

Heriot-Watt University

Technology Transfer Handbook

An Introductory Guide for Researchers

A large, stylized 3D graphic of a ribbon or banner, rendered in shades of blue and grey, spanning the width of the page. The number "2015" is printed in black on the right side of the ribbon.

2015

FOREWORD

The Technology Transfer Office (TTO) is Heriot-Watt University dedicated Research Commercialisation & Enterprise Support function; As part of Research & Enterprise Services, the TTO primary goal is to manage, develop and transfer the Intellectual Property developed within the University research programs. It does this by progressing and exploiting any and all intellectual assets developed within research activity as well as implementing and promoting the appropriate mechanisms to:

- Encourage innovation e.g. provide entrepreneurial training programs such as the Converge challenge & Seminars on IP, Business planning etc.
- Exploit University intellectual property (IP) e.g. licensing our innovative technologies to companies and creating new spin-outs/start-up companies
- Support knowledge exchange (KE) through industry interaction & outreach activity

Each plays an increasingly important role in the delivery of the University Knowledge Exchange Strategy; the role of the TTO is essential in maximizing the IMPACT of publicly and privately funded research – an increasingly important measure of UK research excellence.

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Website www.hw.ac.uk/licensing

Intranet <https://intranet.hw.ac.uk/ps/res/tto/Pages/default.aspx>

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1. INTRODUCTION

This handbook has been developed for Heriot-Watt University research active staff and students to help them realise the potential of their University research, taking innovations to market or finding development opportunities for further research.

It aims to introduce the basic concepts surrounding some of the issues involved in Knowledge Exchange (KE) and university technology transfer (TT). It is a reference document to help you in your discussions with the Technology Transfer Office (TTO) professionals who will help you evaluate the potential of your technology and help bring it to market, secure development funding or grow university-industry collaboration.

This handbook gives an overview of some of the fundamental issues that you should understand and outlines some of the routes to the commercialisation of your research or idea.

2. THE TECHNOLOGY TRANSFER OFFICE (TTO)

‘Impact – the demonstrable contribution that excellent research makes to society and the economy¹

In line with the University Knowledge Exchange Strategy and the Outcome agreement with the Scottish Funding Council, the TTO works towards creating this IMPACT by releasing the value within Heriot-Watt’s research activity through the commercialisation of the University’s Intellectual Property (IP) portfolio; our main activities are in

- Technology development & licensing
- Supporting Spinout & Start-up activity
- Knowledge Exchange (KE)
- Outreach & Industrial Liaison
- IP awareness & training

We do this by working with our researchers to identify innovative ideas (or IP) from the research base, protecting this IP through patenting (where possible), identifying and securing suitable funding to develop the technology (building value) and marketing this to industry partners as licensable IP or developing the IP towards a new venture, such as a spinout or start-up company, suitable for 3rd party investment.

¹ Research Councils UK (RCUK) definition

It's our job to help you make the most of your research activity in HWU. Bring us your idea and we will guide you through the paperwork & processes to assess, protect and commercialise your idea.

2.1. Why is 'Knowledge Exchange' or 'Technology Transfer' Important?

In line with the University KE strategy and the Outcome Agreement with the Scottish Funding Council, The TTO mission is to enhance the University's reputation, financial stability and societal impact by progressing and exploiting any and all intellectual assets developed within research activity. Working with a large number of research active staff and students realise the potential of their research, we help take innovative ideas to market or help find development opportunities for further research. Why?

A) The UK Economic & Social Research Council (ESRC) defines Knowledge exchange as 'a two-way process where ... [researchers] and individuals or organisations share learning, ideas and experiences. Collaborative working benefits both the researchers and the individuals or organisations involved; examples of collaborative activity include:

- developing strategic partnerships with organisations to ensure we **maximise the impact** of our activities
- working with partner organisations to **develop and fund** major research and capacity building initiatives
- supporting initiatives to foster **direct collaboration** between [researchers] and other individuals and organisations.

To be most effective, knowledge exchange should not be treated as an 'add-on' at the end of a research project. It works best when it is considered before the start and built into a project.

