



D2.11 SESAR Innovation Days 2021 Report

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Engage

THE SESAR KNOWLEDGE TRANSFER NETWORK

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Abstract

This report describes the eleventh edition of the SESAR Innovation Days, which took place as a virtual event between 7th and 9th December 2021.

The opinions expressed herein reflect the authors' view only. Under no circumstances shall the SESAR Joint Undertaking be responsible for any use that may be made of the information contained herein.

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1 Introduction

The eleventh edition of the SESAR Innovation Days took as a virtual event between 7th and 9^h December 2021. As in previous years, Engage took responsibility of the programmatic, i.e. scientific content of the conference, tightly collaborating with the SJU as main sponsor. The other aspects of the conference were organised by the SESAR Joint Undertaking, especially SJU Communications. This includes the selection and preparation of the keynotes, the configuration of the virtual conferencing system, the virtual networking activities and communications.

The conference was initially planned to take place in Budapest hosted by HungaroControl; a site visit had already taken place in 2019 with the initial intention of hosting the 2020 SIDs in Budapest. This plan was then shifted to 2021 owing to the Covid-19 crisis in 2020. Unfortunately 2021 saw us obliged to host the SESAR Innovation Days on a virtual platform. Building on the experience gathered in 2020 a number of additional lessons were learnt and these can be found in Section 9.

Over 750 participants (unique visits) attended the SIDs, which featured technical presentations, plenary talks, panel discussions and numerous networking activities. The SIDs included a number of specific opportunities for networking, including Virtual Coffee and Chat Roulette as well as a virtual poster session in an innovative format.

1.1 Engage support for the SESAR Innovation Days

Engage is the SESAR Knowledge Transfer Network (KTN), established to promote and facilitate the development of air traffic management research in Europe. The organisation of the SESAR Innovation Days receives support and expertise from Engage consortium members (led by EUROCONTROL), from initial planning through to post-conference activities.

1.2 Objectives of this document

This document describes the 2021 edition of the SESAR Innovation Days.

1.3 Scope of D2.11

The following sections describe the:

- Programme Committee;
- Call for Contributions;
- Paper selection process;
- Conference programme;
- Virtual Conference Format and associated electronic tools;
- Results of a participant satisfaction survey; and
- Some lessons learned for future editions.

2 The SESAR Innovation Days

The SESAR Innovation Days are a scientific conference based on an open Call for papers and the peer-review of paper submissions through the SIDs Programme Committee (PC); members of the PC, supported by the SESAR Scientific Committee, perform a triple review of all submissions on the basis of which a decision about acceptance and rejection is made. The SIDs have taken place annually since 2011, usually in late November or early December and in varying locations.

Table 1: Unique visits SIDs 2021

OVERVIEW: Unique visits SIDs 2021	
Day 1	511
Day 2	348
Day 3	372
Total	758

Note that owing to the virtual format of the conference the attendance varied greatly over the days and the different sessions. In 2021, the SIDs welcomed a total of 758 unique visitors to the conference. This means that 758 participants attended at least one of the session/events of the SIDs conference, which featured technical presentations, plenary talks, panel discussions and numerous networking activities.

The maximum attendance in the technical sessions was 357 participants (two technical sessions took place in parallel); the opening keynote was attended by 293 (day 1), 179 (day 2), and 154 (day 3) the virtual quiz was attended by 41 participants.

Table 2: Attendees Technical Sessions SIDs 2021

Day	Technical Sessions	Attendees
Day 1	Airports and airlines	173
	Machine learning	184
	Airspace management and design	175
	Urban air mobility	150
Day 2	Safety	90
	Network and flow management	140
	Human factors	104
	Meteo and environment	108
Day 3	U-space I: operational aspects	111
	ATM operations and performance	134
	U-space II: safety and performance	115
	Complexity, modelling and optimisation	109

Table 3: Attendees Opening Keynotes / Plenary Sessions SIDs 2021

Day	Attendees
Day 1	293
Day 2	179
Day 3	154

3 Programme Committee

The Programme Committee is composed of selected researchers from academia and industry; its main tasks are the review of paper and poster submissions leading to decisions about acceptance and rejection of all submissions. The Programme Committee was supported in the review process by the SESAR Scientific Committee. The PC comprised the following members:

Programme Chair:

Dirk Schaefer – EUROCONTROL

Programme Committee:

Luis Barbero – GATCO
 Marc Bourgois – EUROCONTROL
 Lorenzo Castelli – University of Trieste
 Andrew Cook – University of Westminster
 Ramon Dalmau Codina – EUROCONTROL
 Francesca De Crescenzo – University of Bologna
 Daniel Delahaye – ENAC
 Arnau Folch – Barcelona Supercomputing Center
 Peter Hecker – TU Braunschweig
 Jacco Hoekstra – TU Delft
 Gokhan Inalhan – Cranfield University
 Chris Johnson – Queen’s University Belfast
 Radosav Jovanovic – University of Belgrade
 Oliver Kranz – OK Management Consulting
 Dirk Kuegler – DLR
 Bruno Lamiscarre – NeoMetSys
 Javier Lopes – Boeing Research & Technology Europe
 Guglielmo Lulli – Lancaster University
 Stephane Marché – Honeywell Aerospace
 Max Mulder – TU Delft
 Jose Muñoz – ASLogic
 Eric Nantier – Swiss International Air Lines
 Olivia Nunez – SESAR JU
 Paola Pellegrini – IFSTTAR
 David Perez – Innaxis
 Goran Petrovic – SMATSA
 Simone Pozzi – Deep Blue
 Xavier Prats – UPC
 Jose Javier Ramasco – University of the Balearic Island
 Andrea Ranieri – ALG
 Paul Ravenhill – Think Research
 Damián Rivas – University of Seville
 Sergio Ruiz – EUROCONTROL
 Francisco Javier Saez Nieto – Cranfield University

Founding Members





Rita Somogyi – HungaroControl
Georg Trausmuth – Frequentis
George Vouros – University of Piraeus

Additional Reviewers from the SESAR Scientific Committee:

Juan Besada – Universidad Politécnica de Madrid
Henk Blom – NLR
Tatjana Bolic – University of Westminster
Vojin Tosic – University of Belgrade

4 Call for Contributions

The Call for Contributions was published in May 2021 soliciting paper and poster submissions; submissions through SESAR ER and IR projects were encouraged but the Call was not limited to SESAR projects but open to all relevant ATM research.

The Call was published via the SIDs website [2], and announced through emails, SESAR Newsletters and the Engage website [3]. The call can be accessed via [Call for contributions to the SESAR Innovation Days and Young Scientist Award now open! \(flxml.eu\)](#).



Call for contributions to the

11th SESAR Innovation Days

7– 9 December 2021

A virtual conference and exhibition

Dear [REDACTED],

The 11th edition of the SESAR Innovation Days (SIDs), our annual scientific event that showcases results from ATM research and explores how to advance promising concepts towards industrial research within the SESAR innovation pipeline, will be held on 7-9 December 2021.

Given the current situation with COVID-19 and the associated impact on travel and gatherings, the 2021 edition of the SIDs will take place online in a virtual format. This will allow as wide a participation as possible, enhancing the key role that SIDs plays in showcasing the latest research and innovation and reflecting Europe's commitment to the long-term sustainability of the aviation industry, as well as its recovery from the COVID-19 crisis.

The SIDs are based on an open call soliciting contributions from ATM research. Exhibitions and poster, keynotes and virtual networking events will provide further opportunities to learn about interesting projects and meet like-minded researchers.

Founding Members



Call for contributions for the SESAR Innovation Days

Researchers from universities, research institutions, airlines, air navigation service providers, airports and industry are invited to submit papers (up to 8 pages) presenting exploratory research within the areas of interest listed below. Papers will be evaluated based on the innovative nature of the ideas, as well as the approach and methods applied.

A special edition of a renowned ATM research journal will be published with selected articles from SIDs 2021.

