



# Design Computing 2018 Exhibition 11.10. – 17.10. 2018

The Design Computing exhibition shows education, research, and work done on the application of advanced computational technologies in schools of architecture and architectural firms from all over the world. The exhibition is in the form of a video exhibition, because design computing is about process, and not about the final form of designs.

## Design computing is not a style

“Computing”, as the name suggests, is a verb, that is, an activity. It is a way of thinking and looking at architecture as an active system. Computational design thinking provides a vocabulary through which we can connect people and things as actors on many different levels. Objects, buildings, and urban environments are dramatically influenced through this new lens. Better understanding of the design process leads to tools that act as partners during design. Knowledge and simulation feed forward in the design process to inform our design decisions.

## Design computing is not architecture first, computer second

How does the architectural discourse change when we look at it from a design computing point of view? Although computers are used in architecture already for more than 60 years, we are still at the early phase to understand this question. We do not have the luxury of time, though. Production and consumption of goods and raw materials have reached an unprecedented height and threatens life on this planet. We need a different way of thinking, designing, building, and managing that better balances our resources. Thinking of architecture as a passive container is not adequate anymore. Typology must be broken up to form hybrid and appropriate answers to society's needs.

## Schools in design computing

The main pedagogical model for many schools of architecture is the design studio. Indeed, learning how to design is the main skill that schools confer to students. Although this pedagogical model is quite old, it is also very poorly understood. There is a lot of implicit learning by showing going on, and students do not get explicit knowledge about the design process. Partly this is necessary, because we train students to deal with problems that have no ready or just one good answer. Experimentation is key to most examples we see here and in everyday programs of schools that engage in design computing. All people, tutors and students alike, are learners in this process.

## Companies in design computing

Computer Aided Design in the paradigm of the “electronic drawing board” was hugely successful in the building and construction industry, because it replaced traditional work processes in much the same way as was done before, and did not challenge the status quo. It just made things faster and more efficient. After this wave of automation, companies have realized however, that architecture can be addressed in different ways, that give them an edge in the competition. Faster and more efficient production allows freeing up the thinking time on the conceptual level. Exploration, simulation, and forward calculation of the impact of design decisions on the end result of the design process, increase the odds to come up with better designs.

## Design computing is architecture

The exhibition shows from over 40 universities and architectural firms how they apply design computing in their work. As can be readily seen from the many examples, almost without any example, all computing is embedded in material and technical. The “digital” affords us to design and act in an informed way during the design process. We are pleased to have so many contributions in the design computing exhibition. All participants are listed here on this poster. We thank all contributors for their willingness to share their work on this exhibition.

