

# ISDC2020 Virtual Bergen, Norway Conference Report for Policy Council

Submitted by the 2020 Conference Organizers

**Conference Attendance:** Our first-ever virtual conference had a record 679 registered, up from the previous record of 559 attendees at the 2007 conference in Cambridge. After the shift to the virtual format, the conference revenue goal was to at least break even with 350 attendees, down from the original hope for 550 people to attend the Bergen conference. Fortunately, both goals were exceeded. Furthermore, we welcomed 326 additional guests at the COVID-19 plenary and Student Colloquium, and 39 additional attendees of the System Dynamics Summer School. Participants attended from 62 different countries, quite an increase from the 39 countries represented the previous year in Albuquerque. Record conference attendance helped fuel growth of the System Dynamics Society to over 1400 members, up from the previous record of 1250 members in 2005.

Conference Year	Members	Students	Authors	New	Registrants
2020 Virtual Bergen	57%	37%	55%	50%	679
2019 Albuquerque	76%	27%	59%	42%	363
2018 Reykjavik	82%	44%	51%	38%	502
2017 Cambridge	80%	27%	55%	41%	527
2016 Delft	69%	38%	62%	38%	399

**Conference Sponsors:** Conference Partners were University of Bergen and isee systems. Supporting Sponsors were BTN, who developed the 3D app for the conference, and DNV GL, Sage Analysis Group and Ventana Systems, Inc. Thread Sponsors were Homer Consulting - Health Thread, Millennium Institute - Public Policy Thread, and University at Buffalo Geography Dept - Environment Thread. For a full list of conference sponsors, please see the 2020 conference sponsor website (<https://www.systemdynamics.org/2020-conference-sponsors>).

**Conference Organizers:** Organizing Chairs, Birgit Kopainsky, Pal Davidsen, Erling Moxnes; Program Chairs, Sara Metcalf, Brad Morrison, Etienne Rouwette; Workshop Chairs, Jack Homer and Hazhir Rahmandad; Modeling and Publishing Assistance Workshop Chairs, Gary Hirsch, Rod MacDonald, Shayne Gary; Student-Organized Colloquium Chairs Jenn Johnson, Laura Upegui; Work in Progress (WIP) and Feedback Session Coordinators Mohammad Jalali, Bob Eberlein; VP Meetings, Leonard Malczynski; and Executive Director, Rebecca Niles, worked alongside home office Executive Assistant Michael Breslin, Program Coordinator Roberta Spencer, Conference Volunteer Coordinators, Alan Mozaffari, Christina Gkini, Technical Advisor Billy Schoenberg, Web Developer Claire Hornig, as well as many other volunteers, including Thread Chairs and Session Chairs, to make the conference a success.

**Finances:** The 2020 Virtual Bergen Conference earned \$91,257.20 in net revenue, after accounting for \$248,995.92 in gross profit and deducting \$157,738.72 in conference-related expenditures, including the labor involved in planning for 2 conferences – first the in-person conference in actual Bergen, and then the online conference in Virtual Bergen. Of this, the System Dynamics Summer School contributed a surplus of \$35,958.98, greatly exceeding expectations thanks to ample interest, an accessible format, and dedicated volunteers.

**Program:** The conference theme was “Hindsight in 2020: Learning from the Past to Inspire the Future.” The Health thread had the highest percentage of papers submitted for review, arising in part from the relevance of disease diffusion models during the COVID-19 pandemic. The 2020 conference introduced a new thread on Artificial Intelligence (AI) and Data Analytics in response to expressed interest. Individual thread percentages were as follows for submitted papers, WIP descriptions, and practitioner applications that were sent for review.

