

PB403 Societal and Environmental Psychology

Summative Assignment

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***Rethinking Academic Air Travel – A Hybrid Hub Model for
Sustainable and Inclusive Knowledge Exchange***



LSE - The London School of Economics and Political Science

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Background

Amid an intensifying climate crisis, air travel accounts for up to 4.9 per cent of global greenhouse gas emissions (Lee et al., 2009). The aviation sector is characterised by rapid growth, making emissions particularly challenging given their highly unequal distribution across the global population (Wenger, 2023). Gössling and Humpe (2020) estimate that just 1 per cent of the world's population is responsible for over half of all passenger air travel emissions. Across many industries, air travel has become deeply normalised as professional practice (Glover et al., 2018), with the perceived necessity of physical co-presence playing a key role in sustaining high levels of mobility (Strengers, 2015). Within academic institutions, academic air travel (AAT) represents a particularly significant source of emissions, accounting for between 63 and 73 per cent of total institutional emissions at some research-intensive universities, such as the University of British Columbia (UBC) (Köhler et al., 2022). This disproportionate contribution is further illustrated by research from a Swiss university, which found that academics take nearly four flights per year on average, more than double the national average, resulting in approximately five tonnes of CO₂ equivalents annually. This thrice exceeds the per-capita carbon budget compatible with limiting global warming to 1.5°C, assuming an equitable global distribution of emissions (Ciers et al., 2018; Kreil, 2021). A substantial share of AAT is driven by attendance at in-person events, with conferences, symposia and workshops frequently cited as primary purposes for flying within academia (Ahonen & Rask, 2024).

Conferences offer academics' a venue to advance their career and grow their network (Parker & Weik, 2014). This also contributes to academics keeping up to date with developments in their respective fields (Bell & King, 2010). This is a major reason why attending conferences is widely considered to be integral to a successful academic career (Oester et al., 2017) alongside being able to network with colleagues (Hopkins et al., 2019). Face-to-face interactions allow for richer and more complex communication, and signal respect and value (Storme et al., 2017). European academic conferences occupy a distinctive position within global academic mobility (van de Glind & Gomez-Baggethun, 2022). However, one academic conference of 646 attendees emits an estimated 300 metric tons of carbon from just travel alone (Schmidt, 2022). Many are regionally based, often attracting participants from across Europe and beyond, resulting in substantial volumes of air travel. This occurs despite the availability of lower-carbon alternatives such as rail for intra-European journeys. At the same time, European universities and funding bodies have increasingly committed to ambitious climate targets (Zhou, 2024), creating a tension between institutional sustainability goals and established conference practices.

Large recurring international meetings are particularly relevant, as they combine high attendance, regular scheduling, and strong professional incentives for participation. Such conferences provide a useful lens through which broader patterns of academic mobility can be observed. The International Meeting on Experimental and Behavioural Social Sciences (IMEBESS) illustrates the international scale of some academic conferences. In 2025, the conference attracted 155 participants from 107 universities across 25 countries, including strong representation from Germany, the United Kingdom, the United States and France. This geographic diversity demonstrates the high mobility required to attend such events and the substantial air travel associated with European academic conferences.

Introduction

The knowledge economy is built on the exchange of human capital and international collaboration. Academic isolationism has a “chilling effect on collaboration and mobility” (Sugimoto et al., 2017, p. 29) and limiting opportunities for academic exchange has detrimental effects on academic engagement and research impact. Though support for research openness has in part been a reaction against political upheavals and their resulting travel restrictions stymying academic movement (e.g. Sugimoto et al., 2017; Wagner & Jonkers, 2017), it is still undeniable that AAT contributes to anthropogenic climate change (Schmidt, 2022). Already two decades ago, researchers had identified the necessity of alternatives to AAT on the grounds of reducing fossil fuel consumption (Nevins, 2014). Scholars now face the tension between professional gain and sustainability (Caset et al., 2018), raising the question of whether AAT’s benefits outweigh its environmental harm (Nevins, 2014). This essay aims to reconcile these apparently opposing goals of academic networking and sustainability.

The intricacies of academic networking can be illustrated using Storme et al.’s (2017) two types of networks (see Table 1). Sparse networks facilitate emergent connections that depend on physical presence and are typically afforded by events like international conferences. Contrastingly, virtual communication has been shown to be effective in maintaining dense networks (Bagutti et al., 2024). This academic network typology suggests that sparse networks, which are associated with academic conferences, are under the most threat by measures to curtail AAT. Efforts to reduce AAT must provide researchers with alternate ways to access a sparse network.

	Sparse networks	Dense networks
Motive	Gather new knowledge and connections; increase awareness and visibility; grow network capital.	Deepen working relationships; build career safety net for long term planning.
Activities	Developing a broad range of relationships between people of diverse backgrounds.	Build and maintain highly connected networks and friendships; recognise and reward the work of others; reaffirm relationships.
Presence	Sense of "planned happenstance"; physical presence is key.	Communication channels already established; physical presence not necessary.
Examples	International conferences, associations	Seminars, working groups

Table 1. A comparison of Storme et al.'s (2017) sparse and dense networks for academic networking.

Because of its influence and diversity of skills, the higher education and research sectors are well-placed to lead progressive climate action (Schmidt, 2022). Several universities worldwide have begun engaging in measures to lower greenhouse gas (GHG) emissions: prohibiting domestic air travel; prohibiting first and business class flights; requiring senior approval; and implementing an air travel emissions accounting system (Hoolohan et al., 2021; Wynes & Donner, 2018). Interventions have thus far focused on dissuading AAT by making the journey longer, less enjoyable, less convenient, or evoking cognitive dissonance. Technological advances in aviation, such as low-carbon fuel, may appear attractive because they relieve the pressure on academics to abstain from AAT, but researchers argue that such innovations would not lead to meaningful solutions in time to limit global warming to 1.5°C by 2030 (Caset et al., 2017).

