



Inventors Guide

University of Cape Town

OVERVIEW

This Inventor's Guide - from what is required to file the initial, priority founding patent application through the innovation journey to licensing or spin-off company creation.

The Department of Research Contracts & Innovation (RC&I) supports the process through: Intellectual Property (IP) management; securing seed funding to mature the technology; conducting market research and commercialising the IP either through licensing or spin-off company formation.

This booklet has five primary sections:

- A. Filing the Provisional/Priority Founding Patent Application
- B. Beyond the Priority Filing
- C. Commercialisation
- D. The Rewards
- E. Some UCT Innovation Success Stories

In terms of the UCT IP policy (www.uct.ac.za/about/policies/), the IP generated from research activities is automatically assigned to UCT as a default, but under certain circumstances a funder can own the IP that arises.

Benefit from successful commercialisation is also distributed according to the IP Policy, with a portion of the revenue going into the Inventor / IP Creator's pocket and the remainder being distributed within the university to further research and innovation.

UCT provides RC&I with a budget to support IP protection and additionally, the National IP Management Office provides an up to 50% rebate to assist the university. This means that there is no cost to a researcher, unless patenting has specifically been budgeted for on a project.

Please contact the RC&I team should you have any additional questions, or for help with invention disclosure and IP protection.

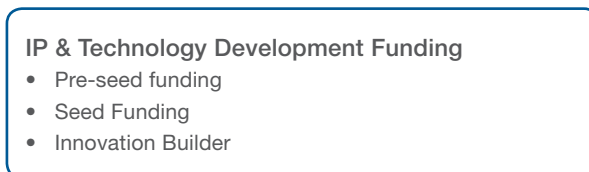
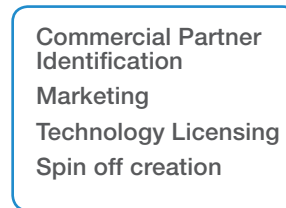
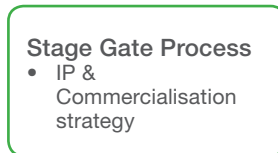
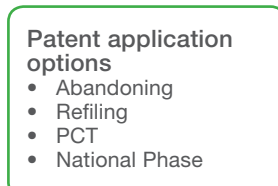
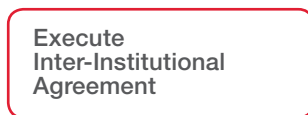
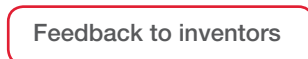
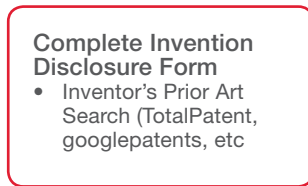
Additional information is available on our website: www.rci.uct.ac.za



UCT
Process Engineering

It's a bug's life

Inventor's Guide Flow Chart



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GLOSSARY

PCT – Patent Cooperation Treaty, often the first phase of international filing.

Priority Date – the date of filing the priority patent application / provisional.

IP – Intellectual Property

IPR – Intellectual Property Right

ISR – International Search Report

Office Action – issued by an Examiner regarding issues relating to lack of inventiveness or novelty. These are addressed by the inventor and a response is filed by the patent attorney.

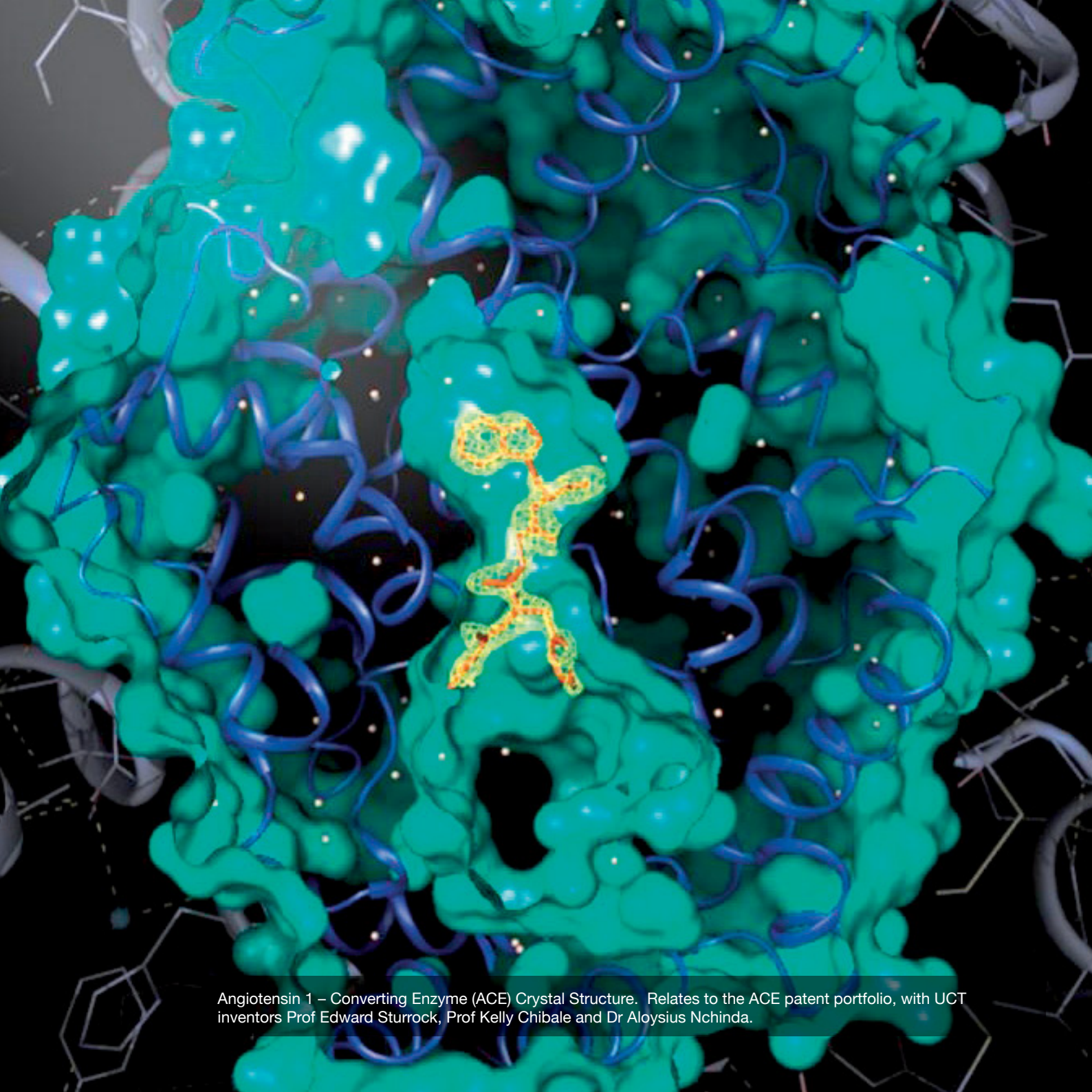
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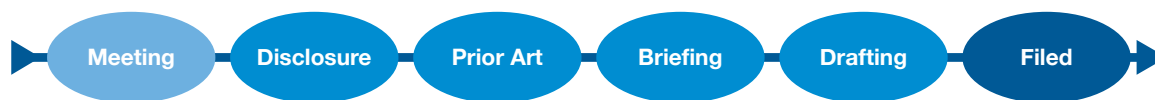
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Angiotensin 1 – Converting Enzyme (ACE) Crystal Structure. Relates to the ACE patent portfolio, with UCT inventors Prof Edward Sturrock, Prof Kelly Chibale and Dr Aloysius Nchinda.

FILING THE PRIORITY PATENT APPLICATION



1. Preparation

(i) The Disclosure Form

UCT has an Invention Disclosure Form which captures the key information relating to the invention (download here <http://www.rci.uct.ac.za/rcips/ip/overview/>).

