The JobTech Platform - A Research Project Description

Johan Linåker

Draft v.0.4 - 2018-12-18

1 Introduction

This document proposes a two-year research project funded by the Swedish Public Employment Service (SPES) and Lund University. In the project, two researchers from Lund University will study SPES and the realization of their JobTech platform[1], and thereby their move from the role of being a service provider to becoming a service enabler. The JobTech platform provides an infrastructure of open innovation, allowing an ecosystem of third-party organizations and private citizens to create new technologies, products, and services based on resources released by SPES to the platform, such as open source software, data, application programming interfaces, and standards (see Figure 1). The JobTech platform enables ecosystem members to collaborate and co-create, potentially resulting in accelerated innovation and new business opportunities, as well as reduced costs through shared maintenance and shorter time-to-market.

Through the research project, the researchers will take an active part in the realization of the JobTech platform together with SPES by engaging in discussions, communicating knowledge and lessons learned from existing research, as well as findings that are made as research progresses. The aim through this active role is to iteratively intervene and improve the implementation, release, and continued evolvement of the JobTech platform, as it is being studied. The research will focus specifically on the following four Research Goals (RG):

RG1 Develop guidelines to help SPES decide what resources to share on the JobTech platform.

RG3 Develop metrics to measure the health of the JobTech platform.

RG2 Develop guidelines for a governance structure of the JobTech ecosystem and governance activities to be performed by SPES, in the role of the platform leader.

RG4 Identify factors that encourage third-party organizations to use and contribute back to the JobTech platform.

[1] See: https://jobtechdev.se/

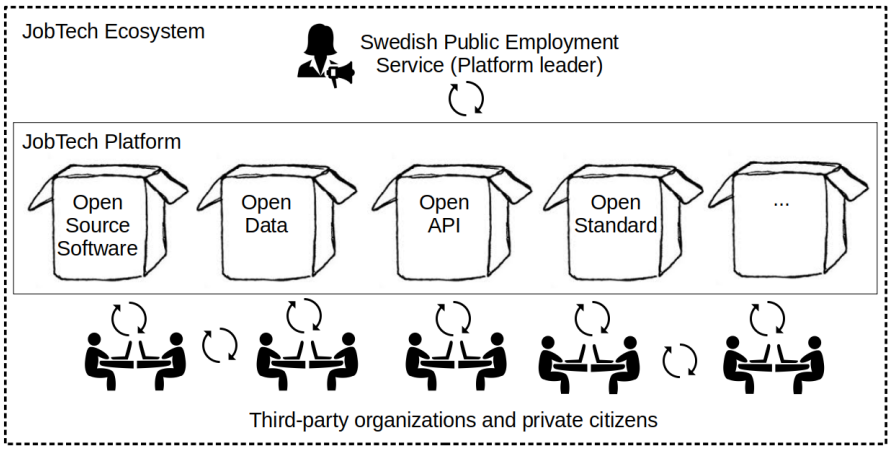

Figure 1: Overview of the JobTech ecosystem and the JobTech platform with examples of resources it may contain, which the platform leader and the third-party organizations use, co-develop and collaborate around.

Beyond contributing to a successful realization of the JobTech-platform, the research project aims to create a blueprint for how software organizations similar to SPES within the public sector can undergo a similar transformation by opening up. All research results will, if not requested otherwise by SPES, be made publicly available and published as open access.

Below, we provide a brief background and framing of the project based on related work. We then lay out our planned research approach, followed by a brief overview of an estimated budget and time plan for the research project.

2 Related Work

Open Innovation (OI) has sparked software organizations into realizing the potential of opening up their gates to in- and outflows of ideas, knowledge, and technology [1]. Instead of developing monolithic applications and focusing R&D resources internally, the software organizations' leverage the external knowledge and workforce available from parties with aligned interests to accelerate internal innovation processes. One common approach is for a software organization to open up and turn internally produced software into a platform. Through this move, the software organization opening up (platform leader), enables third-party organizations to build complementary innovations on top of the platform, e.g., in the form of specific products, related services or component technologies [2]. The platform unites the different organizations in that it solves a common problem, allowing them to focus on more value-adding activities, and/or enabling new business models.