Virtual conferencing is a viable alternative to shift academic traffic away from air travel to participating digitally (Lahlou et al., 2021) and thus more sustainably. Based on calculations by the University of Zurich, participating in a virtual conference by a single institution can lower that institution's GHG emissions by 27.45%, but this alone is not sufficient to meet emissions reduction targets (Bagutti et al., 2024). Hagen (2021) maintains that events like conferences require resources so environmental damage is inevitable; even with virtual conferences, power is required to host events using data centres and personal computing devices (Tao et al., 2021). Furthermore, Whitmarsh et al. (2020) found that while attitudinal factors, like compensatory beliefs about pro-environment actions, predicted researchers' willingness to fly less, structural and social factors served as stronger predictors for air

travel. Senior researchers, researchers with family commitments, and those located in countries where air travel is the primary method of mobility tend to fly more than other groups. Interventions to curb AAT can capitalise on these contextual factors rather than individualising air travel. Conferences constitute some of the structural and social factors that may encourage less flying behaviour. Smaller, locally-limited events that use existing infrastructure makes environmental and social sustainability more attainable (Hagen, 2021). This essay takes the IMEBESS as an example conference on which to pilot our intervention. The IMEBESS sees between 150-200 attendees annually, is hosted within Europe, and makes use of preexisting infrastructure; these attributes may make the IMEBESS more receptive to sustainable interventions.

AAT must be understood within the context of the institutional scaffolds that have made aviation such a thorny problem. The neoliberalisation of academia has imposed quantifiable metrics onto definitions of academic success (Nevins, 2014), such as number of publications (Wynes et al., 2019). Academia has also become dependent on recognition and presence on an international scale, and this “internationalness” is a valuable attribute to institutions because it drives student recruitment and enhances academic reputation (Hoolohan et al., 2021). Both shifts in higher education have influenced university organisational policy and practices, chief among them AAT, forming a normative system of “academic aeromobility” (Glover et al., 2017). This pressure to engage in air travel falls disproportionately on graduate students and early-career academics (Nevins, 2014); this asymmetry is explored in the Stakeholder Overview section.

To challenge the dominance of aeromobility in academic travel, we propose an intervention to shift conference participation from in-person to virtually while preserving the aspects of in-person meeting that have become necessary in the higher education sphere. This intervention will not only dissuade academics from attending the IMEBESS in-person but also make virtual participation an attractive alternative. Stakeholders and their motives will first be identified and analysed. We then utilise Activity Theory and Installation Theory to structure our intervention development and evaluation. We aim to suggest a more sustainable form of academic co-presence – one that is environmentally-conscious, inclusive, and to which stakeholders are amenable.

Stakeholder overview

To identify effective intervention points for reducing AAT emissions, this study conducts a stakeholder analysis of actors involved in academic conference travel. Figure 1 displays the

primary stakeholders, decision-makers, key players and further interest groups based on their level of involvement in and influence over AAT.

