

DPS Meeting Exploration Team (DPS-MXT) Final Report, 2022

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https://dps.aas.org/sites/dps.aas.org/files/meetings/DPS-MXT_Report.pdf)

I. DPS-MXT Scope and Process

1. Scope and structure of this report

Prompted by COVID, the DPS community and the world at large were pushed into virtual meeting settings. While pushes for increased virtual access had been occurring over much longer times with an aim towards increased accessibility, the pandemic forced the broad community to engage with and evaluate a wide range of options for science meeting/conference structures, including those with events and attendee interactions online.

In 2022, as meetings were starting to incorporate in-person participation again, the DPS chartered a group to proactively think about what may be possible and/or optimal with future meetings, without being constrained within a particular year's meeting's timing/resource availability. This group was to formally investigate a range of meeting structures and to form recommendations for future DPS fall meetings, so as to best serve the full DPS community. The DPS Meetings Exploration Team (DPS-MXT / pronounced "DPS mixt" = di: pi: ess mɪkst¹) was charged with outlining a definition(s) of hybrid meetings (i.e., a meeting with both in-person and remote participants) and identifying risks/costs/resources/benefits associated with each such definition. Members of the DPS-MXT were gathered from the DPS Committee and relevant DPS Subcommittees.

This report is the final product of the DPS-MXT. We aimed for this report to deliver actionable recommendations for the DPS, useful guidance for the organizers of future DPS meetings, and references and information for all those in the DPS and broader planetary science community that are grappling with similar challenges.

This report is structured as follows:

- Throughout Sections II and III, information about context and motivation for a Recommendation will be presented in prose, followed by the Recommendation text in **dark blue**. (Sometimes additional details within the recommendation are in bulletpoints, also in **dark blue**).
- Additional related details/thoughts from DPS-MXT may then follow the Recommendation, in **black** text in bulletpoints; such text is meant to provide additional context or suggested implementations that came out of DPS-MXT discussions or reflect community feedback *but are not recommendations*.

¹ Pronunciation guide based on the International Phonetic Alphabet, <https://www.internationalphoneticassociation.org/content/full-ipa-chart>

- [Section II](#) presents the main, broad recommendations from DPS-MXT for future DPS meeting planning, divided into those that generally hold, those that apply to DPS meetings in the next few years, and those that would apply beyond the near-term.
- [Section III](#) presents more focused recommendations that, while still relevant for all meeting organizers to consider, are perhaps more appropriate for an individual meeting's organizing committees, on: poster sessions, networking (especially to support students and early career folks), exhibitors, and ancillary meetings.
- The appendices provide summaries, contextual information, and references. [Appendix A](#) provides a listing of all DPS-MXT recommendations. [Appendix B](#) shows the DPS-MXT Charter. [Appendix C and D](#) summarize the questions asked in the community surveys and summarizes some of the results. [Appendix E](#) includes some additional information and suggestions from the broader science community, regarding meeting planning.

We highlight that some DPS-MXT recommendations are for “all DPS meetings” and some are for “all DPS-hosted meetings”—the latter would not pertain to joint DPS-EPSC meetings hosted by the Europlanet Society (although they may still contain useful suggestions for those meetings).

2. Schedule and methods of gathering community input

The DPS-MXT effort occurred May to December, 2022 (with final report formatting in January, 2023). Our schedule of work and methods of compiling information are summarized here:

- **May 6:** kick off meeting to confirm scope, membership, and plan.
 - May 20: Presented plan to DPS Committee, to gather feedback and agreement.
 - May 31: released the charter (see [App. B](#)) and announced this effort to the DPS community.
- **June through November:** held 2-4 telecons/month to share information and develop report.
 - At some telecons, DPS-MXT heard from community members who wished to share additional input with us. (*Many thanks to those volunteers.*)
 - The DPS-MXT periodically divided into subgroups for focused efforts:
 - Best practices and studies of meeting successes/issues outside of DPS
 - Review of past DPS post-meeting survey results
 - Potential hybrid poster session aims and design
 - Interests of vendors/exhibitors
 - Support of ancillary meetings
 - Desired levels/types of virtual participation
 - We presented three status updates to the DPS Committee.

- **July:** surveyed the community (see [App. C](#)).
- **October (at DPS meeting):** presented status at DPS business meeting to DPS community and via poster² (see [App. C](#) for figures included in the poster).
- **October (after DPS meeting):** surveyed the community (see [App. D](#)).
- **December:** finished this report, building in lessons learned from the 2022 DPS meeting.
 - Dec 19: presented the final report's content to the DPS Committee.
- **January, 2023:** delivered this final report, which was posted to the [DPS-MXT website](#) and advertised to the DPS community.

The DPS-MXT solicited community thoughts via several pathways:

- Community surveys in July (stand-alone, see [App. C](#)) and October (within the DPS post-meeting survey and a stand-alone for DPS members who did not attend the meeting, see [App. D](#)).
- A poster¹ at the 2022 DPS meeting, presented virtually and in-person.
- Discussions with folks at the 2022 DPS meeting, including at the virtual and in-person DPS listening sessions.
- Invitations to DPS-MXT meetings for those that volunteered to share more input.

3. Meeting structures considered

The DPS-MXT ended up focusing on three meeting structures, with the structure defined by the types of interaction expected to occur at the meeting: within in-person or virtual attendee groups, and between these two groups. With all meeting structures, there are many meeting designs that fall within a structure (e.g., there are many ways to plan a “fully virtual meeting”), as well as meeting designs that would fall between the end-members we discussed. As will be discussed in depth in **Recommendations General-3 to -6**, the DPS-MXT discarded consideration of meeting structures that did not include *any* virtual participation options and support (i.e., the in-person *only* meetings that were common prior to 2020); **all of the meeting types discussed in this report incorporate some virtual attendance capabilities.**

For meetings that involve *both* virtual and in-person engagement, the DPS-MXT considered the two end-members of a spectrum of assumed level of virtual attendee participation:

- **Fully hybrid** (sometimes written as just ‘hybrid’ in this report) meetings are those in which in-person and virtual attendees can participate and contribute to the majority of meeting activities, and significant engagement between in-person and virtual attendees occurs within the meeting. Such meetings are likely to have higher associated costs due in part to the higher amount of organization and technologies needed to enable the

² Diniega, S., et al., 2022, Study Status Report from the DPS Meetings Exploration Team (DPS-MXT), and Request for Community Input, presented at the 2022 *DPS Meeting*, Ab. 214.04.

engagement between in-person and virtual attendees, and to address a wider range of needs.

- **In-person focused** meetings focus on in-person participants with some virtual components (perhaps just a minimal amount and an associated low virtual registration fee). These meetings are structured around the needs of the in-person attendees and the benefits that come with co-location of folks, and there is little or no synchronous interaction expected between virtual and in-person attendees. There is also negligible additional cost to in-person registrants, due to the inclusion of virtual components.

We note that anything in the spectrum defined above could technically be considered “hybrid,” based on the dictionary definition of the word, but we reserve “hybrid” in this report to mean exclusively meetings in which virtual participants can fully engage with in-person participants and vice versa. (However, we, and others, have found that full-engagement does not mean the meeting is experienced the same by all attendees; instead, a fully hybrid meeting may be more appropriately thought of as two overlapping meetings (see [App. E](#)).)

Beyond the two structures that involved both in-person and virtual attendees, DPS-MXT also considered the **fully virtual** meeting. This meeting structure is more intuitively defined: it is a meeting where all interactions occur virtually. Such a meeting has, so far, been organized in some ways very similar to an in-person meeting, such as being held during a specific week and with many interactions occurring synchronously/live. However, DPS-MXT notes that such practices are not necessarily the only (or optimal) way to organize a fully virtual meeting.

The 2020 and 2021 DPS meetings were both examples of fully virtual meetings. The 2022 DPS meeting aimed to be fully hybrid (and was costed as such), but its design and implementation caused it to feel closer to an in-person focused meeting in several aspects. For example, as reflected in post-meeting survey responses, virtual attendees felt and were less engaged in live presentations and discussion since chat and cameras-on-presenters were disabled; additionally, interactions between virtual and in-person attendees were very limited (see [App. D](#)).

All three of these meeting structures yield benefits and issues for members of the DPS community (sometimes differently for different people), as shown in Tables 1-2 and Figure 1. Additionally, some concerns are common across meeting structures. In particular, cost, having time available to engage in the meeting, and having work to present are strong considerations for meeting attendance (Table 1).

| | | |
|---------------|---|-----|
| Not Virtual | I have difficulty engaging in a meeting when attending virtually, due to work/home responsibilities. | 54% |
| | I didn't have any work that I wished to present. | 33% |
| | The virtual registration cost was not affordable. | 29% |
| | I have difficulty engaging in a meeting when attending virtually, due to personal communication preferences/abilities. | 21% |
| | The virtual registration cost was affordable, but I did not believe but I did not think that the value of the meeting to me justified the cost of registration. | 17% |
| Not In-Person | I have difficulty scheduling attendance in-person, due to work/home responsibilities. | 47% |
| | I didn't have any work that I wished to present. | 33% |
| | The in-person registration cost was not affordable at all. | 29% |
| | I am concerned about my and others' health and safety with in-person travel. | 21% |
| | I am concerned about environmental impacts of in-person travel. | 17% |

Table 1. The top five reasons given for why a person did not attend the 2022 hybrid DPS meeting. This question was asked only of folks that did not attend the DPS meeting (in October/post-meeting; see [App. D](#)), and respondents could select all that applied.

| | | |
|-----------|---|-----|
| Virtual | I have difficulty scheduling attendance in person, due to work/home responsibilities. | 46% |
| | I am concerned about my and others' health and safety with in-person travel. | 41% |
| | The cost was too high for in-person attendance. | 33% |
| | I am concerned about the environmental impacts of in-person travel. | 28% |
| | I have difficulty engaging in a meeting when attending in-person, due to travel challenges (e.g., mobility issues). | 15% |
| In-Person | I looked forward to seeing my colleagues in person. | 88% |
| | I sought opportunities for in-person networking/impromptu discussions. | 86% |
| | I prefer to attend presentations in person. | 77% |
| | I prefer to share my science via an in-person presentation (oral or poster). | 72% |
| | I sought opportunities for in-person socializing. | 68% |

Table 2. The top five reasons for attendance choice (virtual or in-person) for the 2022 hybrid DPS meeting. This was asked only of DPS meeting registrants via the October/post-meeting survey (see [App. D](#)), and respondents could select all that applied. We noted that (1) the top items were mitigations of concerns for virtual attendance, rather than positive expectations as expressed for in-person attendance, and (2) reasons for virtual attendance were overall more spread as some people prefer virtual and others are pushed into it due to travel-related concerns or limitations.

