Response to Reviewers’ Comments

Submission No. 1897

Dear Track Chairs, Associate Editor, and Reviewers,

We thank you for the opportunity to revise our Short Paper and thank all reviewers for their valuable comments and suggestions to further develop this paper. All made suggestions were very helpful. The table provides a comment-by-comment summary of our taken actions to address each point made by the reviewers.

Sincerely,

The authors

| **#** | **Comments** | **Actions Taken** |
| --- | --- | --- |
| ***Associate Editor*** | | |
| 1 | In my independent reading, I came to agree with the reviewers: **The motivation lacks substance**. You seem to draw from the technical view on digital platforms and assume that the social network of developers interacts with the technical architecture of the project in non-trivial ways. **It is however entirely unclear what this interaction might be and why it merits our attention**. Going forward, I would urge you to figure out what you would expect. As it is, one assumption could be that the literature on coordination in open source work extends to these projects as well and hence your study is superfluous since we know how social networks of developers form as they engage in the technical development (I cite some relevant studies below). In my view, this would go hand in hand with a **revision of the research question**. How social and technical networks interact seems to lack a crucial part: the search for an explanation. **How and why (or indeed why not) would these networks interact and what would consequences of forms (or absence) of interaction be for open source projects.** This would provide some much-needed focus and substance to the study going forward. | In rewriting large parts of the paper, we strengthened the motivation and revised our research question. In addition, we detail the potential interactions in and between the networks that we expect to see, while also describing why these interactions are relevant for the evolution of the ecosystem. |
| 2 | You brush over the two conceptual domains of the study; open source and digital platforms. As a consequence, the **conceptual foundation of the proposed study suffers from a lack of precision**. […] In my view, this confusion is a symptom of the **lax conceptual development of the paper**. You draw from two major streams of IS research and do not do justice to either, leaving the paper open for critique from either side. […] For instance, the digital platform literature would contest the idea of a "hierarchy of dependencies” since the entire point of digital technology is that modules can be integrated actors design hierarchies. Here lumping ideas by Baldwin, Clark, MacCormack and others together with Yoo, Henfridsson, and Lyytinen is not straight forward. Similarly, the OSS literature is all but in agreement when it comes to what constitutes core membership. Many things make a member of a project core than merely working on a ‘core’ part of the technology. These are just two examples of many that are indicative for a lack of precision; **Concepts are introduced with little explanation, and merely referenced in a matter of handwaving. Going forward this has to be strengthened.** I would urge you to **concentrate on fewer concepts and instead detail these concepts with more care to convince the reader of the individual constructs as well as their relationships**. This point weighs heavy because a more thorough conceptual work would have made a strong case for inclusion into ICIS programme in lieu of empirical work. | In order to improve the conceptual precision and clarity of the paper, we rewrote most parts of the paper. In doing so, we tried to define the used concepts in more detail.  Furthermore, we put more emphasize on distinguishing traditional monolithic open source software projects from platform-based open source software. We believe that thereby the motivation and the need for this study also become clearer and make for a stronger case. |
| 3 | The reviewers are generally sympathetic to the proposed methodological approach — as am I. However, it is **not clear what exactly you want to do**. […] You suggest constructing graphs from technical and social interactions. **But what exactly are the networks representing that you wish to study?** Are these networks of actor-artefact interaction or do you wish to compare actor-actor networks with artefact-artefact networks? (this relates directly to my point above; what do you expect to be different or special here?). Subsequently, **how do you wish to proceed with the constructed networks?** The paper states to use ‘mainly network analysis techniques’ but then it also is the aim to ‘use network metrics as predictors for independent variables’. **What exactly do you wish to study?** How meaningful are network metrics (such as various centrality/betweenness measures) and how meaningful are these in comparison to each other or as inputs to models in traditional quantitative analysis frameworks? All this is not clear. Here the early stage of the project is exacerbating the doubts of the review panel and myself; you have **little to show for other than a high-level overview of some collected data**. | In line with the comments made by Reviewer 1 and 2 (see below), we added various additional information and descriptions throughout the paper to explain and describe the operationalization of our framework and how we plan to construct the networks. Furthermore, we detail the focus and goal of our study. We hope that it now becomes more apparent what we want to study in this paper. |
