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MOBILE APPS

A conference in your pocket

Meeting attendees can use apps to network and ease logistical hassles.

BY ROBERTA KWOK

A tweet caught Jessica Ball's attention at last year's meeting of the American Geophysical Union (AGU). A panel had been added about the trial in which six Italian scientists had been found guilty of manslaughter for their handling of earthquake-risk communication, shortly before a magnitude-6.3 quake struck the city of L'Aquila in 2009, killing 309 people. Ball, a PhD student in geology at the University at Buffalo in New York, added the session to her itinerary using the iPad app for the AGU meeting in San Francisco, California. During the panel, she tweeted about speakers' key points, including the importance of

separating the roles of science advisers and civil authorities.

Ball also met geologists and a science-communication expert for drinks during the conference — organized through Twitter. She used her tablet to show other attendees videos about the lava domes that she studies, and displayed a poster with Quick Response (QR) barcodes that allowed people to access the same videos online using their smartphones.

Conferences have come a long way in recent years. Attendees used to base their planning on phonebook-sized paper programmes that they lugged around in tote bags, and communicate only with people they happened to bump into at coffee breaks. Now, a host of apps on smartphones and tablets allows attendees

to expand their networking, search meeting programmes, get schedule updates, discover under-the-radar events, share information and offer better explanations of their work. As long as attendees make sure that they don't spend the entire meeting glued to screens, mobile tools can facilitate lively online conversations, inform research and pave the way for face-to-face meetings.

FOLLOWING THE BUZZ

Twitter is by far the most popular channel for online conference chatter. The event's official hashtag can lead users to organizers, panelists and attendees already tweeting about the meeting. Tweets about an upcoming session might suggest whether it is worth ►

▶ attending, and comments about an ongoing or completed panel allow people to pick up the main points if they couldn't attend. "It takes the stress out of feeling like you have to be everywhere at once," says Kelle Cruz, an astronomer at Hunter College in New York. Scientists also can track the buzz about their own talks by creating a hashtag specifically for their session.

Twitter is also a crucial networking tool, helping people to connect with fellow attendees who have similar interests. Users can invite Twitter connections for coffee or look out for their name tags at the conference, paving the way for an in-person introduction, says Emily Jane McTavish, an evolutionary biologist at the University of Kansas in Lawrence. "That's made a big difference to me at meetings where I didn't know people," she says. Jeremy Yoder, an evolutionary geneticist at the University of Minnesota in St Paul, used Twitter to help to organize a lunch for lesbian, gay, bisexual and transgender scientists at the First Joint Congress on Evolutionary Biology in Ottawa last year. And although these connections might not lead to immediate work advantages, one never knows who might be on one's next grant-review panel or job-search committee, says Cruz.



"It takes the stress out of feeling like you have to be everywhere at once."

Kelle Cruz

SAVE IT FOR LATER

People sometimes tweet details about sessions they attend, as a way of taking notes. Holly Bik, a marine genomicist at the University of California, Davis, finds that her notes are often too long-winded if she types them out in a word-processing programme, but Twitter's 140-character limit helps her to distil out the main points. She also can quickly add links to papers. Later, she uses Storify (a website that is also available as an iPad app) to collect and archive relevant tweets so that she can easily access them later.

Tweeting helps scientists who can't attend the conference to follow important developments, which is particularly appreciated at small meetings. Some people tweet to ask for clarification from other attendees during a talk — for example, to request help understanding a figure, or to find out what an acronym stands for. Users should make sure, however, that the conference doesn't have a policy against tweeting — and should be careful not to disrupt the presentation by

talking on their phone, leaving the ringer on or typing ceaselessly. They should also take care to avoid tweeting or posting excessively harsh critiques of data or presentations, given that they can be seen by just about anybody online — including the speaker. Critiques in general are acceptable, but users need to be as diplomatic digitally as they would be in person.

Twitter can also be a good way to communicate with meeting organizers, who may be able to answer logistical questions such as where to eat or how to deal with problems with the audiovisual equipment. It can be less disruptive than ducking out of a session to make a phone call, and multiple organizers and attendees will be able to see the question, increasing the chances of a quick response. At the 2013 meeting of the American Association for the Advancement of Science (AAAS) in Boston, Massachusetts, in February, organizers responded to tweets sent to the official @AAASMeetings account within minutes, says Tiffany Lohwater, director of meetings and public engagement for the association in Washington DC.

