SELF-EVALUATION REPORT
INNOVATIONS SUPPORT PROCESS

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Self-evaluation Report Innovation Support Process

Executive Summary

KTH has decided to conduct an evaluation of the administrative support to research and education called AAE (Administrative Assessment Exercise). The purpose is to improve the quality of administration with regards to cost, service and competence. The innovation support process is one of two processes being evaluated under the heading Innovation and collaboration.

The innovations support process offers researchers and students at KTH practical support in developing research results or ideas with commercial potential. Rather than making a selection of ideas the idea owner, i.e. the researcher or student, is aided in testing their idea against the market.

The process is made up of five phases, where the central three are to define the business idea in the idea phase, verify the viability of it in the feasibility phase and develop and commercialize the business concept in the project phase. Each phase contains tools, templates, check lists and activities to reach milestone on the way to the market. Each case is assigned a business coach for support throughout the process.

The KTH innovation support process is well developed and implemented, and several other universities have been inspired by it. Through international benchmarking we know that the process holds up well in comparison with Aalto University and TUM for instance. The greatest difference is in the strategic importance of innovation and entrepreneurship at these universities as well as legal implications of the professor's privilege.

From a KTH perspective, the demands on the process is that it should be more integrated into research and teaching at KTH, and that it should be more aligned with the everyday life of a researcher. The perception today is that developing innovations is an add-on to an already heavy and time consuming work load. It is also important that the process prepares the cases for further development and that, when they leave the process, they are investable. Our internal stakeholders highlight the value in having a coach as sounding board and expert on the business related areas of innovation development, as well as access to funding that the process affords.

Our stakeholder analysis also shows that the innovation support process is too obscure within KTH. It would be an advantage for KTH as a whole if the process was promoted as the example of a professional and successful innovation support that it actually is. A strength that both internal and external stakeholders mention is that we are a professional organization with the relevant competence to work in every part of the process. Another strength that became apparent during this self-evaluation is the learning aspect of the process; idea owners who go through the process, even without their idea being successfully launched on the market, gain valuable practical skills. Structure, measurability, scalability and market alignment are all mentioned as advantages of the process.

The main weaknesses are perceived to be the lack of available funding for cases at an early stage, not enough focus on finding a strong individual – champion – to back and develop each idea, and that we are not able to communicate all that the process has to offer. It also needs to prepare the cases better for packaging the innovation and accepting investments in the stages following the process. There is also a risk involved in being very dependent on the VFT funding program. Should VINNOVA decide to change or withdraw the program the process would be adversely affected.

There is a risk in that the process is time consuming for the idea owner leading to low development pace for the case. Other risks associated with the process are challenges to the technical development of ideas and previous contracts and agreements hindering commercialization.

In view of the strengths, weaknesses and risks identified we suggest a number of improvements, including better integration into KTH research and teaching, increased understanding at the top of KTH for the strategic importance of innovations support and strengthening our networks.

Contents

Appendix

1.   The KTH Innovation System

2.   Process map and flow chart Innovation support Process

3.   Reference Groups, External Assessors

4.   Interview and Survey Questions

5.   Tools in the Process

6.   Case studies

7.   Competences in the process

8.   Staff at KTH Innovation

9.   Benchmarking Aalto

10. Benchmarking TUM

1   Introduction

1.1   Background

KTH has decided to conduct an evaluation of the administrative support for research and education. The objective is to improve quality in the administrative departments with regards to cost, service and competence.

14 processes within the university administration have been selected by the President and Dean, of which one is Innovation and Collaboration (area 8). Two departments of university administration, KTH Innovation and KTH Business Liaison, fall under this part of the evaluation which is divided into two processes; the Innovation Support Process and the Partnership Process. KTH Innovation is investigating the former, and KTH Business Liaison is investigating the latter, where the focus is on the structure and method for working with strategic collaboration in a process initiated in 2010 and estimated to generate at least 12 established strategic partnerships between KTH and industry by 2016.

1.2   Goals and Objectives

The objective of evaluating the innovation support process, which is at the core of what KTH Innovation does, is to:

- Articulate and visualize the process both as a whole and in its parts
- Evaluate the effectiveness of the process
- Analyze and identify improvement potential for the process
- Conduct international benchmarking

The goal of the project is:

- A distinct and visualized innovations support process as it stands today, backed up by documentation and tools that describe and are used in the process
- An analysis of the process based on the parameters cost, service and competence
- A number of identified key development areas for continued improvement
- A discernable effectiveness improvement of the process measured by one of the following key indicators:
  - Improved pace of throughput, i.e. time in the process or its various phases
  - Improved throughput measured in number of ideas per time unit that is developed through the phases of the process
  - Increased number of successful closures
- Benchmarking – an analysis of the current status and potential improvements based on the comparison to two-three international organizations of similar kind.

1.3   Definition of innovation

The word " innovation" is used in many contexts and with many different definitions. The definition of innovation in this report is:

The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations (OECD/Eurostat, 2005)

Another concept with varying meaning depending on the context is "commercialization". For the purpose of this report it, is to increase value through adding a business perspective.

1.4   Method

Self-evaluation is a method by which the employees themselves critically review their own work for the purpose of development and increasing quality in the organization.

One objective of a self-evaluation is to encourage development, and provide an opportunity to reflect, and for this reason, new encounters and learning has been important. A project manager, together with two team members, has led the operative work. All the employees at KTH Innovation have been involved in the evaluation by taking part in several workshops. Another two colleagues outside the project group have conducted stakeholder interviews. The self-evaluation is divided into four sections – 1) Process description, 2) Stakeholder analysis, 3) External analysis and 4) Internal analysis.

With the help of a process consultant, the team at KTH Innovation mapped all processes of the department and created a detailed description of the chosen process, the innovation support process. This was done by interviewing employees at KTH Innovation, and in four workshops facilitated by the consultant. Three case studies, written by members of the team, have been added in order to enhance the process analysis with more qualitative information.

A stakeholder analysis was conducted to initially identify relevant individuals based on their influence on the process and/or how it affects them. Stakeholders were divided into an internal and external reference group and information exchange workshops were conducted with both groups. Interviews were held with selected individuals from both groups. A survey was distributed to all idea owners that have received support through the innovation support process. Two of the internal stakeholders participated in creating the case studies in the appendix section. All members of the internal, and a selection from the external, reference group have read and been given the opportunity to comment on the self-evaluation report.

The external analysis included a look at the external stakeholders and how they influence and/or are influenced by the innovation support process. The legal counsel at KTH Innovation studied the implication of legal issues. Two benchmarking studies were conducted, with the Aalto University in Finland and TU München in Germany, by two external consultants with good insight into the respective organizations. During the autumn of 2013, KTH took part in a benchmarking study carried out by the Finnish TUTLI program. The result of this study has been integrated into the report on Aalto.

The internal analysis was completed during a facilitated workshop with an organizational consultant. The exercises and approach was based on the Future Workshop methodology, which supports a reflective and developing critical look at an organization or process. All but one of the KTH Innovation team members participated in the workshop.

KTH has determined that the self-evaluation shall be assessed with regard to the aspects cost, service and competence. We have strived to identify relevant indicators and metrics to facilitate such an assessment.

2   Description of the Process

2.1   Introduction

There are a number of operators supporting innovation at and around KTH. It is in the context of this ecosystem that the KTH innovation support process is set. An introduction to the ecosystem can be found in the appendix section.

2.2 KTH Innovations Key Processes

Initially we enlisted the help of a process consultant to map all processes within the scope of KTH Innovation operations. A total of eight key processes were identified:

1. **Build and manage networks with relevant operators** - Ideas need access to the right network and right support, and external operators need to come into contact with ideas and technologies from KTH. Within this process we identify networks and approach contacts. We also build, utilize and manage networks. The result of this process is qualified contacts that get involved in processes 5 and 6, for instance. Target groups are individuals with ideas as well as business angels, alumni and others.

