

SPACE ARCHITECTURE

ORGANIZATION

CONTEXT

CONTACT

1

Symposium and panel

Space Architecture is a global research and dialogue about human living in space. Space Architecture. SpaceArchitect.org maintains a bibliography and open archive of space-architecture papers and articles here; maintains the online brochure "How to become a Space Architect?", a first-line FAQ for those interested in the field; and organizes periodic space architecture symposia to bring students and enthusiasts together with professionals. Stay current and like us on Facebook.

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SATC (Space Architecture Technical Committee) is a professional organization. Comprising an international network of professionals, it is one of many AIAA (American Institute of Aeronautics and Astronautics) technical committees. It promotes development of the professional field of space architecture, including practice standards and other interfaces between aerospace engineering, architecture and industrial design disciplines. Members are formally nominated and



SPACE ARCHITECTURE SYMPOSIUM

Reflections on Where we Are

GOAL: Produce a statement on where we stand as an architectural community and the active work of the recent past

PURPOSE:

- a) For the space architects in the room to reflect on their contributions and the purpose and contributions of space architecture as a whole (to space, to architecture, to others).
- b) To identify the current activities in the space architecture field and how SATC could participate
- c) To produce a public statement on the recent practice of space architecture

DESCRIPTION: What are the Opportunities, Weaknesses, Strengths, and Threats (SWOT) for space architecture? What have we been doing in the past and what are we now? How have past figures contributed to the field and how has what we have each done as attendees contributed recently?

SPACE ARCHITECTURE SYMPOSIUM

9:00 Whole Group Session: Introduction

1. **Welcome by DLR representative**
2. **Introduction** (*Barbara, Kick-Off for the whole day*)
3. **Kickoff: Where we are by Region**
A 2-5 minute statement of the state of space architecture by region.
 - Russia (*Olga*)
 - USA (*Taylor*)
 - Europe (*Barbara*)
 - Japan (*Toshiroh IKEGAMI*)
 - China (*David*)
 - India (*Susmita*)
4. **Introduction of Small Group Topics for the morning Session** (*by each moderator*)
5. **Directions for Group Sessions** (*Christina, defining goals*)

Where we are by region

Russia (*Olga Bannova*)

USA (*Taylor Phillips-Hungerford*, <https://youtu.be/DD4cjBI-bf8>)

Europe (*Barbara Imhof*)

Japan (*Toshiroh IKEGAMI*, <https://www.youtube.com/watch?v=vALkHLREmX4>)

China (*David Wong*)

India (*Susmita Mohanty*, <https://www.youtube.com/watch?v=bDHUo3D2hMc&t=7s>)

1. Please introduce yourself: your name, where you live, your affiliation, your profession ?
2. Are there any space architects in the US, who are they?
3. What do they do?
4. Do they earn their money with space architecture projects?
5. What projects are the US space architects involved in?
6. Is there any academic space architecture design studio at an US University?
7. Any relevant developments which might have an impact for the future work of Indian space architects?
8. Any other comments?

SPACE ARCHITECTURE SYMPOSIUM

10:00 - 10:45

1. Topic 1: Projects ([moderator: Jacky](#), [rapporteur: Christina](#))

- What are some recent space architecture projects?
- Are these significantly different from past space architecture activities, in what way?
- *WRAP-UP / Reporting*

SPACE ARCHITECTURE SYMPOSIUM

10:45 - 11:30

1. Topic 2: Companies ([moderator: Sam](#), [rapporteur: Christina](#))

- What companies are engaging in Space Architecture, small and large, startups, architecture firms, aerospace firms, or other designers?
 - Architecture (Foster, BIG, Liquifer, SEArch,....)
 - Aerospace (Boeing, Bigelow, OrionSpan...)
- What kind of active projects are they engaged in? What communities are they engaging?
- How many people work there?
- What is their business model?
- How do they support themselves?
- What is their level of success?
- How can SATC participate?
- WRAP-UP / Reporting

SPACE ARCHITECTURE SYMPOSIUM

11:30 - 12:15

1. **Topic 3: Competitions** (*moderator: David, rapporteur: Christina*)

- What Space Architecture related competitions have come about in recent years (XHab, Eleven Magazine Marstopia and Moontopia, 3D Printing Centennial Challenge, Phobos, Mars City Design, ISSDC etc)
- What are their target audiences and expected outcomes? Who are they trying to reach and why?
- *What have they done for the space architecture community?*
- How can SATC participate? Does it want to?
- WRAP-UP / Reporting

