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# Delegate Perspectives on Transitioning the 41<sup>st</sup> Canadian Symposium on Remote Sensing to a Virtual Event Due to the COVID-19 Pandemic

## Points de vue des délégués à propos de la transition du 41<sup>e</sup> Symposium canadien sur la télédétection à un événement virtuel en raison de la pandémie COVID-19

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### ABSTRACT

The 41<sup>st</sup> Canadian Symposium on Remote Sensing (CSRS) was a unique event, originally planned to be hosted as an in-person event in Yellowknife, Northwest Territories but ultimately delivered 100% online due to the COVID-19 global pandemic. As the 41<sup>st</sup> CSRS represented an unprecedented departure from the CRSS-SCT's long history of annual in-person symposia, this note summarizes the transition from an in-person to an online event. In particular, delegate feedback on some of the challenges encountered, as well as positive and negative perceptions of the event delivery. It is important that a record of these collective experiences is preserved and considered for future symposia, and our experience is shared with the global research community.

### RÉSUMÉ

Le 41<sup>e</sup> Symposium canadien de télédétection (SCT) a été un événement unique, initialement prévu pour être organisé en personne à Yellowknife, dans les Territoires du Nord-Ouest, en juin 2020 mais qui s'est finalement déroulé entièrement en ligne en raison de la pandémie mondiale COVID-19. Comme le 41<sup>e</sup> CSRS a représenté une rupture sans précédent avec la longue tradition de symposiums annuels en présentiel du CRSS-SCT, cette note résume la transition d'un événement en personne à un événement en ligne. En particulier, les commentaires des délégués sur certains des défis rencontrés, ainsi que les perceptions positives et négatives de la prestation de l'événement sont présentées. Il est important que les enseignements de ces expériences collectives soient conservés et pris en compte pour les futurs symposiums, et que notre expérience soit partagée avec la communauté mondiale de la recherche.

### ARTICLE HISTORY

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## Introduction

In 2017, the Canadian Remote Sensing Society (CRSS-SCT) decided that the 41<sup>st</sup> Canadian Symposium on Remote Sensing (CSRS) would be hosted for the first time in Yellowknife, NWT in June 2020. With no university campus and few venue and transportation options, it was a bold plan to host the national event in the Territories. Nonetheless, by March 2020, the Explorer Hotel venue was booked and event space configured, catering, field trips, and all social events finalized, with a rich lineup of dignitaries and cultural experiences confirmed. Even the abstracts had been

reviewed and delegate registration opened. All that remained was the detailed scheduling of oral and poster presentations within the program sessions. Then the world went into varying degrees of lock-down and COVID-19 dominated all plans. The Organizing Committee immediately postponed registration and hit pause for 2 weeks while options were sought and weighed. In the beginning phase of the COVID-19 pandemic, many national and international conferences were canceled, and for a short time, it looked like the 41<sup>st</sup> CSRS was not going to happen.

In April 2020, the Organizing Committee decided to forge ahead with a virtual meeting and instead of

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hosting the first CSRS in the NWT, the 41<sup>st</sup> Canadian Symposium on Remote Sensing became the first fully online annual symposium for CRSS-SCT (Hopkinson et al. 2022). The theme “Landscapes of Change; Remote Sensing for a Sustainable Future” remained and many individuals, agencies, and partners stepped up to help with the transition to online. Notably, our conference program partner, ExOrdo in Ireland responded to the challenge faced by CRSS-SCT (and other conference planners), by agreeing to build, from scratch and in a short time, an online platform to help mount the CSRS technical program.

As the 41<sup>st</sup> CSRS represented an unprecedented departure from the CRSS-SCT’s long history of annual in-person symposia, this note summarizes the transition from an in-person to an online event. It is important that a record be kept of actions taken and challenges faced by the Organizing Committee and especially conference delegates in facing this pandemic. While global pandemics are rare occurrences, there is mounting evidence that suggests that the frequency of these events is increasing (Marani et al. 2021). Our hope is that this record will serve as a reference point for future Symposia and online conferences in other disciplines.

## A virtual event

The conference Organizing Committee’s planning and preparation between April and July was fluid as the ExOrdo virtual platform did not exist and key components were being built, modified, and repaired up to, and even during the live event. In total, the 41<sup>st</sup> CSRS hosted 237 registered delegates from across North America, Europe, Asia, the Middle East, and Africa. On the first day of the Symposium, three full-day summer school workshop themes were hosted (Google Earth Engine, Synthetic Aperture Radar, and Lidar). The Organizing Committee attempted to honor the planned in-person technical program as closely as possible in the online environment. It is important to note that nobody on the original conference Organizing Committee had any experience with online scientific conference delivery.

After some minor adjustments and inevitable presentation withdrawals, the technical program included 88 oral, 31 poster, 2 keynote presentations, and three special panel discussions. Technical program presentations were distributed across 18 oral sessions and 3 interactive poster sessions, organized into regular or special session topic areas. A link to the conference

web page and program can be found online (CRSS-SCT 2020).

