



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 Chazvisavaleadi, Wassim Jabri, and Mohamed Gomaa | Courtesy Wassim Jabri
- 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, Austria | Faculty of Architecture and Media | Renate Weissenböck | Courtesy Renate Weissenböck
- 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 Tempelink, Tudor Cosmatu, Sevil Saryıldiz, Peter Lucarese | 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 Research 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, Tubā Kocaturk | Courtesy Tubā 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, Morphologyminerals, 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: Vix, Pirella Göttsche Grassottti | Courtesy Graphisoft, Len Decker, Brian Johnson
- MVRDV** | Parametric Design Services for Valley
Rotterdam, 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 Synthesis Design
- 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 Berckel and Steve O'Reilly
- Xenia Automated Design Platform** | Xenia Automatic Design Platform showcase
Kelsarya, 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 Housková

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 Matisková and others...

Tuesday 16.10.2018 afternoon

Virtual reality in design process | Stanislav Mosevec
The Czech Pavillion 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.

