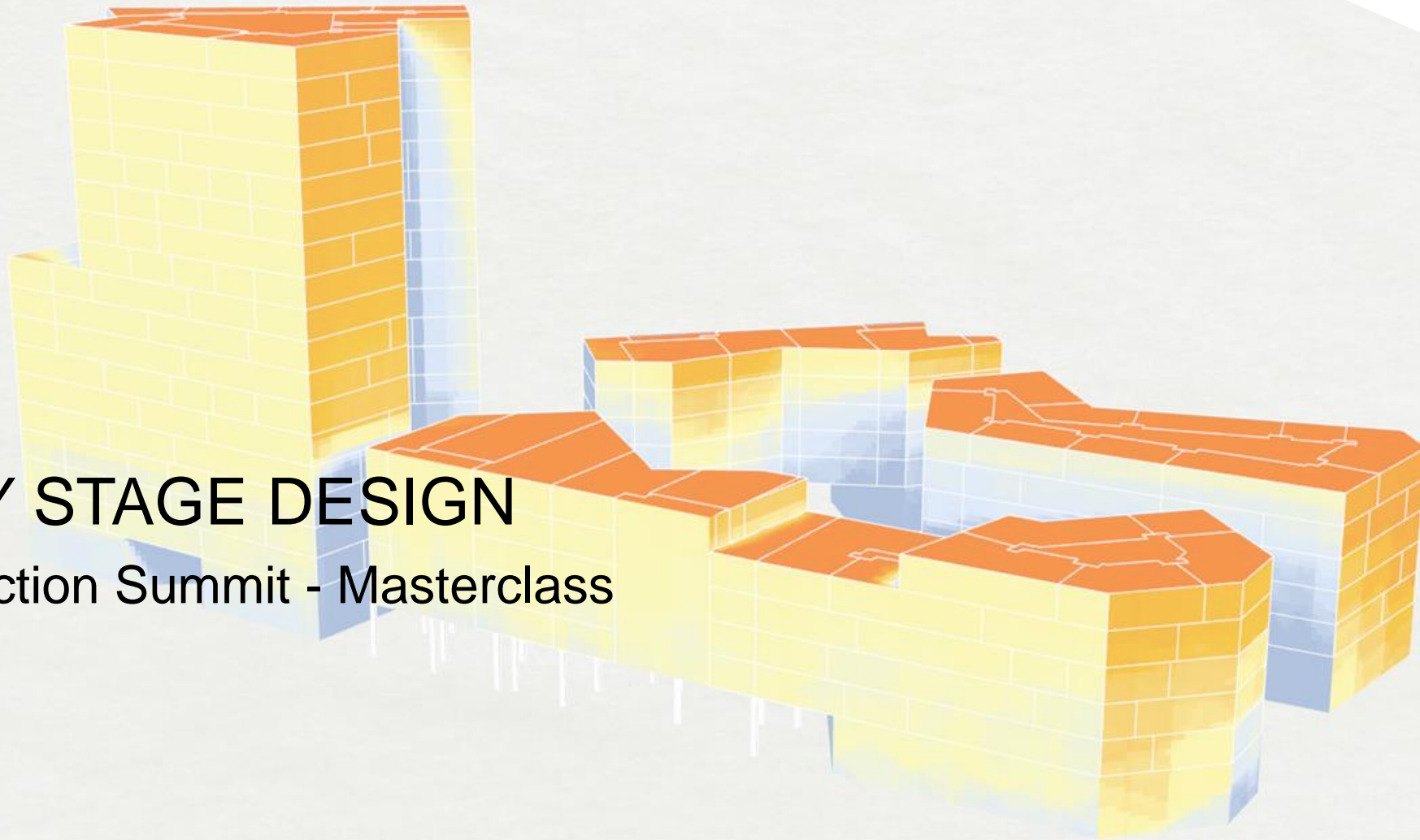


EARLY STAGE DESIGN

Construction Summit - Masterclass

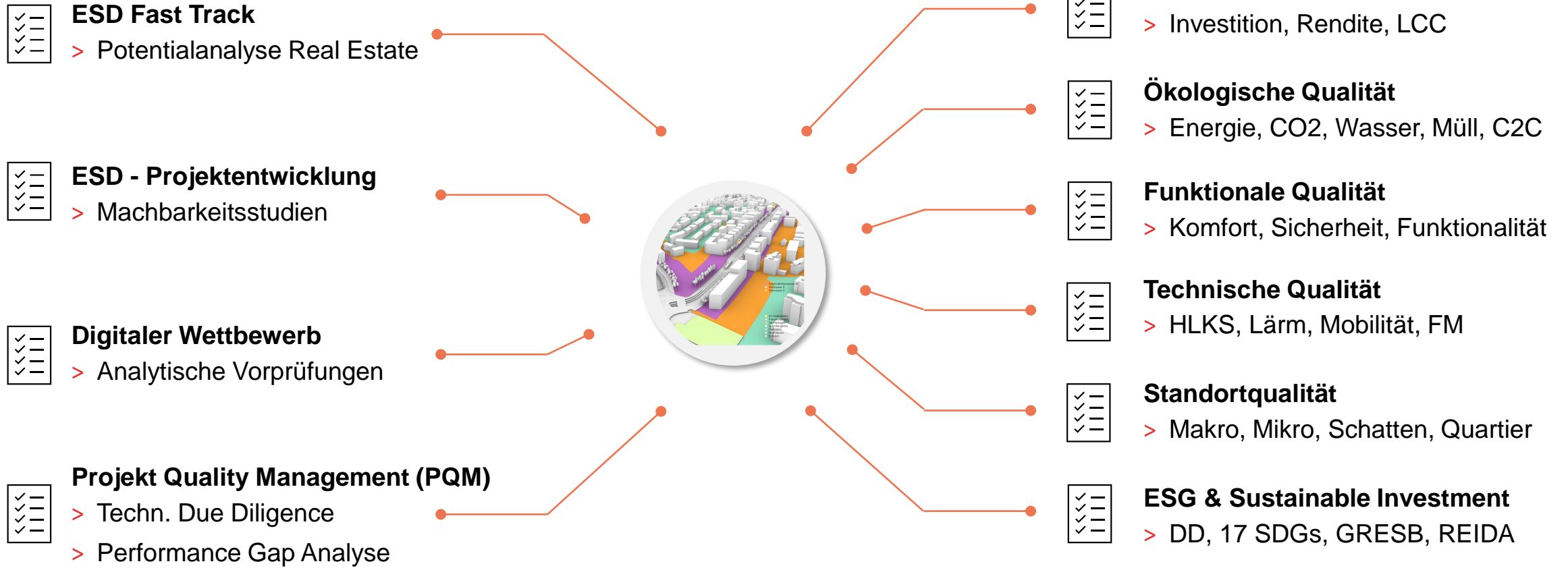
Manuel Frey

02. März 2023



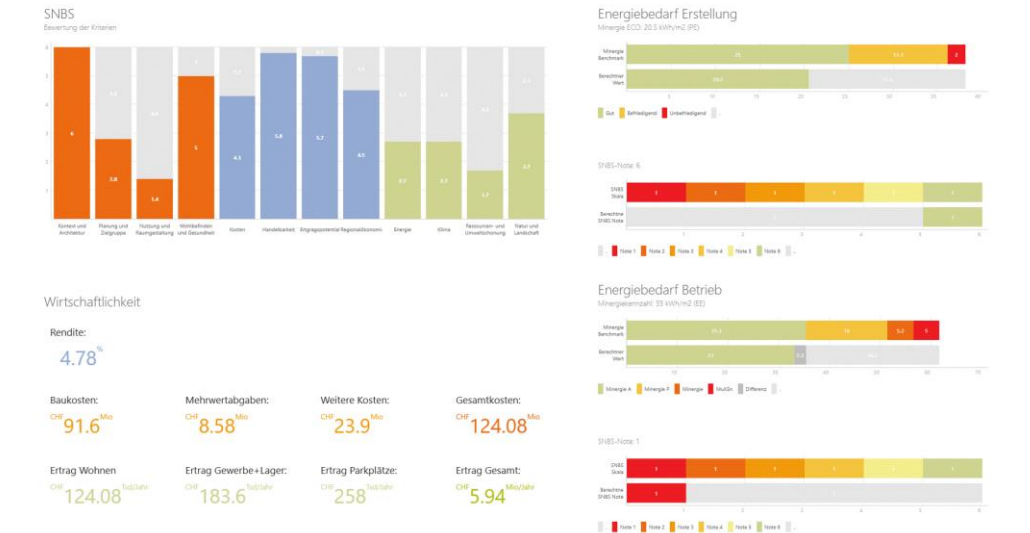
EARLY STAGE DESIGN

MODULE & INHALTE

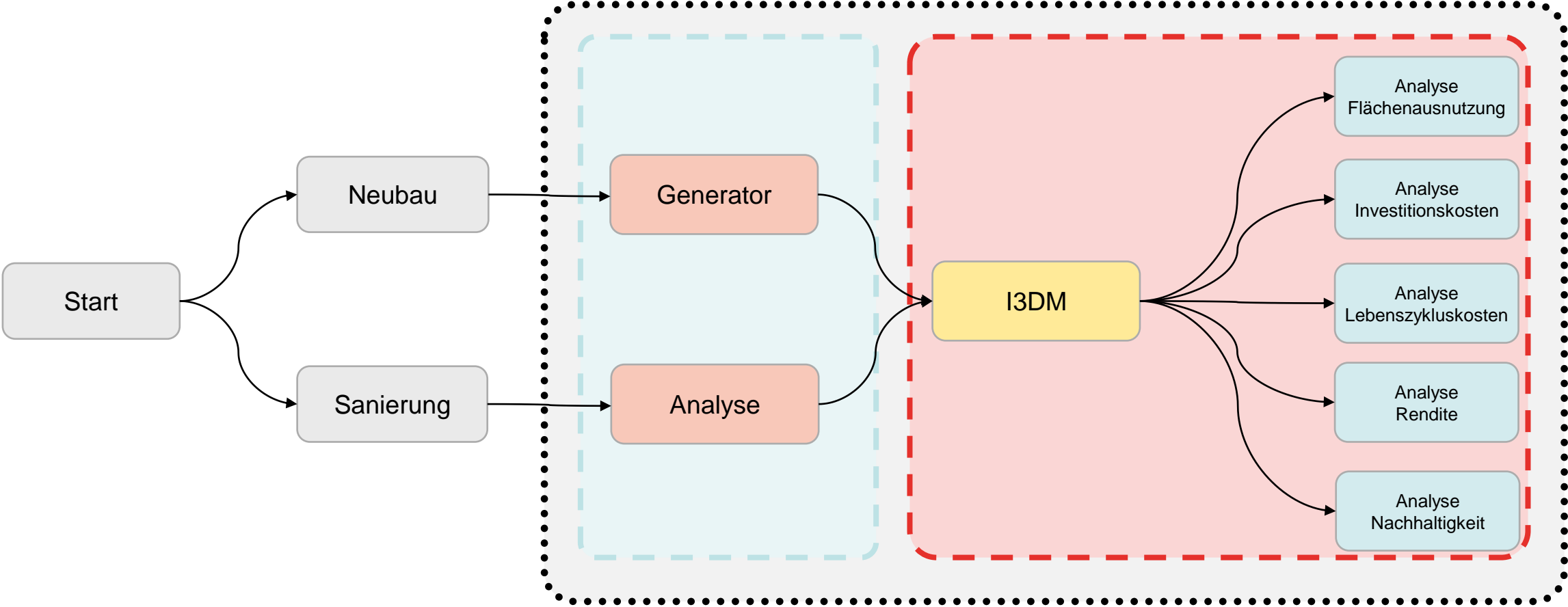


EARLY STAGE DESIGN