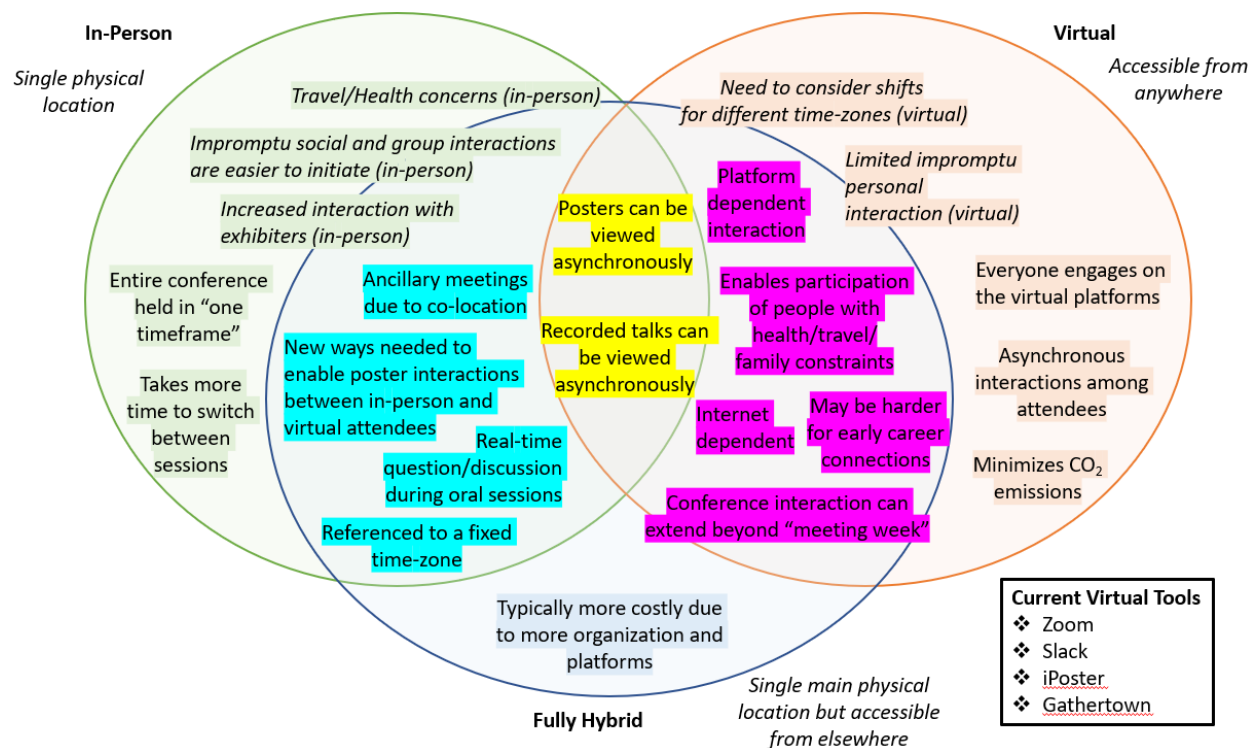


Figure 1. Venn diagram of characteristics of different meeting structures that can lead to benefits or issues for attendees. Note that a characteristic sometimes does not uniformly yield a benefit or an issue for all DPS community members. The items in italics, along the **Fully Hybrid** boundary, are characteristics that extend into Fully Hybrid but only for that specific group of attendees.

II. Future Meeting Structures

A starting, central premise of the DPS-MXT is that DPS meetings should maximally benefit the DPS membership. In debating what this meant, we considered both options that would benefit the largest number of usual meeting attendees and options that would ensure meeting access to attendees with distinctive needs. Furthermore, we sought information about what people look for from their meeting experiences, including how expectations differed depending on the meeting structure type (see [App. D](#)).

Our many inputs from the community showed that the needs and preferences expressed by DPS members, related to DPS meeting structure, greatly depend on their specific life situation and responsibilities, work location and resources, and personal capabilities. Often, these needs were in tension with each other – such as some folks with large home responsibilities greatly appreciating the flexibility and lack of travel that came with virtual attendance and others greatly preferring the physical and temporal separation from similar large home responsibilities that came with in-person attendance (e.g., Table 2, top items). Some needs were not ones that have traditionally been a large focus of accessibility efforts within DPS and other STEM professional activities, such as folks greatly appreciating being able to ask questions of presenters via asynchronous, text-based platforms as social anxiety or physical mobility constraints made usual interactions (e.g., standing in a line at a microphone) a significant obstacle for participation in DPS meeting discussions. In DPS-MXT, we tried to understand and pay attention to all needs.

The DPS-MXT found that no one, single meeting structure would work for the whole DPS community. (Note: This appears to be the case even if we could assume that some “perfect” technology for hybrid interactions was available.) Furthermore, we found that the community’s expectations of different meeting structures are still evolving, along with the potential technology resources and in meeting organization competencies that can help a meeting be successful for a broad swath of people. All of this means that:

- We do not recommend a single structure (or even specific cadence of a set of structures, e.g., see [App. C](#) and [App. D](#) for options we considered) for future DPS meetings. Instead, we give “General recommendations” ([II.1](#)) to (1) improve the ability of DPS members, broadly, to participate in each meeting (but not necessarily all members at all meetings), and (2) have DPS work now to maximize its ability to adjust future meetings to what DPS members will need and want.
- With “near-term” meeting (2023-2026) recommendations ([II.2](#)), we seek to help DPS gather the information that we wish we had, so that a future assessment can more fully match the different meeting structures with the needs of the DPS community.
- Finally, we list recommendations for DPS meetings beyond 2026 ([II.3](#)). We leave specific meeting structure recommendations for that period to a subsequent assessment

team (referred to as DPS-MXT-2), and instead aim to leave them as much useful information and flexibility as possible.

1. General recommendations

The earlier in the DPS meeting planning process that inclusivity and accessibility aspects are considered, the easier and more effective incorporation of such aspects is likely to be.

However, the specific aspects of inclusivity and accessibility that would be of focus for a meeting may vary, depending on meeting size, structure, location, resources/capabilities, and associated costs. So that DPS members can make informed decisions about their potential attendance of a given meeting, information about the resources/capabilities to be available to those attending in-person or virtually needs to be provided.

Recommendation General-1: All DPS meetings, regardless of structure, should maximize accessibility and inclusivity in the design of the meeting from inception, within limits imposed by the meeting structure, location, and associated available resources/capabilities and considering the impact of attendee cost on meeting access.

- One important aspect of accessibility, for meetings with an in-person component, is whether folks can or want to travel to a specific location. While DPS meeting organizers are to consider these aspects within their proposal³, due to the typical selection of DPS meeting locations five or more years in advance, local policies and situations may change well after meeting planning has commenced and a meeting venue has been put on contract. Including capabilities for substantial virtual attendance and participation is one way to mitigate either known or potential issues with travel to a location, including situations or local policies that create safety concerns for members of the DPS community.
- However, DPS-MXT emphasizes that a fully hybrid meeting structure is not necessary to address this concern, and that the higher costs associated with more virtual access capabilities can create an accessibility barrier. Additionally, the experience by virtual attendees at a fully hybrid meeting is not the same as the experience at a fully virtual meeting, as many aspects of a hybrid meeting are inherently unequal between virtual and in-person attendees (such as the time zone focus and access to side conversations that come with having some attendees co-located; see [App. E](#)).

Recommendation General-2: For all DPS-hosted meetings, at least a high-level explanation of an individual year's meeting structure should be communicated to the DPS membership as early as possible and well in advance of abstract and early registration deadlines.

Some additional details that are included in this recommendation:

³ DPS Meeting Guide, which can be found at <https://dps.aas.org/meetings/future> (current latest version is from 2019: https://dps.aas.org/sites/dps.aas.org/files/meetings/DPS_meeting_guide_2019.pdf).

- In particular, meeting organizers should be transparent about what sort of virtual access is enabled for a given meeting.
- When registration rates are posted, DPS membership should be provided with a high-level explanation of registration costs (e.g. a breakdown of venue rental, food/beverage costs, virtual platform licenses, etc.), especially those connected with specific meeting structure components.
- To explain the first bulletpoint in the above recommendation: the aim is for a potential registrant to understand their participation options. For example, there is a large experience and value difference between the “ability to remotely view partial content” and “the ability to present live and engage in Q&A with both remote and virtual attendees,” but either of those could reasonably be offered under “virtual registration.”
- Related to the last bulletpoint in the above recommendation, it would be helpful for some explanation of how virtual vs. in-person registration rates were set to also be shared with the community. Following the 2022 hybrid DPS meeting, some folks stated a perception that virtual attendance-related costs were driving up the in-person registration rates, but that was not the case. (While there is a portion of cost increase related to the larger complexity and thus planning time needed for a hybrid meeting, much of that meeting’s higher costs were related to COVID-related plans for the in-person attendees, such as the outdoor venues for social events and security, and some were related to general economic inflation.)

From personal experiences of DPS-MXT members and community input to DPS-MXT, it was apparent that all future DPS meetings will be expected to include some virtual engagement options that were first incorporated into the 2020 and 2021 virtual DPS meetings. Virtual engagement options generally benefit in-person attendees by providing increased access to meeting content, in addition to being critical platforms for virtual attendance. For example, many folks appreciated the added flexibility and safety of being able to attend part of the 2022 DPS meeting from their hotel room due to concerns about illness and/or juggling of other activities with the conference (such as work meetings). Similarly, those that have difficulty seeing/hearing presentations in session rooms due to disabilities or AV issues benefit from also being able to follow along online, including with captioning. **The following recommendations are based on the above observation, as well as that observing and presenting science were stated in surveys ([App. C](#), [App. D](#)) as the main reasons that folks attend the DPS meeting, whether they attend in-person or virtually.**

Recommendation General-3: All DPS-hosted meetings should include live streaming and recording of all oral sessions, with recordings made available for online viewing by all meeting attendees, starting no later than the conclusion of the meeting, and available for at least 30 days and no more than 90 days.

- The amount of time recordings are available for viewing online should be sufficient for viewing after people ‘catch-up’ from backlogs in other obligations from attending the meeting but not so long that they inhibit presentation of unfinished work. If practical, they should be on a site that does not allow downloading recordings or screen captures.
- These remote presentation observation capabilities are essential for virtual attendees so, in the meeting budget, they may be assessed a larger fraction of the per-person costs than paid by in-person attendees. If recordings were to be made available to all DPS members after the meeting concluded, then a share of the cost should be included in membership fees (with corresponding increase in differential meeting registration costs paid by non-members).

Recommendation General-4: For all DPS-hosted meetings, both virtual and in-person registrants should be equally eligible to present a paper in association with the meeting.

- The above recommendation aims to ensure that virtual registrants will be able to present, in some format, “at” the meeting. This is an important capability as, at some institutions, people may not be able to pay for meeting registration with institutional funds unless they are presenting. However, this recommendation is not meant to impact usual limitations within selection for presentation, such as space/time available or the need to meet deadlines and requirements for abstract submission.
- For folks at some institutions (such as those that need to forecast conference attendance through the NASA system), attendance for “heavily attended meetings,” such as the DPS meeting, may require being a listed presenter.
- Depending on meeting structure and capabilities, virtual attendees may be restricted to asynchronous presentation formats, such as through electronic posters and/or recorded talks. The particular mode enabled for virtual presenters would be determined by costs and benefits, and might be affected by the choices of presentation options available to in-person participants.

Recommendation General-5: All DPS-hosted meetings should include a capability for asynchronous collection of questions for presenters and for presenters to be able to respond publicly (e.g., similar to how Slack was used in the 2020–2022 DPS meetings).

- The inclusion of an online platform for asynchronous questions to and answers from presenters greatly widens the number of folks that are able to engage with a presentation and presenter, and in particular makes it easier for remote participants (that may only be able to watch a recording of the presentation) to follow up with a presenter. While an individual can, of course, email a question to a presenter, use of this type of platform enables (1) a more public interaction, more similar to the traditional “Q&A” from a microphone after an in-person presentation and (2) provides a communication pathway that some find significantly more accessible.

- One frustrating part of these types of asynchronous interactions is that one is not sure when the other party may respond. To mitigate this, the DPS meeting organizers could clearly state expectations for asynchronous questioning, such as selecting a date (soon after the end of the meeting) beyond which presenters wouldn't be expected to continue checking the platform. Additionally, while the default expectation (and encouragement) should be that presenters will engage with questions posted to such a platform, if a presenter does not intend to do so then they could indicate this by inserting a graphic (supplied by the DPS meeting organizers) in their title and final slides or on their poster (similar to the current “no photographs” protocol).

Recommendation General-6: All posters at DPS-hosted meetings should be presented via electronic formats as these provide improved general accessibility to both in-person and virtual attendees/presenters.

- With these electronic posters, DPS-MXT recognizes that many improvements are needed for viewer experience, whether in-person (looking at big monitors) or virtual (looking via gather.town and/or iPoster platform). Some specific suggestions, based on comments collected via community feedback, are listed here:
 - A pdf poster should always be an allowable electronic format.
 - The iPoster format is sometimes very hard to navigate or view, depending on the device one is using to view it. An ability to print to pdf (with a reasonable layout so that all material can be visible at once) would provide an additional format for readability on and off screen.
 - The menu of posters should be searchable by session name, poster title, topic(s), and author(s).
 - In addition, an online navigable “gallery” format display of posters could help one browse posters to find posters-of-interest. For in-person attendees, having a few large monitors dedicated to rotating through posters is one way to realize this capability.
- If the meeting is able to host physical posters, in-person presenters might have the option to *also* present a physical poster (in addition to the electronic format). However, meeting organizers should recognize that such posters would generally be inaccessible to remote attendees.

