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STARMAC: AN ENVIRONMENT FOR THE STIMULATION AND THE DEVELOPMENT OF ENTREPRENEURIAL PROJECTS IN ACADEMIC INSTITUTIONS

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In this article, we present STarmac, a program developed by the Swiss Applied Science University of Canton Vaud (HEIG-VD), part of the University of Applied Science and Arts in Western Switzerland (HES-SO) to support young founders in the development innovative business ideas by providing them with the tools for management of market and technology risk. We present the STarmac program, its components and we outline a framework with some relevant metrics for its assessment and comparison with existing similar initiatives so that we can engage into a continuous improvement methodology and provide better support to our spin-offs teams.

Keywords
Entrepreneurship, Pre-Incubators, Startups, University Spin-offs

1. Introduction

STarmac is a university pre-incubator which is supposed to promote the emergence of entrepreneurial projects among the academic community by providing an environment that stimulates innovation and entrepreneurship from the ground up. STarmac is both a *physical place* where university students and staff can work and meet, and a set of *support services* organized into a “journey” towards the creation and development of new ventures. STarmac’s main goals are the following:

1. It provides a safe environment where participants can win their fears and develop their business ideas by testing them on the market following the Lean Startup approach [1].
2. It fosters the creation of interdisciplinary teams with the right balance of technology and business development expertise.
3. It provides a liaison with the local entrepreneurial ecosystem as well as a due diligence process for potential investors for assessing the level of risk and the expected return of the investment.

When a founder or a founding team joins STarmac, an initial assessment is done to understand the stage of project’s development. In most of the cases, projects are brought by engineering students or researchers. They might have developed the technology, but they have not considered elements of business development. There are sporadic cases of projects

brought by business students. It is our goal to increase the number of business students involved in entrepreneurship by proposing them classes where they can develop their own business ideas. We have identified 4 entry points for our program:

1. **Business Ideas**: based on founders' intuitions, business opportunities are proposed without any strong concern about technical feasibility or economic viability. Usually, ideas come from classes, but not always. Sometimes even first and second year students contact us to get feedback on their business ideas.
2. **Business Concept**: this phase represents the first step of validation of the idea. With a blend of training and coaching, founders engage with Market Discovery [1]. At the end of this phase, we expect that market opportunities are clearly identified. The program heavily relies on collecting primary data from potential clients. Teams need to perform at least 30 interviews during a term. Some projects stop at this stage because the initial assumption on the market demand where shown to be false. Moreover, some founders are not able to pivot and adapt their initial strategy to the outcomes of reality-check. As an additional outcome of this program, the founders have defined their initial (non-yet-validated) Business Model.
3. **Business Validation**: founders who have been capable to clearly identify a market opportunity, can now start to validate their Business Model assumptions. During another term (4 months), founding teams are pushed beyond their comfort zone and asked to tackle the market by selling their value proposition. Based on Steve Blank's Customer Validation method, founders will have to test their Minimum Viable Product (MVP) directly on the market. It is a fast pace process, where we ask the teams to rapidly iterate, emphasizing the "minimalism" of MVP, namely the minimum effort required for validating an assumption. Very often, MVPs are considered as prototypes or proofs-of-concept to show that the solution "works". We stress that MVP are tools for validation, and in their case, technical feasibility is rarely the riskiest assumption to validate first.
4. **Startup-Innogrant**: this phase involves both coaching and a financial support. During this phase, selected projects are incubated for 1 year to reach the necessary maturity to successfully apply for external incubation or acceleration programs. The main goal of this program is to prepare for scaling. There might be some assumptions left from the BV program and the team should be able to reach the necessary traction for becoming interesting for investors.