- > **Früher** im Investment- & Planungsprozess Entscheidungen durch phasenverschobenen Detaillierungsgrad treffen können.
- > **Schnellere** Entscheidungsfähigkeit herbeiführen durch integrierte Analysen, modellbasierte Simulationen und objektive Variantenstudien.
- > **Bessere & nachhaltigere** Entscheidungsfindung durch hochwertigere Entscheidungsgrundlagen für transparente und nachvollziehbare Entscheide.



EARLY STAGE DESIGN



CD

Computational Design (**Geometrie**)

I3DM

Informed **Data Driven Decision Making** (**Engineering**)



Geometrie

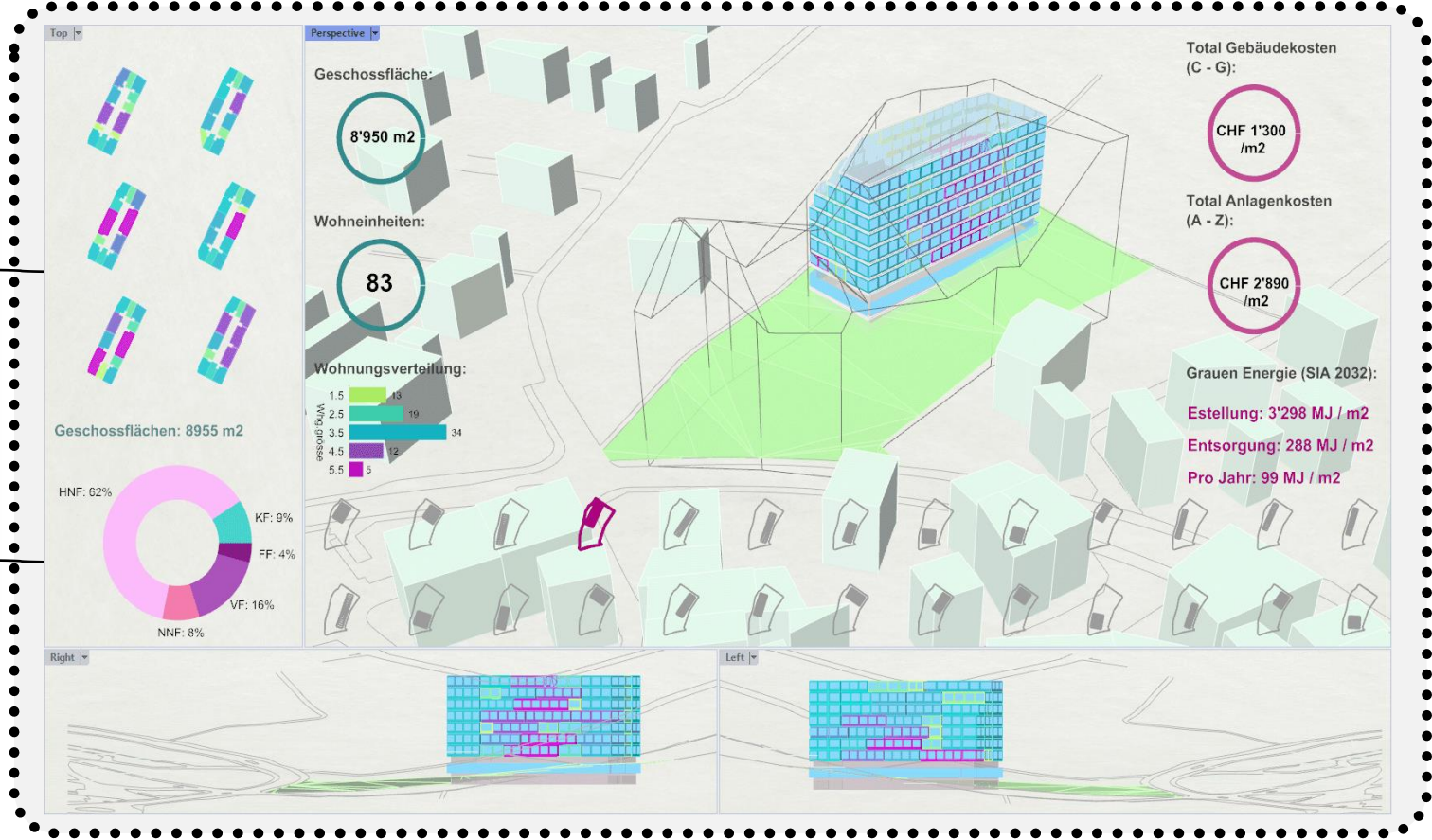
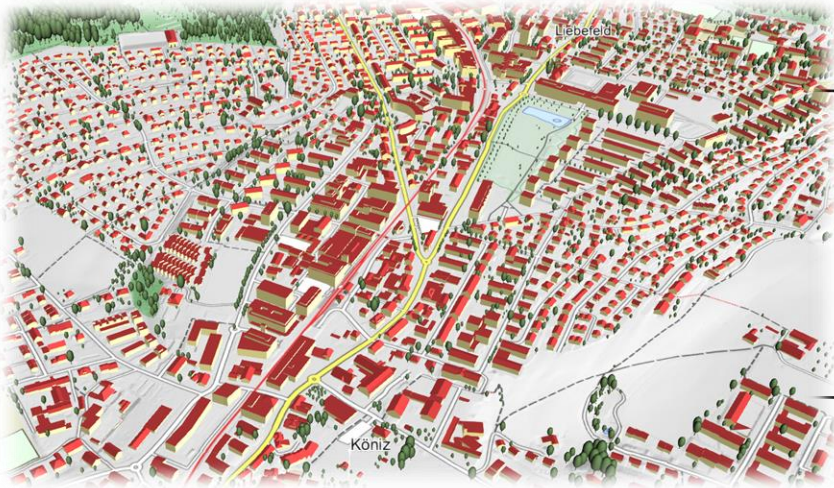