Health	15.7%	Stakeholder Engagement	5.5%
Environment	11.6%	Operations	5.1%
Public Policy	11.6%	Human Behavior	4.6%
Resources	8.7%	AI and Data Analytics	3.9%
Business	7.2%	Security	2.7%
Methodology	7.0%	Strategy	2.7%
Economics	6.3%	Information and Knowledge	1.7%
Learning and Teaching	6.0%		

We sincerely appreciate the efforts of the dedicated Thread Chairs (see Appendix) and many conference paper reviewers. A total of 880 reviews were completed in 2020. Over the past few years, the table below shows how many reviews have been assigned and completed. Empty cells signify data that were unavailable for this report.

Conference Year	Reviews Assigned	Reviews Completed	% Completed
2020 Virtual Bergen	1182	880	74.45%
2019 Albuquerque	588	492	83.67%
2018 Reykjavik		654	
2017 Cambridge	1065	842	79.06%
2016 Delft	950	808	85.05%

A total 394 submissions were reviewed for the conference program across the 3 types (full research papers, works in progress, and practitioner application slides). Overall allocations of the submissions are shown in the table below, along with allocations made for the 229 full research papers that were submitted for review.

Status	Overall	Full Papers
Plenary	3.32%	4.41%
Parallel	31.38%	48.46%
Poster	22.19%	31.72%
WIP	35.46%	8.81%
Feedback	6.12%	4.85%
Rejected	1.53%	1.76%

There is no target rejection rate under current program guidelines. Rejections were made only for lack of relevance to System Dynamics or for instances of plagiarism. Papers that could benefit from improvement were placed in Feedback or WIP sessions. In 2020, 8.81% of research paper submissions were assigned to WIP sessions, and 9.09% of WIP submissions were accepted for Feedback discussion sessions.

Practitioner application slides comprised only 8.37% of overall submissions, perhaps because some presenters were unaware of that option. In contrast, WIP descriptions comprised 33.5% of all submissions reviewed. The large volume of WIP may be attributable to a one-week extension that was given upon request for WIP submissions (since the submission deadline was March 2, 2020 – 2 weeks earlier than usual) and the relative ease of submitting a WIP description as an extended abstract rather than a full paper.

Including invited presentations, a total of 410 submissions were accepted. After accounting for withdrawals, 334 papers were ultimately presented in the conference program. The conference papers were scheduled so that 24 were placed in 8 Plenary sessions, 115 were placed in 38 Parallel sessions, 68 were placed in Poster sessions, 108 were placed in 20 WIP sessions, and 19 were placed in 4 Feedback sessions.

***First Virtual Conference:***

Due to the COVID-19 pandemic, the 2020 conference was held entirely online from July 19-24, 2020. New events in 2020 included:

- Conference website (developed by isee systems) featuring online schedule with Zoom meeting links, paper information, online help, and ability to view previous session recordings.
- Custom 3D virtual environment (developed by BTN) in which participants could meet; the 3D app was also the venue for the Banquet, Welcome Reception, and Student-Organized Colloquium.
- Opening plenary session on COVID-19 was accessible to the public for free.
- Authors could prerecord presentations and make them available through the conference website.
- Echo discussion sessions were created to include attendees from different time zones in discussion; echo sessions allowed for up to 30 minutes of additional live discussion, without repeating the presentations.
- Video recordings for the Plenary, Parallel, WIP, Feedback, and Echo sessions were made available on the conference website for an extended period, through August 7, 2020, to allow for asynchronous viewing.

- Posters were displayed on conference website and presented in 45-minute Zoom meetings, with an opportunity to repeat at a later time.
- Participant directory on the conference website with linked sessions for presenters and chairs, profile pictures, bios, and contact information.
- Morning announcements were sent via email through the Web Portal each day to preview coming events. The content of these messages was updated by the organizers in response to points of confusion.
- Chapter, SIG, and General Business Meetings were held outside of the conference week to avoid crowding the schedule.
- An extra day (Friday July 24, 2020) was added to the conference schedule when planning for the virtual format, to allow greater scheduling flexibility and opportunities to repeat sessions of workshops.

Successful continuing events included the Welcome Reception, Award Ceremonies, Student-Organized Colloquium, Modeling and Publishing Assistance Workshop, Roundtables, Workshop Days, Sunday Health Policy SIG Meeting, Exhibitor Demonstrations (in the 3D environment), and System Dynamics Summer School.

