Case Study 15.4. Living Labs at TU Eindhoven

CRITICAL AREA OF FOCUS 4: "Securing TTO staff skills and organising the TTO for optimum growth"
BEST PRACTICE FOR: "Organizing the process for growth"
AIMED AT: TTOs **TTO**: TU/e Innovation Lab
UNIVERSITY: Technical University Eindhoven (The Netherlands)

The context:

Eindhoven University of Technology (TU/e), founded in 1956, is a research university specializing in engineering science & technology. Their education, research and knowledge valorization focus on the Strategic Areas of Energy, Health and Smart Mobility. In the academic year 2015-16, TU/e has 2,044 academic staff, 1,210 doctoral candidates (PhD), 290 technological designers (PDEng), 3,238 MSc students (16% international), and 4,973 BSc students (4% international).

TU/e Innovation Lab is the Technology Transfer Office (TTO) for TU/e, an expert center that helps translate knowledge into business. An experienced team of advisors and coaches work with scientific staff, students and external parties to turn knowledge into products and services.

TU/e Innovation Lab is an independent company which currently employs 35 people and is owned and partially funded by the Technical University Eindhoven. €1M of funding per year comes from the university and € 2.2M from the TTOs own profitable business model as a shareholder in different independent private companies, Valorization Academy; IL Consultancy; Bright Move; Housing/Science Park; TU/e SURE Eindhoven; Start-up Eindhoven. These companies offer technology transfer services, contract research, project partnering, innovative financing and start-up/incubation services to external parties on a fully commercial basis. TU/e Innovation also receives income from exiting from startups in which it has taken equity.

The problem:

In 2012 the annual research budget for the Netherlands was expected to be cut from 100M to 60M in the coming years as the national income from gas was decreasing. The governmental institution for funding the technical universities, STW (Stichting Toegepaste Wetenschappen), invests mainly in collaborations with the top sector of Dutch industry. Up to 30% of this funding comes from industry and from EU grants. Through such collaboration, TU/e has been successful in increasing its share of EU grants for applied research from 11% to 18% in 2012. In the short term, it seemed that research funding would not be a problem for TU/e. However, the world is ever-changing and 80% of all innovations in industry now come from Small to Medium Enterprises (SMEs). They make up 99.8% of all businesses in the European non-financial business sector and in 2014, these 22.3 million companies accounted for 67% of total employment in Europe (ERM annual report 2015: Job creation in SMEs).

TU/e Innovation recognised that they and the university are highly dependent on large enterprises (LEs) for research and development and were not set-up to access the huge pipeline of innovation generated by SMEs. They believe that collaboration with SMEs will become an increasingly important way to access new innovations in the future and so they made the strategic decision to develop a program which would orient some of its knowledge transfer activities on collaborative research and student-based entrepreneurship, optimizing the TTO/PRO for growth in this sector.

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.

The problem for TU/e Innovations in implementing this strategy was two-fold:

1. In general, the gap between the Technology Readiness level from the university (TR2) and the expectations of industry (TR7) was too wide to attract collaboration with SMEs. They needed to find a way to develop their technologies to a level that is useful to commercial partners
2. They needed to fund this development.

The solution:

TU/e Innovations saw this as an opportunity to start a co-creation programme with SMEs which they called the Living Lab. TU/e utilizes its campus as a laboratory in which researchers and students, in collaboration with the business community, co-develop ideas into solutions. This way the campus is used to give tangible substance to innovations by the testing and further development of technologies to bridge the gap in the technology readiness level and create market and investor ready solutions and products. The process also ensures that products are created from market pull although some of the ideas will originate from market push.

TU/e Innovations kick-started this process using their connections with the local automotive industry. Companies were invited to participate in Friday afternoon events to meet research staff and students. Their first Living Lab team was the Stella Team, which was set up to work on the "car of the future" in collaboration with a consortium of SMEs in the automotive sector. The students worked on everything – from mechanics to project management and finance, with mentoring and guidance from the TU/e Innovations team and practical help from the SME partners. It was such a success it became a system. Now there are 8 automotive teams and 400 companies involved in the Living Lab. Each year, new projects are presented at an annual event called, "WHERE SCIENCE MEETS BUSINESS".

TU/e Innovation Lab sees its own role in the Living Labs as an organizer, facilitator, business developer and the provision of its network, without too much emphasis on the content.

Constant monitoring and interaction with the teams helps to keep up momentum. TU/e Innovation business developers work with expert panels, one for each project which are made up of the consortium of companies for that project. The panels also use researchers from other universities to challenge the invention / idea and sometimes they also include retired entrepreneurs. When the time is right, the panel will start the process of looking for a professional management team to set up a start-up company.

The Living Labs are organised into 5 strategic themes which work horizontally across the 9 faculties of TU/e: Energy, Health, Smart Mobility, Data Science and High Tech Systems. As an example, 4 of the 9 faculties are involved in data science projects while 6 sponsor smart mobility projects. This helps to keep the PRO involved as a whole and contributes to teaching across all faculties. Input ideas are not limited to TU/e research outcomes but also come from Universities and in particular the 4 other Technical Universities in Netherlands with which TU/e shares knowledge and IP to create projects for the Living Lab. Undergraduate students can also approach TU/e with ideas for the living lab. These will be assessed by the same criteria as research outputs and will be taken up if they prove feasible.

The total cost of this living Lab is currently €4M per year. The university provides €300,000 of funding and the gaps are filled by SME partners, mostly as in-kind contributions. The benefits for SMEs include very high added value innovation with university knowledge and free access to foreground IP but this reverts to TU/e if they don't commercialise it.

TU/e Innovation Lab holds 100% of the shares and manages / develops the company from the patent to a proof of concept. The revenue model is to create shareholder value as soon as possible and to go for an early exit converting the shareholding to cash. Sometimes a company is sold for €1 and then Innovation Lab agrees on a license deal with the buyer, receiving royalties when the spin-off becomes profitable.

TU/e business model is to secure monetization on exit from spin-offs. Currently TU/e creates 100 per year. This was changed from model where licenses were favored but this only produced €500k per year in royalties.

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Alignment to PROGRESS-TT:

This case is a good illustration of the "Organizing the process for growth" Best Practice in PROGRESS-TT Critical Area of Focus 4 "Securing TTO staff skills and organising the TTO for optimum growth".

"The Living Lab starts with a simple concept: You don't need a lot of money – just a good project" (Steef Blok – Director of TU/e Innovation). The transferability of these best practices relies on the creation of a mindset which in turn creates a paradigm shift away from traditional investment models to a co-creation concept in which the stakeholders support one another. TU/e has set up a model where the SMEs have free access to IP but other models of IP ownership could be used instead. Research is part funded by the university and part funded by the SMEs, whose main contribution is in the form of labor and materials.

The critical success factors are strong ties between the PRO management, TTO, faculty and SMEs. The business developers need to be extremely client-oriented, acting as entrepreneurs rather than consultants. They must have strong analytical skills and soft skills like communication and negotiation.

This is suitable for a region with a strong SME base where the PRO research has synergy with the SME products. Engagement with students and researchers provides access to a well-educated and practically trained future work force who will contribute to the creation of wealth and jobs in the region.

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