Engineering



Early Stage Design

EARLY STAGE DESIGN



Early Stage Design

EARLY STAGE DESIGN

IMPRESSIONEN AUS WORKSHOPS MIT EARLY STAGE DESIGN



Big Room - JED Schlieren / Projektteam

- > Projektentwicklung & Asset Management
- > Externe Bauherrenberatung
- > Architekten, Städteplaner + Jury
- > Politik / Leiter Stadtplanungsamt



Early Stage Design Workshop @Gruner Köniz

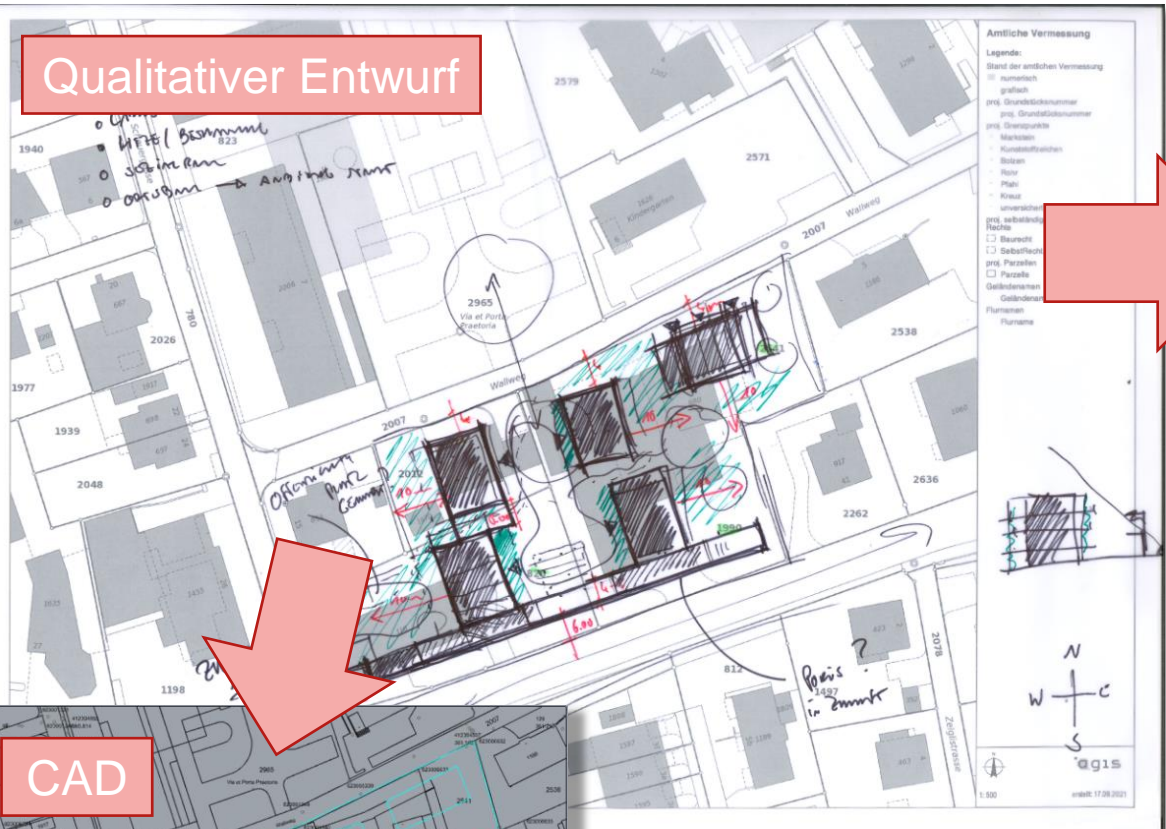
- > Projektentwicklung (Investorenseite)
- > Bauherrenberatung
- > Architekten
- > ESD-Spezialistin