B) For **researchers**, the benefits of knowledge exchange and working collaboratively can include:

- informing and improving the quality of your research
- enhancing your understanding of research users and their needs
- applying evidence based knowledge to important business or policy issues'²

The process of knowledge exchange/technology transfer 'helps develop early stage intellectual property into tools for direct use by the research community, or into bases for new platforms, products, or services to be made into products for public use. Successful collaborations are formed

² ESRC <http://www.esrc.ac.uk/collaboration/knowledge-exchange/> 2014

between researchers across different universities or industries in order to advance the knowledge in a particular field or to further develop a technology. These collaborations may result in licensing or sponsored research opportunities that benefit both partners. In addition, technology transfer ensures that the interests and rights of the university in the intellectual property are protected. The university is able to retain the intellectual property rights of the technology and issue a license for the conditional use of the technology.

Successful transfer and development of the technology helps promote the research institution and its commercial partners. The university obtains recognition and increases its reputation for their research and innovation potential see [Heriot-Watt REF2014 Results](#). Industry partners can also reduce the costs incurred during their research and development stage by licensing technology from a university. Another benefit for the university involves using the licensing revenue to support further research and education at the institution. The university's investments in the technology help stimulate local economic development'.³

3. WHAT IS INTELLECTUAL PROPERTY (IP)?

Intellectual Property is the innovative or novel output of intellectual and creative effort and thought. It encompasses a vast range of material which can be protected by a variety of means – these rights enable the owner of the IP to control the commercialisation of it for a fixed time.

Types of IP include:

- Patent - A patent offers a form of monopoly; it protects your invention and lets you take legal action against anyone who makes, uses, sells or imports your invention without your permission. (e.g. Apple® vs. Samsung® infringement case)
- Trademarks ® or ™ - as above but specifically relates to - Product names, logos, jingles etc. (e.g. Irn-Bru® “Made in Scotland from Girders”)
- Design – the appearance of a product including, shape, packaging, patterns, colours, decoration etc. (e.g. the shape of the Coca-Cola bottle is instantly recognisable)
- Copyright © - Literary works (including writing), art, photography, films, TV, music, web content, sound recordings, software code

³ Heriot-Watt Economic Impact Report (Biggar Economics, 2012) <http://www.hw.ac.uk/business-engagement.htm>

- Knowhow - Any form of technical information or assistance relating to the manufacture or placing into operation of the said products. It also means any practical knowledge, techniques, and skill that are required to achieve some practical end.

Throughout the year the TTO offers training support and advice on IP through a series of seminars or confidential one to one discussions.

3.1. Ownership of IP & Heriot-Watt University policy

Staff

By law, the University owns the Intellectual property (IP) generated by its employees in the course of their normal duties thus any Intellectual Property created by a member of Staff in the course of their employment shall be the property of the University⁴; In particular first ownership of any copyright. For further details, exclusions, revenue sharing or change of employment please see the IP Policy - [Heriot-Watt IPR Policy](#) or contact the TTO.

Students

Any Intellectual Property created by a Student during the course of their study; In particular first ownership of any copyright created, rests with the Student in accordance with the Copyright, Designs and Patents Act 1988, and shall remain the property of the Student except in the provisions listed below.

This policy applies to:

- (a) Postgraduate research work;
- (b) Research work where substantial guidance is provided by a Member of Staff;
- (c) Any work done by the Student, where the Student's tuition fees are paid by a third party with condition on Intellectual Property Rights;
- (d) Work on a particular topic, area or project with Intellectual Property Rights conditions attached.

The University Policy on IPR: [Heriot-Watt IPR Policy](#)

How the TTO can help

It can -

- (a) Clarify who owns the intellectual property produced.

⁴ Section 39 of the Patents Act 1977 and Section 11 of the Copyright, Designs and Patents Act 1988

- (b) If the intellectual property has not been dealt with, make sure that if possible it remains the property of the university.
- (c) If it is not, then make sure the university can get as much benefit as possible in other ways through, for example, licensing and further research rights.

This is not a hugely time consuming matter, and will not slow down the processing of your funding if you talk to us at application stage, but if you're successful in your work it will be invaluable

3.2. IPR Policies of Funding Organisations

If you apply for grant funding of any kind check the details of who will own any IP resulting from the project – doing this at the application stage will avoid complicated and time consuming discussions when looking at Post Project development or commercialisation. For many funders IP is not an issue thus IP would belong to the University; if however they have specific requirements at the end of the project e.g. use of the tool, programme or system created because of their funding then this position should be made clear at the outset. It is important to note that post project work can still be done but IP arrangements would have to be clarified first. Example UK funders include BBSRC, Wellcome Trust, Royal Academy of Engineering, Leverhume Trust, JISC etc.