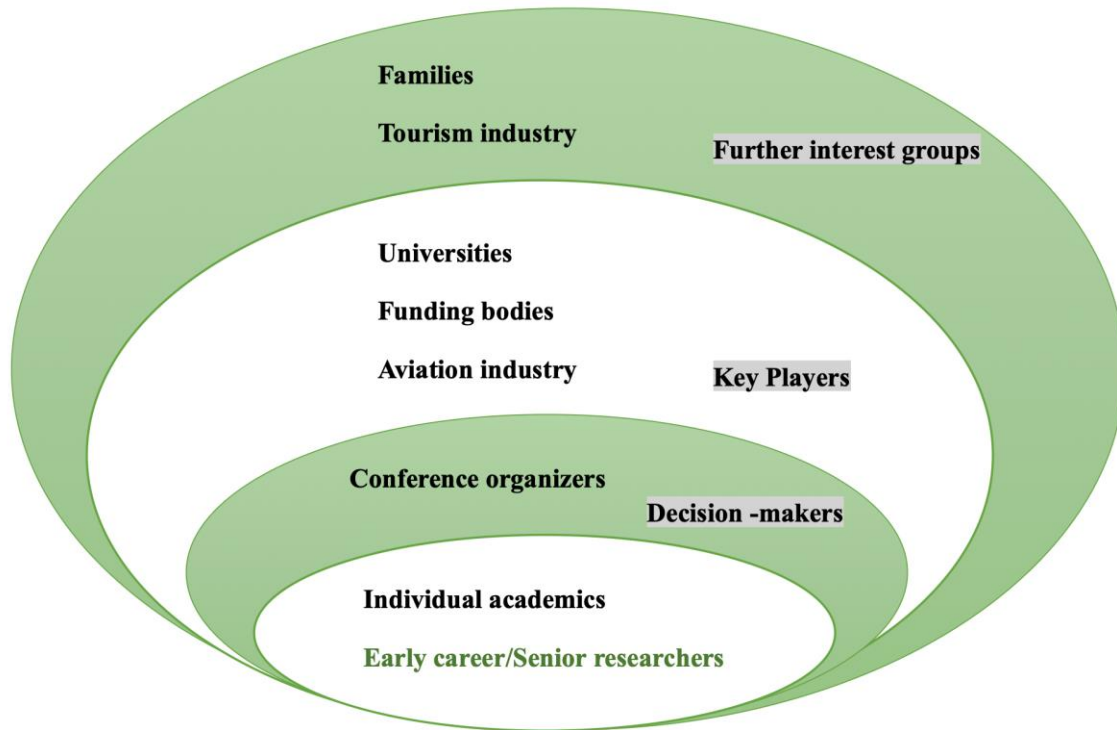


Figure 1: Stakeholder overview

Existing research indicates that a disproportionate share of aviation-related carbon emissions is generated by a relatively small group of frequent flyers (Gössling & Dolnicar, 2023). Academics occupy a prominent position within this group, as air travel has become deeply embedded in the functioning of the global academic system (De Vos, Hopkins et al., 2024). Individual academics constitute the primary stakeholders in AAT, as conference attendance is closely tied to career development, academic norms, and professional visibility. Passengers are often reluctant to reduce or cease flying because responsibility for emission reduction is commonly perceived as lying with aircraft manufacturers and airlines rather than with individual travelers. As key stakeholders, individual academics demonstrate distinct motivations for conference attendance across different career stages. In this study, early-career scholars are defined as those who have obtained their doctoral degrees within the past ten years (Stratford, Watson et al., 2024). At this stage of career development, academics are strongly motivated to expand professional networks and pursue collaborative opportunities through conference participation. Early-career scholars typically register and pay independently to attend conferences as regular participants by

themselves. As academic mobility is widely viewed as an essential driver of career advancement, few early-career scholars attend closely to the negative environmental impacts of AAT. Restrictions on academic travel are often perceived as detrimental to individual career development, and even evidence suggesting that conference travel is not directly associated with academic performance tends to conflict with dominant academic norms, making such arguments difficult for early-career scholars to recognize. Senior researchers, by contrast, are more likely to attend conferences to maintain existing professional relationships or to participate as invited speakers. With greater experience and increased awareness of environmental responsibility, some senior scholars are more inclined to evaluate the academic value of conferences and the necessity of attendance. Travel expenses for invited speakers are typically covered by conference organizers. As transportation decisions are not made by the participants themselves, invited guests may be less aware of, or less able to influence, the environmental consequences of their travel.

Because decisions regarding transportation modes and conference venues are generally determined by organizers, conference organizers are therefore treated as decision-makers and identified as key leverage points for intervention, given their substantial influence over the implementation of travel-related decisions. Taking the IMEBESS Organizing Committee as an illustrative example, its principal organizers are researchers or professors within the behavioral and social sciences. Through in-person conferences, organizers enhance professional reputation, strengthen academic networks, establish long-term collaborations with institutions and sponsors, and expand their influence within the academic community. Funding bodies and academic institutions are indirectly connected to the interests associated with AAT. While they benefit from increased visibility and international reputation through conferences, they generally lack direct decision-making power, as they are neither primary attendees nor organizers. Although some academic institutions and universities have adopted measures such as flight reduction policies or support for virtual participation, their influence over travel decisions remains limited.

The aviation industry directly profits from AAT and cultivates long-term repeat customers through pricing strategies and service incentives. In response to emission reduction targets, some airlines have introduced sustainability initiatives, including fleet modernization and carbon offset programs. However, short-term economic incentives may lead certain airlines to circumvent or dilute environmental commitments cause cost pressures and existential threats remain significant challenges for the aviation industry (Amankwah-Amoah, 2020). Although governments and sustainability-oriented organizations express increasing concern about aviation-related emissions, targeted policies addressing AAT specifically remain underdeveloped. Consequently, these actors are classified as peripheral stakeholder groups in this study.

Finally, the impact of AAT on families should not be overlooked, particularly in the context of international travel. Families often support academic travel due to its perceived career benefits and the potential for secondary leisure opportunities. At the same time, frequent business travel places considerable strain on spouses and children (Espino, Sundstrom et al., 2002). Family concerns tend to focus primarily on travel duration, distance, and destination, rather than on the environmental consequences of AAT, which currently receive relatively limited attention.

Application of theoretical concepts

Understanding AAT and identifying where meaningful and realistic interventions can be leveraged requires a detailed analysis of the structural and behavioural conditions that make frequent flying both attractive and often seemingly unavoidable for many academics. Research shows that, especially during the COVID-19 pandemic, online and hybrid conference formats were feasible at a large scale and were sometimes even attended by more people than exclusively in-person events. However, studies also show that there is currently a clear trend back towards in-person events (Goodale et al., 2025). This is very likely because the main challenge of virtual attendance, which is frequently discussed in the literature, is the limited opportunity for informal interaction and networking. In addition, online environments are often associated with higher levels of distraction and reduced focus, which can further diminish the perceived value of virtual participation (Dumbell & Haddow, 2024). Given these aspects, our analysis aims to better understand the behavioural dynamics that underpin AAT. This approach allows us to develop solutions that address the environmental challenge in a sustainable way while still aligning with academics' core motives and needs. To do this, we draw on a simplified version of Activity Theory, as outlined by Lahlou (2017), which conceptualizes behaviour as a sequence of goal-oriented actions embedded in specific contexts. In parallel, we apply Installation Theory (Lahlou, 2017), which explains how physical, embodied, and social layers jointly stabilise particular behavioural patterns. These frameworks guide our analyses how psychological and structural interventions can be used to reduce emissions associated with AAT while preserving the key functions that conferences serve.

Activity Theory helps us to take a closer look at what academics actually do when they engage in conference travel and why flying often becomes the easiest and most logical option. Instead of treating the decision to fly as a single moment, this perspective breaks the behavior down into a sequence of smaller steps. Following Lahlou's (2017) simplified model, we examined academic conference participation as an activity system made up of motives, goals, and actions that unfold over time.

Figure 2 illustrates the concrete sequence of actions that academics perform before, during and after a conference.

