MA SEMINAR

gt+ke

Lehrende
LBA Daniel Lago
Transsolar KlimaEngineering

Termine
Thursdays 14-17 Uhr
9 Sessions

Kick-off
Thursday April 25th, 2pm
ABK Plaza, Flag Pavillon

Sprache
English

Anmeldung
by e-mail Tuesday, 16.04.2024
climatedesigntools@transsolar.com

More Info
portal.abk-stuttgart.de
gt.abk-stuttgart.de

MA-Seminar Climate Design Tools
Course outline

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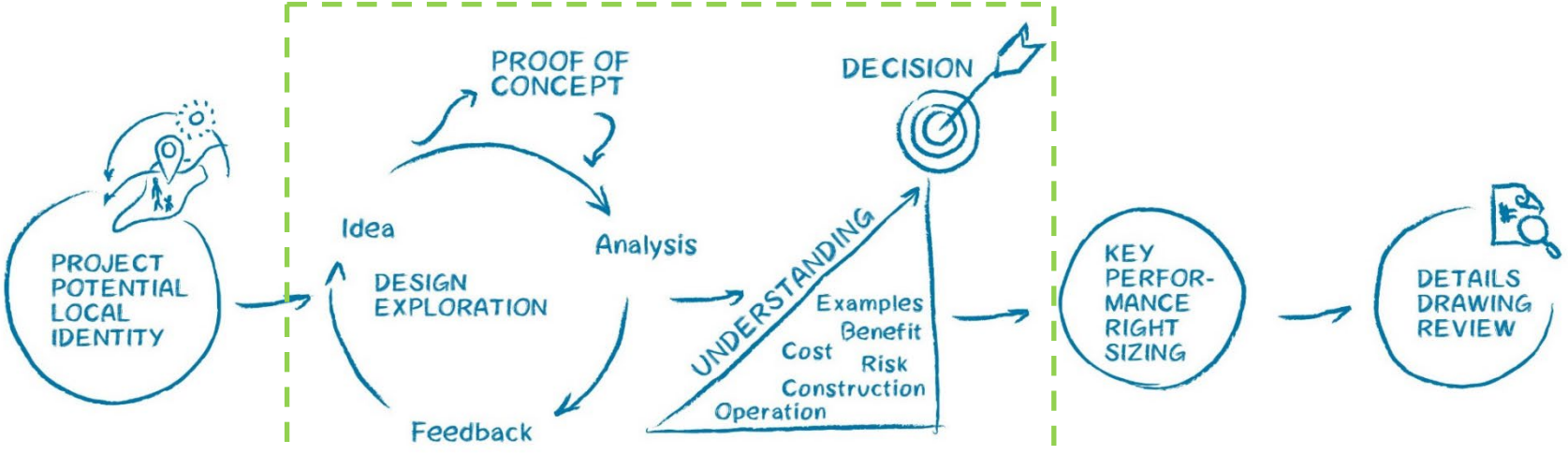
gebäudetechnologie + klimagerechtes entwerfen

Session	When?	What?
Session 01	25/04 (14:00 to 17:00)	Introduction Daylight and Radiation
Session 02	02/05 (14:00 to 17:00)	Software Setup & Troubleshooting
Session 03	16/05 (14:00 to 17:00)	Introduction to Rhino and Grasshopper
Session 04	06/06 (14:00 to 17:00)	Computational Design Tutorials & Hands-on
Session 05	13/06 (14:00 to 17:00)	Computational Design Tutorials & Hands-on
Session 06	20/06 (14:00 to 17:00)	Computational Design Tutorials & Hands-on
Session 07	27/06 (14:00 to 17:00)	Capstone Project - Introduction
Session 08	04/07 (14:00 to 17:00)	Capstone Project – Mid review
Session 09	11/07 (14:00 to 17:00)	Capstone Project – Final review

Source: Transsolar KlimaEngineering

MA-Seminar Climate Design Tools
Performance Driven Design



Optimize and advocate for your design successfully

Source: Transsolar KlimaEngineering

MA-Seminar Climate Design Tools
Design for Quality of Comfort

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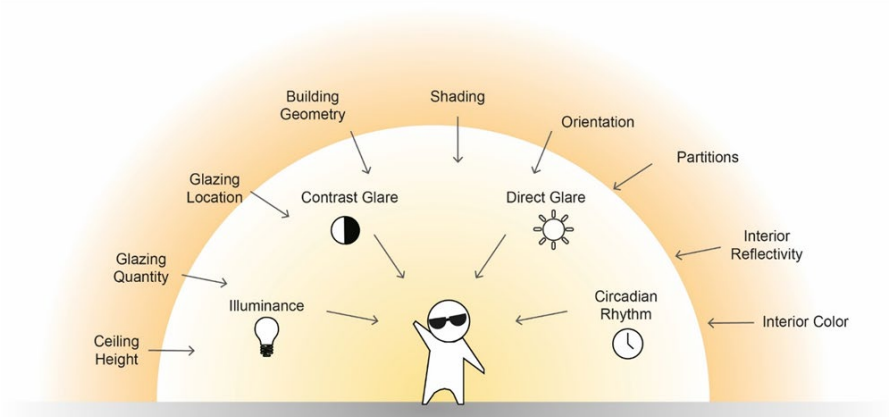
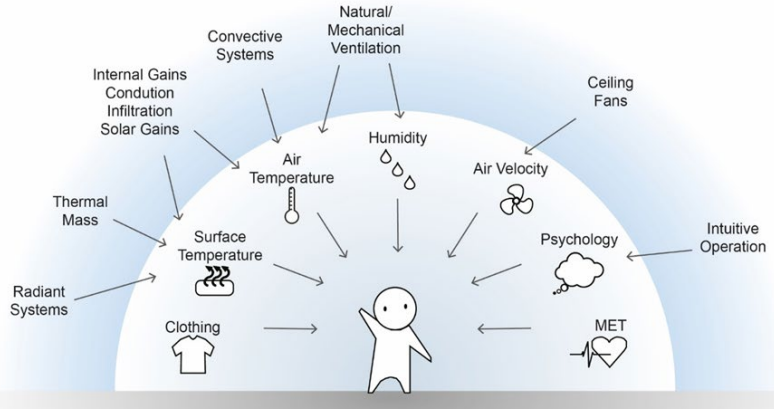
VISUAL COMFORT