3.3. IPR Implications of Collaborative Research

If applying for industry or Industry-University collaborative funding of any kind its best to check who will own any resulting IP and have the rights to own/ exploit it commercially - this should be agreed up-front and written into the initial contract to avoid lengthy discussions at a later date. This allows the researcher to clearly define which IP will belong to them and the University and which will belong to the company on completion e.g. each party will be entitled to their own background IP (the knowledge or technology they bring to the project) and parties will usually share any foreground IP (that resulting from the project itself) either in equal split or based on contribution to the project. The staff in the TTO can help you navigate this process.

4. IPR PROTECTION AND COMMERCIALISATION

'IP is an important asset in today's knowledge economy and should be strategically managed'⁵

The Technology Transfer Office's role is to:

- Identify, Protect & Manage the University's IP
- Prepare non-confidential overviews
- Investigate market & identify partners
- Contact potential licensees
- Facilitate confidential meetings
- Negotiate terms of any deal/ collaboration & conclude and sign



Commercialisation Process

4.1. Benefits of commercialisation your research at Heriot-Watt

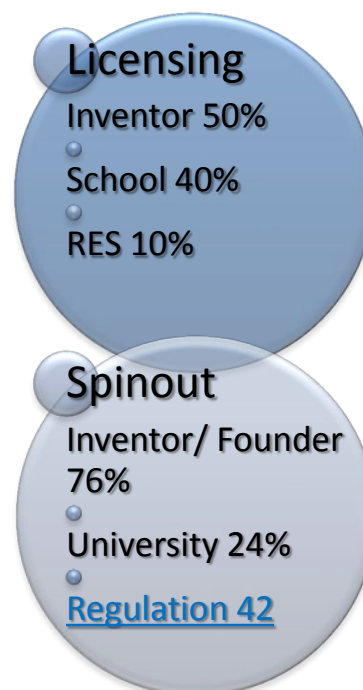
Heriot-Watt operates a generous remuneration scheme for those inventors who successfully commercialise their research through license or spinout:

Researcher/ Inventors

- The practical application of your work
- Develop technology to its full potential
- Wider recognition of your research
- Forging collaborative partnerships
- Gaining financial sponsorship/support
- Revenue Sharing

University

- Public Good & Benefit to Society
- Evidence of research success
- raise institutional profile
- Grow partnerships with industry
- Economic benefits – local/ global
- Revenue stream
- IMPACT – REF2014 etc.
- Recognition for KE activity within University PDR & promotion process



⁵ Australian Government IP Australia <http://www.ipaustralia.gov.au/> 2014

4.2. What do we mean by 'impact'?⁶

Research Councils UK (RCUK) describe impact in the following ways:

- **Academic Impact**

“The demonstrable contribution that excellent research makes to academic advances, across and within disciplines, including significant advances in understanding, methods, theory and application”. When applying for Research Council funding via the electronic proposal submission system, Je-S, pathways towards academic impact are expected to be outlined in the Academic Beneficiaries and appropriate Case for Support sections.