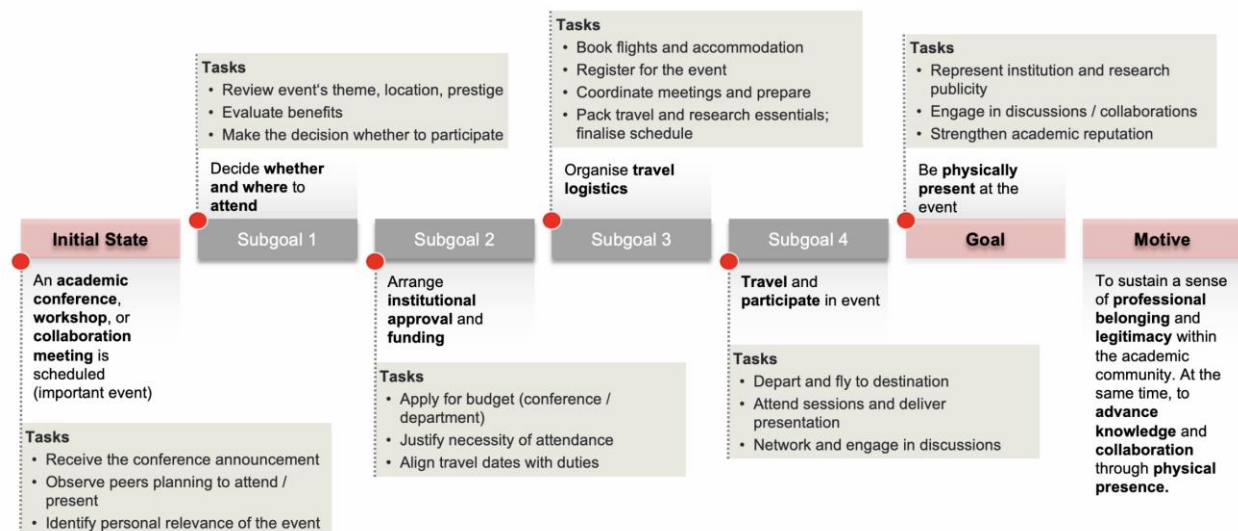


Figure 2. Activity sequence of an academic's conference participation

The activity begins with the announcement of a conference, after which academics quickly assess its relevance, anticipated benefits, and their peers' intentions to attend. This triggers a sequence of decisions and practical steps, ranging from securing institutional approval and funding to arranging travel logistics, that implicitly normalise physical attendance, as most administrative and budgetary structures are built around air travel. These actions then lead to travelling to the venue, presenting research, and taking part in informal exchanges that are often central to building collaborations and maintaining a sense of professional belonging. This underlying motive to network and connect with peers strongly anchors the expectation that meaningful engagement happens in person.

While academics are central to this activity system, our stakeholder analysis showed that several other actors play equally important roles in shaping how conference participation unfolds. Especially the activities of conference organizers, universities, funding bodies and the aviation industry intersect with those of the academics and are especially relevant for our solution proposal.

Conference organisers, in particular, occupy a key decision-making role. Their underlying motive is to deliver a successful and prestigious event, with the goal of securing strong participation and engagement. The way they plan conferences—such as selecting a venue, designing the programme, arranging social events, and inviting participants—often assumes physical co-presence. Their concrete actions, including booking large venues and structuring sessions around in-person formats, as well as operational practices such as relying on templates from previous conferences, tend to reinforce the idea that conferences

take place in a single location. Our analysis shows that meaningful interventions therefore require challenging and reshaping these established routines.

Universities are another central stakeholder whose activities strongly shape academics' behaviour. Their motive is to increase institutional visibility and support staff development, and their goal is for academics to be present at recognised international forums. Their trajectory includes approving conference attendance, allocating travel budgets, and integrating conference activity into performance evaluations, which implicitly channels academics towards physical presence. Typical actions, such as encouraging international engagement, and routine operations, such as standardised travel forms, stabilise physical travel as the default option. Any feasible intervention must preserve universities' underlying motives of visibility and recognition while offering alternatives that achieve the same goals without requiring long-distance flights.

Funding bodies and the aviation industry further shape the activity environment in ways that reinforce air travel. For funding bodies, the motive of maximising research impact and the goal of broad dissemination are reflected in grant guidelines and reporting requirements that often assume physical attendance. Actions such as allocating dedicated travel budgets normalise academic mobility. The aviation industry, driven by a motive to maximise revenue and a goal of sustaining demand, follows pricing strategies, route planning, and loyalty programmes that incentivise frequent flying. Operations such as competitive fares, automatic mileage accrual, and upgrades make air travel convenient and personally rewarding. Any intervention therefore needs to account for these incentive structures and consider how airlines could pursue their goals without continually reinforcing frequent long-distance flights.

Taken together, Activity Theory provides a structured view for identifying where along this sequence of motives, goals, and actions targeted interventions can be introduced. By making visible how flying becomes so normalized through routines and structures, it allowed us to identify leverage points for redesigning conference participation in ways that reduce emissions while preserving the core motives of all key players.

Building on this, Installation Theory helps us frame AAT as a stabilized installation of physical, embodied, and social layers that jointly sustain frequent flying. As illustrated in figure 3, these layers interact across the stages of conference participation.

	Pre-travel	During travel and networking	Overarching themes
Physical affordances	• Institution's travel portals / booking systems • Conference announcements, programmes • Availability of airports / long-distance flight routes • Administrative offices • Physical preparation materials	• Aviation and travel infrastructure • Conference venue • Hotels and local transport systems • Physical spaces for in-person interaction	• Default-status of flying • Reinforcement of in-person attendances • Low visibility of alternatives
Embodied competences	• Air travel seen as the preferred and default option • Academic travel is made available for those with certified competences. • Cognitive dissonance	• Skills and experience in navigating in-person networking and meetings. • In-person collaboration and air travel is embodied as the default option. • Sense of achievement and community. • Linked to stress and work/life imbalance.	• The "impactful academic": affiliated with many international institutions. • Academic FOMO as a potential roadblock in intervention design. • Air travel is an option that is habitual and requires the least mental load.
Social regulation	• Expectation to travel to advance one's chosen research career (Especially early-careers researchers) • Prestige status is conferred to academics who travel internationally. • Disciplinary conventions and departmental culture.	• Institutional obligation to have academic impact (e.g. number of citations). • The unspoken rule that "good networking" means being physically present, sociable, and available - not just online.	• Network capital (growing the strength of your academic network) is important to many mobile academics. • Research openness and collaboration/co-authorship is prized by academia.

