

# Chapter 11

## Open Scientific Entrepreneurship: How the Open Source Paradigm can Foster Entrepreneurial Activities in Scientific Institutions

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### ABSTRACT

*The objective of this article is to conceptually transfer the concept of open source software (OSS) development to scientific entrepreneurship and to hypothetically discuss the support potentials of this rather new development philosophy for what we than call open scientific entrepreneurship. Therefore, at first the authors will go into conceptual details of scientific entrepreneurship and than of OSS development. Following, the main thrust of the article presents open scientific entrepreneurship from two points of origin: first of all, OSS development as a specific form of scientific e-entrepreneurship and further on potential benefits of opening “traditional” scientific entrepreneurship up by looking at specific action fields. These action fields are theoretically based on the process and competence perspective of scientific entrepreneurship. Finally, the general benefits as well as downsides of the concept of openness are discussed on a generic level. It becomes obvious that there is need for balancing the tensions between an open and closed design pattern for scientific entrepreneurship with a general emphasis on the open design perspective.*

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## INTRODUCTION

During the last years, open source software (OSS) development has become a major industry trend (Weber, 2005). OSS refers to software products distributed under terms that allow to use the software, modify it, and redistribute the software without the requirement of paying the copyright holding authors of the software. What started as an ideology with the aim to provide free access to everyone, evolved to a highly complex (eco)-system of voluntary programmers, sponsoring firms, implicit and explicit governance structures, and simple economics (Lerner, & Tirole, 2002). One of the most well-known examples of OSS are the Linux operating system, the Apache web server, or the Mozilla web browser. In the meantime, the open source concept has not only been applied to software development but also to the open design and engineering of hardware products like mobile phones, furniture or even cars (e.g., [www.opendesign.org](http://www.opendesign.org)).

Against this background, the transfer of this rather new development philosophy to scientific entrepreneurship seems to be very paradoxical at first glance. By scientific entrepreneurship we mean the application of principles, methods and instruments in respective entrepreneurship-related action fields in order to systematically and holistically support entrepreneurial activities within the academic community (Magin, & von Kortzfleisch, 2008; for more details and references see the background chapter). The paradox in this context results from intellectual property (IP) as the outcome essence of scientific work and as primarily being something which needs to be protected against other researchers' publication desires in principle (Murray & Stern, 2005). Scientific entrepreneurs, as well as producing companies usually build new businesses through the development and the commercialization of incremental or even better, radical innovations. As these innovations require large investments in R&D it is most likely that both, entrepreneurs as

well as existing companies tend to protect their investments in IP by using trade secrets, copyrights, trademarks or patents (Lichtenthaler, 2009). Following the logic that technological features themselves have no benefit without a business model which transforms technology into economic value, copyright holders usually generate their revenue through the sale of owned IP in the form of (technological) products or services.

With regard to the paradoxical situation described above however, besides the OSS development movement another concept might support our idea of transferring the OSS development philosophy to entrepreneurship, i.e. the concept of open innovation (Chesbrough et al., 2008). Also this concept proclaims the benefits of openness and at the same time it is closely related to entrepreneurship by focusing on new knowledge creation, too. Open innovation at its core is the increasing usage of external sources for creating and developing new ideas which lead to innovation. In contrast to a closed innovation paradigm, firms try to include customers, users, universities and even competitors in different stages of their new product development processes (Chesbrough, 2003). The change from a closed to a more open development paradigm includes a change of the underlying mental models as well. In a closed innovation environment, firms try to hire the smartest people to work for them, they rely heavily on internal research and development (R&D) activities, and try to control and to protect their IP. In contrast, in an open innovation environment firms are trying to work with smart people from inside and outside the company, are recognising internal R&D activities as only a part of an innovation process, and are buying IP from outside whenever it is needed and suitable for the current business model (Lichtenthaler, 2009).

In recent years, many firms opened several parts of their innovation processes for external participation. Most activities can be observed in integrating users or customers especially in early and late phases of the innovation process – like

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