Patentability

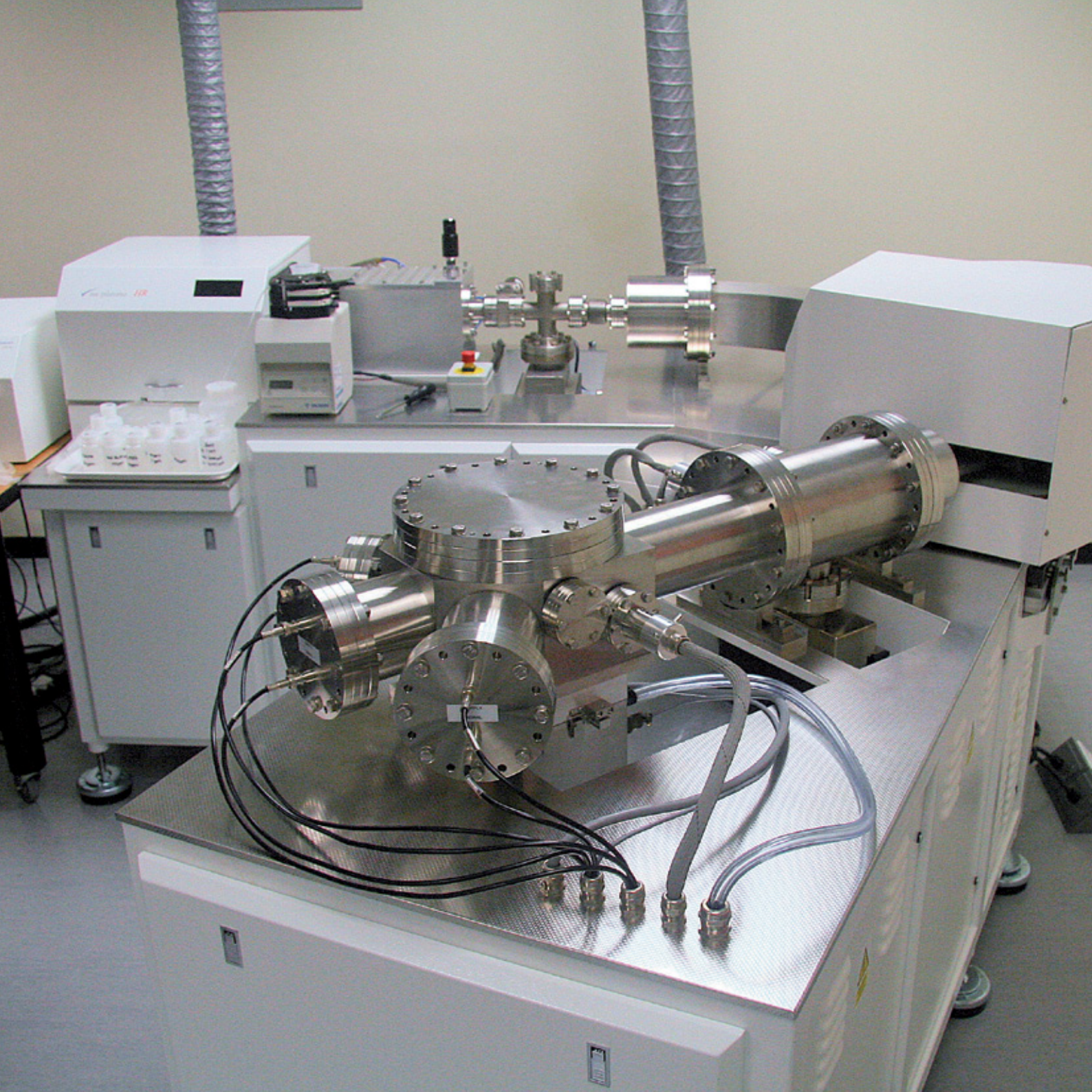
The form is used for the first internal assessment of patentability and commercial potential. There are three key requirements for patentability:

- **Novel** – this means that the invention is new and has never been disclosed publicly (even by the inventor!), e.g. through journal publications, conference presentations and posters, online web postings or thesis examination. Discussions held with collaborators or contractors or potential commercial

partners need to be under the protection of a non disclosure agreement (contact RC&I and we will ensure that one is put in place if necessary). The invention must also not have been anticipated and publicly disclosed by anyone else, or be found in general or patent literature (**see Prior Art Search**).

- **Inventive** – this is perhaps the most difficult aspect as it is subjective. Essentially it means that the invention is not ‘obvious’ to a person generally skilled in the art, i.e. in that particular field. This can generally be regarded as a technician who would typically be carrying out routine tasks.
- **Useful** – this means that there is ‘industrial’ application and is generally easily met.

There also needs to be some commercial potential or social benefit for UCT to invest in the patent protection.



Inventorship

At the disclosure phase, one of the important aspects to establish is inventorship – who the inventors are. An inventor is a person who has contributed to the ‘inventive step’ towards devising an invention.

A person who had conducted experiments or analysis clearly defined by the originator(s) of the idea, would not be considered an inventor, but rather regarded as an ‘enabler’. Similarly, a co-author is not necessarily a co-inventor even though some of the experimental data or text (that could also occur in a publication) has been included in the patent document.

In some cases, the claims of a filed patent may be amended during the course of patent examination (“patent prosecution”)

prior to a patent being granted. Generally this does not impact inventorship. But, if there are distinct parts to an invention (e.g. “A” and “B”) and a person only contributed to part “B”, if the claims related to part B are not allowed by the examiner, then the person would be removed from the list of inventors in the final patent.

Incorrectly including somebody as an inventor (or omitting somebody) can invalidate a patent. An ‘enabler’ can, at the inventors’ discretion, be recognised for their contribution to the invention and be included in the share of the portion of royalties accruing to the inventors.

Full names, as appearing on your identity document, as well as your residential address are required by the Patent Office and appear on the patent application.

Determining Inventorship with Examples

Example 1

CONTRIBUTION	INVENTOR	NOT INVENTOR
1 Person A conceptualises a new reactor design that allows continuous addition of catalysts and raw feed in a special reaction chamber.	✓	
2 Person B designs the chamber to withstand high pressures and temperatures using advanced materials.	✓	
3 Person C conducts lab experiments to prove the concepts put forward by Person A and also improves the feed/catalyst ratio and efficiency of the reactor design.	✓	
4 Person D obtains instructions from Person B and generates significant data from experiments that support the invention.		✓
5 Person E effectively manages the research in the lab ensuring safety and oversee the acquisition of the research materials.		✓
6 Person F heads the research unit, has raised funding and is the Principal Investigator of a larger project that this work was funded by, but Person F did not devise any part of the invention.		✓

Example 2

CONTRIBUTION	INVENTOR	NOT INVENTOR
1 Person A came up with the idea for a new diagnostic device, did 80% of the work, but had difficulty with identifying specific biomarkers.	✓	
2 Person B helped Person A to solve the problem and completed the 20% of the work by indicating specific biomarkers with improved accuracy.	✓	
3 Person C conducted 1000 repeated experiments on the device to test the efficiency and repeatability of the device.		✓
4 Person D analysed the data generated by Person C and suggested colors for the device to make it attractive to users (i.e. not core to the function of the device).		✓

Example 3

CONTRIBUTION	INVENTOR	NOT INVENTOR
1 Person A has an idea for a new vaccine and contributes of the development by providing the sequences and documenting how the idea could be reduce into practice, and conducts routine experiments to reduce the invention to practice; the latter is the bulk of the effort.	✓	
2 Person B contributes to the required development by conducting animal trials using publicly available methods and basic knowledge and confirms that the vaccine has 80% efficacy in terms of an immune response in the animals.		✓
3 Person C discovers that the use of the vaccine with an unexpectedly effective booster (e.g. adjuvant) that increased the efficacy to >95% immunity. This booster will now be included as part of the invention that will be patented.	✓	

Inventor's Share in IP

A section of UCT's Disclosure Form captures the contribution that was made by each inventor to the IP. Often inventors share the IP in equal portions (the default position), but on occasion the input by the different inventors can differ considerably and the share in the IP needs to reflect this.

For UCT inventors, the share in the IP also

determines the split of royalties that may accrue to them and it is important that this is established upfront. See part D of this booklet for more information on royalties. The inventors may also elect to identify Enablers who should share in the "income pool" that accrues to inventors. The Invention Disclosure Form has a separate table for this split and record, as the Enablers will not be included in the list of inventors published on the patent.