Figure 3. Physical, embodied, and social layers of the conference participation environment

At the physical layer, infrastructures and institutional booking systems, conference venues, aviation networks, and travel services make flying easy and highly accessible, while alternatives remain less visible or harder to integrate. At the embodied layer, repeated participation in in-person conferences reinforces the idea that networking and meaningful engagement require physical presence. Air travel becomes associated with professional success and is experienced as the most familiar and least effortful way to access these interactions. At the social layer, disciplinary norms and career incentives link physical presence to academic impact, networking, and professional legitimacy. Our key insights is that AAT is maintained by the alignment of these layers rather than by individual choice alone. This perspective guided our analysis by showing that effective interventions must for example shift defaults and incentives, while preserving the core academic functions of visibility, exchange, and collaboration.

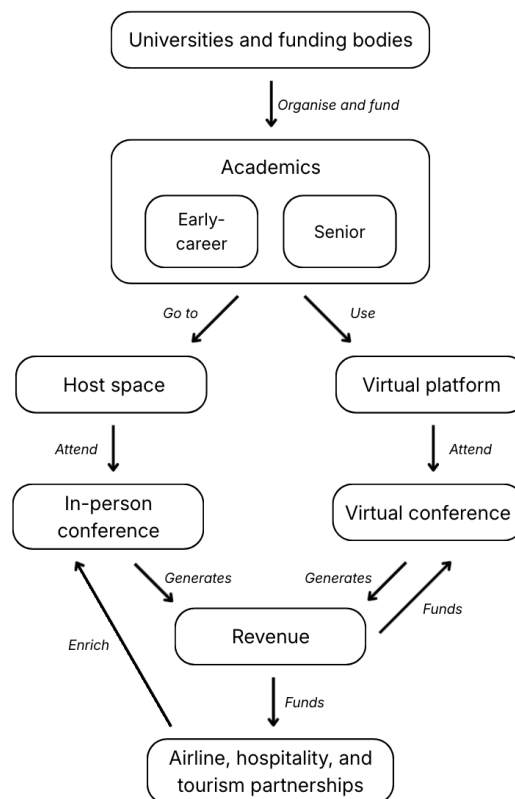
Using Activity Theory, we identified specific points in the conference trajectory where long-distance flying becomes the default. These include moments when academics anticipate networking benefits through physical presence, when funding routines implicitly assume travel, and when organisers design events around a single physical venue. Installation Theory then helped clarify which structural layers would need to change for alternatives to work: the physical layer of centralised conference locations, the embodied expectation that networking requires co-presence, and the social norms linking mobility to academic success. Together, these analyses guided us towards a solution that targets these exact leverage points, combining regional hubs that reduce physical travel requirements with VR-

enabled participation that preserves relational and visibility functions without relying on long-distance flights.

Solution proposal

Prior analysis has demonstrated that academic success requires a degree of networking, in turn requiring physical co-presence. Our proposed solution outlines a hybrid conference structure to preserve the knowledge transfer and social exchange functions of academic conferences (Lahlou et al., 2022) for early-career and senior academics while reducing the environmental impact of AAT. The intervention also allows conference organisers to maintain their industry activities, universities their research visibility, and the aviation, hospitality, and tourism industries their revenue and consumer demand (see Figure 4).

Figure 4. Flowchart of the solution proposal.



Conference hubs

Conferences like the IMEBESS are held in a different country each year; in addition, conferences typically make use of existing infrastructure, taking place in universities or dedicated event spaces (IMEBESS, 2025). This practice of repurposing existing infrastructure reduces environmental impact compared to building facilities anew (Hasik et al., 2019). We take this model as a foundation for our solution. The in-person component of our conference will continue to “travel” each year and utilise pre-existing spaces, whether that be a partner university or an event space.

To shift in-person conference participation from senior academics to early-career academics, we will implement a two-tier conference registration fee: the original registration fee of €370 for senior academics and a 25% discounted ticket of €275 for early-career academics. This extra cost that the conference organisers will have to bear will be supplemented by an increased sale of tickets for virtual attendees, which will be discussed in the next subsection, as well as savings from running a smaller-scale conference.

In addition, our intervention imposes a distance-based constraint on academics attending the conference in person. This constraint bars academics from taking long-haul flights and reduces GHG emissions resulting from AAT as well as per-person conference emissions. Similar to above, we will give early-career researchers a greater allowance to attend the conference in person: early-career researchers within a flight distance of 1250km (approximately a 2-hour flight) are invited to attend, whereas the distance-based constraint on senior researchers is 750km (approximately a 1-hour flight). Those outside this area are instead invited to attend virtually. A different pool of academic attendees will be able to participate each year due to the traveling nature of the conference, maximising the formation of sparse networks (Storme et al., 2017).

Virtual conferencing

Although switching from in-person to purely virtual conferences can reduce its carbon footprint by up to 94% (Tao et al., 2021), virtual conferencing is weaker in building community and encouraging networking (Fulcher et al., 2020). Borrowing from innovations in virtual events and remote working, the virtual component of our hybrid conference will take place on a virtual platform, such as SoWork (2025), allowing virtual attendees to meet and mingle, and fulfilling the social exchange function of conferences (Lahlou et al., 2022). Attendees control a digital avatar to move around a virtual conference space, “walking” from room to room to attend talks, participate in workshops, and meet other academics (see Appendix B). This mode of participation does not require the use of VR equipment, only a laptop with camera and microphone capabilities.

