

BIODESIGN GLOBAL SOURCEBOOK: SG.04 SINGAPORE INTELLECTUAL PROPERTY BASICS

Once innovators have identified a potential medical device concept, they need to begin understanding Intellectual Property. Intellectual Property (IP) refers to the products of the human mind or intellect. Like any type of property or asset, IP can be sold, licensed, and mortgaged. A device may contain IP if it is unique based on the way it works, the way it is made, the way it looks, the way it is branded, or the way it is expressed. Depending on their business strategy, inventors may want to seek legal protection for their device’s IP to maximize its value and deter competition. Alternatively, inventors may discover through IP analysis that their new device contains IP owned by somebody else, which could potentially cripple their project. This chapter provides a basic understanding of Singapore’s IP regime and how to seek patent protection in the city-state.

OBJECTIVES:

- ✓ Understand Singapore’s IP regime.
- ✓ Recognize the requirements for patentability in Singapore, including practical aspects of filing for a patent.
- ✓ Be aware of key differences and similarities between Singapore’s patent system and foreign patent systems.

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IP REGIME IN BRIEF

The Singapore government has identified innovation and R&D as drivers of economic competitiveness and is working to position Singapore as a magnet for the commercialization of ideas and innovation. Toward this end, it has sought to nurture an environment conducive to the creation, protection, and exploitation of IP through various policies, legislation, and initiatives. It has passed a series of IP-related laws over the last 25 years, including the Patents Act (1995), which led to the establishment of an independent patent system in Singapore (see Appendix 1 for key milestones in the development of IP legislation in the city-state). It has harmonized its IP regime with international IP standards and best practices, and is a signatory to various major international treaties, such as the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement under the World Trade Organization (see Appendix 2 for a list of conventions to which Singapore is a signatory). Singapore also offers sound enforcement of IP rights; good access to IP information, services, and professionals; a growing reputation as a regional center for alternative IP dispute resolution; and competitive IP registration costs. As a result, Singapore is evolving into an important Asian IP hub despite its small market.

The Intellectual Property Office of Singapore (IPOS) advises on and administers the country's IP laws and policies. It also promotes public awareness to respect IP, pushes IP education, and provides market infrastructure to facilitate the development of IP in Singapore.¹ The criminal enforcement of IP rights falls under the Intellectual Property Rights Branch of the Singapore Police Force's Criminal Investigation Department.

FORMS OF IP

Various forms of IP are protected by law in Singapore. The most applicable to medical devices are patents, registered designs, trademarks, copyright, and confidential information including trade secrets (see **Figure 1**).

Figure 1 Forms of IP that may apply to medical devices

Form of IP	Aspect(s) Protected	Example	Registration Needed in Singapore
Patent	Invention which can be a product or process leading to a new technical solution to a problem	Mechanics of medical device	Yes
Registered Design	Appearance applied to an article by an industrial process, which can relate to shape, configuration, pattern, etc.	Aesthetic design of medical device	Yes
Trademark	Sign used in the course of business or trade to differentiate goods or services from those offered by others	Logo for medical device company or product	Yes ²
Copyright	Literary, dramatic, musical and artistic work	Computer program used for operating medical device	No

Confidential Information and Trade Secret	Information or secret that has important commercial value to business or trade and to be kept from the public	Special manufacturing process for medical device that is not for public disclosure	No
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Comparing with Foreign IP Regimes

Patents and registered designs in Singapore may be analogous to utility patents and design patents, respectively, in some other countries. A utility model (also known as innovation patent or petty patent) is a form of IP right that is similar to a typical patent. However, it provides a shorter protection term, imposes less stringent registration requirements, and sometimes offers more limited protection compared to a typical patent. Utility models are granted in a number of countries but not in Singapore. (For a list of countries that grant utility models, see http://www.wipo.int/sme/en/ip_business/utility_models/where.htm.)

SEEKING PATENT PROTECTION IN SINGAPORE

Patents are by far the most important form of IP rights for medical devices. Device inventors therefore should understand the key characteristics of Singapore's patent regime and how to obtain a patent in Singapore. Note that Singapore is currently reviewing its patent system and considering changes to the application process and other elements discussed below.

Rights Conferred and Their Limitations

Patent rights are **limited** and **exclusionary**. Once the Registry of Patents at IPOS grants a patent, patent owners have exclusive rights for a specified period to **prevent** others from exploiting the patented invention in Singapore without their permission. (Note that **exploitation** in this context refers to activities such as use, copy, production, sale, and import.) Since patent rights only apply in the country where they are obtained, a patent granted for a medical device in Singapore can only be enforced in Singapore. Patent rights may be limited in other ways. For example:

- The patent law may only allow certain exceptions for others to use the patented invention for research and educational purposes, non-commercial intentions, or government and public emergencies (e.g., where the use of a medical product is urgently needed to save lives).³
- Patent owners whose devices have not met Singapore's non-IP related regulatory requirements may not be able to fully exercise their patent rights. For instance, patent owners who have not obtained product registration approval from Singapore's Health Sciences Authority (HSA) for their medical devices may not be able to sell or license the devices in Singapore even with a Singapore patent.
- Patent owners must also determine if their device has **freedom-to-operate** i.e., that the invention's features are not related to existing patent claims. Otherwise, the device may infringe on registered or pending patent rights.⁴ If inventors use existing patented technology in their inventions, which is often the case for medical devices, they need the patent owner's permission to use the technology before commercializing their device.

Qualifying Criteria for Patentable Inventions

A notable difference between Singapore's patent system and many other countries is the city-state's use of the **self-assessment mode** for patents. The self-assessment mode, under which patent applicants seek a **grant of patent** based on their own judgment, impacts the issue of qualifying criteria for patentable inventions. Under the self-assessment mode, IPOS traditionally does not refuse to grant a patent on the grounds that an invention is not patentable. This does not mean, however, that inventors do not need to concern themselves with meeting these criteria. Anyone can challenge a patent after it is granted precisely because it does not meet the patentability requirements discussed below. If the challenger proves that the device is not patentable, then IPOS can revoke the patent. (See Application for Singapore Patent below for more details on Singapore's self-assessment mode.)

It therefore behooves inventors to build the following key patentability criteria into their innovations as early as possible in the innovation process:

- **Novelty** – The invention is new and not made known to the public in any way anywhere.⁵
- **Inventive step** – The invention should represent an improvement over any existing product or process, which is not obvious to a person skilled in the technological field of the invention.⁶ Inventive step is absent if the invention does not provide an apparent solution to a technical problem or if it is derived by simply juxtaposing known devices or extrapolating obvious logic. For example, an invention that merely changes the material of an existing device grip from one type of plastic to another may not meet inventive step criteria since the “innovation” might come readily to the mind of a technically skilled person in that field and not provide any new advantage.
- **Industrial application** – The invention has to be useful and capable of practical application in industry.⁷ An invention involving *methods* for treating humans or animals by surgery, therapy, or diagnosis is not deemed to have industrial application, hence it is not patentable.⁸ (This exclusion refers to the method of treatment e.g., a process or approach to perform treatment, not the medical device as a product itself. A medical device product that is used during the course of a method of treatment may be patented.)

Note that inventions going against social order or morality and other Singapore laws shall not be patentable in Singapore, even if *the above* three key criteria are satisfied.⁹

Note that ideas for a new invention do not alone qualify for patent protection. Besides fulfilling the criteria mentioned above, inventions have to be applied to a product or process in practice. Inventors do not need to construct the actual product or process to prove **reduction to practice** (the process of demonstrating that an invention works correctly for its desired purpose). They can instead develop a viable prototype. Alternatively, they can provide a description of how to carry out the invention that a person skilled in the technological field of the invention can understand.¹⁰ This option may be considered if the development of a working model is costly, difficult, and time-consuming. Innovators may want to seek professional advice from a patent agent or lawyer on the best approach for their specific situation.