The keynote addresses and panel discussions were delivered as live presentations, while oral and poster presentations were delivered as a combination of pre-recorded presentations with live question and answer (Q&A) sessions. Paper presentations were allocated 10 min and were released to conference attendees on the day of the presentation. Dedicated live Q&A sessions of 20–35 min followed the video presentation release, with approximately 5 min allotted to each presenter. Poster presentations were allocated a 1 min poster video plus PDF slides of their poster. Poster presentations were available throughout the symposium with a 1 h interactive session after the videos were played. As expected, there were some minor hiccups with the online delivery due to the unfamiliarity of hosting symposia in this format and the compressed timelines involved. During the live sessions, there was much behind the scenes online (Slack) chat between session hosts and ExOrdo to address small technical problems as they arose.

Due to moving the meeting online with limited time to prepare, the social program was the most impacted, resulting in the elimination of some of the social events that are characteristic of CSRS meetings (Ice Breaker reception, awards banquet, field trips, and walking tours were all canceled). However, delegates did experiment with informal Zoom gatherings at breaks and evenings, and these were reasonably well attended (~10 people per meeting), providing an opportunity for delegates to catch up with friends and colleagues in a less formal venue than symposium sessions. Another change from the norm was the inability to host exhibitor booths. Weblinks to partner web pages or online exhibits were made from the online program (CRSS-SCT 2020) and ExOrdo platform (ExOrdo 2020) to slightly mitigate the loss of physical exhibitor spaces. Overall, CSRS 2020 became an event of forced experimentation, where much needed to be learned quickly, and last-minute innovations were necessary.

## Survey methodology

As the event unfolded, it became apparent through real-time feedback that certain elements of presentation content or the delivery schedule were not optimal. To learn from this experience, CRSS-SCT circulated an online *Survey Monkey* questionnaire to all registered delegates on July 20<sup>th</sup>, 4 days following the close of the symposium to solicit feedback on

**Table 1.** Online survey questions and multiple choice answer options. Note “The Committee” refers to the symposium Organizing Committee. Below the question number at left is the percent response rate (in brackets) from all respondents who engaged with the survey.

Multi-choice questions	
Q1 (100%)	Please rate your overall impression of CSRS 2020 online (from 1 to 5, with 1 being a low and 5 a high rating).
Q2 (100%)	Relative to typical “in-person” events, do you think the online event was: (a) much better; (b) better; (c) about the same; (d) worse; (e) much worse.
Q3 (100%)	Recognizing that online vs “in-person” events are different (i.e., Live vs On-Demand content), which elements of the online event were better or worse? (a) Live Plenary Sessions; (b) Live Special Panel Discussions; (c) Blended Oral Presentation Sessions; (d) Blended Poster Sessions; (e) Exhibits; (f) Social Interaction.
Q4 (100%)	New to CSRS 2020 was the requirement to submit and review Poster and Oral Presentations as “On-Demand” web content at pre-released times. From any of the following perspectives that applies to you, please rate your experience (from good to bad): (a) Poster presenter; (b) Oral presenter; (c) Delegate; (d) Session chair
Q5 (99%)	The committee needed to encourage participation in Q&A sessions, while keeping the day’s events accessible to participants across many time zones across Canada. Given these constraints, please comment on the timing of each component (too short to too long): (a) Each full day of the symposium; Plenary sessions; (c) Special panel discussion sessions; (d) Oral Q&A sessions; (e) Social Zoom sessions.
Q6 (94%)	The committee chose to host four parallel technical oral sessions as a compromise between making sessions accessible to all, while ensuring some time for meaningful discussion; that is, to increase the length of Q&A sessions and the amount of time each presenter can speak, we would need either more parallel sessions (and fewer delegates per session), a longer overall day, or shorten other elements of the program. Please select your preferred option: (a) Four parallel sessions and the length of Q&A discussion was about right; (b) The Q&A sessions should be lengthened by having more parallel sessions; (c) The Q&A sessions should be lengthened by increasing the length of the day’s program; (d) The Q&A sessions should be increased by reducing other elements of the program; (e) Other (please specify).
Q7 (97%)	The platform used for the symposium had no dedicated social interaction or networking capability. We elected to use Zoom for ad hoc gatherings during breaks and each evening. Please indicate your opinion of these social networking interactions: (a) I’d rather have “in-person” interaction but the Zoom gatherings were fun under the circumstances; (b) I found the Zoom interaction awkward and unsatisfactory; (c) I thought the Zoom interaction was great and would like to see this option even at “in-person” events; (d) I did not attend any of the Zoom gatherings; (e) Other (please specify).
Q8 (97%)	Were you aware of any Mainstream, Social or in-house Media Postings promoting CSRS 2020, either before, during or after the event? (a) Yes, social media; (b) Yes, mainstream media; (c) Yes, internal corporate announcements/promotions; (d) No, I did not see any media attention regarding CSRS 2020; (e) Other (please specify).
Q9 (100%)	Now that we’ve experimented with online conference delivery, do you agree that we should incorporate elements of real-time online web-based content into our future in-person Symposia? (a) Strongly agree; (b) Agree; (c) Neither agree nor disagree; (d) Disagree; (e) Strongly disagree.
Q10 (92%)	If you agree with Q.9 above, do you prefer to see more “On-Demand” (bundled) presentation content, or more of the Live WebEx style interactive presentations and Q&A? (a) More On Demand (Bundles); (b) More Live Interactive (WebEx); (c) More of both; (d) I don’t want to see more web-based content at “in-person” events.
Q11 (100%)	An online event requires that both the host and attendee have high quality web-based audio video capabilities. Please rate your experience in the following categories (from very good to very bad): (a) Audio quality; (b) Video quality; (c) Internet streaming quality.
Q12 (67%)	Please provide any other thoughts or feedback you feel might be useful in helping us improve the Canadian Symposium on Remote Sensing in the future, whether fully “in-person” on online.