## A | Design Computing video programme | FA CTU, MOLAB

Atelier Achten-Pavilček  
Atelier FLOW Florián-Kurila

## B | Design Computing video programme | others universities

- Aalborg University** | Acoustic Studio 2018  
Aalborg, Denmark | Isak Wore Føged and Mads Brath Jensen | Courtesy Isak Wore Føged
- Aalborg University & AREA (Applied Research in Environmental Architecture)** | Sense IV  
Aalborg, Denmark | Copenhagen, Denmark | Courtesy Isak Wore Føged
- Aalborg University** | Parametric Urban Design  
Aalborg, Denmark | Nicola Siorro and Kristian Mortensen | Courtesy Nicolai Steino
- Architectural Association** | Design and Build 2017-2018  
School of Architecture, London, United Kingdom | Eritrich, Emergent Technologies and Design | Michael Weinstock and Eif Eridine, EmTech group and program students | Courtesy Eif Eridine and Michael Weinstock
- Braunschweig University of Art** | Breathe  
Braunschweig | Germany - Audi - Bigrep | Manuel Kretzer and Audi/Bigrep team | Courtesy Manuel Kretzer
- Cardiff University** | Digital COBstruction II  
Wales School of Architecture, Cardiff, Wales, United Kingdom | Alkaterim Chazvisavadi, Wassim Jabi, and Mohamed Gomaa | Courtesy Wassim Jabi
- Chalmers University of Technology** | The Architectural Convertibles  
Göteborg, Sweden | Johan Ingeborg, Stockholm - Swedish School of Textiles, Boris + University of Arts, Crafts and Design Konstfack, Stockholm | Malgorzata Zbornicka, Dalia Dumbrăscu, Fredrik Nilsson, Monica Bilger, Ulrika Karlsson, Hanna Landini, Pablo Miranda, and Karin Hedlund | Courtesy Malgorzata Zbornicka
- Future Cities Laboratory** | Cognitive Design Computing  
ETH Zurich, Switzerland + National Research Foundation Singapore, Singapore | Gerhard Schmitz, Reinhard König, Kaja Knecht, Katerina Korikova, and Yufan Miao | Courtesy Gerhard Schmitz
- Gramazio Kohler Research** | Gradual Assemblies  
ETH Zurich, Zurich, Switzerland + Istituto Svizzero - iflab - Gruner | Courtesy Esther Lombardini
- Gramazio Kohler Research** | Spatial Timber Assemblies  
ETH Zurich, Zurich, Switzerland - iflab - Nest | Courtesy Esther Lombardini
- Craz University of Technology** | Dynamic Shaping  
Cruz, Brazil | Federal of Architecture and Media | Renate Weissenboeck | Courtesy Renate Weissenboeck
- Hong Kong Polytechnic University** | Inno Bubbles  
Hong Kong, Peoples Republic of China + Fovlin Architects, San Clemente, California | Courtesy Michael Fox
- University Institute of Lisbon, Information Sciences** | Digital Technologies for Architecture  
Technologies and Architecture Research Centre, Lisbon, Portugal | ISTAR-UL, research team, Master students, PhD students | Courtesy Sara Eloy
- Instituto Superior Tecnico** | Algorithmic Design for Architecture  
Lisbon, Portugal | Courtesy Antonio Leitao
- Israel Institute of Technology** | T\_CODE Laboratory research projects  
Haifa, Israel | Michael Weizmann, Aniele Blonder, Guy Azulem, Yasha Jacob Glickman | Courtesy Yasha Jacob Glickman
- Pablo Zamorano research** | Expandable Surface System, Water Fields  
Lisbon, United Kingdom | Pablo Esteban Zamorano, Jacob Bek, Nacha Mart, Marco Gardas | Courtesy Pablo Esteban Zamorano
- Penn State College Stuckeman Centre for Design Computing** | NASA 3D-Printed Habitat Challenge  
State College, Pennsylvania | Courtesy Jesse Duarte
- Princeton University** | Flexing Room Embodied Computation  
Princeton, New Jersey | Axel Kilian | Courtesy Axel Kilian
- Rio de Janeiro Federal University** | Genetic Landscape, Tetra-Script, Honeyscape, Wiki-House, Tornado Pavillion, Butterfly Gallery  