Other Requirements Affecting Patent Eligibility

Patents make technical information known to the public and establish the scope of legal rights granted to patent owners.¹¹ To this end, Singapore and other countries impose additional requirements on patents.

Enabling Disclosures

In return for obtaining patent rights, patent owners must disclose in detail how to work the invention, so that the public can use it after the patent term expires. The description, known as an enabling disclosure, should be clear and complete enough for a person skilled in the technological field of the invention to comprehend and carry out the invention. Patent applicants must include an enabling disclosure in the patent specification, which forms part of the patent application. The disclosure is released into the public domain 18 months after the application is filed. It then contributes to **prior art**, which refers to all forms of information related to the invention made publicly available before a given date.

Patent Claims

In the patent application, claims are specific written statements that mark the boundaries of the invention over which the patent owner holds legal rights. They assert exactly the rights covered and thereby what constitutes infringement. For a patent on an invention to be valid, the patent applicant must describe and claim the invention within the correct scope and adequately support it with the disclosure.

IPOS will grant patent rights within the scope of disclosure described to the public in the patent document.¹² Claims should:¹³

- Define the matter for which protection is sought;
- Be clear and concise;
- Be fully supported by the description disclosed; and
- Relate to one invention or to a group of inventions that form a single inventive concept i.e., only invention(s) having close technical linkage and sharing one/more same or corresponding special technical feature can be filed under a single patent application. (This prevents people from exploiting and cramming several less-related inventions into one patent to gain unfair savings in filing fees and create an overbearing patent, when they are supposed to file separate patents for different inventions.)

Patent applicants need to strike a delicate balance when drafting claims in patent applications. An appropriate claim is not so broad that it extends beyond what the invention covers, yet not so restrictive that the applicant cannot receive a just reward for the invention.¹⁴ Patent applicants commonly draft claims broadly to prevent competitors from developing and selling a very similar product that captures the fundamentals of their invention. However, claims drafted too broadly risk being dismissed, invalidating the patent.

Term of Protection

In Singapore, the standard term of patent protection is **20 years from the filing date**, subject to payment of annual renewal fees.¹⁵ Patent owners may extend this term on certain grounds, such

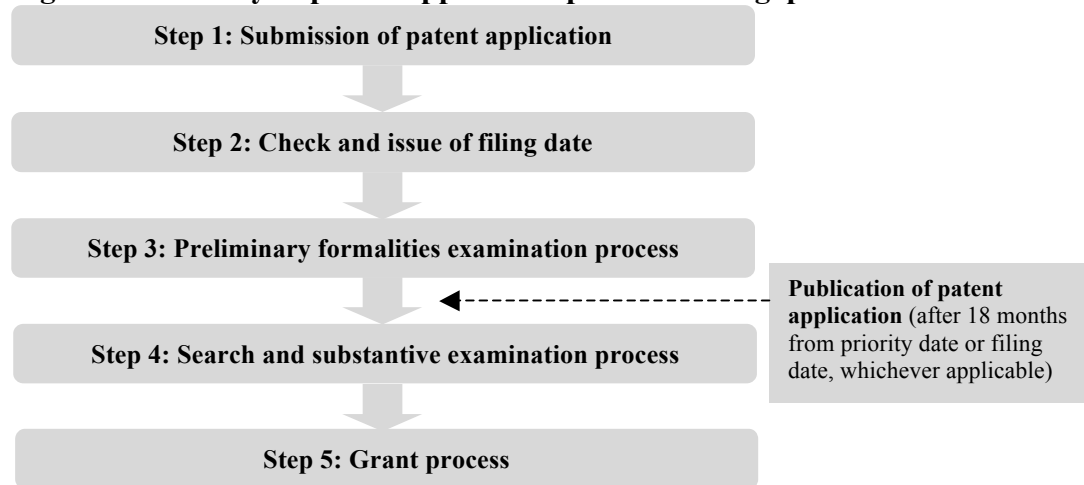
as an unreasonable delay in granting the patent by the Singapore Registrar of Patents at IPOS.¹⁶ Not all patents remain in force for the full 20 years. Patent owners may choose to let the patent lapse earlier if their device is no longer commercially viable or has become obsolete.

Inventors should not assume a patent is legally in force based solely on its apparent existence. Its owner could have let it lapse or cancelled it. Inventors can verify a patent's legal status by checking the patent's bibliographic data (such as past entries of assignment, transfer, renewal, expiration, and cancellation information) available in the records of patent search databases. (For examples of patent search databases, see Appendix 3).

Application for Singapore Patent

To be granted a patent in Singapore, patent applicants must take the following five steps illustrated in **Figure 3**:

Figure 3 Summary of patent application process in Singapore¹⁷



Step 1: Submission of Patent Application

The first step is to submit a patent application to the Registry of Patents at IPOS. Patent applicants can submit applications via ePatents online system (<http://www.epatents.gov.sg>) or manual forms available from the IPOS website (<http://www.ipos.gov.sg>). The application must include the following completed documents:¹⁸

- A **request** for a patent;
- A **specification** containing a description of the invention, claim(s) and any drawings referred to in the description or in any claim; and
- An **abstract** containing a concise summary of the disclosure described in the specification, which is used for publication purposes.

Please refer to the Getting Started checklist at the end of the chapter, for more details on the steps and documents for submitting patent applications.

Patent applicants are not required to furnish patent claim(s) when filing their patent application to obtain a filing date. However, IPOS will treat as abandoned applications for which patent applicants have not furnished claims within the prescribed 12-month period.

Applicants need to provide the Registry of Patents an address in Singapore where it can send all correspondence.¹⁹ If they hire a Singapore-registered patent agent or lawyer to act on their behalf, they should use the agent's or lawyer's practice address.

Comparing with Foreign IP Regimes

The United States and some other countries allow **provisional patent applications**, which enable people to file an initial patent application and secure a filing date without yet submitting patent claim(s). With the filing date, the applicant can seek early priority over other people in obtaining a patent and indicate the invention as "patent pending." The applicant then has more time to assess market viability and decide whether to continue the patent filing process. Note that the applicant has to take further steps within the stipulated timeframe to advance this provisional application into a regular patent application; otherwise a patent will not be granted.

Singapore law does not specifically refer to provisional patent applications. Nonetheless, applicants can obtain filing dates without furnishing patent claim(s) when they file their application. IPOS can issue a filing date if the applicant duly submits the patent request, the applicant's identity, and the invention's description. Such an **application without providing claims** is similar in concept to a provisional patent application. Note that applicants must furnish any claims within 12 months of the filing date.

Step 2: Check and Issue of Filing Date

IPOS will check the documents submitted and issue a filing date if they meet the requirements mentioned above.²⁰ In the event that the description of the invention is missing from the patent application, IPOS may still issue a filing date if the applicant:²¹

- Refers to an earlier related application that has already been declared as priority;
- Submits the earlier application's filing date and the country in which it was filed; and
- Shows that this earlier application includes the missing description.

Singapore's patent system operates on a **first-to-file** basis.²² The first entity/person to file an application generally has priority over others in obtaining the patent for the same invention (this concept is known as **claiming priority**). Since IPOS may refer to the filing date to decide which party is first to file, applicants should file promptly to increase the chance of obtaining the patent.