2. **Market and communicate innovation support at KTH** – Researchers and students need to know about KTH Innovation and what we offer. There is also a need for KTH to demonstrate to external visitors and partners how the innovation support works. Within this process we plan, prepare for and engage in several activities to promote innovation support at KTH. The outcome of the process is researchers and students with increased knowledge of KTH Innovation and external visitors with knowledge of how KTH supports innovation.

3. **Train and inspire to innovation** – There is a need to increase the practical knowledge of innovation among researchers and students. There is also a general need to increase interest in innovation. Within this process we plan, prepare for and engage in a number of activities, such as innovation modules in courses and workshops for research groups. The outcome of this process is increased understanding of innovation and more prepared ideas to go into process number 6.

4. **Support better handling of IP/agreements regarding innovation** - KTH has a need to strengthen its efforts in handling the intellectual property (IP) that is created at KTH. There is also a need for the various policies in this area to be adhered to. There is also a need to feed back knowledge of the effect of agreements already in place to those working on new agreements. The outcome of this process is an improved handling of IP and increased scope for future innovation.

5. **Secure and handle funding for idea development** – There is a need to secure funding support for idea development through the various innovation phases in process number 6. Within this process we identify external financiers, sometimes as a result of process number 1, and handle both internal and external funding/verification programs such as VFT[1]. We support researchers and students with contacts, applications and reporting. The outcome of the process is access to, and the effective use of, funding in idea development.

6. **Support researchers and students from idea to innovation** – the innovation support process, see below.

7. **Facilitate and engage in innovation support programs/initiatives at KTH** - KTH needs a body with the right competence to represent KTH in exchanges with large innovation programs, such as EIT for example. Within this process we support the development and establishing of programs that will support innovation at KTH. We also actively strive to contribute to and make use of resources within the programs. The outcome of the process is a well-run program that supports innovation at KTH and strengthens and complements the KTH Innovation offer.

8. **Collaborate with innovation support at other universities** - KTH has a need to, within the scope of the innovation office initiative, collaborate with other universities to ensure research at those receive similar support. In the proposition "A lift for research and innovation"

(Prop. 2008/09:50) KTH was given the opportunity to establish an innovation office. The development should be in close cooperation with other universities and colleges in the Mälardalen region. KTH, Mälardalen University and Stockholm University have formed a partnership led by KTH Innovation. We also engage in a very close collaboration with the innovation offices at Uppsala University and Karolinska Institute. Collaboration with a number of research institutes and incubators in the region has also been established. The parties have agreed to call the partnership InterAct, an alliance that, based on a strong region, together are dedicated to achieving concrete results on an international market.

All these processes were described in general terms and the innovation support process is the subject of this self-evaluation. A map of all eight processes and a flow chart for the innovation support process is attached.

2.3 Process Description

The innovation support process has been developed by KTH Innovation to support researchers and students from idea to innovation. The process meets the need of researchers and students with concrete business ideas for assistance in developing the idea towards the market (see fig. 1). Researchers, in this context, are both employed researchers and PhD students.
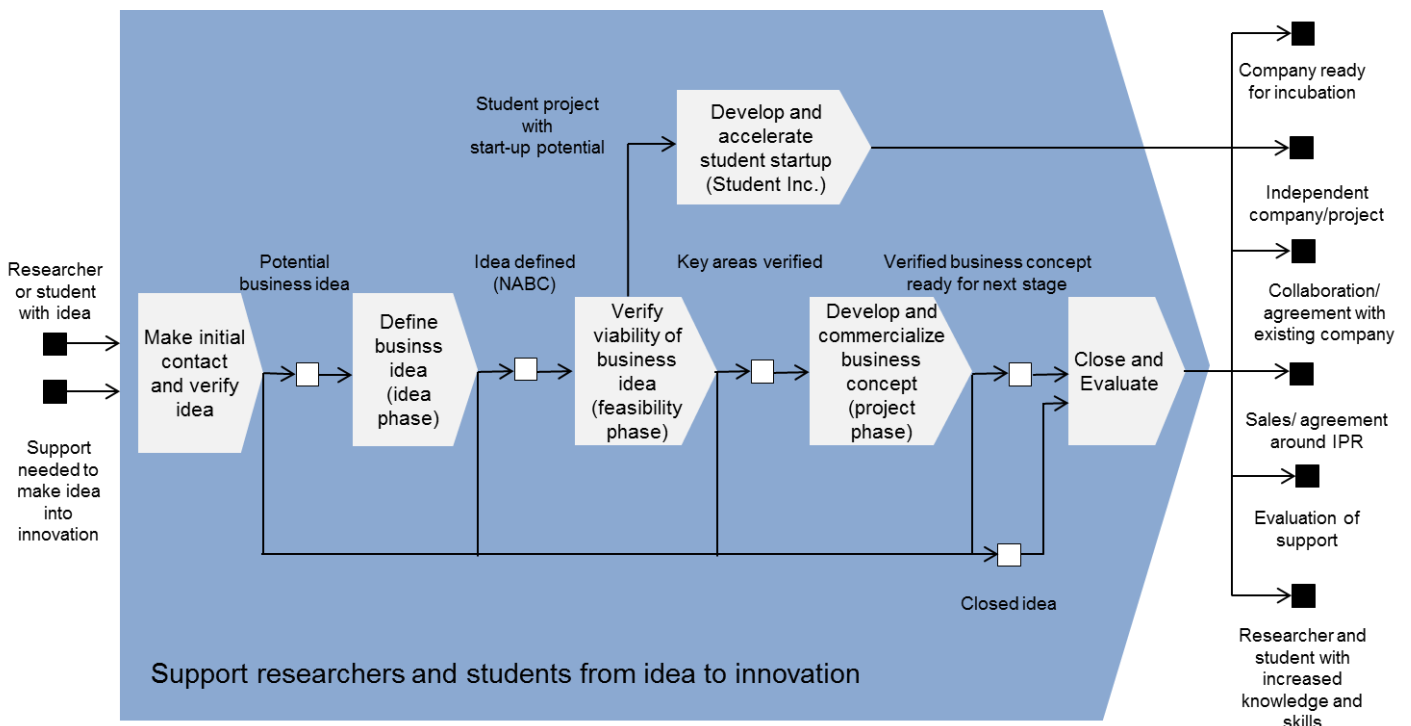

Fig. 1 – simplified flow chart of innovation support process

2.4 Roles/functions

There are 10 roles/functions contributing to the process (see appendix for detailed description):

Role	Description
Idea Owner	• Researcher or student at KTH with an idea • Runs their project with the support of a business development coach
Coach	• Business development coach, employed at KTH Innovation, who coaches and supports idea owners
Coordinator	• Administrative resource employed at KTH Innovation
Legal Counsel	• IPR lawyer employed at KTH Innovation
Patent Engineer	• Patent Engineer employed at KTH Innovation
External Expert	• Person with specific competence within a certain area who advices or concretely supports and contributes to the process • Typically a paid consultant in business development, IPR, technology etc.
Leader of Operations	• Head of Department at KTH Innovation. Has casting vote in case meetings • Makes decisions on goals, indicators and resources in the process
Case Meeting	• Forum for coaches, legal counsel, patent engineer and leader of operations for discussion and decisions on cases in the process
Steering Group Student Inc.	• Made up of coaches and members from the student association Excitera • Makes decisions in the Student Inc. process - the KTH student incubator
KTH Holding AB	• KTH:s holding company – can take ownership in companies and of intellectual property • Can fund and take ownership in cases (within and after the process)

Fig. 2 – functions/roles in the process

2.5 Phases of the Process

The trigger for the process is the need of an idea owner for support to take an idea to the market. In order to support and identify this need and make sure that the idea owner knows where to turn with their idea, KTH Innovation engages in several activities. These are part of other processes, such as "Market and communicate innovation support at KTH" and "Train and inspire to innovation". As a result, concreted ideas are born and identified and the interest of potential idea owners is awakened, leading to knowledge of innovation development and the process.

