



solar decathlon^{21»22} europe

WUPPERTAL GERMANY *...goes urban!*



go urban with us!

Speaker:
Lubna Sukhni, M.Eng. Arch

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Solar Decathlon Europe 21/22





Bergische Universität Wuppertal

Geisendörfer Architekten,
Würzburg 2019-21

FH- Würzburg Schweinfurt,
Würzburg 2018-20

Praktikum Dechsner Architekten Ingenieure
GmbH, Würzburg 2017

Graduation ceremony, GJU
Amman 2018

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Europe's cities are already built!

- Need for action to optimize the existing building stock
- Construction industry has high share of raw material and energy consumption:
 - 30% of global CO₂ emissions
 - 40% of global resource consumption
- Solution: Energetic renovation of the existing building stock has less of an impact on the environment than new construction activities



Wuppertal © Malte Hefer

Urban energy transition



What does that mean?

- 40% of the EU's energy consumption is accounted by existing building stock
- Approximately 75% of the buildings in the EU are not energy efficient
- The German government aims to achieve climate-neutrality of the building stock by 2050

Solar Decathlon Europe 21/22

what is the sde21/22?

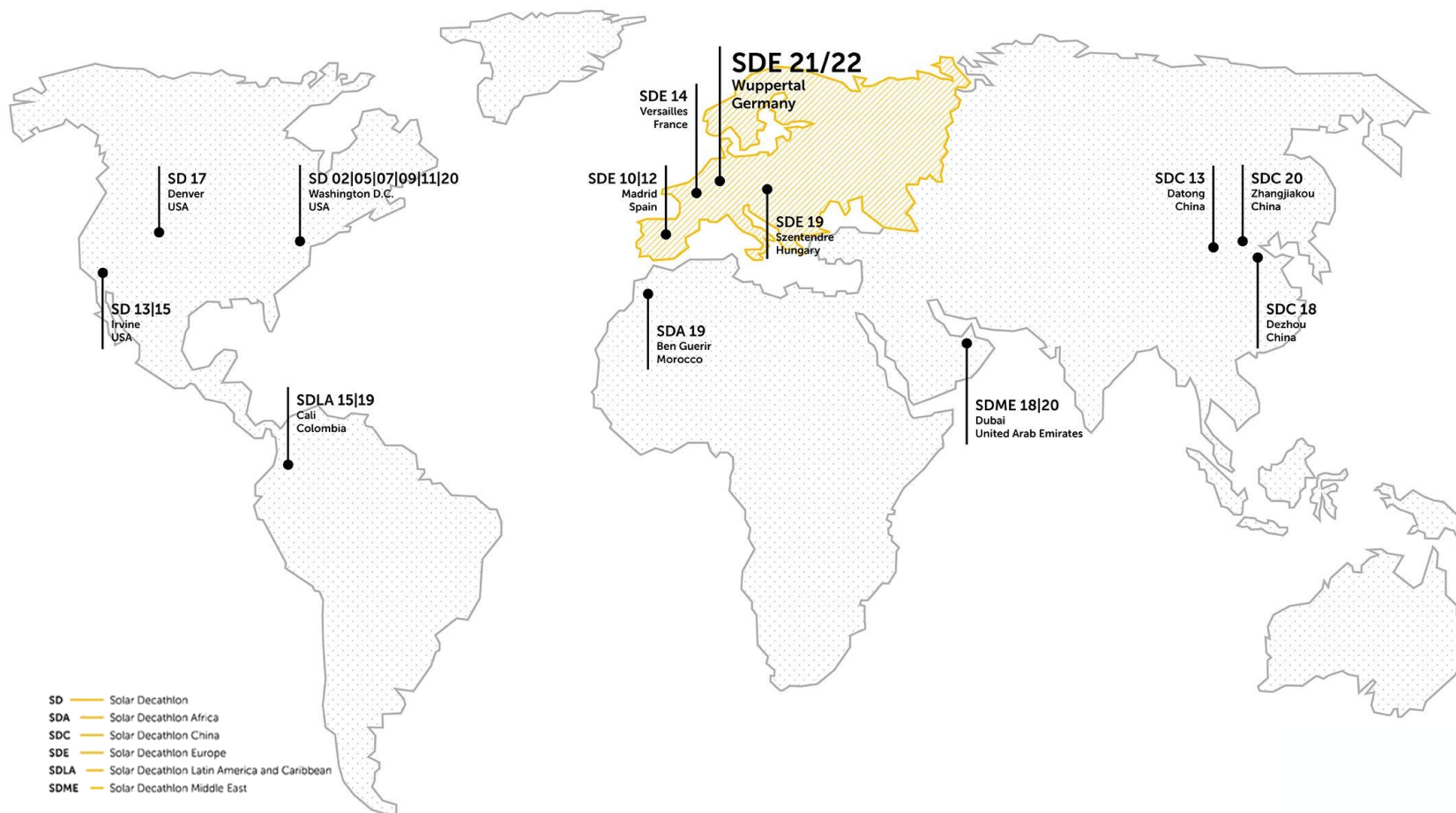
... summary:

- Competition for international universities about sustainable housing and living in the city
- 18 young, interdisciplinary teams from eleven countries compete in a decathlon
- Task: Design, build and operate solar houses with neutral or even positive energy balance
- Aspiration: Technical brilliance, livable housing and socio-economic adequacy
- Event phase June 2022: Evaluation in ten contests - from Architecture to Innovation to Urban Mobility



Solar Decathlon community

An idea goes around the world which started in the USA 2002



Solar Decathlon Europe



SDE Overview

- 2010 in Madrid, Spain
- 2012 in Madrid, Spain
- 2014 in Versailles, France
- 2019 in Szentendre, Hungary

... 2022 in Wuppertal, Germany!