IP Rights and Funding

As mentioned in the introduction, UCT is the default owner of the IP generated from research activities and as such is the “Applicant” or “Assignee” on patent applications. Although the application is made in the name of the university, the inventors are also registered.

If the invention is generated through work funded by a research contract then, depending on the terms of the funding received, UCT may assign the rights to the IP to the funder. Here the patent will be applied for in the name of the funder but again, the inventors will still be registered and appear on the patent.

A funder may also stipulate specific terms regarding how IP needs to be commercialised. e.g. Gates Foundation wanting to ensure that “Global Access” is achieved with benefit to poorer nations.

With collaborative research projects, UCT may share the ownership of the IP with one or more parties. The share in the IP is typically determined via the respective contribution of a party’s inventors to the invention.

In collaborations the actual benefit IP share may be different to the share of the parties in IP creation and the agreement may indicate that it will be based on the financial or intellectual contribution of the parties, or

the work that a party does towards development and commercialisation of the IP.

For these reasons it is important that the funding that supported the research leading to the invention is disclosed.

(ii) Supporting Documentation

If draft publications are available, or sections of theses and research reports, these can be submitted to the patent attorney so that they can ‘cut and paste’ this information when preparing the priority funding patent specification. Often this provides either background material or experimental results, etc. that are included in the patent as examples. This saves the inventors’ time as well as attorney expenses in preparing the disclosure document.

Patenting requires an “enabling disclosure” to be made. The best method of providing this is by way of examples that cover all the claims that will be made. The examples need to have sufficient details that a person skilled in the art could follow the procedures and implement the invention. Additional information regarding the requirement for examples, especially in the biotech and chemistry areas, is available from RC&I.

(iii) Prior Art Search

The primary objective is to identify all patents and literature that are close to the invention and to put the invention in context

against this background, i.e. distinguish the ways in which the invention is ‘novel’ and ‘not obvious’. The prior art search is different to a typical literature review – we only require a ‘cut and paste’ of the abstract and a comment on the applicability. Separate information will be provided by RC&I on patent searching and on how to access the Total Patent database, which is facilitated by UCT.

2. Drafting the Specification

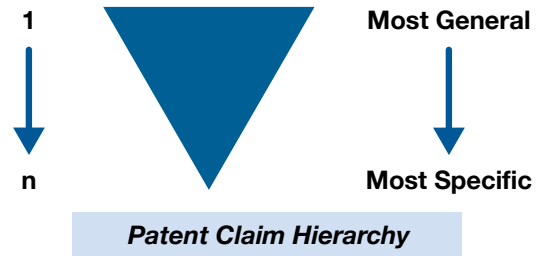
A patent attorney from one of the several law firms that UCT interacts with is appointed by the RC&I Case Manager to draft the specification. The patent attorney is selected based on their technical background (they have a technical qualification in addition to their legal qualification) as this ensures that they can readily communicate with the inventor and understand the complexities of the invention.

The disclosure form is sent through to the patent attorney. It provides them with the material that they will use to prepare the first draft. A briefing meeting is generally held too, which allows the patent attorney to gain a more detailed understanding and to ask the inventors any questions. The draft is circulated to the inventors so that it can be edited and clarification or additional material provided where necessary. It is important that as much is included in the specification

as possible, as information can be removed at a later stage but not added (unless it falls within the original scope). It may also be relied on for claim amendment during patent examination.

To minimize costs, it is important that the patent attorney is provided with complete information detailing the invention up front, and that the number of rounds of editing are kept to a minimum; all the inventors should review the specification and confirm that they are happy with it before the document is returned to the attorney.

Patent attorneys have draftsmen who can prepare any drawings that may need to be included in the specification, unless the appropriate quality drawings are already available.



Claims are arranged from the broadest, most general claim to subsequent narrower claims that can be viewed as “fall-back positions” if the first claim were to be challenged successfully by the patent



examiner. The subsequent claims become more and more specific.

The patent attorney will prepare claims that are as broad as possible, whilst the patent examiner will look at reducing the scope of the claims by arguing as to why they are not inventive or novel. It is useful for inventors to think about other areas that the invention can be applied to.

3. Filing

Once the inventors are satisfied with the specification and drawings that have been drafted by the patent attorney, RC&I will provide the patent attorney with the official instruction to file the application. A priority founding patent application is the first patent filed to establish the priority date, and may be a provisional patent application or full patent application

Filing the priority founding application secures a “priority date” (i.e. the date of filing the application) which is critical to the success of the application. Patents are territorial i.e. only give protection in a specific country. However, due to the Paris Convention, member states (some 125) recognise this priority in all signatory countries provided that a full application is made within 12 months of filing the priority founding application. If a provisional was

filed, the full application will now need to include claims.

This means that should somebody file a patent in any signatory country after your priority date, their patent will not be allowed as long as you have proceeded to file a full application later.

Patent applications are not published within the 12-month priority period and are maintained confidential by the Patent Office. The patent application can thus be withdrawn and later refiled at any time during this 12-month period, but one will then lose the priority date.

Once a priority founding application has been filed, it is possible to publicly disclose the invention (e.g. by submitting a thesis for examination, or publishing a paper in a journal or in conference proceedings) if necessary.

However, where public disclosure can be avoided, maintaining confidentiality during the 12-month priority period is useful for two reasons:

- (i) the commercial market will be unaware of the invention; this gives a commercial partner a time advantage.
- (ii) it allows for a greater amount of additional material to be included in the full patent application, assuming

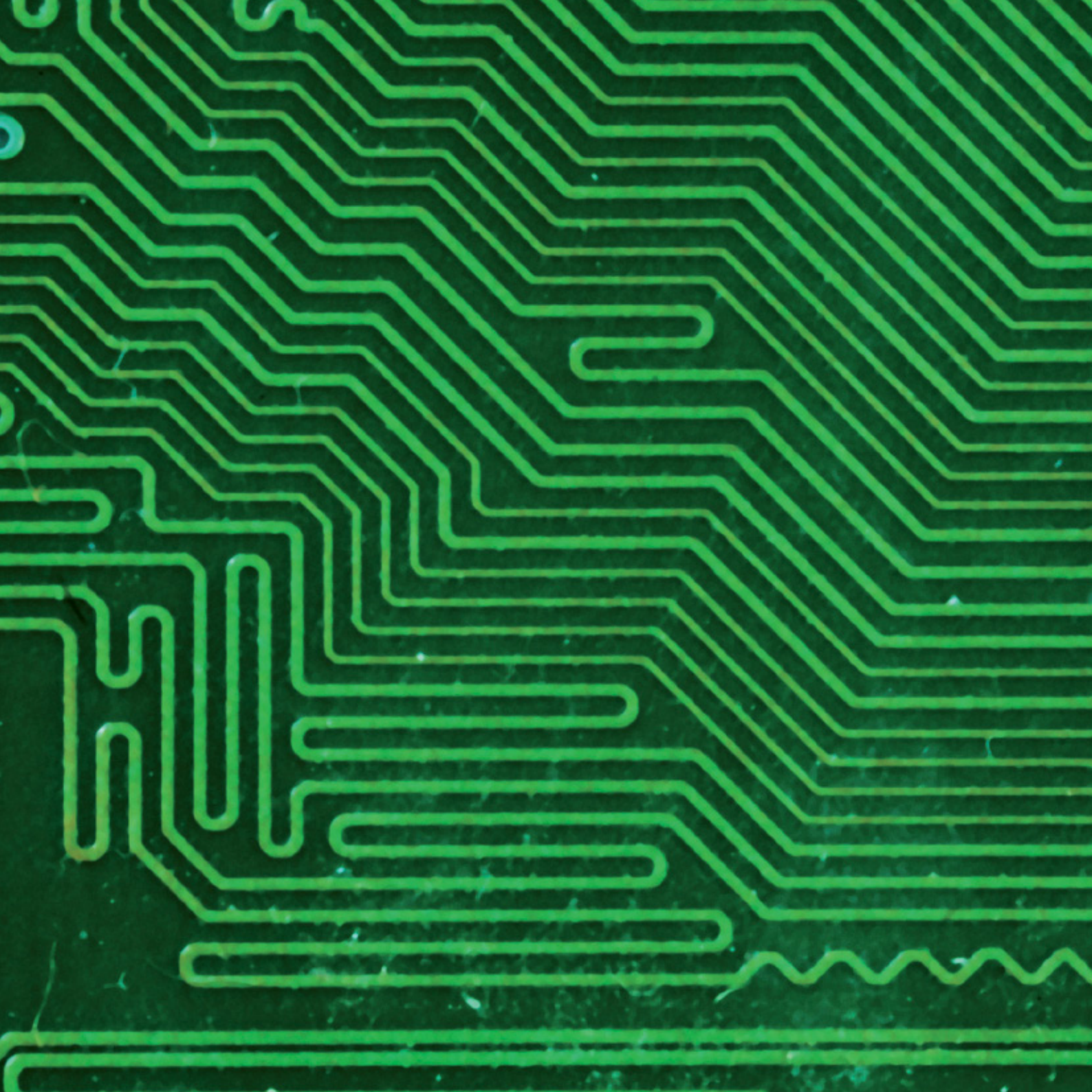
that this material falls under the broad umbrella of the original priority founding application (e.g. if one publishes experimental results in a journal, which had not been part of the priority founding application, these could not be included in the full application). A way of avoiding this, if there has been significant development coupled with a need for public disclosure, is to file a number of successive priority founding applications, which are rolled into one full application at national / PCT stage (with a range of priority dates associated with the different sections of material included!).