| ***Reviewer 1*** | | |
| 4 | I would recommend that you **further strengthen the motivation for your paper and the logical connections from this point onward till your conclusive discussion**. The logic becomes clear as one reads on, however **your introduction could do a better job by specifying what drives your investigation and why it is important to uncover these dependencies**. You may try to answer more clearly, for example, **what gap in understanding are you trying to fill** (I understand you want the explain the interactions between the technical and social networks), **and more importantly, why?** By knowing the pattern of such interactions, what may we be able to understand or explain better? I see you explain this partially under the contribution section, however bringing elements of your overall contribution to the framing section of the paper helps your reader get a sense of the direction in which you are headed. Also, the weight of your contribution becomes clear earlier on. Specifically, I would recommend, based on Paragraph 3 (Introduction): [Comments 5-7] | As suggested, we rewrote the Introduction section of our paper to focus more on the drivers of our investigation and the need to explore this phenomenon in more detail. Also, we tried to make the gap and the importance to fill it clearer. The more specific recommendations are addressed in the comments 5-7. |
| 5 | **Ecosystem vs. platforms**: It can be useful to **distinguish these, both conceptually** (by defining these right from the start) **and empirically** (as you mention your identification strategy, since you have a number of elements involved, both from GitHub and npm) | We added definitions for both concepts to the Introduction and further described how we operationalize our conceptual model in the Research Design section with more information and tables. |
| 6 | You cite Baldwin & Clark, 2006 to talk about ‘technical architecture that can influence participation in projects’. It can be helpful to **be more specific here (rephrase), technical architecture of what?** (the platform itself, the set of dependencies in the framework...) | We rewrote large parts of the Introduction to be more specific and make the Motivation clearer. In doing so, we removed the reference and changed the way of describing the differences between *social* and *technical* in our context. |
| 7 | You mention: “direction and consequence of changes in social and technical networks in POSSE have yet to be uncovered”. This is a very important point, here I would want to know more about **a) the nature of these networks b) what are these consequences?** A brief hint to the reader is necessary. It may be useful to suggest what these 'consequences' may be before explaining why they should be studied. Finally, **when you talk about the relationship between the technical and the social networks, I see that there is certainly a link here, but I would recommend that you make this more explicit.** What is the link between "interaction of social and technical networks" and "success of POSSE”? Additionally, I would recommend that you **stick to one term between social and technical "networks vs. layers"**. Using both interchangeably in your text serve to conceptually obfuscate rather than clarify what you are trying to build here at this point. Basically, reduce the reader's effort and streamline the argument. | In revising the paper, we added information on both networks, their interactions, and the consequences (see mainly Sections 1 and 2.2). Both sections also explicitly describe the link between the two networks.  Lastly, we decided to stick with the term “networks” and got rid of “layers”. |
| 8 | You have a potentially effective research question to direct your investigation. However, as I mention earlier, **the interplay in the paper’s vocabulary i.e. the interchanging references to “technical and social layer” and “technical and social networks” presents conceptual difficulties**. As I mentioned, it is best that you choose a single term and stick to it in the remainder of the paper. From the proposed developments in the paper, ‘social network’ and ‘technical network’ of inter dependencies is more apt. Also, you mention that your answer to this question comes from a socio-technical perspective. **By introducing "socio-technical approach here", we find ourselves talking to a very specific stream of literature and more importantly, a very specific conceptual lens that aims to uncover the dynamics of social and technical interactions**. If this is the primary objective of your paper, it may be helpful to **emphasise this point even more and bring focus to this aspect in the early segments of your paper**, particularly in the framing section. Unless this objective is salient in the way you frame the paper, mentioning it as a theoretical contribution (for now) appears trivial. | As already addressed in the comment above and suggested by the reviewer’s comment, we decided to stick with the term “networks” instead of “layers”.  Furthermore, as suggested, we emphasized the socio-technical nature of this study and highlighted it in the Introduction of the paper. Also, we stressed the study’s focus on the socio-technical dynamics in POSSE. |
