



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 gives 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 tectonics. The “digital” affords us to design and act in an informed way during the design process. We are pleased to have so many contributions on 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-Paviček
Aatelier FLOW Florián-Kurilla

B | Design Computing video programme | others universities

Aalborg University | Acoustic Studio 2018
Aalborg, Denmark | Isak Wore Foged and Mads Brath Jensen | Courtesy Isak Wore Foged

Aalborg University & AREA (Applied Research in Environmental Architecture) | Sense IV
Aalborg, Denmark | Copenhagen, Denmark | Courtesy Isak Wore Foged

Aalborg University | Parametric Urban Design
Aalborg, Denmark | Nicola Steiro and Kristian Mortensen | Courtesy Nicola Steiro

Architectural Association | Design and Build 2017-2018
School of Architecture, London, United Kingdom | EntTech, Envisage, Technologies and Design | Michael Weinstock and Elf Eridne, EntTech group and program students | Courtesy Elf Eridne 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
Welsh School of Architecture, Cardiff, Wales, United Kingdom | Alkaterini Chatzivasileiadou, Wassim Jabl, and Mohamed Gomaa | Courtesy Wassim Jabl

Chalmers University of Technology | The Architectural Convertibles
Göteborg, Sweden | Institute of Technology, Stockholm + Swedish School of Textiles, Borås + University of Arts, Crafts and Design Konstfack, Stockholm | Malgorzata Zbomska, Delia Dumitrescu, Fredrik Nilsson, Monica Billger, Ulrika Karlsson, Hanna Landin, Pablo Miranda, and Karin Hedlund | Courtesy Malgorzata Zbomska

Future Cities Laboratory | Cognitive Design Computing
ETH Zurich, Switzerland + National Research Foundation Singapore, Singapore | Gerhard Schmitt, Reinhard König, Katja Knecht, Kateryna Korovieva, and Yufan Mao | Courtesy Gerhard Schmitt

Gramazio Kohler Research | Gradual Assemblies
ETH Zurich, Zurich, Switzerland + Istituto Svizzero + dlab + Gruner | Courtesy Esther Lombardini

Gramazio Kohler Research | Spatial Timber Assemblies
ETH Zurich, Zurich, Switzerland + dlab + Nest | Courtesy Esther Lombardini

Craz University of Technology | Dynamic Shaping
Cruz, Brazil | Institute of Architecture and Media | Renate Weissenboeck | Courtesy Renate Weissenboeck

Hong Kong Polytechnic University | Inno Bubbles
Hong Kong, People's Republic of China + Foshan 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-IUL, 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 | I.T.CODE Laboratory research projects
Haifa, Israel | Michael Weizmann, Arielle Blonder, Guy Auzan, Yasha Jacob Grobman | Courtesy Yasha Jacob Grobman

Pablo Zamorano research | Expandable Surface System, Water Fields
London, United Kingdom | Pablo Esteban Zamorano, Jacob Birk, Nache Mann, Marcos Cardenas | Courtesy Pablo Esteban Zamorano

Penn State College Stuckeman Centre for Design Computing | NASA 3D-Printed Habitat Challenge
State College, Pennsylvania | Courtesy Jose 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, Laboratorio Modelos 3D e Fabricação Digital + LabIT + Science Park UFRJ/collaborative 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 Plotnikov, Tibor Goldschwendt | Courtesy Gerhard Schubert

Technische Universität Delft | Technology Design Informatics
Delft, Netherlands | Wrocław University of Science and Technology, Wrocław, Poland | Sander Asut, Frits Gouwerot, Jerzy Latka, TU Delft + Wrocław students | Courtesy Sander Asut

Technische Universität Delft | Doubleface 2.0
Delft, Netherlands | Chair for Design Informatics, Chair for Building Physics & Services, Michela Turin, Martin Tempelink, Todor Cosmatar, Sevil Sanyildiz, Peter Lucarelli | Courtesy Michela Turin and Sevil Sanyildiz

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 + Kunsthochschule 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 Cuo, 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 | Odyseas Kontovouris and Faculty students | Courtesy Odyseas Kontovouris

University of Kentucky | Resonance House
Lexington, Kentucky | Courtesy Gregory Luhn

University of Liverpool | Iterative Agent Based Design
Liverpool, United Kingdom | Leyla Deniz, Tuba Kocaturk | Courtesy Tuba Kocaturk

University of Melbourne | Mould Racing
Melbourne, Australia | Stanislaw Roudawski, Alexander Holland, Julian Rutten | Courtesy Stanislaw Roudawski