Based on the relationships underpinned by the platform, the software or-

ganizations together form a software ecosystem through which they interact, collaborate and potentially compete on a shared market [3]. As more organizations join an ecosystem and new components are built, the value of the platform increases for the ecosystem's members, as does the ecosystem's attractiveness for new members. However, to get a good indication of an ecosystem's health one should also consider how productive and active the ecosystem's members are, as well as the quality of their components [4].

Open Source Software (OSS) communities are a common type of software ecosystems used by software organizations to gain the potential benefits that OI can provide [5]. In an OSS community, the OSS project makes up the platform which is co-developed openly and transparently by the stakeholders in the community [6]. The stakeholders use the OSS project as a complement to different extents in their products, services or operations [7]. Reduced maintenance cost, shortened time to release and market, and increased innovation are common motives [8]. Besides using it as a complement for their business models, many software organizations also use OSS as a tool for their business strategy in gaining a competitive edge, e.g., through disrupting competitors, creating new standards, and performing external R&D [9].

Considering software organizations within the private sector, OSS is generally adopted[2]. Recent research on government agencies in Sweden indicates that this may also be true within the public sector [10]. However, the study also suggests that a very limited amount of software is made available as OSS. As the authors highlight, *" . . . this is interesting in the light of calls for more open data and open software in the public sector"* [10]. Even though it is suggested that the development largely resembles private sector counterparts, and that established best practices are implemented [10], there is a lack of knowledge in how the potential benefits of OI apply to software organizations within the public sector as compared to those in the private [11].

There has been some research on the phenomena labeled Government-as-a-Platform [12], where different types of resources from a government agency together form an open platform that allows people and organizations inside and outside of the government to innovate. However, the research still lacks in terms of how these platforms are realized. A gap also exists in terms of how software ecosystems are realized within the public sector, as opposed to the private, where it has been given much focus [13].

3 Planned Research Approach

To answer the defined research goals of this project, the researchers will take an active role in the realization of the JobTech platform. This approach, commonly referred to as action research, is preferable before a more passive approach as SPES will actively be developing the JobTech platform throughout the lapse

[2]https://www.zdnet.com/article/its-an-open-source-world-78-percent-of-companies-run-open-source-software/

Table 1: Expected salary costs accounting for one Post-doc at 80% and one Professor at 15% during the project span of 24 months. *Lund University will sponsor one third of defined salary costs related to the position of Professor (i.e., 184 950 SEK), while SPES will sponsor remaining defined costs concerning both positions.

	Post-doc	Professor
Salary	47 500	68 500
Employee benefits (50%)	23 750	34 250
Overhead (50%)	35 625	51 375
Percentage	80 %	15 %
Number of months	24	24
Subtotals	2 052 000	554 850*
Total	2 606 850	

of this research project. Thus, close and iterative collaboration is expected between the researchers and SPES.

Interviews, focus groups, and document analysis will be used to gather data from SPES, constituting the platform leader, and third-party organizations using the JobTech platform. Synthesis will be based on thematic analysis of interview transcripts and extracted findings from document records. Findings will be continuously looped back to SPES to be used as input to the realization process of the JobTech platform.

To complement and generalize the synthesized findings beyond SPES, and to increase their transferability, software organizations similar to SPES within the public sector will be surveyed.

The main researcher (Post-doc, see Table 1) will be responsible for all parts of the data collection and be the main contact towards SPES and other third-party organizations partaking in the case study. All interviewees will receive a summary of interview transcripts with the chance to clarify and correct any misunderstandings. Audio trails will be kept for traceability. Everything mentioned during interviews or in communication will be kept confidential by the researchers. Nothing in regards to recordings, transcripts, documents, and communication etcetera will be redistributed or shared with any third party without explicit consent.