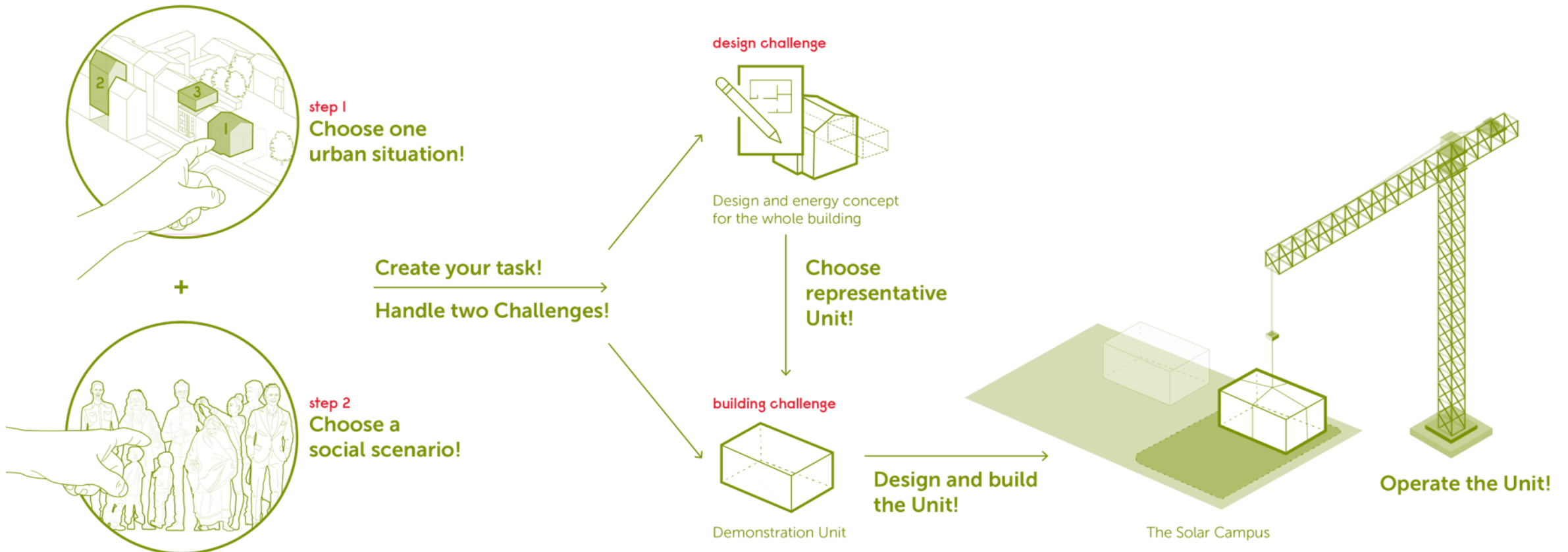
© SDE14 | Valeria Anzolin

SDE 2010, Madrid: Wuppertal participated

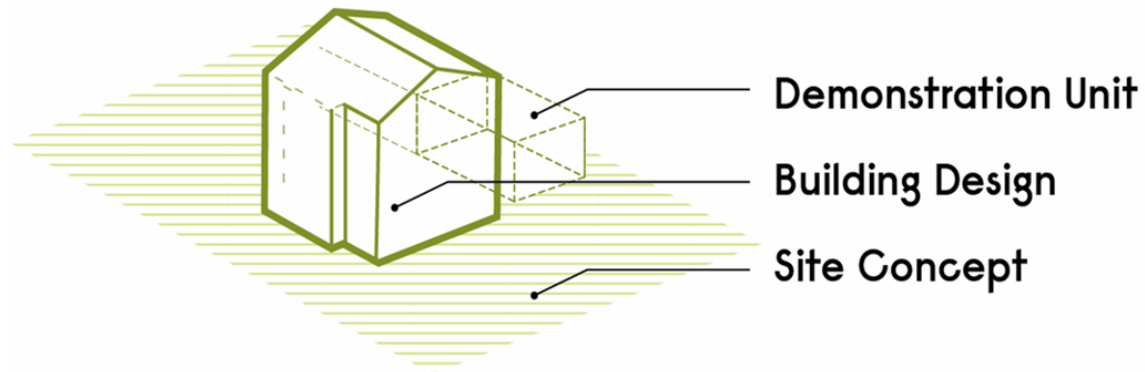


The competition

Our motto: design - build - operate



design- & building challenge



design - build - operate:

- Design Challenge: Conception of the entire building in its urban context including energy concept
- Building Challenge: Building of a representative residential unit from this building ("demonstrator") in a scale of 1:1.
- Demonstrator specifications: max. 10x10 meters, 7 meters high, two storeys.
- Installation of the demonstrator during the 2022 event phase on the Solar Campus in Wuppertal.