University of Melbourne | Pocket Pedal
Melbourne, Australia | Stanislaw Roudawski, Alexander Holland | Courtesy Stanislaw Roudawski

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, Morpholuminescences, Twist
Student teams of the faculties, Joshua Vermillion, Jason Johnson, Ludwig Vaca, Elizabeth Boone, Eric Brockmeyer, Adam Buente, Kyle Perry, Mahesh Das, Philip Beemley, Brad Rotherberg, Richard Samach, and Evan Douglas | Courtesy Joshua Vermillion

University of New South Wales | Bachelor of Computational Design projects: Participation Plus, Hextic, Interchanging
Sydney, Australia | Courtesy Verity Alexander and Daniel Yu

University of Novi Sad | Shark Skin Panels
Novi Sad, Republic of Serbia | Digital Design Centre | Bogan Tepavčević, Vesna Stoković, Marko Jovanović, Ivana Bajdarski, Marko Vučić, Dejan Mitov, and student team | Courtesy Vesna Stoković

University of Sydney | Robotic Fabrication of Acoustic Surfaces
Sydney, Australia | Dagmar Reinhardt, Dennis Cabrera, Alexander Jung, and Rod Watt | Courtesy Dagmar Reinhardt

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
Herzliya, Israel | Courtesy Eye Net

Graphisoft By Design | Season 2, Episode 2: Future Proof
Göteborg, Sweden | Foshan Architects | Courtesy Graphisoft, Len Decker, Brian Johnson

MVRDV | Parametric Design: Services for Valley
Rotterdam, Netherlands + Arup, London, United Kingdom | Courtesy Gijs Rikken

OceanCN | UrbanSMS: Paradigmatic Practices + Their Multifarious Platforms
Hong Kong, People's 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 Sópoulou architect | Summer Residence in Sithonia, Hellikidiki
London, United Kingdom | Courtesy Eva Sópoulou

Synthesis Design + Architecture | Desk and Storage System for a Private Home Office, Data Moiré, Office overview
Los Angeles, California | Courtesy Huang

Tactile Architecture – Office für Systemarchitektur | Physarum Polyccephalum 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 Bilgory

Rene van Zuuk architecten | René van Zuuk Foam-Cutting Method
Almere, Netherlands | Courtesy René van Zuuk

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

Designing Architecture for Virtual Reality for Digital Life of Avatars in the Future | Marketa Gebrian

Sound Shape Space | Karolina Kotnour

Evo Tectonics | Michal Bednář

SCAR | Dominik Císař

Carbon Fibre Bridge | Jakub Fíša

Data City | Pavel Pázelka

Heliotrop Habitat | Ondřej Pokoj

Neoplasm | Ondřej Pokoj

Transferium | Ondřej Pokoj

TweetBot | Ondřej Pokoj

Skyscraper 3.0 | Ondřej Tomáš

Skyscraper 4.0 | Ondřej Tomáš

Cze-Growing | Expo 2020 | Jakub Trčka

The Growing Architecture | Jakub Trčka

Soběstačné město | Martin Závacka

Polifunkční atletická hala a velodrom v Brně | Lucie Hanžlová, MOLAB_Atelier Achten-Paviček

D | Design Computing Models | FA CTU, FLOW

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

FRACT | Dominik Císař
relocation | Jindřich Raňá
2.Real | Jan Tůma
Space for double-reality performance-interactive scene concept
swarm_bot_concept | Dan Volák
BlockOI-Liquid Zoid | Michal Bednář
Swarm Tower | Jan Petráš
Origami Gallery | Ondřej Otyška
Metaballs ponds | Nina Peřná
Coral Tower | Petr Bláha
Tensegrity Tower | Ondřej Otyška
Walking Gallery | Nina Peřná
Art Palace Prague | Nina Hedvíc Housková

Membrane Models | Studio FLOW

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

E | Design Computing Actions, Design Computing in Practice

Monday 15.10.2018 afternoon

3D task – Molab | Jiri Vele
Bogle Architects | Jan Bogle
AED a BIM | Lucie Hanžlová
and others...

Tuesday 16.10.2018 afternoon

Virtual reality in design process | Stanislav Mosavec
The Czech Pavilion for EXPO 2020 | Jindřich Raňá, Jan Tůma, 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 Matějčková

The exhibition is connected with the students research conference Design Computing (11.10.2018), supported by the grant SVK 23/18/PS, Czech Technical University in Prague

Graphics | Martin Kral

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

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