THERMAL COMFORT

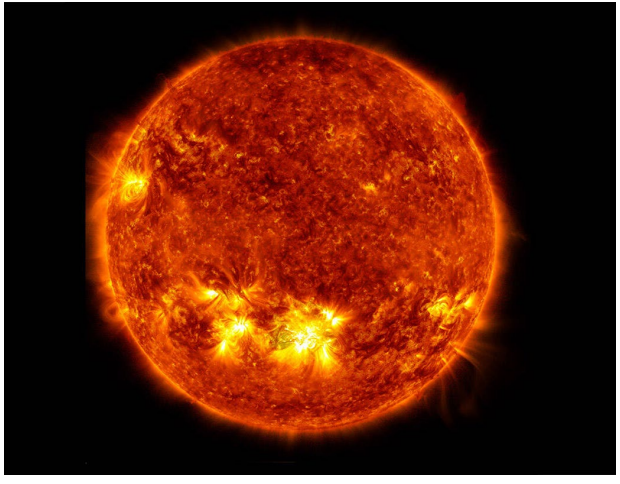


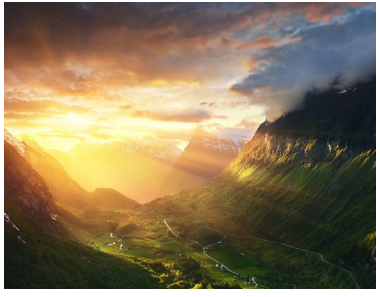
Subjective and objective influencing factors