Comparing with Foreign IP Regimes

Most countries, including Singapore, adopt the **first-to-file** system. An exception has been the United States, which currently uses the first-to-invent system. For first-to-invent, the first entity/person to come up with the invention is generally granted the patent even if it is not the first to file the application, provided other requirements have been fulfilled. The United States will switch to the first-to-file system on March 16, 2013.

Step 3: Preliminary Formalities Examination Process

The following conditions must be met for IPOS to start preliminary formalities examination:

- The filing date has been obtained;
- The application is still active (e.g., the applicant has not withdrawn it or in some other way abandoned it);
- The filing fee has been paid; and
- One or more patent claims have been filed within the prescribed time periods.²³

IPOS will check the patent application to make sure the documents have been completed correctly and comply with all formal statutory requirements.²⁴ If the application does not meet the requirements, the patent applicant will have to amend the application accordingly before proceeding to the next step.

Step 4: Search and Substantive Examination Process

Once patent applications have passed the preliminary examination, applicants can submit a request to IPOS to begin the search and substantive examination process. They can choose from several search and examination options: all local, all foreign, or a combination of the two (see **Figure 4**).²⁵ They may want to seek professional advice to help determine the most appropriate option for them. Note that Singapore's patent office does not conduct search and examination itself, but has instead designated the patent offices of certain countries to handle these procedures for patent applications in the city-state.

During the search portion of the process, patent office examiners collect materials and information relevant to the subject of the invention. They then document the search results in a search report. During the substantive examination, patent examiners appraise the invention's patentability (i.e., whether it meets the qualifying criteria of novelty, inventive step, and industrial application).²⁶ They then document the examination results in an examination report.

Figure 4 Search and examination options

Approach	Overview
All local	The applicant undergoes either local search-then-examination process or combined search-and-examination process in Singapore. Singapore-designated external examiners (e.g., Danish, Austrian, and Hungarian Patent Offices) conduct the search and examination.
All foreign	The applicant relies on the search and examination results from an earlier international patent application for the same invention, by submitting the final search and examination report or a copy of the patent grant of that earlier application.
Combination	The applicant relies on the search results from an earlier international patent application for the same invention, but requests for local examination process in Singapore. Singapore-designated external examiners (e.g., Danish, Austrian, and Hungarian Patent Offices) conduct the examination.

Comparing with Foreign IP Regimes

Unlike the United States, China, and many other countries, Singapore's patent office only performs **formalities examination** during which it checks whether applications have been completed and submitted according to statutory requirements. It does not perform **substantive examination** to determine whether inventions are patentable. Once the applicant initiates a search and substantive examination for the patent application, IPOS designates these procedures to a patent office from another country. The patent office used depends on the search and examination option chosen (see **Figure 4**).

Step 5: Grant Process

After they have received and reviewed the search and examination reports, patent applicants will need to decide whether or not to proceed to the next stage: requesting a **grant of patent**.²⁷ As mentioned previously, Singapore uses the **self-assessment mode** for patents, under which patent applicants seek a grant of patent based on their own judgment that the innovation meets patentability requirements. Under this model, IPOS does not refuse to grant patents on the basis that inventions are not patentable. Rather, it grants patents as long as applicants have correctly completed their application dossiers and have met fee deadlines.

If applicants decide to move forward with their patent request despite negative search and examination reports, they bear responsibility for any consequences arising after IPOS grants the patent. Search and examination reports are open for public scrutiny and interested members of the public can challenge a patent after it has been granted. If the challenger proves that the patent is invalid, IPOS can revoke the patent (see Revocation of Patents for more details). Patent applicants therefore are wise to make sure their application fulfils all patentability requirements and amend it according to any objections raised in the examination reports.

Comparing with Foreign IP Regimes

Known as the **self-assessment mode**, Singapore's practice of relying on an applicant's good judgment to determine whether or not to request a patent contrasts with common practice elsewhere. In most countries, the patent office decides if an application can proceed to the grant stage. Switzerland, Netherlands, and Singapore are among the countries that use the self-assessment mode for patent grant requests. Singapore is currently contemplating moving to a positive grant regime, in which IPOS can grant patents only if applications fully meet patentability requirements.

Once IPOS approves a patent application, it issues a **certificate of grant**, which is published with the grant date in the **Patents Journal** available at ePatents (<http://www.epatents.gov.sg>).

Two-Track System

To meet applicants' different needs, two timelines – **fast track** and **slow track** – are available for processing patent applications (with a declared priority date or filing date on or after July 1,

2004).²⁸ If an inventor first files an application in a member state of the Paris Convention or the World Trade Organization (WTO), the date of this first filing is known as the **priority date**.

The choice between tracks offers applicants flexibility. For example, the slow track allows an applicant to postpone deadlines for clearing patent application steps, if extra time is needed to consider options and settle affairs. The best track to adopt depends on the case. Innovators may want to seek professional help for advice on which the most suitable track for their device.

Applications are fast-tracked unless patent applicants request the slow track. To do so, they must submit a **block extension of time** within 39 months from the declared priority date or filing date, whichever applicable. IPOS enforces the 39-month deadline strictly and will not extend it. Indeed, the patent application process involves many steps and deadlines. Rather than filing a request for block extension of time for multiple steps (and deadlines) via the slow track, applicants can alternatively file a **request for the extension of deadline** for a specific step within the patent application process, subject to requirements being met and fees being paid. **Figure 5** summarizes the various deadlines for both tracks.

Figure 5 Summary of deadlines for fast track and slow track. Months are calculated from declared priority date or filing date, whichever applicable.

Request/Notice	Fast Track	Slow Track
Submission of patent claim(s) <i>With reference to Steps 1 and 2 in Figure 3</i>	12 months	12 months
Request for search process <i>With reference to Step 4 in Figure 3</i>	13 months	13 months
Publication of application	18 months	18 months
Request for examination process <i>With reference to Step 4 in Figure 3</i>	21 months	39 months
Request for combined search and examination process <i>With reference to Step 4 in Figure 3</i>	21 months	39 months
Request for use of prescribed information (Foreign final search and examination results or International Search Report and International Preliminary Report on Patentability of PCT applications) <i>With reference to Step 4 in Figure 3</i>	42 months, or when request for grant is filed and grant fee paid, whichever earlier	60 months, or when request for grant is filed and grant fee paid, whichever earlier
Request for patent grant <i>With reference to Step 5 in Figure 3</i>	42 months	60 months

Patent Fees

The fee for filing a request for the grant of a Singapore patent is roughly S\$160 (US\$1:S\$1.25). If applicants request search and/or examination reports, they are charged above this filing fee. The cost depends on the options chosen by the patent applicant. For example, the fee for requesting an examination report is S\$1,350, while the fee for requesting a search and examination report is S\$2,600. Upon grant of a Singapore patent, annual renewal fees apply. In all, renewal fees to maintain a patent for 20 years may reach S\$6,000.

Innovators can find details on all **patent processes, forms and fee calculations** at the IPOS website (<http://www.ipos.gov.sg>). The estimated processing time varies for each patent application. It generally ranges from two to four years from the application's filing date.

Application for Patent Internationally

Selecting Countries to File Patent Application

Determining in which countries to file patent applications is a commercial decision. It typically depends on where the patent applicants intend to exploit or license their invention. However, there are other factors to take into consideration. For example, because precise requirements for filing applications can differ widely around the world, patent applicants should understand and evaluate the feasibility of meeting the specific requirements of the countries they are targeting. They also need to assess the costs involved, such as application, translation, and professional fees, as the rates can vary significantly from country to country.