***From the Program Chairs—Lessons Learned and Recommendations for Future Conferences:***

An important aim for all three of the program chairs was to create an inclusive program, showcasing all forms of System Dynamics use and all domain areas in which SD is applied. We wanted everyone attending from around the world to feel welcome, whether a newcomer or experienced practitioner. While it was not part of the original plan, the accessibility of the online format was well-suited for this goal, and is recommended as a basis for future conferences, whether or not an in-person conference is feasible. The Virtual Bergen conference schedule included programming for up to 16 hours each day for inclusion and ease of participating for attendees from around the world, and the 3D environment was available 24/7 for the first 3 days of the conference.

As our Program Chair duties intensified in preparing for the virtual conference under a compressed timeframe, we especially valued the team work among all conference organizers. Indeed, we appreciated the opportunity to be involved in most aspects of the conference, even when we were not the final decision makers, such as in the development of the conference website and 3D environment. In particular, we learned the importance of preparing for contingencies, being ready for the fast pace, keeping to the schedule, and responding quickly to issues that arose.

For future conferences, we advise allowing for additional planning time to iterate the program schedule before it is finalized, so as to ensure allocations are consistent across threads. Such iteration is especially important in the virtual conference format, since time zone accessibility for presenters is a critical consideration.

Even in the virtual context, meeting room capacity should be maintained so that the number of parallel sessions at a given time is limited to 8 or 9 alternatives. In 2020, there were up to 11 Parallel, WIP, and/or Feedback sessions at a given time. We could have added an additional time block to ease the schedule, or we could have scheduled fewer parallel sessions by accepting more papers as posters instead.

We were pleased to hold the Best Poster Award competition again, and felt that this was a success with four winners selected on the basis of participant input. We would have liked to see more posters at the conference, however, and we hope that the poster format can be more attractive for future virtual conferences through the use of features such as breakout rooms within a single meeting, rather than a separate meeting for each poster.

The Appendix below provides further detail about ISDC 2020 regarding attendance and results of the post-conference survey. Additional reflections from the 2020 conference are compiled in the following document: <https://bit.ly/isdc20lessons>. We welcome questions and comments.

Sara Metcalf  
 Brad Morrison  
 Étienne Rouwette

## Appendix

The 2020 Thread Chairs, who were instrumental in conference program development, were as follows:

*Artificial Intelligence & Data Analytics* chairs Asmeret Naugle, Billy Schoenberg; *Business* chairs Warren Farr, Scott Rockart; *Economics* chairs Oleg Pavlov, David Wheat; *Environment* chairs Allyson Beall King, Jake Jacobson; *Health* chairs John Ansah, David Lounsbury; *Human Behavior* chairs Shayne Gary, Camilo Olaya; *Information & Knowledge* chair Leonard Malczynski; *Learning & Teaching* chairs Saras Chung, Diana Fisher; *Methodology* chairs Jeroen Struben, Yutaka Takahashi; *Operations* chairs Ed Anderson, Burcu Tan; *Public Policy* chairs Navid Ghaffarzadegan, Rod MacDonald; *Resources* chairs Todd BenDor, Silvia Ulli-Ber; *Security* chairs Saeed Langarudi, Ignacio Martinez-Moyano; *Stakeholder Engagement* chairs Susan Howick, Etiënne Rouwette; *Strategy* chairs Brad Morrison, Nici Zimmermann.

Selected video artifacts from the conference are as follows:

Opening Ceremony: <https://youtu.be/rUxJL75PsU>  
 Presidential Address by Birgit Kopainsky: <https://youtu.be/iL24d2a2uXY>  
 Special tribute to Pal Davidson and Erling Moxnes: <https://youtu.be/SFQ9xwpwEaw>  
 Fireside chat reflecting on the Bergen experience: <https://youtu.be/zZiHHuTYPWk>  
 Conference photo tribute for Closing Ceremony: <https://youtu.be/V9nqbMZrzung>  
 Post-Conference Debrief held Thursday July 30, 2020: <https://youtu.be/1wwySqNmlYc>

### 1. Attendance Records

The table below notes the average session attendance by session format, distinguishing between the Main (original) session and the later Echo discussion session. The Echo column is also used to represent information about repeated workshops and roundtables.