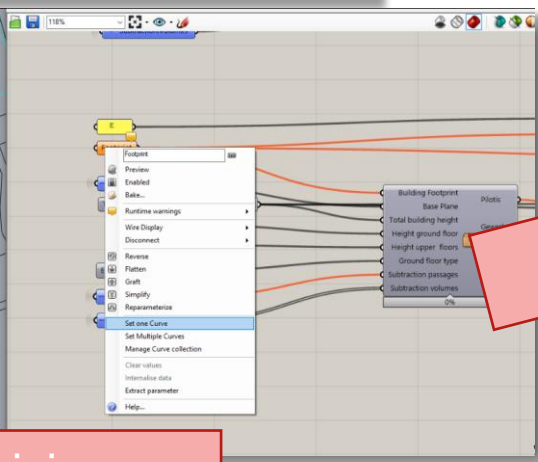
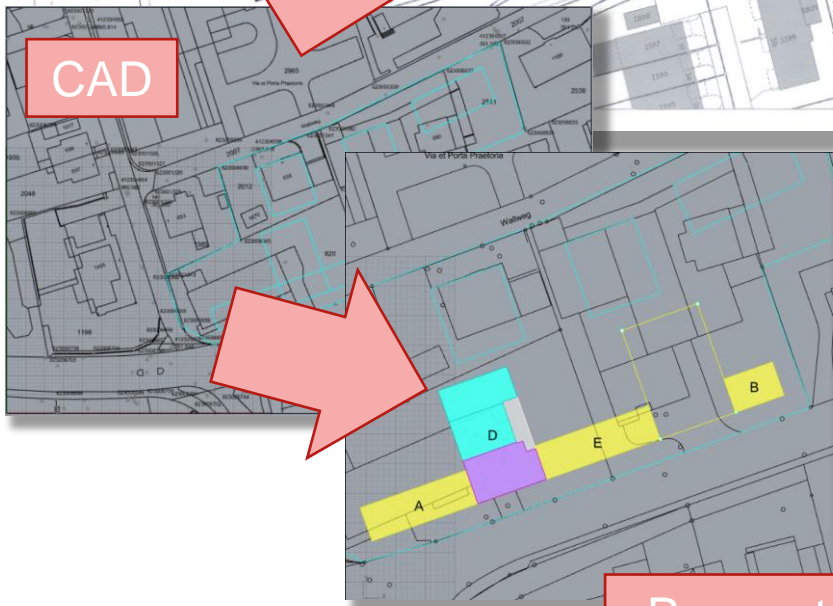
Early Stage Design Entwicklungsteam @Gruner Köniz

- > Computational Designer
- > Frontend Developer
- > Nachhaltigkeit / Energiekonzept

Qualitativer Entwurf



CAD



Parametrisierung



Varianten

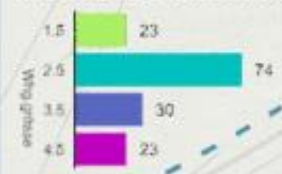
Geschossfläche:

13'649 m²

Wohneinheiten:

150

Wohnungsverteilung:



Kosten:

57.5 Mio CHF

Rendite:

4.98 %

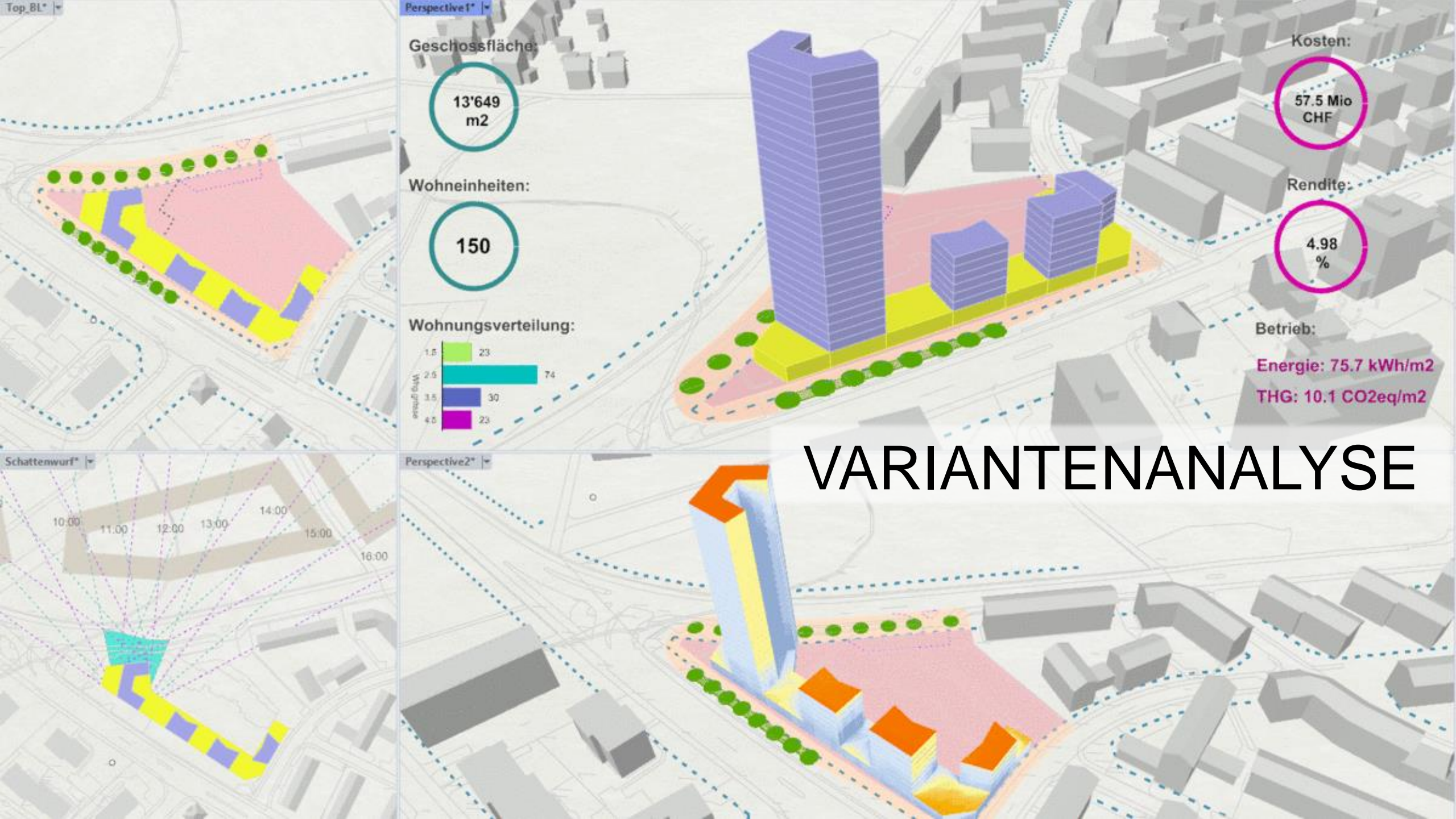
Betrieb:

