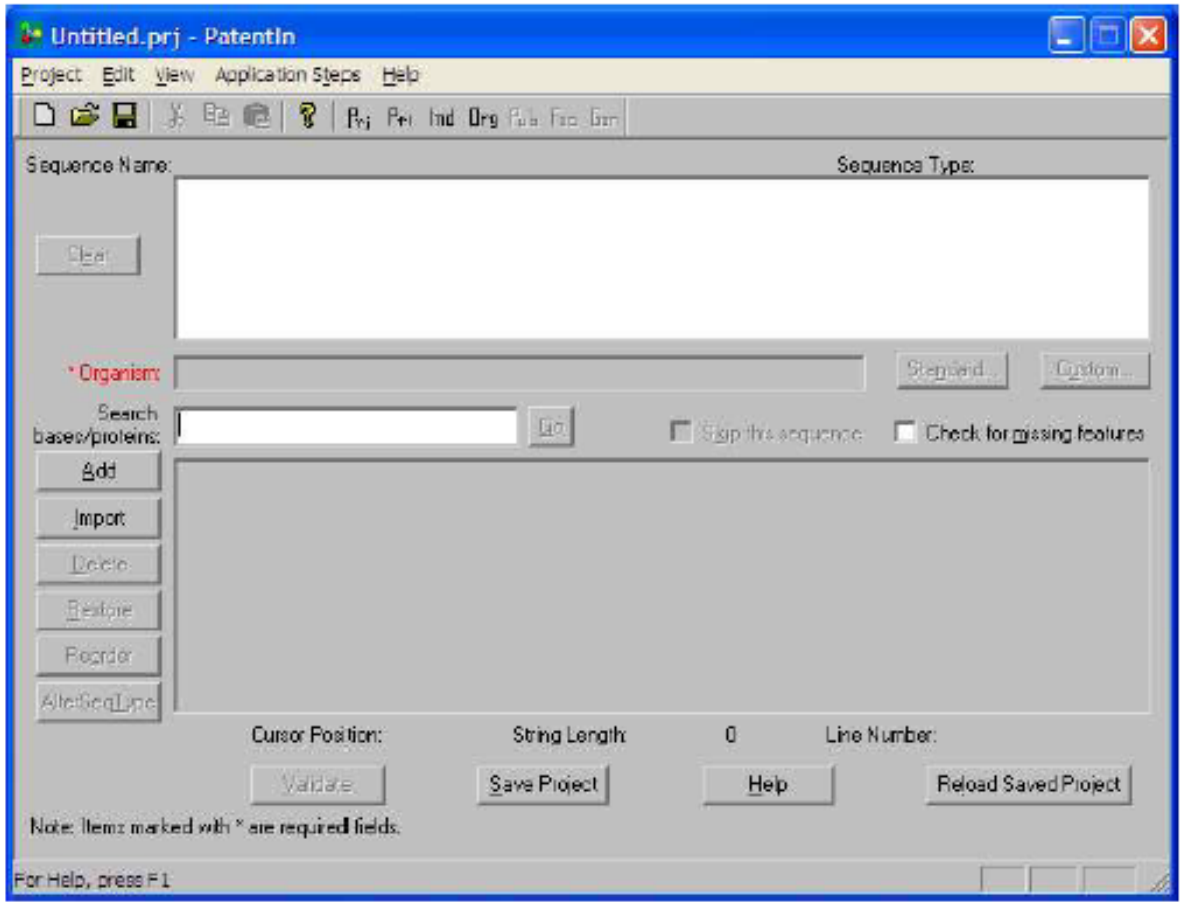
Presentation of Free Text

- The Standard defines “free text” as a wording describing characteristics of the sequence which does not use “language neutral vocabulary”, that is, controlled vocabulary used in the sequence listing that represents scientific terms as prescribed by sequence database providers (including scientific names, qualifiers and their controlled vocabulary values, the symbols and the feature keys appearing in the Appendices to the Standard).

- Where the sequence listing part of the international application contains free text, that free text:
  - may, and preferably should, be in English (irrespective of the language of the main part of the description) (Rule 12.1(d))
  - must be repeated in the main part of the description (“Sequence Listing Free Text”) in the language thereof (ISA invites to furnish correction if not contained in main part of description as filed) (Rules 5.2(b) and 13*ter*.1(d))

- For the purposes of the national phase (Rule 49.5(a-*bis*)), no designated Office is entitled to require the applicant to furnish to it a translation of any text matter contained in the sequence listing part of the description if such text matter:
  - is presented in accordance with the Standard
  - is repeated in the main part of the description (and hence in any translation thereof)