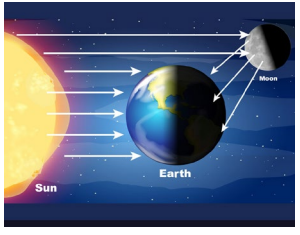
Source: Transsolar KlimaEngineering

Introduction to Daylight

Light sources



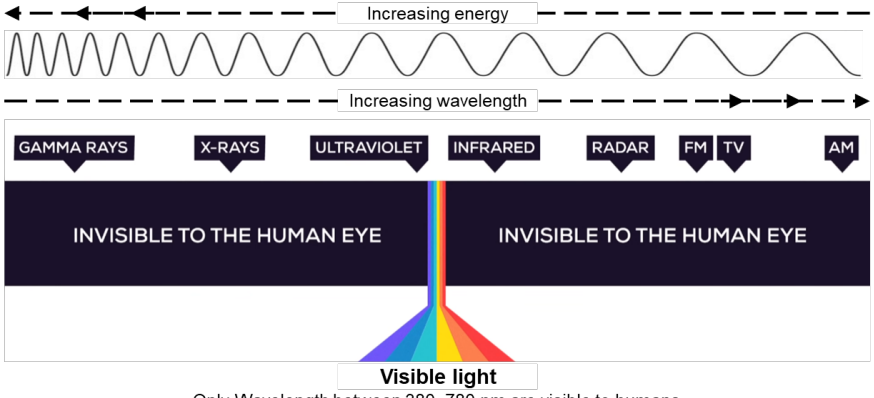




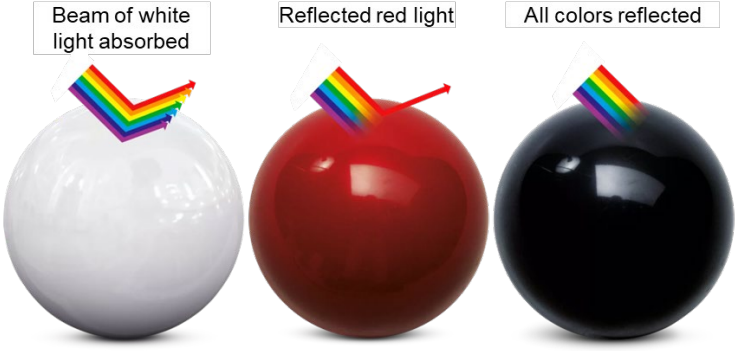
Source: Transsolar KlimaEngineering

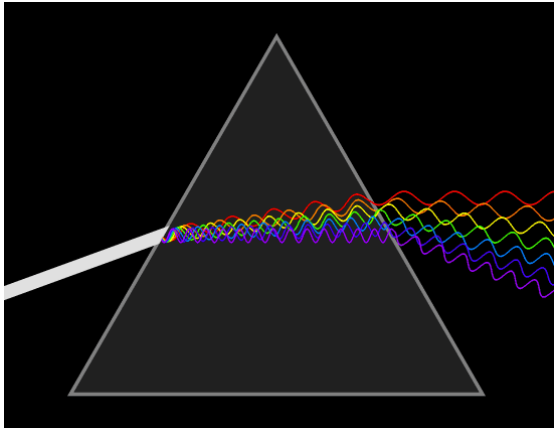
Introduction to Daylight

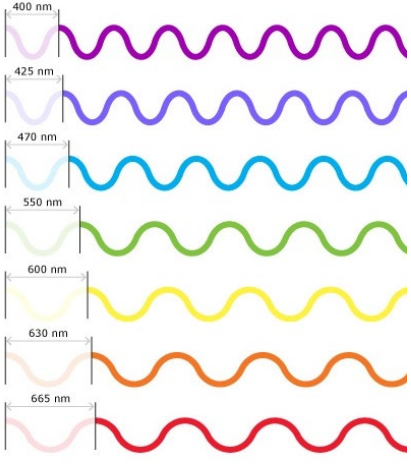
Physics of light



Only Wavelength between 380 -780 nm are visible to humans







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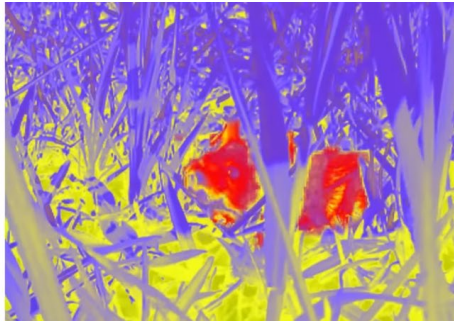
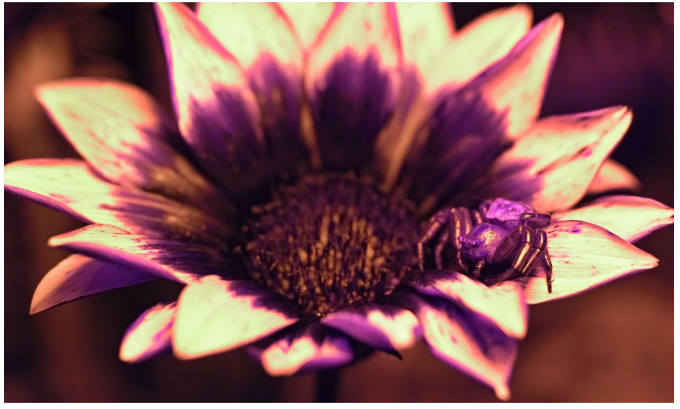
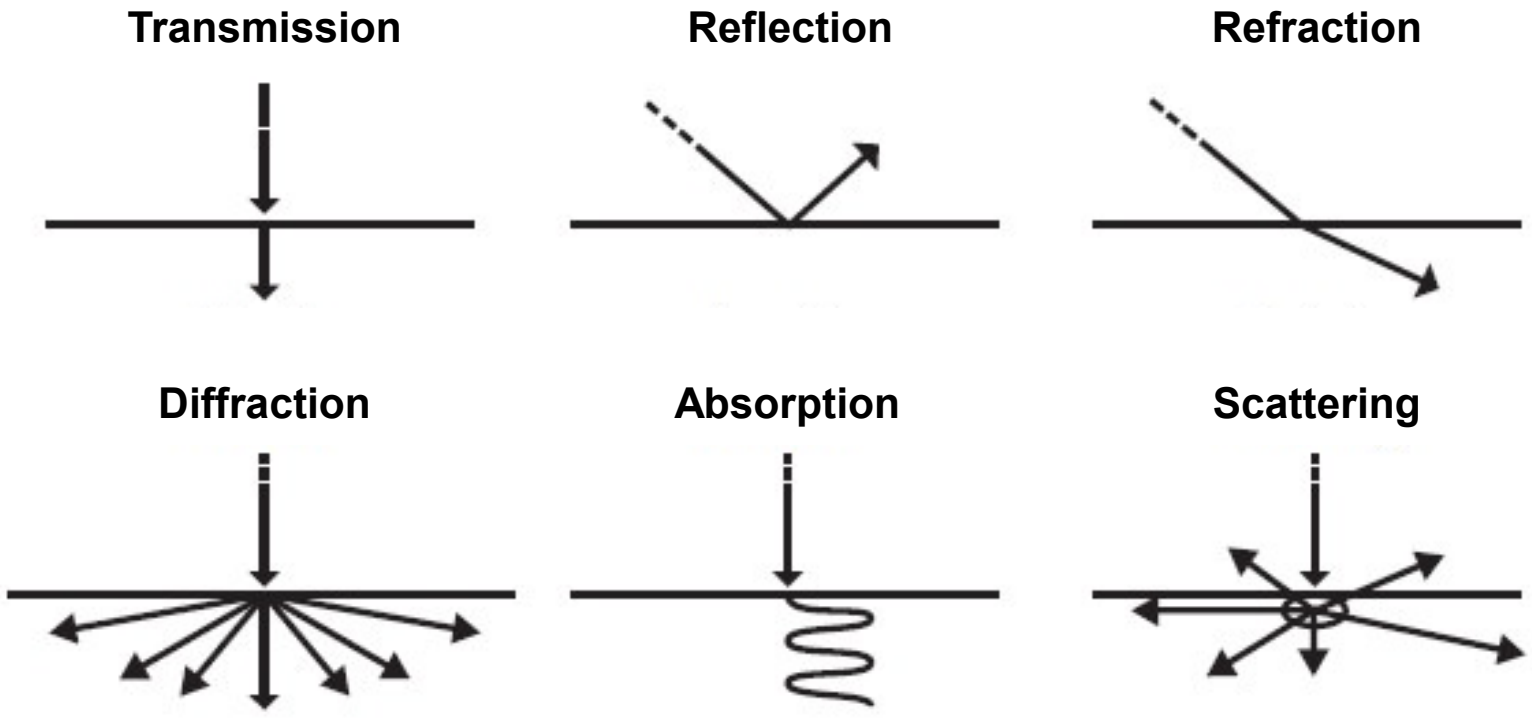




Source: Transsolar KlimaEngineering

Introduction to Daylight

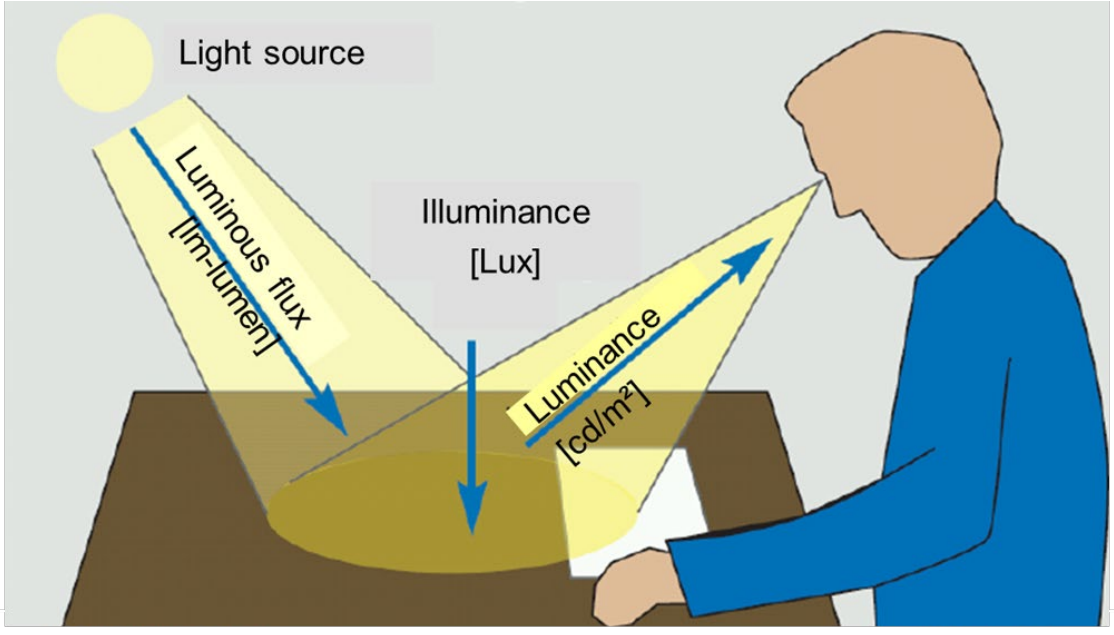
Light behaviors



Source: Transsolar KlimaEngineering

How to measure light?

Definitions, metrics and tools



IL-LUMINANCE
WHAT THE OBJECT
RECEIVES

LUMINANCE
WHAT THE EYE
RECEIVES

Source: Transsolar KlimaEngineering

How to measure light?

