

6-18-2024

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### Recommended Citation

Jain, Radhika, "Transitioning from product to platform-based firm: An empirical investigation" (2024).  
*MWAIS 2024 Proceedings*. 10.  
<https://aisel.aisnet.org/mwais2024/10>

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# Transitioning from product to platform-based firm: An empirical investigation

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## ABSTRACT

In this research, through a qualitative field study we empirically examine how firms make a transition from product based firm to a platform based firm. While platform literature has been a fertile ground for understanding issues of platform strategy, economics, and governance, there has been relatively less attention given to how firms become platform oriented. We examine how they grow their portfolio of products to a point where the need for platform based approach becomes evident in a firm's ability to rapidly meet the customer needs. Specifically, we aim to understand how firm mobilizes its various resources and coordinates their impact to achieve this transition.

## Keywords

Platform development, platform transition, field study, qualitative study

## MOTIVATION AND THEORETICAL BACKGROUND

There has been great interest in academic and practitioner literature on platforms. Platforms have been the focus of many different disciplines within managerial and engineering streams (Alaimo, Kallinikos, & Valderrama, 2020; Clements & Northrop, 2002; Gawer, 2014; Tiwana, 2015) Within the engineering stream, researchers have focused primarily on issues of how firms should organize their development efforts in supporting core platform and product variety development (Itzik, Reinhartz-Berger, & Wand, 2016; Reinhartz-Berger & Kemelman, 2019). Typically, these platforms have been for internal use within an organization to support their own development efforts to create a diverse variety of either purely software or software-intensive products. These platforms have also been known as internal platforms. Within the managerial and economics streams of literature, researchers have focused on issues of how platforms enable matchmaking as well as strategic concerns of allowing complementors to provide innovative services using common core services. Typically, these platforms have been created for direct use by individuals/firms that are external to the organization. Given the prominent rise and economic impact of these platforms, within managerial stream researchers have investigated factors that lead successful market entry as well as sustained competitive advantage, governance (Xia, Peijian, Lanfei, Ling, & Fan, 2023), coordination (Fang, Wu, & Clough, 2021; Hsieh & Vergne, 2023) and competition issues between platform providers and complementors (He, Peng, Li, & Xu, 2020; Hukal, Henfridsson, Shaikh, & Parker, 2020). These platforms have been typically referred to as external platforms.

In this research study, we focus on the former type of platforms *i.e. internal platforms*. Most small firms either start out small with a product and evolve their existing product into a platform over time, as they find success in the market and accumulate more resources over time while some are born with platform orientation in mind from the beginning. There have been far fewer studies done to examine how firms begin to offer platform services and what such transition product-based to internal platform-based transition entails. It is not clear what challenges firms face in such transitions or in the early stages of platform formation. For example, how does such a transition influence the firm's operations internally? What changes do firms need to make internally to become platform-centric? What resources do they need to cement, grow, and expand beyond these relationships? Researchers have examined how such transition can potentially influence organizational identity as firms must rely on the complementor's efforts to provide innovative services (Altman & Tripsas, 2015). Research has examined the dynamic resources needed as well as the processes needed to orchestrate these resources as firms transition and develop platforms (Shi, Li, & Chumnumpan, 2021). Others have examined how firms create boundary resources to enable coordination between platform providers (Eaton, Elaluf-Calderwood, Sørensen, & Yoo, 2015) and complementors as well as tensions in standardizing the interfaces (Cheng, Peijian, & Kai, 2023).

## RESEARCH METHODOLOGY

In this research we empirically investigate how an open source software firm transitions from a product based approach to a platform based approach. Specifically, we conduct an interpretive field study of a niche open source software (OSS) firm, OpenPlat (a pseudonym).

### Field Site

OpenPlat provides R&D services to develop innovative multi-modal intelligence and visualization solutions in a wide range of domains. These range from virtual simulators for healthcare personnel training to visualization software to aid in robotic surgical procedures, to multi-modal deep intelligence applications for government military intelligence operations. Despite the small but constant growth in size (from 5 in 1998 to about 230+ full-time employees in 2023 spread across multiple U.S. and European locations), OpenPlat has been able to sustainably build, innovate, and maintain the infrastructure for the open source suite of multi-dimensional analytical software.