Tweeting at conferences can even lead to unexpected career developments. McTavish once tweeted about the lack of other female attendees at a computer-science workshop. One of her Twitter followers happened to be organizing a computational phylogenetics hackathon — a meeting of biologists and programmers to develop new software tools — and invited McTavish to apply to attend. Her participation in the hackathon led to a paper and an opportunity to reconnect with the scientist who ultimately became her post-doc supervisor.

Other social-media tools may also help attendants to navigate the myriad sessions and plenary events at a conference. Organizations sometimes post meeting updates or highlights on their Facebook pages; users can 'Like' the page to see the updates in their news feed. And when the meeting is over, attendees

can maintain connections by sending 'friend' requests through Facebook or the more professional LinkedIn.

CONFERENCE LOGISTICS

Increasingly, conference attendees can turn to apps that are tailored to specific meetings. The quality and features vary, but such apps often include schedules, abstracts, presenter biographies, PDF and PowerPoint files uploaded by speakers, venue maps, lists of nearby restaurants, and ways to take notes and save contacts. Some of them also work offline — a boon when the conference Wi-Fi gets bogged down. "You don't want to be sitting there waiting for pages to load," says Silke Fleischer, co-founder of ATIV Software in Santa Rosa, California, which develops event-planning and conference apps. Among others, it has provided app software for the 2012 Society for Neuroscience meeting in New Orleans, Louisiana, which had about 28,000 attendees.

Conference organizers can build their apps with various providers to get a range of features. ATIV's EventPilot app lets users view downloaded PowerPoint slides, which is useful if the projector quality is poor. Attendees can also exchange contact information by scanning QR barcodes on each other's phones, even without an Internet connection.

EventMobi in Toronto, Canada, provides a live polling feature that allows speakers to ask questions of the audience and get a real-time chart of the results. An app by Bizzabo in New York suggests attendees with similar interests for users to contact, and Bloodhound in San Francisco will soon offer a feature to look at sessions that users have chosen to attend, and suggests others that they might like.

Users can turn to other apps if the conference software doesn't offer the required features (see 'Appy to help'). And some apps can help researchers in the lab, too (see *Nature* **484**, 553–555; 2012).

Online tools and mobile devices have even infiltrated the old-fashioned poster session.

ON THE GO

Appy to help

Here are some of the most useful apps for conference-goers.

- Twitter, HootSuite and Echofon: read Twitter feeds, send tweets, follow other users and search for hashtags.
- Notability and iAnnotate PDF: type or handwrite notes on a PDF file, such as a conference programme. Some apps sync notes to cloud services such as Dropbox and Google Drive.
- Notes, Simplenote, and Evernote: take notes that are synchronized across devices.
- GoodNotes and Papyrus: handwrite notes

or draw with a stylus.

- WorldCard Mobile and CamCard: scan business cards and automatically import the information into a phone's contacts list. Supports multiple languages.
- Scan: use Quick Response barcodes to view associated websites automatically. Keeps history of past scans.
- Yelp, Urbanspoon and OpenTable: search for nearby restaurants, read reviews and make reservations.
- Expensify and Concur: scan receipts and create expense reports. **R.K.**

Researchers can use websites such as Kaywa to generate QR barcodes to embed in their posters. Viewers can scan the barcodes with a smartphone or tablet to automatically open a web page showing videos, linked papers or further data.

Apps come in handy for hallway conversations, too. Ball uses Skitch and Paper to draw pictures with her finger or a stylus, illustrating concepts in her volcano research — the locations of hot springs, for example, or the direction of fluid movement in a lava dome. She can e-mail the pictures to others or save them as ideas for figures.

Carol Finn, president of the AGU, uses the Keynote app on her iPad to show slides from her presentation, and EarthObserver to demonstrate features of the area she is studying, such as topography. For Android users, Quickoffice Pro and Google Earth, respectively, perform some of the same functions.

In future, other conference interactions may also move into apps. The AGU is considering adding scoring forms for its student-paper competition — in which volunteer attendees judge students' presentations at poster sessions — to its app. It is also thinking about adding discussion boards on which people can ask presenters questions about uploaded posters or recorded talks. This year, Bizzabo will start offering polling so that registered users can vote on their favourite sessions.

