

Scalable hybrid approaches to ensure equitable access for all sizes of astronomy events

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XXXII IAU GENERAL ASSEMBLY

CAPE TOWN, SOUTH AFRICA, 2024

What does the future of astronomy look like?

- **Unique time** - rapidly advancing technology, global pandemic, rise of AI
- **Diverse global trends** beyond astronomy and academia
 - How to be more accessible and inclusive in the way we interact
 - Addressing big global challenges, e.g., climate change
 - Distributed collaboration and the future of work
 - Creating opportunities for diverse perspectives and contributions
- We owe it to the **next generation** to prepare them for a future that by necessity will look quite different to our past
- The Future of Meetings is a **community of practice** dedicated to experimenting with new approaches and technologies for better online and hybrid interaction (and have contributed to the technical aspects of this GA!) - <https://tfom.org>



#TFOM
TODAY TOMORROW FUTURE



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Every astronomy event should be **hybrid**

- Accessible to all, no matter where you are located and whether you can travel
- Recorded for future access and audiences
- Not a huge challenge/organisational burden
- Environmentally friendly and sustainable
- 'Hybrid' here means equal engagement of online and in-person attendees
 - It's often used incorrectly to mean 'Streaming' - where people can access content online but can't otherwise participate in the event
- If you have astronomers at an event without good internet connectivity, you have other problems... ;-)
 - Wired is best, but mobile (or even Starlink if need be) also works in most places
 - If internet costs less than a longhaul flight - it's worth it!



Not everyone can travel to in-person meetings

- Travel is expensive
 - Not everyone has access to grants with attached travel funding
 - Only wealthy people can afford this personally
 - Scholarships are great, but they are limited in availability and always in high demand
- Travel is time-consuming
 - Time off work can be tricky, using vacation time for conferences can be difficult
 - People have other responsibilities, e.g., family, which can prevent travelling
 - Can be even more difficult for people needing accessibility and assistance
- Visas are really difficult & expensive, particularly for Global North meetings
 - Time-consuming, often don't know if you have one until the last minute
 - US, UK, and Schengen Area can be particularly difficult for visas
- The unexpected can happen
 - Planes cancelled, people falling ill, wars breaking out, volcanoes erupting, etc.
- Travel is making global warming worse
- Hybrid provides a better solution
 - Doesn't prevent those who want to travel, does help those that can't



Minimal hybrid works well and doesn't cost much

- For a basic setup, use Zoom/Jitsi/Google Meet/Teams/etc.
 - Also live-stream to Youtube/etc., and record.
- Get all presenters to connect individually and share their screen
 - No dongles/adapters needed!
- Have remote microphones connected to one computer (and that computer to speakers etc.)
 - Make sure everyone uses a microphone - no microphone, no talking!
 - Avoid feedback loops (only one computer running audio)
- Have a camera looking at the crowd, and a camera at the speaker
 - Owl/360° cameras can work well with this - automatically focus on speakers
 - And/or have two organiser connections, one for each camera
- Have a screen showing online participants (ideally with their cameras on)
 - Makes them more 'real' to in-person attendees



Minimal hybrid works well and doesn't cost much

- Gets more complex with parallel sessions, but can copy-paste setup
- Can easily be run by event volunteers
- Make sure you have someone focussed on online attendees for each session
 - Confirm that sound, cameras, and screen sharing are working OK
 - Watch out for online questions
 - If you can, use one channel for questions regardless of attendance mode (e.g., Zoom chat)
- Slideo/other online survey tools can help survey both in-person and online attendees in real time
- Online posters can be more effective than in-person ones
 - Not limited to static text and images
 - Available online for much longer than is possible in-person
 - Avoids poster tubes!

Minimal hybrid can be built upon for better experiences

- Expand live language translations
 - Zoom etc. offer audio overlays for this, if you can have people translating live
- AV companies can do professional setups, but they can be expensive
 - Do all the setup for you, supply people to run everything - but you pay for it.
 - Often limited in what they are willing to support
 - They prefer software and setups they are used to, not experimenting with new ones
 - Sometimes they only focus on in-person AV problems, not helping online attendees
- If you have the budget, you can always get better cameras, microphones, lighting, extra screens, etc.
- Consider sending conference goodies/snacks/etc. to remote participants too
 - E.g., vouchers for printing conference T-shirts/mugs/etc. from global/local suppliers
 - A postcard from the organisers?