4 Time-plan and Budget

The research project is set to last between 1st of October, 2019 until 1st of October, 2021. During the project period, one post-doc will be assigned at 80%, and one professor will be assigned at 15%. Expected salary costs are presented in Table 1. To be added is expected costs for biweekly to weekly travels between Lund and Stockholm, as well as up to two international research conferences per

Table 2: Expected travel-related and other costs accounting for the project span of 24 months. Defined costs will be sponsored by SPES.

Travels Lund – Stockholm	
Transportation	4 500
Overhead (50%)	2 250
Number of travels	40
Hotel	1 500
Overhead (50%)	750
Number of nights	15
Subtotal	303 750
Research conferences	
Transportation	10 000
Hotel	7 000
Overhead (50%)	8 500
Participants fee	7 000
Number of conferences	2
Subtotal	65 000
Licenses and consultancy services	
Software licenses	5 000
Consultancy services	20 000
Overhead (50%)	12 500
Subtotal	37 500
Total per year	406 250
Total	812 500

year, as presented in Table 2. Costs specified in Table 1 and 2 will be sponsored by the two project partners, SPES and Lund University. Lund University will cover one third of the salary costs related to the Professor that will be assigned to the project. Not specified in the budget is the necessary office space and facilities for the two researchers which will be provided by Lund University.

References

[1] H. Chesbrough, *Open innovation: the new imperative for creating and profiting from technology.* Boston, Mass.: Harvard Business School Press, 2003.

[2] A. Gawer and M. A. Cusumano, "Industry platforms and ecosystem innovation," *Journal of Product Innovation Management*, vol. 31, no. 3, pp.

417–433, 2014.

[3] S. Jansen, S. Brinkkemper, and A. Finkelstein, "Business network management as a survival strategy: A tale of two software ecosystems," *Proccedings of the 1st International Workshop on Software Ecosystems*, pp. 34–48, 2009.

[4] K. Manikas and K. M. Hansen, "Reviewing the health of software ecosystems–a conceptual framework proposal," in *Proceedings of the 5th International Workshop on Software Ecosystems (IWSECO)*. Citeseer, 2013, pp. 33–44.

[5] J. Linåker, P. Rempel, B. Regnell, and P. Mäder, "How firms adapt and interact in open source ecosystems: Analyzing stakeholder influence and collaboration patterns," in *Requirements Engineering: Foundation for Software Quality*. Springer, 2016, pp. 63–81.

[6] W. Scacchi, "Collaboration practices and affordances in free/open source software development," in *Collaborative software engineering*. Springer, 2010, pp. 307–327.

[7] D. Riehle, "The economic motivation of open source software: Stakeholder perspectives," *Computer*, vol. 40, no. 4, 2007.

[8] J. Linåker, H. Munir, K. Wnuk, and C. E. Mols, "Motivating the contributions: An open innovation perspective on what to share as open source software," *Journal of Systems and Software*, vol. 135, pp. 17–36, 2018.

[9] J. West, "How open is open enough?: Melding proprietary and open source platform strategies," *Research policy*, vol. 32, no. 7, pp. 1259–1285, 2003.

[10] M. Borg, T. Olsson, U. Franke, and S. Assar, "Digitalization of swedish government agencies-a perspective through the lens of a software development census," in *40th International Conference on Software Engineering*. IEEE, 2018.

[11] H. Munir, J. Linåker, K. Wnuk, P. Runeson, and B. Regnell, "Open innovation using open source tools: a case study at sony mobile," *Empirical Software Engineering*, pp. 1–38, 2017.

[12] T. O'Reilly, "Government as a platform," *Innovations: Technology, Governance, Globalization*, vol. 6, no. 1, pp. 13–40, 2011.

[13] K. Manikas and K. M. Hansen, "Software ecosystems–a systematic literature review," *Journal of Systems and Software*, vol. 86, no. 5, pp. 1294–1306, 2013.