- **Paper submission deadline: 30 September 2021**
- **Notification of acceptance: 15 November 2021**

- **Poster/exhibits submission deadline: 15 September 2021**
- **Notification of acceptance: 14 October 2021**

Read more about the SESAR Innovation Days 2021

Calling Young scientists: Applications open for the SESAR Young Scientist Award 2021

Are you a young scientist active in the field of air traffic management (ATM) and aviation? Are you looking for the perfect opportunity to showcase your talent and advance your career? If yes, then look no further... the SESAR Young Scientist Award is for you!

The 2021 edition of the award seeks to recognise young scientists in the following two categories:

- PhD scientists; with the chance to receive a prize of EUR 5 000
- BA or MBA students; with the chance to win a prize of EUR 1 500

The award also provides researchers starting out in their career with an opportunity for further professional development.

Contest rules and how to apply

If you wish to apply for this Award, please read the Contest Rules (SJK/LC/0160-CNT), complete the application form and declaration of honour and send them to: youngscientist@sesarju.eu

The deadline for applications is 5 September 2021, 24:00 CET

Read about the 2020 Young Scientist Award winner

Read about the 2020 SESAR Innovation Days

5 Paper submission and selection process

Two types of submissions were solicited: full paper submissions (up to eight pages) and poster abstracts (up to two pages). A submission template based on IEEE conference style was made available for full papers and poster abstracts alike. Papers and poster abstracts had to be submitted via a dedicated page on the EasyChair conference management website (a professional licence was therefore purchased). The paper template was available for download on the EasyChair page in both Word and LaTeX format. Papers had to be submitted in pdf format.

A total of 77 full papers (2020: 48; 2019: 71; 2018: 59) and 30 posters (2020: 23; 2019: 23; 2018: 33) were submitted and triple-reviewed by the Programme Committee (including reviewers from the SESAR Scientific Committee). One paper was subsequently withdrawn by the authors due to IPR issues.

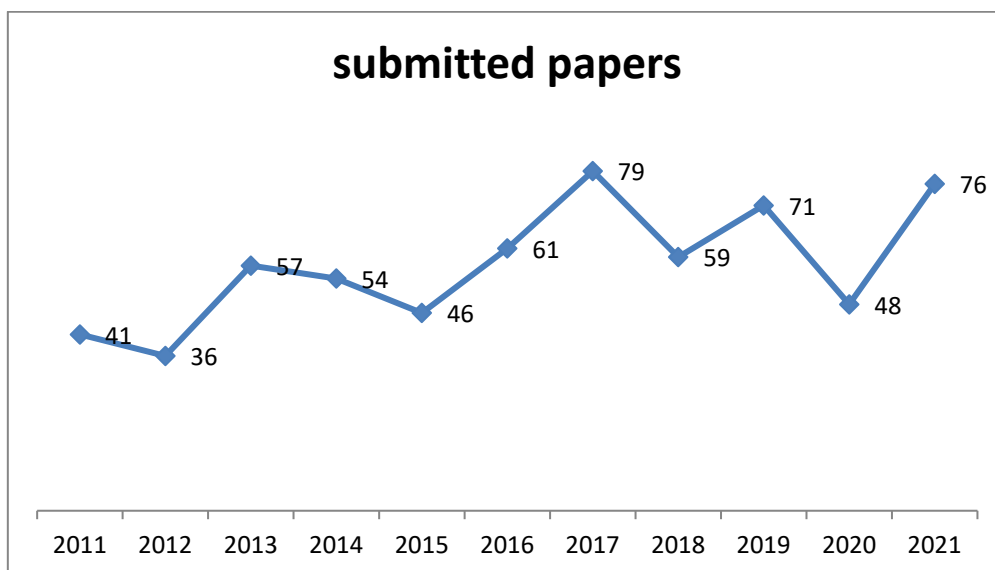


Figure 1: SIDs number of full paper submissions

EasyChair's paper bidding function was used which allowed all reviewers to specify which papers they would prefer to review and to declare conflicts of interest, e.g. in cases in which they authored or co-authored a paper. The review assignment was done by the Programme Chair respecting the preferences as much as possible.

The review was based on the following criteria:

- Overall evaluation;
- Innovativeness;
- Technical quality;
- References.

The overall evaluation was based on a score (strong reject; reject; weak reject; borderline paper; weak accept; accept; strong accept) as well as a free text field. The review comments provided in this field were sent to the authors with the email notification or acceptance or rejection. Reviewers were instructed to provide detailed and constructive feedback. Another free text field allowed committee

members to provide confidential remarks for other Programme Committee members – comments provided here were not sent to authors.

Each paper was reviewed by three reviewers who entered their reviews via EasyChair. In cases where reviews came to different conclusions a dialogue between the three reviewers was initiated by the Programme Chair. In most cases this led to a consensus between the reviewers; in the few cases where this was not possible, a decision was taken based on the review comments.

Poster submissions were reviewed by two members of the PC; all poster submissions were accepted and we attempted to further raise the profile of posters, for example by including all posters on the website and the App. Notification emails were sent to inform authors whether their paper or poster as accepted or rejected. A total of 37 papers were accepted (2020: 30; 2019: 38); this corresponds to a paper acceptance rate of 48.7% (2020: 62.5%; 2019: 53.1%).

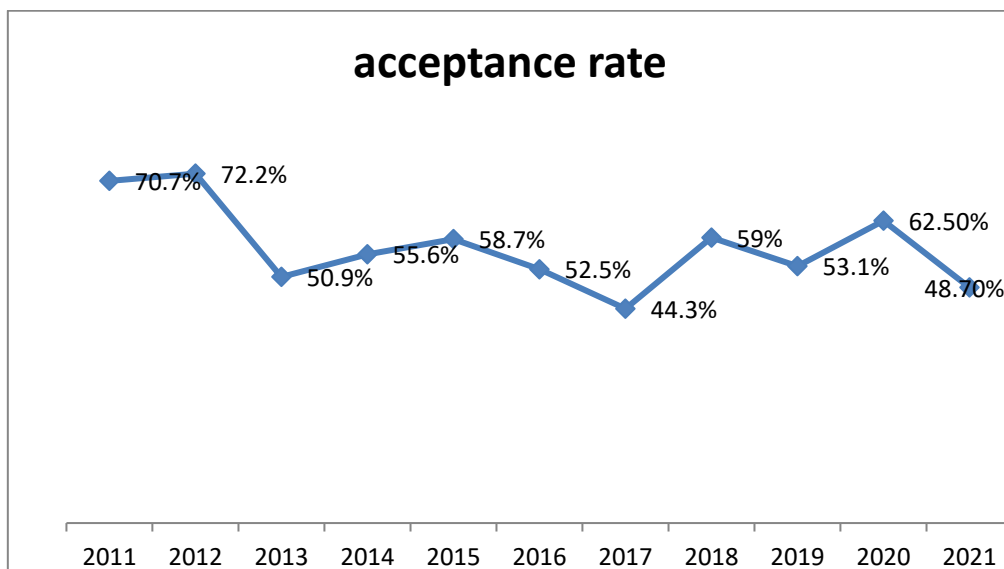


Figure 2: Paper acceptance rate

6 Conference programme

All papers were assigned to thematic tracks and integrated as sessions of three/four paper presentations into the programme. Whilst keynotes, plenary talks and discussion panels took place in plenary sessions, i.e. were attended by the entire audience, technical sessions were conducted in parallel sessions. The Whova platform was used for the main conference programme throughout the SESAR Innovation Days.