Changing the mentality in the room

- Make sure everyone uses microphones when they are talking
- Give equal status to online people, e.g., alternate questions between online and in-person
- Online speakers are as valuable as in-person speakers (and cost less!)
- Do group photos with online attendees
- Provide ways for online and in-person attendees to interact (e.g., Slack/Discord/Zulip)
- Have a good way for online attendees to alert to connection problems etc.
- If you have small group discussions, also do an online table, or have several hybrid tables



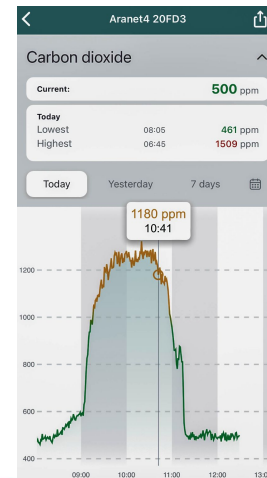
Make sure that in-person is as healthy as possible

- The last few years have highlighted the risks of in-person meetings
- The covid pandemic is still ongoing
 - Those with health risks might not be able to travel, such as immunocompromised, or living/working with vulnerable people
 - Be aware of waves of infections
 - Keep track of illnesses, and share info where possible
- Provide masks, basic healthcare items (pain medication, covid/flu tests, etc.)
 - Consider making masks required, particularly if it is taking place during a covid wave
- If people are feeling ill, ask them to attend online instead
 - If you're already set up for good hybrid, this becomes very straightforward



Make sure the in-person venue is well ventilated

- Use CO2 monitors in all spaces
 - CO2 should be <600ppm (outdoors is ~450ppm)
 - If over 1,000ppm, you have a problem you need to urgently fix (open windows/doors)
 - Check in advance and while the meeting is going on - it varies with # of people in room
 - If people start falling asleep, suspect CO2, not boring presentations...
- Make sure ventilation is running properly, not just aiming for a set temperature
- Have someone on standby who can control the building ventilation
- Consider installing extra HEPA filters in the middle of the room (can DIY or buy)



Accessibility grants

- Not everyone has easy internet access
- Particularly important for global south, but not exclusively
- Small grants for online attendance can make a big difference
 - Childcare: so they can concentrate on the meeting rather than looking after kids
 - Internet access: can be expensive in some countries
 - Assistance for deaf/blind attendees, e.g., closed caption software
 - Laptop loan: mobile phones are common, but not always laptops
 - Audio headset / microphone: not always easily available/of reasonable quality
 - VR headset access: if the meeting has VR components
 - Working area hire: if they don't have a good working place available
- Make sure to advertise it well - can be unusual, people don't look for it
- Also for in-person attendance, e.g., equipment to boost audio for hearing aids



