



National Centre of Competence  
in Research  
Digital Fabrication



The NCCR Digital Fabrication is Switzerland's initiative to lead the development and integration of digital technologies within the field of architecture.

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## Towards a Digital Building Culture

The NCCR Digital Fabrication



The National Centres of Competence in Research (NCCR) are a research instrument of the Swiss National Science Foundation.



## At the Forefront of Digital Fabrication

Initiated in 2014, the National Centre of Competence in Research (NCCR) Digital Fabrication aims to revolutionise architecture through the seamless combination of digital technologies and physical building processes. Over 40 researchers from six different disciplines collaborate to develop ground-breaking technologies for tomorrow's construction. Their research allows Switzerland to take a leading position within the global field of digital fabrication.

NCCRs are cross-disciplinary research networks funded by the Swiss National Science Foundation (SNSF). They support research in areas of strategic importance for the future of Swiss science, economy and society.

## Key Areas of Activity

### Research

The NCCR Digital Fabrication promotes cutting edge research which promises to sustainably reinforce Swiss research within the field of digital fabrication in architecture and construction.

### Education and Training

In order to prepare academics and professionals for the future, the NCCR Digital Fabrication offers education and training in digital technologies for architecture and related disciplines.

### Knowledge and Technology Transfer

The NCCR Digital Fabrication provides numerous avenues for cooperation and exchange with industry. Opportunities include supported research, workshops, seminars and collaborative projects.

### Equal Opportunities

The Equal Opportunities programme actively promotes gender equality in research, support for families and the ability for all researchers to maintain their work-life balance.

### Communications

The NCCR Digital Fabrication maintains a continuous dialogue with its stakeholders. By sharing research results and reporting on its activities, it addresses the broad public interest in architecture and technology.

## Two Main Challenges for Research

The NCCR Digital Fabrication recognises the advancement of architecture as the ultimate goal for its research. Within this frame, researchers address two Grand Challenges:



**On Site Digital Fabrication** aims to bring digital fabrication onto building sites. Researchers investigate integrated design, planning and robotic control methods, develop versatile on-site fabrication robots and examine cooperation models for man-machine and machine-machine interactions.



**Bespoke Digital Prefabrication** augments the advantages of manufacturing through the use of digital building technologies. It enables custom-designed, large-scale digital prefabrication of complex architectural elements. Researchers work at the 1:1 building scale, developing resource-efficient material systems, joining methods, design tools and computational technologies.

## Truly Interdisciplinary

To fully leverage the potential of digital fabrication, the following six disciplines intensively collaborate within the NCCR Digital Fabrication:

- **Architecture**
- **Structural Design**
- **Materials Science**
- **Computer Science**
- **Control Systems Engineering**
- **Robotics**