Tuesday 7 December

TIMING	ACTIVITY	
DAY 1 - 7 December		
9:30 – 10:00	Virtual coffee	
10:00 – 11:00	Welcome and opening Richard Frizon, Executive Director AD Interim, SESAR JU Eamonn Brennan, Director General, EUROCONTROL Jane Amilhat, Head of Unit, Clean Planet, Directorate-General for Research and Innovation, European Commission	
11:00 – 11:45	Update from Engage	
11:45 – 12:00	Programme overview, Dirk Schaefer, Chair SESAR Innovation Days Programme Committee	
12:00 – 12:30	COMFORT BREAK	
12:30 – 14:00	Technical session Airports and Airlines	Technical session Machine Learning
14:00 – 14:30	COMFORT BREAK	
14:30 – 15:00	Exhibition talks	
15:00 – 16:30	Technical session Airspace management & design	Technical session Urban Air Mobility

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Wednesday 8 December

TIMING	ACTIVITY	
DAY 2 - 8 December		
09:30 – 10:00	Virtual coffee	
10:00 – 10:15	Welcome Richard Frizon, Executive Director Ad Interim Dirk Schaefer, Chair SESAR Innovation Days Programme Committee	
10:15 – 10:30	Keynote: Sustainable and connected transport for Europe Carlo Borghini, Executive Director, Shift2Rail	
10:15 – 11:45	Plenary session: multimodality Introductory remarks: Delphine Grandsart, Research Officer, European Passengers Federation Panel discussion: <ul style="list-style-type: none"> - Christoph Schneider, Munich Airport, Chairman of ACARE WG1 - Ralf Bärwalde, Head of Intermodal & Mobility Innovations, Lufthansa - Annika Paul, Researcher, Bauhaus Luftfahrt and leading on the SESAR 2020 Modus project - Delphine Grandsart, Research Officer, European Passengers Federation <i>Moderated by Andrew Cook, University of Westminster</i>	
11:45 – 12:30	COMFORT BREAK	
12:30 – 13:00	Exhibition talks	
13:00 – 14:30	Technical session Safety	Technical session Network and Flow Management
14:30 – 15:00	COMFORT BREAK	
15:00 – 17:10	Technical session Human Factors	Technical session Meteo & Environment
17:15 – 18:15	SOCIAL ACTIVITY – SESAR Innovation Days Quiz	

Thursday 9 December

TIMING	ACTIVITY	
DAY 3 - 9 December		
09:30 – 09:45	Welcome Peter Hotham, Deputy Executive Director, SESAR JU Dirk Schaefer, Chair SESAR Innovation Days Programme Committee	
09:45 – 11:00	Plenary session: AI-borne: how artificial intelligence is transforming aviation Introductory remarks: Gokul Krishna Srinivasan, Director of technology at robots expert Panel discussion: Gokul Krishna Srinivasan, Director of technology at robots expert Guillaume Soudain, Leader of the EASA AI roadmap, EASA Paula López-Catalá, Programme Director, Innaxis Romaric Redon, Head Advisor Artificial Intelligence, Airbus <i>Moderated by Paul Bosman, EUROCONTROL</i>	
11:00 – 11:15	COMFORT BREAK	
11:15 – 12:45	Technical session U-space I	Technical session ATM operations, & performance
12:45 – 13:15	Exhibition talks	
13:15 – 14:00	COMFORT BREAK	
14:00 – 15:30	Technical session U-space II	Technical session Complexity, Modelling and Optimisation
15:30 – 15:45	COMFORT BREAK	
15:45 – 16:45	Young scientist Award Ceremony	
16:45 – 17:30	Closing Wrap up by Dirk Schaefer, Chair SESAR Innovation Days Programme Committee Closing remarks Peter Hotham, Deputy Executive Director, SESAR JU	
END		

7 Virtual conference format

The following URL was communicated as the official SESAR Innovation Days website: www.sesarinnovationdays.eu. This URL redirected visitors to a dedicated page on the SJU website [2].

All relevant information including Call for papers, submission instructions, logistical information and, at a later stage, programme and conference registration were available via the SIDs website [2].

11th SESAR Innovation Days

INSPIRING LONG-TERM RESEARCH IN THE FIELD OF AIR TRAFFIC MANAGEMENT

The SESAR Innovation Days (SIDs) are the main vehicle for SESAR Joint Undertaking to share progress and disseminate exploratory research results. Unlike other scientific events in air traffic management (ATM) research, the SIDs focus explicitly on exploratory research. Organised annually since 2011, the SIDs have become a landmark event in the European aviation research calendar. The SIDs is further strengthened with the support of Engage, the SESAR knowledge transfer network.

Given the current situation with Covid-19 and the associated impact on travel and gatherings, the 2021 edition of the SIDs will take place online from 7-9 December. Despite taking place in a virtual format, the SIDs promises to be a valuable event, showcasing the latest research and innovation and reflecting Europe's commitment to the long-term sustainability of the aviation industry, as well as its recovery from the Covid-19 crisis.

The SIDs are based on an open call soliciting contributions from the ATM research community. Exhibitions and poster, keynotes and virtual networking events will provide further opportunities to learn about interesting projects and meet like-minded researchers.

Once again, this year's SIDs will host the annual Young Scientist Award, recognising young scientists, who have demonstrated excellence in ATM and aviation-related research fields.



SIDs2021



Figure 3: SIDs website

All papers are available for download from the website [2], together with the presentations. The website also maintains an archive of all papers and presentations at the SIDs since 2011.

BREAKING NEWS	PAPERS - PRESENTATIONS	AGENDA	SPEAKERS	PROGRAMME COMMITTEE
---------------	-------------------------------	--------	----------	---------------------

2021-02	<u>Measuring Speech Recognition And Understanding Performance in Air Traffic Control Domain Beyond Word Error Rates</u>	<u>Présentation</u>
2021-04	<u>Improved Sensing and Positioning via 5G and mmWave radar for Airport Surveillance</u>	<u>Présentation</u>
2021-19	<u>Close proximity and collision risk assessment of drones and urban air mobility</u>	<u>Présentation</u>
2021-20	<u>Management of Operations under Visual Flight Rules in UTM for Disaster Response Missions</u>	<u>Présentation</u>
2021-21	Summary Report for EngageKTN Project 204: ADS-B/avionics cybersecurity pentesting results	Présentation
2021-38	<u>Identification of a Consensus in a Multicriteria Decision Process involving several Decision-Makers</u>	<u>Présentation</u>
2021-45	<u>Easy Adaptation of Speech Recognition to Different Air Traffic Control Environments using the DeepSpeech Engine</u>	<u>Présentation</u>
2021-46	<u>Increasing the Detection Performance of Genuine Separation Minima Infringements with XGBOOST</u>	<u>Présentation</u>
2021-47	<u>Safety Optimization of a Layered Airspace Structure with Supervised Learning</u>	<u>Présentation</u>
2021-48	<u>Optimal Dynamic Airspace Configuration (DAC) based on State-Task Networks (STN)</u>	<u>Présentation</u>
2021-49	<u>Active Learning Metamodels for ATM Simulation Modeling</u>	<u>Présentation</u>
2021-50	<u>Natural Language Processing and Data-Driven Methods for Aviation Safety and Resilience: from Extant Knowledge to Potential Precursors</u>	<u>Présentation</u>
2021-53	<u>Limitations of Conflict Prevention and Resolution in Constrained Very Low-Level</u>	<u>Présentation</u>

Figure 4: Website archive of papers

A dedicated smart phone application (provided by Whova) was also available, which included relevant information and allowed users to comment and engage in dialogue. The Whova application was available both as a smartphone application and as a desktop application.

For a discussion of the participant survey results see Figure 7. It is not our aim to qualify the comments given by the respondents but it could be that the criticism expressed by a small number of individual was due to the complexity of the offering on the website and the event application which was necessary in the sense that parallel and plenary sessions, technical papers, posters and exhibits including exhibitor booths etc. were accessible through website and application and this required that participants invest a little bit of time to navigate the online content.

Some more statistics which illustrate the usage and acceptance of the Whova tool:

- 1678 private messages exchanged,
- 104 discussion topics created,
- a total of 1561 messages across the Community Board,
- 264 participants that created their personal agenda,
- 158 questions asked,
- 1765 speaker webpage views (*these statistics might give a different view on the small number of Whova criticisms*).

Last, participants could also take a Whova-specific survey via the app where 71% of the respondents were positive about the use of Whova.