ISDC2020 Average Attendance

Session Format	Main	Echo
Plenary	193	44
Parallel	40	10
WIP	32	12
Feedback	24	N/A
Workshop	41	25
Roundtable	46	25
Special	135	40

Note: “Special” includes opening and closing ceremonies, presidential address, and awards ceremonies. Feedback sessions did not have Echos. Attendance was derived from available Zoom data and volunteer records.

There were 8 Plenary sessions including the public COVID-19 plenary and a special plenary “plus” session that included presentation of the Applications Award as well as the classic work of Jay Forrester. Attendance at Plenary Sessions was as follows:

Plenary Topic	Main	Echo
Societal Containment of COVID-19	341	40
Climate Futures and the Limits to Growth	272	34
Harnessing Artificial Intelligence for System Dynamics	180	43
Scientific Advances	113	44
Electricity & Sustainability	110	33
Hindsight & Foresight: Moving the Field Forward	155	57
Community Engagement for Social Change	180	60
Then and Now: The Best Work	130	19

Note: For the Plenaries, Main session attendance was based upon volunteer records, whereas echo session attendance records were from Zoom data.

## 2. Post-Conference Survey Results

We received 218 responses to the post-conference survey, a 32.1% response rate. See <https://bit.ly/isdc20survey> for a list of survey questions asked, and <https://bit.ly/isdc20surveyReport> for a report of the survey results.

In the 2020 survey, we took the opportunity to ask questions about unique features of the virtual conference such as the website and 3D app that were used to help attendees connect in the virtual environment. The results indicated that fewer respondents expressed opinions about the 3D app in part because they did not have the chance to use it due to technical barriers or other issues. In contrast, the conference website was rated by all respondents, signifying its greater accessibility to attendees.

When asked which of the following conference features should be continued, the overwhelming majority (95%) of respondents indicated access to the recorded sessions as a key amenity. Note that respondents could indicate more than one choice.

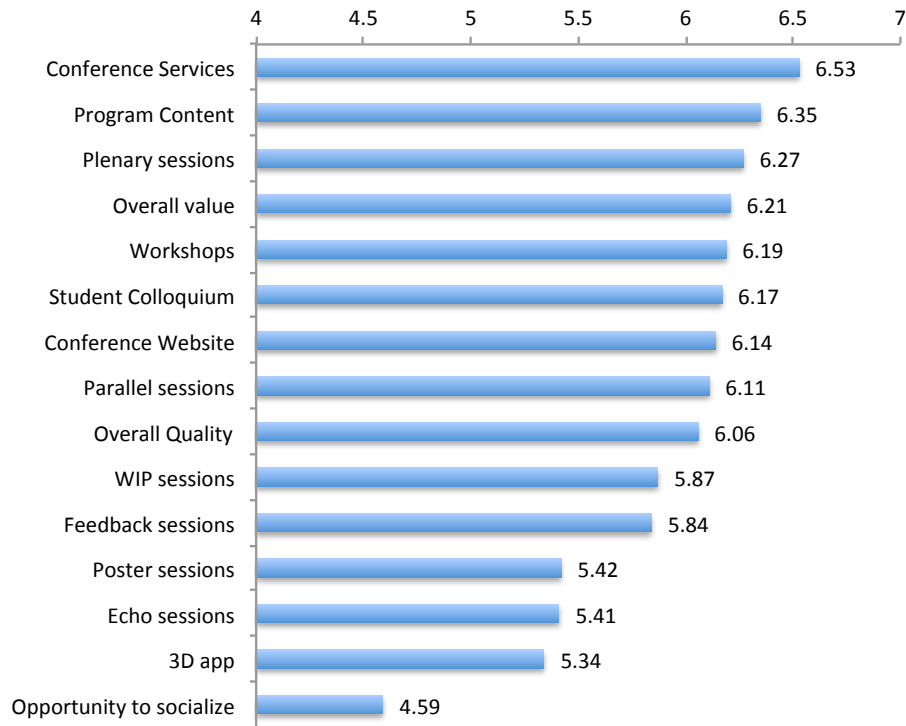
Access to recorded sessions	94.50%
Availability of pre-recorded talks	56.42%
Networking in Zoom	55.05%
Echo discussion sessions	47.71%
Networking in 3D app	35.78%