Digital tools and workflows

User interface

Rhinoceros 3D
Grasshopper
Ladybug & Honeybee

Validated engine

Radiance
Daylight simulation engine for static daylight analysis

Source: Transsolar KlimaEngineering

Daylight-Radiation 3D-model with Rh

Preparation, simplification, materials

Rhinoceros®

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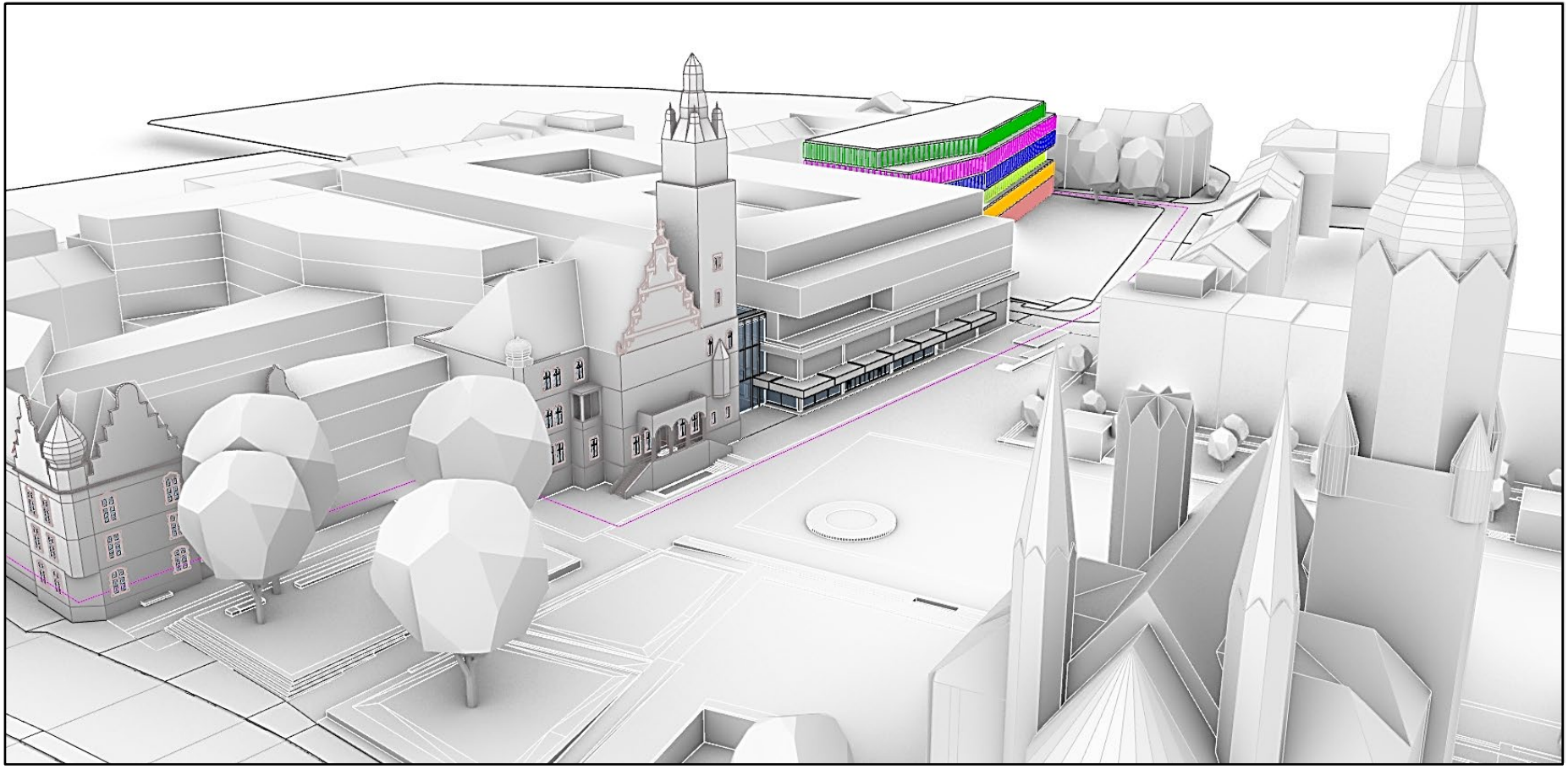

Source: Transsolar KlimaEngineering

Daylight-Radiation 3D-model with Rh

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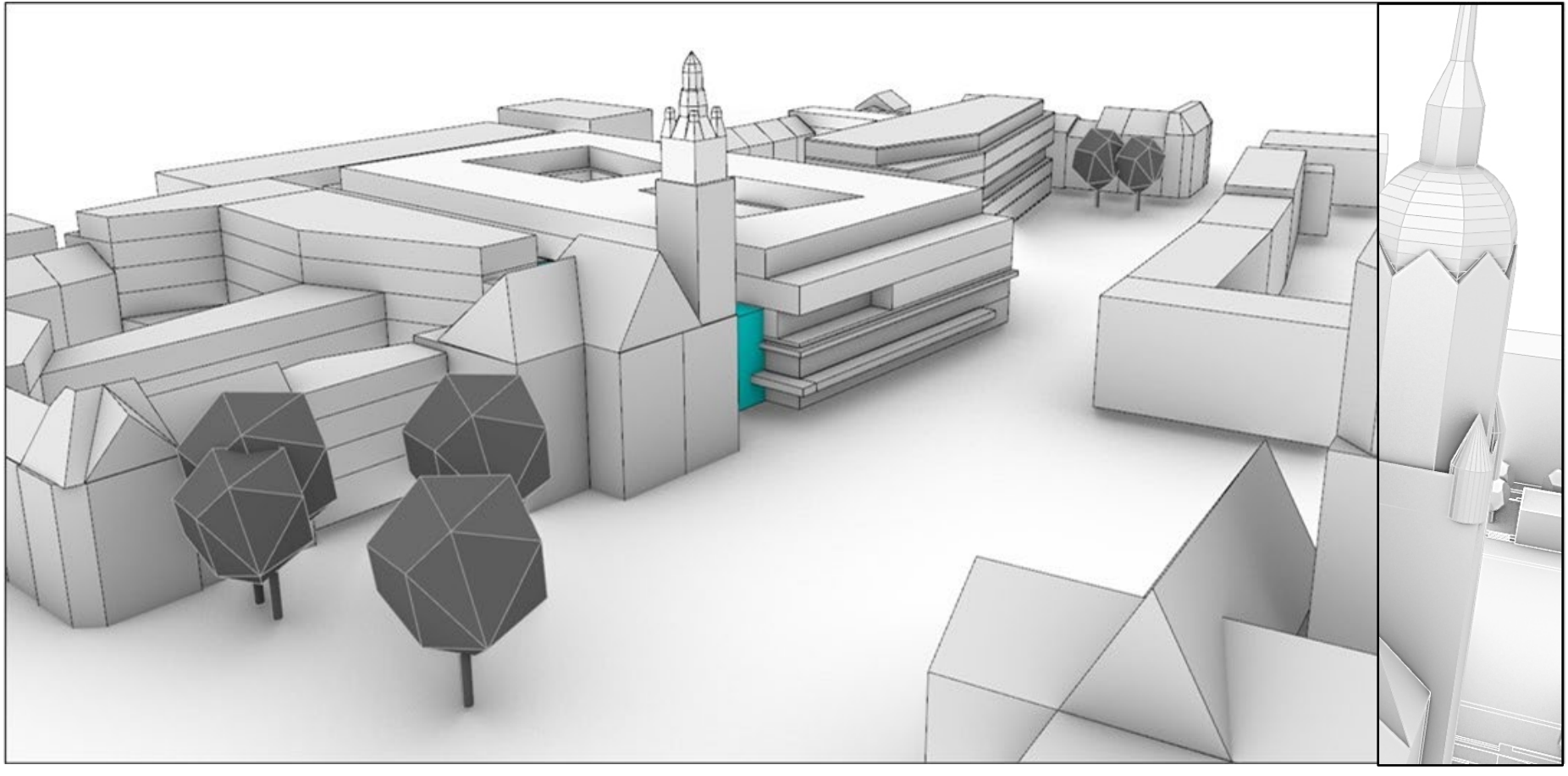
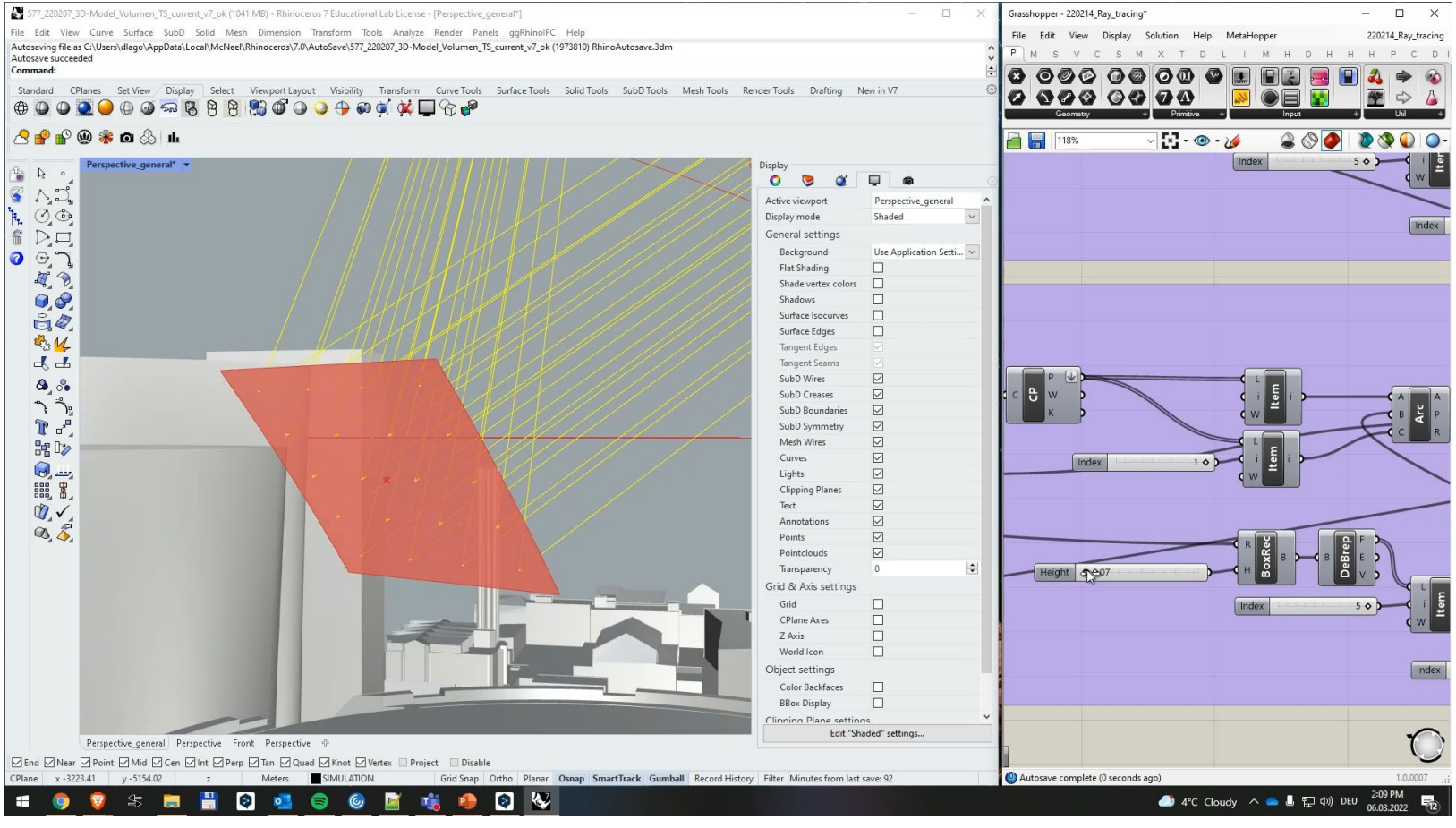