Applying for a Patent in a Foreign Country by a Singapore-Based Entity/Person

Singapore residents have to obtain written authorization from the Registrar of Patents before they first file (or cause to be first filed) an application outside Singapore to patent an invention.²⁹ They must use a specific form, which is available at the IPOS website (<http://www.ipos.gov.sg>).

As mentioned above, patent rights depend on the specific laws of each country. A global patent conferring worldwide protection does not exist. To gain patent protection in multiple countries outside Singapore, inventors must file separate applications in each country.

If patent applicants intend to apply for patents in multiple countries, they may consider taking the **Patent Cooperation Treaty (PCT)** route. With over 140 contracting states, PCT provides patent applicants a more streamlined process for applying simultaneously for patents in many countries. However, patent applicants who choose the PCT route are not automatically granted patent rights in all contracting states under PCT. They still have to undergo and fulfill separate requirements (examination, grant, etc.) for each country. The PCT route is divided into two phases:

- **International phase** – The patent applicant submits a single international patent application to either the Registry of Patents at IPOS or the International Bureau of the World Intellectual Property Organization (WIPO). Applicants designate the countries where they desire patent protection. This designation preserves the earliest priority date in each of those countries. The International Searching Authority (ISA) then conducts an international search. Applicants can also choose to undergo an optional international preliminary examination by the International Preliminary Examination Authority (IPEA).
- **National phase** – The patent applicant decides whether or not to pursue patent protection, and, if so, in which countries. Applicants must comply with local patent requirements and regulations.

Patent applicants do not need to pursue patent protection in every country they initially designate during the international phase. Applicants therefore typically designate all PCT countries first during the international phase and discard the unwanted ones during the national phase.

The timeline in **Figure 6** shows the typical approach for filing a PCT application,³⁰ where applicants start with a national patent application in their home country to obtain a priority date, and then file a PCT application within the prescribed 12-month period. Innovators can find more details at the PCT section of WIPO's website (<http://www.wipo.int/pct/en/>).

Figure 6 Timeline for typical approach for filing a PCT application³¹



Since Singapore is a contracting state under PCT, Singapore residents or nationals may file the PCT application in Singapore with the Registry of Patents at IPOS, which acts as a PCT receiving office. Alternatively, they can file PCT applications with the International Bureau of WIPO.

PCT benefits applicants by reducing initial administration costs and simplifying procedures. Furthermore, the 30-month gap between filing the patent application and starting the national phase gives applicants more time to assess their invention's viability. They also have more time to determine the worthiness of seeking protection in all their originally designated countries, which may help them avoid spending money on unnecessary entries into national phases.

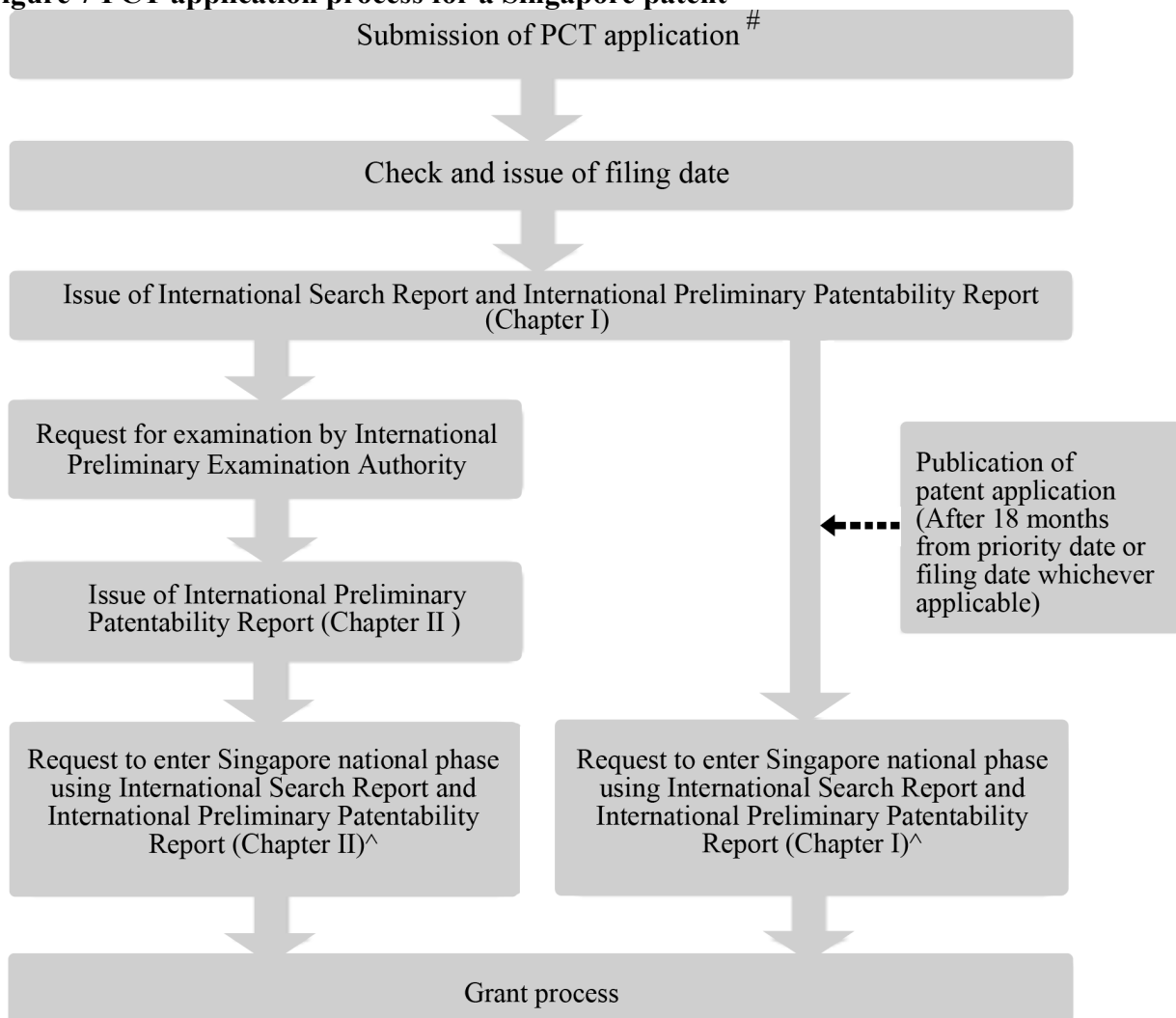
In addition, the international patent search that occurs during the 30-month gap gives patent applicants an early indication of their application's feasibility and of advisable amendments, before incurring the costs of national phases. The optional international preliminary examination unearths difficulties that may arise at the national phases, giving applicants time to take preemptive action. For example, if the examination report is unfavorable, the patent applicant may consider whether to improve the patent application or withdraw it all together.

Applying for a Patent in Singapore by a Foreign-Based Entity/Person

Any entity/person can file a patent application in Singapore. Singapore does not place restrictions on applicants' nationality and residency.

Foreigners can submit applications to the Registry of Patents at IPOS directly or via the PCT route. For the latter, the applicant's home country should be a PCT contracting state, and applications can be filed with either the patent office of their home country or the International Bureau of WIPO. **Figure 7** illustrates the process of applying for a Singapore patent via the PCT route.³²

Upon entering the national phase in Singapore, international applications via PCT receive the same treatment as a typical patent application filed in Singapore.