Rio de Janeiro, Brazil, LAMO Laboratório Modelos 3D e Fabricação Digital - LabIT + Science Park UFRJ/lablaborative projects | Courtesy Goncalo Castro Henriques
- Technische Universität München** | Interactive Design Environment  
Chair for Architectural Informatics, München, Germany | Gerhard Schubert, Frank Petzold | Courtesy Gerhard Schubert
- Technische Universität München** | Tangible Grasshopper  
Chair for Architectural Informatics, München, Germany | Gerhard Schubert, Frank Petzold, Boris Polnikov, Tibor Coldschwendt | Courtesy Gerhard Schubert
- Technische Universität Delft** | Technology Design Informatics  
Delft, Netherlands - Wrocław University of Science and Technology, Wrocław, Poland | Sendar Asut, Frico Couvreur, Jerzy Laika, TU Delft - Wrocław students | Courtesy Sendar Asut
- Technische Universität Delft** | Doubleface 2.0  
Delft, Netherlands | Chair for Design Informatics, Chair for Building Physics & Services, Michela Turin, Martin Tempeliet, Tudor Cosmatu, Sevil Saryıldiz, Peter Lucaree | Courtesy Michela Turin and Sevil Saryıldiz
- Texas A&M** | Architecture Mediator projects  
Department of Architecture, College Station, Texas | Negar Kalantar, Ward Wells, tranSTUDIO | Courtesy Negar Kalantar
- Universität Kassel** | Solar Spine Project  
Kassel, Germany + Architectural Kassel Kassel, Germany | Timo Carl, Markus Schein, Frank Stepper | Courtesy Timo Carl
- University of Auckland** | The Digital Igloo  
Auckland, New Zealand | Design and Digital Media + AEC Futures Research Group + Centre for Advanced Composite Materials + Unitec | Dermott Mc Meel, Cameron Spicer, Jack Guo, Nick Young, Robyn Walton, Pete Cleveland, Karl Butler, Yinan Liu, Mark Batters, Peter McPherson, Yusuf Patel, Annaliese Mirus | Courtesy Dermott Mc Meel
- University of Cyprus** | Advanced Computer-Aided Design Topics  
Nicosia, Republic of Cyprus | Doyseas Kontosoukous and Faculty students | Courtesy Doyseas Kontosoukous
- University of Kentucky** | Resonance House  
Lexington, Kentucky | Courtesy Gregory Lujan
- University of Liverpool** | Iterative Agent Based Design  
Liverpool, United Kingdom | Leyla Deniz, Tuba Kocaturk | Courtesy Tuba Kocaturk
- University of Melbourne** | Mould Racing  
Melbourne, Australia | Stanislav Roudavski, Alexander Holland, Julian Rutten | Courtesy Stanislav Roudavski
- University of Melbourne** | Pocket Pedal  
Melbourne, Australia | Stanislav Roudavski, Alexander Holland | Courtesy Stanislav Roudavski
- University of Nevada Las Vegas & University of Calgary & University of Waterloo & Ball State University**  
Las Vegas, Nevada - Calgary, Canada - Waterloo, Canada - Muncie, Indiana  
Small Parts, Complex Effects, Arcus Animus, Morphologyminiscope, Twist  
Student teams of the faculties, Joshua Vermillion, Jason Johnson, Ludwig Vaca, Elizabeth Boone, Eric Brockmeyer, Adam Buerse, Kyle Perry, Mahesh Das, Philip Beesley, Brad Rotherberg, Richard Samach, and Evan Douglas | Courtesy Joshua Vermillion
- University of New South Wales** | Bachelor of Computational Design projects: Participation Plus, Hectic, Interchanging  
Sydney, Australia | Courtesy David Hatcher and Daniel Hu
- University of Novi Sad** | Shark Skin Panels  
Novi Sad, Republic of Serbia | Digital Design Centre | Bojan Tepavčević, Vesna Stajković, Marko Jovanović, Ivana Bažanski, Marko Vučić, Dejan Miov, and student team | Courtesy Vesna Stajković
- University of Sydney** | Robotic Fabrication of Acoustic Surfaces  
Sydney, Australia | Dagmar Reinhardt, Deniz Cabrera, Alexander Jung, and Rod Watt | Courtesy Dagmar Reinhardt