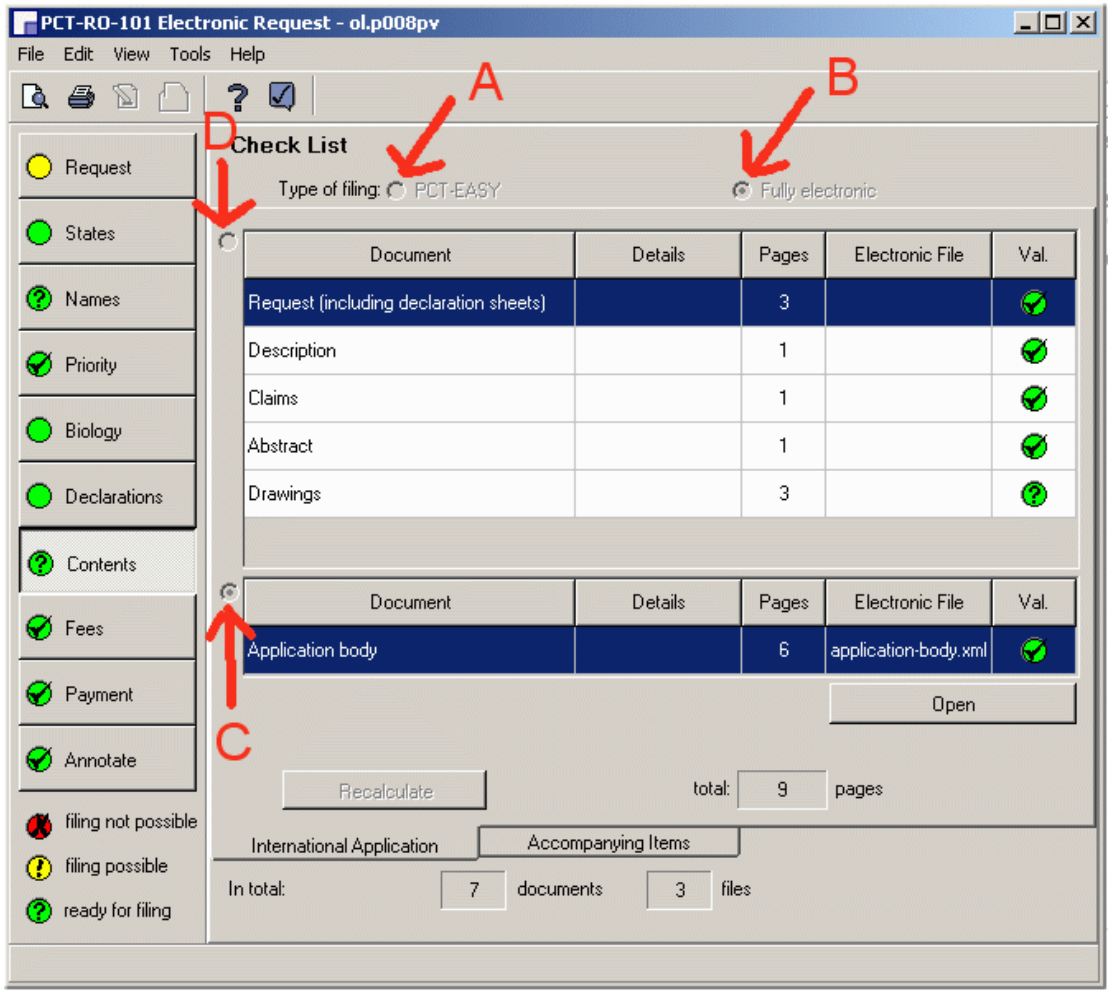
PatentIn Software



- Windows-based version (available free of charge from the JPO, the USPTO and the EPO) designed to expedite the process of preparing sequence listings in a standardized computer readable format complying with the PCT Sequence Listing Standard
- Helps in creating a database of patent-disclosed sequences
- Supports the exchange of published sequence data between the European Patent Office, the Japan Patent Office and the United States Patent and Trademark Office in a Trilateral Sequence Exchange Project

PCT – SAFE

Secured Application Filed Electronically



PCT-SAFE: two options

Fully electronic filing of application:

- entire application in electronic form (image or character-coded), electronically signed
- transmitted via secure internet connection or on physical media

Preparing request in "PCT-EASY mode"

- entire application in paper form (legal copy) including the PCT-EASY request form printout
- plus physical medium with electronic request form and

PCT-SAFE: fee reductions

- "PCT-EASY" type of filing (on paper + request and abstract on physical medium)
  CHF 100 (EUR 66 or equivalent amount)
- Fully electronic type of filing with application body in image format (for example PDF, TIFF attachments) and only the request in character coded format (XML)
  CHF 200 (EUR 132 or equivalent amount)
- Fully electronic type of filing with application body and request in character coded format (XML)
  CHF 300 (EUR 198 or equivalent amount)

ePCT Filing

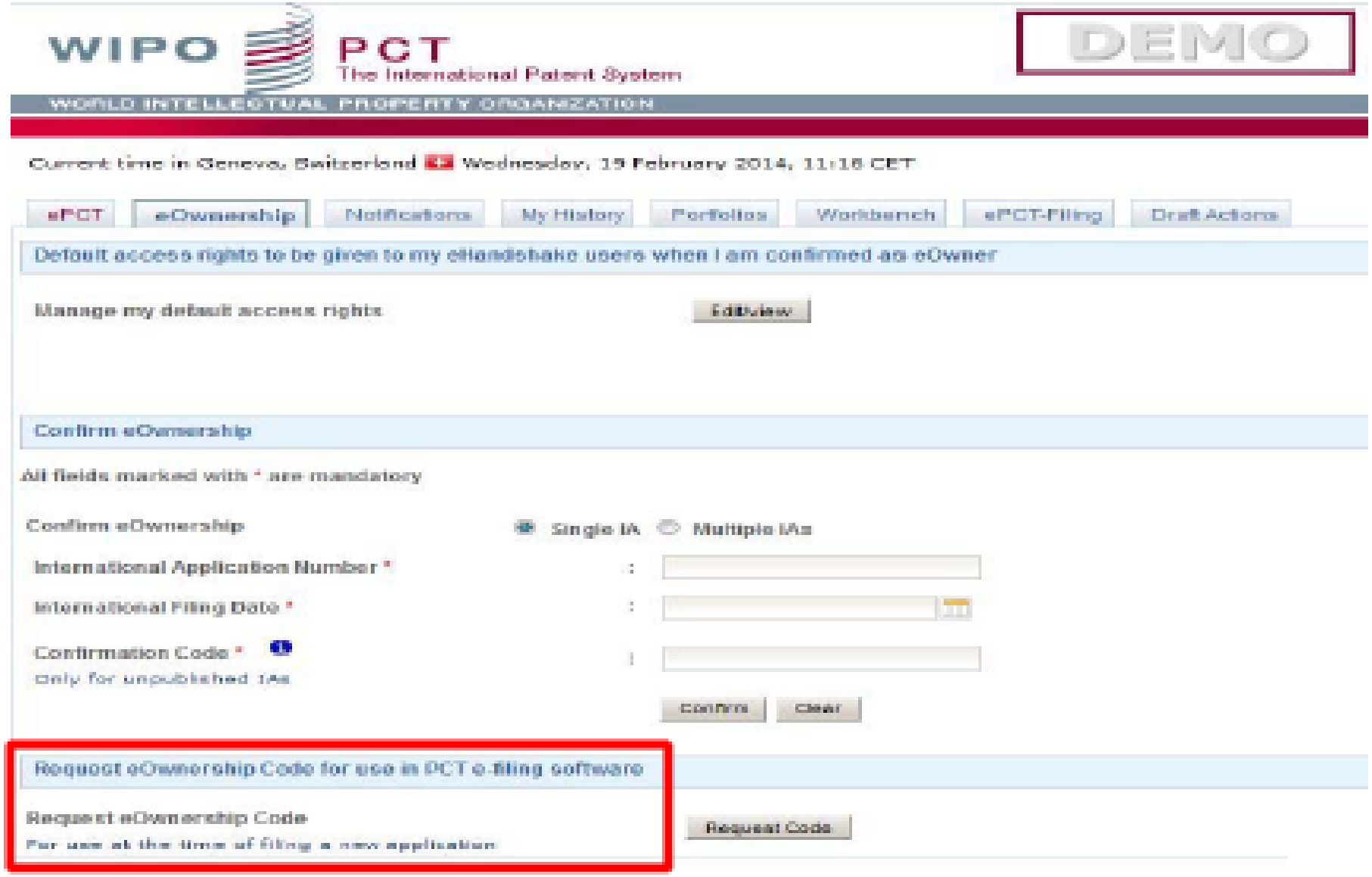
- Web-based filing of PCT applications available to all PCT applicants