(i) Signing Forms

At the time of filing, the inventors will be asked to sign an Assignment Form, which is lodged at the patent office. This is merely a confirmation of the assignment that has already taken place in terms of the UCT IP Policy (the policy can be downloaded off the UCT website). UCT (represented by the Registrar or designated authority) will also sign a Power of Attorney to appoint the attorneys to act on UCT's behalf in filing the patent application in different territories.

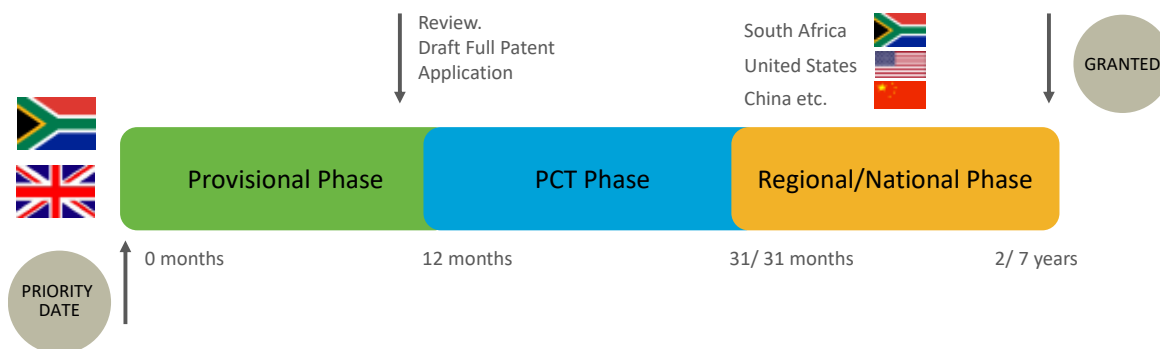
Unfortunately certain national patent offices require their own forms to be signed, so you may need to sign additional forms at each stage of patenting.

It is important to remember that your invention is only protected from infringement once the patent has been formally granted. The prosecution / examination process can take anywhere from two to five years to get to a granted patent. During this time one is not yet in a position to take legal action to defend your invention.



BEYOND THE PRIORITY FILING

A year after the priority application has been filed, one needs to proceed with the next phase of patenting. There are three key stages of patent application: priority (provisional); PCT; and regional or national phase.



1. Patent Examination

All of the supporting experimental data will ideally be available at the time of filing the priority application, but on occasion there is a need to file the patent (fast-moving field/ a publication/ a conference) ahead of having all of the data available.

It is possible to include additional results ahead of the PCT / National Phase deadline, but it is imperative that the data are available ahead of the 12-month deadline, as there can

be no delay or postponement and there is no opportunity for amendment of the detail in the patent specification after the 12-month period.

RC&I maintains contact with the patent attorney throughout the patenting process and involves the inventors where necessary. Inventors' input is required to assist with the preparation of rebuttals to examiners negative assessment of claims (e.g. lack of novelty or inventiveness) by assessing the "prior art" documents that the examiner has cited, by indicating hopefully (!) how their invention

differs. The examiner's reports are called "office actions" and one is issued a deadline by which one must file a response.

Sometimes claims need to be amended to exclude prior art and the inventors guide the technical decision-making to see how the claims can be amended as lightly as possible, to counter the examiner's objections, but not to give up too much scope of protection and importantly to ensure that the invention is still protected.

Unfortunately, on occasion prior art found by the examiner is very damaging and no claim amendment is possible, and the patent application is abandoned.

2. Stage Gate Process

For effective innovation four parallel processes need to be managed holistically to keep them synchronised, namely:

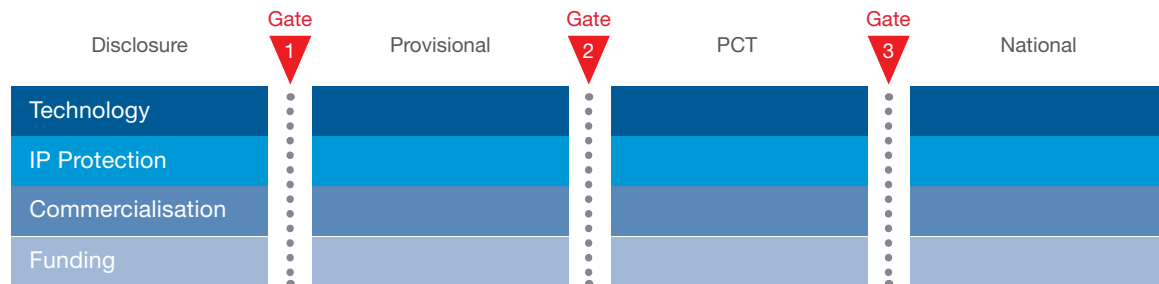
- **technology development;**
- **intellectual property protection;**
- **commercialisation,** which initially focuses on market research to understand

the market that the product/ technology will be going into, and then later looks at either spin-off company creation or identification of licensees and negotiation of license deals; and

- **funding,** i.e. to support the development/ maturing of the technology/ spin-off company formation.

They impact on one another, e.g. knowledge of potential international markets will inform the patenting strategy, identifying the countries in which patents should be applied for to maximise IP value. Knowledge of a market will also influence technology development, e.g. scale of manufacture, quality or regulatory entry barriers (e.g. clinical trials, certification), etc. One wants to ensure that the technology has developed and been commercialised by the time one reaches the later (expensive) stage of patenting.

RC&I has established a stage-gate process, aligned with the stages of the patenting process, to review these four areas and guide prudent spending of UCT's patent budget. A "Gate Review" is held near the end of each stage.



2.1 Gate Reviews

Gate 1: Filing the Priority Application

This first gate considers the best form(s) of IP protection that should be pursued (copyright, registered designs, trademarks or patenting). If patenting, an invention meets the three patentability criteria (novel, inventive and useful). RC&I also need to determine whether the technology has commercial potential or social benefit, i.e. whether there is merit to UCT investing in IP protection.

The RC&I Case Manager will complete an Invention Disclosure Assessment that is used to motivate for management approval to file a priority application.