Its business model is based on the principles of open access and open science to enable openness, transparency, and reproducibility of scientific work, in stark contrast with the traditional closed source proprietary model followed in most organizations. Within the context of scientific computing, the founders of OpenPlat believe that this alternative open approach can provide significant advantages to the innovation process: 1) Computationally intensive research programs undertaken in most academic and research lab settings suffer from a lack of well-documented and well-maintained source code and are rarely built with software maintainability, compatibility, and sustainability issues in mind. The lack of availability of source code, datasets, and specific parameter settings can make it difficult if not impossible for others to reproduce, verify, and swiftly build up subsequent innovative imaging solutions, 2) Innovative solutions within the scientific computing arena are inherently complex and can benefit from seamless coordination of multiple integrative and inclusive approaches.

### Data Collection and Analysis

We reviewed more than 2000 blog entries from 1998 that the firm posted on diverse topics including but not limited to celebrating its employees, OSS business model, new alliances/partnerships, federal contracts awarded, software releases, to inform us on the OSS business model. We also examined multiple user and developer forums/ mailing lists for different open source software suites maintained by the firm. To gain deeper insights on the challenges in developing its product portfolio and the practices used to address them, we also conducted semi-structured interviews with the members of the founding and the leadership team. We also followed up with them with requests for clarification as we interweaved our data analysis with data collection in an iterative fashion.

## PRELIMINARY FINDINGS

Through our analysis, we identified three primary asset areas that OpenPlat works to cultivate painstakingly through a corresponding assemblage of strategies. These asset focus areas include:

- 1) public and private stakeholders,
- 2) hard and soft resources that these stakeholders contribute, and
- 3) the resulting open source suite of multi-modal analytical solutions.

It deploys its internal firm assets to continually identify and exercise strategies to weave together these external assets of stakeholders and resources to enable the inclusive development of its open source suite of solutions for biomedical visualization. The common thread that connects its various strategies to cultivate these assets draws on the principles of open access to research and software and open science practices of transparency and reproducibility through access to methodology and datasets. OpenPlat practices many of these strategies to simultaneously cultivate multiple assets. For example, through its multi-pronged presence at various top research conferences, symposiums, and workshops in the form of delivering keynotes, presenting research papers co-authored by its employees, conducting toolkit training sessions, exhibiting advances and use cases of its toolkits, organizing birds-of-a-feather sessions to connect with user and developer communities, organizing call for grand challenges and data for medical image analysis among several other initiatives, it is able to 1) identify and network with diverse range of stakeholders, 2) generate hard/soft resources necessary for furthering its platform development, and 3) scout for potential innovative extensions and applications of its suite of open source solutions. It relies on agile methods to deliver customized solutions for its clients as well as for its own internal development work to be released directly for open source access and consumption.

## FUTURE STEPS

While we have done our initial analysis of firm blogposts, forums/ mailing lists, and interview transcripts without theoretical underpinnings, the observed behavior of the firm in the form of various strategies employed and how they are brought together to weave various contributed resources into a constantly growing and evolving open source suite exhibits several salient aspects bricolage (Duymedjian & Ruling, 2010), entrepreneurial bricolage (Baker & Nelson, 2005; Steffens, Baker, Davidsson, & Senyard, 2023), and resource constrained grassroots innovation phenomenon such as Jugaad and Kaizen (Radjou, Prabhu, & Ahuja, 2012; Ramesh, Cao, Kim, Mohan, & James, 2018). As part of our ongoing analysis, we will be reviewing these streams of literature that draw upon the theoretical lens of bricolage and innovation in resource-constrained environments to assess its appropriateness within the context of steps taken by firms to transition from product based to platform based approach. We believe findings from our study will have wider implications for not only open source software based firms but in general for firms that are resource-constrained by nature such as smaller entrepreneur driven firms.

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