Figure 7 PCT application process for a Singapore patent³³

[#] Inventors do not need to furnish patent claim(s) when filing a patent application in order to obtain a filing date. However, IPOS will treat applications as abandoned if applicants fail to furnish claims within the prescribed 12-month period.

[^] When search and examination reports are used as the basis for requesting to obtain a patent during the grant process, it is not mandatory to rely on the International Search Report and International Preliminary Patentability Report (Chapter I or II). Upon entry into Singapore's national phase, it is at the applicant's discretion to use any of the search and examination options available under Singapore's application track.

Claiming Priority from Earlier Patent Applications Filed Elsewhere

If a patent applicant first files a patent application in a member state under the Paris Convention or World Trade Organization (WTO), the date of this first filing is known as the **priority date**.

For a patent application first filed outside Singapore, the applicant may subsequently apply for a patent in Singapore for the same invention and claim priority from this earlier foreign application.³⁴ This provision holds as long as the Singapore application is made within 12 months from the priority date. In the event that applicants miss the 12-month deadline, they may

still possibly file their Singapore application within 14 months from the priority date. However, they will have to pay additional fees.

To claim priority from an earlier application filed outside Singapore, applicants must declare this priority when they file their Singapore application.

Likewise, for a patent application first filed in Singapore, applicants may apply for a subsequent patent in another country (also under the Paris Convention or WTO) for the same invention and claim priority from this earlier Singapore application.³⁵ They must file the subsequent foreign application within 12 months from the priority date. The priority date is important for two reasons:³⁶

- It is the date when the novelty of the invention was determined. Prior art arising before the priority date will destroy the novelty of the invention and affect the validity of the patent.
- It determines which party was the first to apply for the patent. Singapore adopts the first-to-file system: If two applicants file for a patent for the same invention, Singapore will grant the patent to the applicant with an earlier priority date (assuming patent requirements have been met and all other factors are equal).

For example, start-up XYZ first applied for patent protection in Australia for its endoscope on May 1, 2009. After 18 months, it decided to apply for a patent in Singapore for the same invention. Unfortunately it missed the deadline. As a result, it would not be able to:

- File an application in Singapore and claim priority from the earlier application in Australia, since it should have filed by May 1, 2010 (i.e., within 12 months from the priority date of May 1, 2009); or
- File a new application in Singapore, since the invention described in the Australian application has been disclosed for public view and has formed part of the prior art. Once disclosed to the public domain, the invention is no longer considered novel and the company would not be able to meet the qualifying criteria for patent protection.

Accelerated Application Processing Between Singapore and Other Countries

The backlog of patent applications is a worldwide problem. To speed up processing of patent applications between Singapore and other countries, IPOS and several foreign patent offices have initiated collaborative programs. IPOS partners include:

- U.S., under the IPOS-USPTO Patent Prosecution Highway;
- Japan, under the IPOS-JPO Patent Prosecution Highway; and
- ASEAN (excluding Brunei Darussalam and Myanmar), under the ASEAN Patent Examination Cooperation.

While specific details may differ, these programs aim to reduce duplication and shorten turnaround times by allowing participating patent offices to share search and examination results. Applicants in participating countries who opt to process patent applications through these programs may obtain corresponding patents more quickly and efficiently.

Innovators should note that these programs are sometimes launched on a trial basis and may run for a limited period (one year, for example). The partnering patent offices may decide to end or extend them when the collaboration expires. For information on a program's status, check the IPOS website (<http://www.ipos.gov.sg>) or call the IPOS helpdesk at (65) 6339 8616.

Maintenance of Patents

To keep a patent in force for its 20-year term, patent owners must renew the patent and pay the prescribed fee within the prescribed period. The annual renewal fee is payable, starting from the end of the fourth year from the filing date until the patent expires.³⁷ The fee increases on a sliding scale according to the patent's age. For instance, the fee is S\$160 for the patent's fifth year, S\$350 for the twelfth year, and S\$650 the twentieth year. See the IPOS website for the complete fee schedule.

If a patent document requires amendments or corrections, its owner must make them within the boundaries of statutory provisions. For example, an amendment to a patent specification should not include any additional matter or extend the scope of protection.

Revocation of Patents

Once a patent is granted, anyone may challenge it. Examples of grounds include:³⁸

- The invention is not patentable;
- The amendment made is not allowed or broader than filed;
- The patent was obtained by fraud or misrepresentation;
- The specification does not provide sufficiently clear and complete disclosure; and
- The patent owner is found not entitled to the patent.

Because patents granted are presumed valid, the onus is on the challenging party to prove its invalidity. Should the challenge succeed, the patent may be amended or revoked entirely.

Patent owners should pay close attention to the addition of new content or subject matter as a cause for revocation,³⁹ particularly when handling amendments of priority or corresponding applications from other countries. They need to make sure that these amendments do not add matter and affect related Singapore applications.⁴⁰

PATENT OWNERSHIP IN SINGAPORE

Under Singapore law, inventors primarily own the rights to an invention and hence to the patent relating to the invention. However, an inventor's employer may hold the rights for inventions developed during the course of work. The law spells out the specific circumstances under which employees' inventions belong to the employees themselves or to their employers.⁴¹

If the inventor is a student, the ownership of rights will depend on the institution's specific IP policies. The institution often claims ownership if the student receives funding support and/or makes substantial use of the institution's resources to develop the patented invention.

PATENT INFRINGEMENT IN SINGAPORE

Infringement occurs when one party operates within the scope of another party's patent (that is in force), without consent of the patent owner. If patent owners believe that another party is exploiting their patented invention without permission and infringing on their patent rights in Singapore, they may take legal action against the alleged infringer. Remedies include:⁴²

- Injunction to stop the infringing act;
- Civil recourse either to seek compensation for the damages/losses incurred by the infringing act or to recover profits made by the infringing party;
- Order for delivery of and/or disposal of infringing articles; and
- Declaration that the patent is valid and has been infringed by the infringing party.

Typically civil proceedings are used to enforce patents in Singapore.⁴³ The patent owner brings a case against the party allegedly infringing the patent. The court decides whether infringement has occurred, and if so, orders appropriate remedies. Singapore, like most countries, does not treat patent infringement as a criminal action. Criminal action, in which the state deals with the infringement, applies more to cases involving other intellectual property, such as trademarks and copyright.

A patent granted in Singapore can only be enforced in Singapore. Likewise, a patent granted in another country has no legal standing in Singapore. It cannot be enforced in Singapore even if someone is exploiting the patented invention in the city-state without permission.

Exceptions

Singapore allows certain infringing acts under special circumstances and does not consider them infringement. These include:⁴⁴

- Private and non-commercial acts (e.g., using a patented item for research purposes in a non-profit educational context);
- Experimental use related to the invention (e.g., using a patented item for experimentation to invent improvements);
- Importing foreign products under a corresponding patent with the patent owner's consent;
- Use in ships and aircraft temporarily entering or crossing Singapore;
- Supporting an application for marketing approval for pharmaceutical products on certain grounds;
- Importing, disposing, or offering to dispose of patented pharmaceutical products for use by or on a specific patient. (*Disposal* in this context implies *transfer of possession*); and
- Special non-commercial preparations of medication from raw compounds, based on prescription.

SEEKING PROFESSIONAL HELP IN SINGAPORE

Although inventors may choose to manage IP issues on their own, such as registering IP rights and seeking settlement on infringement, they may want to consider hiring trained professionals.