| 9 | The paper adopts an appropriate methodology, but the **connection between ‘platform’, ‘ecosystem’, ‘digital habitat’ remains to be explained**. The data sources are robust, yet what is not clear is whether you aim to develop a theoretical framework to explain the socio-technical / network elements or relationships that have not been identified earlier (since you mention motif analysis)? It would have been useful to **provide more insight into the 'outcome' of your analysis and may also have been useful to present a few propositions**, although understandably, this is a short paper in its development stages. Yet, this is an aspect that requires attention and further development. | During the process of reframing the paper, we removed the concept of “digital habitats” as it did no longer fit the argument of the paper. We also describe the connection between platform and ecosystem earlier in the paper and in more detail.  Moreover, we added more details regarding the potential outcomes of our study and formulated some preliminary propositions in the Expected Results section. |
| 10 | Clearly, you have a work plan for further developing your paper. **On the topic of expected contribution, I recommend, as previously stated that you develop this section further with a view towards both scholarly and practical implications.** I see you note: “Being able to explain why some ecosystems are more successful or are growing faster than others, based on the social and technical networks underlying these ecosystems, enables developers of such ecosystems to take corrective actions” This is certainly interesting, **but it remains to be explained ‘how’ i.e. the mechanism underlying this growth may add to your contribution**. Also, your concluding remarks and discussion become more effective if you **explicate the connections between your question and findings (or contribution) in this section**, thus tying off loose ends and ensuring logical consistency. | In line with the reviewer’s comment above, we also improved the Expected Contribution section by providing some implications for both research and practice, and also describing how the socio-technical interactions might explain growth and evolution of POSSE. |
| 11 | Title: ‘Digital Habitats’: The **mention of "digital habitats" escapes me in the remainder of the paper**. Why is this paper titled digital habitat? How would you make explicit the connection between "socio-technical interactions" on digital platforms and digital habitats in digital ecosystems? Do these habitats emerge from the interactions of the social layer with the technical layer? | In the process of reframing our motivation and the direction of the paper, we got rid of the concept of “digital habitats” as it does not perfectly fit the rephrased argumentation and motivation and might lead to unnecessary confusion. |
| 12 | **Technical trace, yes, but what is social trace**? How do you explain or build your reader’s intuition or understanding of ‘social trace’? With reference to Berente et al, I feel this is slightly misguiding. | In the previous version, both social and technical traces referred to digital traces regarding either the social or the technical network of the ecosystem. To avoid confusion, we now only use the term digital trace and provide additional information on what type of digital trace we refer to. |
| 13 | Figure 1: The conceptual implication of Fig 1 is that the **platform core is treated as a black box**, we do not look at its internal modules. You may want to **connect this with your overall arguments while also making it clear in your empirical strategy**: in your study, what is this platform? | To address this issue, we made clear what we consider to be the platform in the context of our study. Also, we now explicitly state that we treat the platform as a “black box” and that our focus is on the ecosystem and its socio-technical dynamics. |
| ***Reviewer 2*** | | |
| 14 | **Providing an overview of the collected data** would give the paper more granularity and could serve as a starting point for discussions around possible research outcomes. This could either be in the form of descriptive statistics for the respective network graphs or actual visualizations. | Table 2 now provides an overview of the collected data per module from npm. Further, we provide more information in the Data Collection section of the paper. |
| 15 | While the data analysis section provides numerous technical details for how the resulting graphs might be studied, it reveals very little about how the conceptual framework provided in figure 1 might be applied. **It would be good to see how each of the proposed edge types will be operationalized to generate insights** other than ‘certain groups of developers contribute to certain modules’. **Making this link clearer would give the short paper a much stronger claim** to its contribution and make for an interesting discussion during the paper session. | We added various information on the operationalization of our conceptual framework, including tables providing an overview of the collected data per module (Table 2) and how the edges in and between both networks will be constructed (Table 3). |
| 16 | Stating that as the study is exploratory in nature, the expected results cannot be predicted does not seem sufficient. Being a short paper, it can not be expected that the results are elaborately described and grounded in the literature on platform ecosystems and open source communities, but the **expected general insights and how they might contribute to existing research should at least be suggested**. | We rewrote the sections on Expected Results and Expected Contribution to be more specific and give more information, and also align better to the motivation and context of our study. |