Source: Transsolar KlimaEngineering

Rhino + Grasshopper

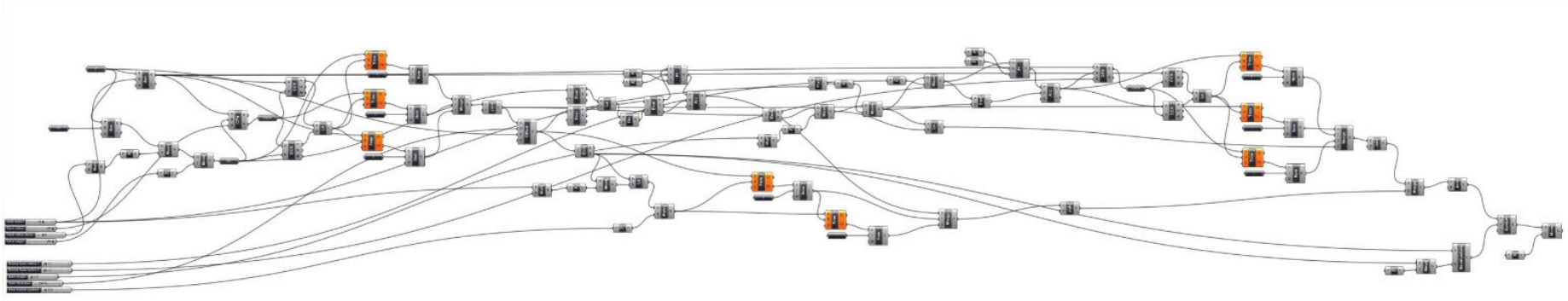
Parametrization, visual programming



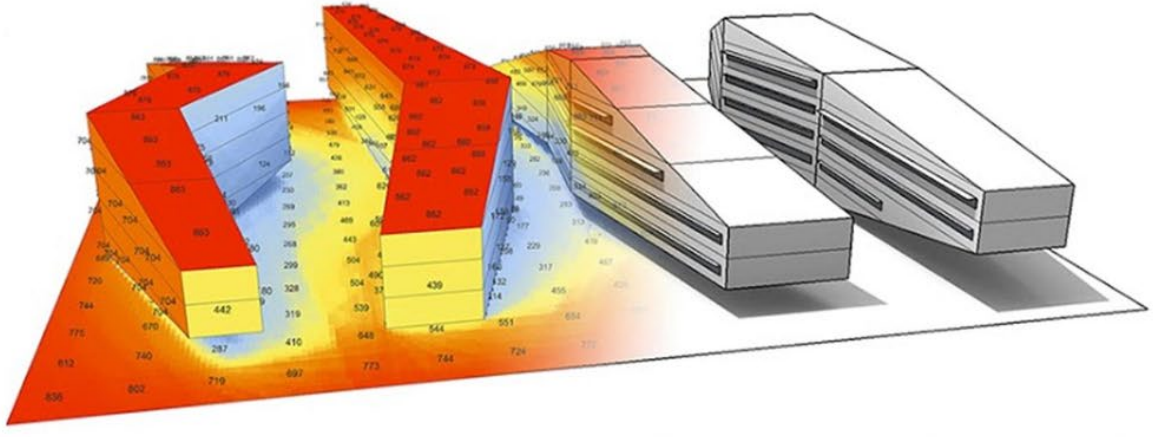
Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