Even before 2020, navigation of the poster session was daunting for many people. Now, with posters presented in different formats and imperfect or incomplete capabilities within the platforms currently available for viewing the electronic posters, poster sessions were a commonly reported source of frustration for 2020–2022 DPS meeting attendees. Based on experience at other meetings, having poster session chairs to help folks visit a group of posters (including/especially early career folks and students) may help to mitigate this issue. Additionally, such session chairs may be especially important at a hybrid meeting as in-person

and virtual attendees would benefit from being able to interact with each other, but such interactions are not yet natural to our community (more on posters within a hybrid meeting in [III.1](#)).

Recommendation General-7: Poster sessions at DPS-hosted meetings, whether hosted online or in-person, should have session chairs to encourage attendance and facilitate interaction between presenters and attendees.

To facilitate arrangement of the above virtual components (and more), a Point of Contact and, potentially, a team of volunteer community members should be identified as having responsibility to organize the virtual components of the meeting. Since 2020, a Virtual Organizing Committee (VOC) has been created to fulfill this role for a given DPS meeting, with responsibilities and structure similar to the traditional Science Organizing Committee and Local Organizing Committee. DPS-MXT recognizes the critical need for the advocacy done by this group on behalf of virtual attendees and, thus, recommends that this group become a regular part of meeting planning for all DPS meetings.

Recommendation General-8: All DPS-hosted meetings should have a Virtual Organizing Committee (VOC) initiated at the start of meeting planning, in addition to and at the same decision-making level as the traditional Science Organizing Committee (SOC) and, for meetings with an in-person component, Local Organizing Committee (LOC).

- For some meetings where expected virtual participation is small/limited, the VOC may be very small. For other meetings, such as fully virtual or hybrid, the VOC may be significant in size and influence.
- One part of the VOC's duties during the meeting should be to ensure there is at least one designated and advertised in-person meeting staff member who will ensure that technical issues affecting virtual capabilities are addressed in a timely manner (such as acting as a contact person for virtual attendees with issues and, if applicable, assisting session chairs in navigating virtual platforms).
- To maintain some continuity of knowledge about technology needs/capabilities and best practices, it is recommended that at least the previous year's VOC Chair be a member of the current year's VOC.

An additional very prominent source of frustration by in-person and virtual attendees at 2020–2022 DPS meetings was the meeting website and program platform(s), which were difficult to navigate, especially regarding finding specific presentations and related materials (such as the Slack channel). Some particular areas that could be improved:

- Respondents to the DPS 2022 post-meeting survey indicated that they felt the online schedule was difficult to use because it was presented chronologically on a single page, rather than as a single page block schedule or with separate pages or easily-observable

labels for different days. Attendees using mobile devices found the schedule particularly difficult to navigate due to the small font size, lack of contrasting colors, and need to scroll, and multiple survey respondents noted that it was easy to scroll to events on a different day without realizing.

- In the program, schedule headings were not always clear, particularly “Attendee Events”, which included coffee breaks and the nursing room along with events like the Sagan prize talk. Multiple respondents noted that they had difficulty finding information in the schedule about these types of ancillary events.
- Virtual attendees commented that links to online sessions were updated slowly and only after sessions had begun, causing them to miss initial remarks and introductions.
- In the detailed view of each session, attendees noted that the author names and titles were truncated, requiring a click to show the full text, and that an additional click was then required to bring up the relevant abstract (and sometimes the user would need to log in again, which still did not always bring up the abstract text).
- Some respondents opted out of joining the Slack channel because they were unable to connect due to required application updates, despite being frequent users with the latest version installed.

Recommendation General-9: For all DPS-hosted meetings, the online meeting platforms, especially those containing the program and one’s personal schedule, should be easy to navigate and accessible across multiple browsers and device types, with clear information about how to attend a specific presentation/event and who can attend (e.g., if it’s open access, in-person only, etc.).

Some additional details that are included in this recommendation:

- Specific events, presentation titles/authors, or presentation topics should be easily findable within the program, and individual attendees should be able to build a personal schedule that can be shared across multiple devices.
- A single-page pdf version of the block schedule should be available and easy to find for those who wish to refer to a ‘paper’ schedule.
- The entry portal should enable easy access into the meeting portion of interest, and, especially if multiple online platforms are used for the virtual components (e.g., Slack, Gather.town, iPoster, and Zoom were used for presentations and discussion at the 2022 DPS meeting), the program and one’s personal schedule should provide obvious access to all relevant links for presentations/events of interest.

Although DPS-MXT recognized the importance in adding at least some virtual capabilities to all future DPS-hosted meetings (as described above), we also recognized that in-person interactions at DPS meetings are extremely beneficial to science collaboration and some people’s mental comfort. We debated at length the pros and cons of future fully virtual DPS meetings, but did not reach full consensus about planning for a regular cadence of such meetings. We instead agreed

that such an option should be available in the future (more in this under Recommendation Future-3 in [II.3](#)) and that fully virtual meetings, if they are planned, should not be held in consecutive years (unless this is unavoidable due to pandemic or other emergencies).

Additionally, as meetings outside of the U.S. are very difficult for some members to attend (due to visa issues, travel logistics, higher cost, and/or concern about associated CO₂ emissions), fully virtual meetings should not be held both the year before and the year after a DPS meeting located outside of the U.S. (An exception would of course be made if there were no other viable options, including if unforeseen circumstances led to a last-minute pivot to a fully virtual format.)

Recommendation General-10: So as to avoid a multi-year period with potentially low/zero opportunity for in-person attendance to a DPS meeting for at least portions of the community, the DPS should not plan to hold fully virtual meetings in consecutive years or during the years adjoining a DPS meeting located outside the U.S.

A corollary to the above restriction related to the meetings held outside of the U.S. relates to the frequency at which such meetings occur. The current nominal frequency is every 3 years, with hosting alternating between DPS and EPSC, so a meeting is held outside of the US currently every ~ 6 years. Eliminating the adjoining years, that eliminates three of every six years for a potential fully virtual DPS meeting to be scheduled and significantly reduces the option space for multi-year meeting-structure planning (more on this in [II.3](#)); a longer cadence for joint meetings would increase flexibility for DPS meeting planning.

Recommendation General-11: So as to potentially increase the ability for DPS to plan different DPS meeting structures between years, including fully virtual meetings, the DPS Committee should discuss the frequency of joint EPSC-DPS meetings with the Europlanet Society, and with input from the DPS and Europlanet communities.

2. DPS meetings 2023-2026

No single meeting structure can address all needs; the community is very split in terms of identifying which type of meeting structure would be best for future DPS meetings. To assess potential DPS meeting structures and the community's needs more thoroughly in the future (discussed more in [II.3](#)), more information is needed. Such information can be gathered at the DPS meetings over the next few years, with lessons learned from recent DPS meetings and other experiences applied by DPS meeting organizers and attendees.

Recommendation Nearterm-1: DPS should organize at least one of each of these two meeting structures during the next four years 2023-2026, thus providing further information about either end-member of the spectrum of meeting structures that include in-person and virtual attendees: (1) in-person focused, (2) fully hybrid.

- While spanning the recommended variation in meeting structures over the four years, the decision of which structure would be held by each individual meeting would be based on capabilities and preferences of the SOC/LOC/VOC of the specific meetings.
 - Should an opportunity and good reason develop for holding a virtual meeting during this time frame, that remains a valid possibility.
- As people need to be able to plan their future conference participation around knowing what types of participation and inter-attendee interaction will be available (especially true for students and early career folks; see [III.2](#)), the decision about which meeting structure would be used during which year should be made and advertised as far in advance as possible. *The DPS-MXT suggests the information should be shared at least by the start of the 2023 DPS meeting, and preferably before the 2023 DPS meeting abstract and registration deadlines.*
- New technologies (such as virtual reality and/or other new online platforms) or organizational efforts (such as encouraging more asynchronous discussion, perhaps outside of the main meeting's duration) that can enhance the virtual experience could be tested during this time range.
- From each of these meetings, the DPS Committee should assess how community members benefited from the meeting's structure and plans, as well as why folks may have felt excluded from the meeting or meeting benefits. (E.g., this could be done through post-meeting survey questions.)
- *The 2023 DPS meeting is currently planned to be fully hybrid. The 2025 meeting is a joint DPS-EPSC meeting, hosted by the Europlanet Society; thus, the DPS will have less influence on the meeting structure selected (but could still gather information from the DPS community about their meeting experience or why they did not attend).*

Recommendation Nearterm-2: For each DPS-hosted meeting, meeting organizers should identify options available for (1) individuals with in-person registration, but who end up not being able to attend in-person, and (2) alternative plans if the in-person plans cannot be upheld. Both of these plans should be advertised well before abstract and registration deadlines.

- Given current higher uncertainties around individual and full meeting plans (especially those involving travel and in-person interactions), it is important to provide potential meeting attendees with more information about meeting participation options. The shared plan does not need to be detailed, but should be sufficient to give folks a sense of their options if their plans need to change. For example, if the presenter or one of their family members gets sick just before the meeting and they are unable to travel, would they be able to give a remote oral presentation, switch to a poster presentation option, or withdraw entirely from the program? For example, if all in-person components to the meeting need to be canceled due to a natural disaster, global pandemic, or U.S. government shutdown, would the meeting be completely canceled or could it pivot to a virtual platform where people can present remotely?

3. DPS meetings beyond 2026

A new assessment group, similar in scope as DPS-MXT and convened in a few years, could re-evaluate the options for future DPS meeting structures from increased and updated information (as outlined in [II.2](#)).

Recommendation Future-1: By the end of 2025 (i.e., no later than 3 years from this report), DPS should convene a new DPS-MXT (hereafter referred to as *DPS-MXT-2*) to re-evaluate meeting structures, considering new technologies and community expectations/demographics and additional information about community engagement through different meeting structures.

- With this schedule, the DPS-MXT-2 would be able to incorporate feedback from the 2023, 2024, and 2026 DPS-hosted meetings, as well as the 2025 DPS-EPSC joint meeting. (See [II.2](#) for more comments on what types of new/updated information DPS-MXT-2 would have available.)
- Should the DPS Committee think that sufficient information has gathered, DPS-MXT-2 could be convened earlier than 2025.

As explained in the start of this section, DPS-MXT has found that no one meeting structure would meet the needs of all DPS members. Furthermore, fully virtual DPS meetings are not, at present, a good option for the majority of the DPS community. However, community culture/expectations will change as we experience more virtual, in-person focused, and hybrid meetings with continued advancement in technology and meeting best practices. Thus, DPS-MXT highlights a few areas that the DPS-MXT-2 should include in their option space.

Recommendation Future-2: The DPS-MXT-2 should consider a regularly changing meeting structure, on a cadence that is advertised well in advance.

Recommendation Future-3: Within DPS-MXT-2, fully virtual meetings should again be included in the range of options for future DPS meetings: as a regular meeting structure within a cadence (such as once every 4 years) or as a planned option if a hybrid or in-person focused meeting needs to pivot to a fully virtual format.

Additionally, DPS-MXT highlights a few areas of proactive technology and education that DPS should engage in, so as to best position the community and DPS-MXT-2 in considering potential future meeting structures, especially with regards to the engagement and inclusion of a meeting's virtual attendees. In addition to providing better support of virtual attendees at DPS meetings with in-person components, such investment will better prepare AAS, DPS leaders/meeting organizers, and the DPS community should a DPS meeting with in-person components need to pivot to a fully virtual structure (as occurred in 2020).

Recommendation Future-4: The DPS should proactively identify and prepare potential organizers (in the community and AAS) and technology capabilities for the support of engagement of virtual attendees at meetings.

- A particular area of helpful investment would be in identifying technologies and practices that will enable meaningful and broad networking among virtual attendees.

Recommendation Future-5: During DPS-hosted meetings and through other DPS activities, DPS should provide information/resources and events that will help the community become more comfortable with virtual interactions/platforms and be ready to derive good value from virtually attending a meeting, including a fully virtual meeting.