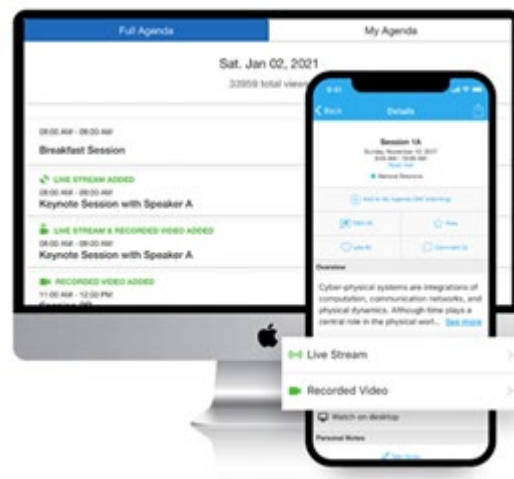


Figure 5: Conference smart phone application available from Whova

8 Participant survey results

Participants were requested to provide feedback about the 2021 SESAR Innovation Days through an on-line survey. For sake of comparability, the same questionnaire as in previous years was used – as in 2020, with some adaptations to cater for the virtual conference format. The survey encompassed questions in the following areas:

- Before the SIDs including website and app;
- Content;
- Networking and Logistics; and
- Benefits.

In addition to providing their agreement to each question on a four-point Likert scale (strongly disagree/disagree/agree/strongly agree) a free-text field was provided in each category for explanations and further comments.

Responses from a 76 participants were received (2020: 43; 2019: 25; 2018: 37); the results are provided below compared to the results from previous years. The results are presented in a segmented fashion for the last five years to discriminate the four categories of agreement rather than collapsing the positive and negative responses. This was done because most questions received high and sustained agreement and it was assumed that displaying strong agreement and agreement in a separate fashion might offer some additional insights.

With n=76, 1.32% would correspond to one respondent but since not all respondents answered all questions so that the percentages differ in some cases.

8.1 Before the SIDs including website and app

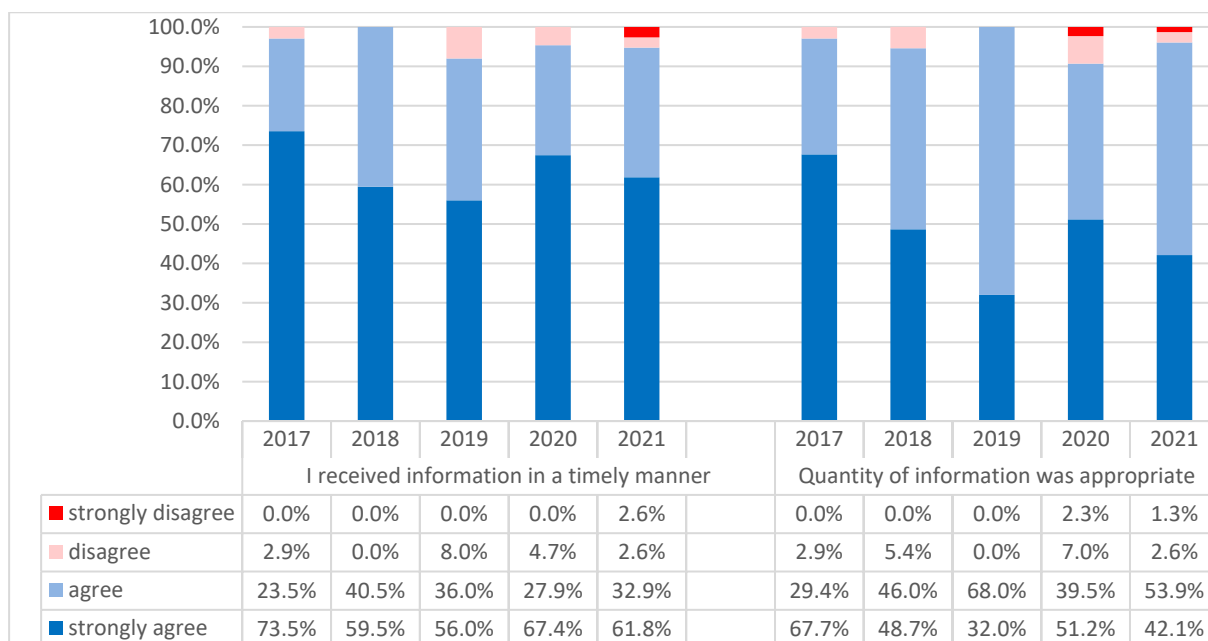


Figure 6: 'I received information in a timely manner' and 'Quantity of information was appropriate'

The following comments were received in this category:

- The website could be more user friendly.
- For all SESAR events, we do not receive any confirmation of subscription. It is confusing and lead to many registrations, as you are sending reminders to subscribe. Please send us a message to confirm the registration just after we registered.
- In general, website worked much better than last year. However, there were times when things were not working either on Zoom or Whova. If sitting next to a PC, it was relatively easy to switch and sort the problem.
- Personally, I found the emails announcing sessions rather annoying, just additional emails in the inbox.
- Poster session cards were a bit nicer when compared to last year, but again needing to go through session, and then a link within the session then clicking on a poster card. Not very intuitive.
- Navigating the website and to find the wanted information was sometimes not easy for me.
- I could not use the chat function as it was blocked so I could not send questions.
- I think that the website info could be improved a bit. Especially for the poster process matters. The link to the poster info area did not point to a poster template as expected but to a word file. Also, it was very unclear whether or not a poster template needed to be used, But more important it was rather unclear that a formal selection process had to be gone through for which a poster summary file had to be delivered first. Finally, quite late a (~1min) teaser video was asked for as well as a final video (or poster presentation). This should all have been indicated a bit more clearly on the website as production (and especially the approval process) of all these items takes considerable time.

- Whova doesn't work on Safari on iPad [Comment from the organisers: the app works, the desktop application did not work on Safari.]
- Very fruitful topics and discussions.
- When I registered, I was told that I would have received detailed information on how to connect in an email. I never received such email. I could only connect to the third day, and there was no information on how to post questions. I finally connected to Whova, when I noticed that logo in the website.
- Congratulations SJU.
- All worked very well. There was some confusion about which platform to use for attending the sessions in real time: zoom, who..
- I had problems with calendar appointments for sessions being invalid after some time.
- I couldn't access Whova app from my computer. May be due to company rules, I am not sure. So couldn't reach anything. But I'm sure it was very plentiful meeting.
- I had difficulties to connect. It took some time.

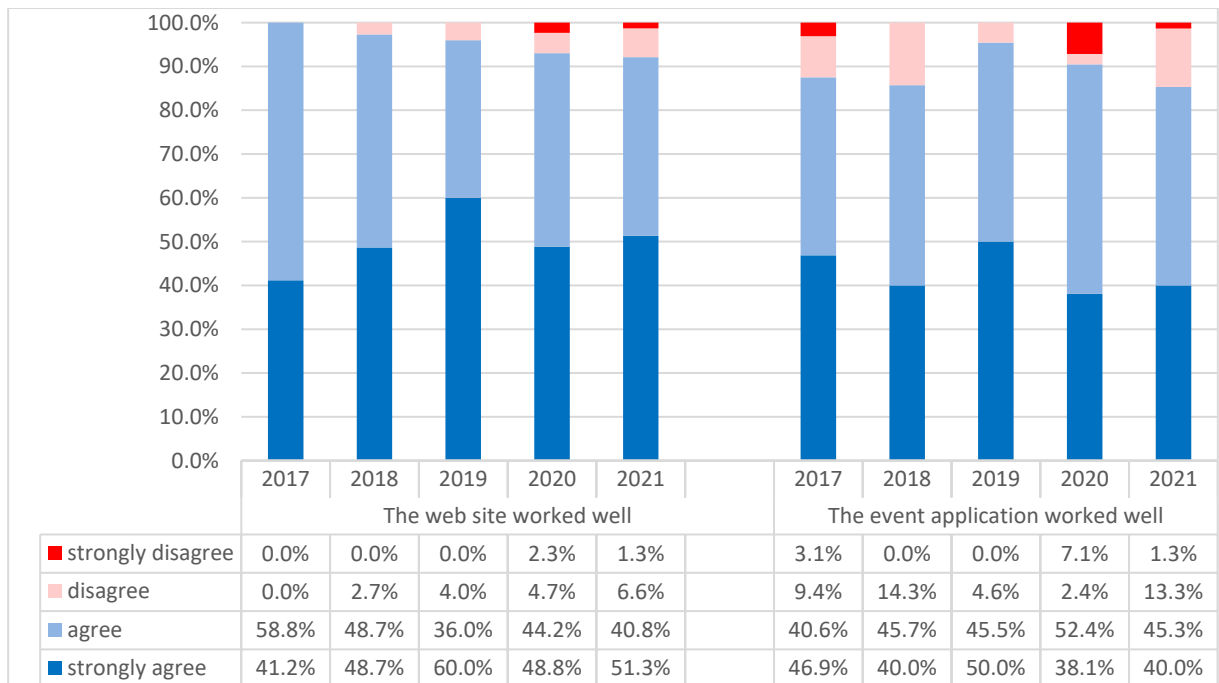


Figure 7: 'The web site worked well' and 'The event application worked well'

Discussion

The poster submission was based on a word template which was to be used to create a poster abstract to be submitted via EasyChair. Although this was indicated on the website, some comments related to this process suggest that it could have been communicated more clearly.