Solar Radiation studies



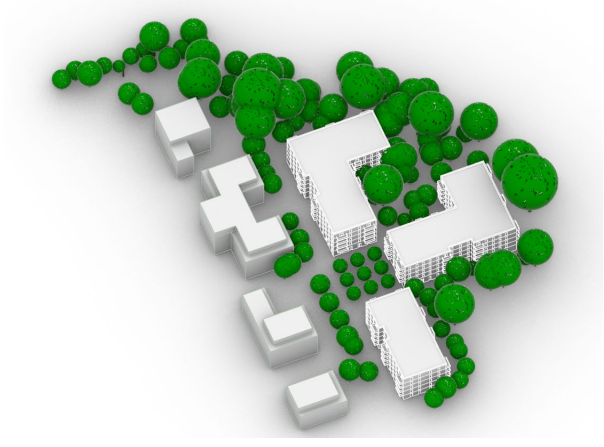
Façade Radiation Analysis

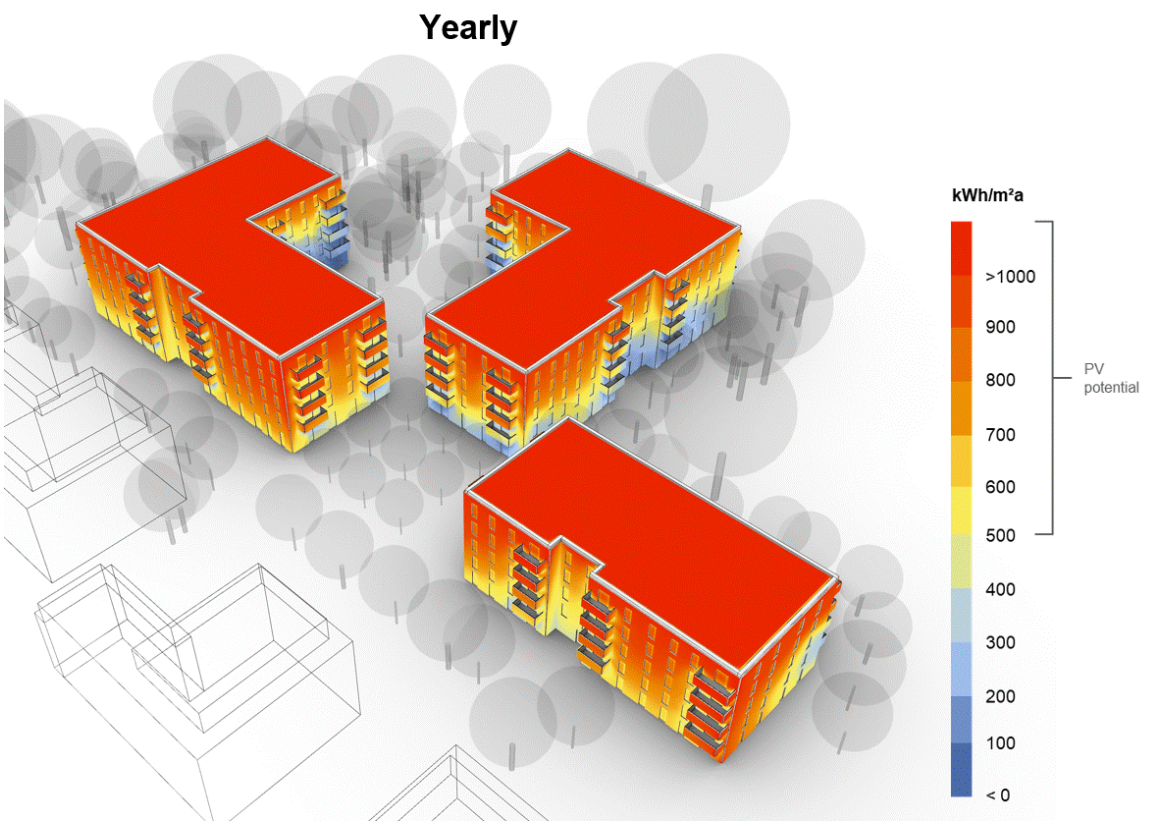


Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

Solar Radiation studies and View from the Sun

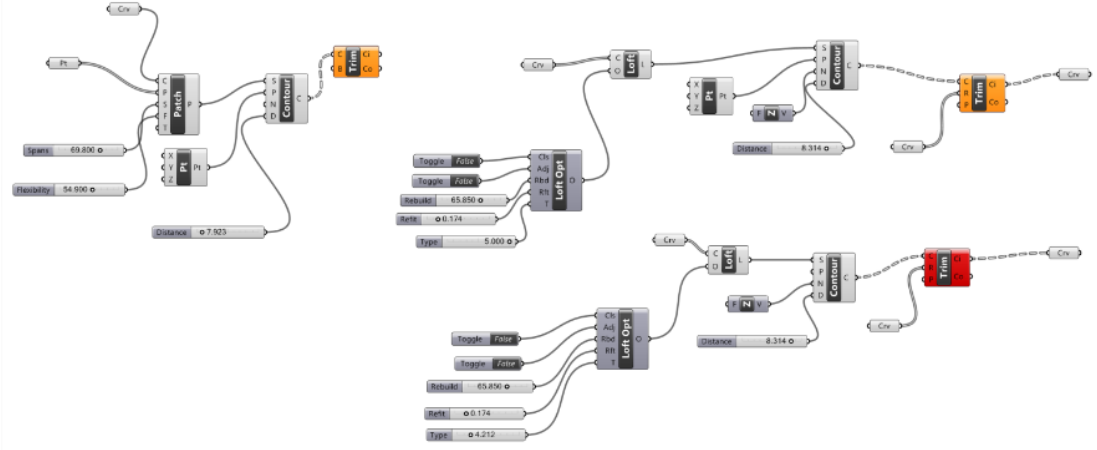


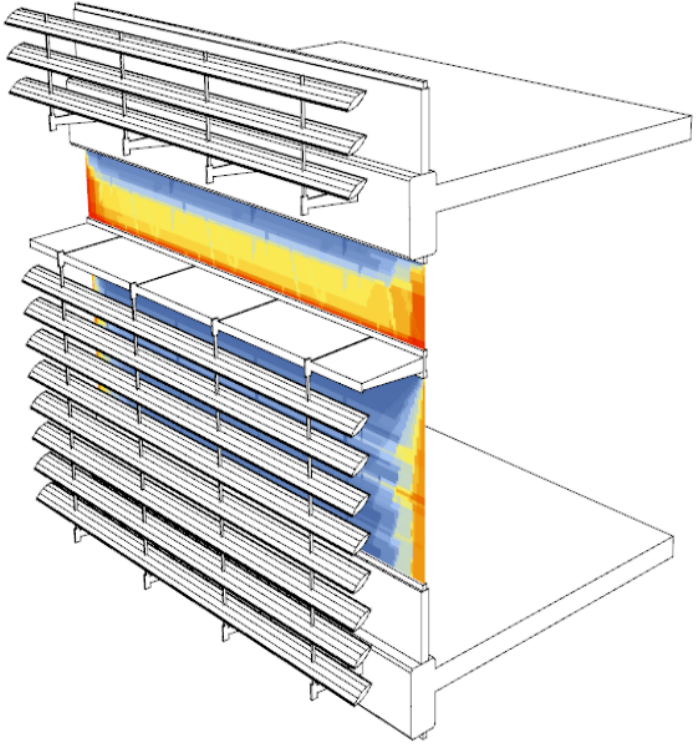


Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

Design and optimization of external shading devices





Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

Sunlight hours (Facades and Outdoor spaces)