overall impressions, and to seek specific feedback on what worked well or could be improved. The survey was open until September 14<sup>th</sup>, 2020.

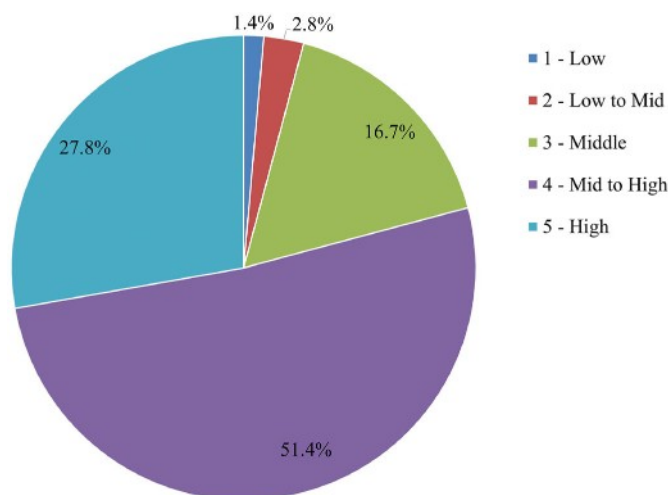
Table 1 lists the 11 multiple choice and single open-ended questions presented on the online questionnaire. Respondents were able to provide additional comments related to certain questions as well as general feedback on any aspect of the Symposium. The multi-choice results are presented in the next section.

### Delegate perceptions

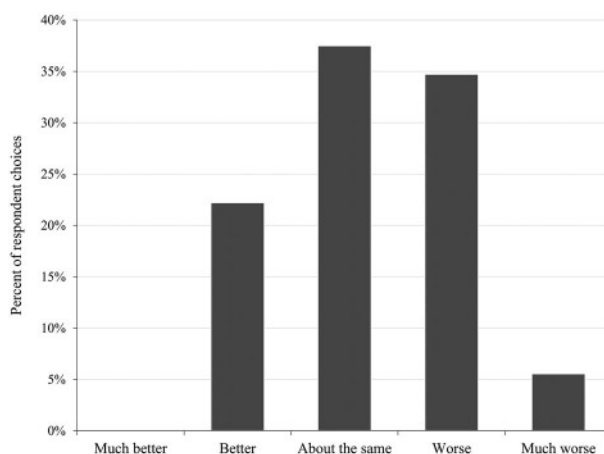
At the close of the survey, 72 of 237 registered delegates had responded to the questionnaire. The results of this survey, therefore, represent the perspectives of >30% of symposium attendees. Of the 11 multiple choice questions, six received a 100% response rate,

with the lowest response rate of 92% for question 10 (Table 1). The single open-ended question (Q12) generated a 67% response rate (or 48 individuals) from all respondents. Figures 1–12 present the main results of the survey questions listed in Table 1. The raw survey data, including delegate comments, are available online (Survey Monkey 2021).

A summary of individual delegate impressions of the symposium, where 1 represents the lowest and 5 the highest overall impression is presented in Figure 1. Here, it is assumed that a mid-level score of 3 indicates that a respondent perceived the event to be of “typical” or “average” quality. Only one respondent provided the lowest score of 1/5, and 20 respondents provided the highest score of 5/5. The weighted average of 4.0, indicates that the overall impression of the symposium was “Middle to High,”



**Figure 1.** Pie chart illustrating the distribution of respondent answers to Q1: “Please rate your overall impression of CSRS 2020 online.”