The venue: welcome to Wuppertal



Wuppertal and the mirke district

- Central location in North Rhine-Westphalia, between the Rhine and Ruhr
- Largest industrial, economic, educational and cultural centre in the 'Bergisches Land' region
- Over 360,000 inhabitants
- Stands for industrialization, structural change as well as bottom-up social transformation

Wuppertaler Schwebebahn © Malte Reiter

representative european district



Mirke district

- Architectural background of the competition
- Venue in June 2022 (Solar Campus)
- Subject of the sde21 accompanying research

Neue Nordstraße, Mirker Quartier © SDE21/22

Three urban situations



Options selection :

- Renovation & extension
- Closing gaps
- Renovation & staking new storey

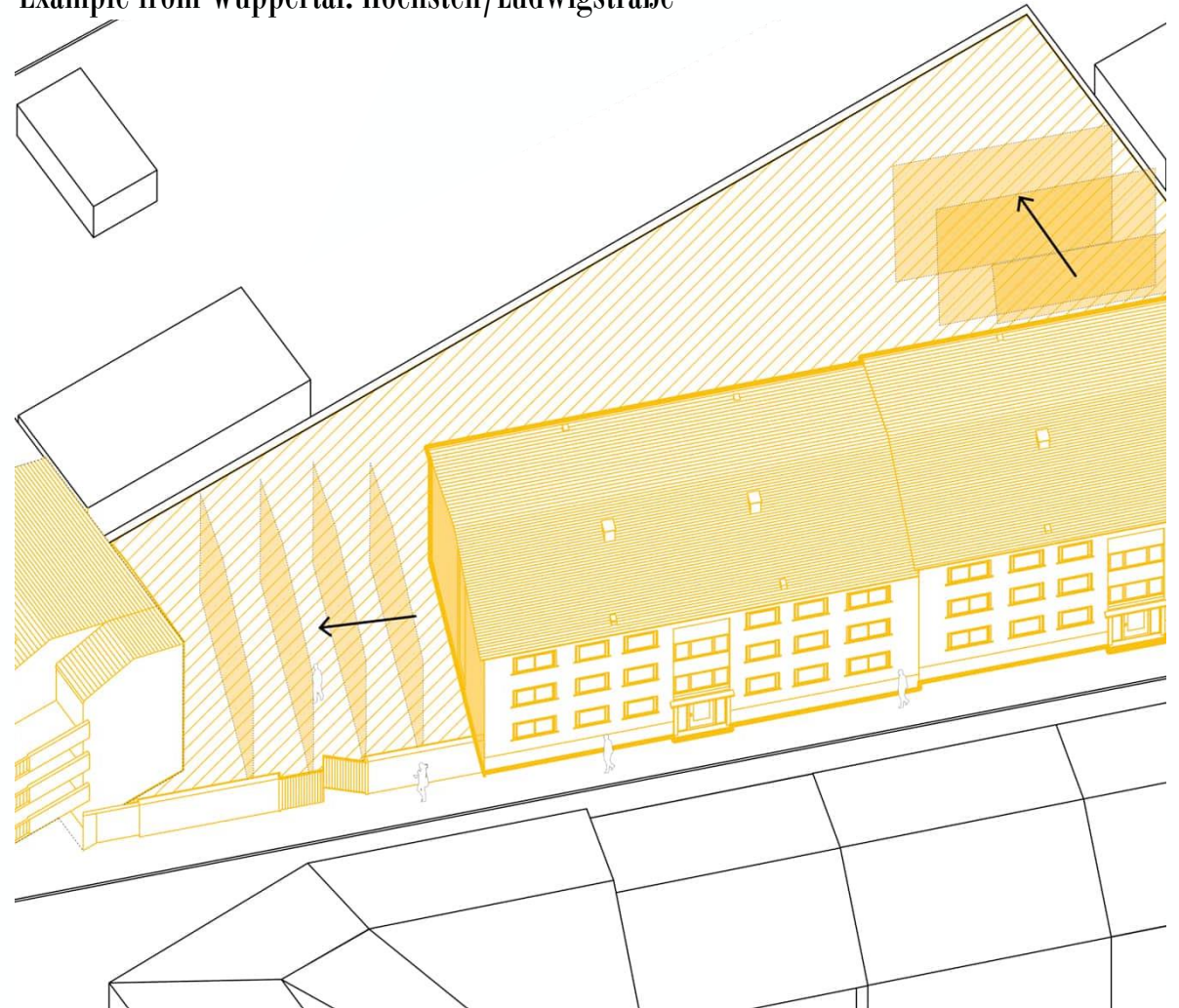
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Urban Situation 1 : Renovation & extension