Some comments relate to the registration process which seemed confusing and some participants pointed out that they did not receive an email confirmation of their registration (although such a confirmation was indeed sent out).

The fact that different calendar entries were created for different sessions was equally confusing.

8.2 Conference content

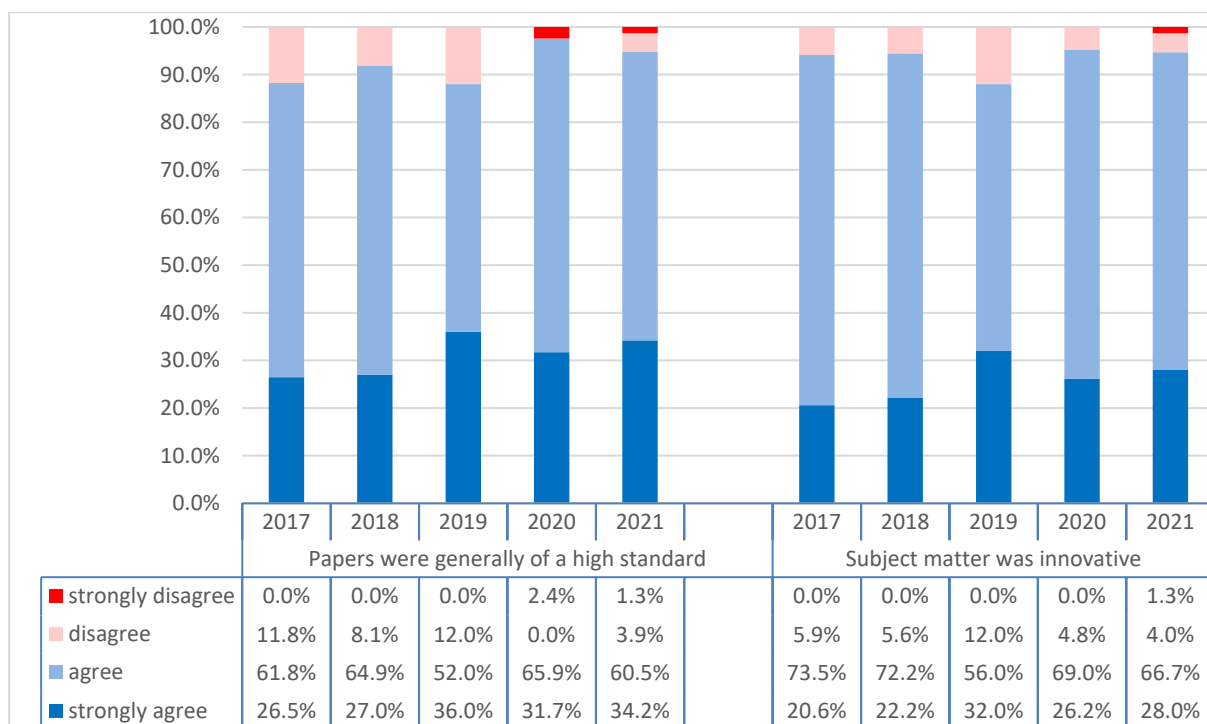


Figure 8: ‘Papers were generally of a high standard’ and ‘Subject matter was innovative’

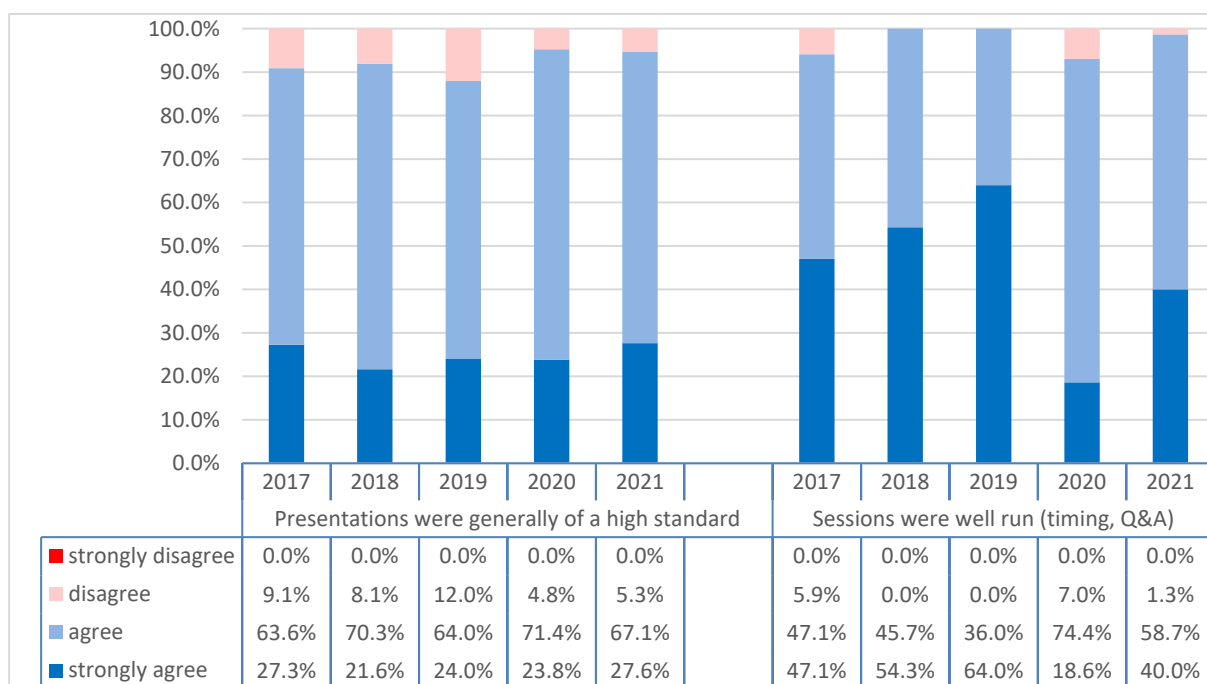


Figure 9: ‘Presentations were generally of a high standard’ and ‘Sessions were well run (timing, Q&A)’

As can be seen in Figure 8 and Figure 9 participant satisfaction with the quality of the papers, the innovativeness of the subject matter and the quality of presentations matched or exceeded the high level of previous years. A slight downturn in the satisfaction with the way the sessions were managed may be attributable to the fact that whilst the session chairs were all experienced in chairing conference sessions, Zoom was relatively new to most if not all of them.

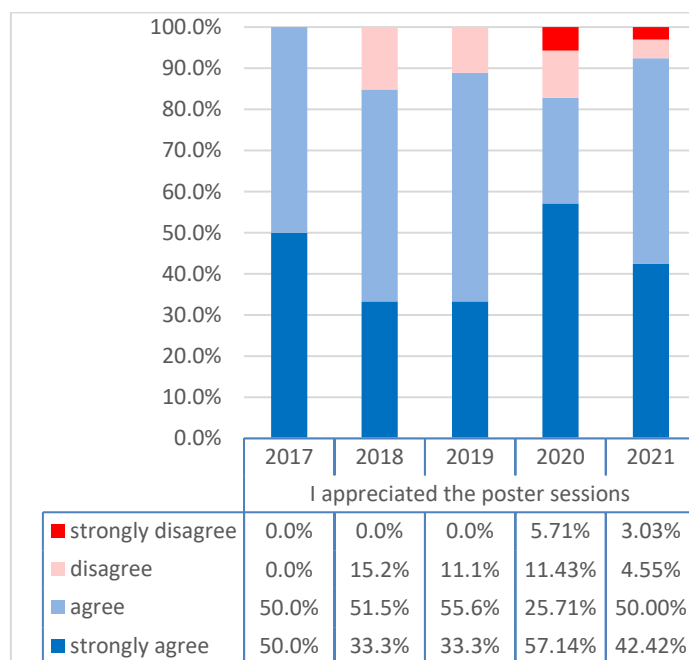


Figure 10: 'I appreciated the poster sessions'

Figure 10 suggests that the satisfaction with the poster sessions was slightly higher than last year and matching that of previous years; unfortunately the question does not allow us to conclude whether this was due to the set-up and the applications that were used for the poster sessions or the poster content. However, some comments, as can be seen below, seemed to suggest that this was at least partly due to the logistics and the process.