- Available with 43 receiving Offices
  - Direct: AT, AU, AZ, BG, BN, BR, CL, CO, CU, CZ, DK, DZ, EA, EE, EP, FI, HU, IB, ID, IN, IR, IS, KR, LV, MX, MY, NO, NZ, OM, PH, PL,PT, QA, RU, SA, SE, SG, SK, TR and ZA (40)
  - Upload package: CA, IL, US (3)

- Real-time online payment to the International Bureau of filing fees by credit card or by debiting a WIPO Current Account (only for filings with RO/IB)
  - Visa, MasterCard/Eurocard, American Express, Diners Club
  - Payment can be made at or after the time of filing

eOLF / CMS Filing

European Patent Office



List of PCT Fees

At RO

- **transmittal fee**
- **international filing fee** (for IB)
- **search fee** (for ISA)
- **supplement per sheet in excess of 30** (for IB)
- *fee for priority document*
- *late payment fee*
- *late furnishing fee (translation of international application)*
- *fee for requesting restoration of the right of priority*
- *fee for copies of documents*

At ISA

- *additional search fee*
- *protest fee (where applicable)*
- *fee for copies of documents*
- *late furnishing fee (furnishing of a sequence listing)*

At IB

- *fee for early publication (before issuance of ISR)*
- *fee for publication of refused request for rectification of obvious mistake*
- *fee for publication of late request for correction/addition of priority claim*
- *fee for copies of documents*
- *supplementary search fee (for the SISA)*
- *supplementary search handling fee*

At IPEA

- **preliminary examination fee**
- **handling fee** (for IB)
- *late payment fee*
- *additional examination fee*
- *protest fee (where applicable)*
- *fee for copies of documents*
- *late furnishing fee (furnishing of a sequence listing)*

Fees indicated in italics are payable only in certain circumstances

Cost Considerations

October, 2019

EXAMPLE OF PCT FEES TO BE PAID BY CORPORATE APPLICANTS FROM INDIA

• Transmittal fee:	US$	102 (RO/IB)	INR 17,600 (RO/INp)	INR 0 (RO/INe)
• International Filing fee:	US$	1,352		
• Less PCT-SAFE (Max.):	US $	(305)		
• Less 75% Reduction:	US$	0		
• Search fee:	US$.	2,080	(ISA=US)	
• Examination fee:	US$	600	(IPEA=US)	
• Handling fee:	US$	203		
TOTAL PCT FEE (Ch.I):	**US$**	**3,229**	**INR 17,600 (RO/INp)**	**INR 0 (RO/INe)**
TOTAL PCT FEE (Ch.II):	**US$**	**4,032**		

- ***Not exceeding 30 pages + US$ 15/page***
- ***Applicant not Small or Micro entity***

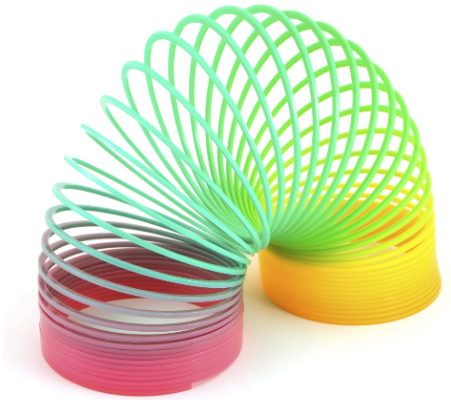
Benefits from using the PCT – Unique Procedure

- One application, in one language, filed with one Office, replaces multiple foreign filings until entry into the national phase
- Permits last minute foreign filing (before expiration of priority year)
- International filing date has the effect of national filing date in all designated Offices
- Uniform formal requirements accepted by all designated Offices
- Greater home control of the prosecution

- Decision on foreign filings can be postponed up to 30 months from the priority date at minimal cost
- Enables assessment of economic value of the invention and the chances of obtaining a patent before entering national phase