The innovation support process starts with the **initial contact and verifying the idea**. In practice this means that contact with an idea owner is somehow established. KTH Innovation receives a general, short description of the idea, usually by email to the preferred channel innovation@kth.se. Now the idea is assessed using the following criteria:

- The idea owner is a current researcher or student at KTH
- The idea has a technical aspect
- The idea has an innovative aspect

The idea is forwarded to the most suitable business coach, who contacts the idea owner and books a first meeting, to which other roles may be invited, such as the patent engineer or legal counsel.

The first meeting is conducted according to the set routine and the idea is subject to an initial analysis based on the description. If the idea meets the criteria and the idea owner wants to continue in the process, the next step is to enter the idea phase to **identify the business idea**. These are the criteria for entering the idea phase:

- The idea owner has substantial ownership of the idea
- It is a business idea

- The idea owner wants and is able to develop the idea
- It is an innovative idea with a technical content
- The idea is in a phase where commercialization can begin

Even at this early stage ideas drop out because they do not meet the criteria or the idea owner does not want to proceed. It is not uncommon for the idea to receive support outside the process, such as advice on specific issues. In recent years, the dropout rate after the first meeting has been around 35 %.

In the idea phase, the business idea is defined and an initial description of the idea is created. This always includes, but is not limited to, an NABC – a method of describing a value proposition that the Stanford Research Institute (SRI) has developed – using a template and with the help of the coach if needed. Critical issues such as ownership or IPR may need to be investigated together with the legal counsel and/or patent engineer; although not in any detail but rather to ascertain that no obvious obstacles exist. In order to move on the next stage the idea must have been described according to NABC and the idea owner must show interest and drive to continue the process.

As a rule, the idea phase should be quite short; the goal is to complete it within 1-2 months. This target is ambitious and the median time was just under 5 months in 2013. At this stage too some ideas drop out, mainly because idea owners, despite reminders, do not get back in touch or fail to produce an initial description. The dropout rate in the idea phase was around 30% in recent years.

The next step in the process is **to verify the viability of the idea** in the feasibility phase. The idea is verified against these aspects:

- Market – confirm sufficient market size
- Customer/user – confirm market need and interest (initial customer contacts)
- Technology – show that technology principally works (often lab scale or first prototype)
- IP and ownership – ownership is investigated and IP protection options reviewed
- Team – analyze competence needs and potential early additions
- Funding- enable funding for verification ("soft funding")

A number of tools and templates are used to verify the idea as above. Central to this are the tools in the shape of scales showing clearly and visually where you are today and what the next step in the development is. There is the Technology Readiness Level (TRL, developed by NASA), Customer Readiness Level (CRL, developed in-house) and IP Readiness Level (IPRL, developed in-house). See appendix for descriptions. Each area has a scale and these tools are now being implemented for market, team and funding. The assigned coach is continuously following up the case, coaching and supporting in various ways. The innovation support process now draws on resources from other main KTH Innovation processes supporting verification such as:

Secure and handle funding for idea development: in this phase we mainly work with funding from the VFT-1 program. These are funds from VINNOVA (Swedish Governmental Agency for Innovation Systems) that are administered by KTH Holding locally. Using these funds we can finance crucial verification activities such as market analysis and customer contacts using paid consultants.

Build and manage networks with relevant stakeholders: now we may use the network of contacts with companies and individuals who can advise and give input (through the Innovation Panel, for instance, which is a web based tool for gathering feedback and conduct a structured evaluation of an idea with the help of a large number of respondents).

It is in this phase that student cases can be accepted into Student Inc., the KTH student incubator run by KTH Innovation to develop and accelerate student startups. It is a pre-incubator with an accelerated development process for students who have founded, or are aiming to found, a company. The cases in Student Inc. keep their coach and follow an accelerated, somewhat modified process including pitch training and structured evaluations. They also get access to office space, workshops and other activities suitable for young startups.

The goal of the feasibility study phase is that these five milestones are reached within 12 months:

- Ownerships shall be determined and options for IP protection explored (IPRL at least level 4)
- There should be a clear commercial potential as defined by a sufficient market size
- Customer need and interest has be verified (CRL minimum level 4)
- The technology shall work (TRL minimum level 4)
- The idea owner has enough engagement and ability to drive the idea development onwards

Median time for cases in the feasibility phase was just short of 9 months in 2013.

During regular case meetings, cases are presented where the assigned coach deems the milestones to be reached, and after a discussion a decision is made on which cases should enter the project phase. In this phase **the business concept is developed and commercialized** focusing on:

- Customer/user – increase CRL by establishing customer relations, pilot test and first deal
- Technology – increase TRL by showing that technical concept works (pilots, prototype tests)
- IP and ownership – increase IPRL by securing and developing IPR and handling agreements
- Commerce – develop and verify business model, define and test business and revenue models
- Team – increase TeamRL by developing and expanding team, recruiting entrepreneurs for instance
- Funding – enable funding of project phase and next stage of the process

Work in the project phase should lead to a verified business concept ready for the next step. This means that the typical goals are a deal with a customer, such as collaboration with an existing company or an agreement around IPR. If commercially viable, the goal is also to establish a company that can grow independently or in an incubator. Ideally the project phase should run a maximum of 24 months. Median time for 2013 was just under 11 months but the time spent on development varies significantly between technical areas etc.

More resources are spend on cases in the project phase and the assigned coach often participates very actively, following up, coaching and supporting in various ways. In the project phase we use outcomes of several other KTH Innovation processes that support commercialization. This usually means using the networks we have built for securing funding, such as our network of private investors. It also includes using networks to find competence, mainly individuals who contribute to cases with their commercial or industrial experience or entrepreneurial expertise.

During the project phase there is also an opportunity for idea owners to accept assistance from KTH Holding in a scenario where the holding company takes over IPR and commercialization. In these cases the holding company fully or partly accept responsibility for driving the case when idea owners need further support or lack the time or interest to run the case. This offer is called IP2Market.

The last phase, **close and evaluate**, includes closing projects and transferring successful cases on to the next stage. This next stage varies, and can be an independent company/startup, collaboration/agreement with an existing company or sales/agreements around IPR. A particular action relates to transferring certain projects to a new owner/structure, which typically means handing them over to an incubator. In our case this is primarily STING and the hand-over follows a set process. At this stage, KTH Holding can invest against ownership in a company. In some instances the case does not reach any of the above results, but is simply closed. There can be many reasons behind this and it is a natural part of idea development. Our mission and process have an educational aspect and idea owners who have completed parts or all of the innovation support process have gained valuable knowledge and important skills to facilitate future idea and business concept development.

2.6 Tools in the Process

Attached to each of the phases in the process there are a number of tools and templates that standardize, quality assure, facilitate and increase the pace of idea development. Some tools were

developed by KTH Innovation and some are from other parts of the innovation system or industry. The main tools can be found in the appendix.

2.7 Case Studies

In order to highlight how the process works in practice we have produced three case studies describing different types of cases that have been supported through the process. The case studies are attached.

- Volumental AB – case based on research which resulted in a company www.volumental.com/
- Centive Solutions Gmbh – student case which resulted in a company www.centivesolutions.com
- Project TSV- case commercialized based on collaboration with an existing company and IPR agreement

2.8 Areas of Expertise

We have reviewed the areas of expertise deemed necessary in the process and the specific competences associated with each of these areas (full description in the appendix section). The table below lists these areas of expertise and the development potential that we have identified on a general level. Based on our own evaluation of the collective team competence, and feedback from stakeholders, we conclude that we live up to the demands and expectations of both the process and our stakeholders. All coaches have a coaching qualifications, we have a legal counsel with specific IPR competence and a patent engineer on the team, as well as individuals with extensive experience of business development, funding and technology development.