However, for social exchange and networking to take place, it is not sufficient for attendees to embody a digital version of themselves; academic networking via a virtual platform is a novel phenomenon, and as such, the embodied competences and social regulation necessary to participate have not been fully scaffolded (Lahlou et al., 2022). The novelty of virtual conference platforms gives us the opportunity to design its installation from scratch. Taking Hollan & Stornetta’s (1992) advice to identify functions unique to virtual meetings that physical co-presence cannot offer, we now point out characteristics of virtual conferencing that channel academics’ behaviour and enrich their experience beyond what they would have derived from attending in-person.

Firstly, the existing embodied competences for navigating in-person networking do not necessarily apply to virtual conferences. Social expectations and individual roles and statuses are similarly obscured. To address this cognitive and social vacuum, the virtual platform will utilise help screens and pop-up windows to offer attendees guidance on how to interact with the platform and other attendees. The virtual platform’s help screens will explicitly lay out the “ground rules” of virtual etiquette, such as how to virtually network with

a peer, thus creating a situated framing for behaviour. This system of on-demand guidance, unique to virtual platforms, is difficult to replicate in-person, and because it builds across the physical, embodied, and social layers, it creates a more resilient installation. Academics will also be asked to furnish their avatar's profile with their affiliation, title, and background so that peers can click on their profile and see these details immediately. This is a feature unique to virtual platforms that offers much more depth and flexibility than the name badges commonplace to in-person conferences. Being able to quickly signal role and status (Lahlou et al., 2022) affords a more streamlined networking experience for virtual attendees.

Secondly, virtual conferences often lack structured interaction between attendees (Fulcher et al., 2020). This poses a barrier for academics to grow their professional network and deepen working relationships. To address this, conference organisers will send a form to all academic attendees to fill with their research interests prior to the event and then sort academics into groups according to their responses. At the conference, attendees will be guided to meet members of their interest group and engage in moderator-led discussions. These interest groups will consist of a mix of in-person and virtual attendees, allowing cross-interaction. This will be made possible by hosting interest group meetings in a videoconferencing-enabled room in the conference facility, which in-person academics can physically attend, and virtual academics can join virtually. Being part of a discussion community increases interaction rates between attendees, particularly those joining virtually (Fulcher et al., 2020). With a platform like SoWork, participants can interact with each other via group chats, direct messages, video, audio, and nonverbally via their digital avatar's "emotes". This multimodality in interaction enriches the embodied experience of "being there" at the conference, allowing participants to engage deeply and to recognise virtual conferencing as a viable alternative to attending in person.

Stakeholder partnerships and implications

Lowered participation barriers of virtual conferences will benefit our stakeholder network in various ways. The geographical, economic, and logistical barriers of conference participation, such as gender, career stage, disability, carer status, and visa restrictions (Bagutti et al., 2024) are lowered, relieving stress and work/life imbalance for academics and their families. Increasing conference accessibility by adding a virtual alternative will thus likely lead to a higher virtual attendance rate (Fulcher et al., 2020; Thaller et al., 2021); even with virtual tickets being less expensive than in-person ones, conference organisers will see an increase in ticket revenue from attendance numbers alone.

There are many opportunities for adjacent industries to collaborate with IMEBESS conference organisers and provide traveling academics with a seamless and enjoyable trip whilst bolstering the industry's visibility, relevance, and revenue.

Conference organisers can use the surplus virtual ticket revenue to subsidise cheaper in-person tickets for early-career academics, as mentioned earlier. Conference organisers can also explore sponsorship opportunities with airlines to offer flight ticket vouchers in exchange for brand visibility at the conference. Depending on the host country, IMEBESS can reach out to the partnerships office of the main regional airline¹. In addition, traveling academics may have points accrued in frequent flyer programmes. Conference organisers can exploit partnerships that already exist between airlines and local service providers. Academics can use their flight miles to redeem hotel vouchers for their stay, tickets for city tours and tourist attractions, or local public transport vouchers. This partnership has the added benefit of contributing to the host country's tourism industry, enriching the relationships between traveling academics, and bolstering cultural exchanges between academics and the host city. As key players in our stakeholder map, the airlines, hospitality, and tourism industries will continue to enjoy academics' patronage this way, even with an overall decreased volume of travel.

Discussion

This paper set out to show that reducing AAT does not have to mean giving up conferences. Using IMEBESS as an example and drawing on Activity Theory and Installation Theory, the proposed hub-and-virtual model illustrates how conference participation can be reorganised in a way that lowers emissions while still supporting knowledge exchange and professional networking.

Strengths

The proposal preserves the core functions of conferences. Formal presentations, discussion, and professional visibility remain possible through a mix of local hubs and virtual participation. Rather than eliminating sparse networks, the model changes how access to them is organised, making it possible to connect across regions without relying on long-distance flights. The model also improves accessibility and inclusion. By offering a meaningful virtual option, it lowers barriers linked to costs, visas, disability, and caring responsibilities. This widens access to academic exchange beyond those who are able to

¹ For example, Swiss Airlines accepts sponsorship applications here:
<https://www.swiss.com/corporate/en/company/about-us/sponsoring>

travel frequently and aligns environmental goals with greater social equity. Importantly, this structure is scalable and adaptable: it can be piloted with a limited number of hubs and gradually expanded across conference editions and disciplines, reducing implementation risk while allowing institutional learning.

By introducing stricter distance-based constraints for senior academics, the proposed intervention deliberately disrupts entrenched status hierarchies. Prioritising early-career academics for in-person attendance reframes physical co-presence as a developmental resource rather than a prestige marker. The intervention is theoretically grounded in socio-technical approaches to behaviour change, particularly Lahlou's concept of installed practices. The IMEBESS is a highly stabilised installation composed of material infrastructures, embodied competences, and social regulations (Lahlou et al., 2022), redesigning the model alters the conditions under which academic behaviour is produced.