- In surveys and other discussions, many DPS members expressed concerns about the value one could receive from fully virtual interactions, especially with regards to building networks and collaborations. The DPS-MXT recognizes that these are very real and valid concerns, but also recognizes that a continued focus exclusively on gaining value through in-person experiences will maintain the traditional exclusivity of our community's science engagement and recognition.
- Furthermore, there are very real and valid ways in which some people will benefit from having substantial virtual meeting participation options, and we believe that between advances in technology, shifts in some cultural norms and expectations, and more practice with new ways of doing things, most people likely can find increased benefits in virtual interactions.

Recommendation Future-6: The DPS should hold 2029 or 2030 open with regards to meeting location and plans until DPS-MXT-2 releases their recommendations, so that one year could feasibly be planned with a fully virtual DPS meeting, if so recommended by DPS-MXT-2.

- Within the usual DPS meeting planning, meeting locations are commonly proposed and selected 5 or more years in advance. Thus, a fully virtual DPS meeting will remain a far-off option unless some meeting year is intentionally held open (i.e., without a specific meeting location). *Currently, all DPS-hosted meetings through 2027 have set locations, so cannot be initiated as fully virtual.*
- The specific year in this recommendation was chosen to (1) be consistent with AAS staff's specification for at least 3 years to plan a meeting (*personal communication from AAS meeting planners to Serina, November 2022*) and when results would be expected from DPS-MXT-2 and (2) to not place a fully virtual meeting too far forward in time. 2030 would be nine years after the last DPS meeting that was planned to be fully virtual (2021).

III. Additional Meeting Considerations

1. Poster Sessions

As outlined above, the DPS-MXT recommends that all presenters have electronic posters (**Recommendation General-6**, in [II.1](#)) and we generated this section assuming that this is the case.

At a fully virtual meeting, a virtual poster session could be held on an online platform that enables virtual face-to-face discussions and file shares; an example is Gather.town, which was used in the 2020 and 2021 virtual DPS meetings. Such an approach could also be used at a hybrid meeting, as was done for the virtual poster session at the hybrid DPS 2022 meeting. For an in-person focused meeting, while there may be virtual presenters with their posters available in an online gallery, we assume that the primary scheduled poster sessions would be held in a physical location and focused on interactions between in-person presenters and in-person attendees (as was the case for fully in-person meetings before 2020). **The focus of this section is on hybrid meetings, where it is much more difficult to identify viable poster session strategies that enable spontaneous, high bandwidth, and impactful interactions between *all* meeting attendees.**

There are four kinds of poster sessions interaction that we sought to facilitate:

- Between an in-person poster presenter and an in-person attendee,
- Between a virtual poster presenter and a virtual attendee,
- A virtual poster presenter and an in-person attendee, and
- An in-person poster presenter and virtual attendee.

Of the above, the first has taken place for decades at in-person poster sessions and the second has taken place at virtual poster sessions during the 2020-2022 DPS meetings. The primary issue is in bringing in-person and virtual attendees together; of the above, the third was attempted at the 2022 hybrid meeting but was not effective (as described below), and the fourth hasn't yet occurred at DPS meetings.

At the 2022 hybrid DPS meeting, separate poster sessions were planned with a focus around, individually, the in-person attendees and the virtual presenters. The in-person poster session displayed electronic posters on large monitors and in-person presenters were encouraged to stand next to a designated monitor during a specific time; in many aspects, this experience was very similar to poster sessions at past fully in-person meetings. In parallel, virtual presenters (as well as in-person presenters, if they so choose) were assigned a location in Gather.town and assigned a time to be present, next to their poster, in the virtual platform. The in-person poster session was engaging for in-person presenters and attendees, but the virtual poster session was significantly

less successful with poor attendance at virtual poster sessions (see [App. D](#)). As more than two-thirds of the DPS 2022 meeting attendees were in-person, the poor attendance at the virtual poster session was mostly exacerbated by the lack of engagement by in-person attendees with the virtual poster session.

It is thought that the organization of separate poster sessions, while technically enabling in-person attendees (including presenters) to also go to the virtual session, did not sufficiently encourage the important cross-interaction. (For example, some in-person attendees commented that they chose to spend time resting or meeting with other in-person attendees, rather than visiting Gather.town during the virtual sessions. Of those that did attend, seeing few other attendees led some to leave after just a short time.) This experience prompted our hybrid meeting poster session recommendation for a joint session (i.e., avoiding separate poster sessions); DPS-MXT recognizes that organizing such a session is *immensely* difficult, but encourage DPS meeting organizers to develop creative options (and we outline some starting ideas below) and DPS to evaluate success of specific efforts and then continue to adapt.

Recommendation Poster-1: For fully hybrid DPS-hosted meetings, DPS should host a *joint in-person and virtual poster session*.

- A joint poster session could have one of two aims: bring the in-person attendees into a virtual platform (such as Gather.town) or bring the virtual attendees “into” the in-person venue. The following implementation ideas cover each of these directions.
 - In this first option, posters could be viewable on monitors in a large hall (such as an exhibit hall), with a headset/microphone associated with each monitor and the ability to open a telecon link (such as Zoom). The Zoom link would be associated with a specific poster, so that a virtual poster presenter as well as any viewer could dial in to discuss that poster, with the poster shared using Zoom’s screenshare (and in-person viewers using the headset and microphone). In-person presenters can use the same setup, in that case presenting from the exhibit hall monitors/headsets or via their own computer/audio.
 - Instead of each poster requiring its own Zoom session, each poster could be in a Zoom breakout room, within a Zoom link assigned to the poster session. This yields a bit more organizational complexity (as now one must track a session’s Zoom link and a poster’s breakout room), but this setup would make it easier for virtual presenters and attendees to visit another poster by switching breakout rooms.
 - Although direct in-person presenter with in-person viewer interactions could still happen within the exhibit hall, many of these interactions would be pushed into Zoom so as to include the virtual attendees.
 - There are health concerns with shared headsets and cost concerns about the needed equipment.

- Another option is use more of a lightning talk format, with a poster session in a single room with a single large monitor and open microphone/speaker, again connected to a Zoom session. In the session, each poster presenter (virtual or in-person) would give a 1-min overview slide of their poster, followed by a period of questions where in-person people come to the mic and online attendees can ask questions via Zoom or Slack, with a Chair moderating the questions. (A 30 min session could include ~10 posters and 20 min of questions.)
 - This format provides for more equal participation of and between online and in-person presenters and viewers.
 - As this option incorporates some oral presentation, these interactions would raise the profile of poster presentations and could bring in some group discussion (as is common at an in-person poster session), but misses the broader browsing aspect.
 - Even if not used for the regular poster sessions, providing a room with this capability could enable specific groups (such as an academic research group or a community group focused on a specific topic) to have in depth viewing and discussion of a list of specific posters.
- In addition to facilitating interactions between all presenters, scheduling a joint poster session with a mix of virtual and in-person presenters may alleviate software-induced scheduling issues such as those that affected the 2022 DPS meeting (wherein the scheduling software used by AAS had difficulty scheduling a single abstract in two, separate poster sessions).

2. Networking, Especially by and with Students and Early Career Professionals

One of the top reasons students attend DPS, especially if in-person, is to network (see [App. D](#)). As folks from all career-levels have experienced, the impromptu and informal networking that more naturally occurs (for most attendees) while folks are co-located is much harder to achieve during virtual interactions. To-date, networking at hybrid and virtual meetings is difficult for students and early career professionals because interactions can be disjointed or non-existent. This has been especially true when mid- and senior level professionals attend meetings virtually (at a hybrid or fully virtual meeting) as students find it hard to network with more senior scientists on virtual platforms, and because many attendees (of all career levels) feel overwhelmed/underprepared in using some virtual platforms.

Recommendation Network-1: For fully hybrid and virtual DPS-hosted meetings, networking/professional development events should be emphasized and available to all attendees.

- In addition to engaging students and early career DPS members and enabling networking within these groups, activities that will engage senior members of the field, so as to

facilitate networking with those folks, would greatly benefit students and early career DPS members.

Recommendation Network-2: DPS should plan and host (additional) networking workshops or events outside of the DPS meeting duration, especially in years when the DPS meeting will be hybrid or virtual.

- Since networking is more difficult during virtual interactions, more opportunities should be planned; hence the focus on meetings that would have a significant number of virtual attendees.
- Workshops should aim to educate students and early career professionals on opportunities in the field. They also can be a place for early career folks to voice their needs and concerns.
- Workshops organizers should recruit participation from mid- and senior- level scientists.

3. Attracting and Including Exhibitors

At the 2020 and 2021 virtual DPS meetings, there was minimal traffic at virtual exhibits. The experience was similar at virtual AAS meetings in the same timeframe. Exhibitors participated in virtual meetings in 2020 and 2021 because there was no other option. However, in an environment in which in-person, hybrid, and fully virtual meetings are all possible, it is likely that exhibitors will participate at in-person meetings and at hybrid meetings, but will choose to skip fully virtual meetings.

Recommendation Exhibit-1: At every DPS-hosted meeting, offer a low-cost and low-effort exhibitor option that engages with attendees only via online platforms.

- A proposed name for this type of exhibitor option is as a *Silicon level sponsor*, following the existing naming convention.
- Based on the 2022 DPS meeting experience and assuming that the same online platforms are again used, one example idea for this type of exhibitor option is to offer a vendor-associated Slack channel with a Gather.town/vFairs presence, with an exhibitor cost of <\$1000.

Recommendation Exhibit-2: If the DPS hosts a fully virtual meeting in the future, plans and budgets should be created with the expectation that there will be little to no exhibitor participation.

- However, there are some institutions that have a history of supporting DPS meetings as sponsors without having an exhibit, so some non-exhibiting sponsors can be expected to participate in a fully virtual meeting.

Recommendation Exhibit-3: At a fully virtual DPS-hosted meeting, organizers should try to increase contributions from non-exhibiting sponsors.

Recommendation Exhibit-4: At a DPS-hosted joint DPS-EPSC meeting, organizers should target both North American and European institutions when recruiting sponsors.

4. Enabling Ancillary Meetings or Workshops

Many large meetings have had ancillary meetings, which are group events not assumed to be part of the main program but which take advantage of the co-location of main meeting attendees. At past DPS meetings, ancillary meetings have typically included:

- workshops (such as bystander intervention or a SPICE demonstration),
- research or mission team meetings, and
- gatherings for minoritized communities (such as a networking and support event for LGBTQ+ or scientists of color).

Support for these events, at least consisting of advertisement of the timing of the event, who can attend, and how one attends, is a valuable resource for the community.

The DPS-MXT discussed ways in which ancillary meetings could still be supported under the different meeting structures.

- If a DPS meeting is in-person focused, then the traditional processes and support options are likely sufficient for coordination.
- If a DPS meeting is fully virtual, then there is no co-location impetus for an ancillary meeting and so much less support is likely needed. Support by DPS meeting organizers could be restricted to advertising information about ancillary meeting events, including how to join. Additionally, events are not restricted to during same week as the main meeting, and it could be advantageous to minimize additional activities during the main meeting week so as to not increase attendee stress, especially across multiple time zones.
- If a DPS meeting is fully hybrid, then events could also have a range of structures (i.e., be in-person only, virtual only, or hybrid) and so it'll be critical for the program to clearly advertise who is able to attend any given event and how to attend.

Recommendation Ancillary-1: When some DPS meeting attendees are co-located (e.g., at an in-person focused or hybrid DPS-hosted meeting), opportunities for DPS meeting attendees to hold ancillary events should be provided. Such events, if open to other meeting attendees, should be advertised within the main meeting's program and it should be clearly stated whether remote attendees can participate.

Recommendation Ancillary-2: For fully virtual DPS-hosted meetings, ancillary events could still be advertised within the main meeting's website, but should generally not be held during the main meeting's duration.