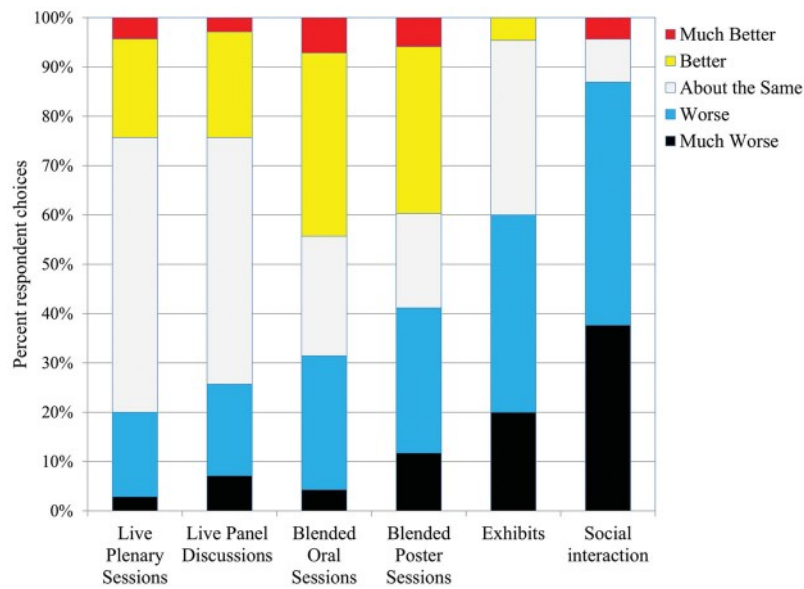
**Figure 2.** Bar graph illustrating the distribution of respondent answers to Q2: “Relative to typical ‘in-person’ events, do you think the online event was: (a) much better; (b) better; (c) about the same; (d) worse; (e) much worse?”

or above average. Nuances on these perceptions are further illustrated in [Figure 2](#), where the most common perception amongst respondents (38%) was that the online event was about the same (i.e., no better or worse) relative to a typical in-person symposium. It is noteworthy, however, that while overall impressions of the symposium were above average ([Figure 1](#)), 40% of respondents perceived the online event to be inferior to in-person events, relative to 22% who perceived it to be better ([Figure 2](#)). The potential disparity in perceptions here may be attributed to different levels of expectation; that is, prior to the online symposium, expectations may have been low for many delegates due to either the forced and rapid nature of the change or simply a low expectation for online events in general. Consequently, this may have led to a positive impression for those whose expectations were exceeded. It is therefore possible to reconcile a high

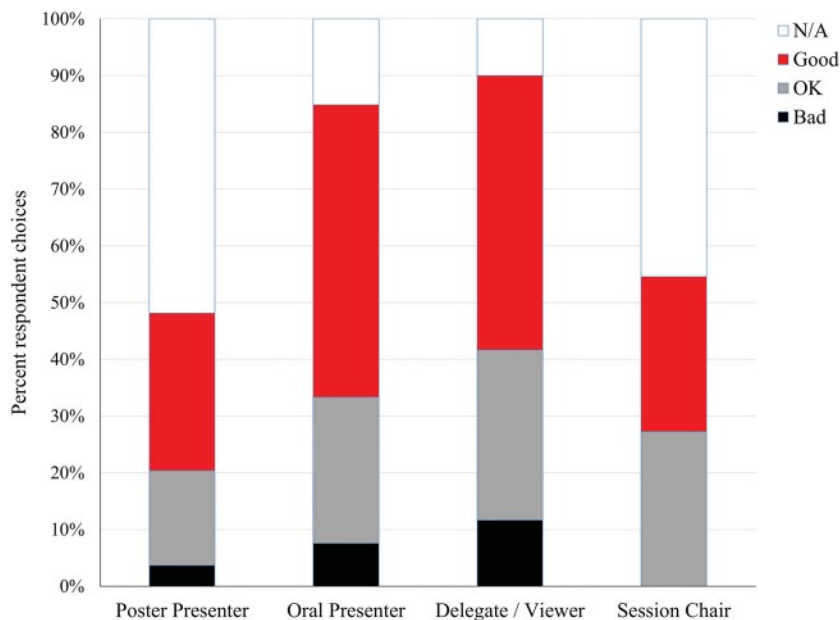
overall impression with a tendency for most to still perceive the online experience as inferior to an in-person symposium.

While all aspects of the online event prompted mixed reactions, there was a general consensus that plenary (~80%) and panel discussion (>70%) were at least as good or better than a traditional conference experience ([Figure 3](#)). There was a greater tendency for respondents to consider the exhibits (~60%) and especially social interaction (>80%) opportunities to be worse in the online environment. Responses were split almost evenly, however, for the delivery of technical program oral and poster presentation content, with some respondents favoring online and others not ([Figure 3](#)).