Benefits from using the PCT – Greater Flexibility

- Keep options open by making multiple designations
- Various possibilities for withdrawal
- International publication can be prevented or postponed until as late as 15 days before the actual publication date – conditional withdrawal possible
- Further expenses can be avoided simply by no longer prosecuting the application or not entering the national phase
- Amendments made during the international phase have effect in all designated/elected States
- More time for better quality translation for the national phase
- Better planning of the expenditures for the national phase



Benefits from using the PCT – Further Features

- Postponing national filings costs earns interest on capital
- Fee reductions in national phase in certain national Offices
- More straightforward and rapid national patent granting
- Less restrictive unity of invention requirements permit a reduced number of applications in the US
- Provisional protection after publication at 18 months from the priority date (in countries which afford such protection)
- 75% reduction in PCT fees for applicants from certain Contracting States

Evolution of Practice

- Carefully comply with all formal requirements
- Select ISA and IPEA for maximum benefits
- Reserve all market options - designate all
- Docket & track all events
- File early Demands
- Respond to Written Opinions
- Integrate PCT into Portfolio Management Program
- Make final decisions using all information
- Allow your agents sufficient time

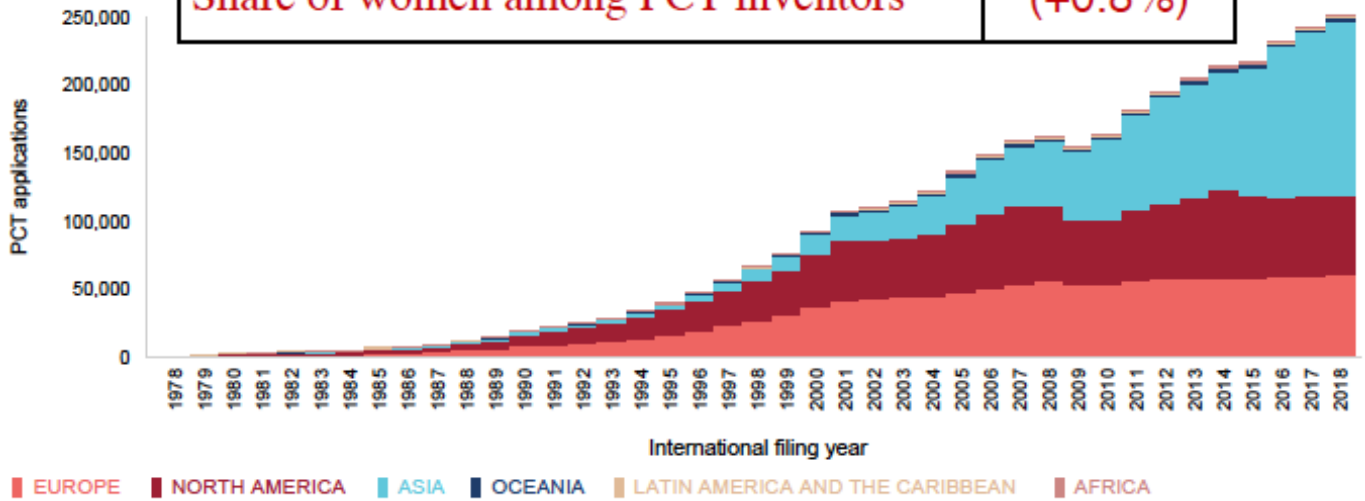
Decisions

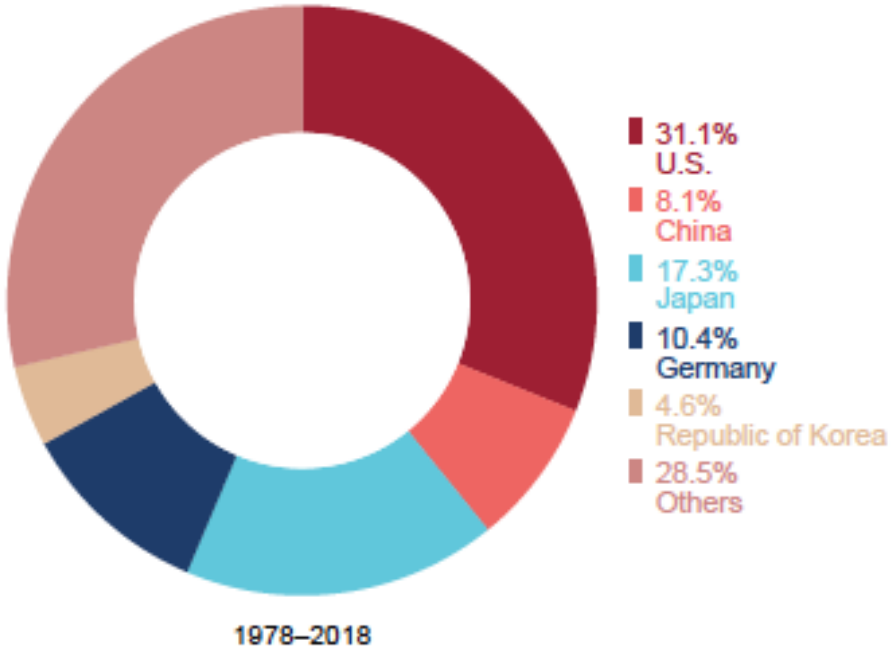
- Is filing a PCT application right?
- Where is the market of the invention?
- Who are the customers?
- Who is the competition?
- How easy (or difficult) would it be to design around the claims?
- Is there an incentive to copy in unprotected countries?
- What is the marketing strategy?
- What is important - exclusivity, freedom to practice or both?
- What is your budget?