Appendices

- A.** Summary of DPS-MXT Recommendations, with Relevance Noted for Specific Meeting Structure Types
- B.** DPS-MXT Charter
- C.** July Survey Questions and Some Summary Results
- D.** October Survey Questions and Some Summary Results
- E.** Some Additional Guidance/References for Meeting Organization

A. Summary of DPS-MXT Recommendations, with Relevance Noted for Specific Meeting Structure Types

| Recommendations | Relevant for specific meeting structure: | | |
|--|--|--------------|---------------|
| | In-person focused | Fully Hybrid | Fully Virtual |
| General-1: All DPS meetings, regardless of structure, should maximize accessibility and inclusivity in the design of the meeting from inception, within limits imposed by the meeting structure, location, and associated available resources/capabilities and considering the impact of attendee cost on meeting access. | X | X | X |
| General-2: For all DPS-hosted meetings, at least a high-level explanation of an individual year's meeting structure should be communicated to the DPS membership as early as possible and well in advance of abstract and early registration deadlines. <ul style="list-style-type: none"> • In particular, meeting organizers should be transparent about what sort of virtual access is enabled for a given meeting. • When registration rates are posted, DPS membership should be provided with a high-level explanation of registration costs (e.g. a breakdown of venue rental, food/beverage costs, virtual platform licenses, etc.), especially those connected with specific meeting structure components. | X | X | X |
| General-3: All DPS-hosted meetings should include live streaming and recording of all oral sessions, with recordings made available for online viewing by all meeting attendees, starting no later than the conclusion of the meeting, and available for at least 30 days and no more than 90 days. | X | X | X |
| General-4: For all DPS-hosted meetings, both virtual and in-person registrants should be equally eligible to present a paper in association with the meeting. | X | X | X |
| General-5: All DPS-hosted meetings should include a capability for asynchronous collection of questions for | X | X | X |

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| presenters and for presenters to be able to respond publicly (e.g., similar to how Slack was used in the 2020–2022 DPS meetings). | | | |
| General-6: All posters at DPS-hosted meetings should be presented via electronic formats as these provide improved general accessibility to both in-person and virtual attendees/presenters. | X | X | X |
| General-7: Poster sessions at DPS-hosted meetings, whether hosted online or in-person, should have session chairs to encourage attendance and facilitate interaction between presenters and attendees. | X | X | X |
| General-8: All DPS-hosted meetings should have a Virtual Organizing Committee (VOC) initiated at the start of meeting planning, in addition to and at the same decision-making level as the traditional Science Organizing Committee (SOC) and, for meetings with an in-person component, Local Organizing Committee (LOC). | X | X | X |
| <p>General-9: For all DPS-hosted meetings, the online meeting platforms, especially those containing the program and one’s personal schedule, should be easy to navigate and accessible across multiple browsers and device types, with clear information about how to attend a specific presentation/event and who can attend (e.g., if it’s open access, in-person only, etc.).</p> <ul style="list-style-type: none"> • Specific events, presentation titles/authors, or presentation topics should be easily findable within the program, and individual attendees should be able to build a personal schedule that can be shared across multiple devices. • A single-page pdf version of the block schedule should be available and easy to find for those who wish to refer to a ‘paper’ schedule. • The entry portal should enable easy access into the meeting portion of interest, and, especially if multiple online platforms are used for the virtual components (e.g., Slack, Gather.town, iPoster, and Zoom were used for presentations and discussion at the 2022 DPS | X | X | X |

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| meeting), the program and one's personal schedule should provide obvious access to all relevant links for presentations/events of interest. | | | |
| General-10: So as to avoid a multi-year period with potentially low/zero opportunity for in-person attendance to a DPS meeting for at least portions of the community, the DPS should not plan to hold fully virtual meetings in consecutive years or during the years adjoining a DPS meeting located outside the U.S. | Cross-meeting recommendation | | |
| General-11: So as to potentially increase the ability for DPS to plan different DPS meeting structures between years, including fully virtual meetings, the DPS Committee should discuss the frequency of joint EPSC-DPS meetings with the Europlanet Society, and with input from the DPS and Europlanet communities. | Cross-meeting/EPSC-joint meeting recommendation | | |
| Nearterm-1: DPS should organize at least one of each of these two meeting structures during the next four years 2023-2026, thus providing further information about either end-member of the spectrum of meeting structures that include in-person and virtual attendees: (1) in-person focused, (2) fully hybrid. | Cross-meeting recommendation | | |
| Nearterm-2: For each DPS-hosted meeting, meeting organizers should identify options available for (1) individuals with in-person registration, but who end up not being able to attend in-person, and (2) alternative plans if the in-person plans cannot be upheld. Both of these plans should be advertised well before abstract and registration deadlines. | x | x | |
| Future-1: By the end of 2025 (i.e., no later than 3 years from this report), DPS should convene a new DPS-MXT (hereafter referred to as DPS-MXT-2) to re-evaluate meeting structures, considering new technologies and community expectations/demographics and additional information about community engagement through different meeting structures. | Cross-meeting recommendation | | |

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| Future-2: The DPS-MXT-2 should consider a regularly changing meeting structure, on a cadence that is advertised well in advance. | Cross-meeting recommendation | | |
| Future-3: Within DPS-MXT-2, fully virtual meetings should again be included in the range of options for future DPS meetings: as a regular meeting structure within a cadence (such as once every 4 years) or as a planned option if a hybrid or in-person focused meeting needs to pivot to a fully virtual format. | Cross-meeting recommendation | | |
| Future-4: The DPS should proactively identify and prepare potential organizers (in the community and AAS) and technology capabilities for the support of engagement of virtual attendees at meetings. | | X | X |
| Future-5: During DPS-hosted meetings and through other DPS activities, DPS should provide information/resources and events that will help the community become more comfortable with virtual interactions/platforms and be ready to derive good value from virtually attending a meeting, including a fully virtual meeting. | X | X | X |
| Future-6: The DPS should hold 2029 or 2030 open with regards to meeting location and plans until DPS-MXT-2 releases their recommendations, so that one year could feasibly be planned with a fully virtual DPS meeting, if so recommended by DPS-MXT-2. | Cross-meeting recommendation | | |
| Poster-1: For fully hybrid DPS-hosted meetings, DPS should host a joint in-person and virtual poster session. | | X | |
| Network-1: For fully hybrid and virtual DPS-hosted meetings, networking/ professional development events should be emphasized and available to all attendees. | | X | X |
| Network-2: DPS should plan and host (additional) networking workshops or events outside of the DPS meeting duration, especially in years when the DPS meeting will be hybrid or virtual. | | X | X |

| | | | |
|--|-----------------------------------|---|---|
| Exhibit-1: At every DPS-hosted meeting, offer a low-cost and low-effort exhibitor option that engages with attendees only via online platforms. | X | X | X |
| Exhibit-2: If the DPS hosts a fully virtual meeting in the future, plans and budgets should be created with the expectation that there will be little to no exhibitor participation. | | | X |
| Exhibit-3: At a fully virtual DPS-hosted meeting, organizers should try to increase contributions from non-exhibiting sponsors. | | | X |
| Exhibit-4: At a DPS-hosted joint DPS-EPSC meeting, organizers should target both North American and European institutions when recruiting sponsors. | EPSC-joint meeting recommendation | | |
| Ancillary-1: When some DPS meeting attendees are co-located (e.g., at an in-person focused or hybrid DPS meeting), opportunities for DPS meeting attendees to hold ancillary events should be provided. Such events, if open to other meeting attendees, should be advertised within the main meeting's program and it should be clearly stated whether remote attendees can participate. | X | X | |
| Ancillary-2: For fully virtual DPS-hosted meetings, ancillary events could still be advertised within the main meeting's website, but should generally not be held during the main meeting's duration. | | | X |

B. DPS-MXT Charter

This document was posted to: <https://dps.aas.org/meetings/dps-mxt> in May, 2022.

DPS Meetings Exploration Team Charter finalized May 31, 2022

The goal of the DPS Meetings Exploration Team (DPS-MXT/"DPS mixt") is to identify, for the DPS Committee, options for future DPS fall meetings and options for such meetings' structure, so as to best serve the full DPS community. In particular, this team will outline a definition(s) of hybrid meetings (i.e., a meeting with both in-person and remote participants) and identify risks/costs/resources/benefits associated with each such definition. Furthermore, this team will recommend next steps to the DPS Committee for effective development of future DPS meetings, including—but not limited to—those with hybrid structure. Output from this team will be delivered to the DPS Committee and DPS community via a few interim reports and then a final written report by the end of calendar year 2022.

Scope

- Define what should be included (for organizers and participants) within a “hybrid” meeting structure. Note that this could be a spectrum or number of types of “hybrid” structures. Such a structure should specify:
 - Stakeholders (including meeting attendees with different life needs, career levels, and history with DPS; exhibitors; and the DPS/AAS folks providing financial and organization resources)
 - Level and types of meeting/community engagement possible for remote attendees, including consideration of interaction between remote and in-person attendees.
 - Possibilities of asynchronous interactions, such as pre-recorded talks that require folks to spend the preceding week watching them (or skipping them entirely or live talks at the meeting that are recorded and posted afterwards.
 - Impact on all typical parts of meetings, such as networking, oral presentations (parallel or plenary), poster presentations, and workshops/side meetings.
- Identify benefits and costs/risks associated with these structures. Such discussion should include consideration, for each hybrid meeting structure, of:
 - Safety, inclusivity, and equity impacts for subsets of the planetary science community, that would impact ability to participate in the DPS community and its activities,
 - Potential impact of the meeting organization onto the broader society and world (including science inclusivity and outreach, and environmental impacts),
 - Cost and cost risk to AAS, DPS, and meeting participants.

- Identify resources needed (especially if new or significantly higher than those needed for past, non-hybrid DPS meetings and activities) for the organization and implementation of these hybrid meeting structures. Such resources would include (but are not limited to):
 - Technology platforms* that enable remote access to information, presentations, and discussion,
 - Pre-meeting labor and time-duration(s) needed for coordination and organization of the meeting,
 - During-meeting labor needed for meeting implementation,
 - Information needed for organizers and participants to do their work in an efficient/effective manner.
- Make actionable recommendations about how DPS can best support hybrid meetings in the future, including considerations of:
 - Organization and support structures
 - Timing (including interspersation with meetings that may be fully in-person or fully virtually)
 - Setting registration costs
 - Meeting policies
- To gather needed information, we may invite members of the planetary science or other communities to share their experiences with planning or attending hybrid/virtual meetings, as well as reasons for choosing to attend or not attend a meeting. We also may solicit for broader community input via a survey or request for comments.

*Note that this team should not recommend specific vendors; this team's focus is on identifying the needs of the community that such platforms should address via their capabilities/features (thus helping to inform any vendor selection by DPS or AAS).

C. July Survey Questions and Some Summary Results

The July survey was advertised via email newsletters and open to all DPS members. We received **68** responses. (*Thank you to the respondents!*)

The questions covered:

- Demographics of the respondent: Gender identity, racial identity, if had additional underrepresented identities, if had a physical, mental, or life-needs-related accessibility concerns that negatively impacts the ability to engage in a meeting in-person or virtually, current career stage, has attended prior DPS meetings, was planning to attend the 2022 DPS meeting
- Reasons for attending (or deciding to not attend) virtual, hybrid, or in-person meetings over the last two year, and the useful aspects of the experience when attending
- Reasons for attending a future DPS meeting that may be virtual, hybrid, or in-person; including consideration of a higher registration fee
- “Current experience shows that organizing and conducting a fully hybrid meeting is more expensive than either a fully virtual meeting or in-person-focused meeting, leading to higher registration costs. Considering this and other benefits/costs of the different meeting structures (as asked about in the last section), which of these meeting structure plans would you most prefer?”
- (optional) “Are there developments that have come about at hybrid/virtual meetings that you’d like to see incorporated into all DPS meetings, regardless of meeting structure (e.g., captioning, pre-recorded / archived talks, electronic/digital posters).”

Additionally, we solicited for volunteers to speak with the DPS-MXT during our telecons, to share more detailed feedback.

These figures were included in the poster presented at the 2022 DPS Meeting, in October, 2022: Diniega, S., et al., 2022, Study Status Report from the DPS Meetings Exploration Team (DPS-MXT), and Request for Community Input, presented at the *2022 DPS Meeting*, Ab. 214.04.