In the table below we have attempted a general assessment of the areas in most need of attention for future development initiatives. They are marked in yellow, and the areas where we feel that we have sufficient competence to meet demands today are green. As there is always room for improvement we have suggested certain aspects of all areas of expertise that can be developed further.

Area of Expertise	Development Potential
Legal and agreements	• Improved competence in licensing/sales of IPR • More proactive identification and implementation of vital agreements in cases during the process
IPR - mainly patents	• Improved competence in complementing types of IPR such as software • Improved competence in designing IPR strategy • Better at proactively identifying inventions and different kinds of IPR • Handling ”provisional” applications
Market assessment – determine market potential	• Improved competence and structured approach to quantifying market opportunity • Better at identifying and analyzing competitors
Determine customer need, establish customer relations and do business	• Better at supporting the idea owner, and giving them access to, customer contacts • Better at supporting sales processes
Enable funding	• Better at enable and facilitate interaction with private investors • Better at producing financial forcasts and business cases • Broaden competence in finding public funding and support the writing of applications
Develop and verify business model	• Improved support for formulating business model, including method for testing and refining • Better at producing revenue models and associated calculations
Presentation and packaging	• Better at producing and supporting the creation of marketing material, such as teasers, logotypes, websites, demos etc.

Technology development	• Increased competence within some areas of ICT (such as electronics) and some biotech.
Coaching and project support	• Some increase and broadening of competence in project planning such as activities, goals, milestones and project management
Development of team – competence and constellation	• Improve facilitating and supporting the development of teams by identifying competence gaps etc. • Enable and facilitate recruitment process and other around new team members
Knowledge of internal routines and processes	• Increased knowledge of current routines and tools

Fig. 3 - Areas of expertise

2.9 Time Spent on Process

All employees at KTH Innovation filled in time sheets during a four week period in January/February 2014 in order to determine the amount of time spend on tasks within the innovation support process. The result shows that the business coaches spend almost exactly 50 % of their time on tasks within this process. It is the time allocation that we have been striving for. The IPR group is spending 50 % and other team members 16 % of their time on innovation support process related tasks. Around 40 % of the time spend on the process is dedicated to cases in the project phase, and the rest is divided between the idea and feasibility study phases. This snapshot is in line with the time sheets some members of the team have been filling out over the past few years.

The time idea owners spend on the process must of course be added to the time that KTH Innovation dedicates to it. It is very difficult to put a number on that as each case is unique. In some cases, a single idea owner will spend a lot of time on the idea, whereas in other cases a number of people will sporadically focus on their idea development. It is not always possible for a researcher to prioritize innovation development and KTH Innovation has no influence over their allocation of time.

2.10 Cost

KTH Innovation operations are funded to around 50 % by the Ministry of Education and Research, money earmarked for the Innovation Office, 40 % by KTH and10 % EIT KIC's ICT Labs and InnoEnergy (EIT is a body of the European Union, whose mission is to increase European sustainable growth and competitiveness by reinforcing the innovation capacity of the EU).

Work within the innovation support process is mainly dependent on time spent by coaches and other team members at KTH Innovation. The external interventions in the cases are mainly funded by the VFT program.

Based on estimated time spent as above and the collective salary cost for the employees inclusive of OH, the total cost of work within the process is estimated at SEK 5 million per year. Approximately 40 % of time is spent on cases in the project phase, and the remaining 60 % on cases in the earlier phases. During the year we have had around 40 cases in the project phase and around 100 in earlier phases. This means an average cost of SEK 50 000 per case in the project phase and SEK 30 000 per case in earlier phases.

The total number of individuals receiving support through the process during the year was 397, giving us a cost of SEK 12 500 per individual. Another important measure is the number of successful closures. In 2013, the process yielded 19 successful closures, which adds up to a cost of SEK 263 000 per successful case. We have also calculated the external funds, mainly from the VFT-1 program, which have been used by cases in the process. In 2013 a total of SEK 4 million were allocated to 50 cases which works out at an average of SEK 80 000 per case. Typically this has been used to pay for business consultants, market research, patenting and prototyping.

On top of this, cases in the process have attracted funding for commercial development amounting to around SEK 11 million. Included in that figure are larger contributions from various VINNOVA programs and KIC InnoEnergy as well as investments by private persons into cases in the later stages of the process.

2.11 Relevant Key Indicators

The process has been built for scalability and large volumes. Key indicators, supported by a CRM system, are followed up on a regular basis. These indicators may be relevant when assessing the process:

	2009	2010	2011	2012	2013
Influx of new ideas - number of first meetings (of which researchers)	101 (52)	135 (79)	169 (75)	181 (105)	187 (81)
No. of ideas entering idea phase	30	115	109	119	114
No. of ideas entering feasibility phase	26	66	81	87	74
No. of ideas entering project phase	13	11	26	17	19
No. of closed cases categorized as successful	14	5	21	15	19
No. of deals with customer	3	4	12	10	14
No. of companies founded	4	8	12	17	17
No. of companies transfered to the incubator STING	2	1	1	3	5
Sum secured funding for commercial development (SEK million)	3.5	7	8	8	15
No. of projects accepted into Student Inc.	-	-	16	8	13
No. of novelty searches	15	18	23	22	21
No. of patent applications	13	15	14	6	14

Fig. 4 – Selection of indicators from the process

3 External Analysis

3.1 Laws, regulations and external requirements

As part of the organization KTH, we must take into account the laws applicable for KTH at large. At an overall level, regulations such as the Higher Education Ordinance, the principle of public access to official records and the Secrecy Act, affects our work. The regulation on state aid, prepared at EU level, also has relevant impact.

The Higher Education Ordinance consolidates, although not without debate, the so -called third task, where the university is expected to interact with the community and create societal benefit of research results. The Professor's privilege states that a researcher at a Swedish university him- or herself owns the rights to their results and this is fundamental to our work. As the University does not itself own the IP we are managing, our process requires that we work closely together with the rightholder. The principle of public access to official records means that information that is submitted to us may be deemed to be public. The Secrecy Act allows some degree of confidentiality. Awareness of this is

necessary especially in a context where IP is subject to intellectual property rights protection. Rules on state funding to universities regulate how a governmental body is allowed to use the designated state funding and affects our work through i.e. the prohibition on the use of the funding for IPR protection or to take equity/partnership in companies.

The debate on possible tax consequences for the people who benefit from the advice we offer also affects our work. We must consider if our counseling involves private economic benefit for the rightholder and if this is subject to tax issues etc. The state aid regulation raises similar issues. We must ensure that our activities does not give certain companies, research -owned or owned by stakeholders to research results we manage, are rewarded in ways that conflict with the state aid regulation.

3.2 Most Important External Stakeholders

Our definition of an external stakeholder is an external entity interested in the innovation support process that can both influence and be affected by the process. We have grouped the stakeholders according to whether they have a great or intermediate influence on the process.

The following external stakeholders are deemed to have a great influence, which means that they can actively influence what happens in the process and/or how it is laid out. VINNOVA and the Ministry for Education and Research, in their roles as financiers, exercise great influence both on the design and content of the process. EIT (ICT Labs and InnoEnergy) and STING are important collaborative partners who greatly influence parts of the process. Private investors, external experts and consultants such as patent attorneys, entrepreneurs taking a stake in particular cases and potential customers collaborating with cases may influence what happens within the process.

The following stakeholders are deemed to have an intermediate influence, but in certain cases the influence may be great. We have, for instances, placed the Swedish Energy Agency in this category. They may not have a great influence on cases in general, but in the cases that receive funding from them they do. Other financiers such as Almi/Innovationsbron, who invest in the stages after this process, are in this category. The Ministry of Enterprise, Energy and Communications takes a great interest in innovation issues and has a great influence on VINNOVA, for instance, but the direct impact on our process is limited. PRV (Swedish Patent and Registration Office) is an important government agency but exercises less influence on the process. The research institutes collaborate with a few cases in the process but do not really influence what happens in it. Stakeholders such as the foundations Stockholm Science City, Flemmingsberg Science and Electrum are interested in the process but do not have much opportunity to influence it. The collaboration with other innovation offices and other organizations such as the business plan competition Venture Cup is important, but they have limited influence. We collaborate closely with UU Innovation in the area of IP, and they have relatively large scope for influencing the process on IP related issues.

