

## **Betting on Research-Based Inventions: an investigation of pre-seed Deep-Tech venture capital decision-making processes and activities**

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Most of the Research Based Inventions (RBI) developed by research centers never get commercialized due to the highly uncertain nature of these technologies. A suitable commercialization path for these technologies however can be through spin-offs, since risk-reward profiles of these technologies might interest private equity funds such as Venture Capitals. Even though different gap funding instruments have been developed by the public sector to facilitate spin-off creation, most RBI remains trapped in the so-called “Death Valley” due to the diffused lack of entrepreneurial capabilities among scientists, which further exacerbates the difficulty of raising funds. In contrast with this fact, in the last decade, the interest from private investors in financing breakthrough technologies has grown exponentially. This mismatch between supply and demand of innovation is pushing investment firms to start investing early in the process of technological development and commercialization. Of particular interest are *IP Venturing funds*, which finance technologies protected by Intellectual Property in the early stages with the aim of building market-ready concepts. These funds differ from classic Venture Capital investors for two main reasons: they invest a small amount of money in startups with unproven technologies (thus substantially providing proof of concept financing “with strings attached”) and they invest in projects in which the entrepreneurial drive might not be even present. Even though literature started to highlight different strategies adopted by these funds and to identify how such funds reduce agency costs or trigger opportunity recognition (Jarchow and Rohm, 2023), little is known about how these funds operate: how they select technologies or projects on which to invest, and then how they help them overcome commercialization challenges is still largely unexplored. Providing a map of IP Venturing decision-making processes and operational models is therefore the objective of this paper which investigates these aspects through a multiple case study aiming to provide an answer to the following research

question: “*How decision-making processes and activities of IP venturing funds help technologies bridge the valley of death?*”

We interviewed 7 different IP Venturing funds operating across Europe and the USA in various technological domains, and findings reveal that even though all these funds are characterized by a strong “hands-on” approach, they adopt different operational models and decision-making processes to reduce uncertainties related to the potential commercialization path of RBIs, such as legal, technological, managerial, market and investor desirability, or value-chain uncertainties.

Our study thus provides a deeper understanding of how the actions carried out by IP Venturing Funds help reduce uncertainties that characterize RBI’s commercialization process, showing that different alternative approaches might better adapt to different situations and thus might represent useful tools to capitalize on the considerable number of lost opportunities of technology transfer (Würmseher, 2017).

**Keywords:** *IP Venturing, pre-seed financing, VC decision-making process, Research Based Invention commercialization, Deep-Tech, Technology Transfer*