Apps with indoor mapping might one day pinpoint attendees' location in the building and direct them to the next session on their itinerary. Organizers could make conferences into a game by giving people rewards for going to specific activities or booths.

Some meetings might soon drop paper programmes all together. The Association for the Sciences of Limnology and Oceanography in Waco, Texas, offered an app at its meeting for the first time in 2013, and will probably go paperless in a few years, says co-organizer Hans-Peter Grossart, a microbial ecologist at the Leibniz Institute of Freshwater Ecology and Inland Fisheries in Neuglobsow, Germany. However, the AGU and the AAAS plan to offer paper programmes for the foreseeable future.

Conference attendees do need to exercise caution when turning to the blizzard of digital tools. Taking photos of slides, or recording talks without the speaker's permission, is generally considered bad form. And users should try not to get distracted by the constant stream of tweets and notifications during real-life conversations. "You want to be present," says McTavish. Emma Borochoff, a community manager at Bizzabo, agrees. "Connections aren't complete if they're just online," she says. ■

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COLUMN

Roadside science

Sometimes the best outreach happens when lay people stumble over research unawares, says **Carolyn Beans**.



As government funding of science declines and public scepticism runs rampant, scientists are working hard to find effective ways to explain their research to others. Although social media, magazines, museums and nature centres are all important vehicles for bringing science to the public, I worry that they draw only people who already appreciate research. How can we reach those who are resistant or indifferent?

With this concern in mind, I take my job as a roadside scientist very seriously.

I study an invasive plant in the northeastern United States, and find myself working along roadways that encourage its spread. I wear red rain boots, a reflective vest, a waist pouch that I have fashioned into a tool belt, and a baseball cap draped with mosquito netting. I look ... well, odd. Cyclists, pedestrians and drivers often stop to ask what on Earth I am doing.

In Lubeck, Maine, an electrician parked and came over to check out my work. I pointed to the seedlings of the native and invasive jewelweeds that I study, then showed him the seedling that I was folding into my plant press. The leaves of my sample were coloured like those of the native jewelweed, but shaped more like those of the invasive species, suggesting that the sample was a hybrid. It made me wonder whether the invasive jewelweed might invade not only the native's space, but also its genome. The electrician marvelled that this was what science looked like — a woman on the side of the road folding plants in newspaper.

In Camden, Maine, a neighbour asked about the mesh bags that I was placing over developing fruits of the native jewelweed. I explained that I needed seeds from the native

species living in places both with and without the invasive plant. I could grow these seeds in competition with the invasive species in a greenhouse, to test whether the native seedlings from invaded communities survived better than those from communities without the invaders. The neighbour was excited to learn that evolution could take place on his own street, and that it was actually measurable.

Sometimes I am tempted to brush off a curious passerby. As the field season wanes, any distraction feels as if it could result in enough data loss to ruin an experiment. But I have gained meaningful insights from my interactions with the public. An older woman in Camden who showed me the local children's library told me that she recalled seeing the magenta flowers of the invasive jewelweed in her neighbourhood as many as 50 years earlier. This suggested to me that the native jewelweed has had at least half a century to evolve in response to the invasion. In return, I told the woman that the plant she admired from her bedroom window was originally from India.

Not everyone who stops to ask what I am doing hangs around long enough to hear my response. Some are turned off by the mention of science. Others are too busy to chat. But if I explain my research clearly enough, many passersby want to hear more.

As a roadside scientist, I have the opportunity to talk to members of the public without first drawing them to a blog or museum. People who would never seek out a scientific discussion come to me unaware that we are about to talk about invasive species, evolution and what it is like to be a field biologist. I receive them not knowing whether they accept evolution, or if science is going to be a tough sell. I offer them an explanation of my work and they offer me the chance to win them over.

Just as successful political campaigns recognize that knocking on doors brings people to the polls, I believe that impromptu face-to-face communication brings people to an appreciation of science. In a way, we all become roadside scientists every time we describe our research to a stranger at a bar or to our aunt at a family party. I am just fortunate to have the chance not only to talk about science, but also to show people how it works on the streets where they live. ■

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