3.3 Changes over Time

The Ministry of Education and Research has become a more important stakeholder as they fund the innovation office directly. VINNOVA is also increasingly important as their VFT program facilitates a deeper and broader support within the innovation support process. It has also meant that we can work much more actively to strengthen teams with external competences, bring in consultants for particular assignments and recruit potential entrepreneurs to mainly the research based cases, thus increasing our network of valuable contacts. An important target for cases receiving funds from the VFT program is the early establishing of contact with potential customers/collaborative partners for the development ahead. This is usually done during the feasibility and/or project phase, often with the objective of carrying out pilot studies together with potential customers.

Our scope for attracting the interest of private investors in our "early" cases has increased in recent years. Our business angel network EarlyBird was established about two years ago and consists mainly of KTH alumni but also other individuals interested in investing time and money in early innovation. The innovation support process and the VFT funding contribute to limiting the risk for private investors, who would otherwise be more reluctant to invest in such an early phase.

Almi/Innovationsbron was previously much more important to the process as they handled all funding for early innovation. Today, most of the funding offered by Almi/Innovationsbron applies to stages after the innovation support process, even though the Almi pre-study funds can still be used for cases in our process. The KTH participation in the KIC's (EIT ICT Labs and EIT InnoEnergy) has both contributed to the work within the process and increased the odds for individual cases to get funding. The KIC's have also opened up a large European network which both KTH Innovation and the individual cases can draw on. Within ICT Labs, for example, the cases we work with in that field have the opportunity to find partners, co-locate at Co-Location Centers at other nodes like London or Berlin, and have the support of a coach at a different node.

It is worth noting that the KIC's also bring challenges such as unclear IP rules and difficulties in informing idea owners of the implications of participating in a KIC due to the complex contract structures etc. The fact that the KIC's comprise multiple research collaborations across many nodes, and with multiple IP regulations, makes it a complex environment. There is a risk that the IP of our idea owners, when they conduct research within a KIC, is subject to IP regulations that negatively affects the innovation support process. It is therefore important to have knowledge of which agreements and IP rules are in force in each particular case, and it is here that our collaboration with the Legal Department and Research Office is especially important.

STING remains a very important partner in the process, and during recent years we have established improved and more effective processes for transferring cases from the KTH Innovation process to STING. We have also initiated a new collaboration in the area of recruitment, where we since the autumn of 2013 jointly develop and use STING's recruitment network "Search for Talents".

3.4 Expectations for the Future

It is difficult to predict the future. We believe that innovation support will continue to have high priority at the Ministry of Education and Research and VINNOVA, and we hope to receive a sizable share of funding in the future too. We do, however, need to broaden our portfolio of investment options for the cases we support. We will have to focus more on recruiting external entrepreneurs to our cases. Today we are too dependent on researchers developing innovations as a side line. We also believe that we will need to work even closer to existing large and small companies to verify and develop technology. We will continue to grow our international network of contacts with both companies and investors, but also with academy for knowledge exchange.

3.5 Benchmarking and Comparison to Other Organizations

Today there are 12 innovation offices in Sweden being funded under the innovation office program. The 12 offices are all located at a university and a majority of them are closely collaborating with universities and institutions in their region in the same way that KTH partners with Mälardalen University and Stockholm University. The operations at these offices vary from one university to the next, mainly due to the nature of the faculty, but also due to previously established innovation support systems in the regions. At some universities, some of the support offered by the KTH innovation support process is delivered by the incubator. This is the case at Karolinska Institute for instance. Linköping University and Lund University have chosen to work in a similar way to KTH, although in Linköping the operations fall under the holding company.

Internationally there are many good examples. We have chosen to conduct two international benchmarking studies as part of this self-evaluation; Aalto University in Finland and Technische Universität München (TUM) in Germany. An important factor when comparing our innovation processes is the fact that, due to the professor's privilege, ideas are entered into our process on a voluntary basis. At the other two universities, researchers are obliged to report their results to the innovation support organization. Another difference is that in the two international examples, the universities own the research results, whereas in the Swedish system the individual researchers own their results. Below we have summarized the result of the benchmarking, the complete reports can be found in the appendix section.

3.5.1 Aalto University

The organization Aalto Centre for Entrepreneurship (ACE) offers research groups and students commercialization support and would be the equivalent of KTH Innovation at Aalto. 13 people are employed at ACE, at KTH Innovation there are 12. The study has focused on the ACE innovation support process and gives an overview of the complete innovation support system at Aalto. The AEC innovation support process contains four phases; Application phase, Evaluation Phase, Concept phase and Validation phase. The activities performed during the four phases are similar to those in the KTH innovation support process. The ACE process, however, is a lot more selective, which is probably an effect of the design of the Tekes TUTLI program. Projects that do not get funding through the program exit the process and it is not entirely clear what happens to them after that. A consequence of this is that only about 4 % of projects entering the second phase actually goes through to the last phase. The equivalent at KTH Innovation is 20 % of ideas entering the idea phase (evaluation phase at ACE) go through to the project phase (Validation phase ACE).

According to the study, some of the characteristics of the ACE process is; the personnel's business competence, the short average handling time of 150 days and the total budget of around EUR 600 000 for cases reaching the third phase. In addition, ACE has the articulated backing of the university management and administration. The importance of collaborating with industry and creating value from research results permeates the whole university. There is even a bonus program that rewards researchers who submit results to ACE and contributes to patent applications etc.

The challenges facing ACE are much the same as KTH Innovation are experiencing. One of them is improving the internal and external marketing. Up until recently they relied to a large extent on "word of mouth" but during 2013 initiatives were taken to be more proactive in selling to the different schools using a similar approach as KTH Innovation. The limited knowledge about commercialization among researchers is also perceived as an obstacle. The researchers behind the discovery are central to the future commercial development, and when they do not value or prioritize participating in the process the result is often sub-standard applications that are not granted funds from TUTLI. Another challenge mentioned is "cleaning out the pipeline", which we also share. Both organizations feel the need to close down some of the inactive cases in the process in order to not waste time and resources.

In the study by MIT Skoltech 2013, referred to in 4.3, Aalto finished just after KTH in the ranking of the best university innovation ecosystem for technical innovations.

3.5.2 Technische Universität München - TUM

If you google TUM university, the first hit is TU München – the entrepreneurial university which gets you straight to the official website. The UnternehmerTUM center (Unternehmer means business man/entrepreneur) is a central and strategic component in the realization of TUM – the entrepreneurial university.

Founded in 2002, the center is organized into three different companies: UnternemerTUM GmbH – tasked with inspiring researchers to think innovatively and equip them with tools through education and guidance; UnternehmerTUM Projekt GmbH – responsible for arranging business developing collaboartoin with established and startup companies; and UnternehmerTUM Fond Management GmbH – investing in spin offs with front end technology and a large international growth potential. Our innovation support process can be compared to some of the activities in the first and second company above. Around 50 projects are completed annually, compared to 19 successful closures at KTH Innovation. TUM is, however, a much larger university.

As becomes apparant from the case study, the President Wolfgang Herrmann is a pivotal figure in the development of the entire innovation support system. He has been the President for the past 17 years and formulated, during his first 6 years' tenure, the strategy and process now implemented at TUM – the entrepreneurial university. The continued development is conducted in the partly externally funded project "TUMentreprenurship". The project is headed up by a board comprising the President, two

Vice Presidents and the Chairman of the Board at UnternehmerTUM, and is funded with a contribution from BMW of EUR 2,5 million annually.