- **Economic And Societal Impacts**

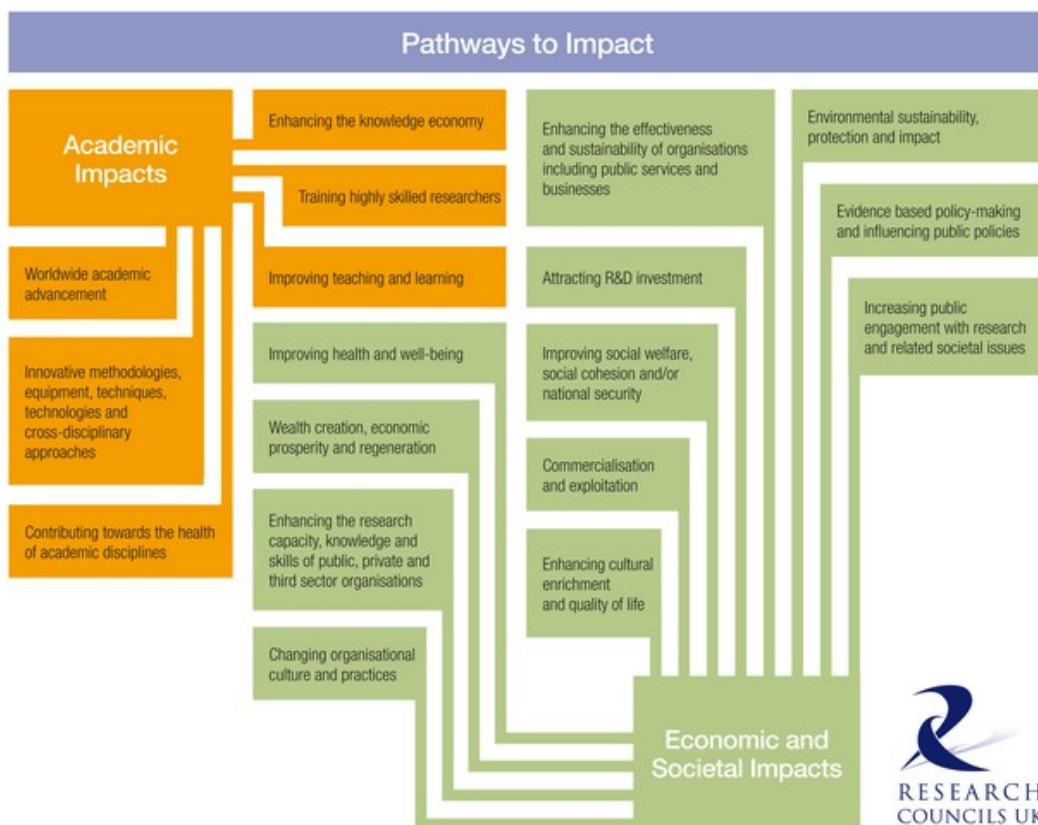
The demonstrable contribution that excellent research makes to society and the economy. Economic and societal impacts embrace all the extremely diverse ways in which research-related knowledge and skills benefit individuals, organisations and nations by:

- fostering global economic performance, and specifically the economic competitiveness of the United Kingdom,
- increasing the effectiveness of public services and policy,
- enhancing quality of life, health and creative output.

When applying for Research Council funding via Je-S, pathways towards economic and societal impacts are expected to be outlined in the Impact Summary and Pathways to Impact. The [RCUK Statement of Expectation on Economic and Societal Impacts](#) and [RCUK Knowledge Exchange Principles](#) outlines considerations that we expect every funding recipient to undertake.

The following diagram provides an indication of the potential range of impacts that can be generated from research.

⁶ RCUK <http://www.rcuk.ac.uk/ke/impacts/meanbyimpact/> 2014



Case studies outlining Heriot-Watt IMPACT case studies for Research Excellence Framework (REF2014) can be viewed here: [Research Impact](#).

4.3. Patent v Publication (or Why Patent)⁷

There are two mechanisms to bring technical and scientific knowledge into the public sphere: 1) Patent Application and 2) Journal Publications, contrary to perception these are not mutually exclusive so publication can take place after patenting.

Traditionally *basic research* (focussing on questions of scientific interest) is disclosed through publication and *applied research* (aimed at commercialising innovation from research) is protected through patents; but these are no longer seen as conflicting outcomes.

The boundary between basic and applied research has blurred over the last two decades and Universities are now realising the potential of extracting as much value from their Intellectual Property as possible.

Scientific publication is a useful means of knowledge dissemination and can be faster than the patent process but the protections of copyright inherent in the written work do not extend to

⁷ http://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Patenting_v_publishing_0.pdf

the ideas, these can only be protected by a patent – disclosing your idea without protecting it means that others can use your idea. If there is any chance of your idea having a potential market impact its worth patenting *before* you publish to protect it.

Combining patenting and publication permits researchers to benefit from the two activities – taking advantage of potential commercial value and being recognised in the academic community for their publications.