Höchstes, Ludwigstraße, Wuppertal © SDE 21/22

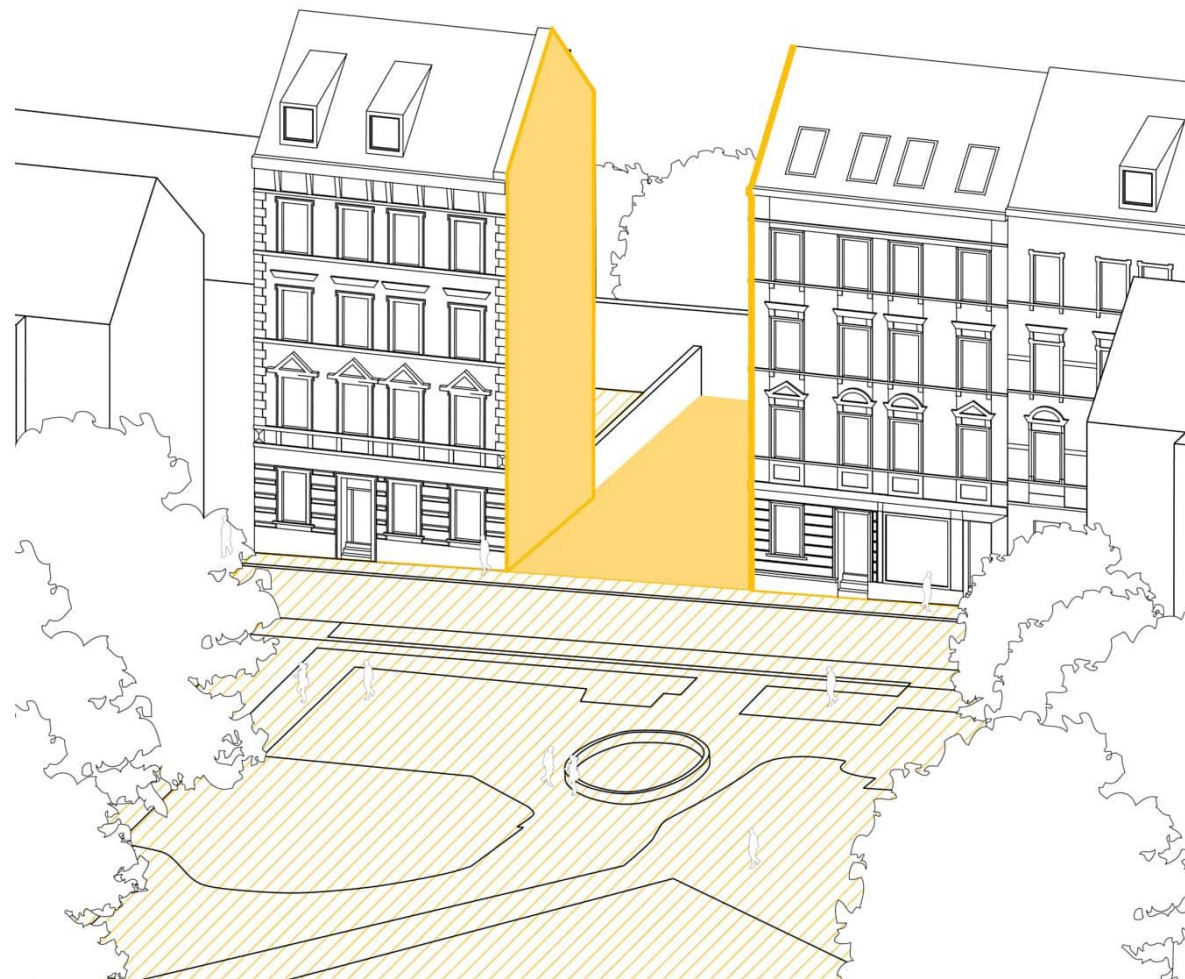
Example from Wuppertal: Höchsten/Ludwigstraße



Urban Situation 2: Closing gaps



Example from Wuppertal: Bandstraße

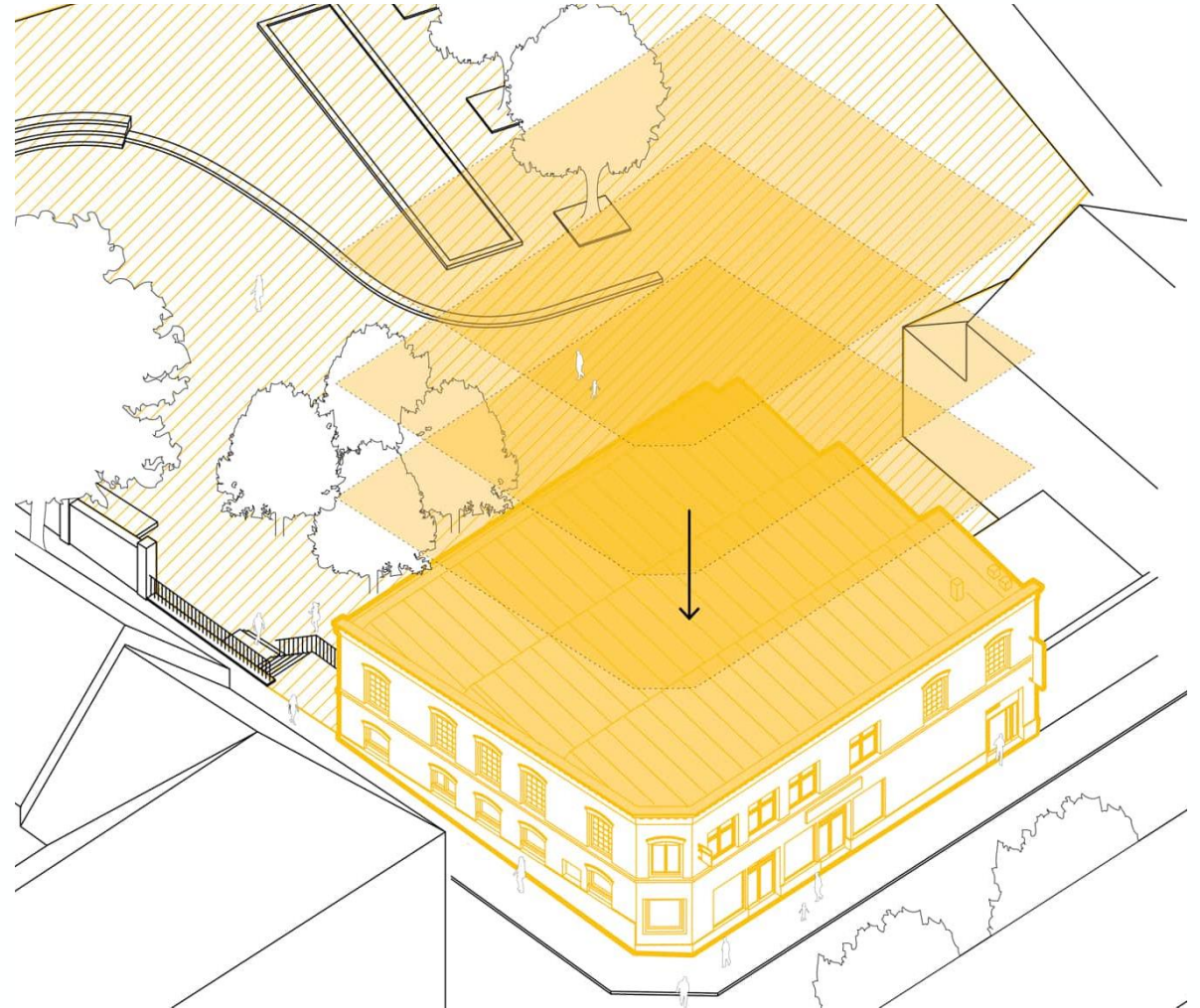


Urban Situation 3: Renovation & extension:

