Sustainable Design Policies and Regulations (ARC61604)
April 2025

MeetingPoint: Reworking the Limitations of Hybrid Conferencing

NATALIE GAN YI QIEN (0356116)
natalieyiqien.gan@sd.taylors.edu.my | nataliegyq@gmail.com

School of Architecture, Building & Design
Faculty of Innovation and Technology
Taylor's University

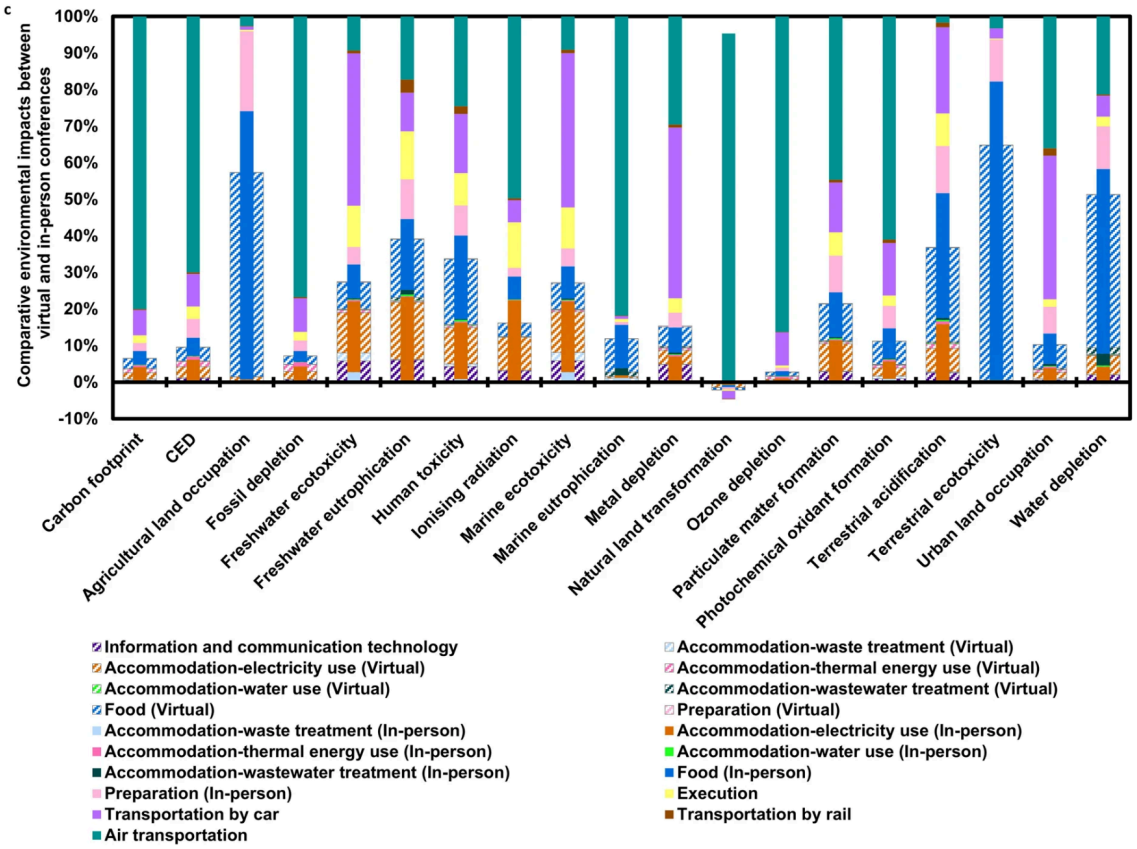
Introduction

The question of the viability of online mediums as an alternative to face-to-face meetings has been ever-growing, remarkably so since the COVID-19 pandemic had made its mark on the world. When considering online and hybrid conferences for big events, they are often brushed off in favour of in-person meetings due to limitations on human interaction and participation. This essay aims to suggest a new approach to the way we treat hybrid and online events to make them a more viable and sustainable alternative to in-person meetings, along with introducing a virtual conference software, MeetingPoint.

Analysing the Limitations of Online Conferencing

A study done by Tao et al. in 2021 calculating the life cycle carbon footprint of in-person and online conferences found that “transitioning from in-person to virtual conferencing reduces the carbon footprint by 94%”. It was also concluded that air travel accounted for majority of the carbon footprint of in-person conferences.

Fig. 1: Comparative environmental impacts between virtual and in-person conferences (Tao et al., 2021)



Despite these numbers, it is undeniable that in-person meetings have aspects that are nearly impossible to achieve through online conferencing. One factor that is prevalent among scientific events is the ease of networking with others. When everyone is online by within the confines of their own workspace, striking up conversations during breaks and lobbies is proven to be far more difficult.