The virtual component of the intervention addresses key barriers to reduced travel. Drawing on innovations in virtual workspaces, the proposed use of platforms such as SoWork seeks to preserve opportunities for genuine interaction and informal exchange (Lahlou et al., 2022). The intervention recognises that virtual networking is a novel practice for many academics. Etiquette guidance and role signalling address this cognitive and social vacuum (Hollan & Stornetta, 1992), supporting more equitable participation across modalities.

Finally, the intervention is scalable and adaptable. It can be piloted with a small number of hubs and gradually expanded across conferences and disciplines. Because it relies on existing infrastructure and widely available platforms, it does not require major technological breakthroughs but mainly a shift in organisational routines and expectations.

Limitations

However, several limitations and risks must be acknowledged. One important limitation is the reduced quality of informal networking. While structured interest groups and virtual spaces can support interaction, they cannot fully replace spontaneous encounters in corridors, over coffee, or during shared meals. These moments are often crucial for forming new connections, especially within sparse networks.

Lowering barriers to participation through virtual attendance may also encourage academics to attend a greater number of conferences, potentially leading to rebound effects that partially offset emissions reductions. In addition, proposed collaborations with airlines, while financially pragmatic, raise concerns about greenwashing and the symbolic reinforcement of aviation.

Another limitation concerns career signalling. Physical attendance at conferences still carries symbolic value, particularly for early-career researchers. If in-person participation continues to be seen as more legitimate than virtual participation, the model risks creating a hierarchy between those who can attend physically and those who cannot.

Implications

These challenges highlight the need for institutional change. Universities and funders must recognise virtual participation as equivalent to in-person attendance in hiring, promotion, and evaluation. Without this, incentives will continue to favour flying, especially for those at early career stages.

New inequalities may emerge, including disparities in digital access, time-zone disadvantages, and the continued perception of virtual participation as less legitimate. Addressing these issues will require explicit institutional recognition of virtual engagement as professionally equivalent. Institutional feasibility remains a challenge, as the model requires buy-in from stakeholders whose professional identities are closely tied to mobility. Yet this resistance may be mitigated by alignment with universities and funding bodies, many of which have committed to ambitious climate targets (Zhou, 2024).

Success should also be assessed using both environmental and academic criteria. Reductions in travel emissions need to be considered alongside academic outcomes such as participation, diversity, collaboration, and perceived networking value.

If adopted more widely, the hub-and-virtual model could support a long-term shift toward low-carbon knowledge exchange. Rather than weakening international collaboration, it offers a way to maintain openness and professional interaction while making academic conferencing more compatible with climate targets.

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Appendices

Appendix A – Stakeholder analysis table

Stakeholder	Motives and goals	Contribution from actor	Actor's rewards	Affordances	Competences	Regulation
Individual academics (early career)	Development of academic network; collaboration and career mobility	Generate demand for air travel through conference attendance Legitimize long-distance academic mobility as a professional norm	Gain professional visibility and build early academic networks. Access collaboration opportunities that support skill development. Strengthen future career prospects through recognised participation Increased accessibility and inclusivity for attendees	Physical preparation materials	The “impactful academic”: affiliated with many international institutions Academic FOMO as a roadblock in intervention design	Expectation to travel to advance research career
Individual academics (senior researchers)	Seek professional recognition; maintain academic relationships Preserve established professional networks	Generate demand for air travel through conference attendance Legitimize long-distance academic mobility as a professional norm Normalise frequent long-distance academic travel through repeated participation and leadership roles at international conferences	Maintain and expand professional networks within their field Exchange new data, receive peer feedback, and stay updated with developments Enhance academic prestige and improve chances for funding or promotion	Physical preparation materials	Air travel is an option that is habitual and requires the least mental load Academic travel is made available for those with certified competences Symbolic power to shape academic norms	Network capital is important to many mobile academics Network capital is important to many senior academics and often implicitly rewarded in promotion and evaluation systems

Conference organisers	Rely on physical attendance for prestige, networking, and financial viability	Create and sustain demand for academic air travel by organising in-person international conferences Reinforce expectations of physical attendance	Increase organisational visibility and establish credibility within the academic community Build long-term partnerships with institutions and sponsors Gain recognition for successfully hosting high-impact events	Sharing conference announcements and programmes.	Capacity to design conference formats and participation modes Control over programme structure, prestige signalling, and attendance norms	Financial dependence on registration fees and sponsorship Reputational pressure to host “high-impact” in-person events
Universities and academic institutes	Promote global visibility and rankings through international conferences, partnerships, and mobility schemes Encourage international presence as an indicator of excellence	Support and legitimise academic air travel through funding schemes, mobility policies, and performance metrics	Raise institutional reputation through researchers’ international presence. Increase visibility of the university’s research outputs Benefit from improved recruitment and performance metrics linked to academic mobility	Institutional infrastructure (travel offices, mobility grants, international partnerships)	Authority to set evaluation criteria and mobility expectations Capacity to allocate resources and shape organisational norms	Institutional obligation to have academic impact (e.g. number of citations). Research openness and collaboration/co-authorship is prized by academia
Funding bodies	Require international networking; sometimes include travel budgets that incentivize flights	Indirectly incentivise academic air travel through grant structures and dissemination requirements Reinforce international mobility as a marker of research impact	Showcase the impact of funded projects through public academic dissemination Strengthen relationships with leading researchers and influence research directions	Financial resources Legitimacy to define “impact” and “excellence”	Power to shape research practices through funding conditions Agenda-setting influence over academic priorities	Accountability frameworks focused on visibility, outputs, and international reach
Aviation industry	Benefit from the academic travel market; shape accessibility through pricing and route availability	Provide infrastructure and services enabling academic mobility Actively accommodate academic travel demand through	Revenue Customer loyalty	Availability of airports / long-distance flight routes Frequent flyer membership awards	Operational capacity to sustain frequent long-distance travel Market power in shaping route availability	Aviation regulation and market competition frameworks Limited obligation to reduce demand-side travel