4.4. What is a Disclosure?



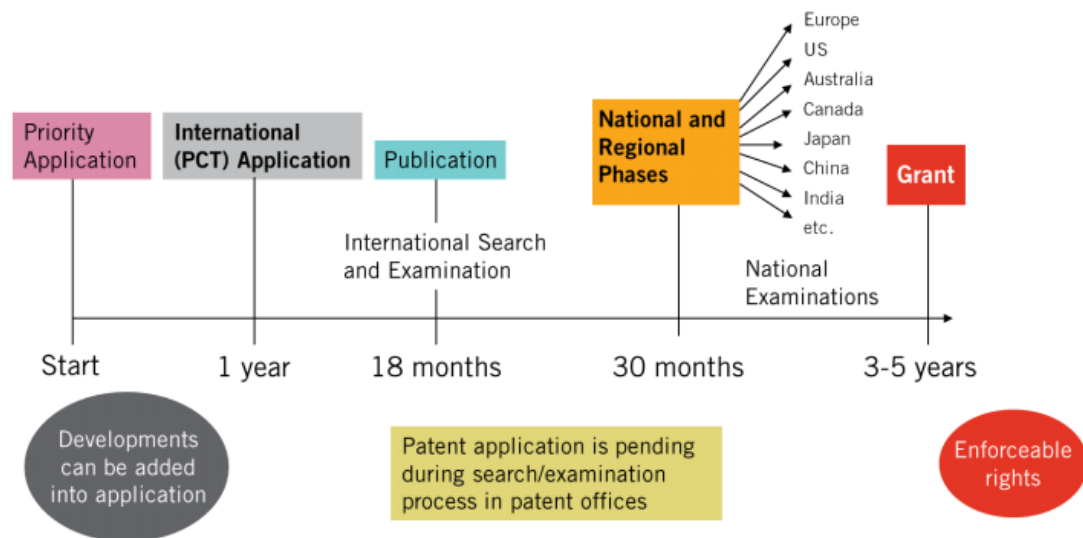
Public disclosure is **any** non-confidential communication of an idea or invention.

4.5. Dangers of public disclosure

It is vital to avoid non-confidential disclosure of a possible invention before an appropriate patent application has been filed. This is because patent law in the UK, Europe and much of the rest of the world requires an invention to be both new and non-obvious over everything known to the public anywhere in the world (the "prior art") at the relevant date. If you make a non-confidential disclosure before filing a patent application, then that disclosure could deprive your invention of novelty and render it impossible to achieve a valid granted patent. A patent can be invalidated by an act as simple as telling your idea to one person who is not under an obligation to keep the idea confidential.

You can talk to professional advisers, such as patent attorneys and solicitors, who are by the nature of their business under an obligation of confidentiality to their clients. Otherwise, you should speak to the TTO, take professional advice and file any necessary patent applications before you make any non-confidential disclosure’⁸.

4.6. The Patent Timeline



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Before the priority application date, the TTO will work with you to understand your idea and guide you in choosing the correct commercial path. The University (in most cases) will assign an external patent agent to work with you on the drafting of a priority application – the cost of this can vary but is typically in the region of £4000-£5000 (2014).

A priority application is “a stake in the ground” and from that date forward the clock starts ticking. During year 1 (the priority year) you can add supporting material to your application (experimental results/ datasets etc. that support claims etc.) but you cannot add anything completely “new” to the patent description.

At month 12, by paying the official filing fees (~£4-5K), the University may enter the “Patent Co-operation Treaty” or PCT phase and during this time – at around month 16-18, the patent will be published online by the International Patent Office in databases such as Espacenet (www.espacenet.com), WIPO (www.wipo.int), Google patents etc. and will be visible to anyone as public domain information. At month 30, there is the option of continuation to the National/

