

SATC Telecon Minutes

23 November 2018, 18:00 UTC

Chair: Brent Sherwood

Vice-chair: Olga Bannova

Roll call

11 (31%, roughly 1/3) of the members attended:

SATC: 35 total members as of 11/23/18		
◊ = attending members. • = pre-coordinated absence. R = Regular Member. I = International Member.		
	Payam Bahrami (R)	François Lévy (R)
◊	Olga Bannova (R)	Sungwoo Lim (I)
	Donald Barker (R)	Elizabeth Lockard (R)
	Christian Carpenter (R)	Renée Matossian (R)
◊	Christina Ciardullo (R)	Yash Mehta (R)
	Marc Cohen (R)	Kursad Ozdemir (I)
◊	Silvano Colombano (R)	◊ Georgi Petrov (R)
•	Ondřej Doule (R)	◊ Emanuel Pimenta (R)
	Maria João Durão (I)	Raúl Pólit Casillas (R)
	Antoine Faddoul (R)	Luke Roberson (R)
◊	Brand Griffin (R)	Tomáš Rousek (I)
	Patrick Harkness (I)	◊ Kevin Scholtes
	Sandra Häuplik-Meusburger (I)	◊ Brent Sherwood (R)
	William Hart (R)	Jackelynne Silva-Martinez (R)
	A. Scott Howe (R)	◊ Matthew Simon (R)
◊	B. Imhof (I)	Max Skuhersky (Assoc. Member)
	Ryan Joyce (R)	Sam Wald (R)
	Mark Kerr (R)	◊ David Wong (I)

We received 11 applications for new members; Marc Cohen (Membership lead) is organizing some missing material and we will select new members this month, notifying AIAA along with our Annual Report due on 1/31/19. The 3-year terms of the new members will take effect in May.

Callouts for this year's volunteer efforts

Our committee runs on volunteer power. Brent recognized the SATC volunteer superstars from the year's work:

- Best-paper awards process: **Renee Matossian**
- ICES: **François Levy, Sandra Häuplik-Meusburger, Georgi Petrov**
- AIAA Space Forum: **Matt Simon, Sam Wald**
- SAS: **Christina Ciardullo, Barbara Imhof**
- IAC: **Barbara Imhof, Olga Bannova**
- Year-end summary: **Ted Hall, Barbara Imhof, Maria João Durão**
- Webinar: **Brand Griffin**
- Website and org membership: **David Wong**

Space Architecture gatherings

US meetings in 2018

- **ICES** (International Conference on Environmental Systems) in July in Albuquerque. François Levy, Georgi Petrov, Sandra Häuplik-Meusburger, and Don Barker organized the session, which contained five peer-reviewed papers on habitat concepts for LEO and Mars, crew quarters design, human safety rating, BIM, and reduced-gravity stairs and ladders. The session sustained an audience of about 60. See <http://spacearchitect.org/event-summary-ices-2018/> for more details.
- **AIAA Space Forum** in September in Orlando. Matt Simon and Sam Wald organized the COL track of five sessions related to Space Architecture: Mars Mission Concept and System Architectures I and II; Manufacturing and Construction Technologies; Deep Space Gateway; Next Steps for Commercial Human Space Flight; and Space Human Factors I and II. The sessions typically held audiences of 20-80. Many of the papers presented SA topics.
- **Annual SATC F2F meeting** was on 9/17/18, at the AIAA space Forum. Minutes were distributed to the SATC email list. Highlights included a preview of the Habitability Standards activity; and a visit by representatives from our AIAA parent (Space & Missiles Group) describing the future replacement of the Space Forum series.

European meetings in 2018

- **SAS Bremen:** We held a successful Space Architecture Symposium on 9/29/18, the Saturday before IAC. DLR hosted us. Christina Ciardullo and Barbara Imhof led the planning, and several YP (young professionals) helped with logistics. Many YP and students attended, including several who did not also attend IAC later in the week. The morning session discussed the current status of the Space Architecture discipline and community by sector, country, region, industry, and academia. Presentations included current work, issues and achievements. The afternoon session discussed where our field is going. Discussions aimed to identify current and future opportunities, what needs to be done to fulfil those opportunities, and our roles as professionals. We had a tour of DLR's EDEN Antarctic greenhouse operations center, concurrent engineering facility, and integration and test facilities. The day concluded with a fellowship dinner at Haus am Wald.
- **Public panel session: "Building Beyond"** was held on the evening before the IAC opening ceremony, in a conference room at the venue. This turned out to be a good formula for attracting curious delegates; about 70 attended and engagement was good. Barbara Imhof

and Christina Ciardullo organized the symposium, and Christina moderated the panel: Angelo Vermuelen (Delft Univ. of Technology), Daniel Schubert (DLR), Barbara Imhof (Liquifer Systems Group), Brent Sherwood (JPL), and Jan Dierckx (Foster + Partners). We provided refreshments for post-panel networking.

- **69th IAC, session E5.1, Space Architecture: Habitats, Habitability, and Bases.** Olga Bannova and Brent Sherwood co-chaired; Barbara Imhof was Rapporteur. We organized talks into four main topics: 1) presentation and panel Q&A by half of the invited NextSTEP deep-space habitat contracts; 2) innovative concept for an advanced orbital-debris recycling station; 3) current work in 3D printing technology and concepts; and 4) current work in terrestrial analogues. NASA Advanced Exploration Systems head Jason Crusan and ESA astronaut Claude Nicollier both attended. The session was standing-room-only, capped out at 93 by security. The E5.1 Interactive Presentations were held in the Thursday IP session, although the setup was crowded, noisy, and chaotic. Physical models brought by two of our presenters attracted additional interest. Led by a very active and dynamic group of YPs, the space architects met informally at restaurants and receptions throughout the week.