The next point will be the main emphasis of this essay's suggested solution; the feeling of disconnect in online meetings. Numerous studies (Kuzminykh and Rintel, 2020; Cao et al., 2021) have found that online events don't carry the same weight and impression on attendees. Whereas in-person meetings involve a strict routine with careful preparation, online meetings don't require commuting, dressing up nicely, etc. This overly familiar environment doesn't serve the same amount of anticipation and expectations that come with being face to face with people, which can lead to lower productivity and participation (Pînzaru & Stoica, 2022).

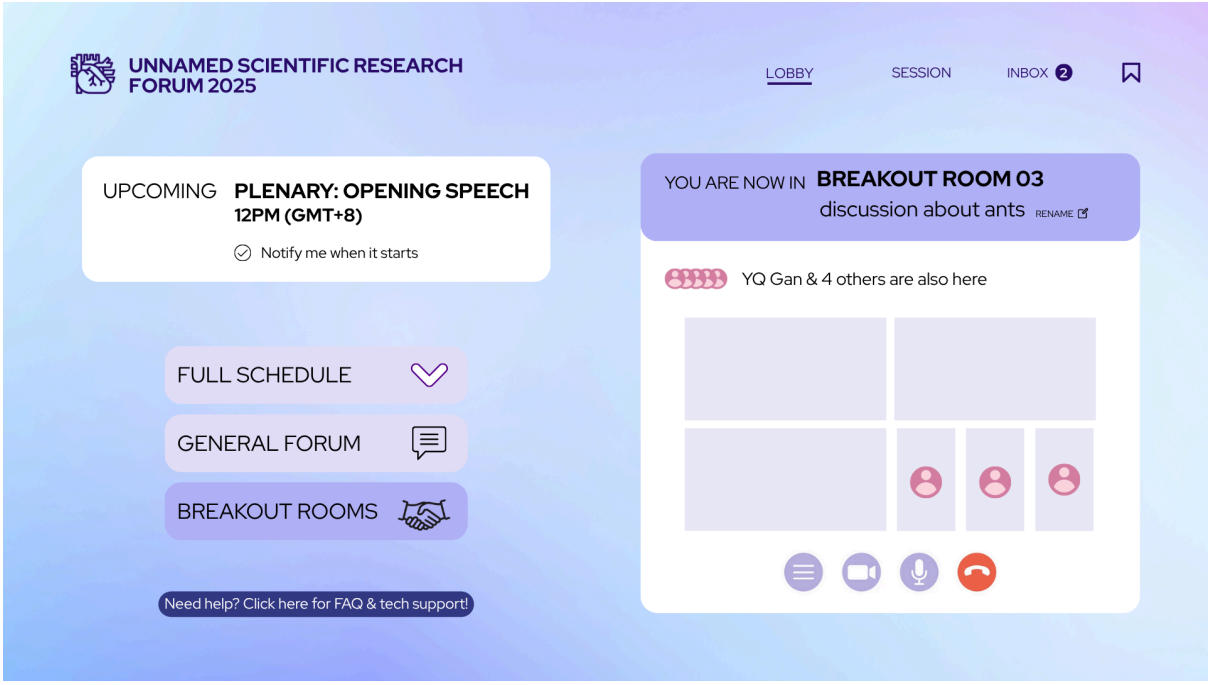
Additionally, people who join online meetings and conferences can struggle with audio & video issues, connectivity issues, amongst other technological related problems. (Suduc et al., 2023).

Breathing New Life into Hybrid Conferencing

This proposed solution will be an innovation to the implementation of hybrid conferencing, as well as the design of an online conferencing software, MeetingPoint.

First, there are various potential improvements to be made in regards to the use of online conferencing software. The problems that may come with working with existing e-conference software interfaces is that they can lean one of two ways: conventional softwares that only contribute to further blur the lines between ordinary online work meetings and special once-in-a-few-months large scale convention, and extravagantly detailed websites with crowded interfaces that warrant a learning curve and take up bandwidth leading to connectivity issues (Renders, 2021). When designing an interface that aims to be used by people of all demographics, it is important to find the balance between a user interface that is engaging enough without being muddled with too many moving parts that can take up bandwidth and make the software hard to navigate as one who is not so computer literate.

Fig. 2: Mockup of MeetingPoint's home page



Note. Main features of MeetingPoint's interface: Simplified layout, clear instructions and icons. Full event schedule details are placed behind a drop-down menu to not clutter the home page if the user isn't currently looking for that information.

A specific emphasis was placed on looking into how poster sessions could be translated through a digital medium. In-person poster sessions (where rows researchers pin up posters detailing their findings to share with an audience – a session that leads to a lot of paper wastage and carbon emissions when done on a large scale) involve the casual sharing of information and mutual communication between viewers and researchers, which can be a task to replicate online.