In the study by MIT Skoltech 2013, TUM ranked just above KTH.

3.6   Exchange of Experiences

There is plenty of opportunity for exchange of knowledge and experiences between the innovation offices in Sweden. Twice a year, managers at the innovation offices and holding companies meet through the holding company association FUHS (Association for university holding companies in Sweden).The organizations SNITTS (Swedish Network for Innovation and Technology Transfer Support) regularly arrange meet-ups on specific topics to share best practice. On behalf of the innovation office at KTH, InterAct, KTH Innovation arranges annual study trips in order to find and evaluate new processes, models, methods and tools. Another objective is to network internationally for the benefit of both our idea owners and InterAct. The first trip was to California in 2012 and the most recent one was to Israel in 2013.

3.7   Results of Exchange of Experiences

The national exchange of ideas and experiences has been very useful and there is a genuine will to share experiences and tools to improve the process. KTH Innovation has on many occasions shared information about the innovation support process with other universities, Linköping and Uppsala being two examples.

Our partnership within the innovation office – InterAct – aims to make the innovation support at the three universities (KTH, Mälardalen University and Stockholm University) broader, deeper and more effective through collaboration between the existing innovation support organizations. For 2013 Stockholm University received funds to start their own innovation office. However, the parties have agreed to continue the InterAct collaboration and the new innovation office will be built around the KTH innovation support process.

Exchanges between holding company CEOs and innovation office managers are very fruitful. The group is often asked to take part in dialogue with the Ministries for Education and Research and for Enterprise, Energy and Communication, VINNOVA and others. It played a considerable part in the re-structuring of the VFT program, which to a great extent has influenced and professionalized the way we work in the innovation support process.

In terms of international exchange we have generally been boosted in the work we do in the innovation support process. The main differences, as far as we can see, are access to funding for developing cases, different legal conditions, mainly the professor's privilege, and the strategic importance that the university's leadership see in innovation support. In our interactions with corresponding organizations abroad we have discovered that we struggle with much the same challenges and that there is consensus on the subject of how to run operations for maximum effect. The InterAct trip to California and Silicon Valley in December 2012 did, for instances, lead to the opportunity for one team member to spend seven weeks as an intern with a handful of organizations in Silicon Valley and San Francisco. One part of the internship was to develop the program Startup Inspire in collaboration with Silicon Vikings. Startup Inspire is a tailored program for young startups with Internet/media and during the autumn 2013 six cases from the innovation support process traveled to Silicon Valley to take part. There is also a great deal of knowledge exchange within ICT Labs. Several coaches from KTH Innovation participate in the so called Business Development Accelerator (BDA) program. The program, which is open to coaches from all nodes in ICT Labs, aims to support international development and expansion for ICT based cases.

4   Internal Analysis

4.1   The Process in Relation to Research and Education at KTH

KTH's management has assigned to KTH Innovation the task of giving innovation support to researchers and students at KTH. The current organization was launched in Spring 2007, and during the first years focus was on supporting researchers. Since 2010 more emphasis has been placed on offering similar support to students. In 2011 a student incubator – Student Inc. - was launched.

In 2008 the Swedish government decided to open innovation offices at eight Swedish universities (another four were subsequently added), of which KTH was one. According to the government's description, the innovations offices were intended work more or less in the same way that KTH Innovation was already working. The main difference was that the government wanted to see universities who were granted innovation offices collaborating closely with those who did not. Consequently, KTH's management decided to incorporate the innovation office in KTH Innovation and start the partnership InterAct with Stockholm University and Mälardalens University. Activities in InterAct are led by KTH Innovation and strive to make the innovation support in Mälardalen broader, deeper and more effective through collaboration between the existing innovation support organizations. Although the building of the innovation support process started in 2007, the funding for the innovation office meant that it could be further developed and improved.

The innovation support process relates to KTH research and education in such a way, that it offers researchers and students a method for taking their research result or business idea to the market. The volumes are relatively large, up to 200 ideas a year come into contact with the process, and it is important that it is scaled to handle this case load. It is also important that it is tailored to each individual development project and that it is a learning process. A student or researcher will often have a lot more than just one idea during their time at KTH, and even if the first one does not go all the way to becoming a new product or service on the market, going through the process should have resulted in more knowledge and new skills. With the next idea, the ground run will be shorter and the first steps will be a lot easier.

Studying at KTH often leads to discoveries or ideas about technical products or other solutions that would benefit society. Entrepreneurship courses are often offered as part of the programs and the innovation support process can be seen as a complement to them. It is foremost a process leading to practical skills, and it has an educational purpose as well as a focus on bringing new innovations to the market.

When it comes to research we know that the innovation support process contributes to researchers being able to spend less time on commercialization and more time on research. By using the process as a hand rail, and all the tools available, it is possible to take a research result from the lab to the market a lot quicker than it would be if researchers had to do all the work themselves. Sometimes the perception is that the innovation support process is a layer on top of the actual research, i.e. something that you spend time on after the research project is concluded. We see a great advantage in integrating the process even deeper into all research environments at KTH. Many of the conditions that regulate commercialization of results are already agreed on in the research funding agreements, which underlines the importance of understanding the terms of the innovation support process at the beginning of a research project.

One of the demands of the innovation support process is that it should counteract the premise that, in order to reach the market with a result, a researcher has to become a full time entrepreneur. The same goes for students, who should not have to sacrifice their degree in order to focus on their innovations. By following the innovation support process it should be easier and less time consuming to develop an idea than if you do not follow the process. Because an integral part of the process is building a team around the idea, with external competence in business development, sales and marketing, the foundations are put down to ensure that researchers in time can return to their academic careers to a larger extent than if they were solely responsible for the project.

4.2   The Main Internal Stakeholders

It is quite natural to start a paragraph about the most important internal stakeholders by mentioning what we call our clients – KTH researchers and students who have a research result or business idea that they want to investigate for commercial potential. The process is built around their needs and priorities.

KTH management, in the role of commissioning body, has an interest in the results delivered by the innovation support process. The focus on innovation is increasing in society as a whole, and being able to show concrete results of research and education at KTH in the shape of innovations reaching their market ought to be very important for KTH as a brand. It is also a fact that a prerequisite for the new large research grant programs, such as Horizon 2020 and EIT, is that participants have well-functioning innovation support processes in place.

The Deans of the KTH schools are important stakeholders. Each school has a Presidential Contract and in order to fulfill its obligations a close collaboration between the school and innovation support is essential.

Teachers and researchers who are not personally involved in the process are keen to see it to provide maximum support to idea owners who choose to develop innovations. An effective innovation support process limits the risk that researchers and students become full time entrepreneurs instead of continuing their research or studies.

4.3   KTH Strategies Governing the Process

KTH's strategic plan and vision impact the innovation support process, but not in a concrete sense. Innovation is frequently mentioned both in the strategic plan for 2013-2016 and Vision2027 without giving concrete examples of what this entails. It is not perceived to be a part of the university's overall strategy in the same way as in the case of Aalto or TU München, for instance. Our benchmarking study shows that the KTH innovation support process, with its results and scope, can be favorably compared to these universities. During 2013, MIT Skoltech Initiative conducted a benchmarking study of technology innovation ecosystems where 81 international experts answered questions on the subject. According to their feedback, KTH tied with UC Berkeley in 10th place globally for having created the most successful ecosystem. TU München was ranked at number 9, and Aalto was not in the top ten.

The commission from the government regarding the innovation office, which KTH elected to place at KTH Innovation, has led to a doubling of funding for the department. This in turn has resulted in further development and enhancement of our support, including the innovation support process. The expectations on the innovation office are set out in the letter of regulation and are followed up in KTH's annual report.

One recent development is that collaboration with KTH Innovation as a whole, including the innovation support process, is part of many KTH schools' development plans. One example is the school of industrial technology and management who mention initiatives in innovation and entrepreneurship in collaboration with KTH Innovation as one of their four focus areas.