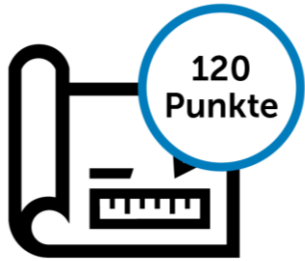


Wiesenstrasse, Wuppertal © SDE 21/22

Example from Wuppertal: Café ADA, Wiesenstraße



The decathlon: 10 contests



120
Punkte

1 • architecture



120
Punkte

2 • engineering
& construction



120
Punkte

3 • energy
performance



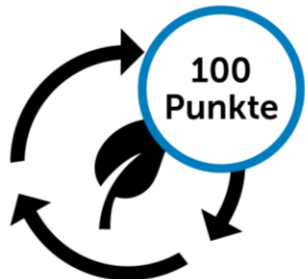
100
Punkte

4 • affordability
& viability



80
Punkte

5 • communication,
education & social
awareness



100
Punkte

6 • sustainability



100
Punkte

7 • comfort



80
Punkte

8 • house functioning



80
Punkte

9 • urban mobility



100
Punkte

10 • innovation

Awards



What will be awarded?

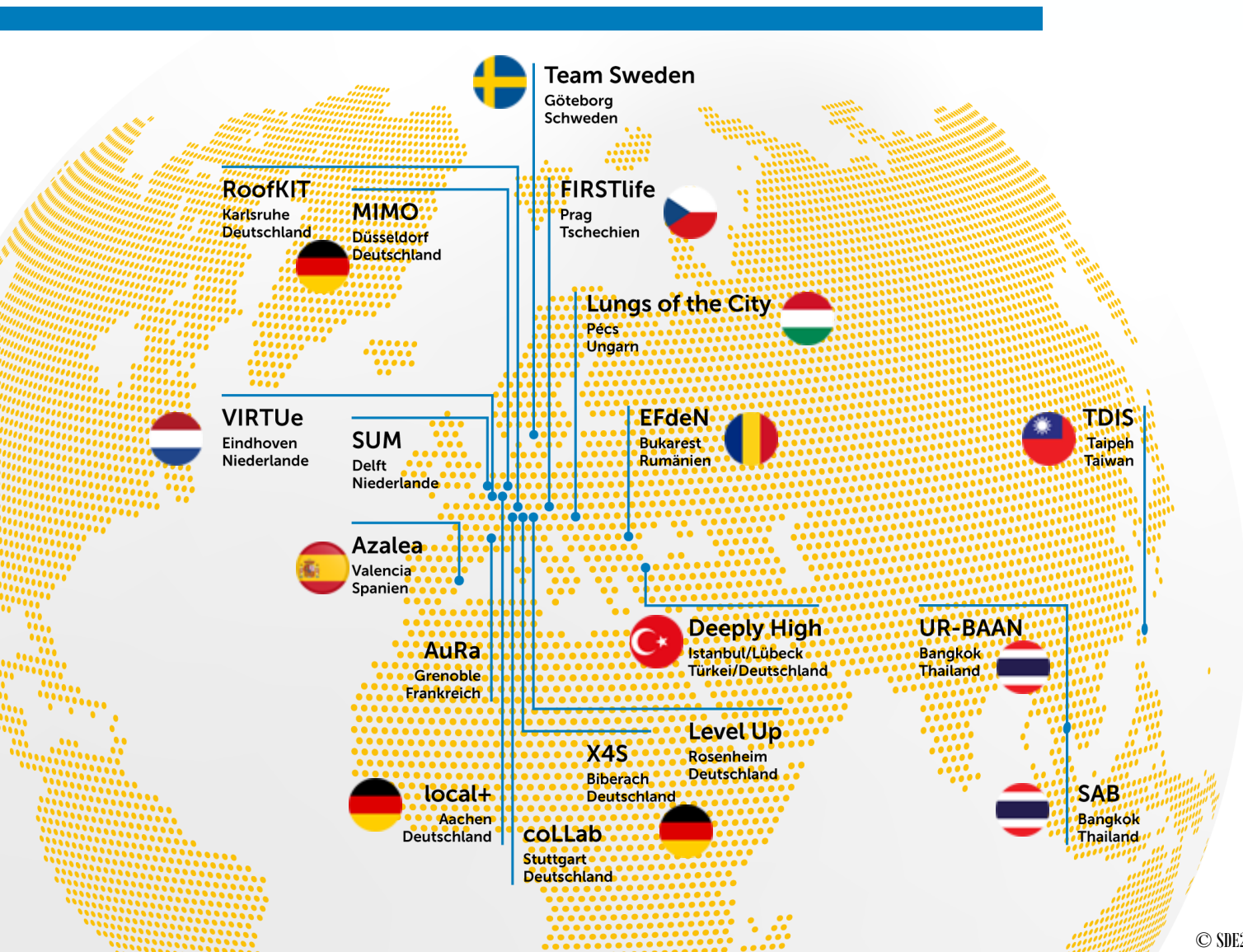
- One award for each of the 10 disciplines
- Award for the overall winning team
- 10 'out of contest awards'