At present RC&I is filing the priority application in the United Kingdom as a “full patent application”. South Africa has a depositing patent system, so no substantive examination is conducted. One needs, however, to determine the strength of the IP as early as possible and the UK provides a preliminary examination report about six months after filing the application. This gives one a good idea of any significant issues that the examiner has highlighted. It also allows one the opportunity to amend and improve the text in the application and supporting data ahead of the next stage of patenting, after which it becomes “locked”. If warranted this UK application can be pursued to grant by responding to the office action. This can be very useful for marketing of the technology as it indicates

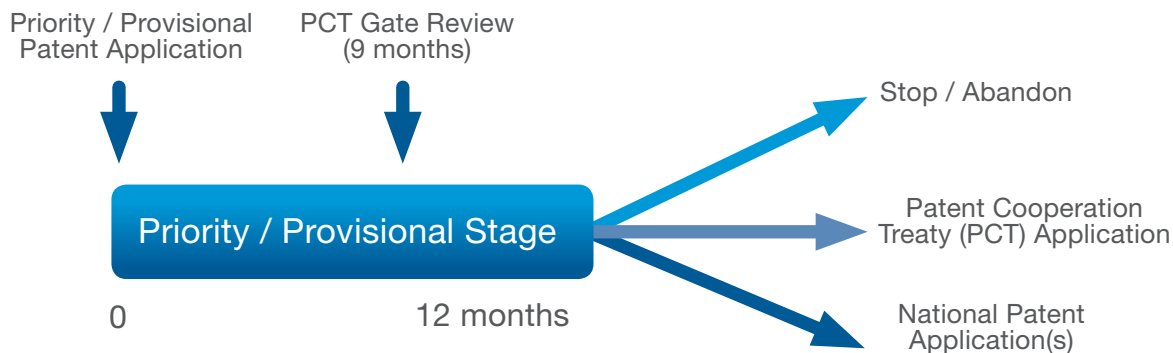
to a licensee, at a very early stage, what the potential granted claims may look like in other territories. Each country has its own patent laws so the granted claims may not necessarily be the same in each country – e.g. the USA and European patent laws are very different, what you will get granted in the USA can be very different to Europe.

Gate 2: PCT Decision

Twelve months after the filing of a priority application, a decision needs to be taken on the way forward. Gate Review 2 is held a couple of months before the end of the 12-month period.

A “Gate Review Report” is prepared by RC&I and will cover the four key areas discussed above: how the technology is developing and is this development funded / plans for next stage funding. The Inventors typically add to this section and are also invited to make a presentation on technical progress at the Gate Review. Where a priority application is filed in the UK, the outcome of the patent examination is presented along with a strategy, that has been developed in conjunction with the patent attorney, to overcome any issues. The market, patenting trends and a commercialisation strategy are also presented in the document.

The review meeting includes all the Inventors, a cross-section of RC&I staff and also may include external experts. The report is discussed and reviewed and a final decision is made.



Options at end of Priority Period

(i) Abandoning the Application

If there is no commercial value, or if some prior art material is encountered that clearly renders the invention obvious or destroys its novelty, then one may abandon the application and stop the patenting process.

(ii) Patent Cooperation Treaty (PCT)

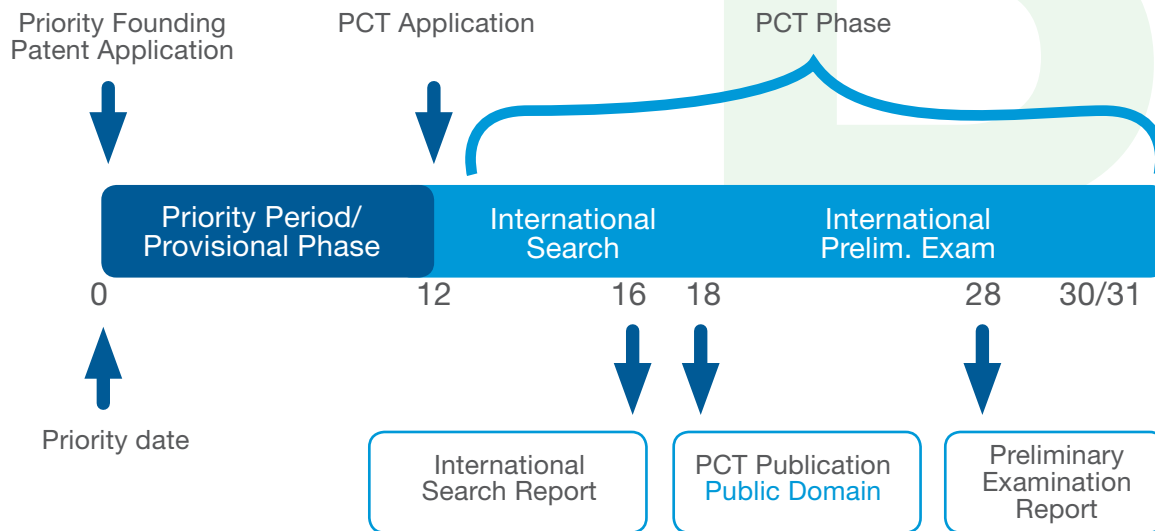
The Patent Cooperation Treaty (PCT) is an international treaty that is administered by WIPO (World IP Office). The PCT has the advantage of allowing one to simultaneously file for patent protection in a large number of countries by filing a single “international” patent application in one language.

It is optional and one can file national phase applications immediately, or a mix of national phase applications with the PCT application. Importantly certain countries are not members of the PCT and there one must file a national phase application in that country in parallel (this is often the case in South America, although a number

of countries have recently signed the PCT). National phase applications are discussed in the next section.

During the PCT phase (18 months) a search of prior art (patents and literature) is conducted by the International Searching Authority (ISA) (UCT typically uses the European Patent Office) that is written up in an International Search Report (ISR) and forms the basis of a written opinion (WO) as to the patentability of an invention.

There is also an opportunity to amend the claims appropriately before proceeding to the PCT Preliminary Examination, performed by the International Preliminary Examining Authority (IPEA). Thereafter, a formal PCT Examination Report will issue, which is another useful indicator of the likelihood of a patent application being eventually granted. This examination step is typically not pursued unless specifically recommended by the patent attorney, to avoid additional costs and to rather play ones hand in terms of amendments at national phase.



Events in Patent Cooperation Treaty (PCT) Phase

This examination process has a number of advantages:

- (i) It gives one a good idea of how strong the claims are and which are likely to be objected to.
- (ii) By selecting the European Patent Office, one often finds that the same examiner is appointed for the ensuing European patent application, so it speeds up the process as one already knows their opinion/stance.
- (iii) One is also dealing with a single office during this 'refinement' process rather than a multitude of national offices.
- (iv) It buys time for a national phase patenting decision to be made, allowing one to identify a licensee or to better understand the market.

Gate 3: National Phase Decision

The Gate 3 Review is held several months before the '30 or 31 month' PCT deadlines and focuses on deciding on which national phase applications will be pursued. A similar Gate Review Report and meeting will be held as for Gate 2.

National Phase filings are ideally steered by a commercial partner and are selected based on whether the country represents a significant market, or location for manufacture. This is a once-off opportunity, as once the deadline has passed, additional national phase applications cannot be made at a later date!

Prosecution of the national phase is a lengthy process, usually taking 2-5 years.

Only one invention is allowed in a patent and occasionally the examiner will decide that there are certain sets of claims that lack a unifying concept. They will issue a unity of invention “restriction requirement” – this can also occur in the priority or PCT phase. Unless one can argue that the two (or more) inventions are a unit, one needs to pay additional examination charges and the patent is split into two or more applications – these are known as **“divisional” applications**.

If one is filing in only one or two countries (or

regions), it may be worth filing applications in those countries directly at the end of the provisional phase, instead of going through PCT. Sometimes this is done in the USA, as the patent law is very different to Europe.

National phase typically occurs at the end of PCT and the selection of countries in which to file applications is generally based on an assessment of affordability/cost against where one is like to manufacture or sell the product. For electronics it may be beneficial to ensure that IP is protected in key low-cost manufacturing territories. Markets for certain tropical diseases may be defined by the presence of mosquitos, climate, latitude bands, etc.