PCT Statistics - 2018

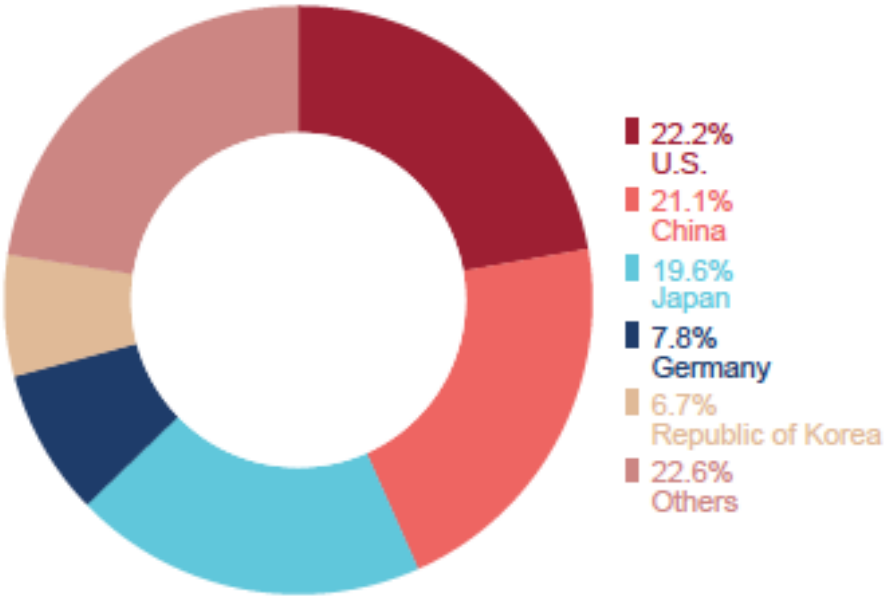
Key numbers for 2018

PCT national phase entries	(+2.3%)
PCT applications filed	(+3.9%)
Applicants	(+3.8%)
Countries in which PCT applications were filed	(+1)
Share of PCT national phase entries in worldwide non-resident filings	(+1.0%)
Share of women among PCT inventors	(+0.8%)