All award ceremonies will take place over the course of two weeks during the event phase in June 2022

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SDE21/22 teams overview

18 Teams from 11 Countries



© SDE21/22

Building challenge: Closing gaps



Lungs of the City, Pécs



TDIS, Taipei



Azalea, Valencia

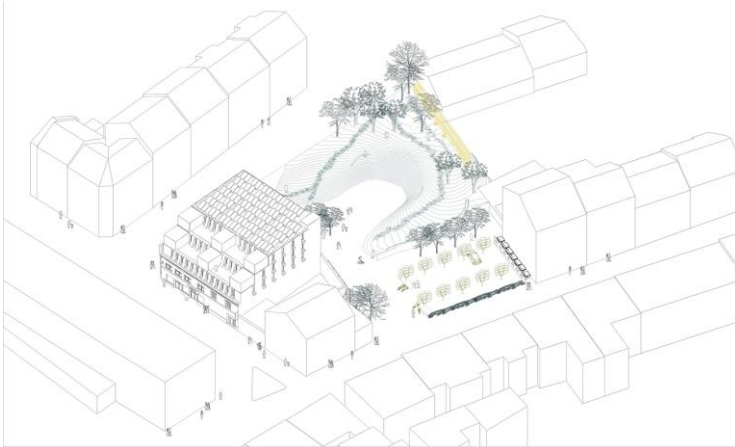


local+, Wuppertal



SAB, Wuppertal

Building challenge: Renovation & addition of storey



EFdeN, Wuppertal



MIMO, Wuppertal



RoofKIT, Wuppertal



AuRA, Col de l'Arzelier (France)



X4S, Wuppertal

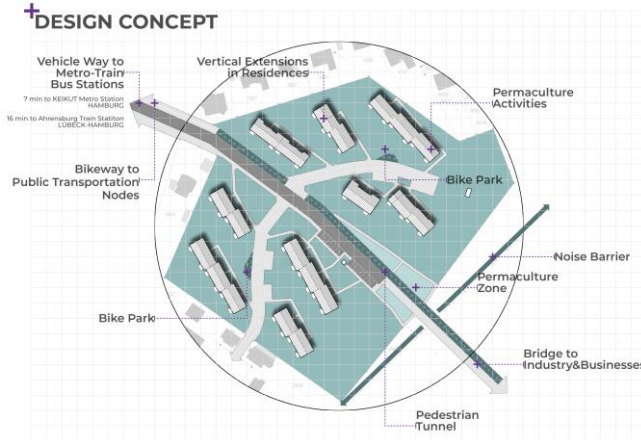


Team Sweden, Göteborg

Building challenge: Renovation & addition of storey



coLLab, Stuttgart



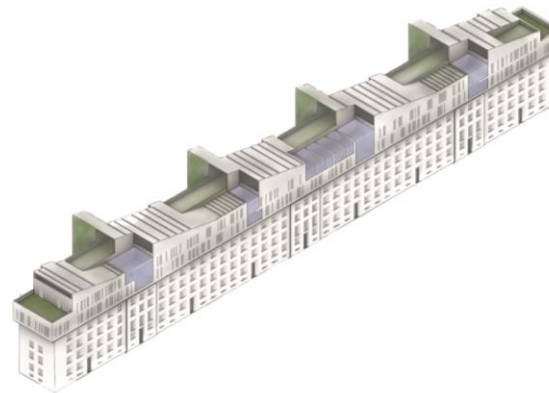
Deeply High, Großhansdorf



FIRSTlife, Prag



UR-BAAN, Bangkok



Level Up, Nürnberg



SUM, Den Haag

First house is already built! VIRTUe



The main event in June 2022

be there live in wuppertal!

- 10. – 26. June 2022
- Solar Campus: 22.000 square meters competition site at Mirke district
- 18 fully functional, one to two storey residential buildings
- Colorful programm
- Target groups: professionals & general public
- Free of charge and publicly accessible



The event



... for the teams:

- Highlight after 2 years of work
- Set-up, operation and presentation of the Demonstrators
- Practical test and feedback: measurements and evaluations
- Competition decision and award ceremonies
- Networking and international exchange

The event



... for visitors:

- Visits of all 18 houses, guided tours by the teams themselves
- Experiencing innovation and pioneering spirit live
- Lectures and events for professionals
- Cultural program with concerts and evening events
- Inspiration and exchange