Perceptions of the online presentation format and content delivery are summarized by delegate and presenter type in [Figure 4](#). For the online pre-released “on demand” videos and posters, the majority of



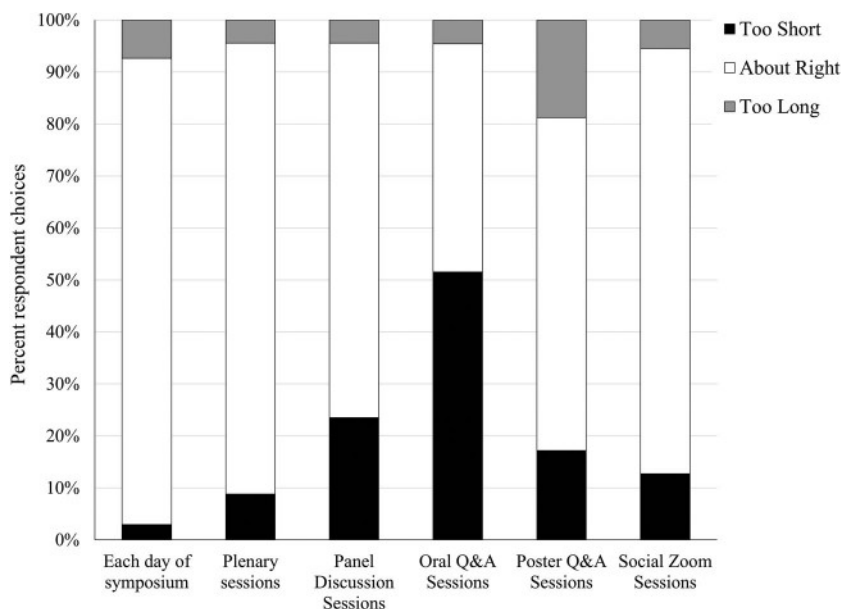
**Figure 3.** Stacked column bar graph illustrating the distributed respondent answers to Q3: “Recognizing that online vs ‘in-person’ events are different (i.e., Live vs On-Demand content), which elements of the online event were better or worse?”



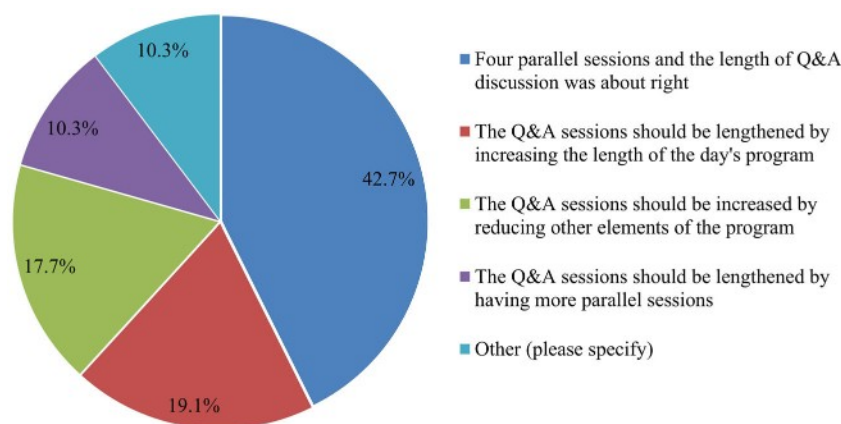
**Figure 4.** Stacked column bar graph illustrating the distributed respondent answers to Q4: “New to CSRS 2020 was the requirement to submit and review Poster and Oral Presentations as ‘On-Demand’ web content at pre-released times. From any of the following perspectives that applies to you, please rate your experience (from good to bad): (a) Poster presenter; (b) Oral presenter; (c) Delegate; (d) Session chair.” *Note.* A response of “N/A” indicates that the respondent did not fall into that category. The sum of all affirmative (good, ok, bad) responses exceeds 100% because respondents can fit into multiple delegate categories and thus provide multiple perspectives.

delegate types indicated that the delivery of presentations in this format was successful (i.e., either “good” or “ok”). Less than 12% of non-presenting delegates considered this mode of delivery to be “bad,” with negative experiences diminishing amongst oral presenters (8%), poster presenters (4%), and session chairs (0%) (Figure 4).

The timings for most individual symposium elements (day length, plenary, panel discussions, poster, and social zoom sessions) were perceived by the majority of delegates to be “about right” (Figure 5). The one exception by a wide margin was the length of time allocated for oral session Q&A periods, where the majority (52%) considered the time too short.



**Figure 5.** Stacked column bar graph illustrating the distributed respondent answers to Q5: “The committee needed to encourage participation in Q&A sessions, while keeping the day’s events accessible to participants across many time zones across Canada. Given these constraints, please comment on the timing of each component (too short to too long).”



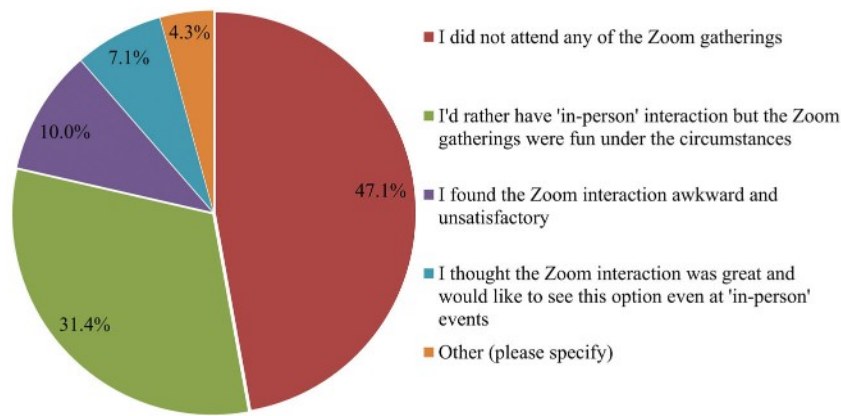
**Figure 6.** Pie chart illustrating the distribution of respondent answers to Q6: “The committee chose to host four parallel technical oral sessions as a compromise between making sessions accessible to all, while ensuring some time for meaningful discussion; that is, to increase the length of Q&A sessions and the amount of time each presenter can speak, we would need either more parallel sessions, a longer overall day, or shorten other elements of the program. Please select your preferred option.”