Patenting Strategy Involves Protecting Key Markets or Manufacturing Territories

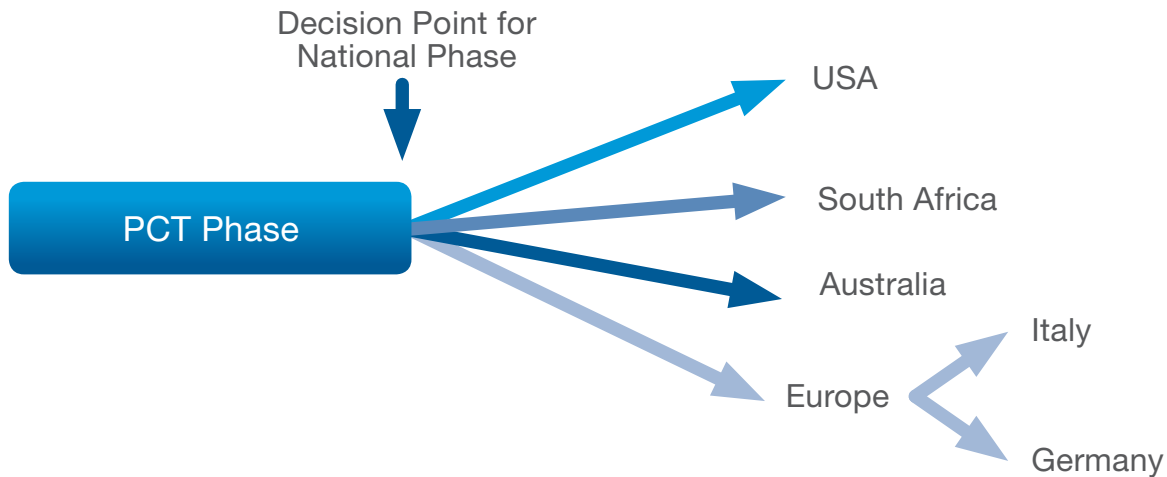
The examination process takes the form of a series of Office/Official Actions issued by the examiner. Each Office Action allows for an opportunity to respond, via patent attorneys, to the examiner's concerns regarding the claims which are now assessed in terms of the laws of the specific country in which one is applying for protection. If this process is concluded successfully a patent is granted in that specific country.

Certain countries have "grouped" their patent offices into a single regional entity. There are five regional offices: Europe, Eurasia, Gulf Cooperation Council, ARIPO (generally African historically English-speaking countries) and OAPI (generally

African historically French-speaking countries).

Once the application is granted at the Regional phase, it generally needs to be "validated" in selected countries in the region (again costs per country apply, so it is an economic decision).

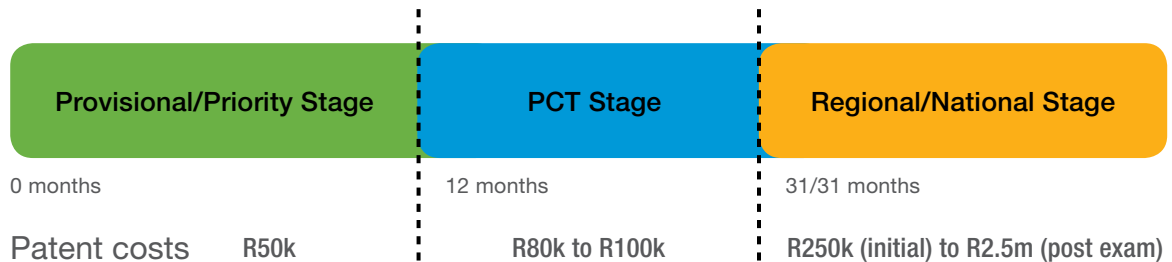
In the example shown in the figure, one can see that USA, South African and Australian National Phase applications were made at the end of PCT, as well as one regional application in Europe. On successful completion of the European examination, the patent was validated in Italy and Germany (i.e. the IP is protected in only these two European countries).



Regional and National Phase Filing Following PCT Phase

3. Costs

Indicative costs of the different stages of the patenting process are shown in the figure below. National phase costs are dependent on the number of countries in which protection is sought and the complexity of the patent specification affects the associated legal fees throughout the various phases.



UCT allocates an annual budget to RC&I to support patent expenses. The Department of Science & Innovation also supports the protection of UCT's IP by providing an up to 50% rebate on fees.

Inventors who apply for funding to develop their ideas and move them through the

innovation space are encouraged to make provision to support ongoing patenting costs in their applications and proposals. An estimate of the appropriate budget provision can be obtained from RC&I.



COMMERCIALISATION

UCT approaches technology licensing and commercialisation on a case by case basis and can adopt a variety of strategies to achieve this, such as entering into both exclusive and non-exclusive license agreements, considering the outright sale of its intellectual property, or taking equity (i.e. holding shares) in a spin-off company.

1. Innovation Management

RC&I follows the Innovation Management Journey shown on page 22. In this process, we mature the technology through different Technology Readiness Levels (TRLs) by accessing funding, developing the technology, understanding the market that the product will be going into and taking any patents through patent examination. The goal is to reach a TRL that will have sufficiently de-risked the technology so that it is of interest to a potential licensee, or investors can see the merit in forming a spin-off company.

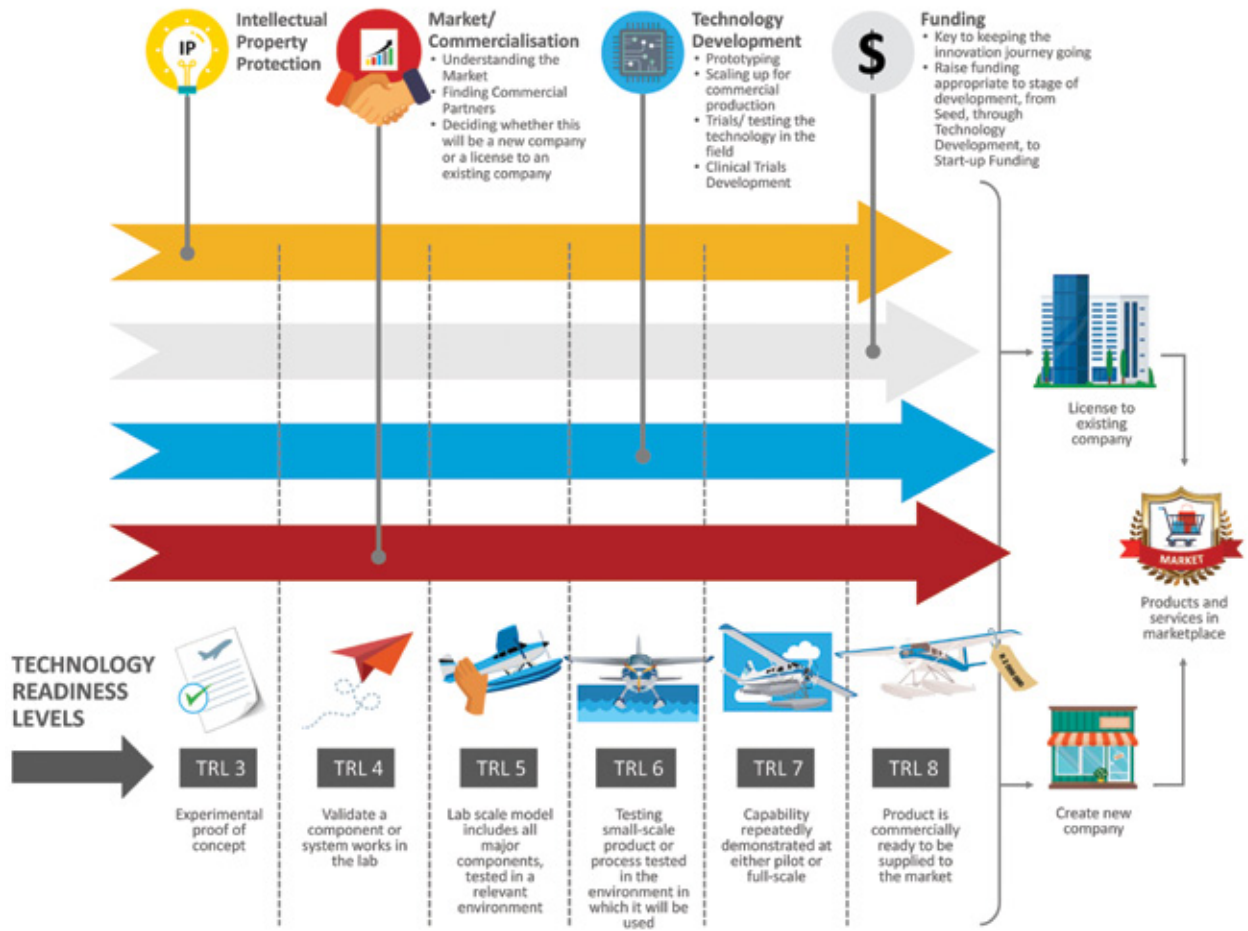
We also look for potential partners who are able to assist the innovation process through technology development, especially through scale-up, piloting and market trials. We often form consortia and partnerships to access funding to support these initiatives, successfully commercialising our technologies in the marketplace.