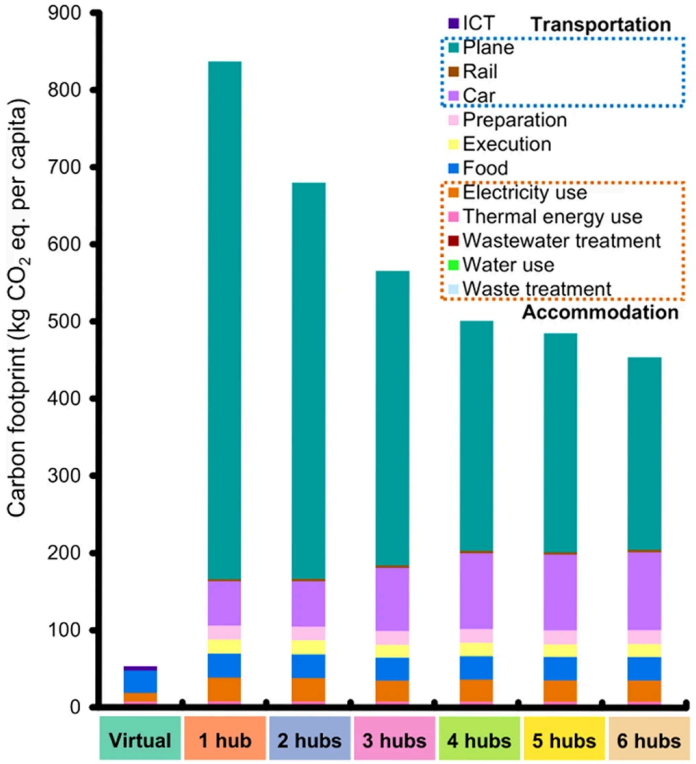
Fig. 3: Mockup of MeetingPoint in use during an online poster session

Note. The key point of this design is to replicate the casual nature of browsing through posters. Only one poster is given focus at a time to mimic the speed and attention of a viewer skimming rows of posters in-person. Viewer numbers are also shown to simulate a person's ability to see the size of a crowd gathered around posters in in-person events. Credits to posternerd.com for research poster templates.

Of course, the best software can only do so much if users aren't going to be lending their full attention to the event, which is why this solution also requires plans for implementation. Conference participants are regionally sorted into smaller groups to attend in-person in their respective locations, (which ideally do not require over half a day's time of travel). This differs from the typical hybrid conference set-up, as this will involve individual participants having their own devices and accounts set up, rather than members of a single entity calling in from one meeting room. The purpose of these regional in-person gatherings is to alleviate the laxity that comes with online conferencing, and gives opportunities for scientists from different cities – perhaps even countries – to network with each other.

The exact amount of carbon footprint reduction made by the implementation of hybrid conferences is dependent on the placement of the meeting hubs, but studies have proven that they emit less carbon than single-hub in person meetings.

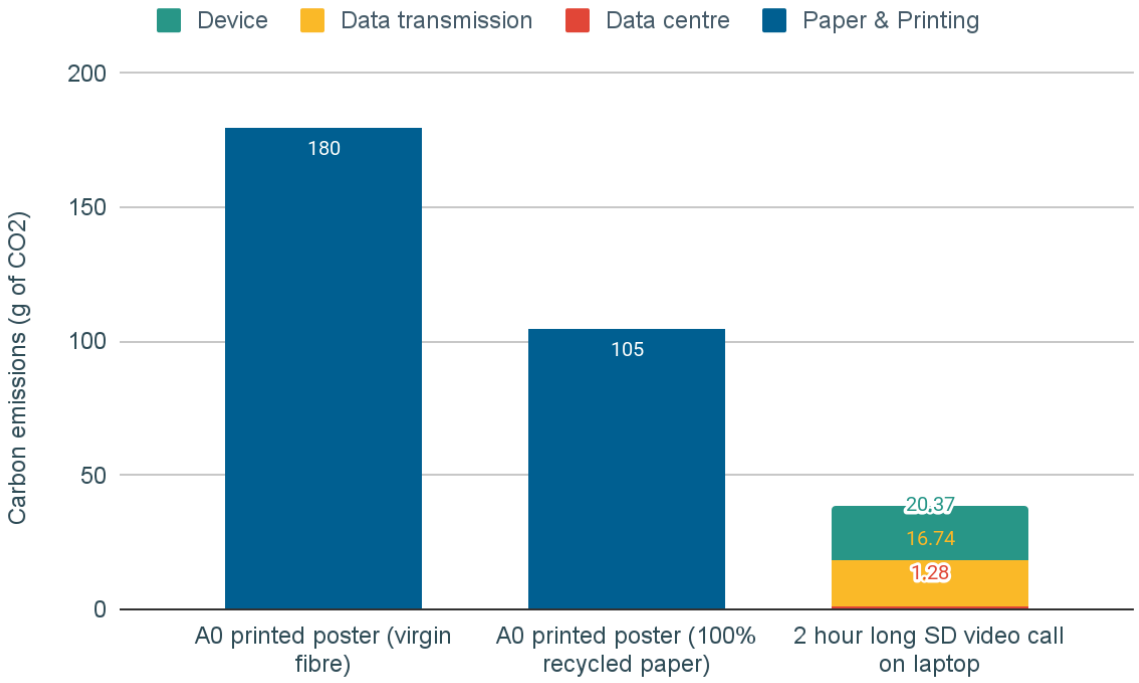
Fig. 4: Carbon footprint of virtual vs single-hub in-person vs multi-hub hybrid meetings (Tao et al. 2021)