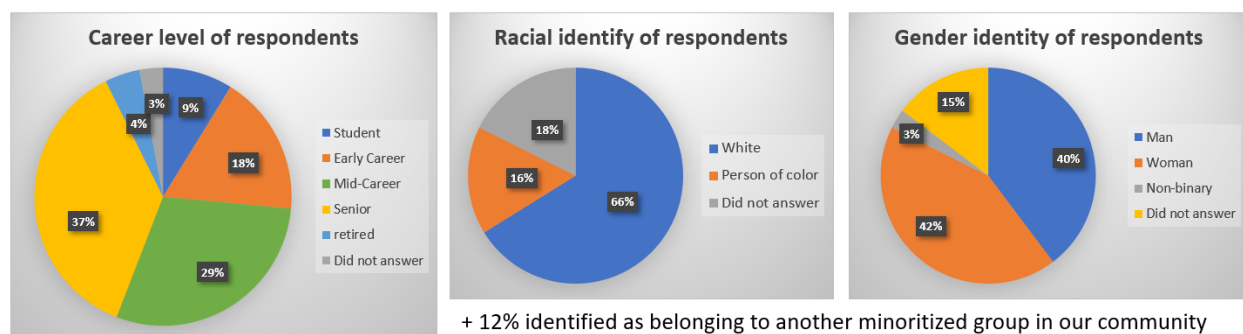


Figure C1. The demographics, along a few axes, of the July survey respondents. We noted low representation of students, but otherwise seemed to have responses from a representative sampling of the DPS community (based on comparison to the 2020 Survey of the Planetary Science Workforce⁴).

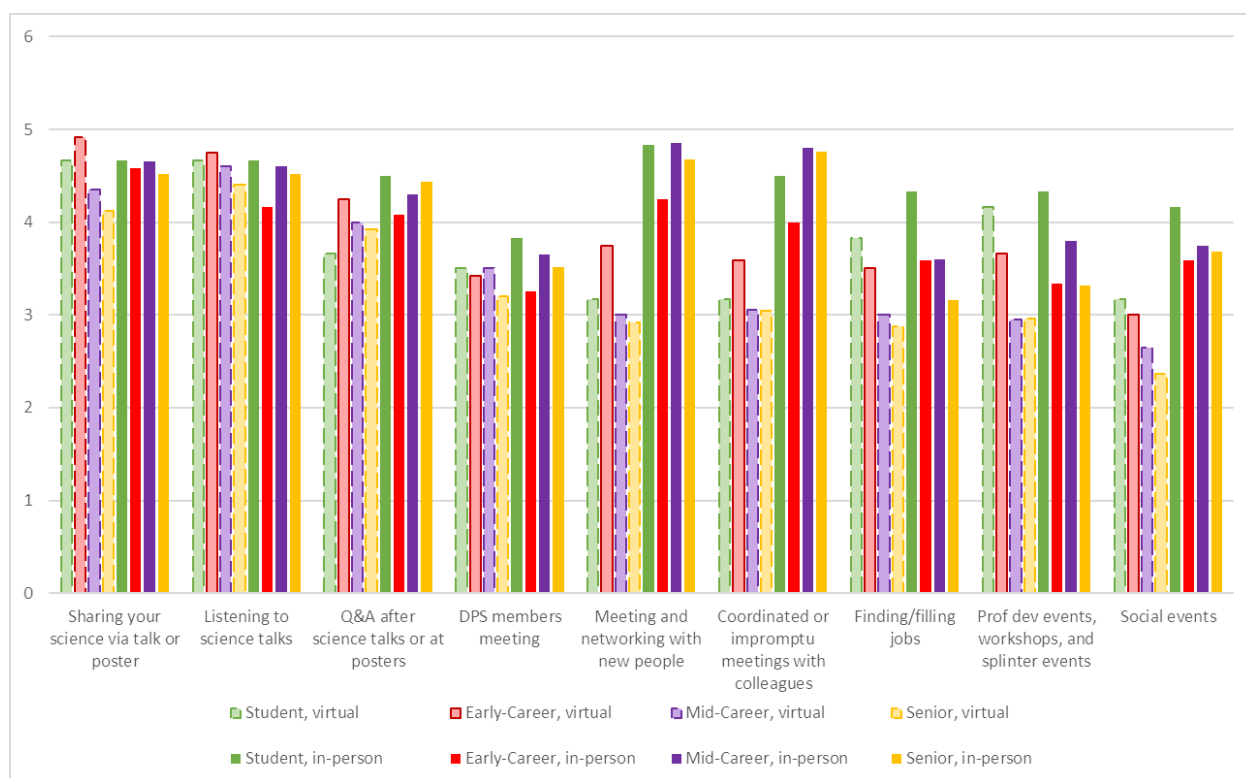


Figure C2. Top priorities/considerations for deciding if one would register for a DPS meeting, as an in-person or virtual attendee, averaged across respondents of a specific career level. Higher numeric value indicates higher priority. (Actual responses were one of the following: “a top consideration,” “something that I pay attention to, but not a top consideration,” “I really don’t care about this item,” and “this is actually a negative for me”. These were converted to values of 5, 4, 3, and 1, respectively.) Across all groups, sharing science and listening to science talks was a top priority. Priority levels that varied strongly between groups included: a strong division

⁴ <https://dps.aas.org/dps-2020-membership-survey-results>

between priority-level for in-person vs. virtual attendance for “meeting and networking,” “meetings with colleagues,” and “social events;” and a much higher prioritization by students on “finding and filling jobs” and “professional development events.”

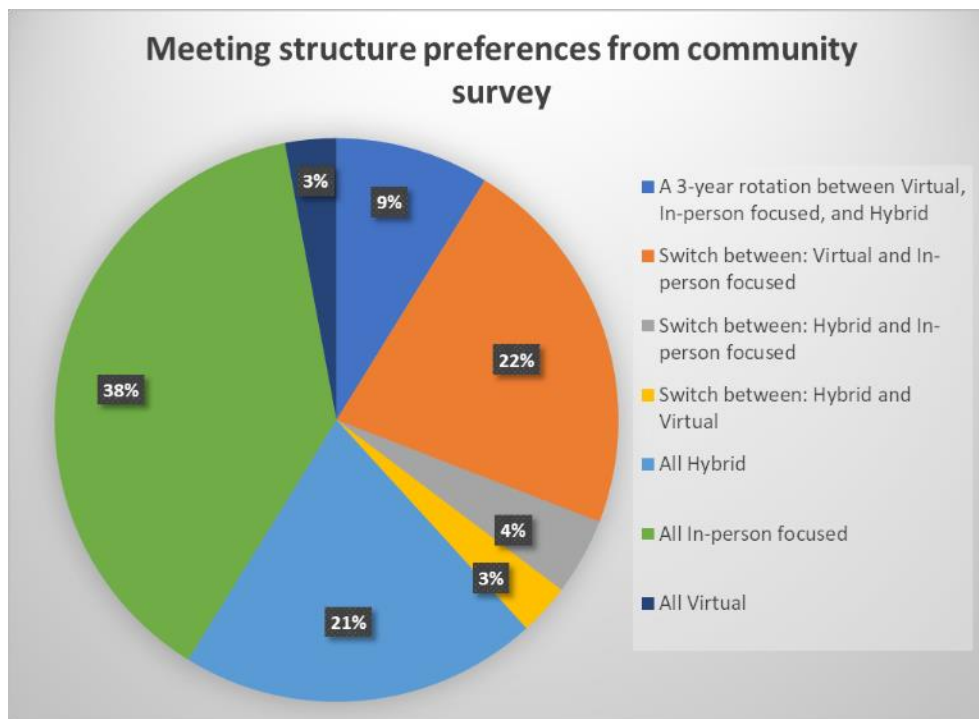


Figure C3. The meeting structure(s) most preferred by respondents. Respondents could only pick one option (or fill-in under “other” – these were combined with the appropriate categories).

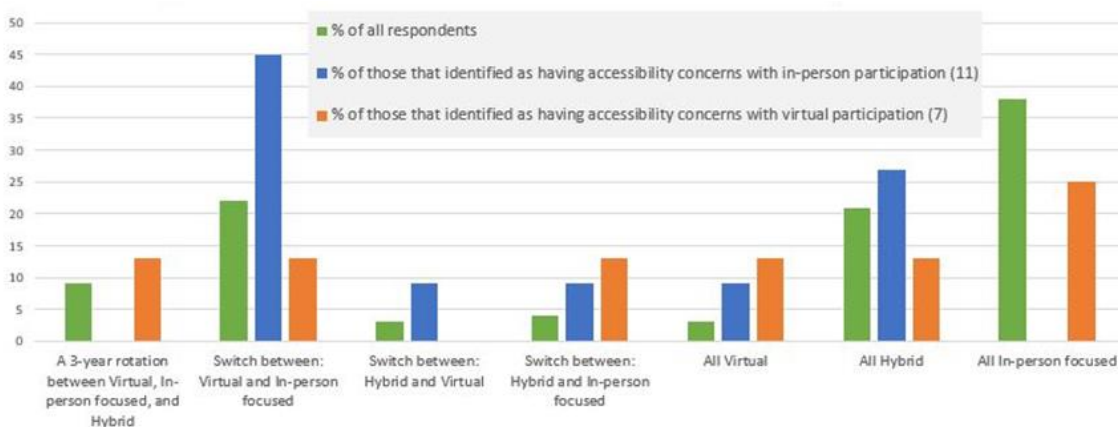


Figure C4. As in Figure C3, the meeting structure(s) most preferred by respondents, but with focus on folks that reported accessibility concerns that negatively impact their ability to participate in a meeting as in-person or virtual attendee. (The number of survey respondents included in this analysis is shown in parentheses.)

D. October Survey Questions and Some Summary Results

The October surveys were sent out two ways: questions were included in the usual post-meeting survey that went out to respondents, and a survey specifically for those that did not attend DPS was advertised via email newsletters. The number of survey respondents were: Virtual: **46**, In-person: **138**, Did not attend meeting: **57**; total: **241**. (*Thank you to the respondents!*)

Responses to the full DPS post-meeting survey were considered in DPS-MXT analysis (e.g., comments about the 2022 DPS meeting poster sessions), but the main questions we considered, and the ones shared between all three surveys, were:

- Demographics of the respondent: Current career stage, where currently working or studying, primary areas of research or education interests, has attended prior DPS meetings.
- Reasons for attending (or deciding to not attend) the DPS meeting, as an in-person or virtual attendee.
 - This included these questions (referenced in Figure D3): “Please rate the following aspects of attending this hybrid meeting according to what is most important to you as an attendee” and “Please comment on whether this hybrid meeting provided the value you sought in these areas, as an attendee.”
- “The DPS Meeting Exploration Team (DPS-MXT) is evaluating three meeting structures: fully virtual (similar to DPS 2020/2021), in-person focused = an in-person meeting with virtual components but potentially little interaction between virtual/in-person attendees and no additional cost to in-person registrants, and fully hybrid = enabled engagement between in-person and virtual attendees but higher associated costs for all (similar to the 2022 DPS meeting). Please answer which of these structures you would consider attending for a future DPS meeting (select all that apply).”
- “The DPS-MXT is considering options where the DPS meeting structure changes between years, following a regular cadence. (See question 28 for meeting structure options.) Which of these meeting structure plans do you think could work well for the full DPS community and that you’d consider attending? (Select all that apply.)” (referenced in Figure D5)
- “To help the DPS-MXT for a recommendation: What are the minimum virtual aspects you would like to see at future DPS meetings, even if they are in-person focused? (Select all that apply).” (referenced in Figure D6)

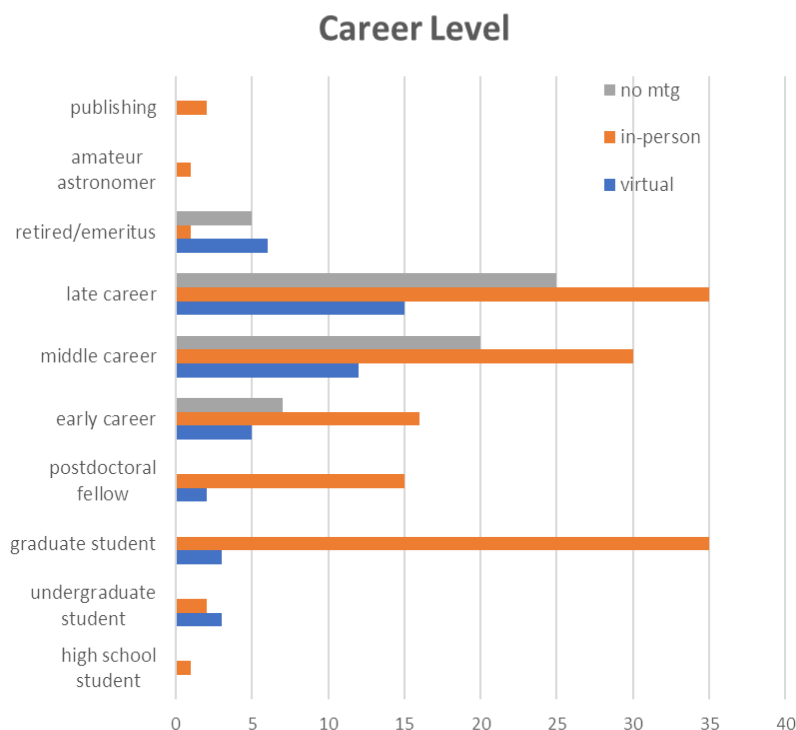


Figure D1. Responses came from all career levels from in-person attendees, but skewed to late and mid-career for all groups, and also graduate students for in-person. Identity demographics data (such as race and gender) were not collected in the October survey.