One of our core objectives is to stimulate the growth of the South African economy by fostering small business development and/or the creation of jobs through the commercialisation of UCT's intellectual property.

Although the commercialisation decision ultimately rests with UCT/RC&I, inventors are encouraged to play an active role in the commercialisation of their IP. They often already have strong established links with industry and can readily identify potential commercial partners.

Inventors may also be interested in forming start-up companies based on the IP that they have developed and RC&I will assist with them with developing Business Plans and conducting market research. RC&I Pre-Seed funding is available to support these activities, which often require the advice of external consultants.

Innovation Management Journey



2. Funding

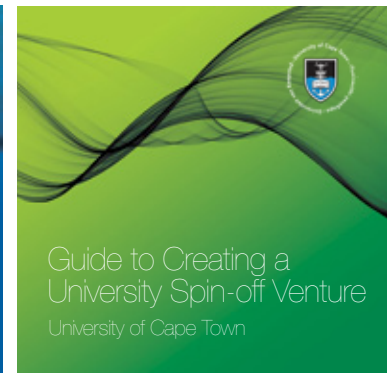
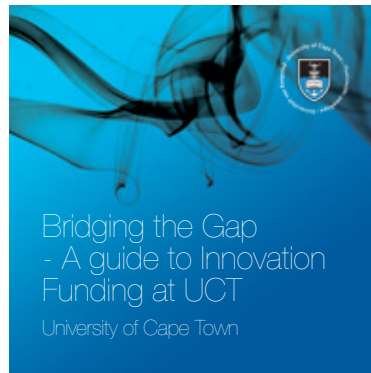
UCT is fortunate to have a number of internal and special external funds (e.g. the University Technology Fund) that it can use to support projects and early-stage spin-off companies.

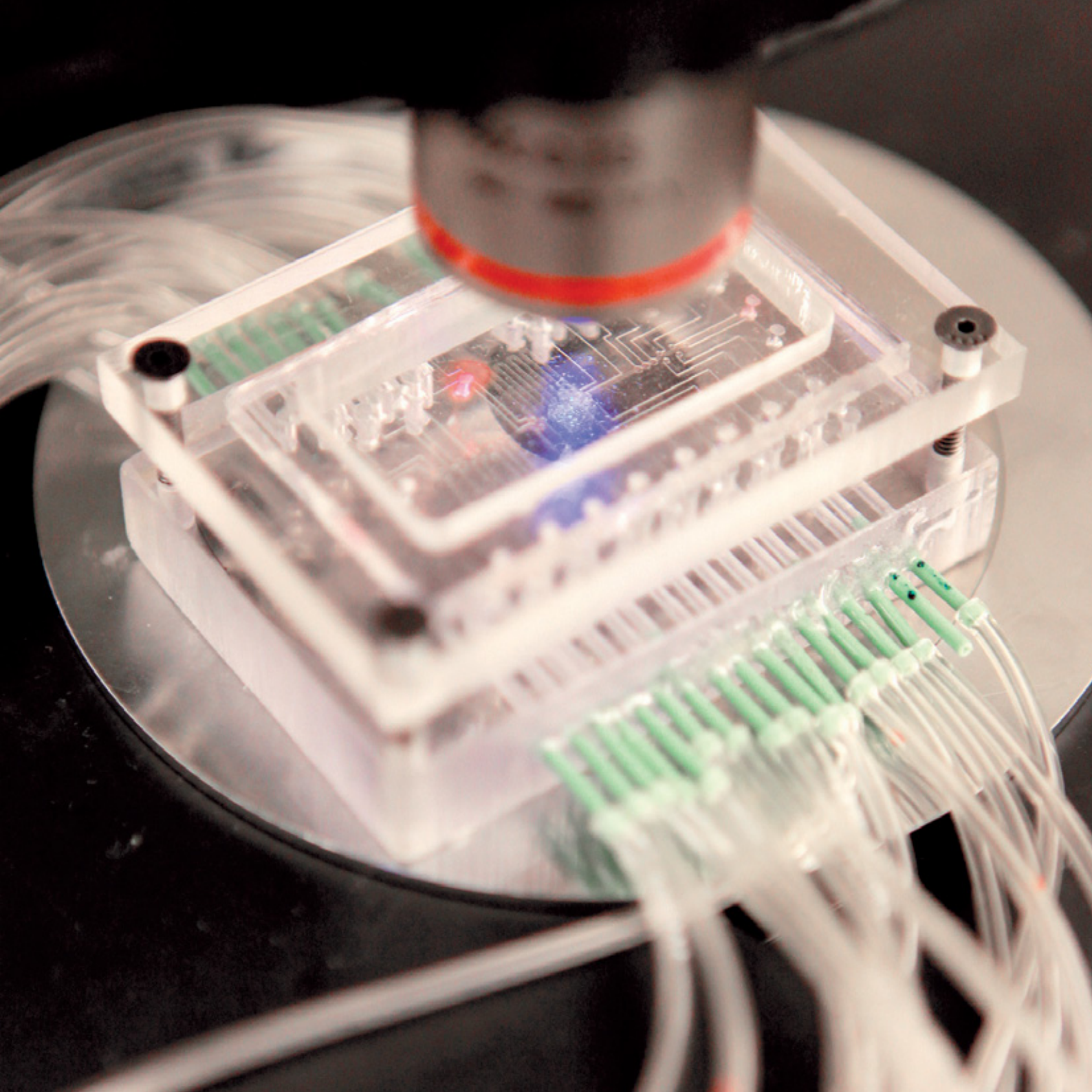
RC&I advertises the different funding calls, but many are ad hoc and you can obtain current information on our website or by contacting the Innovation Funds Manager or Innovation Projects Coordinator at RC&I.

FUNDING AMOUNT	DEVELOPMENT (POST RESEARCH)	START-UP	BUSINESS GROWTH (POST REVENUE)
< R100k	UCT PreSeed Fund		
< R500k	UCT Innovation Builder Fund UTF* PreSeed		
< R1.5m	UTF* Seed		
< R6m	UCT Evergreen Fund		
< R17.5m		UTF* Series Seed	UTF* Series A
R24m x 3 yrs	Department of Trade & Industry THRIP		
Contract Research for Commercial Partner	Licencee		

Details of the UCT funding landscape are available in another booklet in this series: *Bridging the Gap – A Guide to Innovation Funding at UCT*.

You can also find out more about creating a spin-off company at UCT in the third booklet *Guide to Creating a Spin-off Venture*.





ROYALTIES, REVENUE AND REWARDS

First Rule – Keep in Touch!

It is important that when an inventor leaves UCT, they ensure that RC&I is advised of any changes in your contact details so that they can be traced for royalty payments! On occasion, some real detective work has been required. If we cannot find you after a period, your income will be redistributed!

Royalties and Revenue from Commercialisation of IP

Revenue accrues from successful commercialisation of IP in a number of different ways:

- Revenue from outright sale of the IP. This is also known as ‘assignment’ of the IP; i.e. UCT assigns the ownership rights.
 - Revenue from Option Agreements – a fee charged to a potential licensee for the opportunity to evaluate the IP, but not to exploit products or services commercially during the option period;
 - Licensing the IP to third parties on either an exclusive or non-exclusive basis.
- Licensing may involve:
- Upfront payments - payable on signing an agreement; often this is where previous patent expenses are recouped from a commercial partner;
 - Milestone payments – payable when certain ‘milestones’ are reached, e.g. the granting of a patent, the approval of a drug by the FDA; points where the IP effectively increases in value;
 - Royalty payments – payable generally on an annual or semi-annual basis and defined as a percentage of the revenue generated from the sale of products or services based on the IP that has been licensed.
 - Minimum royalty payments can also be specified in an Agreement to ensure that a certain level of exploitation / income is maintained.
 - Equity in companies. Here the IP may be licensed to a company, or the ownership transferred to a company (assignment of the IP) in return for shares in that company. UCT holds the shares on behalf of inventors who are not directly participating in the company. As for normal shares, dividends may be paid to the shareholders if the company is successful. Revenue is also generated when these shares are sold (or ‘disposed of’) by UCT.