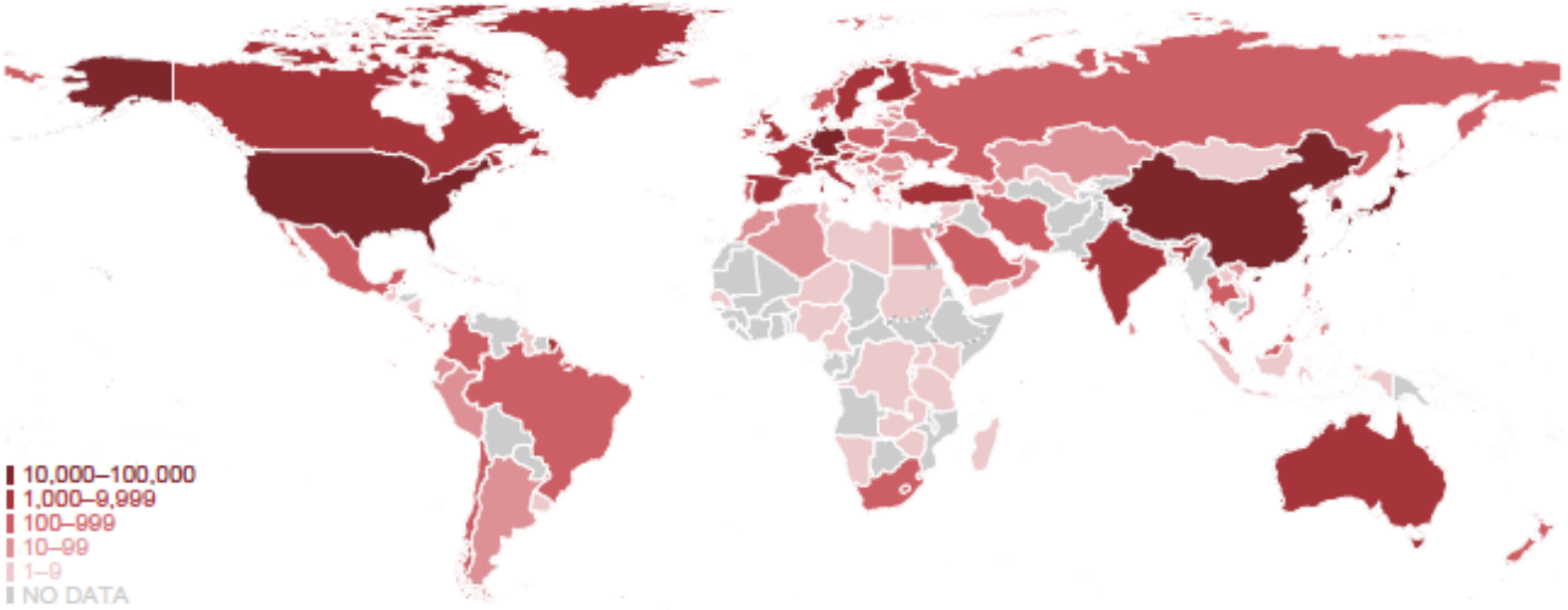


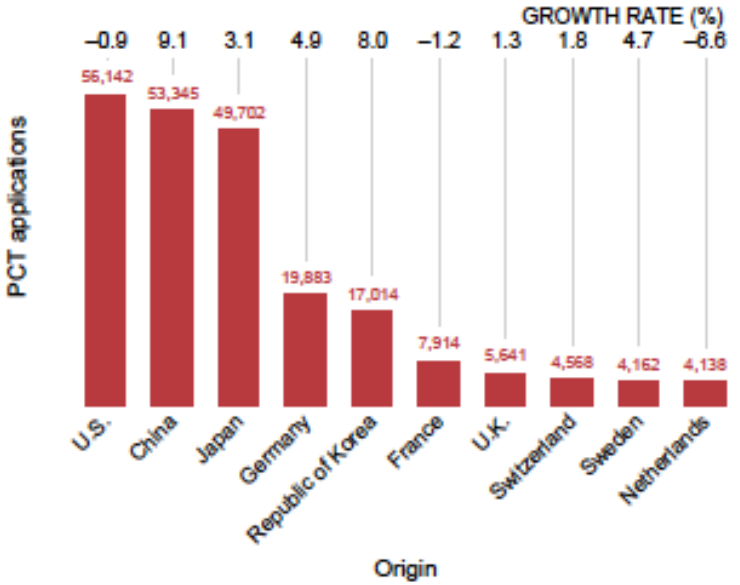
1978–2018

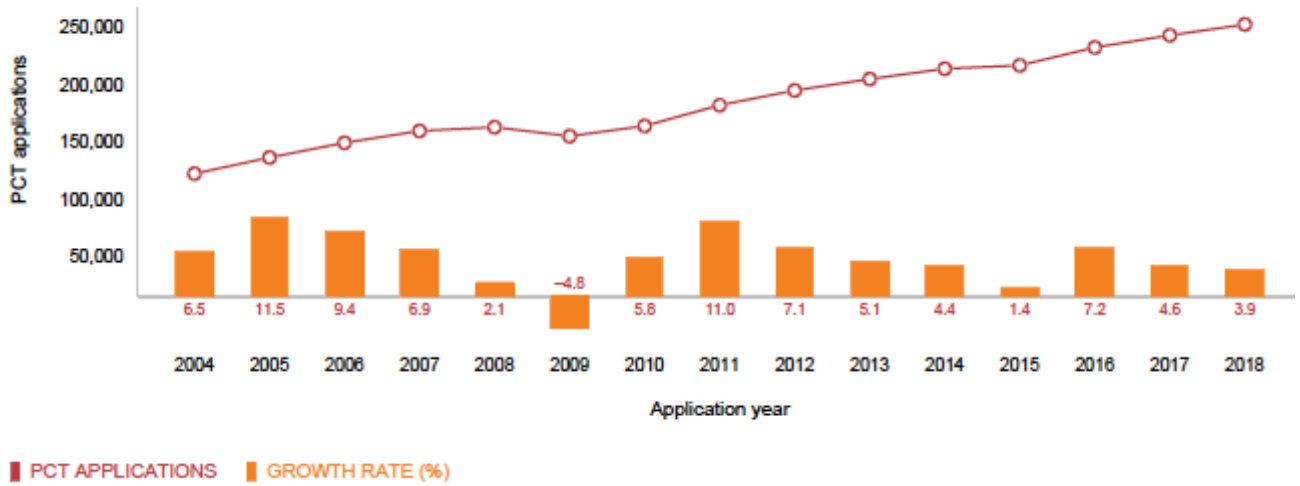


2018

PCT Trends - 2018







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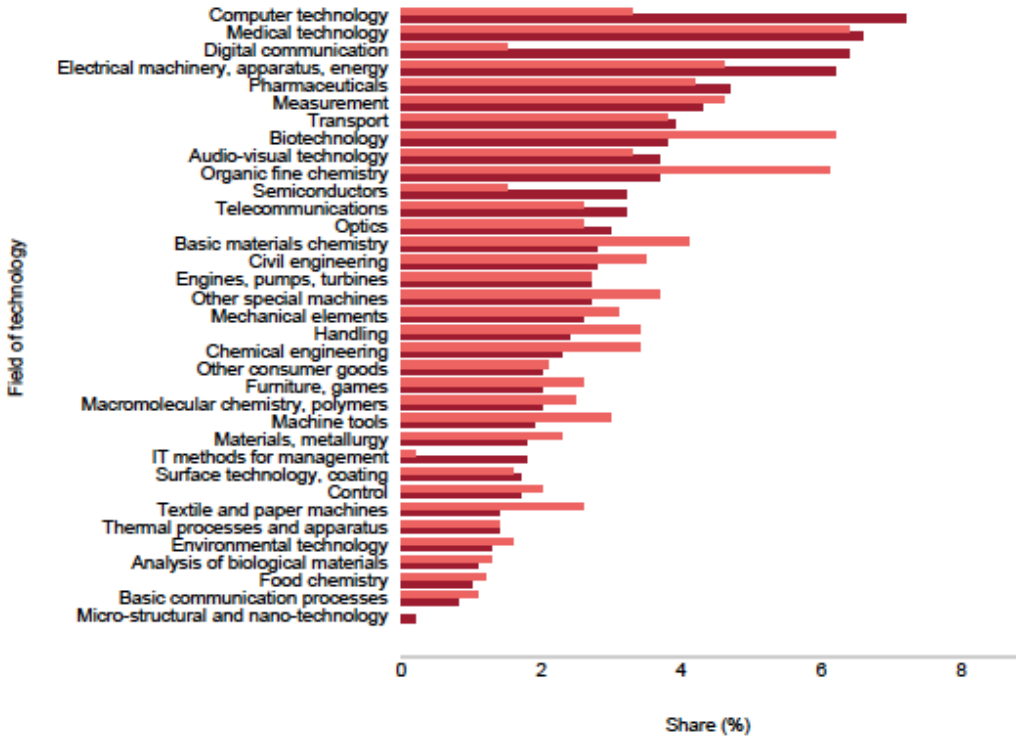
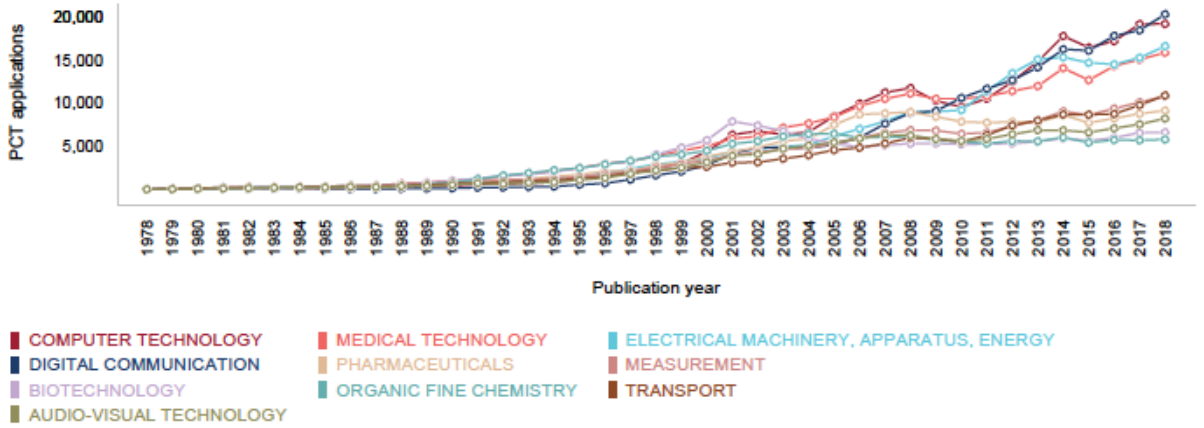
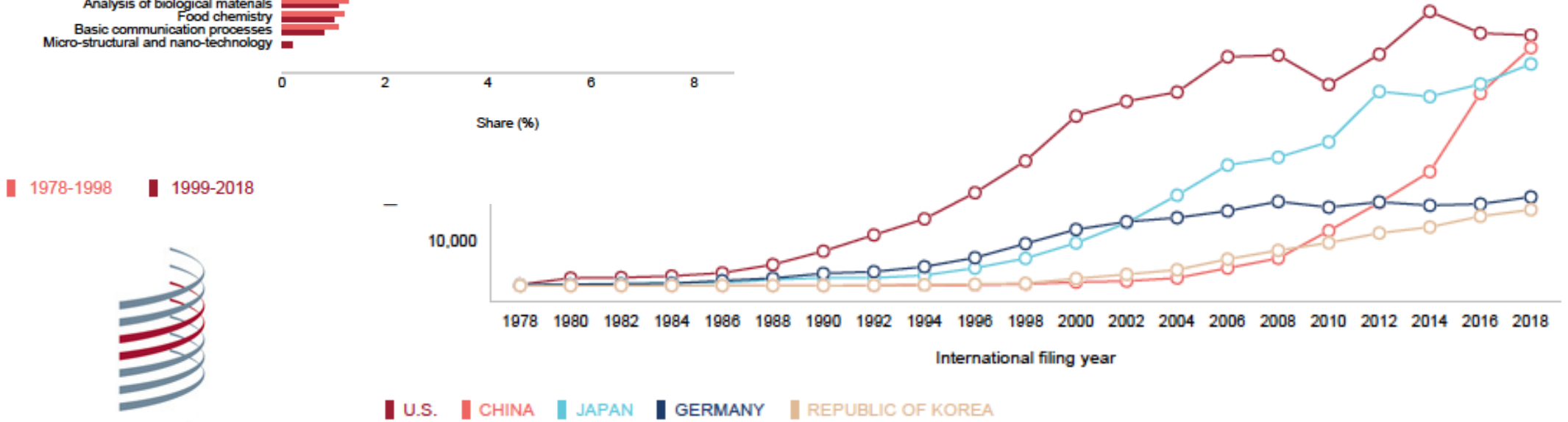
Source: WIPO Statistics Database

Top Applicants - 2018







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Source: WIPO Statistics Database

Top Applicants (Corporates) - 2018

Ranking	Change in position from 2017	Applicant	Origin	Published PCT applications		
				2016	2017	2018
1	0	HUAWEI TECHNOLOGIES CO., LTD.	China	3,692	4,024	5,405
2	2	MITSUBISHI ELECTRIC CORPORATION	Japan	2,053	2,521	2,812
3	0	INTEL CORPORATION	U.S.	1,692	2,637	2,499
4	1	QUALCOMM INCORPORATED	U.S.	2,466	2,163	2,404
5	–3	ZTE CORPORATION	China	4,123	2,965	2,080
6	2	SAMSUNG ELECTRONICS CO., LTD.	Republic of Korea	1,672	1,757	1,997
7	0	BOE TECHNOLOGY GROUP CO.,LTD	China	1,673	1,818	1,813
8	–2	LG ELECTRONICS INC.	Republic of Korea	1,888	1,945	1,697
9	1	TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)	Sweden	1,608	1,564	1,645
10	4	ROBERT BOSCH CORPORATION	Germany	1,274	1,354	1,524
11	0	MICROSOFT TECHNOLOGY LICENSING, LLC	U.S.	1,528	1,536	1,476
12	3	PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.	Japan	1,189	1,280	1,465
13	–4	SONY CORPORATION	Japan	1,665	1,735	1,342
14	3	SIEMENS AKTIENGESELLSCHAFT	Germany	1,138	1,063	1,211
15	–3	HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.	U.S.	1,743	1,519	1,170
16	5	SHARP KABUSHIKI KAISHA	Japan	1,205	963	1,132
17	23	GUANG DONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD	China	80	474	1,042
18	–2	KONINKLIJKE PHILIPS ELECTRONICS N.V.	Netherlands	1,137	1,077	1,033
19	1	DENSO CORPORATION	Japan	986	968	998
20	5	LG CHEM, LTD.	Republic of Korea	671	850	969
21	–2	FUJIFILM CORPORATION	Japan	968	970	962

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The International Patent System