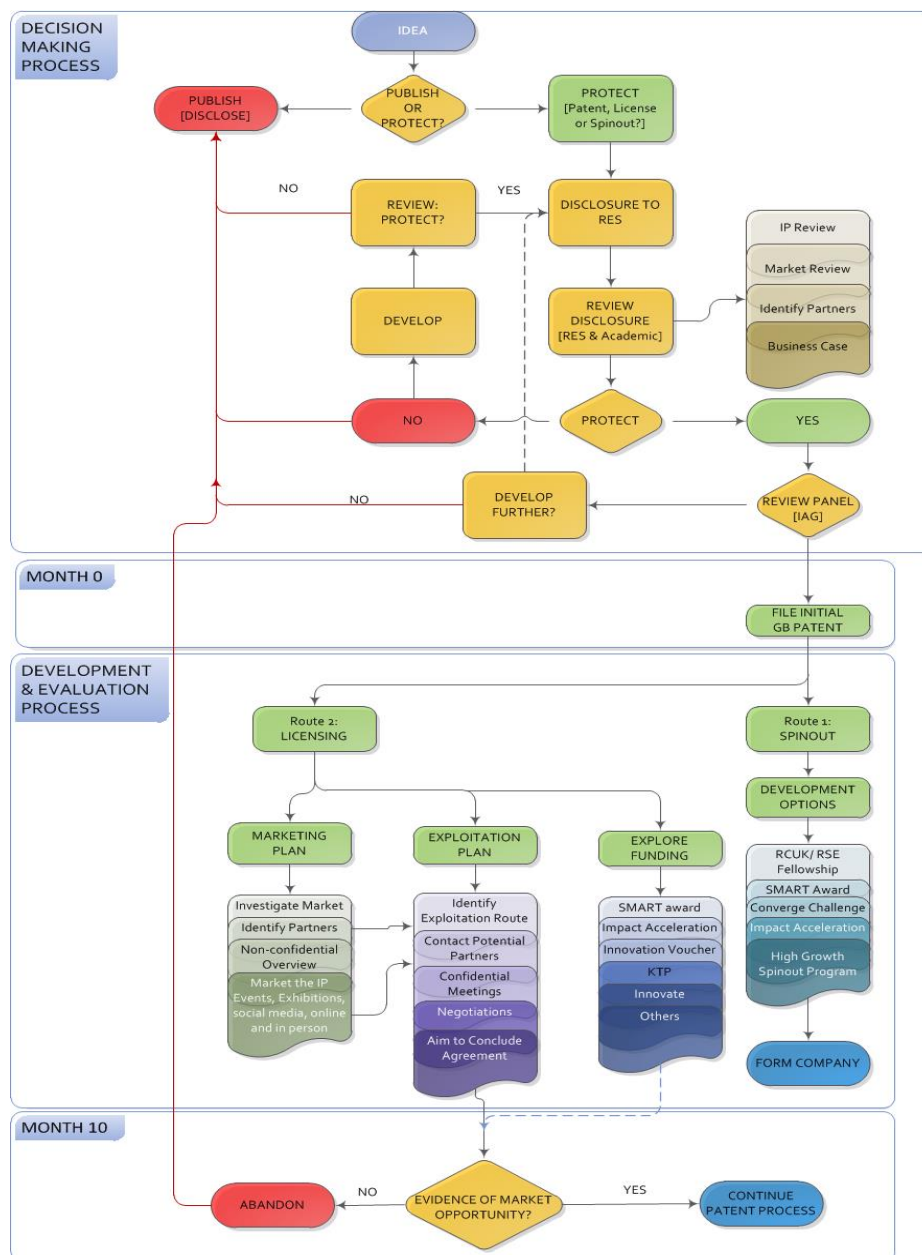
⁸ <http://www.ahpatent.com/documents/Disclosures%20of%20Your%20Invention%20-%20FAQs.pdf> [2014]

⁹ http://www.dehns.com/cms/document/patent_application_timeline.pdf

Regional patent phases – by paying a fee in each patent territory (e.g. USA or Japan) you have, following examination, the option to gain global patent coverage providing a barrier to competition for up to 25 years.

5. CHOOSING THE RIGHT COMMERCIAL PATH

The diagram below outlines the process used within Heriot-Watt and shows the key steps from the initial idea (basic research) to the successful transfer of the technology through either a technology license or formation of a new company.



During the decision making process, a TT Executive will work with you to understand your idea to capture the basic details within an “Innovation Disclosure Form” (or IDF) and then use this information to perform a prior-art search to check the patentability (is it Novel, inventive, capable of application?), identify potential market applications and any establish whether this is a license or a spinout/ start-up type opportunity.

The TT executive develops a short business case, outlining the concept and market opportunity represented by the idea; presenting this to the University Innovation Advisory Group (the IAG) - an independent panel of entrepreneurs, technical experts, senior university staff and external representatives from legal, IPR and funding bodies whose remit is to provide an objective decision on the commercial route (patent & license, patent & spinout, publish – limited opportunity) to be taken with any particular technology.