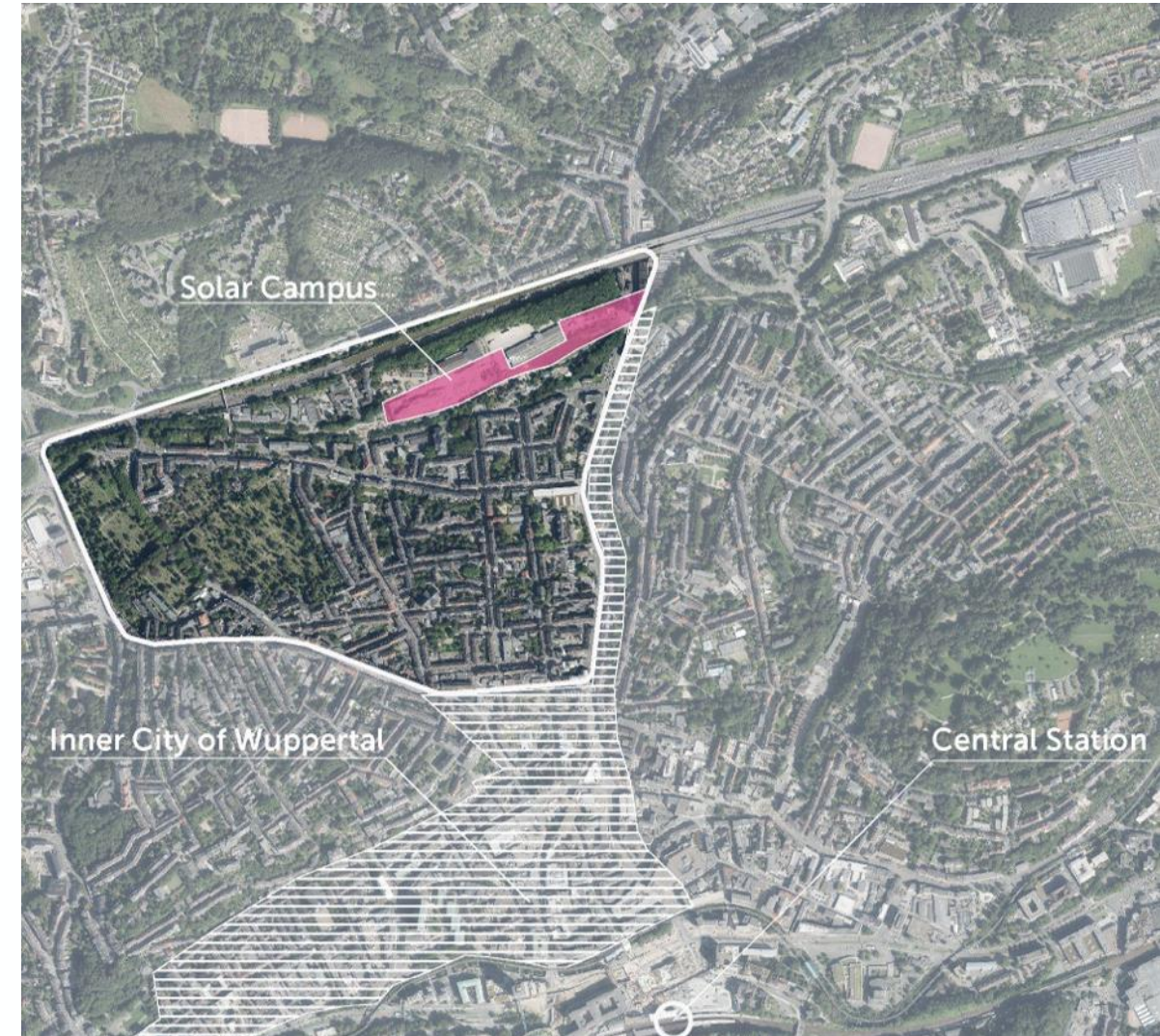
... for businesses:

- Presenting solutions for sustainable (re)construction of cities to around 150,000 visitors
- Being part of a major international project with event spaces in the most central location Wuppertal
- Benefit from the immense media attention