Source: WIPO Statistics Database

Top Applicants (Universities) - 2018

Ranking	Change in position from 2017	Applicant	Origin	Published PCT applications		
				2016	2017	2018
38	1	UNIVERSITY OF CALIFORNIA	U.S.	434	482	501
108	–32	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	U.S.	236	279	216
119	103	SHENZHEN UNIVERSITY	China	87	108	201
145	192	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	China	50	70	170
147	–26	HARVARD UNIVERSITY	U.S.	163	179	169
158	–22	UNIVERSITY OF TEXAS SYSTEM	U.S.	155	161	158
181	20	SEOUL NATIONAL UNIVERSITY	Republic of Korea	122	119	137
181	91	TSINGHUA UNIVERSITY	China	84	90	137
211	0	LELAND STANFORD JUNIOR UNIVERSITY	U.S.	104	113	121
219	25	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	China	84	99	114
242	78	OSAKA UNIVERSITY	Japan	65	75	105
259	–77	JOHNS HOPKINS UNIVERSITY	U.S.	158	129	99
273	–53	KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY	Republic of Korea	87	109	94
280	–49	UNIVERSITY OF TOKYO	Japan	108	104	92
294	–84	HANYANG UNIVERSITY	Republic of Korea	101	114	89
300	–20	TOHOKU UNIVERSITY	Japan	56	88	87
304	0	KYOTO UNIVERSITY	Japan	72	80	86
324	–80	UNIVERSITY OF MICHIGAN	U.S.	94	100	81
332	–12	OXFORD UNIVERSITY INNOVATION LIMITED	U.K.	32	75	79
332	–143	UNIVERSITY OF FLORIDA	U.S.	97	126	79
332	–35	UNIVERSITY OF ARIZONA	U.S.	47	81	79
338	–86	KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY	Saudi Arabia	72	97	78
348	67	CORNELL UNIVERSITY	U.S.	42	55	76
351	0	PEKING UNIVERSITY	China	54	67	75
355	7	JIANGNAN UNIVERSITY	China	37	65	74
365	–77	DUKE UNIVERSITY	U.S.	62	84	72

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Source: WIPO Statistics Database

Top Applicants (Govt. / Research Institutes) - 2018

Ranking	Change in position from 2017	Applicant	Origin	Published PCT applications		
				2016	2017	2018
57	18	FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	Germany	252	279	345
69	37	CHINA ACADEMY OF TELECOMMUNICATIONS TECHNOLOGY	China	145	204	303
75	–12	COMMISSARIAT À L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES	France	329	300	289
164	–54	INSTITUT NATIONAL DE LA SANTÉ ET DE LA RECHERCHE MÉDICALE (INSERM)	France	146	199	149
175	–7	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY	Japan	122	134	139
175	–16	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)	France	135	143	139
196	–36	AGENCY OF SCIENCE, TECHNOLOGY AND RESEARCH	Singapore	162	142	130
201	119	SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY	China	31	75	128
259	–21	UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH & HUMAN SERIVCES	U.S.	89	103	99
374	–31	MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH	U.S.	55	69	71
406	–99	KOREA ELECTRONICS TECHNNOLOGY INSTITUTE	Republic of Korea	44	79	65
460	56	RIKEN (THE INSTITUTE OF PHYSICAL AND CHEMICAL RESEARCH)	Japan	48	45	57
465	–93	SLOAN-KETTERING INSTITUTE FOR CANCER RESEARCH	U.S.	73	62	56
465	197	ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE OF KOREA	Republic of Korea	38	36	56
488	91	KOREA INSTITUTE OF INDUSTRIAL TECHNOLOGY	Republic of Korea	83	41	54
516	63	KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY	Republic of Korea	25	41	51
516	93	UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRETARY OF THE NAVY	U.S.	36	39	51
535	–91	COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION	Australia	44	51	49

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LOW TEMPERATURE SYNTHESIS OF VITREOUS BODIES AND THEIR INTERMEDIATES

FIELD OF THE INVENTION

This invention relates to a novel method for making a vitreous body and its intermediates. More particularly, the method relates to a low temperature production of a vitreous body via synthesis of a self-supporting body by solution deposition.

DESCRIPTION OF THE PRIOR ART

In recent years, the most commonly employed commercial process for the manufacture of glass is the direct melting process. This process is somewhat tedious and has not been very successful in the melting of easily devitrifiable and high refractory glass. Many of the latest technological advances demand glass to be in a state of high purity which is seldom met in a

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D01D 5/42, F16J 15/22, D01F 6/12

A1

(11) International Publication Number: **WO 99/60191**

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(21) International Application Number: PCT/IN98/00001

(22) International Filing Date: 29 December 1998 (29.12.98)

(30) Priority Data:
318/Bom/98 20 May 1998 (20.05.98) IN

(71)(72) Applicant and Inventor: PANDEY, Raj, Kumar [IN/IN]; Plot No. A/465, Road No. 28, Wagle Industrial Estate, Thane 400 604, Mumbai, Maharashtra (IN).

(74) Agent: BHATNAGAR, Mahendra, Prasad; Lall Lahiri & Salhotra, N–128, Panchsheel Park, New Delhi 110 017 (IN).

(81) Designated States: US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
With amended claims and statement.

(54) Title: EXPANDED SINGLE MOLECULAR ALIGNED TEMPERATURE TREATED YARN

When to use PCT?

- Ease of filing
- Gain additional time to make final filing decisions
- To get information, licensees, capital, partners
- Preserve the right to continue prosecution in any PCT member country
- Get global publicity for your invention via PCT publication
- Delay costs
- Receive a single search report and written opinion

- I know I need foreign patent protection
- I think I may need foreign patent protection
- I have no idea whether or not I need foreign patent protection
- I think I may be on to something big, but….
- I want an active filing strategy but need to spread my costs

When Not to use PCT?

- I have no interest in obtaining foreign patent rights
- I know I only want protection in *X* countries, and
- Those countries allow me to file in English or
- I am prepared to produce the necessary translations by 12 months
- I am prepared to pay national filing fees right away
- I have received sufficient information to give me confidence to proceed
- I have designated foreign counsel who are able to prosecute the application
- I need protection in a non-PCT country

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