Critical Reflection

With all the different variables accounted for in finding the cradle-to-grave carbon footprint of different conferences, it would help to have another simpler comparison. Coming back to virtual poster sessions, if there can be a way to make them more viable and appealing for people to use, carbon emissions and material wastage would reduce on a significant scale.

Fig. 5: Comparison of the carbon footprint of printed posters vs online presentations



Note. Values to calculate paper carbon emissions were sourced from Ezeep.com. Paper was assumed to be 150gsm, creation of paper from virgin fibre emitted 1.2 kg CO2/kg and 0.7 kg CO2/kg from recycled paper. Video call values sourced from the International Energy Agency.

Naturally, virtual conferencing still has its limitations other than what has been discussed so far (e.g.: other environmental effects, material depletion), but as technology continually improves day by day, the numbers calculated will be sure to change. More energy efficient devices, more reliable network connections… the list goes on, and so will the growth of sustainable technology.

Conclusion

Though in the present many people come to favour in-person conferences that have big environmental impacts for experiences that are not able to be replicated through the screen, there can be efforts made to gradually work towards a more appealing and feasible hybrid solution, such as MeetingPoint. By finding ways to organise events that bridge the gap between in-person and virtual and provide opportunities for people to connect online to the same (or greater) extent as in-person, there can be significant reductions to the carbon footprint for a more sustainable future.

References

Cao, H., Lee, C.-J., Iqbal, S., Czerwinski, M., Wong, P., Rintel, S., Hecht, B., Teevan, J., & Yang, L. (2021). Large scale analysis of multitasking behavior during remote meetings. *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3411764.3445243

Chan, A., Cao, A., Kim, L., Gui, S., Ahuja, M., Kamhawy, R., & Latchupatula, L. (2021). Comparison of perceived educational value of an in-person versus virtual medical conference. *Canadian Medical Education Journal*, *12*(4). https://doi.org/10.36834/cmej.71975

CO2 Neutral Printing. (n.d.). Ezeep. Retrieved June 5, 2025, from https://www.ezeep.com/co2-neutral-printing/

Guetter, C. R., Altieri, M. S., Henry, M. C. W., Shaughnessy, E. A., Tasnim, S., Yu, Y. R., & Tan, S. A. (2022). In-person vs. virtual conferences: Lessons learned and how to take advantage of the best of both worlds. *The American Journal of Surgery*, *224*(5). https://doi.org/10.1016/j.amjsurg.2022.07.016

Kamiya, G. (2020, December 11). *The carbon footprint of streaming video: Fact-checking the headlines – analysis*. IEA; www.iea.org. https://www.iea.org/commentaries/the-carbon-footprint-of-streaming-video-fact-checking-the-headlines

Kuzminykh, A., & Rintel, S. (2020). Low engagement as a deliberate practice of remote participants in video meetings. *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3334480.3383080

Pînzaru, F., & Stoica, V. (2022). Virtual versus face-to-face meetings: A study regarding the perceptions of the Romanian managers during and after the COVID-19 pandemic. *Proceedings of the International Conference on Business Excellence*, *16*(1), 1306–1315. https://doi.org/10.2478/picbe-2022-0119

PosterNerd. (n.d.). *Scientific Poster PowerPoint Templates*. Posternerd.com. https://www.posternerd.com/sciposters-templates

Renders, E. (2021, April 20). *The steep learning curve of virtual conferences*. LinkedIn. https://www.linkedin.com/pulse/steep-learning-curve-virtual-conferences-evelien-renders/

Suduc, A.-M., Bizoi, M., & Filip, F. G. (2023). Status, challenges and trends in videoconferencing platforms. *International Journal of Computers, Communications & Control*, *18*(3). https://doi.org/10.15837/ijccc.2023.3.5465

Tao, Y., Steckel, D., Klemeš, J. J., & You, F. (2021). Trend towards virtual and hybrid conferences may be an effective climate change mitigation strategy. *Nature Communications*, *12*(1). https://doi.org/10.1038/s41467-021-27251-2

No content generated by AI technologies has been used in this assessment.