Descriptive statistics for the ISDC2020 post-conference survey are shown in the table below. For the categories evaluated in the survey, 7 is a “very positive” assessment; 4 is neutral; and 1 is a “very negative” assessment. “No opinion” responses are excluded. This table indicates that the conference website was evaluated more positively (6.14) than the 3D app (5.34).

	N	Min	Max	Mean	Std. Dev.
Program Content	217	3	7	6.35	0.864
Conference Website	218	2	7	6.14	1.069
3D app	185	1	7	5.34	1.597
Conference Services	208	2	7	6.53	0.895
Opportunity to Socialize	203	1	7	4.59	1.572
Overall value	214	2	7	6.21	1.039
Plenary sessions	202	1	7	6.27	0.972
Parallel sessions	201	1	7	6.11	0.991
WIP sessions	156	1	7	5.87	1.195
Echo sessions	176	1	7	5.41	1.451
Feedback sessions	82	2	7	5.84	1.300
Student Colloquium	99	3	7	6.17	1.116
Poster sessions	132	1	7	5.42	1.452
Workshops	175	3	7	6.19	1.076
Overall Quality	213	3	7	6.06	0.909
Valid N (listwise*):	35				

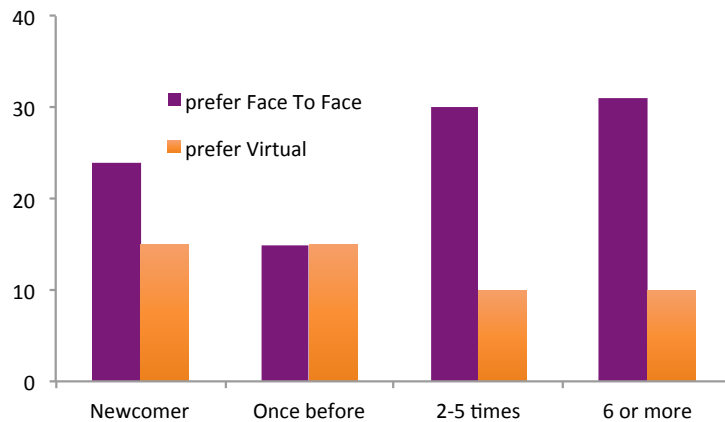
\*This subset shows that only 35 respondents expressed opinions across all of the indicated categories, signifying that they attended or viewed recordings of all types of sessions and experienced all features and services. “No opinion” responses are excluded.

The post-conference survey evaluations are presented graphically in the figure below, with the categories sorted so that the most favorably evaluated aspects of the conference appear at the top of the graph. The graph is scaled so that the range of comparison is between 4 and 7, as all of the average responses were in the positive realm.