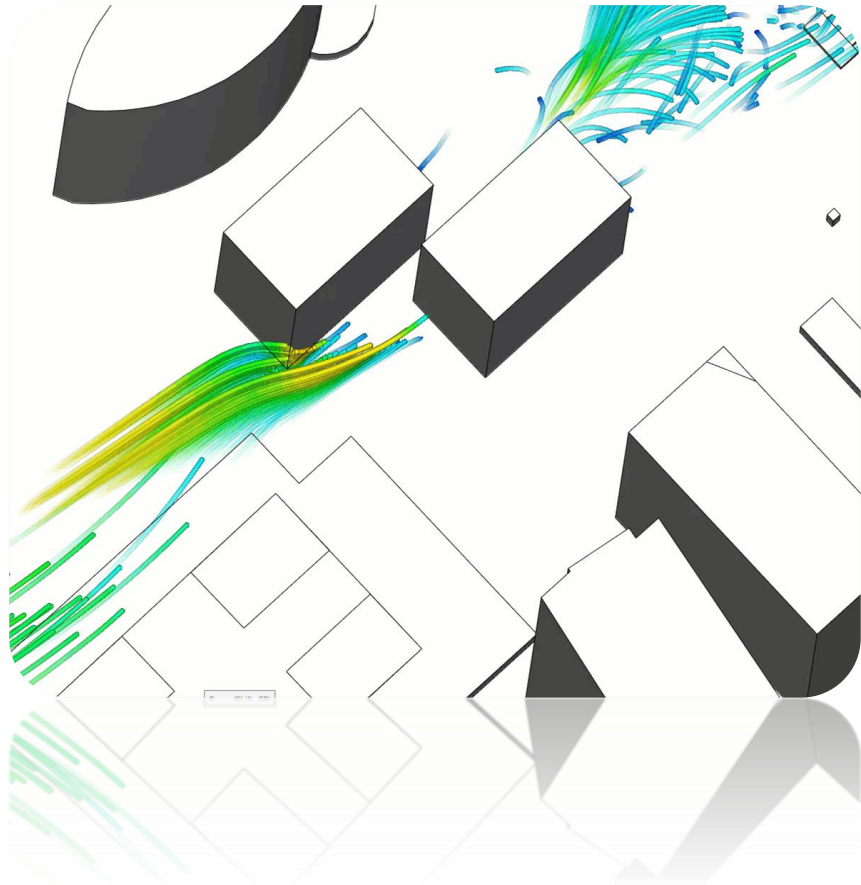
Energie: 75.7 kWh/m²

THG: 10.1 CO₂eq/m²

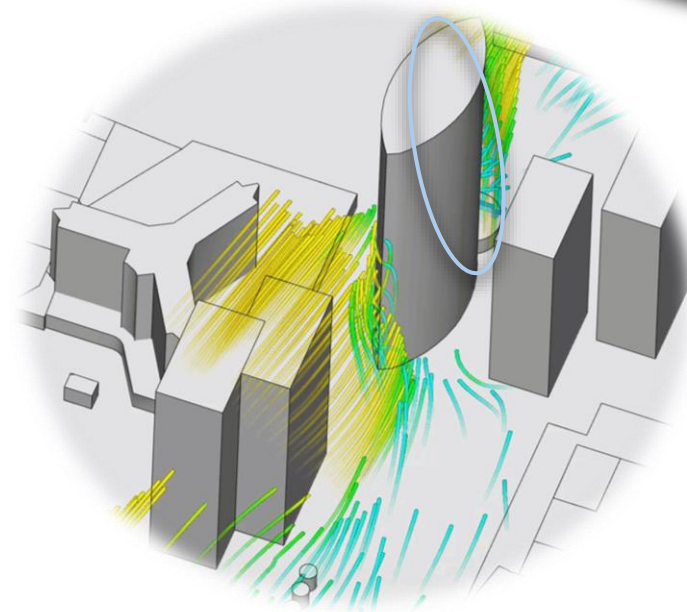
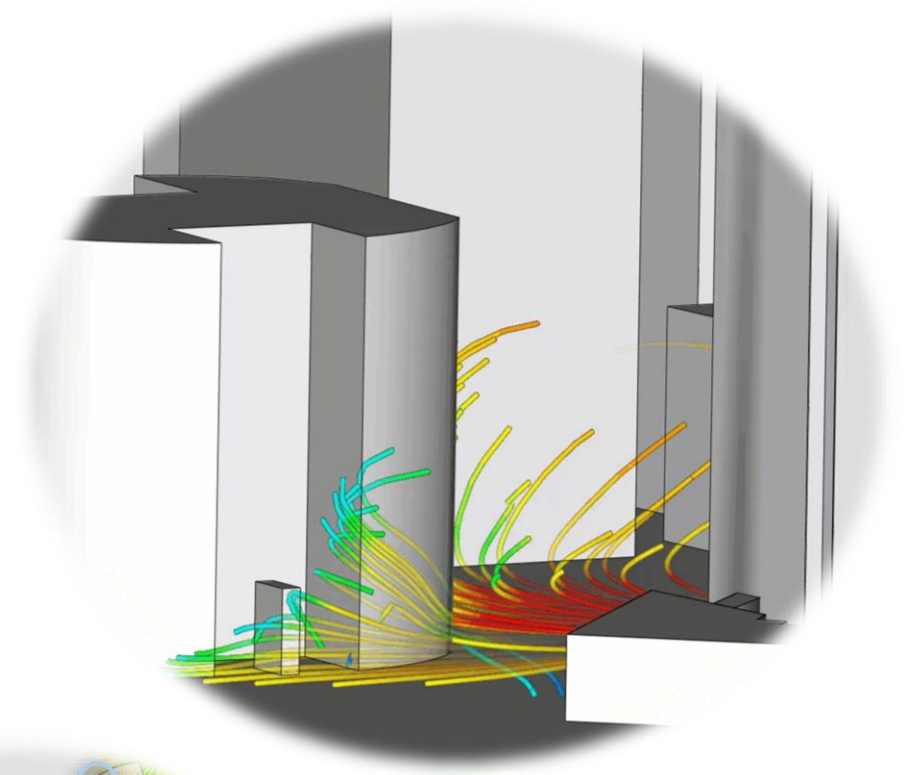