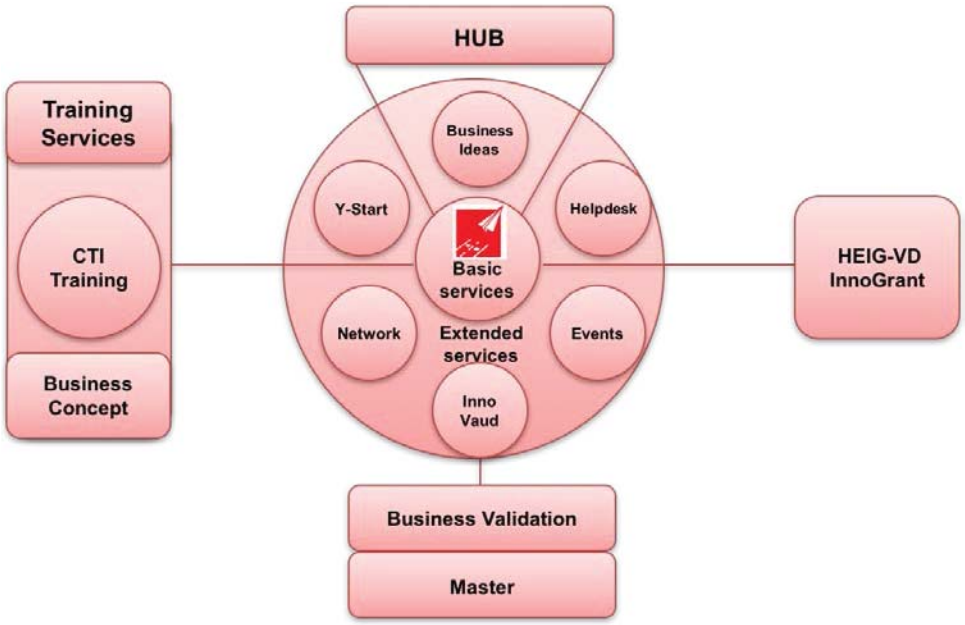

Figure 1 STarmac Architecture

As we previously said, STarmac also provide a suitable infrastructure for the emergence of entrepreneurial projects. The architecture of STarmac is shown in Figure 1. STarmac offers:

- An information and orientation Help Desk for entrepreneurship and innovation.
- A co-working space (HUB)
- A rich program of stimulation events and opportunities to liaise with the local entrepreneurial ecosystem.
- Individual coaching.

In this paper, we provide a framework for assessing the impact and performance of pre-incubators. We also present two studies we conducted that informed us in the design of this benchmarking framework.

2. State of the art

University spin-offs [2] are companies whose products are based on research carried out within their laboratories and institutes. Projects usually spawn from last-year student projects, PhD thesis and research performed by faculty and research staff. Spin-off development requires training and coaching because projects founders do not have all the necessary skills to build and run a business [3]. In some cases, the necessary training and coaching is guaranteed by the university itself. In other cases, it is provided by public or private institutions such as incubators and accelerators. According to the stage of development, this kind of support might take different forms. In most of cases, universities take care of technology transfer and delegate business development support to external institutions [4].

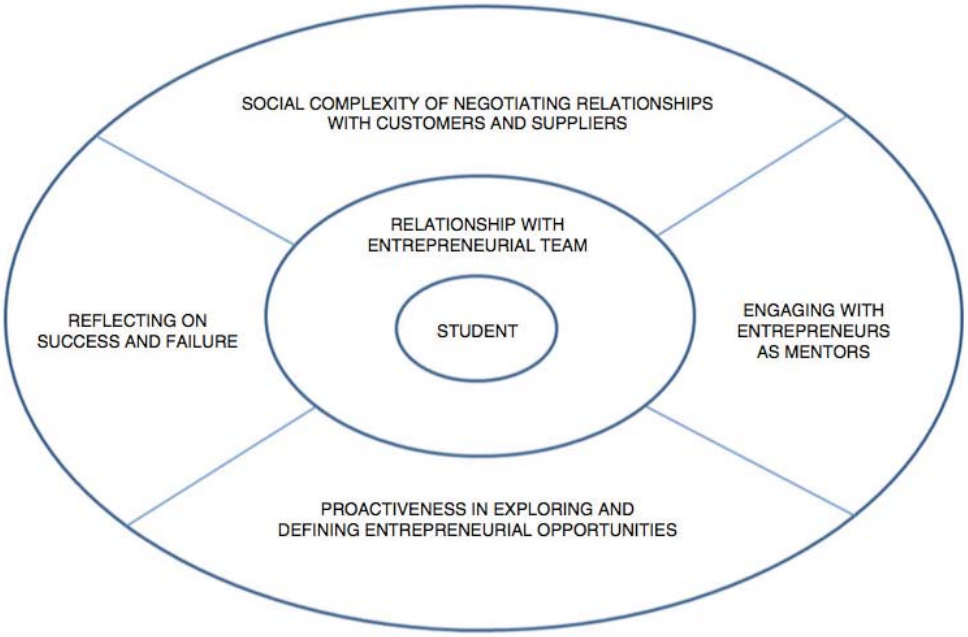

Figure 2 Conceptual Model of Key Success Factors for University Spin-offs from [3]

Supporting the creation of a business goes through different phases [5]:

1. Pre-incubation: idea generation, conceptualization, business model definition and validation, initial business plan.
2. Incubation: company incorporation, access to funding, setup of partnership, go-to-market strategy, growth.
3. Post-incubation: Scaling, industrialization, exit strategy.

In this paper, our focus is on pre-incubation of university spin-offs. We are interested in assessing the performance of pre-incubation by maximizing a set of indicators (metrics) that are relevant and that can help in benchmarking our efforts with respect to similar initiatives, the goal being deriving best-practices and continuous improvement our performance.