2019 meetings

- **49th ICES**, Boston, 7-11 July 2019. Abstracts are now under review by SATC volunteers organized by the planning team. <https://www.ices.space/wp-content/uploads/2018/09/2019-CFP-final-Full-C.pdf>.
- **AIAA Propulsion & Energy conference**, Indianapolis, 19-22 August 2019. AIAA is using this technical conference as a substitute for the Space Forum meeting, which is being renovated for rollout in 2020. Matt and Sam are organizing again; for those interested to participate, abstracts are due by 31 January. https://propulsionenergy.aiaa.org/CallForPapers/?_ga=2.259878794.1080866232.1546389612-1935611269.1540142605.
- **70th IAC and associated events**, Washington DC, 19-25 October 2019. We aim to replicate the Bremen successes: 1) Christina and Barbara are organizing the SAS WDC for Saturday 19 Oct; we are working via AIAA (AIAA chairs the Local Organizing Committee) to secure a good venue; 2) Christina and Barbara are developing a formal IAF proposal for a Special Session for Sunday 20 Oct; 3) Session E5.1 will have both oral and interactive presentations; we will select abstracts at the IAF Spring Meetings in March. Abstracts are due by 28 February; http://www.iafastro.org/wp-content/uploads/2018/10/Call-for-Papers-IAC2019_2018-10-09_FINAL_updated_online.pdf. Finally, Brent secured Jason Crusan's agreement to participate in a Plenary Event about space architecture, which we plan to propose jointly with the Space Exploration TC.
- SAS in Washington DC is already under planning. Involving young generation is critical and the following year SAS in Dubai will be organized by a local space architect. Georgi raised a concern about tying all SASs with IACs only and suggested to alter between conferences (IAC – ICES) and potentially having a stand-alone SAS.

Future years

We discussed the salient roles the SAS series has emerged to fill: 1) providing ample time for interactive discussions about our field, which rigidly timed conference sessions comprising topical papers cannot; 2) providing a cost-effective F2F networking opportunity for us to interact directly with interested YPs and students.

Hatem Alkhafaji has begun planning the SAS Dubai for 2020, prior to the 71st IAC. From initial discussions, we anticipate architecture tours and desert excursion events in the few days leading up to the SAS.

Georgi cautioned that we not lock in on SASs occurring only at IACs; the two standalone “Aliter” SASs in Valencia and Prague were very successful public events.

Current work

Habitat design webinar

On 8 November 2018, Brand Griffin delivered an AIAA webinar on Step by Step Design of Weightless Habitats. Brand had volunteered to prepare and deliver this 90-min event online in response to an AIAA call. AIAA advertised the event and credited our TC \$300. Brand suggested we continue preparing webinars on space architecture, e.g., designing planetary and artificial gravity habitats. Matt volunteered to work with Brand on this, and invite 2019’s new members to participate and/or contribute.

2019 best-paper awards

Emanuel has taken over the process. The general timeline: 1) pool of evaluators designated by 15 February; 2) paper nominations provided by session chairs and others by 1 March; 3) evaluation and selections done by May, to coordinate awards with AIAA before the August conference.

Action to all members, due 15 February: if at all possible, volunteer to review the nominated papers. Emanuel emailed SATC members, but so far no one responded – we will have a critical need for non-conflicted (i.e., not also authors of nominated papers) evaluators.

Action to Georgi’s ICES team, Matt’s AIAA team, and Olga’s IAC team: nominate top two or three papers from the 2018 sessions by 1 March. Other nominations, including self-nominations, are welcome also.

Habitability Standard development subcommittee

Ondrej Doule is leading the development of a potential international habitability standard. Brent provided an overview of the history and goal of this initiative. Members who aim to participate in developing or reviewing the standards should email Ondrej, Brent, and Olga.

Sponsored space architecture competition

Christina proposed that SATC organize a professional space architecture competition, with a prize purse high enough to elicit entries by professional firms. This would require securing industry sponsorship. Process lessons could be learned from the ongoing NASA 3D-printed Mars habitat challenge. Benefits would include setting a high bar (i.e., buildable reality) compared to other “space architecture” competitions; giving space architecture a higher profile within professional architecture circles and building this bridge; and growing the AIAA/SATC brand.

The discussion was positive, and raised key questions: What should be the prize purse, reflecting time and resources spent by the entrants? What value would it bring to the sponsor? Seek sponsorship from within the space industry, or within or together with other industries? (the NASA 3D-printed habitat is sponsored by Caterpillar).

Christina is preparing an action plan. It would be a great opportunity for new members to get involved in SATC.

SpaceArchitect.org and social media

- **Website.** We need a new ISP, due to service continuity and customer-service issues. The SpaceArchitect.org website also needs to refresh outdated links and information. David continues volunteering as our webmaster. **Action to newer SATC members: we need more help in this area.**
- **Social media.** Our Facebook page is active and providing good public outreach (over 2000 followers). Several curators post relevant links continually. Many YPs use Instagram rather than Facebook, so Tom has started our Instagram presence (Brent had secured @spacearchitect when Instagram started).

Member activity

As is typical for volunteer committees, a minority of our membership does the majority of the work. Brent and Olga plan to address this privately with non-participating members, and set expectations for the 2019 new members.

Next Meeting

Next telecon will be on 12 April, 2019 at 1700 UTC.