One individual strongly disagreed with many of the propositions in the participant survey, in fact almost all responses 'strongly disagree' were attributed to this respondent. Unfortunately the respondent did not reveal his/her identity which would have allowed us to understand better what the reasons for his/her dissatisfaction were. Yet, the free text comments provided by this respondent indicated some problems with the conference system (Whova).

The following comments were received in this category:

- I have received an email informing that, I have been selected as judge for the poster presentation. I carried out review for the posters, but there was no link or further communication from conference team to convey my comments for the same. Expecting a better timely coordination in this regard for future events. *[Comment from the Programme Chair: unclear what this comment is about since the review of the poster submissions was carried out by myself and not delegated to anybody else]*

- The attendance to the poster sessions was poor. Mostly internal project members visited it. The efforts in terms of preparing the poster/paper/videos did not balance out against exposure towards attendees external to the project.
- Could not find the virtual posters – there were no links in the reminder sent out.
- Q&A not possible with Zoom and web browser (company policy does not allow to install client). That is bad because I had quite some questions.
- I totally respect to the Chairs and I understand that they try to manage time effectively and want to contribute to the session they manage. However, in my kind opinion, sometimes they may read the questions as the attendee typed. Because some questions need to be written with a little story, example etc. and they should not been cutted from the question or no need paraphrasing. That's all, except that, every moment is stunning and splendid in all sessions :)
- The virtual poster exhibition did not fulfil expectations. A lot of effort spent for very view attendees. Probably it works much better during/at physical meetings.
- Thanks for the organisation. Overall It was well organised and I am happy with the outcome.
- As a session organiser we had to face with technical challenges. However Remy was a great help.
- I feel that 30mn at a specific time for the Q&A for poster did not give us as interaction as I wished.
- I wanted to discuss with other poster organizers and it was not easy.
- May be next time, it will be good to have the session time longer than 30mn and may be at different times, even if it is overlapping with others talks.
- Very good ones.
- Sometimes too technical for people not familiar with the subjects.
- Wide variation in quality of posters. This was a key element as it could give good insight into papers/presentations/projects. Poster in this context should be capable of standing alone and providing all the necessary information.
- For me it was no easy understandable switch between parallel sessions/rooms.
- The presenters not always were dressed to the level of the event. Also because of the technical limitations in some cases the environment were not sufficient enough (lighting, background, etc.).

Discussion

The virtual poster/exhibition consisted of a 1 minute and a 5 minute video and a virtual poster booth in which the poster presenters were available for questions and discussion. This was communicated with the acceptance of the poster submissions but perhaps the time for the preparation of the video was relatively short as expressed by some of the exhibitors, especially since in many cases approval processes internal to the exhibiting project had to be respected.

It also has to be mentioned that the exhibition/virtual posters sessions were not overly well attended; the effort of creating a 1 min and a 5 minute video for the exhibition was perhaps not justified by the relatively low attendance.

The videos constitute valuable resources for the future. They will live well beyond the SIDs and we will continue to be used by the SESAR JU for communication purposes.

8.3 Networking and Logistics

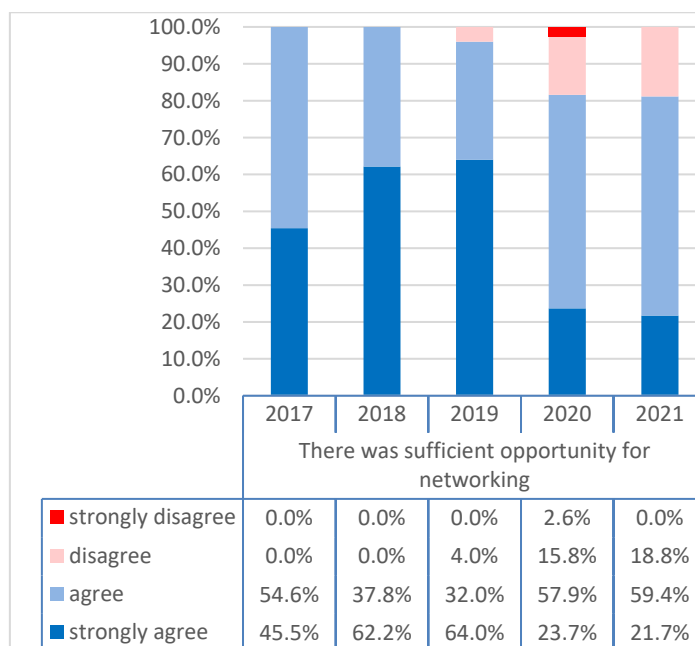


Figure 11: 'There was sufficient opportunity for networking'

Figure 11 shows that the satisfaction with networking in 2020 and 2021 is lower than in previous years. This is unsurprising even since networking benefits greatly from physical presence and a friendly atmosphere. This is why we expected the satisfaction with networking opportunities to be affected by the virtual nature of the conference even more than the scientific discussion.

The following comments were received concerning logistics:

- I sadly had sound issues using Whova. That's why I switched to Zoom, and there everything worked well.
- The SIDs 2020 system with sessions running only in Zoom worked much better. The quality of transmission was notably worse when I used Whova then when following in Zoom, but since attendees were only able to ask questions in Whova, so I had to sacrifice the sound quality and go for Whova most of the time. Other Whova functionalities worked well.
- A bit confusing that those of us who followed from the zoom app did not have access to the chat. Took a while to figure out that one needed to follow both on the Whova web site and in the zoom app.
- Also: The Whova app seemed designed for sales conferences or similar, so the design did not really suggest a professional event – especially in the community section.
- Technical session program a bit hidden and requires some mouse clicks to find. Networking not really meaningful online if you do not know the person beforehand.
- Whova does not work well with Firefox, so we had to follow it in zoom. Unfortunately the chat is not working in zoom....
- The look and feel and intuition of Whova on phone and web is quite different. For example, on the phone, the Sign out button is under Settings (it took me 20 minutes to find it).

- Again I just found it difficult to ask questions which led to less participation on my part otherwise good.
- There seemed to be some issues with the Q&A: at some point I could see many questions in the mobile app, but none of them in the desktop app. As a result (I believe), the session moderator did not ask the presenter any of the questions raised in the mobile app, probably because she (like me) was focused on the desktop app.
- Though I would advise to facilitate the virtual poster exhibition in the same way as the webinars with a kind of direct link arranged via/within Whova itself instead of having to bring a link ourselves. Or is this technically not feasible?
- There was several opportunities for networking but for some reasons, considering that more than 1000 people registered, only few participated to some meet ups. Even though some people created several of them.
- I wonder if it is in December and that people are very busy?
- Whova was a good platform but with a bit too much information and not so fast to navigate for someone with low amount of time; it's probably perfect for students who have more time than senior managers :)
- Very nice.
- I missed the opportunity of a link to the papers in the Whova agenda.
- I preferred the livestream via Zoom, since it allowed me to have it in a separate window, which I could size as I liked, rather than more fixed size in the Whova webpage. Also I liked the virtual background opportunity in Zoom, which was missing in Whova.
- As commented before, the use of Whova for the Q&A was not clear at not enough explained.
- It was a bit difficult to log in into Whova. Most of the e-mails end up in spam. The agenda was difficult to find once you were in a session. There was not much point on the live sessions with the Posters, hardly anyone connects. Only having the videos available is probably good enough.
- I found the platform collaboration parts rooms, topics, etc. a bit unorderedly.
- Did not like Whova app. Could not understand the usability at first, not intuitive.
- Did not like that I felt forced to participate in communication with users instead of better understanding the app.
- Still the virtual events not as good for networking and even for presentation as the normal one.