Internal regulations also have impact on our process, mainly in the form of guidelines and frameworks. Rules surrounding centers, researcher guidelines for outside activities and student project work are examples of such regulations. The impact consists in us having good knowledge about the rules that apply and informing the rightholder. Further, KTH has recently adopted a policy for management of intellectual assets created at KTH. The policy was a Presidential directive and chaired by the Vice President for Research and the Executive Director. The operational work was performed by KTH Innovation in collaboration with the Legal Department and Research Office. The policy establishes core values and principles for ownership of and right to use IP, terms of entering into contract research and collaborative research agreements, authorship and intellectual contributions. The policy is an important tool to manage IP in a professional manner at KTH and legitimizes and reinforces our process and our mission.

4.4 Similarities and Differences Between Schools

Our analysis shows that it is difficult to draw any conclusions about differences between schools with regards to the innovation support process. We have developed innovations with researchers and students from all KTH Schools and research platforms, but the number from each school varies. The breakdown of research ideas by school shows that, since the start of measuring the innovation support process in 2008, we have had an influx of ideas from all schools each year.

	ABE	BIO	CHE	CSC	EES	ICT	ITM	SCI	STH	Totalt
2008	4	5	6	5	5	8	13	6	3	55
2009	5	4	10	7	2	6	10	5	1	50
2010	7	3	12	10	10	7	12	7	5	73
2011	9	2	10	7	11	10	12	2	8	71
2012	7	5	14	9	9	13	18	9	16	100
2013	1	4	6	12	12	15	16	3	6	75
Totalt	33	23	58	50	49	59	81	32	39	424

Fig. 5 – source of ideas

The competence at KTH Innovation is well suited to working with ideas from all schools and resaerch platforms. A number of individuals in leadership roles at KTH's schools have personal experience of developing ideas through the innovation support process.

Our figures show that we get around 20 % of new ideas from researchers or students who have already developed an idea with our help. Another 20 % have been recommended by someone who knows us. 37 % of ideas come from people who have met KTH Innovation in some way (participated in a competition or workshop we have held, had an idea before or seen one of our presentations to researchers). Telephone campaigns and email promotions have generated 12 % of our idea influx during the past six years.

5 Stakeholder Analysis

5.1 Stakeholder Analysis

We have analyzed our most important internal and external stakeholders based on the parameters influence and interest.

Those with significant influence and interest in the process have been categorized as key players in the process. In this group we find idea owners, financiers such as VINNOVA and the Ministry of Education and Research, Deans, and external experts or companies collaborating in cases.

The stakeholders with significant influence and lower interest have been categorized as those that we need to engage more with. These are stakeholders that we would like to turn into key players but who, for various reasons, are not today. Here we find the KTH leadership (even though some members of this group belong in the category above), the Legal Department and Research Office.

Those with limited influence and significant interest are stakeholders that we need to communicate with about the process. It may be researchers and students interested in innovation but not currently developing an idea, the KTH research platforms and the student union. We view these stakeholders as our potential clients and collaboration partners that we need to keep up to date and informed.

Stakeholders with low influence and interest in the process we have categorized as a group we need to acknowledge, but not spend too much time and resources on today. In this group we would find

researchers and students who have no interest in innovation at all. They may well become interested but right now are not. To this group it makes more sense to market KTH Innovation's educational services, such as workshops and lectures.

5.2 Feedback from Internal Stakeholders

As part of the stakeholder analysis we have examined the needs and expectations that the idea owners have in relation to the process. One way of doing that has been to review the evaluations we conduct when ideas leave the process. A survey is sent to all idea owners at the end of our collaboration, regardless of where in the process we part company. Ideas that are closed in the idea phase get a shorter survey, whereas the surveys for feasibility and project phase are identical. The response rate for all three surveys is 32 %, but varies significantly between the phases. Only 24 % of idea owners leaving during the feasibility phase respond, but as many as 50 % respond after the project phase.

The survey results (2011-2013 aggregated, 271 surveys sent, 92 respondents) show that we have an overall customer satisfaction of 4,7 on a 5 point scale, and 99 % would recommend KTH Innovation to others (83 % say "yes, absolutely" and 99 % reply "yes, absolutely" or "yes probably"). 54 % say we exceed and 2 % that we do not live up to their expectations.

In addition to these general questions we ask the idea owners to rate these five areas of support in the process: funding, IP & patents, market analysis and customer contacts, agreements & law, and information materials. The highest scoring areas are support for funding and IP & patents.

When asking what kind of support is missing at KTH Innovation the answers varied more, but a clear weakness became apparent – the lack of funds available for developing innovations. The funding options for cases has improved in recent years through VFT, but there are still cases that for varying reasons do not meet the criteria for these funds. Other weaknesses highlighted were better contacts with industry and investors, and help to produce commercial agreements.

As part of this self-evaluation we sent a survey out to 330 current and previous idea owners with personal experience of work in the innovation support process, including 25 alumni who went on to start companies. A total of 105 people responded, a response rate of 32 %. The survey asked how the idea owner perceived that the impact of working with KTH Innovation had had on their practical innovation development skills. A majority, 73 %, responded that they perceive an improvement, while 27 % perceive no or only a small improvement.

It is worth noting that some of the respondents had been successful with their innovation projects while others had not. The learning was significant either way, and that is one of the central aspects of the process. The fact that nearly three thirds of respondents had gained practical skills deserves to be highlighted in the evaluation of how well the innovation support process delivers results.

Further input from the internal stakeholders can be found in chapter 6 below.

5.3 Feedback from External Stakeholders

The external stakeholders have had one very clear message to us – you have to be more visible! The work that you do with those who find you is great, it is often excellent even, but how do you know that all who might need your support know you exist?

Many of the external stakeholders have also remarked on the KTH leadership's low profile on innovations issues. They argue that it should be strategically important for KTH to have a great innovation system. Those of the stakeholders who know the Swedish innovation ecosystem inside and out confirm that our offer and process compares very well, and sometimes outperforms, other universities' equivalent. Still they would name other Swedish universities as being better examples due

to the high profile of their innovation support system in communication and marketing of their institution. The internal stakeholders are much of the same opinion.

Further input from the external stakeholders can be found in chapter 6.

6   Strengths, Weaknesses, Risks and Actions

6.1   Strengths

For our clients, i.e. the idea owners, the access to a dedicated coach giving feedback and commercialization support as well as being a sounding board is the main advantage. Other strengths is the access to support around agreements and patents, funding and networks. The hand rail in the shape of a structured process with defined phases is also seen as strength.

Knowledge and understanding of the innovation support process varies significantly among external stakeholders, some are very familiar with it and others know it only a little. For a number of them it was difficult to identify strengths and weakness, but when looking at the aggregated feedback a few strengths stood out. The learning, that idea owners gain insight and practical skills even if their case is not successful, was one of them. That there is a structure and a hand rail to hold on to, and that cases emerging from the process are well prepared for investment and further development were also mentioned as strengths.

One strength that our internal and external stakeholders agree we have is that we are overall a professional organization with the right competence to run the entire process.

The strengths that we identified ourselves is that the process is structured and has market focus, is scalable and measurable. Our work in the process is in many ways effective and result oriented, with the right competence to carry out the activities, a good response time and accessibility. We also maintain that we are cost effective as shown in the calculations made for AAE 2014.

6.2   Weaknesses

Idea owners highlight weak spots mainly in funding. To secure funding in the earliest phases i very important for almost all cases, and it entails a lot of work for the idea owner. The scope for early funding of cases has increased significantly with the VFT program, but there are still cases that do not qualify for one reason or another. It is particularly difficult to find funding for more comprehensive prototyping. Another weakness is that the process is not sufficiently adapted for the daily life of a researcher, that it needs too much focus that the researcher cannot afford to dedicate to it. Other areas for improvement are agreements and patents, as well as information about our support.