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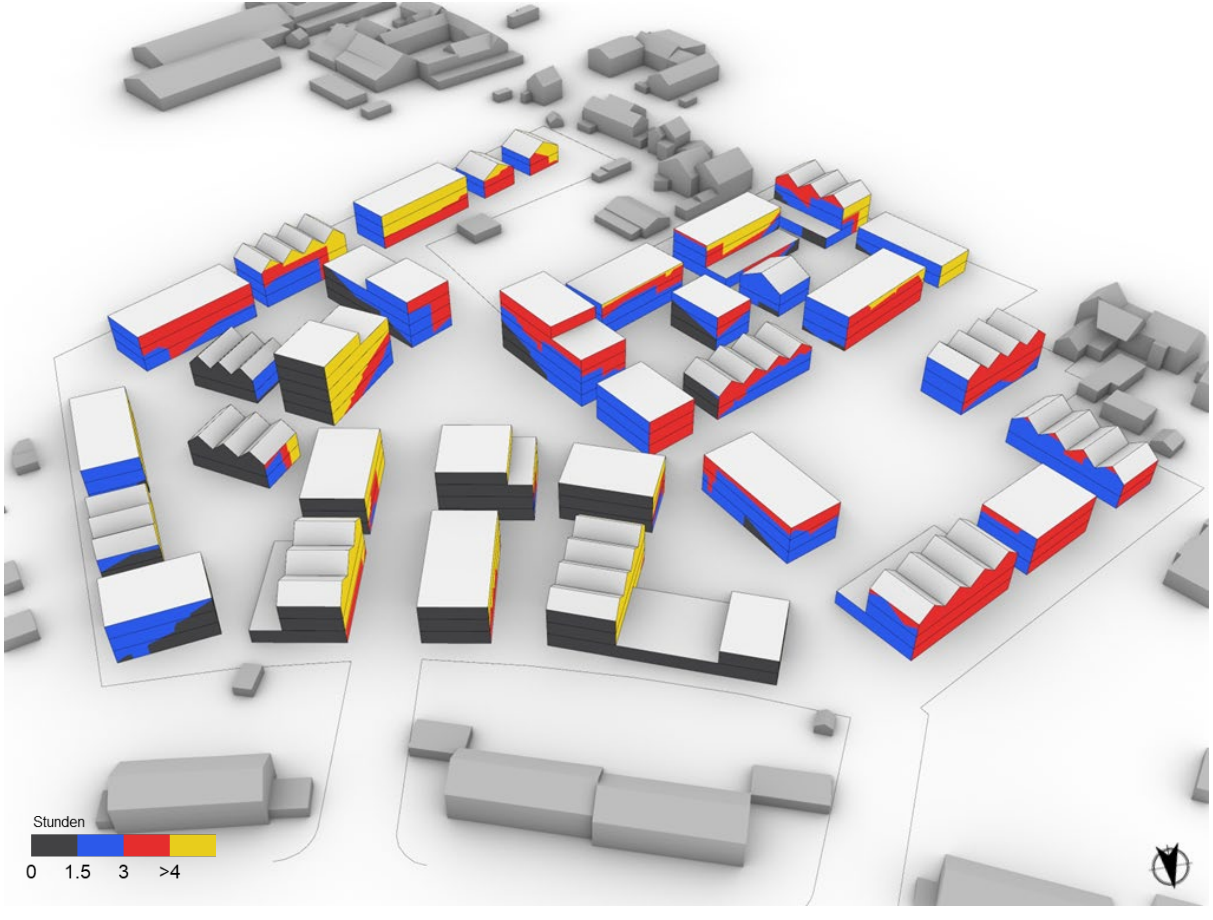
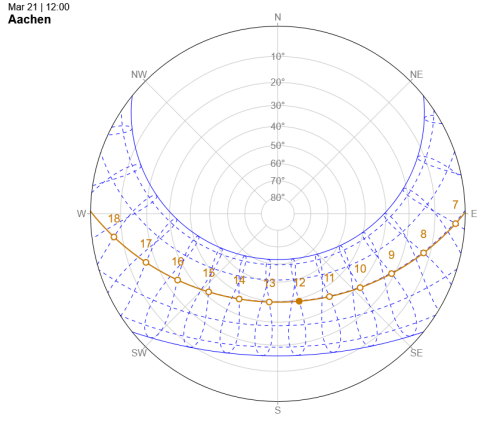
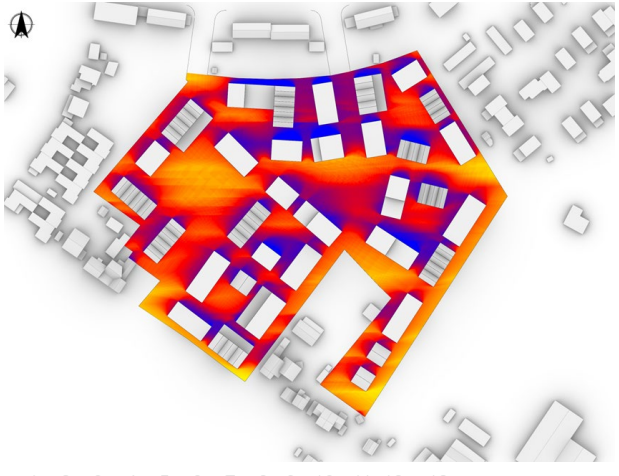