SPACE ARCHITECTURE SYMPOSIUM

Topic 3: Space Architecture Competitions						
Title	Year	Organizer	Sponsors	Target Audience	Intended Outcomes	SATC Participation
<i>NASA 3D Printed Habitat Challenge</i>	2015-present	NASA / Bradley University / AmericaMakes	Caterpillar, AmericaMakes	Construction Technology Companies	Technologies	member participation
<i>MarsTopia</i>	2018	Eleven Magazine	Media	Architecture & Design Media, International	Theory & Inspirations	some jury members
<i>MoonTopia</i>	2017	Eleven Magazine	Media	Architecture & Design Media, International	Theory & Inspirations	some jury members
<i>Mars City Design Competiton</i>	2016-present	Mars City Design	Commercial, Business	Architecture & Design Media, International	Theory & Inspirations	some jury members
<i>X-HAB Academic Competition</i>	2011-present	The National Space Grant Foundation	NASA Advanced Exploration Systems Division	University Students/Faculty, NASA, US nationals only	Technologies	
<i>NASA Big Ideas Challenge (University Level)</i>	2016-present	National Institute of Aerospace	NASA Langley Research Center - Outreach	University Students/Faculty, NASA, US nationals only	Education and Outreach	
<i>AIAA Phobos Base Student Design Competition</i>	2016-2017	AIAA LSTC & SATC	AIAA	University Students/Faculty, AIAA members only	Education and Outreach	some jury members
<i>International Space Settlement Design Competition</i>	1984-present	ISSDC	NASA JSC, Boeing, AIAA SCTC	High School students/faculty, International	Education and Outreach	

SPACE ARCHITECTURE SYMPOSIUM

12:15 - 13:00

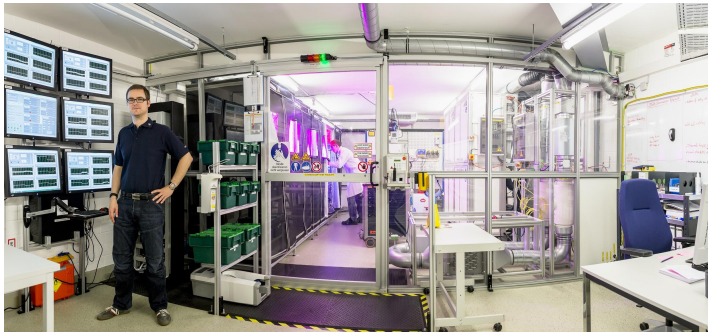
1. **Topic 4: Theory / Education** (*Moderator, rapporteur fill in structure, record MoM live*)
(moderator: Olga, rapporteur: Jacky)

- Where are the opportunities to study? To intern?
- What is the level of interest from where?
- What recent topics are being explored in a university setting? (Nanotechnologies, Space Urbanism, etc...)
- How can SATC participate in educational or theory activities?
- WRAP-UP / Reporting



SPACE ARCHITECTURE SYMPOSIUM

- LUNCH 13:00 - 14:00
- DLR facilities visit 14:00 - 15:00 (group picture)



SPACE ARCHITECTURE SYMPOSIUM

PM

A Picture of the Future

GOAL: Produce a list of actionable items that can be taken to meet the ambitions of space architects.

PURPOSE:

- a) Allow attendees to verbalize/identify their own ambitions and come to clear ideas on how to get there
- b) Identify tasks that the SATC can do to help their members achieve these goals

DESCRIPTION: We all want to do work as space architects. What work exactly? How would we like to be working? How would we be able to get there? What do we want to do and how do we do it? Who do we target?

SPACE ARCHITECTURE SYMPOSIUM

15:00 Whole Group Session: Introduction

1. **Introduction of Small Group Topics** (*by each moderator*)
2. **Directions for Group Sessions** (*Christina, defining goals*)

15:15 Topical Sessions

Worksessions for identifying how we are able to achieve goals we want. How do we achieve these goals in a tangible way?

From each a one paragraph statement to use explaining why architects are valuable in the appropriate context.

SPACE ARCHITECTURE SYMPOSIUM

15:15 - 16:00

1. **Topic 1: Work for New Space (e.g. SpaceX, Blue Origin, etc.)** (*moderator: Tony, rapporteur: Christina*)

Who do we have to talk to there? How do we get aerospace companies to take notice of architects as valuable?