		scheduling and pricing				
Tourism industry	Attract conference-related travel Maximise occupancy and off-season demand	Support academic air travel by providing accommodation and local services tied to conferences	Accommodation revenue Local economic stimulation	Local tourism infrastructure Conference-oriented service ecosystems	Ability to package destinations as “conference-friendly” Coordination with organisers and venues	Local and national tourism policies promoting destination attractiveness and international visitation Economic development strategies that incentivise conference and business tourism
Family members	Maintain family stability and emotional wellbeing Support academic career development	Provide emotional and logistical support that indirectly enables frequent travel Absorb care and domestic responsibilities	Second-hand travel benefits Personal fulfilment	Informal support networks	Limited formal power High adaptive capacity to accommodate academic mobility demands	No formal regulation; impacts remain largely invisible in institutional decision-making

Appendix B – Virtual platform examples

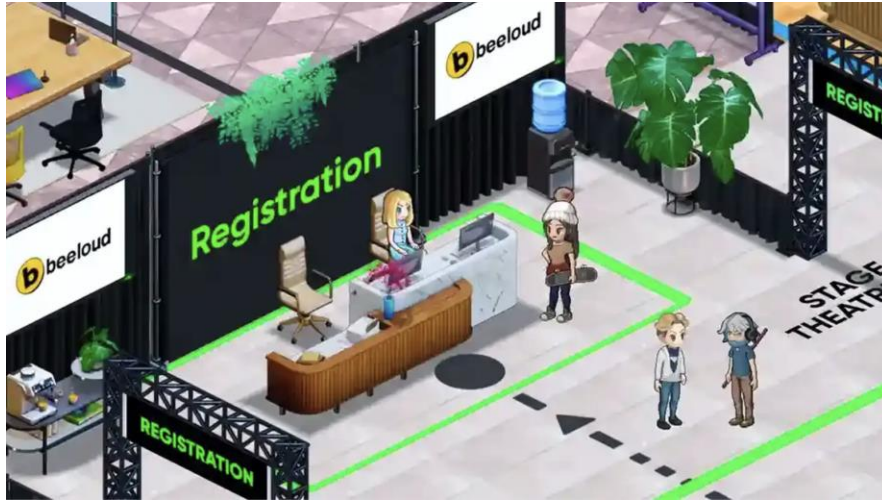


Figure 1. Visualisation of digital avatars in a virtual conference space.

SoWork. (n.d.) SoWork – Smart Virtual Workspace. [Screenshot]. Retrieved from <https://www.sowork.com/features/virtual-events>

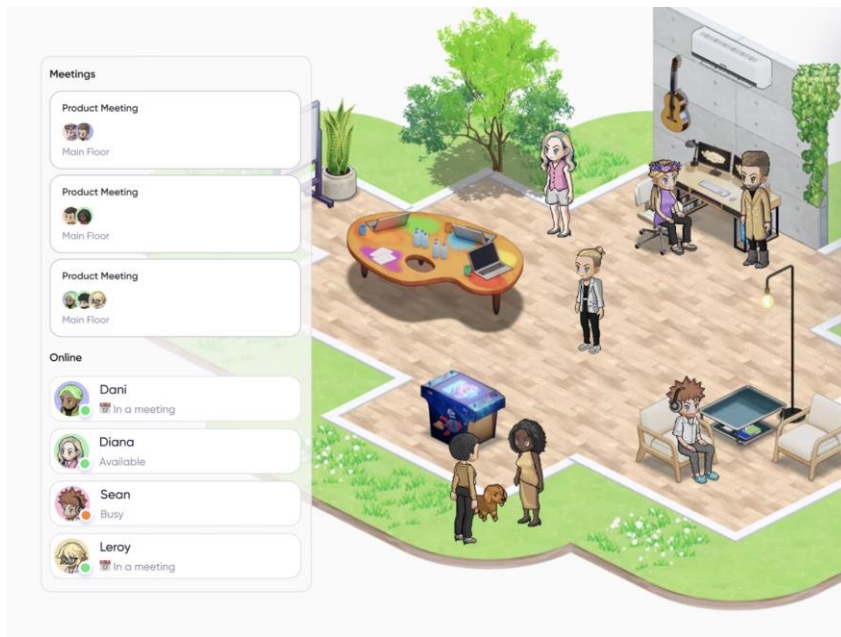


Figure 2. A list of online attendees is displayed to the side of the conferencing space, allowing academics to click into each profile, learn about peers, and network with each other.

SoWork. (n.d.) SoWork. [Screenshot]. Retrieved from <https://www.sowork.com/>



Figure 3. Interacting with peers through the virtual platform encompasses multiple modalities (audio, video, avatar, and chat).

SoWork. (n.d.) SoWork. [Screenshot]. Retrieved from <https://www.sowork.com/>

Appendix C – History of AI Chat

- „Please rewrite this sentence in more formal academic English.“
- „Improve the academic tone of this paragraph without changing its meaning.“
- „Rephrase this paragraph to sound clearer and more professional.“
- „Edit this text for grammar, clarity, and academic style.“
- „Polish the language of this section while keeping the content unchanged.“
- „Restructure this paragraph to improve logical flow.“
- „Make this paragraph more coherent and easier to follow.“
- „Check this text for grammar and style.“
- „Help me improve wording only, not content.“
- „Preserve meaning but improve phrasing.“