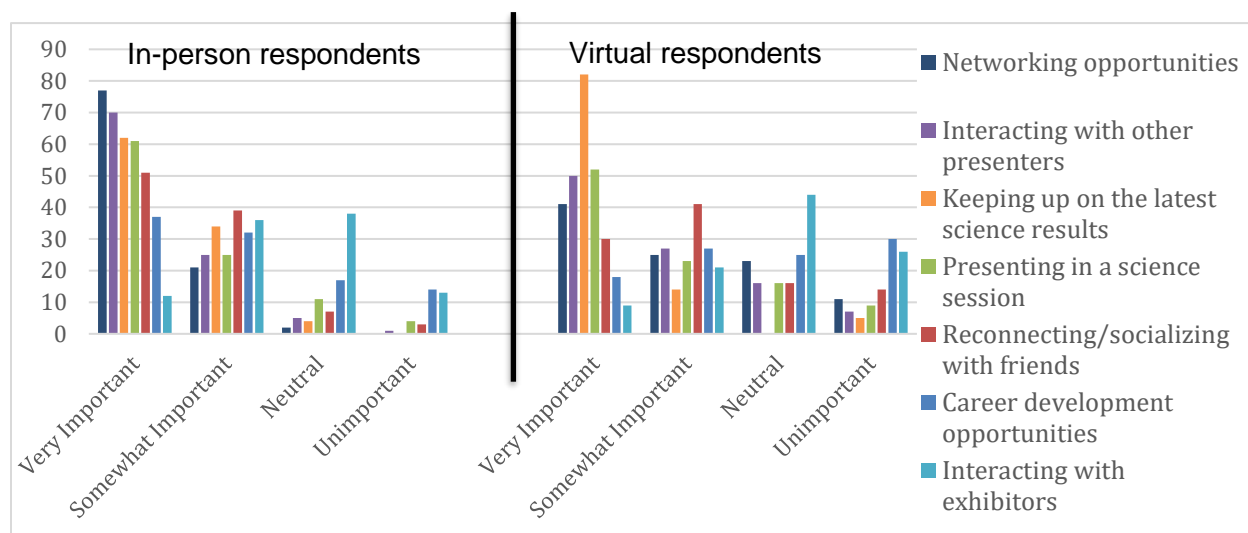


Figure D2. A percentage histogram of responses to “rate the following aspects of attending this hybrid meeting,” ordered with respect to the percentage of in-person respondents that found it *very important*. The order would be different for the virtual respondents—in particular, virtual attendees do not value as highly networking and interacting with other presenters and friends, probably in large part as it is not an expected part of the meeting virtual attendee experience.

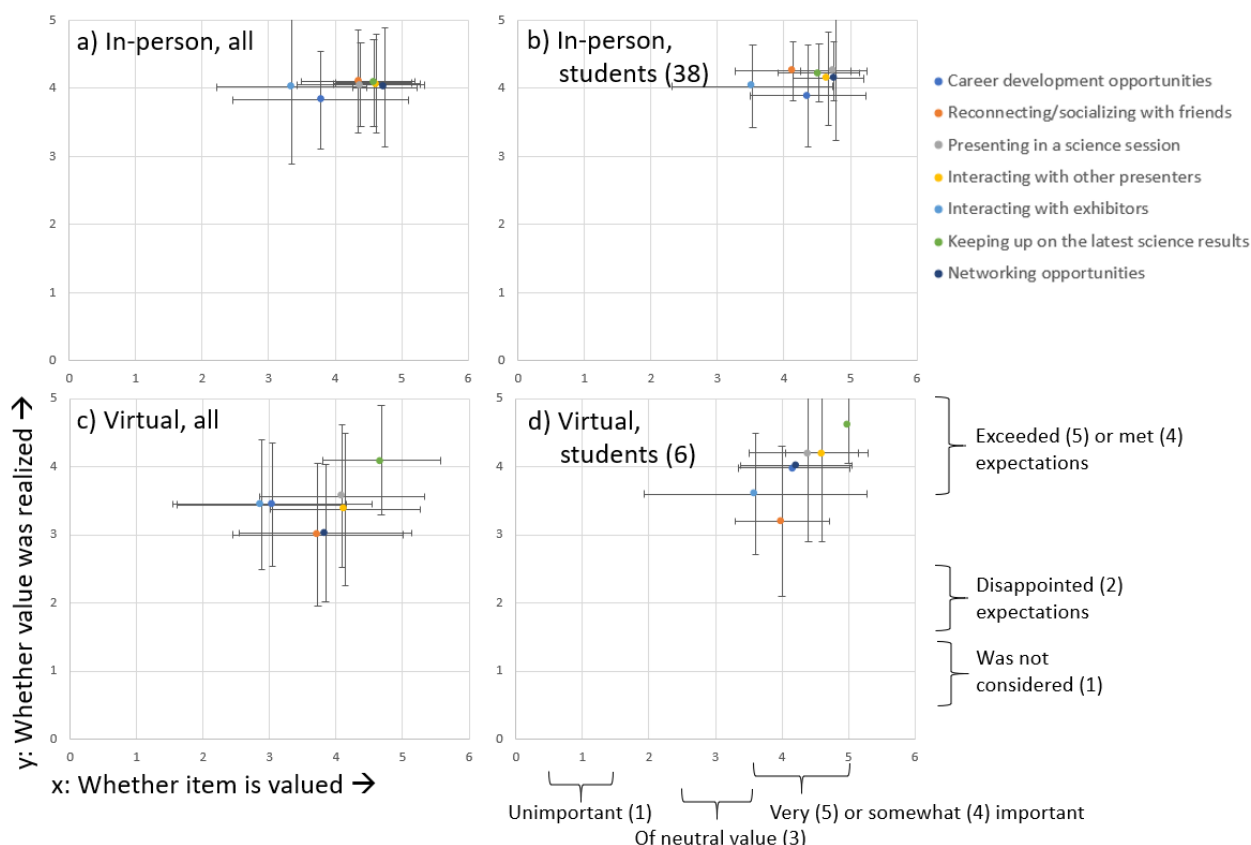


Figure D3. A visual representation of the value held by an interaction at a meeting (x-axis), and whether the DPS 2022 meeting met expectations in delivering that value (y-axis) – i.e., interactions of higher value to meeting attendees are further right and interactions where meeting attendees were pleased with their experience are further up. To generate this plot, responses were converted to arbitrary numerical values (as shown at right and bottom); plotted are average values and the error bars show standard deviation. The legend is shown the right and bottom for all plots; plotted is the average value. The student-respondent population included high school, undergraduate, and graduate levels, and the number of responses is in parentheses.

Some observations:

- In general, “keeping up with the latest science results” is the highest priority for all meeting attendees, and “interacting with exhibitors” was the lowest (of the options we provided in the survey).
- In-person responses from all groups show a high clustering in the upper-right. Virtual responses are more spread – in both average values and the range of answers provided (i.e., higher standard deviation), and in both horizontal and vertical directions. This may reflect the idea that folks choose to attend a meeting virtually for a wider range of reasons than the reasons for attending an in-person meeting (Table 1), and thus there is a broader range of expectations and success in meeting those expectations.
- Despite having lower expectations, virtual attendees were still more often disappointed by their ability to “reconnect/socialize with friends” and to “network”.
- “Networking opportunities” were of higher importance to students.

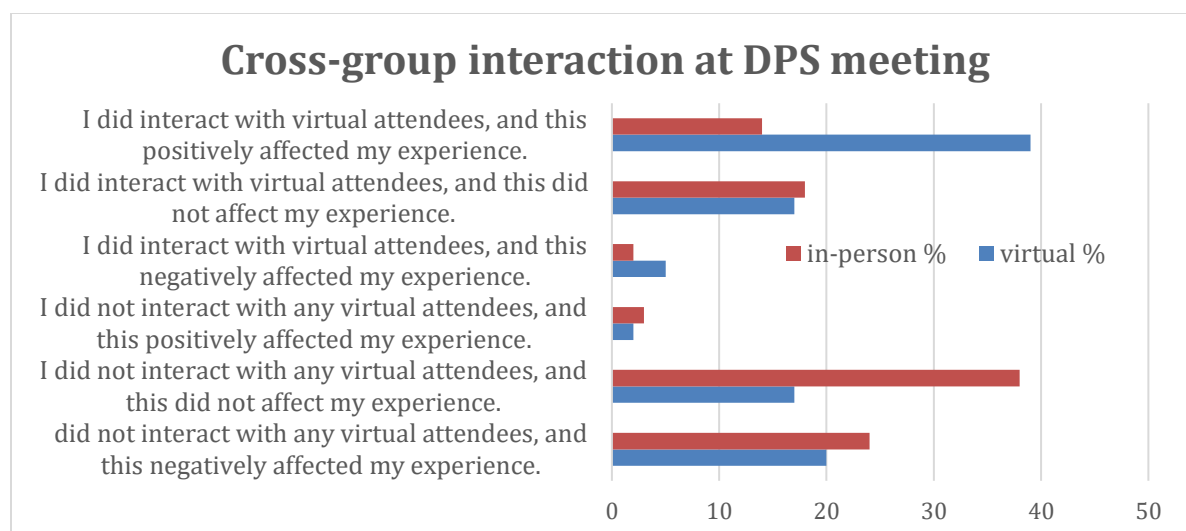


Figure D4. Of survey respondents, <35% of the in-person attendees interacted with virtual attendees in some way (e.g., listened to a virtual oral or poster presentation). Of those that did *not* interact with virtual attendees, 64% reported that the lack of interaction yielded a neutral or positive effect on their meeting experience.

| | Navigation of the online program | | Using Slack for science Q&A | | Using Slack for social interactions | |
|--|----------------------------------|------------|-----------------------------|------------|-------------------------------------|------------|
| | Virtual | In-person | Virtual | In-person | Virtual | In-person |
| Very satisfied | 14% | 5% | 18% | 9% | 7% | 5% |
| Satisfied | 34% | 26% | 25% | 24% | 20% | 14% |
| Neutral | 18% | 19% | 34% | 32% | 25% | 23% |
| Dissatisfied | 30% | 31% | 18% | 7% | 18% | 8% |
| Very dissatisfied | 5% | 18% | 0% | 6% | 11% | 7% |
| Did not experience as I was not interested | 0% | 0% | 5% | 19% | 16% | 37% |
| Did not experience as I was unable to access | 0% | 0% | 0% | 4% | 2% | 6% |

Table D1. Responses are shown with respect to “Please rate how you found the following aspects of the meeting,” with a focus on the online program and virtual participation platforms. >35% of all respondents were *dissatisfied* or *very dissatisfied* with the online program, and many negative comments were left about difficulty finding sought information and connection links. With Slack, 2-4x as many in-person respondents as virtual respondents did not use the platform, reflecting their lower engagement with the virtual platforms. Boldface emphasis added for the two values at 30% or higher.

| | Virtual attendees to virtual poster session | In-person attendees to virtual poster session | In-person attendees to in-person poster session |
|---|---|---|---|
| Very satisfied | 7% | 1% | 13% |
| Satisfied | 30% | 7% | 53% |
| Neutral | 14% | 13% | 16% |
| Dissatisfied | 14% | 12% | 9% |
| Very dissatisfied | 14% | 8% | 4% |
| Did not experience as I was not interested | 20% | 50% | 5% |
| Did not experience as I was unable to access | 2% | 10% | 1% |

Table D2. Responses are shown with respect to “Please rate how you found the following aspects of the meeting,” with a focus on the poster sessions. The majority of meeting attendees did not attend the virtual poster session, with 50% of the in-person respondents electing to not attend. Satisfaction was much higher with the in-person poster session. Boldface emphasis added for the two values at 50% or higher.