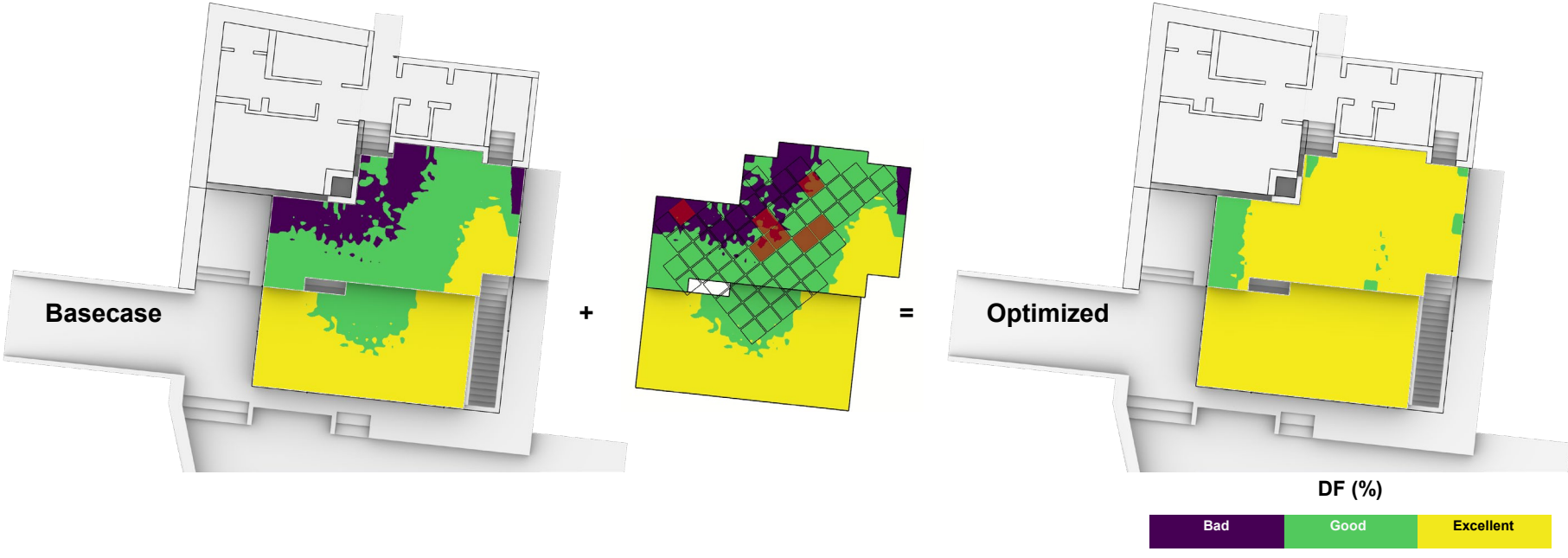




Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

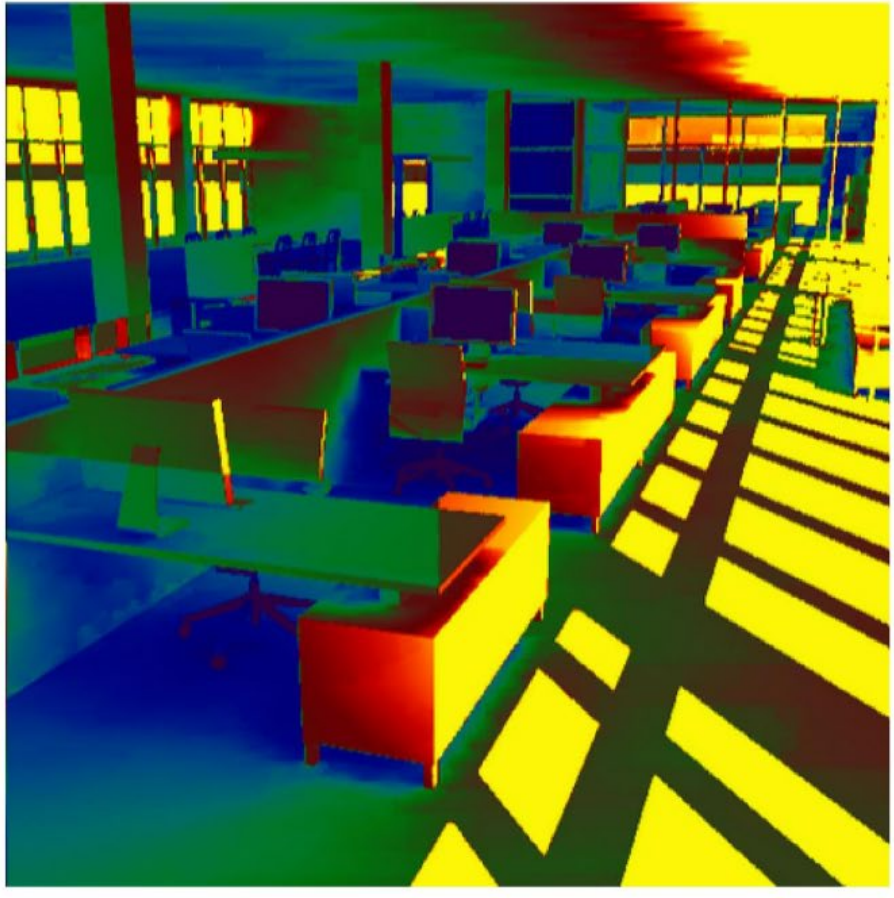
Daylight Evaluations



Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

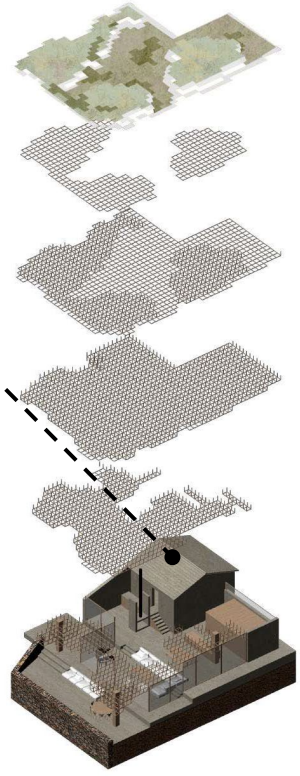
Daylight Performance and Luminance Visualization

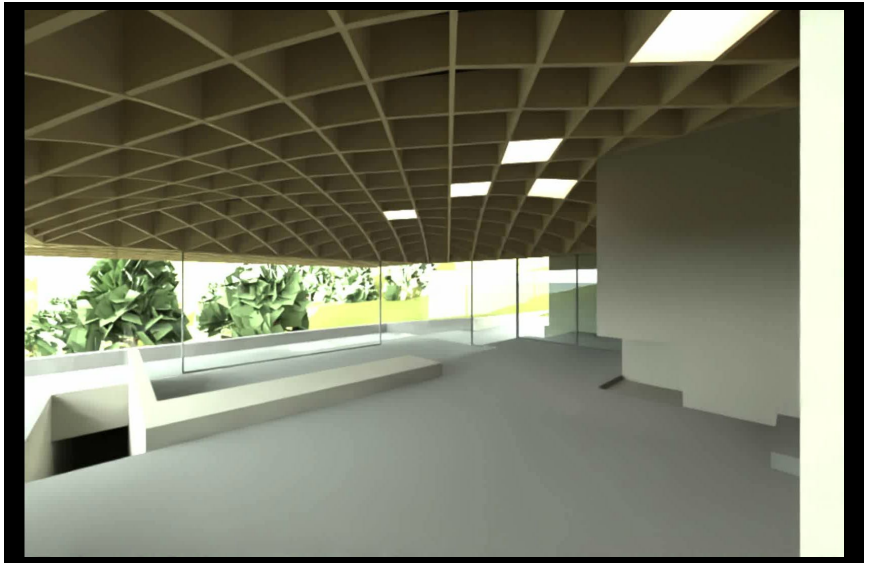


Source: Transsolar KlimaEngineering

Digital Workflows and Computer simulations

Designing with light





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