Discussion

The satisfaction with networking in 2020 and 2021 is lower than in previous years; clearly the absence of a physical networking event led to a larger percentage of participants disagreeing with the statement that “there was sufficient opportunity for networking”. This is not totally surprising and despite best efforts to provide virtual networking opportunities these will probably never be as good as meeting people face to face.

The Whova platform was the preferred entry point to the SIDs and accessible from the mobile phone application as well as from the browser. However, sessions could also be accessed via Zoom, which in many cases led to better sound and video-quality but a loss of the Q&A functionality. This was confusing for many participants.

8.4 Overall benefits

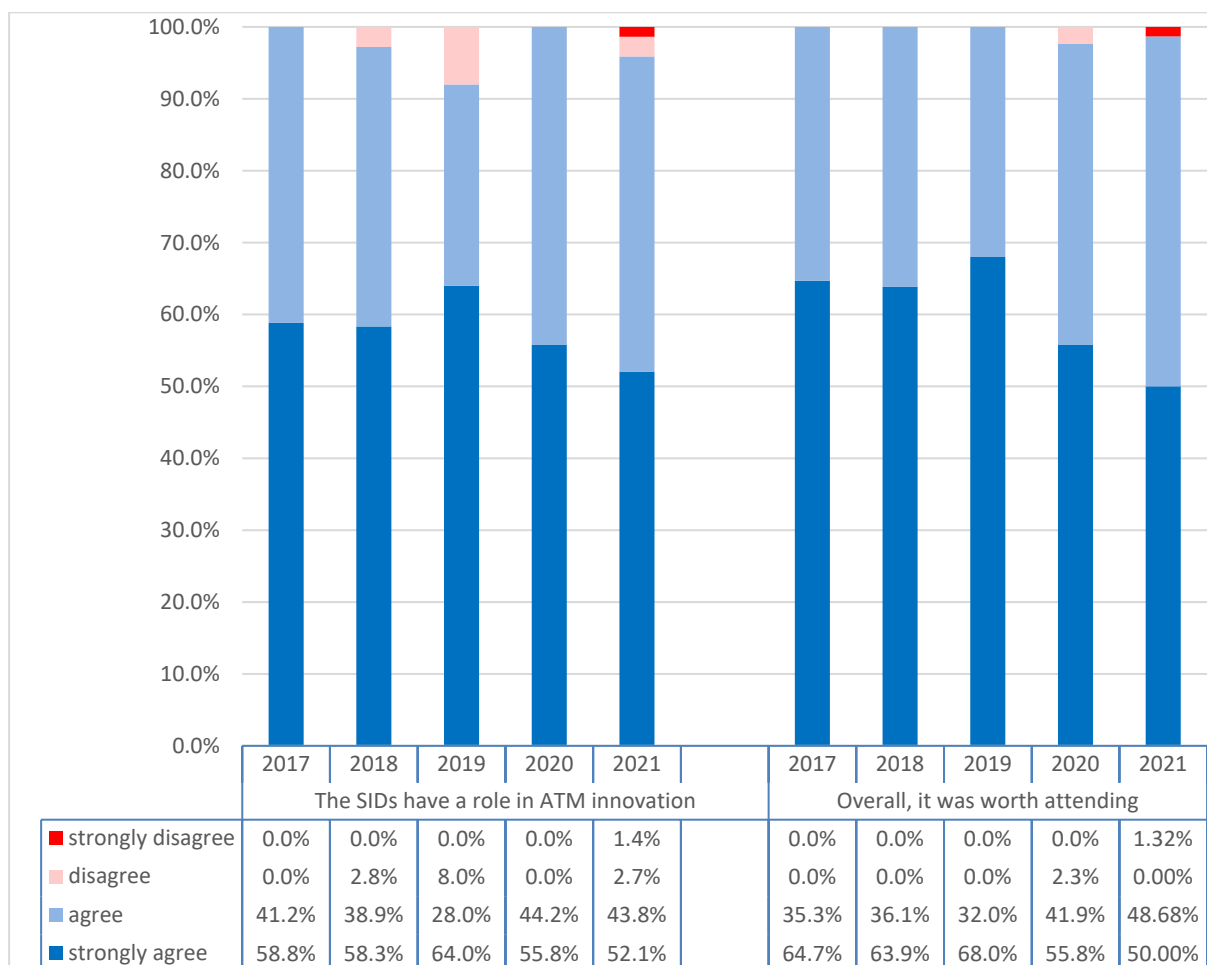


Figure 12: ‘The SIDs have a role in ATM innovation’ and ‘Overall, it was worth attending’

Figure 12 shows that the great majority of respondents are satisfied with their participation in the SIDs and its overall relevance for ATM. One individual strongly disagreed with many of the propositions in the participant survey, including the overall benefits as depicted in Figure 12 (the responses ‘Strongly disagree’ corresponds to this respondent). Unfortunately the respondent did not reveal his/her identity which would have allowed us to understand better what the reasons for his/her dissatisfaction were. Yet, the free text comments provided by this respondent indicated some problems with the conference system (Whova).

The following comments were received in this category:

- The conference papers need to both combination application and exploratory research. For exploratory research more journals are available for publication and most of them are not implemented in practical level in ATM real world application. If SID gives little more important to application research it will be more beneficial to ATM and aviation industry.
- Most of the Papers presented from are SESAR and its collaborative organization. The reviewers of the SID should considers the works from other countries and relevance same in practical case. The comments received for the paper was biased, especially from some reviewer.

[Comment from the organisers: the SIDs accept and encourage submissions from projects outside SESAR.]

- Overall the SID 2021 was conducted in an organized manner. Some of the presentation happened simultaneously was not able to watch. In future some recoding or alternate facility may be arranged to view the missing presentations. *[Comment from the organisers: in fact the presentations were recorded and published the following day.]*
- The poster sessions could be improved. The SID was interesting to see the various presentations, but especially with the online event it was difficult to have sufficient interest for the poster sessions.
- Being virtual events, it would be good to have more online interaction with presenters. In a traditional physical event you could just walk up to them after the talk, here it is less obvious.
- Let's hope to get rid of these virtual events :-)
- Actually, all is well! Especially, to let the attendees free to open topics, create meet-ups and discuss about daily sessions or ATM/Aviation/Environment related topics is precious and nice action :) idk, how was the F2F, I imagine that very useful and enjoyable, however virtual one is also very attractive and nice 👍
- I could not select the below question about attending last SIDs, but, yes, I attended SIDs20 that was also awesome activity. Furthermore, the survey about the SIDs is very thoughtful action, thanks a lot..
- make links to videos of posters more salient.
- No further comments. To close I would like to express my sincere gratitude to all the organising persons involved and in particular to Remy, Christine and Dirk. I very well understand organising such a big remote event is not easy. So a big bow from my side. Also, I think your guidance and accompanying services offered to this event were very excellent. Many thanks for that.
- Expecting all slides to be available for download. Inside the video stream slides resolution cannot be enough good (especially diagrams and drawings with texts). *[Comment from the organisers: all slides are available for download.]*
- Sometimes it was not so clear what real world problem is being addressed.
- Networking in virtual vs in reality is not comparable at all. Looking forward to the next F2F edition of the SID!
- More emphasis on posters with higher standard required for acceptance – poster should give at a minimum background; description of problem/issue being studied; methodology; expected outcomes or conclusions of the study.
- It was worth participating but did not gain as much as from face-to-face event. The digital solutions did not provide me with easy understandable options to switch between rooms, sessions, and exhibition and fully enjoy it and gain benefit as much as I expected.

Discussion

Together with the perceived dominance of SESAR content, the balance between more mature and innovative research contents has been subject of discussions, reflection and participant comments for a number of years now. Whilst the conference is based on an open call, inviting submission as much from SESAR-funded as from other relevant research and from innovative as well as industrial research, it is clear that the SIDs predominantly encourage innovative research content and this is the unique value proposition of the SIDs. At the same time, the SIDs might benefit from greater presence of industrial research projects. Communications could be reinforced to target such projects within and outside of SESAR.