External stakeholders see the need to focus more on the individual – the champion – behind the idea as well as preparing cases better for selling and being invested in. They also saw a need to work more with the teams and complement them with external expertise when relevant.

In our own analysis we have also identified the lack of champions, as well as the development of a functioning team around each idea. From our perspective, another two areas were seen as weak – the managing of expectations of idea owners at the outset and an under-utilization of our structural capital.

 The dependence on the VFT program is also a weakness. It is very important that VINNOVA understand how important these funds are for early stages and that the program is continued and stable.

The analysis of weaknesses confirms a suspicion that we have had for a long time, namely that we are not communicating our comprehensive offering to current and potential clients. Stakeholders mention the lack of things that we know are covered in the process. This leads us to think that we do not use all the resources and tools already available during the process. With the growing of our department we

have perhaps lost track of some structural capital that has been developed in the past. We need a better system to take stock of and show what is available.

6.3   Risks

The process demands a lot of idea owners and there is a risk that it is perceived to be too complex and time consuming. Although we have spent a lot of time on producing templates and tools to minimize the effort, there are many steps to take from idea to marketable product or service. It can be both frightening and difficult to get an overview of a process that, in many cases, stretches years into the future.

A large part of the innovation support process is funded by the Ministry of Education and Research through the innovation offices program. If the funds should be significantly reduced, for instance due to a re-distribution of contribution to the 12 offices, this would greatly influence the process.

Access to funds through the VFT process is crucial for running the process. It is important to ensure that VINNOVA continues to invest in the program and to identify other possible opportunities for similar funding for verification.

KTH is currently in a phase when many research groups start new projects and new research centers are formed. At times like this it is natural for researchers to put all their energy and time into the new projects rather than spend it on innovation projects that may be running out of steam in our innovation support process.

The process is operating at a very early stage of technology development and it is difficult to foresee the problems that may arise along the way. It is also difficult to get an overview of complex contracts and agreements to ensure that ownership rests with the idea owner to a large enough degree. The risk is that you spend a lot of time and resources on cases that in the end prove impossible to commercialize.

6.4   Suggested Interventions

In order to minimize risks, build on the strengths and limit the weaknesses in the process we have identified six interventions to be evaluated:

6.4.1   Improved Quality and Focus

Without abandoning the premise that all ideas are welcome, and that the process is self-selecting, we want to make more resources available to high potential ideas, particularly in the later phases. A possible interaction would be to differentiate our offer and openly communicate the opportunity to put more resources into a case if the idea owner is willing to do the same. In order to increase the quality of ideas coming into the process we could work more proactively with educating students and researchers in innovation development, which is part of different process at KTH Innovation.

6.4.2   Increased Transparency with Clients

Today, the innovation support process is a bit of a "black box" for idea owners. In order not to scare them off, we have introduced the process step by step which has sometimes led to a lack of engagement when it is most needed to make a breakthrough in the case. Through improved communication we can prepare the idea owner on what lies in store at each stage of the innovation development and point to relevant tools and resources along the way. One intervention in this are would be a simplified process map linked to applicable tools – a hand rail – and an introductory workshop to explain the process

6.4.3   Stronger Networks

We need to have a larger and more active network of contacts interested in business and technology and wanting to get involved at an early stage. Both potential entrepreneurs who can actually run cases, but also investors that can contribute both funds and experience. We agree with the idea owners that there is an urgent need for funds for commercialization. In order to meet that need we have to continue to grow our network of investors and secure as large a share of soft funding as possible. A suggested

intervention is to survey possible funding opportunities and improve our ability to attract investors at an early stage. Another potential intervention would be to arrange an annual KTH Innovation Day, similar to the STING Day concept.

6.4.4   Improve KTH Leadership's Understanding of the Strategic Importance of Innovation Support

Innovation and entrepreneurship should be more tied to the KTH brand and profile. A well-functioning innovation support system will be a required if KTH is to be successful in future applications for funding. A clear mandate from the leadership would legitimize our work and send a clear signal that this is important. One way to achieve this would be to anchor the process centrally and have a good dialogue with Deans regarding how innovation support can be integrated into development and research plans. Specific actions could be to invite the KTH Management Group to a presentation of our operations, formalize the running contact with Deans and keep the University Board informed as well.

6.4.5   Branding of the KTH Innovation Support

Through our collaboration with other innovation offices across Sweden we know that the KTH innovation support process is a very well developed and systematic process. Through international benchmarking we know that it holds its own outside our borders. We would like to acknowledge this and increase awareness of the "KTH Innovation Model", nationally and among our clients at KTH, by branding and packaging the process, put forward good examples and underpin all facts with concrete statistics and results.

6.4.6   Improved Integration into Research and Teaching

We want to get better at integrating the innovation support process into research and teaching at KTH. We strive to be a partner along the entire way but whose concrete work starts in the transfer from research to commercialization. We can do this by conducting studies into IP assets in research projects or departments, have a dialogue with the Deans and give input into the innovation aspect of research funding applications.

7   Analyzing the Self-Evaluation

Within our field we hold a long standing conviction that traditional indicators and methods for evaluating innovation development miss some important aspects of our work. This includes the ide owners' learning and development of practical skills which leads to more innovation in the long run but is hard to trace back to our interventions. We are pleased to get the opportunity to highlight these issues within the scope of this self-evaluation.

We spent a great deal of time on mapping the process, which proved very useful. The process has been developed for a number of years and it was time for evaluation. Many suspicions that we had were confirmed by the evaluation, and it will be an advantage to have this report to fall back on when continuing the development of the process.

The most difficult aspect at the beginning was the lack of clear evaluation criteria. Competence, cost and service can mean a great many things. There was consensus in our internal and internal reference groups that it would be a challenge to evaluate ourselves without more defined criteria.

However, at the end of the self-evaluation phase we conclude that we would perhaps not have arrived at the insights what we did had we had more defined criteria. We would have investigated what the criteria asked for and may have missed important information. Instead, we have focused on reflecting and reasoning around the process as it stands today.

During the self-evaluation we have interacted frequently with internal as well as external stakeholders. At the end of this project we would have benefitted from having a dialogue with the KTH management about the emerging conclusions. The fact that our process is so very much dependent on the KTH strategy on innovation issues has become apparent over the course of the project, and we hope to be able to take these findings up with the management during the next phase of AAE 2014.

8 Conclusions

Our project within AAE 2014 was going to; articulate and visualize the process both as a whole and in its parts, evaluate the effectiveness of the process and analyze and identify improvement suggestions tied to the project. The ambition was also to conduct two international benchmarking studies.

We believe that we have achieved this.

KTH Innovation has, for the main part, a well-functioning innovation support process that meets the needs, expectations and demands from idea owners and other stakeholders. This has been confirmed both by idea owners and external stakeholders. The assessment has also identified a number of areas of the process that needs development and that the support available needs to be communicated to all potential clients. It has also been concluded that the process needs to be more visibly backed by the KTH management and that it should be further integrated into KTH's research and education.

The benchmarking studies of Aalto University and TU München have also provided us with valuable input on how the process works at these institutions. There are great similarities in the implementation and outcome. The significant differences lie in the strategic importance placed in the process by management at these universities. At both of them, innovation and entrepreneurship is at the heart of the brand and profile.

A couple of obvious challenges have emerged:

- How can the process evolve though both increased focus on cases with high potential and the continued opportunity for individuals to gain practical skills through innovation development? We see a great need for focus, but we also know that there is a real advantage to giving individuals practical skills and competence for the future.

- How can the innovation support process be tied closer to both KTH management and KTH research and education without losing its flexibility and independence? A process such as ours must be allowed some "creative freedom", because if it is perceived as too slow and bureaucratic it will soon lose credibility.

Based on the description and self-evaluation we hope that the assessment group are able to assess our process from the perspective cost, service and competence. We have tried to identify and put forward relevant key indicators and facts to enable an assessment on those terms.