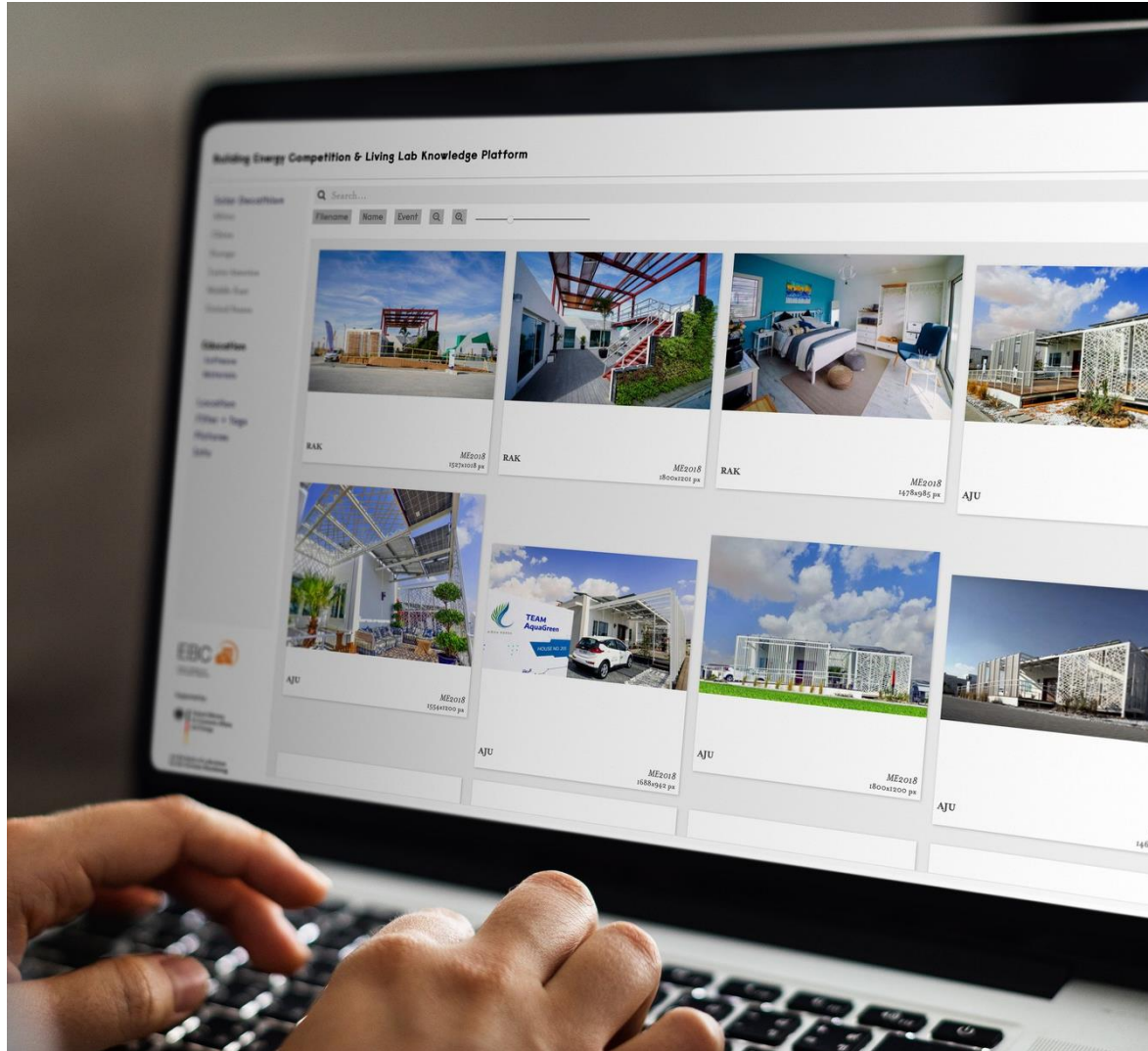
The research continues

... beyond the sde21: LivingLab NRW

- 8 demonstrators remain in Wuppertal
- Research facility on the Solar Campus funded by the State of NRW (MWIDE)
- Operated for 39 months starting 1st July 2022
- Cooperation of 5 universities in a research college
- Visitor and networking concept



New: Solar decathlon knowledge platform



Collected know-how at one click

- Free online database
- All data from all previous and future competitions and living labs on one platform
- Project manuals, drawings, images, scorings and monitoring
- Target: Central archiving and research basis

Board of Directors

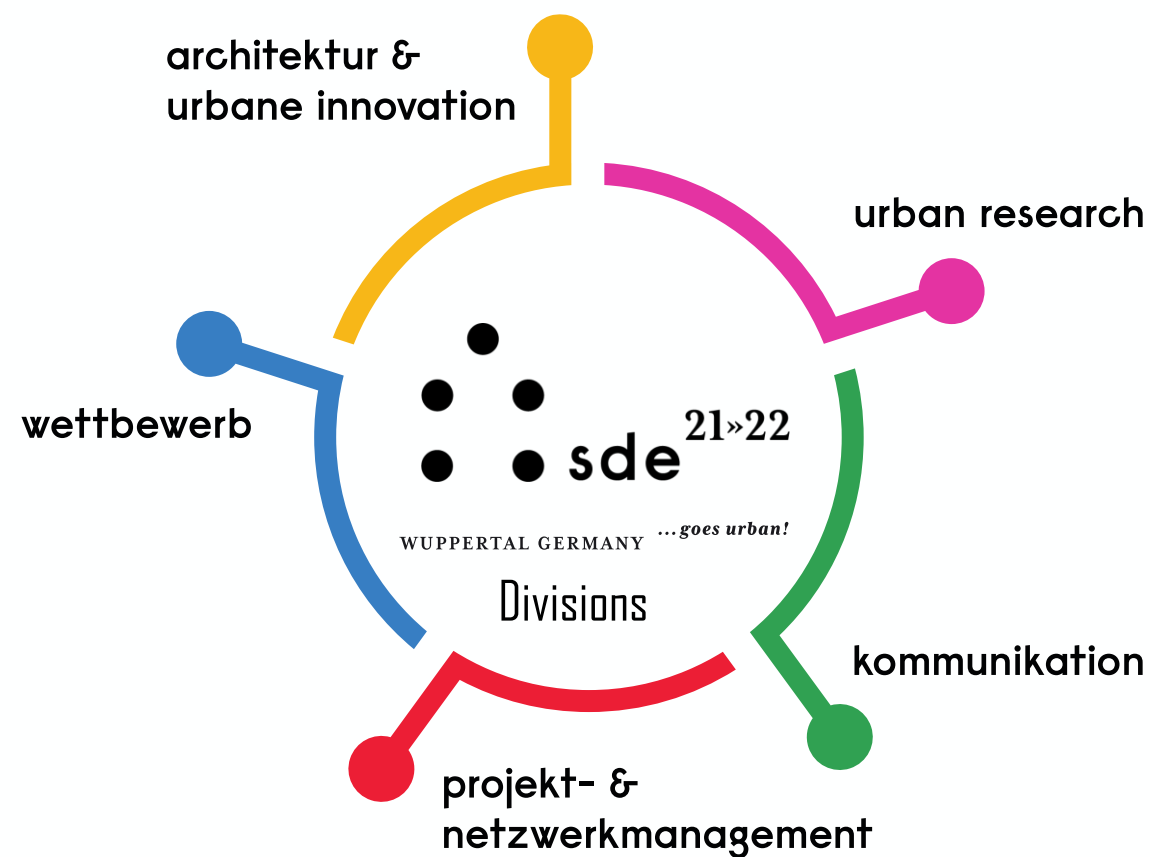


Prof Dr-Ing Karsten Voss,
Competition Director

Dr Daniel Lorberg,
Project Director &
Director for Economics & Social Sciences

Dr-Ing Katharina Simon,
Director and Head of Architecture & urban Innovation

The sde21 team. Project team of the BUW



Advisory board



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 [Solar Decathlon Europe 21 \(SDE21\)](https://www.linkedin.com/company/Solar-Decathlon-Europe-21-(SDE21))

 [solar decathlon europe 21 wuppertal](https://www.youtube.com/channel/UCsukhni)



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