

Dear Reviewer #2,

I would like to thank Reviewer for the issues raised and for the recommendations. In addressing the comments, I have been able to improve the clarity and content of the manuscript vastly. I have made major revisions to the paper based on your inputs, as mentioned below.

#1. The authors made substantial efforts to take my comments into account, and I commend them for that. However, despite the good improvements, I have some remaining concerns.

Thank you for the reviewer's heartfelt comments. The corrections to the reviewer's concerns are as follows:

*#2. There are still some "Reference not found" errors and line breaks when referring to figures in the text, but almost everything regarding the format has been fixed, which gives the revised paper a much more professional look than its previous version. Regarding the references, my point was that there are many references *with formatting mistakes in them*, and not that there are too many references in the bibliography. Please feel free to add them back if you feel they should be included.*

We checked again that errors occurred. After fixing the errors, we rechecked it on others PC. We sincerely apologize for the continued errors. References deleted in the first review were deleted because they were deemed unnecessary. Thanks for the comments

#3. The motivation of the paper is still unclear for me in the introduction, and the reasons for the limitations of smart city services are not clear in Section 2, but is much better explained later in the paper, which is a nice improvement. I believe that explaining standard constraints (due to the multiplicity of service providers) and coupling between services in the introduction to motivate the paper would be valuable. Indeed, if my understanding is correct, they are the factors that cause the limitations of smart city services the authors want to address.

We agree with the reviewer's comments. As advised by the reviewer, the content of the scenario was additionally reflected in the abstract. The contents are as follows.

- *"This study proposes a method for timely and sequential responses, through a flexible combination of the healthcare system and smart city services by envisioning a scenario that sequentially grafts the current status of COVID-19 in Korea."*

#4. The authors made some efforts to streamline Section 2, and it is much easier to follow in its current form. However, some parts still appear unnecessary to me. Table 3 just shows that medical, crime prevention, transportation, and environmental services are the most frequent, which is already said in the text, but without an explanation of what pilot city, regulatory sandbox, and smart city

challenge are, it is difficult to extract anything else from this table. Table 7 does not bring much useful insights as well in its current form. The authors have not responded to my previous comment on this table, I thus redirect them to my review of the previous version.

The description of the characteristics of each city shown in Table 3 was insufficient, as was the reviewer's opinion. Accordingly, the project described in Table 3 was briefly explained and the contents of the article were also revised.

- "... As a representative smart city project in Korea, Pilot city, Regulatory sandbox and Smart City Challenge are in progress. To summarize the smart city services used in this project, medical, crime prevention, transportation and environmental services are the most used."

Table 7 also agrees with the reviewer's advice that it does not fit the current content. Accordingly, the contents of Table 7 were deleted and only the contents described in the text were left. Thanks for your comments.

#5. Section 3.1 gives an overview of the COVID-19 and smart city systems situation in South Korea, but is not part of the novel contribution by the authors. I would thus include it in Section 2 instead. Section 2 would thus have a part on smart city services, a part on COVID-19 response plans, and then the current content of 3.1 which deals with the relationship between the two parts of the current Section 2. It would allow a smoother transition between Section 2 and Section 3, as the modified Section 2 would conclude with the need for a novel smart city service structure.

As commented by reviewer, the content of Section 3.1 includes the content of Section 2. However, for the 3.2 Expansion of smart city structure that we want to present, I think it is necessary to organize the contents of Section 2 through Section 3.1 and to draw limitations. Of course, it is also correct to understand the structure as the opinions of reviewer. We put a lot of thought into reflecting the opinions. We are sorry; however, we have decided that it is difficult to change the structure at the moment. We ask for your generous understanding of the current structure. Thank you.

#6. From the additional explanations in the text, I understand that the idea is to track the movements of everyone and then use that information to trace back the contacts of confirmed infected patients. I stand by my position that the feasibility/ethical aspects should be discussed, at least from a social acceptance or a legal point of view, as the reader is left skeptical about whether it can actually be done with the current explanations. The authors bring up interesting legal considerations in their response to my comments, it would be nice to have them in the paper to show the reader under which conditions the authors' solution can be used.

Thank you for understanding a little more about our paper. Also, I totally agree with the reviewer's comments about the skepticism of readers. Accordingly, the legal considerations specified in the first review have been added to the text. Its contents are as follows.

- “... In Korea, disease-related smart city services are legally sanctioned to be used only when necessary to protect personal information.”

#7. Finally, and this is my biggest remaining concern, the authors have not responded to my comment regarding the lack of explanations on how the flexible adding and removal of the proposed services would be achieved. This is still unclear to me in the paper. This is a very important point, since it changes what is the contribution of the paper. The current contribution seems to be the proposal of new services to handle the COVID situation, or similar situations in the future. However, I am lacking the contribution on the more general issue of integrating and removing services in an existing smart city infrastructure. In other terms, what can we use from the authors' paper to achieve a more flexible smart city service structure?

We are sorry for not being clear on the answer to the last review. This paper tried to present a concept for the smart city structure to cope with major situations such as COVID-19. Therefore, it was not possible to present a specific method of adding or removing a smart city system. Currently, smart city services in Korea are trying to implement a structure that adds and deletes when necessary, as in this paper (Reference #73). However, we apologize for not being able to give you a clear answer on this question. After observing the process of implementing the system, we will present a specific method in the thesis we plan to proceed later.

#8. In brief, the authors have made major improvements on the form and good improvements to the content. However, there are still several of my previous comments that were not answered or not answered in a sufficiently convincing way.

Many revisions have been made to this paper according to the reviewer's comments. Although there are still many things incomplete, we did our best to reflect the opinions of the reviewers. Also, we sincerely appreciate the accurate comments from the reviewers. In addition, we will use a more advanced paper by reflecting it in the ongoing research.

Thank you once again for your pertinent suggestions and feedback.

Yours sincerely,

The Authors