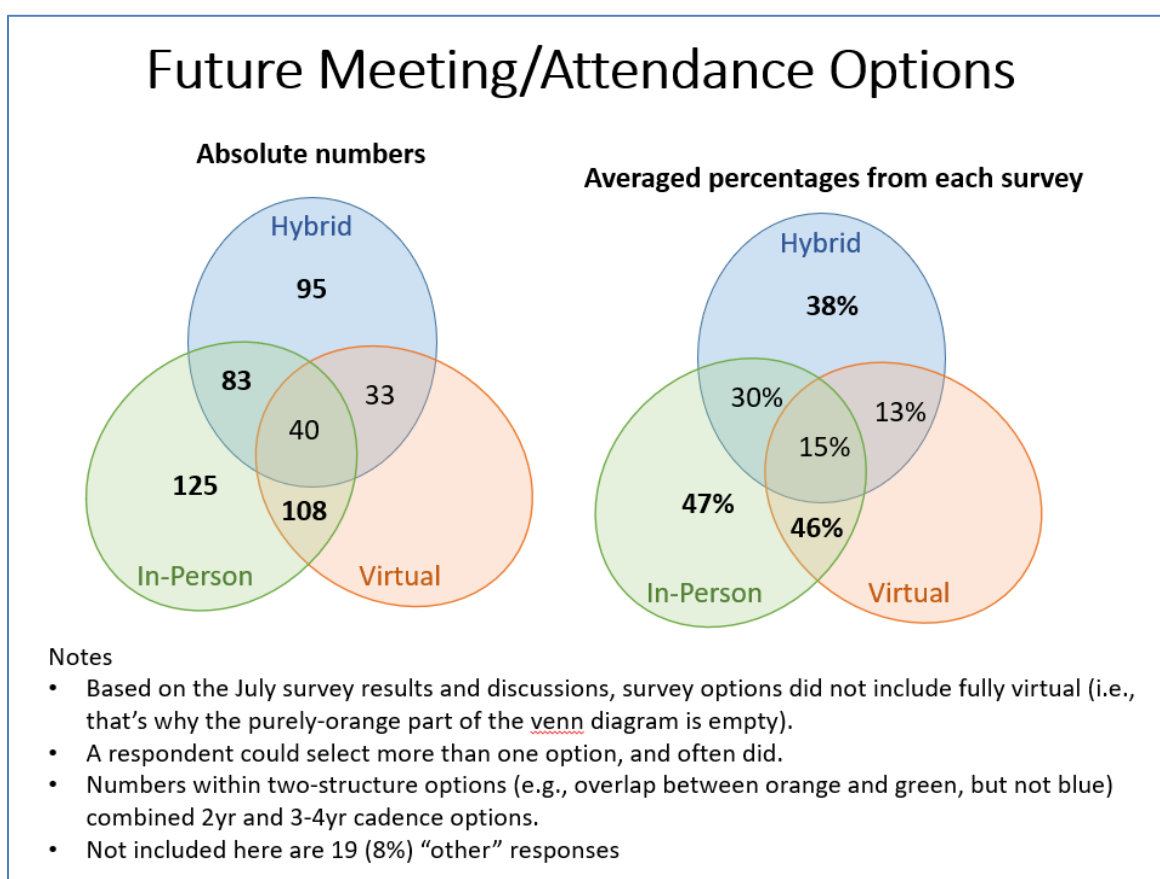


Figure D5. People’s willingness to consider attending future DPS meetings of different structures (as defined in [I.3.](#)), including a regular change of structures over a 2–4yr cadence.

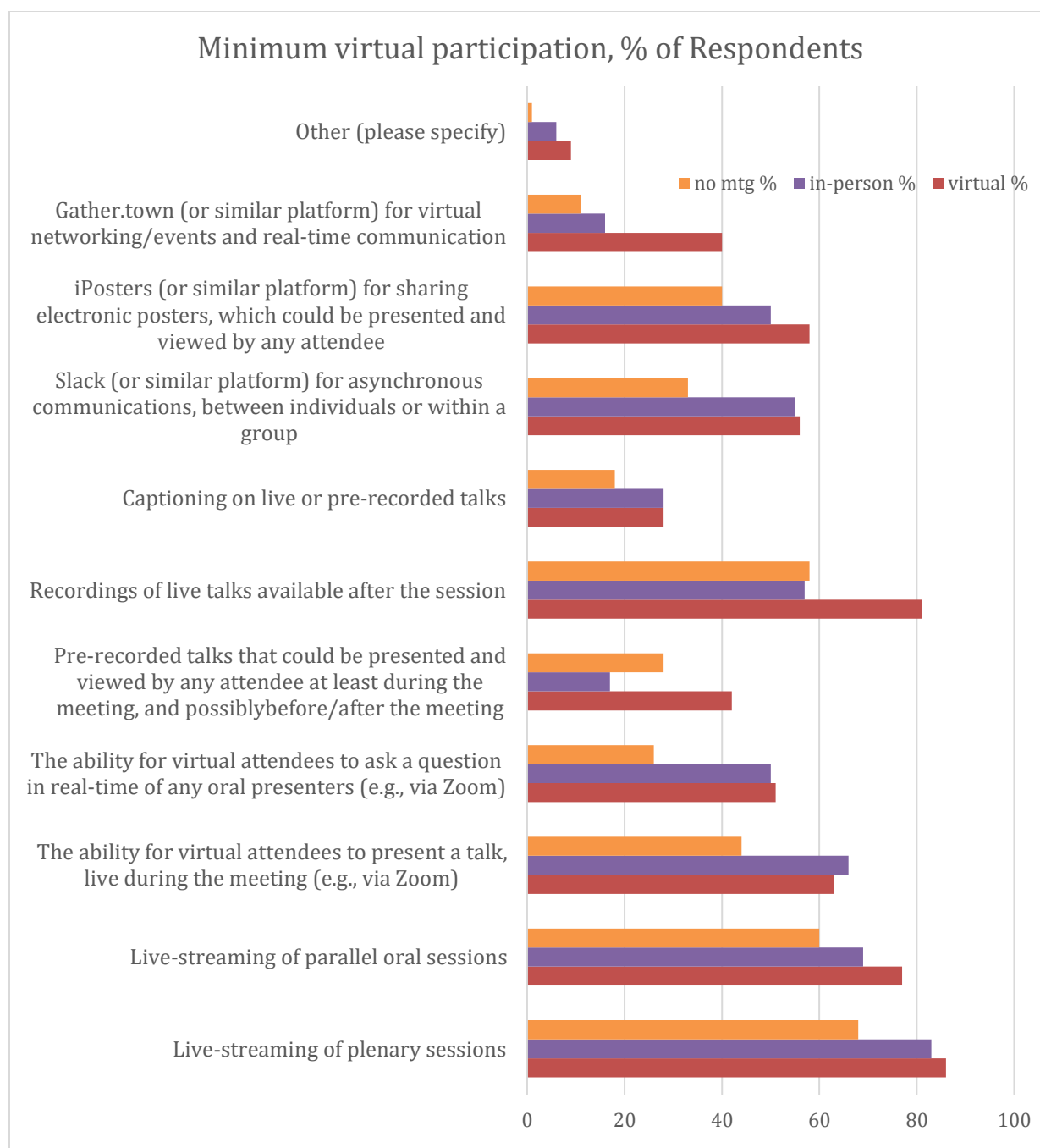


Figure D6. Prioritization, from the community, of virtual components for all future DPS meetings. The top five items (i.e., >40%), across all survey respondents, are live-streaming of plenary sessions and of parallel oral sessions, recordings of live talks available after the session, and ability for virtual attendees to present a talk (such as via Zoom). Also of high priority for those that attended the meeting (in-person and virtual) are use of electronic posters (such as iPosters), a platform (like Slack) for asynchronous communications, and the ability for virtual attendees to ask a question in real-time of any oral presenters (such as via Zoom).

E. Some Additional Guidance/References for Meeting Organization

In generating our recommendations, the DPS-MXT reviewed many online articles offering advice for hybrid meetings and accessibility standards (including studies) and spoke with an accessibility expert. Summarized here, for the benefit of the broader community, are some of the main items we found interesting and/or useful. (Many of these ideas—but not all of them—were incorporated directly into our recommendations for DPS meetings).

Summary of “best practices” for remote/hybrid meetings

- A hybrid meeting is often “one event, two experiences.”
 - Design the experiences or perks for each group (virtual or in-person) separately, so as to maximize their engagement. For example, in-person attendees can go on a field trip while virtual attendees can gain access to a related virtual field trip. (But this does not necessarily mean develop separate events.)
 - In-person attendees tend to dominate interactions.
 - Ensure remote attendees have an in-person contact who pays attention to their needs/engagement and can advocate to fix issues.
 - Assign technical helpers to each event with virtual attendees, that can handle questions regarding platform navigation, and monitor questions/discussion from various platforms (email/Slack/Zoom).
 - Note that some of these responsibilities may be able to be handled by a “session chair,” but some may require someone with a focus on and expertise in the technology/AV.
 - Consider a schedule that accommodates more time zones, and includes frequent breaks.
 - Schedules can be stretched over more days to facilitate more frequent breaks at times that make sense for those in various time zones.
 - Can consider rolling start times each day to better cover multiple time zones.
- Virtual engagement options may include:
 - On-demand content (pre-recorded or recorded from livestream)
 - Discussion via Q&A
 - Visibility of virtual attendees, and letting virtual attendees see in-person attendees. E.g., show the presenter (virtual or in-person) via video along with their slides; have an in-room camera or roving webcams to share views with remote attendees.
 - Small virtual meet-ups, such as making available virtual breakout rooms, with a calendar app for scheduling and ability for attendees to indicate their interest in/availability for small chats
- Accessibility Recommendations include:
 - Minimize the number of platforms used for virtual content, and make navigation as simple as possible.
 - Select virtual platforms with accessibility in mind, such as:
 - Compatibility with multiple operating systems, assistive technologies
 - Flexible screen layouts (e.g. portrait vs. landscape, resizable windows)

- Text alternatives for visual and audio content (captions, text options for app icons), which should be available for both virtual and in-person attendees
- Easily-located and clear help functions
- Adherence to Web Content Accessibility Guidelines (from the [W3C](#)).
- Test extensively before the meeting and provide an easy way for problems to be reported (and prompt response).
- During science sessions and discussions in-person attendees should use microphones so that virtual attendees can hear and participate.

Additional meetings discussed, (via their survey results or personal experience)

- 2020, 2021 DPS meetings (virtual)
- 2022 AAS spring meeting (hybrid)
- PlanetInsitu22 (hybrid, ~20 in-person and ~50 virtual attendees)

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- <https://docs.google.com/document/d/1WSs99ys12OXkkU0WNTNR02rIA-ndRNZVgDeJMnd3j1E/edit?usp=sharing> (Resources for Accessibility @ Conferences, a list compiled and maintained by Dr. Divya Persaud)