- WRAP-UP / Reporting / ACTION ITEMS

SPACE ARCHITECTURE SYMPOSIUM: Work for New Space

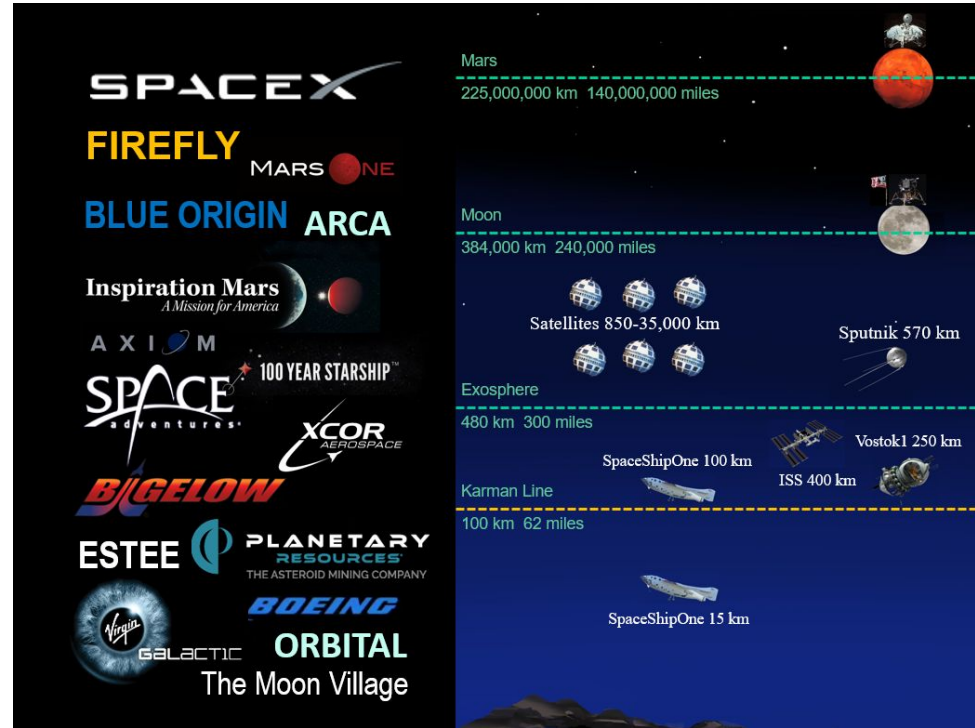
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- WRAP-UP / Reporting / ACTION ITEMS



SPACE ARCHITECTURE SYMPOSIUM: Work for New Space

15:15 - 16:00

1. **Topic 1: Work for New Space (e.g. SpaceX, Blue Origin, etc.)**

Terminology?

Design

Function
Budget
Esthetic
Life Cycle

1. Currently: – Aerospace engineering driven instead of Architectural led
2. Uncommon architectural research methods, Scientific experiments, space probes
3. Different teams working on different parts; propelling, closed eco systems, etc..
4. Design transdisciplinary experience
5. Account for micro-environment and macro-environment
6. Auto-maintenance , Auto repair, and future improvements
7. Sustainability in space, Net Zero systems

Mars
225,000,000 km 140,000,000 miles

Moon
384,000 km 240,000 miles

Exosphere
480 km 300 miles

Karman Line ISS 400 km
100 km 62 miles

SPACE ARCHITECTURE SYMPOSIUM: Branding the Profession

16:00 - 16:45

Topic 2: Branding the Profession / Creating a Better Image (*moderator: Tony, rapporteur: Christina*)

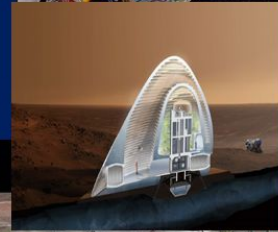
1. To whom? In what form? By what means? For what purpose?
2. Media coverage.
 - WRAP-UP / Reporting / ACTION ITEMS

Space Architecture

“Space Architecture is the theory and practice of designing and building inhabited environments in outer space.”

-the Millennium Charter, the 1st Space Architecture Symposium, 2001

“Space Architecture is the theory and practice of designing and building structures and environments related to space”



SPACE ARCHITECTURE SYMPOSIUM: Branding the Profession

16:00 - 16:45

1. To whom? In what form? By what means? For what purpose?
2. Media coverage.

Internship/Competitions

EdX

U.S.: more possibilities

- WRAP-UP / Reporting / ACTION ITEMS



SPACE ARCHITECTURE SYMPOSIUM

16:00 - 16:45

1. **Topic 2: Branding the Profession / Creating a Better Image** (*moderator: Tony, rapporteur: Christina*)

To whom? In what form? By what means? For what purpose?

- WRAP-UP / Reporting / ACTION ITEMS

SPACE ARCHITECTURE SYMPOSIUM

16:45 - 17:30

1. **Topic 3: Working on Earth** (*moderator: Christina, rapporteur: Sam*)

What are the overlaps between space and earth that we can take advantage of to a) help space architects find relevant work on earth and b) enhance the image of space architecture for the terrestrial architecture community

- WRAP-UP / Reporting / ACTION ITEMS

SPACE ARCHITECTURE SYMPOSIUM

17:30 - 18:15

1. **Topic 4: Outlets for Space Architecture Idea Projects?** (*moderator: David, rapporteur: Christina*)

Where can we share our ideas? What venues? Museums? Universities? Articles? Who is the target for what purpose?