Patent Agents

Patent agents specialize in patents. To act on patent matters in Singapore and represent clients in patent application procedures before IPOS, patent agents must be registered in Singapore and hold a valid certificate that permits them to practice as a patent agent in Singapore (known as a practicing certificate).⁴⁵ However, registered patent agents cannot represent clients in the Singapore courts, unless they are also practicing lawyers. They typically provide:

- Advice on the patentability of inventions;
- Search on prior art and conduct of other due diligence;
- Drafting of patent applications;
- Prosecution of patent applications before the patent office;
- Management of patent portfolios;
- Advice on patent filing strategies; and
- Provision of opinions on whether patent infringement has occurred and how to resolve it.

Since these services require an in-depth understanding of the inventions, inventors may want to engage patent agents with relevant technical qualifications and background knowledge.

Lawyers

Lawyers who are registered in Singapore and hold valid practicing certificates can practice IP law in Singapore and represent clients in proceedings before IPOS and the Singapore courts. They can provide advice on legal matters pertaining to all forms of IP, not just patents.

Practicing lawyers can carry out the business of a patent agent without being registered as one, but they cannot identify themselves as a registered patent agent while doing so. Lawyers may be less versed in the technical aspects of inventions, unless they have additional technical qualifications (which very few do in Singapore).

Comparing with Foreign IP Regimes

If someone in Singapore claims to be a patent attorney, the title is typically self-proclaimed or inherited from other jurisdictions. Singapore does not confer “patent attorney” as a formal qualification, unlike for registered patent agents and lawyers. The term “patent attorney” may carry different connotations in different countries. For example, a patent attorney in Australia and the United Kingdom is a formal qualification synonymous with a registered patent agent in the United States and Singapore. The individual in either case is trained in a technical discipline, has passed prescribed examinations, and has met other requirements. Patent attorneys in the United States additionally must hold law qualifications and be approved to practice law.

GETTING STARTED

Obtain an overview of the patent filing process

What to cover - Consult the IPOS website for information to help innovators prepare a patent filing in Singapore. Given the many technical and legal aspects involved, inventors should consider engaging professionals to assist them.

Where to look

- For information on IP in Singapore
 - IPOS library of infopacks pertaining to patents, registered designs, trademarks, and copyright in Singapore
<http://www.ipos.gov.sg/AboutIP/IPResources/Infopacks.aspx>
 - IPOS collection of answers to common enquiries on patents, registered designs, trademarks and copyright in Singapore
http://www.ifaq.gov.sg/ipos/apps/fcd_faqlmain.aspx
- For information on IP service providers
 - Register of Patent Agents in Singapore (the official directory of Singapore-registered patent agents, with and without current practicing certificates)
<http://www.ipos.gov.sg/ProgrammesandEvents/IPforProfessionals/TypesofIPProfessionals/PatentAgentsInformation/TheRegisterofPatentAgentsinSingapore.aspx>
 - Register of Lawyers in Singapore (the official directory of Singapore-registered lawyers, with current practicing certificates)
<http://www.lawsociety.org.sg/directory/practitioners.aspx>
 - Directory of Providers of Various IP Services in Singapore (a public portal for IP service providers in Singapore to advertise their services)
<http://www.ipos.gov.sg/Services/IPServiceProviders.aspx>

Compile background information

What to cover - Assemble complete background information on the concept or invention and the area in which it will be practiced. This may include information on the disease state, review of existing treatment technologies and approaches, additional research from other sources where applicable. Consider draft points to be included in the claims that cover the basic invention.

Search prior art

What to cover - Identify as many possible keywords as possible for the search. Start with searches in patent databases. Free databases are offered by national patent offices and other organizations and they have become increasingly comprehensive and sophisticated. Commercial databases are also available and they charge a subscription fee in return for enhanced functions in data search and analysis. Carry out an extensive search in other print and online sources, such as medical/med-tech journals, publications, websites, and product coverage. Perform a general Internet search via online search engines for more obscure references to relevant information.

Where to look

- ePatents (an IPOS search database on patents registered in Singapore)
<http://www.epatents.gov.sg>
- Esp@cenet (a European Patent Office network of search databases on patents registered in Europe and over 80 other countries, including Singapore, and under WIPO-PCT)
<http://worldwide.espacenet.com/>
- PatentScope (a WIPO search database on patents registered in Singapore, Korea, Vietnam, Spain, Brazil, Mexico, Argentina, Cuba, South Africa, Israel, Africa, Morocco, as well as under WIPO-PCT) <http://www.wipo.int/patentscope/en/>

Identify relevant prior art for patentability

What to cover - Determine which patents and materials found from the prior art search are most relevant to the patentability of the invention. Aim for the most relevant 10 to 20 patents in the first cycle. Broaden the search using either a citation search or classification index from the patents identified in the first cycle. This should identify some new patents and exclude some existing patents. Repeat the above cycle until only 5 to 15 key patents appear on the list.

Where to look

- See links mentioned above in Search Prior Art.

Check ownership of invention

What to cover - Check whether you are entitled to own the rights of the patent to be eventually granted. The rights primarily belong to the inventor(s). However, they may belong to others e.g., employer/institution/organization, if the invention is developed during the course of work or study, depending on specific circumstances.

Decide where to file patent

What to cover - Assess whether the patent will be filed in Singapore only or in several countries. Decide the countries for which patent will be filed. The choice of countries is a commercial decision. It typically depends on where the patent applicants intend to exploit or license their invention. Bear in mind other factors to be taken into consideration, such as the variations in filing requirements, costs, and translation needs for different countries.

Prepare patent application

What to cover - Prepare the following documentation: a request for grant of a patent; a specification containing a description of the invention, claims and any drawing referred to in the description or claim; and an abstract containing a summary of the disclosure described in the specification. Consider seeking the services of a patent agent to prepare the application.

Where to look

- See links mentioned above in Obtain an Overview of the Patent Filing Process.

File patent application

What to cover - The application can be submitted manually or via the ePatents online system.

Where to look

- For online submission:
 - Before patent applicants can submit the application, they have to visit <http://www.epatents.gov.sg> to register as a user of the ePatents system and create either a Personal or Corporate account (account type dependent on user profile). Subscription surcharges vary with account type and usage volume. Please note that the ePatents account subscription surcharge is in addition to the patent filing fee. Details on subscription accounts, fees, as well as instructions for submitting applications can be found at <http://www.epatents.gov.sg>.
- For manual submission:
 - Submit paper copies of forms and required documents to the Registry of Patents at IPOS by hand or mail. Details on downloadable forms, fees, as well as instructions for submitting applications can be found at <http://www.ipos.gov.sg>.

Appendix 1
History of IP Legislation in Singapore⁴⁶

Year that law came into force	Law
1939	Trademarks Act (Includes legal provisions pertaining to trademark protection)
1987	Copyright Act (Includes legal provisions pertaining to copyright protection)
1995	Patents Act (Includes legal provisions pertaining to patent protection)
1999	Geographical Indications Act (Includes legal provisions pertaining to geographical indication protection)
1999	Layout-Designs of Integrated Circuits Act (Includes legal provisions pertaining to layout-designs of integrated circuit protection)
2000	Registered Designs Act (Includes legal provisions pertaining to registered design protection)
2001	Intellectual Property Office of Singapore Act (Includes legal provisions pertaining to the establishment of IPOS and its scope of functions and authority)
2004	Plant Varieties Protection Act (Includes legal provisions pertaining to plant variety protection)

Appendix 2 International Conventions to Which Singapore Is a Signatory⁴⁷

WORLD TRADE ORGANIZATION (WTO) ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS)

The WTO TRIPS Agreement (1994) establishes international standards for a spectrum of IP rights and ensures international harmonization of treatment and access to the IP systems in different countries. It builds on the existing IP standards in various agreements, such as the Paris Convention and the Berne Convention for the Protection of Literary and Artistic Works.