Do good before/after surveys

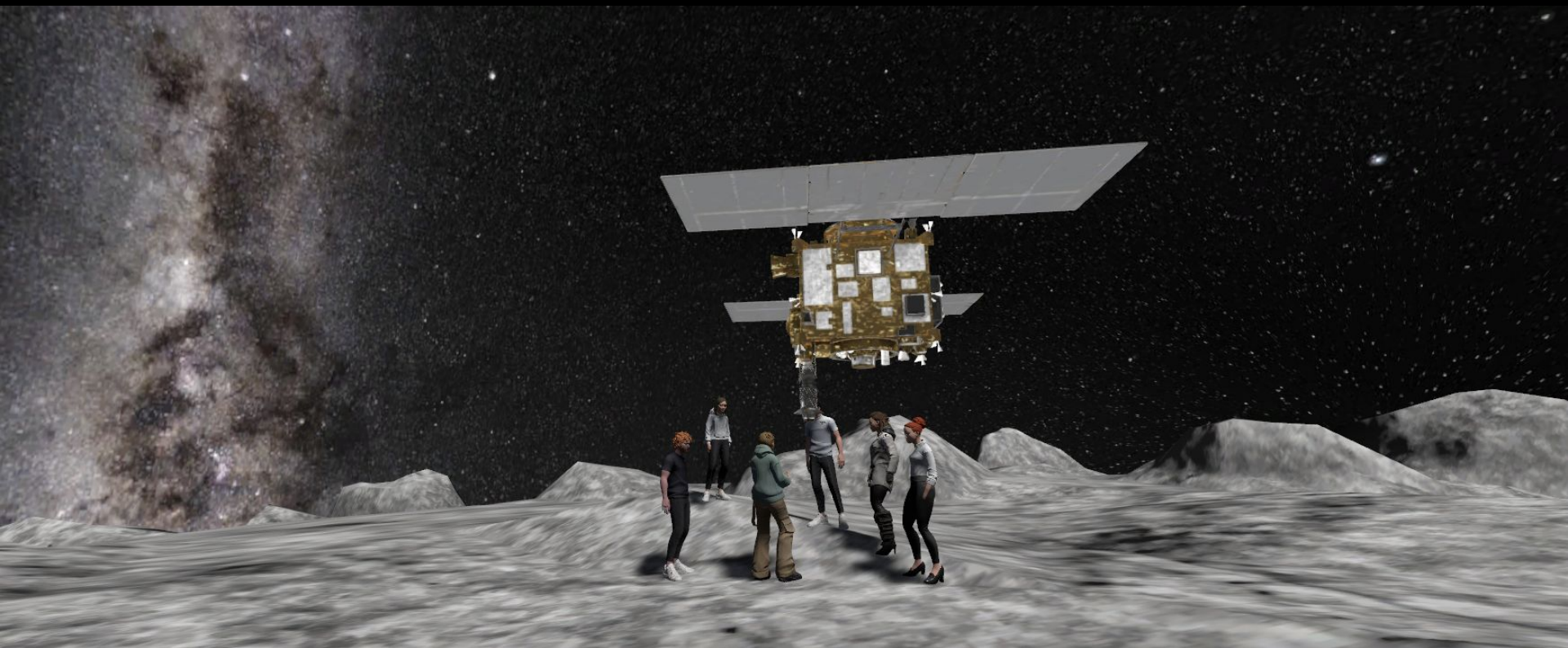
- Before the meeting: ask people what they want to get from the meeting
 - Also use it to set reasonable expectations of what you as organiser can offer
- Afterwards, ask them if the meeting met their expectations
 - Match questions to the before-meeting survey
- Ideally ask the same questions to both online and in-person attendees
 - Don't ask leading questions that, e.g., assume in-person attendance
 - Be careful of survey bias, e.g., if you're just asking people that could previously attend the conference in-person
- Collate and share feedback so others can learn from it
 - Be careful that ethics reviews might be necessary before sharing survey results



Spatially aware environments

- GatherTown/Remo/similar provide old-fashioned video game interfaces
- Spatial provides fully 3D interactive spaces, on computer/tablet/phone/virtual reality headset
- These have spatially aware audio - like real life, can only hear so far away
 - Enables small group conversations
- Can go far beyond 'in-person' - exploring exotic locations etc.
- Can have 3D museums/exhibitions that would not be possible in-person
- Environments can be reused over different events
 - Not just meetings, but also workshops, group conversations, etc.





Credit: Emily Kerrison/Elizabeth Tasker/OmniScope

Online only conferences can also work well

- Explore options, don't just copy-paste in-person formats into Zoom and expect that to work well
- Be flexible with timezone options with a global audience
- Having pre-recorded presentations only, and focusing on discussions during the meeting can work well
 - But make sure participants have time available to watch the pre-records!
- Using Spatial/Gather/etc. only can replicate some in-person experiences
 - Being in the same room for presentations/'watch parties'
 - Informal chats in coffee areas etc.
 - Can be connected to from VR headset, desktop, laptop, mobile, etc.
 - Does require participants to do something different
- If you provide multiple connection streams, expect people to pick the simplest
 - (Yes, this means they'll all be on Zoom...)



Questions?

- This presentation has not covered everything!
- Don't be afraid to experiment with different things and see how they work out!

Try things out:

- Gather space: Parkes/Murriyang Telescope history:
 - <https://app.gather.town/app/uUZhK6tXbUAzIRuJ/Parkes%20history>
- Spatial space: the IAU GA virtual venue!
 - <https://www.spatial.io/s/Main-Hall-IAU-GA2024-66a65c267c02e07c0f7cf573>
- Try Spatial with a VR headset, if you haven't already!