## C | Companies featured with videos at the exhibition

- Arup** | Skills Acceleration Centre  
London, United Kingdom | Courtesy Ramon van der Heijden
- Bots101** | Say It = Make It | 3D Modelling With Bots101  
Haarlem, Israel | Courtesy Eyal Nir
- Graphisoft By Design** | Season 2, Episode 2: Future Proof  
Copyright © 2018, Graphisoft | Courtesy Graphisoft, Len Decker, Brian Johnson
- MVRDV** | Parametric Design Services for Valley  
Roosendaal, Netherlands + Arup, London, United Kingdom | Courtesy Cijs Rikken
- OceanCN** | UrbanSMS: Paradigmatic Practices + Their Multifarious Platforms  
Hong Kong, Peoples Republic of China | Courtesy Tom Verebes
- Jenny Sabin Studio** | MoMA PSI Young Architect's Program 2017 | Lumen by Jenny Sabin Studio  
Ithaca, New York | Courtesy Jenny Sabin and Jordan Berta, Cornell University
- Eva Sópéouglou architect** | Summer Residence in Sithonia, Hellkikiki  
London, United Kingdom | Courtesy Eva Sópéouglou
- Synthesis Design + Architecture** | Desk and Storage System for a Private Home Office, Data Moiré, Office overview  
Los Angeles, California | Courtesy Greg Huang
- Tactile Architecture - Office für Systemarchitektur** | Physarum Polycapillum Research and Design  
Berlin, Germany | Courtesy Lisa C. Werner
- UN Studio** | Services and Interior Design Office Overview  
Amsterdam, Netherlands | Courtesy Ben van Berkel and Steve O'Reilly
- Xenia Automated Design Platform** | Xenia Automatic Design Platform showcase  
Kelsanya, Israel | Courtesy Shmuel Bilgoray
- Rene van Zuur architecten** | René van Zuur Foam-Cutting Method  
Almere, Netherlands | Courtesy René van Zuur

## C | Design Computing Diploma Projects | FA CTU, FLOW, MOLAB

- Designing Architecture for Virtual Reality for Digital Life of Avatars in the Future | Marketa Geberian
- Sound Shape Space | Karolina Kotzour
- Evo Tectonics | Michal Bednář
- SCAR | Dominik Císal
- Carbon Fibre Bridge | Jakub Fibera
- Data City | Radek Pavla
- Heliotrop Habitat | Ondřej Pokoj
- Neoplasm | Ondřej Pokoj
- Transferium | Ondřej Pokoj
- TweetBot | Ondřej Pokoj
- Skycraper 3.0 | Ondřej Tomáš
- Skycraper 4.0 | Ondřej Tomáš
- Cze-Growing | EXPO 2020 | Jakub Trčka
- The Growing Architecture | Jakub Trčka
- Soběstačné město | Martin Žatecká

## D | Design Computing Models | FA CTU, FLOW

**3D models, Rapid Prototyping Models | Studio FLOW**  
www.studioflorian.com

- FRACT | Dominik Císal
- relocation | Jindřich Rátl
- Z.Real | Jan Tóma
- Space for double-reality performance-interactive scene concept
- swarm\_bot\_concept | Dan Vašek
- BlockOI-Liquid Zoid | Michal Bednář
- Swarm Tower | Jan Peřt
- Origami Gallery | Ondřej Otyška
- Metaballs ponds | Nina Pevná
- Coral Tower | Petr Blaha
- Tensegrity Tower | Ondřej Otyška
- Walking Gallery | Nina Pevná
- Art Palace Prague | Nina Hedvic Houkova

## Membrane Models | Studio FLOW

Construction of Membrane Roofing Tennis Areal Praha-Štvanice | Daniel Vejsek  
Transferium Praha | Ondřej Pokoj

## E | Design Computing Actions, Design Computing in Practice

### Monday 15.10.2018 afternoon

3D task - Molab | Jiri Visek  
Bogle Architects | Jan Bogle  
AED a BIM | Lucie Matiskova  
and others...

### Tuesday 16.10.2018 afternoon

Virtual reality in design process | Stanislav Mosevec  
The Czech Pavilion for EXPO 2020 | Jindřich Rátl, Jan Tóma, winning proposal  
and others...

## Design Computing - Exhibition

11.10. – 17.10. 2018

Faculty of architecture, Czech Technical University of Prague  
Department of architectural modelling

Curators of exhibition | Henri Achten, Miloš Florián, Dana Matějovská

The exhibition is connected with the students research conference Design Computing (11.10.2018), supported by the grant SVK 23.78/PS, Czech Technical University in Prague

Graphics | Martin Král

Realization of the exhibition | Ondřej Pokoj | Joinmusic, s.r.o.

Partners | Miro, s.r.o. | Cegra, s.r.o. | Dimensio, s.r.o. | CadConsulting, s.r.o.