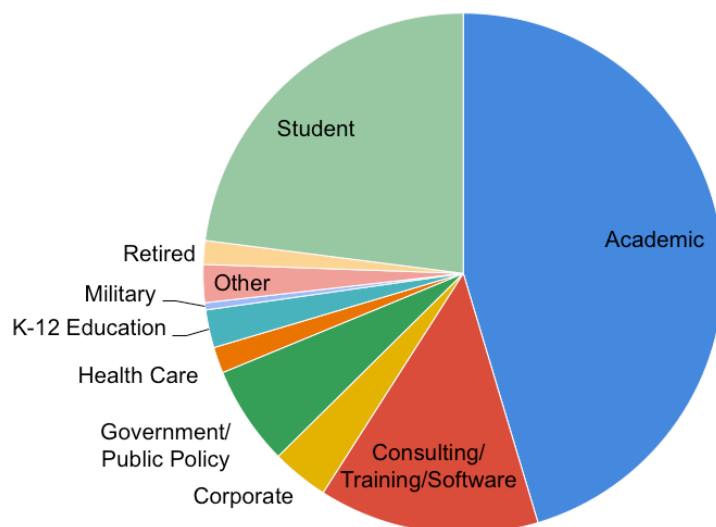
Although the lowest assessment was for *Opportunity to socialize*, this category also had a relatively large standard deviation, as was true for the 3D app, signifying a wide range of opinions. For example, among those who experienced the 3D environment were passionate enthusiasts who welcomed such a novel means of connecting during a time of intense social isolation.

While 58% of survey respondents indicated a preference for in-person conferences over virtual, those who had attended *once before* were evenly split (50%) in their preference for virtual versus in-person conferences (see graph of responses by prior conference experience below). Furthermore, several respondents who did not express a preference in response to the question wrote comments elsewhere in the survey about the importance of a hybrid virtual and in-person conference format going forward.



### 3. Attendee Information

The pie chart below shows the primary work category of conference registrants, with Academic as the largest category, comprising 45% of attendees.



The table below provides a sorted list of countries with the most attendees at the conference. Participants came from 62 different countries to attend the Conference and Summer School.

Country	Attendees	Percentage
United States	227	33.43%
France	51	7.51%
United Kingdom	47	6.92%
Germany	34	5.01%
Norway	32	4.71%
Netherlands	22	3.24%
Turkey	17	2.50%
Australia	16	2.36%
Japan	16	2.36%
Switzerland	16	2.36%
India	12	1.77%
Italy	12	1.77%
China	10	1.47%
Sweden	10	1.47%
Canada	8	1.18%
Colombia	8	1.18%
Thailand	8	1.18%
Brazil	7	1.03%
Ireland	7	1.03%
Nigeria	7	1.03%
South Africa	7	1.03%

\*The following additional countries were also represented: Austria, Argentina, Belgium, Bolivia, Chile, Cote D'Ivoire, Croatia (Hrvatska), Czech Republic, Denmark, Finland, Ghana, Greece, Hungary, Iceland, Indonesia, Iran (Islamic Republic of), Korea (Republic of), Kuwait, Latvia, Lebanon, Lithuania, Macedonia, Malaysia, Mexico, Mongolia, Morocco, Myanmar, Nepal, New Zealand, Pakistan, Peru, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Singapore, Spain, Taiwan, Uganda, and Ukraine.

#### ***4. Participant Feedback***

The conference organizers had to respond quickly to various technical issues during the conference, but they also received an abundance of positive feedback from participants who thoroughly enjoyed the conference and expressed a desire to continue offering a virtual option. For example, comments from the Closing Ceremony Echo session included the following:

“The online format made a more egalitarian conference. At in-person plenaries, it is mostly established male system dynamicists asking questions. Here, there seemed to be first a lot more questions and second from a much more diverse group of people.”

“I think this was one of the best conferences – I’ve gone to a lot of them – and I’m not sure why, because I was not expecting that with the virtual. But there was an element here that was different – and stronger – than some of the in-person stuff. Other parts were missing, obviously – there was a negative as well as a positive. But I think a matter for creative thought is: how do we combine virtual and in-person in the future? And I’m not sure the answer, but that would be a very good thing to think about, because certain elements were stronger. Particularly running the En-ROADS simulation virtually, versus what happened at Albuquerque last year, I think was really good. So I got brand new things – even though I’d played En-ROADS before – and it came from talking with people, and less from the actual sim. So I think there’s an interesting question about how do we, post-COVID, go back to the design of a future session?”