Reply to the review report (Reviewer 1)

Thank you for your detailed review. I have revised the manuscript according to your comments as below.

- ✧ *Reviewer's comments*
- ➢ Author's replies

- ✧ *This paper is not well-integrated. The ideas do not follow logically from the initial setup of the arguments through to the case study and then the conclusions. For example, while AI is discussed and used as a framing device early in the paper, it is never mentioned again. This is a problem because we do not need to know how HTML5 came to be standard so much as we need to know how the lessons offered by its development should guide our understanding of data standards and interoperability in the current environment. This is the source of the paper's promise, but it does not deliver.*

- ➢ I have revised my manuscript holistically to focus the approach to promote data exchange and innovation with big data. I added text from line 128 as

  > *On the other hand, interoperability or convertibility is necessary to generate machine readable data resources for AI analysis. Common technological specifications, in other words, standard plays important role to promote data exchange for emerging applications.*

- ✧ *Too much space is given to describing the changes to the W3C's internal process. The reader is left unsure which details matter to the overall thesis (how interoperability can emerge among competitors) and which are background. More attention needs to be given to the logical flow of the arguments and tying the discussion back to the state of web technologies now. Why are these new hypotheses valuable? How can they be applied to the present situation? These are not things the reader should need to guess.*

- ➢ I have changed most of introduction and conclusion part. This paper is not about standardization but data exchange and innovation with accumulated data.

- *The figures also need to be improved. For example, in Figure 2, no explanation is given for what "revenue stream" means in the context of the diagram. On the left side, for instance, it is implied that Apple predominantly relied on hardware sales for revenue whereas Microsoft was focused on software. That's fine, but then on the right, only Google Drive is highlighted as a revenue stream.*

  - I changed Figures 2 for explaining the change in architecture and conflict among business model. Then I also revised descriptive text as

    > *Google's G Suite is a productivity tools including spreadsheet, word processor and presentation, and compete with Microsoft Office. Microsoft office is developed as native applications which run on operating system installed on local devices. Functions that Google intended to provide with web applications had already been provided by Microsoft as native applications. Introducing HTML5 benefits Google, and damages Microsoft.*
    >
    > *Apple also provide productivity tools as Numbers, Pages and Keynote. However, they are distributed for free. Apple welcomes diffusion of web applications that runs on browsers of MacOS and iOS and had contributed development and standardization activities*

- *Are we to understand that Office Online is not a revenue stream for Microsoft? The push toward getting everyone to sign up for Office 365 suggests otherwise. Also, is Chrome not a revenue stream for Google? The dominant market share of their browser has certainly affected their ad business. Likewise, Figure 4 is difficult to read. It took me a moment to understand that Figure 3 and Figure 4 are the same except for the milestone markers, but they are visually cluttered and do not effectively show how these changes relate to the formation of the hypotheses.*

  - I changed descriptions from the viewpoint of comparison between web application to differences in business models as

    > *The concept of web applications is based on an architecture where web browsers work as runtime environment. Microsoft and Apple have been leading browser vendors, and the functions for web browsers to provide is different among each company's strategy. There had been confliction among the role of web browsers, and the differences in ideal role of browsers have made it difficult to update HTML standard.*

- *I do think the subject matter of this paper is important, which is why I would like to see an improved focus on the ultimate significance of the case study. The adoption of HTML5 is positioned as a singular event that played a key role in modern web architecture. If we grant that, why are the four aspects of the process that the author molds into hypotheses the ones most likely to impact the formation of standards today? I was waiting for this argument to be made convincingly, but after getting to the end of the paper I believed I was left with a list of the hypotheses and no compelling reason to accept them as important to present battles over data standards.*

  - I have changed most of introduction and conclusion part. Especially in conclusion part, I try to explain the implications for institutional design from the viewpoint of data exchange.

- *I was also hoping to see a greater discussion of the tension between standardization and innovation, given that it was mentioned several times but not really explored. Who are the innovators in the modern data landscape? How might standardization hold their progress back? The paper doesn't have to answer that specific question, but those are the kinds of basic questions I think a project like this should address in order to be a valuable contribution to the literature.*

  - Firstly I added section of "2.3. Dilemma between interoperability and innovation" to subchapter of "2. Related Works" to discuss from innovation with accumulated data for AI analysis. And I explained barriers to generate machine readable bigdata aggregated across industries in conclusion part. These amendments make the discussion in this paper from broader point of view.