Founding Members

9 Lessons learned

The satisfaction of SIDs participants provides one perspective on what went well and what could be improved and this view is presented in the previous section. In addition, the SIDs team has reflected on lessons learned and has come to the conclusions presented in the following sub-sections.

9.1 Disadvantages and benefits of the virtual conference format

The decision to host the SESAR Innovation Days on a virtual platform was borne out of the constraints imposed by Covid-19, and 2020 and 2021 offered great learning for everybody involved. It is certain that physical events are preferable for a variety of reasons, including the ability to concentrate more fully on the scientific presentations and discussions and the opportunity to network face-to-face. The absence of a physical meeting was regretted by all of us. We look forward to the SIDs 2022 in the hope that they will take place in Budapest in the way originally planned for 2020 and that we can meet in Budapest and benefit from the wonderful facilities offered by HungaroControl.

At the same time, virtual conferencing has a number of upsides and offers many tools that can be exploited. A major benefit being that the number of participants is limited only by the licence of the chosen conference facility and that these offer much greater flexibility in setting up sessions than physical conventions, where conference rooms have to be booked months in advance, catering contracts need to be let for an estimated yet fixed number of participants, etc.

Further advantages include the possibility of reaching out to other international communities; attracting keynote speakers of such a standing that it would be difficult to convince them to attend the SIDs physically; the opportunities the virtual poster sessions offered (e.g. dynamic videos with wider audiences and more project partners in attendance) and the possibility to live-stream the technical sessions and/or keynotes.

The possibility to hold hybrid events with varying degrees of virtual / physical operation makes the planning for the SIDs less vulnerable to the evolution of the pandemic: a hybrid event can be announced safely in advance and the programme aspects of the SIDs started (inviting the Programme Committee, preparing and launching the Call for Contributions, submission review and selection process). At a later point in time, perhaps around the summer, with a somewhat clearer view on the pandemic, the progress of the vaccination campaigns and constraints (and willingness) on travelling internationally, a checkpoint can be foreseen to decide about the exact format. Options include, as the most conservative scenario, a fully on-line event like in 2020 and 2021 but we remain optimistic that this will not be necessary.

9.2 The SIDs are an established and recognised scientific conference

Many indicators related to the scientific content, such as the number of submissions (Figure 1), the acceptance rate¹ (Figure 2) and the survey results related to the conference content (Figure 8, Figure 9) seem to suggest that the SESAR Innovation Days are now an established and recognised scientific event, at which many SESAR and non-SESAR research projects choose to disseminate their results.

The SIDs are foremost a scientific conference and attendance is largely composed of researchers. What attracts them to the SIDs are (a) the opportunity to expose their own research results and learn about other research; (b) opportunities for dialogue, ideally leading to shared proposals with like-minded researchers; and (c) learning about funding opportunities. In its present form the SIDs seem to cater for these expectations and we must be careful to continue to do so; this includes a high scientific standard of the conference, visibility of the research publications (ISSN, SCOPUS, etc.) and a quality peer-review process.

In order to further strengthen the visibility of scientific contributions to the SIDs a Special Issue in a scientific journal should be considered – similar to the 2019 SIDs which have culminated in a Special Issue in Elsevier’s Journal of Air Transport Management (JATM) which is presently being finalised (Guest Editors: Dirk Schaefer, Andrew Cook and Lorenzo Castelli).

9.3 Excellent triple peer-review process

The SIDs have established a triple peer-review process (many journals rely on double-review only) through a Programme Committee (PC) with recognised members of the research community. In addition, the SESAR Scientific Committee has been involved in the peer review. Thanks to the Engage network, as well as the SESAR JU, the PC has been reinforced with members of industry and this turned out to be particularly helpful.

Membership of the SIDs Programme Committee is reviewed annually and the careful balance between rejuvenating the committee with new members and maintaining the team spirit and knowledge of its established members seemed to work particularly well; five new members were added to the PC in 2021.

As can be expected, reviewers do not always have the same view but differences of opinion normally lead to a constructive dialogue and hence a much-improved feedback to authors. In this sense a triple-review process is particularly enriching and should be maintained.

¹ The paper acceptance rate is an important quality indicator of scientific conferences; too high an acceptance rate suggests that submissions of poor quality are accepted; on the other hand, too low acceptance rates could discourage authors from submitting to a conference.

9.4 Good industry involvement

The 2021 edition of the SIDs has been particularly successful in ensuring involvement and presence of representatives of industry and the European Commission. In many cases dialogue between industry representatives and researchers has led to very tangible, beneficial outcomes.

A greater involvement of the SESAR Industrial Research and Very Large Demonstration projects continues to appear desirable. We also cite the very positive feedback received from all participants regarding the industry panels at the 2021 Engage summer school (see Section 4 of Deliverable 5.14 [5]).

9.5 Conference system and SIDs app very successful yet still confusing for participants

The SIDs have managed to survive the challenges of the pandemic quite successfully and the Whova/Zoom platform and app can claim part of the credit for this. The SIDs app is appreciated by participants and presents a number of advantages, including rapid updates of the schedule, correction of errors and better availability of information, as well as a greater degree of interactivity and participant involvement through various chat options.

As in 2020, we received a number of comments from participants, in the survey as well as verbally, suggesting that further simplifications and greater transparency of the website and the conference system and app continue to appear desirable. These comments may predominantly concern the application rather than the website.

9.6 Virtual networking – an oxymoron?

Apart from the dissemination of research results and the exchanges of views and knowledge about ongoing research, it has always been one of the major aspirations of the SIDs to offer extensive opportunities for networking. The organising team can be proud that this has been quite successful in the past, not only judging from the participant survey but also from the fact that many new projects (e.g. in SESAR 2020) involve consortia members who met at previous editions of the SIDs.

The 2020 SIDs offered a range of events, including a chat roulette, an on-line quiz and a global networking coffee jointly organised with ATCA and ICAO. Whilst this was a good offering, the uptake was somewhat disappointing and we decided to trim down the offering in 2021. Apart from the very entertaining quiz, organised by the Engage KTN, virtual networking was mainly focused on the virtual poster sessions. In addition, the SESAR app offered functionalities such as the possibility to chat with other conference participants or to post comments. There is certainly room for improvement but rather than being overly harsh on ourselves we may need to face the reality that ‘virtual networking’ is just not as good as meeting face-to-face, e.g. over a cocktail.

It was also observed by some speakers, that a number of participants in the app seemed to be particularly interested in learning about wider ATM and aviation activities, and what research was

taking place at a higher and broader level than the specific papers being presented. It might be worthwhile considering this specific SIDs ‘market’ / community in future editions, and how this might be served through the SESAR 3 KTN in general (e.g. through wiki discussion fora, institutional academic programmes, and interactive research maps) and supported in particular at the SIDs: perhaps as a dedicated ‘point of entry’ session for aspiring new ATM researchers, also linked to new PhD programmes and opportunities.

10 Outlook

The twelfth edition of the SESAR Innovation Days will take place between 5th and 9th December 2022. Owing to the uncertainty around Covid-19 a hybrid format will be announced allowing both physical and virtual attendance. A checkpoint in the spring of 2022 will confirm whether the physical attendance is likely to be possible and determine the modalities of the hybrid event.

11 References

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- [2] SIDs website, 2021. <http://www.sesarju.eu/sesarinnovationdays>.
- [3] Engage website, 2021. <https://engagektn.com/>.
- [4] D Schaefer (Editor): *Proceedings of the 11th SESAR Innovation Days*. ISSN 0770-1268.
- [5] Engage project, 2022. D5.14 Engage SESAR Summer School 2021, Edition 01.01.00, March 2022.

12 Acronyms

ATM	Air traffic management
ER	Exploratory research (within SESAR JU programme)
IPR	Intellectual property rights
IR	Industrial research (within SESAR JU programme)
JATM	Journal of Air Transport Management
KTN	Knowledge transfer network
PC	SIDs Programme Committee
SESAR	Single European Sky ATM research
SIDs	SESAR Innovation Days
SJU	SESAR Joint Undertaking



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