In all categories apart from the poster session Q&A, <8% of respondents perceived the sessions to be too long (Figure 5). For the poster session, 19% perceived the session to be too long and 17% too short. The lack of consensus here is assumed to be due to the variance in experience across individual poster sessions, where it was reported in real-time that some were well attended, and discussion could have continued well beyond the allotted time, whereas in others, attendance was low and discussion limited.

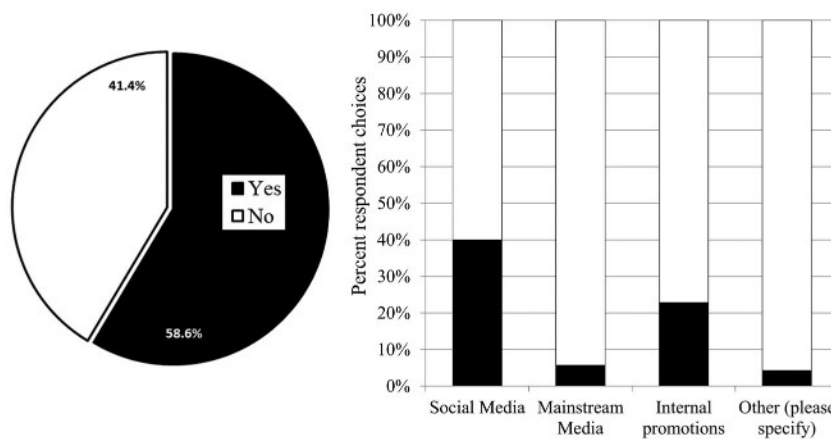
The number of parallel oral presentation sessions (four) and the resultant length of time allocated to Q&A were considered satisfactory by 43% of respondents (Figure 6). The next most popular response

(19%) was to extend the length of each day’s program to allow more time for interactive discussion, though there was little consensus over how, exactly, to lengthen the Q&A periods. Over 10% of respondents made suggestions of their own ranging from releasing the on-demand content before the interactive part of the symposium commences, to trimming the poster Q&A periods, to adding extra days to the symposium and staggering the oral Q&A sessions to remove the temporal overlap.

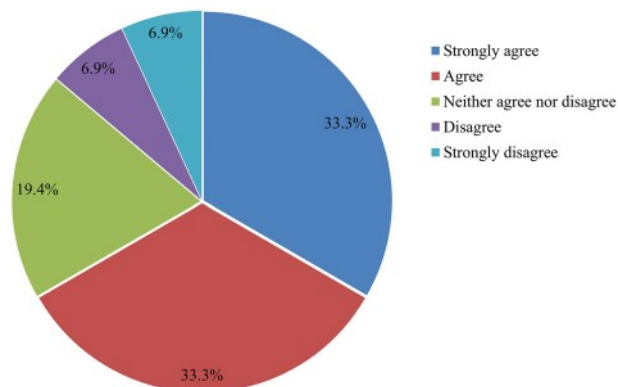
By moving the symposium online at short notice, and using a platform that did not support informal networking, the opportunities for social interaction were limited. The ad hoc Zoom meetings that were



**Figure 7.** Pie chart illustrating the distribution of respondent answers to Q7: “The platform used for the symposium had no dedicated social interaction or networking capability. We elected to use Zoom for ad hoc gatherings during breaks and each evening. Please indicate your opinion of these social networking interactions.”



**Figure 8.** Perceptions of media promotion of the CSRS event identified from Q8. Left: Proportion of respondents who were aware (yes) or not aware (no) of any media promotion of the CSRS. Right: Proportion of total respondent awareness of promotional media type (social, mainstream, internal or other).



