Case Study 14.2. Proof-of-concept funding and technology assessment at KTH Royal Institute of Technology

CRITICAL AREA OF FOCUS 2: "Assessing IP potential, validating technologies and incentivizing for commercalisation"

BEST PRACTICE FOR: "Proof of Concept Programs" and "Technology Assessment tools"

AIMED AT: TTOs/PROs/Policy-makers

UNIVERSITY: KTH Royal Institute of Technology (Sweden) **TTO**: KTH Innovation

The context:

Established in 1827, **KTH Royal Institute of Technology** is the largest and oldest technical university in Sweden. KTH has more than 18,000 students and about 5,000 employees, including nearly 300 professors. KTH is organized into 9 schools and around 40 departments and research centres. KTH research focuses on the following five national strategic research areas: E-science, IT and mobile communication, Transport research, Production engineering, and Molecular biosciences.

KTH Innovation was established in 2007 as an internal department of KTH for providing resources and competencies to support researchers throughout the process of creating a commercial product or service based on research results. KTH Innovation has a team of about 30 people, including 6 business development coaches that focus on different research and technology areas within KTH. The business development coaches have mostly engineering background and experience of working in start-ups or industrial companies.

The problem:

Since early 2000s, many universities in Europe have started to pay a lot of attention to their innovation and technology transfer activities and policies. As the oldest and biggest technical university in Sweden, KTH had to respond to these challenges and undertake substantial changes to transform its conservative system into one that actively supports innovation, technology transfer and entrepreneurship.

As an additional challenge, unlike many other European universities with an "institutional ownership system", which gives universities the right to own inventions from publicly funded research, KTH has to act under a "professor-privilege system", which gives researchers the right to own such inventions.

Furthermore, many former PoC programmes managed and administered by the regional or national governments were not very efficient both in terms of decision-making time and the use of financial resources. For instance, such centralized PoC funding programs have spent a lot of time and resources for the evaluation and administration processes, which could take up to 25% of overall funding.

The solution:

In 2007, to better respond to current challenges and scale up its innovation and technology transfer processes, KTH established an internal department called **KTH Innovation.** KTH Innovation supports different types of technology commercialization including creation of start-up companies, technology licensing, and industry collaborations. For KTH researchers and students, the support services are completely free of charge and confidential. KTH Innovation does not take a share or ownership of projects it supports. In selecting which ideas to pursue, KTH Innovation does not apply a strict selection process to weed out the best ideas, but prefers to deal with as many ideas as possible. Each idea is assigned to a business development coach who then follows and supports the project all the way.

This project has received funding from the European Union's Horizon 2020 research and innovation programme and Euratom research and training programme 2014-2018 under grant agreement No 643486.

In 2012, to help with assessment and development of new business ideas based on research results, KTH Innovation established **a proof-of-concept (PoC) funding programme called VFT-1 (Verifiering för Tillväxt).** The goal of the VFT-1 programme is to take a project to commercialization or prepare it for a more rigorous commercial and technical verification. By operating very close to researchers and making faster decisions locally, this decentralized PoC programme allowed to minimize the amount of money used for evaluation and administration, as compared to other centralized PoC programmes administrated at the regional or national levels.

The VFT-1 programme is financed by three main sources: 50% comes from KTH, 30-40% is provided by Swedish Government, and 10-20% comes from various EU innovation support programmes. Maximum amount of funding per project is around 30,000 euro, paid in different steps according to planned milestones. In the initial phase, KTH Innovation can provide about 5,000 euro to see whether there is a market interest and whether the business concept can be taken forward. Typically a project remains within the VFT-1 programme for about 2-3 years receiving initial small financing rounds that last 2-3 months, followed by larger financing rounds that last 5-9 months. VFT-1 programme funds about 40-50 projects per year with an average investment per project of around 10,000 euro.

KTH Innovation does not launch a call for PoC funding applications. Instead, **projects are selected from an overall pool of projects** that are being developed with the support of business development coaches. In order to select the projects to fund, KTH Innovation has developed a customized tool called "KTH Innovation Readiness Level" (KTH IRL) that looks like a spider chart with the following six dimensions each ranging from 1 to 9: Technology Readiness Level (TRL), Customer Readiness Level (CRL), IPR Readiness Level (IRL), Team Readiness Level (TRL), Market Opportunity Readiness (MRL), and Funding Readiness Level (FRL). For instance, TRL-1 means that "scientific research begins to be translated into applied research and development", whereas TRL-9 means that "actual application of the technology is in its final form and under mission conditions, such as those encountered in operational test and evaluation".

To be eligible for PoC funding, projects should have at least readiness level 2 for all six dimensions. KTH Innovation has developed a software system that tracks all ideas and projects from the first meeting with researchers.

The initial project evaluation is generally done by the **business development coaches** together with researchers. The decision about the first PoC funding round is generally done by a coach team during decision meetings. To ensure a quality control, the decision-making about subsequent PoC funding rounds on larger amounts involves external experts such as industry consultants or representatives of business incubators. The projects that do not successfully pass the further validation are terminated.

Alignment to PROGRESS-TT:

This case is a good illustration of the "Proof of Concept programs" and "Technology Assessment tools", Best Practice in PROGRESS-TT Critical Area of Focus 2 "Assessing IP potential, validating technologies and incentivizing for commercalisation".

The main performance measures for KTH Innovation are those that show success of its commercialization processes. At the moment, KTH Innovation has one of the largest and most successful PoC programme in Sweden. During the period 2012-2013, KTH Innovation had 90 projects in development, created 30 new companies, established 800 customer contacts, and had 12 companies incubated.

The experience of KTH Innovation provides several insights that can be useful for policy-makers and other TTOs in Europe. First, it shows how PoC funding schemes initiated by regional or national governments can fruitfully collaborate with TTOs by efficiently delegating them the operational management functions. By being closer to researchers and making more timely and adequate funding decisions locally, such decentralized PoC funding programmes may lower expenses associated with evaluation and administration processes by a factor of five from about 25% to about 5%, according to the experience of KTH.

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Second, over the years, KTH Innovation has developed and improved the KTH IRL tool to assess the maturity of an idea according to the six readiness dimensions. The KTH IRL tool highlights the importance of simultaneously advancing different areas relevant for commercializing an idea and taking it to the market. The KTH IRL is a comprehensive and self- selecting evaluation instrument that can be adopted by other TTOs in Europe.

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