PARIS CONVENTION

The Paris Convention (1883) covers industrial property (e.g., patents, trademarks, and designs) and institutionalizes two key principles - **national treatment** and the **first to apply** holding the right of priority. The principle of national treatment specifies that for each member country, the industrial property protection granted to its nationals and to the nationals of other parties in the convention must be the same, whereas certain right of priority is given to applicants who file first in a member country to the convention.

BERNE CONVENTION

The Berne Convention for the Protection of Literary and Artistic Works (1886) provides international protection for creative works of authors who are nationals from member countries to the convention and for creative works that are first published in these member countries. The principle of national treatment applies here as well, whereby each member country accords the same protection rights to the authors and creative works originating from other member countries as how it grants to its own nationals.

MADRID PROTOCOL

The Madrid Protocol (1989) relates to the prior Madrid system for international registration of trademarks. Protection of a trademark can be sought in multiple member countries through the filing of an international application with one single office. Upon application, it depends on each designated country to determine if the protection will be granted or refused in the country. The maintenance of trademarks following registration is also made easier through simplified centralized procedures.

NICE AGREEMENT

The Nice Agreement (1957) sets forth an international classification system of goods and services, for the purposes of registering trademarks and service marks.

PATENT COOPERATION TREATY

The Patent Cooperation Treaty (1970) provides a streamlined process for applying for patent protection in many member countries simultaneously. After the international phase, however, patent applicants still have to go through the national phase and comply with the patent laws in each country that patent protection is sought. It brings about lower

initial costs and more time for the applicant to assess whether patent protection is viable and should proceed at a national phase.

BUDAPEST TREATY

The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (1977) allows provision for the deposit of a microorganism at a recognized international depositary authority. By allowing a single deposit, there is no need to make deposits in each country in which patent protection is sought. Therefore, patent applicants can save cost while satisfying the requirement for full patent description.

WIPO COPYRIGHT TREATY

The WIPO Copyright Treaty (1996) is an agreement under the Berne Convention, which specifies further protection for copyright in face of ongoing developments in technology. It highlights computer programs and databases as subject matters to be protected by copyright and covers related provisions on distribution, rental, and communication.

WIPO PERFORMANCES AND PHONOGRAMS TREATY

The WIPO Performances and Phonograms Treaty (1996) covers the IP rights that are granted to performers and phonogram producers in the member countries of the treaty under various circumstances.

INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)

The UPOV Convention (1961) promotes the protection of new plant varieties through IP, by specifying the standards that define certain exclusionary rights of plant breeders who develop new plant varieties, e.g., rights over production, reproduction, sale, export, and import of propagating material for protected plant varieties. It also provides for exceptions, such as acts done for non-commercial and experimental purposes.

GENEVA ACT (1999) OF THE HAGUE AGREEMENT CONCERNING THE INTERNATIONAL REGISTRATION OF INDUSTRIAL DESIGN

The Geneva Act (1999) of the Hague agreement offers a mechanism for international registration of industrial designs, whereby protection of an industrial design can be sought in multiple countries through the filing of an international application with one single office. It depends on each designated country to determine if the protection will be granted or refused in the country. The maintenance of industrial designs following registration is also made easier through simplified centralized procedures.

SINGAPORE TREATY ON THE LAW OF TRADEMARKS

The Singapore Treaty on the Law of Trademarks (2006) establishes provisions that build on the Trademark Law Treaty (1994) to create a further harmonized framework for trademark registration and licensing and to keep pace with technological advances. Of particular note, it hits new ground by explicitly recognizing non-traditional marks, such as holograms, three-dimensional marks, sound marks, and olfactory marks.

Appendix 3 IP Information Resources List

For quick reference, here is a list of some free information resources related to IP issues:

IP SERVICE PROVIDERS

Register of Patent Agents in Singapore

- The official directory of Singapore-registered patent agents, with and without current practicing certificates.
- <http://www.ipos.gov.sg/ProgrammesandEvents/IPforProfessionals/TypesofIPProfessionals/PatentAgentsInformation/TheRegisterofPatentAgentsinSingapore.aspx>

Register of Lawyers in Singapore

- The official directory of Singapore-registered lawyers, with current practicing certificates.
- <http://www.lawsociety.org.sg/directory/practitioners.aspx>

Directory of Providers of Various IP Services in Singapore

- A public portal for IP service providers in Singapore to advertise their services.
- <http://www.ipos.gov.sg/Services/IPServiceProviders.aspx>

IP BASICS

Infopacks on IP in Singapore

- An IPOS library of infopacks pertaining to patents, registered designs, trademarks, and copyright in Singapore.
- <http://www.ipos.gov.sg/AboutIP/IPResources/Infopacks.aspx>

FAQs on IP in Singapore

- An IPOS collection of answers to common enquiries on patents, registered designs, trademarks and copyright in Singapore.
- http://www.ifaq.gov.sg/ipos/apps/fcd_faqmain.aspx

IP SEARCH DATABASES AND ENGINES

ePatents

- An IPOS search database on patents registered in Singapore.
- <http://www.epatents.gov.sg>

eTrademarks

- An IPOS search database on trademarks registered in Singapore.
- <http://tmsearch.ipos.gov.sg/eTMSearch/eSearchOption.jsp>

eDesigns

- An IPOS search database on designs registered in Singapore.
- <http://designsearch.ipos.gov.sg/eDSearch/Search.jsp>

Esp@cenet

- A European Patent Office network of search databases on patents registered in Europe and over 80 other countries (including Singapore), and under WIPO-PCT.
- <http://worldwide.espacenet.com/>

PatentScope

- A WIPO search database on patents registered in Singapore, Korea, Vietnam, Spain, Brazil, Mexico, Argentina, Cuba, South Africa, Israel, Africa, Morocco, as well as under WIPO-PCT.
- <http://www.wipo.int/patentscope/en/>

IP CONSULTATION AND ENRICHMENT**IP Consult Series**

- A regular IPOS event during which IP lawyers and patent agents address the public's IP-related enquiries through group dialogues and personalized one-to-one consultations.
- <http://www.ipos.gov.sg/ProgrammesandEvents/IPfortheGeneralPublic/IPConsultSeries.aspx>

IP Training in Singapore

- The calendar of various IP training activities held in Singapore, ranging from educational seminars for the laymen to degree programs for the IP professionals.
- <http://www.ipos.gov.sg/ProgrammesandEvents/IPforProfessionals/UpgradingYourIPSkills/IPTraining.aspx>

IP COMMERCIALIZATION**ideas2IP**

- An online innovation platform that allows individual inventors to share their ideas with potential investors and to seek funding and guidance on the development of those ideas with commercial potential.
- <http://ideas2ip.sg>

Appendix 4 Grants and Incentives

The Singapore Government offers several grants and incentives to promote the development, commercialization, and management of IP. Some examples of those that may apply to medical devices are listed as follows.