- WRAP-UP / Reporting / ACTION ITEMS

18:15 Workshop summary

1. Takeaways (*Brent, Olga, Barbara, Christina*)

DINNER 19:00

DINNER: HAUS AM WALDE



Kuhgrabenweg 2, 28359 Bremen, Germany, Phone: +49 421 212765, hausamwalde-bremen.de



Space Architecture Symposium and Panel Bremen 29./30.Sept. 2018

BUILDING BEYOND

Sunday 30.9.2018 - 18:00

IAC - CCB Franzius

Messe Bremen, Findorffstrasse 101, 28215 BRemen, Germany

What does the future look like for buildings, cities and habitats on and off the planet?

On the operational field of space architecture and its potential to impact future space exploration and terrestrial building practices.

Invited speakers:

- **Angelo Vermeulen**, artist/biologist, Delft University of Technology, Starship Design
- **Barbara Imhof**, space architect, design researcher, LIQUIFER Systems Group, Vienna, Austria
- **Daniel Schubert**, space engineer, DLR, Bremen, Germany
- **Jan Dierck**, architect, specialist modeling group, Foster & Partner, London, UK
- **Brent Sherwood**, architect, author, engineer, mission planning, NASA JPL, Pasadena, USA
-

Moderator: **Christina Ciardullo**, architect, researcher, SEARCH +LLC, New York, USA

INVITE YOU TO A SPECIAL EVENING PROGRAM AT THE IAC

BUILDING BEYOND

TRANSDISCIPLINARY PERSPECTIVES ON ARCHITECTURE IN SPACE

SUNDAY BEFORE THE IAC
30 SEPTEMBER 2018 | 18:00

OPEN TO THE PUBLIC

SUNDAY
18:00

WHAT DOES THE FUTURE
LOOK LIKE FOR BUILDINGS,
CITIES, AND HABITATS ON
AND OFF THE PLANET?

JOIN US FOR DRINKS AND CONVERSATION
ON THE OPERATIONAL FIELD OF SPACE ARCHITECTURE
AND ITS POTENTIAL TO IMPACT FUTURE SPACE
EXPLORATION AND TERRESTRIAL BUILDING PRACTICES

AT THE
IAC

2.10.2018
14:45

BE SURE NOT TO MISS
IAC SESSION E5.1 SPACE ARCHITECTURE
FEATURING:
NEXT-STEP PROTOTYPES FOR DEEP SPACE HABs
3D PRINTING OF HABITAT STRUCTURES
TERRESTRIAL HABITATION ANALOGUES

CHECK OUT OUR PANELISTS

ARTIST / BIOLOGIST

ANGELO VERMEULEN
DELFT UNIVERSITY OF TECHNOLOGY
BIOLOGIST, ARTIST
STARSHIP DESIGN

IMAGE: EVOLVING ASTEROID STARSHIPS

SPACE ARCHITECT

BARBARA IMHOF
LIQUIFER SYSTEMS GROUP, VIENNA
SPACE ARCHITECT, DESIGN RESEARCHER

IMAGE: SAFE EVACUABLE HOUSING / LIQUIFER SYSTEMS GROUP

ENGINEER

DANIEL SCHREIBT
DLR / BHEMEN
SPACE ENGINEER

IMAGE: EDEN 25 / GREENHOUSE IN POLARICA, DLR

ARCHITECT

JAY DIERCKX
FOSTER+PARTNERS, LONDON
SPECIALIST MODELING GROUP

IMAGE: CONCEPT HABITAT / FOSTER+PARTNERS AND DLR

ARCHITECT / AUTHOR

BRENT SHERWOOD
NASA JPL, LOS ANGELES
ARCHITECT, AUTHOR, ENGINEER
MISSION PLANNING

OUT OF WORLD
THE NEW FIELD OF
SPACE
ARCHITECTURE

IMAGE: BOOK COVER: OUT OF THIS WORLD / THE NEW FIELD OF SPACE ARCHITECTURE

WITH MODERATOR CRISTINA CIARDULLO
SEARCH+ LLC, NEW YORK
ARCHITECT, RESEARCHER

IMAGE: MARS ICE HOUSE, SEARCH+ / CLOUDS4EARTH



FOR MORE INFORMATION VISIT WWW.SPACEARCHITECT.ORG