We adapted the methodology proposed by European Union for the benchmarking of business incubators [6] to the specific case of pre-incubators. As for retained indicators, we will base our set on the conceptual model proposed by [3] and shown in Figure 2. These indicators are related to the evaluation individual and team skills. We found an agreement with other similar initiative about the importance to develop such a skillset. Being an ongoing research, in this paper we only consider the metrics related to individuals and team skillset. However, our goal is to measure the full set of indicators, which include those related to economic impact.

3. Results

Today, STarmac hosts a dozen of projects and involves a core team of 5 people plus several adjunct and voluntary staff. In addition to the benchmarking with other initiatives, we compared the Key Success Factors (KSFs) for our university spin-offs that have not followed STarmac with those that did it. The results confirm the added value to health development of business for those projects that have been supported by STarmac.

STarmac is a newly created structure and we recently started collecting data. However, we already have some interesting promising results that we present in this paper. We provide here a resume of two studies: a qualitative one where we collected information about other local similar initiatives; a quantitative one where we assess the improvement of selected indicators when we provide support to founding teams.

3.1 Qualitative Study

The goal of the study we conducted was to confirm that our initial hypotheses and concerns were shared by other pre-incubators. We met with 4 directors of university pre-incubators in the French-speaking region of Switzerland. We can summarize the study with the following points:

1. Offered services are basically the same. No substantial difference in the types of offered services have been detected.
2. Market validation emerges as the most important skill to be learned. Other skills are: networking, flexibility, adaptation, win the fear of reality-check, interact with people, pitching.
3. Some recognize the role of pre-incubator to stimulate entrepreneurship and create awareness among students of different career opportunities and lifestyle.
4. The number of entrepreneurial student project is still too small.
5. There is a tendency in “sweetening” the support so to avoid scaring potential entrepreneurs. The pre-incubators do not work at full capacity.
6. Low interaction between pre-incubators. Because of low demand, there is a tendency to isolate teams that could be “stolen” by other pre-incubators.
7. Having teams at different stages of development in the same place is very helpful. More mature teams can advise newcomers and accelerate their development.
8. Pre-incubators performance is rarely measured. If it is the case, the most common metrics are qualitative and unclear such as “added value created”. There is rarely a link to economic development metrics such as “number of created jobs”. Metrics related to individual and team skillset development are also considered as important.

3.2 Quantitative Study

We performed a longitudinal study over 3 days of a “startup” student competition event co-organized by STarmac and other partner universities. We collected data 3 times during the event on sample of 90 people. Our initial hypothesis was that our selected indicators would

improve over time because of training and coaching. We asked 8 teams to answer 12 questions (on a scale ranging from 0 to 5). The questions can be categorized according to the Steffensen's conceptual model and they are shown in Table 1.

Table 1 Questions of survey categorized according to the Steffensen's model [3].

Relationship with entrepreneurial team	**Reflecting on Success and Failure**	**Pro-activeness in exploring and defining business opportunities**	**Engaging with entrepreneurs as mentors**	**Social complexity in negotiating relationships with customers and suppliers**
Do you think that interdisciplinary team brings some sort of competitive advantage? Do you feel that in the team a leader emerged?	Do you think that your product/service is innovative? Do you think you need to pivot? Do you feel that you are acquiring new skills related to the development of your business? Do you feel that you are focusing right on the jobs to be done?	Do you consider your business model validated? How are you comfortable with the viability (size, potential, accessibility) of the selected market segment(s)? How do you estimate the potential of your product to become global? (low – high)	Do you feel that coaching is done properly and you (and your team) are benefiting from it? Do you feel that your assumptions and beliefs are challenged and you are forced to leave your comfort zone?	Do you think you have discovered new knowledge about the sector/domain/industry for your product/service?

We can summarize the key results of the study as follows:

- The teams progressed in the business model validation.
- The teams lost confidence in the innovative power of their ideas.
- The confidence of their assessments of market size/type remained stable.
- The urgency of pivoting slightly increased over time.
- The participants felt they improved their knowledge of the market.
- While still high, their opinion about the importance of interdisciplinary team slightly decreased.
- They generally observed the emergence of a team leader.
- Their feeling of having acquired new skills increased.
- The awareness of impact of coaching increased only at the end of the process.
- The teams felt that they could keep focusing (stable high evaluation).
- The teams felt that they were increasingly pushed beyond their comfort zone.

4. Conclusions

In this paper, we have presented the STarmac pre-incubator with its essential components. We have also proposed a framework for assessing the impact of STarmac on five categories related to individual and team skillset. Preliminary result of our investigation about measuring the performance and impact of STarmac provide us with some useful insights that can inform the future development of the project.

As a next step, we are currently collecting data for the ongoing Business Concept and the Business Validation programs. Moreover, we are collecting qualitative data about the expectations of local economic development institutions. This will help us in setting up the extended benchmarking framework with related metrics.

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