TAX REBATES

Productivity and Innovation Credit (PIC)

- Available for Years of Assessment 2011 to 2015.
- Provides tax deductions for expenditures incurred in a broad range of innovation-related business activities.
- Benefits specific to IP include cost deductions for IP registrations within and outside Singapore (both filing and professional fees covered) and writing-down allowances for IP acquisitions.
- Open to all business entities, based on the expenditures covered by the scheme.
- <http://www.iras.gov.sg/irashome/PIcredit.aspx>

GOVERNMENT GRANTS

Technology Enterprise Commercialization Scheme (TECS)

- Provides full or partial funding to defray costs on projects that involve development and commercialisation of proprietary technology.
- Only certain categories of costs can be funded – for the IP-related category, specific costs that qualify for funding include IP licensing/royalties, IP acquisition and patent-related costs.
- Open to Singapore-registered small and medium enterprises, as well as researchers from public research organizations.
- <http://www.spring.gov.sg/entrepreneurship/fs/fs/tecs/pages/technology-enterprise-commercialisation-scheme.aspx>

Technology Innovation Program (TIP)

- Provides partial funding to defray costs on projects that involve application of technology to develop or improve on products, processes or business models.
- Only certain categories of costs can be funded – for the IP-related category, specific costs that qualify for funding include IP licensing/royalties, IP acquisition and patent-related costs.
- Open to Singapore-registered small and medium enterprises.
- <http://www.spring.gov.sg/enterpriseindustry/tip/pages/technology-innovation-programme.aspx>

IP Management for Local Enterprises

- Provides partial funding to defray consultancy costs on the evaluation of company's IP management status and subsequent implementation of IP management projects.

- Open to Singapore-registered small and medium enterprises.
- <http://www.ipos.gov.sg/ProgrammesandEvents/IPforC-suiteExecutivesandBusinesses/IPManagement/WhatisSCOPEIP/IPMforLocalEnterprises.aspx>

IP for Internationalization

- Provides partial funding to defray consultancy costs on the evaluation of company's IP management status and subsequent implementation of IP strategies for internationalising to overseas markets.
- Open to Singapore-registered business entities that would like to internationalise their businesses.
- <http://www.iesingapore.gov.sg/wps/wcm/connect/ie/my+portal/our+assistance/competency/intellectual+property/ip+for+internationalisation/ip+for+internationalisation+programme?pageDesign=IE+Default+Search+Presentation+Template>

Research Incentive Scheme for Companies (RISC)

- Provides partial funding to defray costs on setup of R&D centres or in-house R&D capabilities.
- Only certain categories of costs can be funded – for the IP-related category, specific costs that qualify for funding include IP licensing/royalties and IP acquisition costs.
- Open to all Singapore-registered business entities.
- http://www.edb.gov.sg/edb/sg/en_uk/index/why_singapore/Guide_to_Investing_in_Singapore/financial_assistance.html

ACE Start-Up Grant

- Provides funding up to S\$50,000 to defray business development expenses in creating innovative start-ups (expenses can include those related to IP among others).
- Requires applicant to raise funding from other sources and matches S\$7 for every S\$3 raised by the applicant.
- Matches S\$3 to every S\$7 raised by the applicant for an additional S\$50,000 for selected ventures (i.e., total grant capped at S\$100,000 for these certain ventures).
- Open to Singaporeans and Singapore Permanent Residents who are first-time entrepreneurs who will commit to the business full-time.
- <http://ace.sg/Site/Page.aspx?id=83048AFF-89CF-4214-823B-609CC1F24FA2>

Endnotes

¹ Intellectual Property Office of Singapore, “Overview,” <http://www.ipos.gov.sg/topNav/abo/> (March 14, 2011)

² Trademark owners need to register their trademark to get protection under provisions of trademark law. Owners of registered trademark enjoy statutory monopoly ownership rights and also rights to prevent others from using/exploiting their trademark without consent. For infringement cases, trademark owners can use the registration as straightforward proof of ownership and rights. However, it is not compulsory to register a trademark. If a mark is not registered, owners still have rights to the mark by virtue of the use and reputation of the mark, under provisions of common law. But for infringement cases, trademark owners can only seek recourse through the common law action of **passing-off** – which requires owners to find sufficient evidence to prove their reputation and goodwill.

³ Government of Singapore, “Patents Act (Chapter 221),” section 56, revised edition 2005,

<http://www.ipos.gov.sg/NR/rdonlyres/138E6C9D-983E-4D81-8BC6-7F0848DC9CE1/18787/2011PatentsActextracted2Mar2011.pdf> (March 14, 2011).

⁴ Stefanos Zenios, Josh Makower, Paul Yock, *Biodesign: The Process of Innovating Medical Technologies* (Cambridge: Cambridge University Press, 2010)

⁵ Government of Singapore, “Patents Act (Chapter 221),” op. cit., sections 13 and 14.

⁶ *Ibid.*, sections 13 and 15.

⁷ *Ibid.*, sections 13 and 16.

⁸ *Ibid.*, section 16.

⁹ *Ibid.*, section 13.

¹⁰ Zenios, loc. cit.

¹¹ Antony Taubman, *Intellectual Property and Biotechnology: A Training Handbook*, 2001, Commonwealth of Australia

¹² Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 25(5).

¹³ Taubman, loc. cit.

¹⁴ *Ibid.*

¹⁵ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 36.

¹⁶ *Ibid.*, section 36A.

¹⁷ Intellectual Property Office of Singapore, *Patents Infopack*, 2008, Intellectual Property of Singapore

¹⁸ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 25(3).

¹⁹ Intellectual Property Office of Singapore, “Patents Infopack,” loc. cit.

²⁰ *Ibid.*

²¹ *Ibid.*

²² Intellectual Property Office of Singapore, *Patents Infopack*, loc. cit.

²³ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 28.

²⁴ Taubman, loc. cit., and Thomas Ewing, *WIPO Patent Drafting Manual*, 2006, World Intellectual Property Office

²⁵ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 29.

²⁶ Taubman, loc. cit., and Ewing, loc. cit.

²⁷ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 30.

²⁸ Intellectual Property Office of Singapore, *Patents Infopack*, loc. cit.

²⁹ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 34.

³⁰ Ewing, loc. cit.

³¹ *Ibid.*

³² Intellectual Property Office of Singapore, *Patents Infopack*, loc. cit. and World Intellectual Property Organization, “PCT International Search and Examination Guidelines,” (PCT/GL/ISPE/1), March 11, 2004

http://www.wipo.int/export/sites/www/pct/en/texts/pdf/ispe_i.pdf (March 14, 2011).

³³ *Ibid.*

³⁴ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 17.

³⁵ *Ibid.*

³⁶ Taubman, loc. cit.

³⁷ Intellectual Property Office of Singapore, *Patents Infopack*, loc. cit.

³⁸ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 80.

³⁹ *Ibid.*, section 84.

⁴⁰ Michael Koch and Gary Chua, “US Continuation-in-part Applications,” *Managing Intellectual Property*. September 1, 2010, <http://www.managingip.com/Article/2661601/US-continuation-in-part-applications.html> (March 14, 2011).

⁴¹ Government of Singapore, “Patents Act (Chapter 221),” op. cit., sections 49 and 50.

⁴² *Ibid.*, section 67.

⁴³ Tee Jim Tan and Wee Loon Ng-Loy, “Intellectual Property Law,” March 23, 2009, Singapore Academy of Law, <http://www.singaporelaw.sg/content/iplaw2.html> (March 14, 2011).

⁴⁴ Government of Singapore, “Patents Act (Chapter 221),” op. cit., section 66.

⁴⁵ *Ibid.*, section 105.

⁴⁶ Intellectual Property Office of Singapore, “Milestones,” <http://www.ipos.gov.sg/topNav/abo/Milestones.htm> (March 14, 2011).

⁴⁷ Intellectual Property Office of Singapore, “Overview,” loc. cit. and World Intellectual Property Office, “Summaries of Conventions, Treaties and Agreements Administered by WIPO,” 2011, http://www.wipo.int/freepublications/en/intproperty/442/wipo_pub_442.pdf