Benefit Share

Royalties and Revenues from commercialisation of IP are shared according to the UCT IP Policy. The split is dictated by the “IPR Act” covering IP from Publicly Financed Research and Development. The IPR Act became effective on 2 August 2010 and it governs all IP disclosed from that date onwards.

The introduction of the IPR Act necessitated revision of the UCT IP Policy to bring it into line with the Act. Although the new UCT IP Policy was only approved by Council in July 2011, the changes brought in by the IPR Act apply from 2 August 2010. Inventions disclosed prior to the IPR Act are still governed by the ‘old’ UCT IP Policy (2004).

In accordance with the 2011 IP Policy (<http://www.rci.uct.ac.za/rcips/ip/policy>), all income received by UCT is shared with the inventors. To ensure that inventors get the best of both worlds a ‘test’ is performed to determine whether what was enjoyed in terms of the 2004 IP Policy is more or less than what the IPR Act prescribes and the inventors receive the higher amount.

This all hinges on calculations that consider the ‘gross’ or ‘nett’ revenues.

Gross Revenue is the total sum of money accruing to UCT.

Nett Revenue = (Gross Revenue) – (Patent Expenses Incurred)

The Nett Revenue amount is calculated by deducting all patent expenses from the Gross Revenue amount.

The table below summarises the revenue distribution. “Creator” refers to one or more inventor(s) associated with the IP that led to the income. The term IP Creator(s) is used as not all of the IP that is commercialised is in the form of a patent.

The IP Creators share this “Creator” portion according to the split agreed on by them, on the Invention Disclosure Form.

Further details are set out in the UCT IP Policy that can be downloaded from the UCT / RC&I website.

Summary of UCT Revenue Distribution

Creator(s) Distribution

Income GROSS Revenue	Creator's
< R 1 million	20% (or the following if it works out to be more: 50% of Nett Revenue below @ 250,000 and 33% of Nett Revenue above R 250,000
> R 1 million	33.3% of Nett Revenue

Internal UCT Distribution

Income	Creator's Group	Creator's Department	Creator's Faculty	UCT Central Fund	Evergreen Fund
< R 250,000	50% of nett	0	0	0	0
> R 250,000 < R 1 million	16.7% of nett	16.7% of nett	0	33.3% of nett	0
> R 1 million < R 5 million	16.7% of nett	16.7% of nett	0	33.3% of nett	0
> R 5 million < R 10 million	10% of nett	13.4% of nett	10% of nett	28.3% of nett	5% of nett
> R 10 million	To be determined by IP Advisory Committee				

The portion paid to inventors is subject to tax and is paid to them for their personal use, i.e. it does not have to go into research.

Typically funds paid to the Department will be channelled back to the researcher/group that the IP emanated from – for research

purposes. At higher levels a portion of the income will also go to the Evergreen Fund, which will support innovation and spinoff company formation.

Royalty Distribution Example

Consider the following example royalty distribution relating to revenue received by UCT from the successful commercialisation of an invention invented by Xoliswa and Mike from UCT as well as Jill who is from UniB. Xoliswa and Mike felt that Mpho had done considerable work in generating the various examples that supported the patent application so decided that he should share in 20% of the funds accruing to the inventors.

Institutional Share in Revenue

INSTITUTION	%
UCT	70
UniB	30

Inventors & Enablers Benefit Share

NAME	STATUS	%
Xoliswa	Inventor	40
Mike	Inventor	40
Mpho	Enabler	20

Patent expenses incurred by UCT = R50,000. Uni B paid their share of the costs.

UCT is responsible for collection of the money from the Licensee. Licensee pays UCT R100,000.

So, UCT divides this between the institutions:

- $UCT = 0.7 \times R\ 100,000 = R\ 70,000$
- $UniB = 0.3 \times R\ 100,000 = R\ 30,000$

UCT Gross Revenue is R 70,000 whilst the UCT Nett Revenue = R 70,000 – R 50,000 (patent expenses) = R 20,000.

Inventors' share is the largest of:

- 50% of Nett Revenue = $0.5 \times R\ 20,000 = R\ 10,000$
- 20% of Gross Revenue = $0.2 \times R\ 70,000 = R\ 14,000$ (largest!)

So the R14,000 is shared by the Inventors and Enabler:

- Xoliswa = $0.4 \times R\ 14,000 = R\ 5,600$
- Mike = $0.4 \times R\ 14,000 = R\ 5,600$
- Mpho = $0.2 \times R\ 14,000 = R\ 2,800$

These amounts are subject to personal income tax. For UCT staff and students who are still at UCT, these amounts are paid out through HR payroll. For people who have left UCT, they will need to send an invoice to RC&I to collect their payment and they will be responsible for declaring this income on their tax returns.



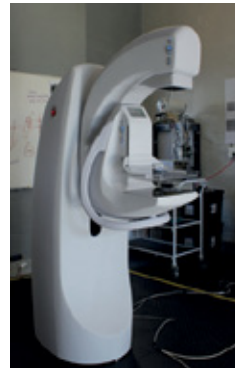
SOME UCT INNOVATION SUCCESS STORIES

CapeRay Medical (Pty) Ltd

One of UCT's more recent spin-off's has Prof Kit Vaughan at the helm. In true spin-off style, Prof Vaughan left a distinguished academic career as head of Biomedical Engineering at UCT to pursue the commercialisation of innovative mammography imaging equipment.

IP had been developed during the course of an Innovation Fund project and with funding raised from the Industrial Development Corporation Venture Capital Unit, CapeRay was officially launched on 18 August 2010. UCT has equity in this company and Associate Prof Tessa Minter (College of Accounting: Auditing) is the UCT appointed member of the Board. In appointing a Director, UCT attempts to compliment the skills requirements of the Board.

Together with his research and development team, which maintains strong links with the UCT Biomedical Engineering Research Group, Vaughan is developing a revolutionary approach to breast cancer screening by using low-dose x-ray technology combined



with ultrasound, for which new patent applications have been filed.

In 2012 CE Marking of their first products has been achieved and the company are looking for next-round funding.

The Pantoscanner Team won the NSTFBHP Billiton 2012 award for Innovation through an SMME.

The company produces a weekly blog on diverse aspects of their business, which is a rich resource of learning and inspiration to other entrepreneurs. This can be accessed from their website.

CapeRay



www.caperay.com




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Hot Platinum (Pty) Ltd

One of the earliest UCT spin-offs (2006), Hot Platinum was also the result of an Innovation Fund project that developed IP that formed the basis for the company.

Capitalising on that intense allure of molten metal, Hot Platinum has successfully developed innovative platinum casting equipment from technology developed by the UCT Engineering & Built Environment Faculty.

UCT graduates and entrepreneurs Ali Brey (Managing Director) and Irshad Khan (Technical Director) have established a production facility in Montague Gardens, Cape Town, from which they have produced units that have been distributed to nearly all the jewelry design centres at tertiary institutions as well as a number of mining houses, and jewellers in South Africa.

The equipment is capable of melting and casting platinum (20-250g), palladium, gold, silver and stainless steel using standard single phase power; making it an accessible and cost effective solution to small manufacturing jewelers as well as dentists.

An innovative centrifugal casting unit optimises the casting process and can cast from one to 25 rings simultaneously. It is designed to be very energy efficient and melting 150g of platinum uses less electricity than boiling a kettle.

The firm achieved European Certification and learnt a great deal in the process - overcoming a significant hurdle in commercialisation. After successful reception at a number of international trade fairs, the export market opened up and the first units have been exported. The company has now diversified its business to provide a range of different products.



www.hotplatinum.co.za

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Ver: 2021



UCT appreciates and acknowledges the support that the National Intellectual Property Office (NIPMO) provides in terms of patenting rebates received from the IP Support Fund, resourcing of Research Contracts & Innovation (RC&I) and for the publication of this book.