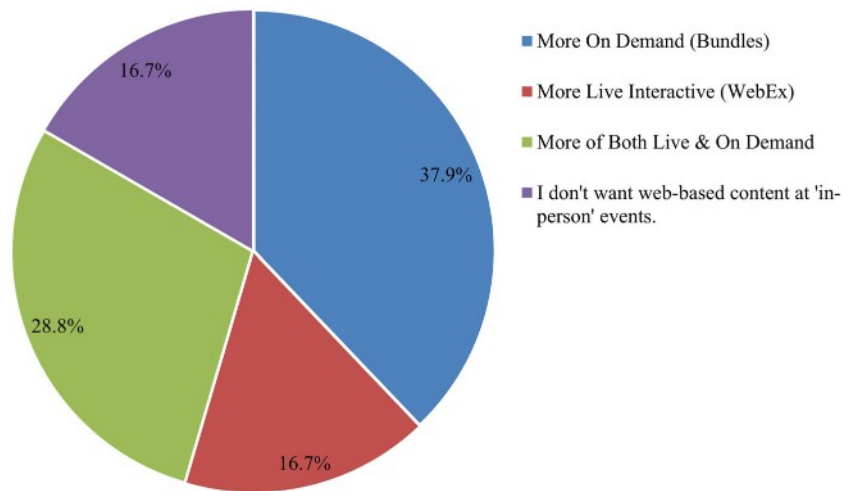
**Figure 9.** Pie chart illustrating the distribution of respondent answers to Q9: “Now that we’ve experimented with online conference delivery, do you agree that we should incorporate elements of real-time online web-based content into our future in-person Symposia?”

open to all delegates were experienced by >50% of respondents (Figure 7). Of these, the majority considered the interactions “fun” under the circumstances

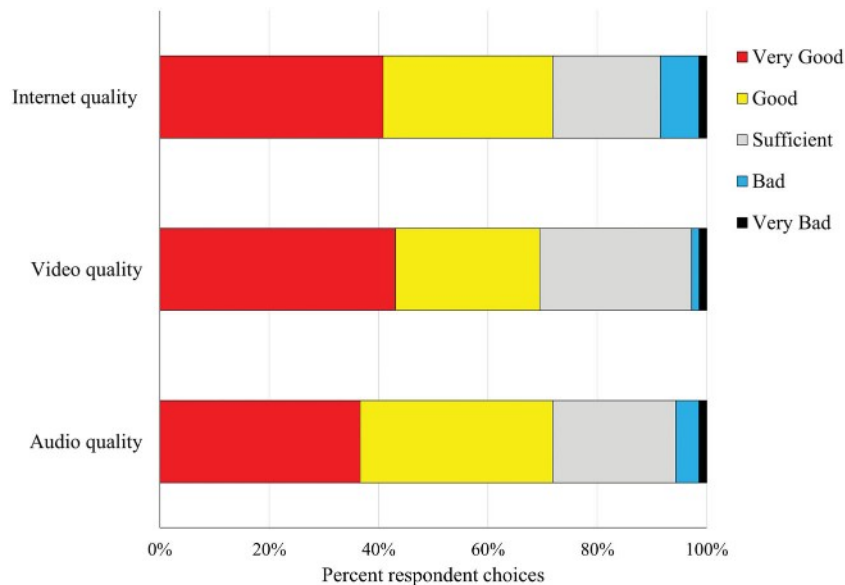
but acknowledged this was not the ideal form of interaction. Only 10% of respondents (or ~20% of those that had the experience) found it awkward and unsatisfactory. In the free-form comments to this question, one respondent noted that some social interaction did occur in the dedicated presenter session Q&A periods. However, such opportunities for social interaction were unplanned and only weakly effective for exploring new connections due to the constraints of time and pre-defined Q&A session discussion topics.

Of all respondents, 59% (Figure 8) were aware of media promotions of the 41<sup>st</sup> CSRS (beyond direct messaging from the CRSS-SCT). At 40% of respondents, Social Media was, by a wide margin, the most visible form of CSRS promotion. Meanwhile, 41% of respondents were unaware of any media promotion of the CSRS event (Figure 8).

A two-thirds (67%) majority of all respondents agreed that future in-person CSRS events should



**Figure 10.** Pie chart illustrating the distribution of respondent answers to Q10: “If you agree with Q9, do you prefer to see more ‘on-demand’ (bundled) presentation content, or more of the Live WebEx style interactive presentations and Q&A?”



**Figure 11.** Horizontal stacked column bar graph illustrating the distributed respondent answers to Q11: “An online event requires that both the host and attendee have high quality web-based audio video capabilities. Please rate your experience.”

contain at least some real-time content delivery in a web-based format (Figure 9). Less than 14% of respondents were opposed to adding online content to in-person symposia.

When it came to the question of future more traditional in-person symposia, less than 17% of respondents were opposed to incorporating online content delivery; that is, hybrid events (Figure 10). Meanwhile, the most favored form of online delivery at 55% was “on-demand” presentation bundles vs 46% for real-time interactive web-based broadcasting. Some opposition to any online content may be expected from those that had a poor online experience. For example, while approximately 70% of respondents found the

online audio, video, or overall internet quality to be good or very good, almost 9% did experience bad or very bad quality (Figure 11), which would make accessing information and maintaining communication difficult.

From the general free-form feedback responses to Q12, 22% can be categorized as conveying negative or critical feedback of the event experience and online configuration, a similar proportion was neutral in providing balanced negative feedback and positive suggestions, with at least 56% of respondents expressing a generally positive experience. A word cloud summary of feedback topics and perceptions is presented in Figure 12.