The aim of the TT executive during the development phase is to **“facilitate an IMPACT for the University”** by promoting the opportunity on a global basis to identified partners in the case of a license opportunity or to help develop the opportunity towards a new venture (spinout/ start-up) in line with the University policy for new companies.

6. DEVELOPMENT FUNDING

There are many different schemes available for funding both the licensing and spinout/ start-up options and some of these are listed below. In all cases, the application to any scheme must be submitted/ approved by Research & Enterprise Services (RES) and supported by a TT or Business Development executive.

Licensing / IPR Development Funding Options:

Scottish Funding Council – “Innovation Vouchers” –available to support any industry (including a voucher specific to Food & Drink) these offer up to £5K in funding (£10K with matched industry contribution) to work in collaboration with a Scottish SME to “solve a problem” or undertake a short innovation project. Facilitated through RES, these vouchers are approved by “Interface – The Knowledge Connection for Business”.

A larger “Follow on” voucher is available (up to £20K) to continue projects with Scottish SMEs but must be matched with a financial contribution from the company.

Interface provides a matchmaking service between Scottish companies seeking to access expertise or technical facilities within Scottish Universities - [Interface - Homepage](#)

“Innovate UK” Innovation Vouchers – £5K maximum, open to working with any UK company. 4 submission dates – October, January, April & July. Application is by the SME Company and the University partner can provide expertise etc. through consultancy/ access to specialist equipment.

Information: [Innovate UK Funding Page](#)

“Proof of Concept” type awards – available from most UK research councils to those who have already held RCUK funding. The awards fund technology development from early stages (low technology readiness TRL 1-4) toward a demonstrator/ prototype. [NERC](#) offer both PATHFINDER (feasibility study type projects) and Proof of concept, STFC offers a [CLASP](#) award while the [MRC](#) Confidence in Concept (MRC-CiC scheme) is focussed on healthcare application of technology and is often in collaboration with NHS Trusts. Calls are open throughout the year and must be submitted with support of the TTO.

Information: Research Support Office ext.3071

EPSRC Impact Acceleration Account (IAA) – EPSRC program grant awarded to leading UK universities to help grow research IMPACT through various KE activities including Proof of Concept, outreach etc. Heriot-Watt IAA is administered through RES with a series of calls arranged throughout the year. Projects must have had previous EPSRC funding and can be Proof of Concept, Outreach, and Company Secondments etc.

Information: Contact RES (Dr Tony Weir ext. 3072)

Knowledge Transfer Partnership (KTP Scheme) – KTP is a company led scheme in partnership with a University as the knowledge provider. Companies work with the University on a specific project and depending on their size receives between 50 – 67% of the project cost from the KTP scheme. A KTP associate (An RA/recent grad) is employed 100% in the company with support from an academic supervisor.

Information: [East of Scotland KTP Centre](#)

Spinout & Start-up Funding:

Scottish Enterprise High Growth Spinout Programme (SE HGSP) – supports the development of “High Growth Spinout Companies” from the research base that will grow to a turnover of at least “£5M in 5 Years” or achieve investment of >£10M in the same time frame. Offering potential funding of >£500K there is a 3 stage application process (Feasibility, Proof of Company & Proof of Investment) that with the support of the TTO requires writing of a “business plan type application form” & presentation to an expert panel. The HGSP is “direct costs only” award and does not pay overheads - all applications must therefore be discussed & approved by the relevant Head of School.

Information: [Scottish Enterprise HGSP](#)

The CONVERGE Challenge® - National Business plan competition open to all Scottish University staff & students, offers a prize fund of >£100K for research to develop a business opportunity (spinout or start up). The Challenge provides dedicated training on business planning, IPR, Finance & teambuilding and runs February through September annually.

Information: [CONVERGE Challenge 2015](#)

Royal Society of Edinburgh Enterprise Fellowship – Enterprise fellowship are 12 month, fully funded posts where a researcher (hosted by their University) has the opportunity to develop a research idea towards a commercial goal (a Spinout/ Start-up company). Application dates are November & May and any application must be approved by the TTO, the relevant Head of School & submitted through RES.

Information: [RSE Fellowship Program](#)

Scottish Institute for Enterprise – SIE wants to help students in Scotland discover their entrepreneurial talent and start up their own ventures. They have competitions and programs aimed at increasing the number of students who see entrepreneurship as an option whilst at or just after University.

Information: [SIE](#)