**Figure 12.** Word cloud constructed from 48 delegate free-form responses to Q12: “Please provide any other thoughts or feedback you feel might be useful in helping us improve the Canadian Symposium on Remote Sensing in the future, whether fully ‘in-person’ or online.”

## Discussion

In addition to the quantitative delegate responses to Q1–Q11 and the 48 free-form responses to Q12, there were 53 additional comments that provided further insights into delegate experiences. There were too many elements of specific or minor feedback to present here but some notable items of criticism or suggestions are highlighted.

The topic of registration fees or symposium attendance costs came up 22 times in response to Q12, with two respondents expressing displeasure at what was perceived to be a high registration fee for an online event. (Note, the online registration fee was reduced to one-third of what had been planned for the in-person symposium in Yellowknife.) The perception was that costs for online events are much lower than for physical events. This is an understandable concern, though does not factor into account that some costs had already been incurred in the original event planning and there are some costs unique to online event delivery. Given the need for an integrated and secure platform for online delivery of live and on-demand content, the cost for this service was not negligible, as some might assume. Even though the Organizing Committee was 100% staffed by volunteers, the behind-the-scenes need for real-time technical support and session hosts was elevated relative to a live event, and this added to the preexisting human resource cost. Therefore, while it is true that an online event is typically lower cost than a live event with its catering and venue rental, these new and distinct costs did need to be covered. Furthermore, with the late transition to online, almost all sponsorship and exhibitor revenues that would normally subsidize registrant fees

were dramatically reduced, thus elevating the requirement for registration revenues to cover costs.

A common response either hinted at or explicitly stated by many respondents throughout the questionnaire (and also in “offline” feedback) was the extra reach the online platform provided to CRSS-SCT. Specifically, some retired, students, reduced mobility, or overseas delegates, indicated that holding the event online was the only way they could participate. Similarly, the reduced cost and no requirement to travel increased accessibility to public sector employees who need pre-approvals to travel and might be blocked if too many of their colleagues wished to attend the same event. Even for those that would normally attend the event every year, it was noted that bundling on-demand content and having it available for an extended period made it easier for delegates to see exactly what they wanted to see in terms of the poster and oral presentation material. This is challenging to impossible at a typical live event, so was widely perceived as one of the major benefits of being online.

Counter to this positive sentiment, however, the interactive elements of the event and timing of release or the time allocated for some on-demand content items were perceived by many to be sub-optimal. In particular, several respondents felt the oral Q&A panel discussion periods were too short, with insufficient time to review on-demand presentations prior to engaging the speakers live. Participants and organizers had limited experience with online conferences, and changing conference modality proved to be not as simple as moving the typical schedule to an online platform.

There was much feedback provided concerning the specifics of the ExOrdo online platform.

Several negative comments and suggestions are the result of the almost prototypical status of the platform, or internet bandwidth constraints at the user end, and were therefore inevitable given the short timelines, budgets, and variations in everyone's geographic circumstances. Such concerns will not be discussed here, as they are not considered representative of general experiences or what should be expected with more lead-time and preparation. These concerns were shared with ExOrdo as the conference Organizing Committee was committed post-conference to improve future online conference events.

However, on the positive side, several presenters and delegates found the ability to discuss individual presentations through web-based "chat" to be a unique and helpful way to engage on topics of interest and develop personal networks. This capability was also found to be helpful to session chairs, as questions associated with on-demand presentations were publicly viewable and could be mined by chairs as they prepared for their sessions, thus ensuring discussion could be maintained during the live Q&A periods. An unexpected outcome of trying to merge traditional oral and poster presentations into the online platform was that the perception of poster presentation utility was slightly elevated. Multiple delegates perceived the poster format to be superior to the oral format when presented online, likely due to the joint on-demand and short video, combined with an enhanced opportunity for live 1:1 interaction. However, this may be more a function of the previously noted abbreviated session time and panel format for the oral Q&A period, than any inherent advantage in the poster format.

## Conclusion

The decision to transition the 41<sup>st</sup> CSRS to online showed that the CRSS-SCT is a dynamic group that can adapt to changing conditions and bodes well for our future leadership in global remote sensing. While the online event exposed the CRSS-SCT to many new challenges and opportunities, the sub-optimal social networking, loss of exhibitor interaction and revenue, and inability to experience a new or different part of Canada, were distinct negatives for many. The organizers of this

conference deeply appreciated that all participants opted to experiment with a new conference modality (albeit forced and rapidly developed) and that the community has grown because of the experience. While online meetings do not replace the sensory depth and diversity of in-person events, they do remove barriers of travel distance, enhance accessibility to content for a much wider demographic, reduce costs associated with research dissemination, and provide greater flexibility in scheduling conference elements. These benefits of online content delivery and interaction suggest that future CSRS Organizing Committees should endeavor to host hybrid events that exploit the benefits of both formats, and thus ensure our events and our message reach as wide an audience as possible.

## Acknowledgments

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