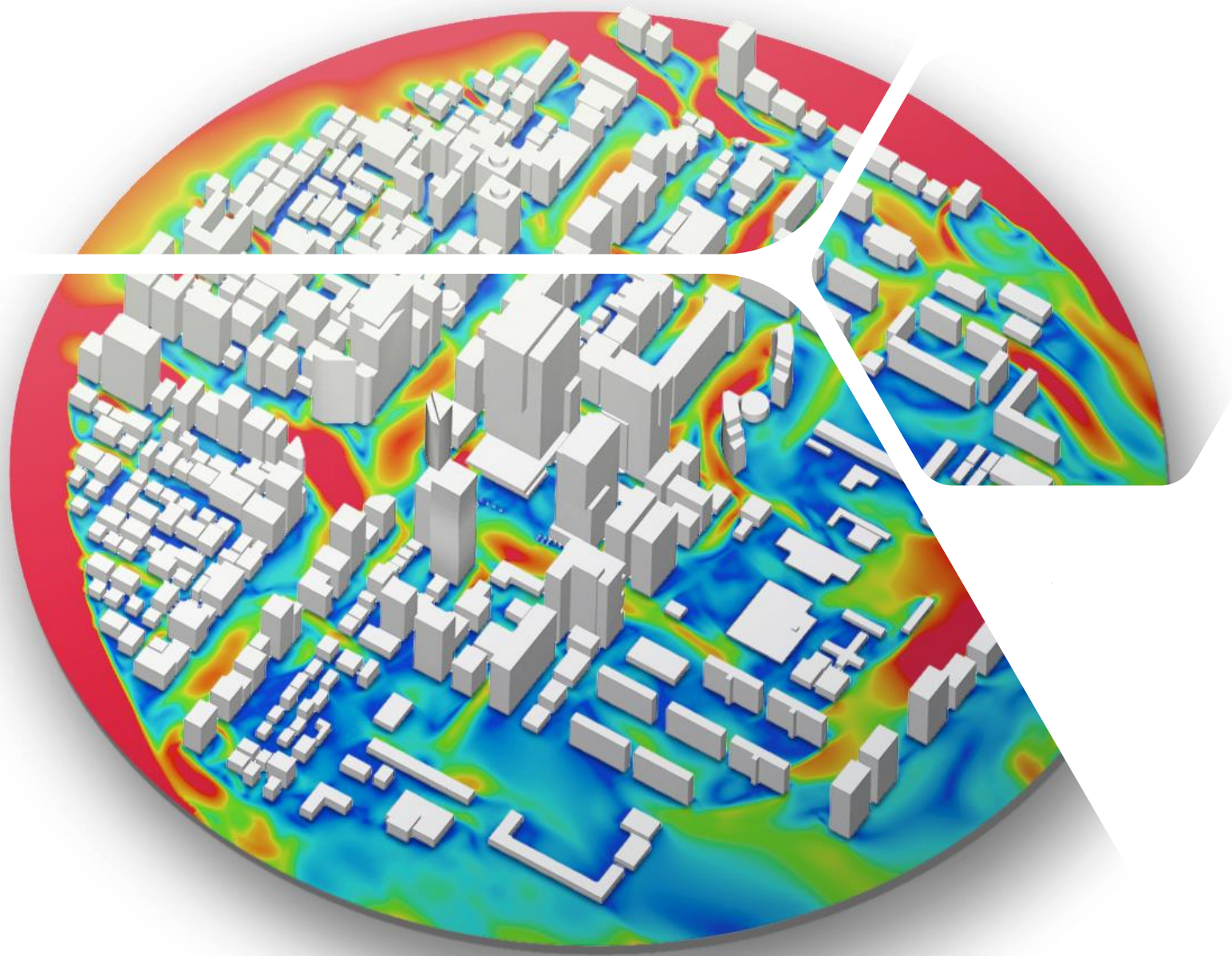
VARIANTENANALYSE





Städtebauliche Analyse





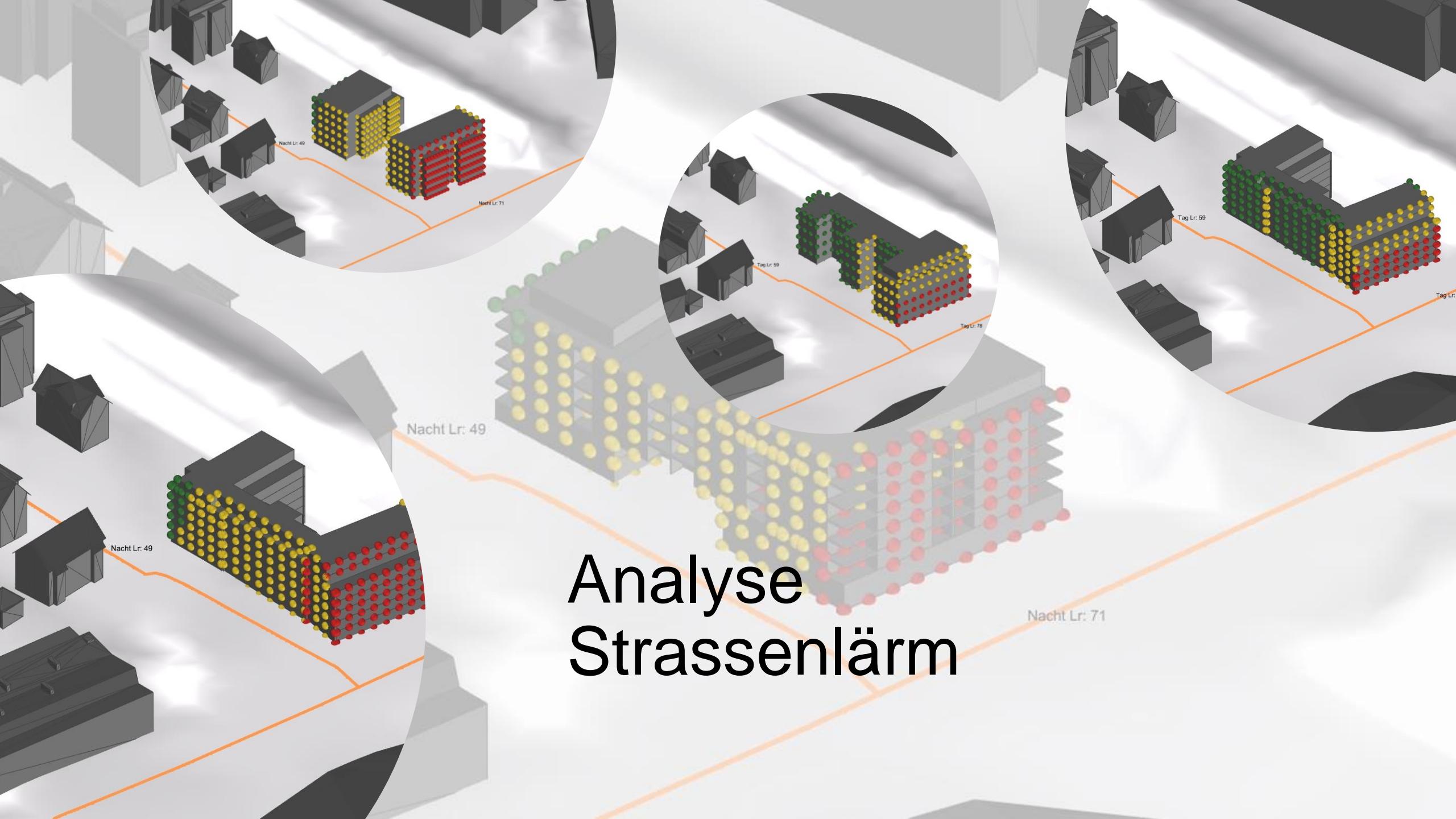
Klimaanalyse

Analyse Strassenlärm

- Empfindlichkeitsstufe III
- Wohnzone 3
- Wohnzone 4

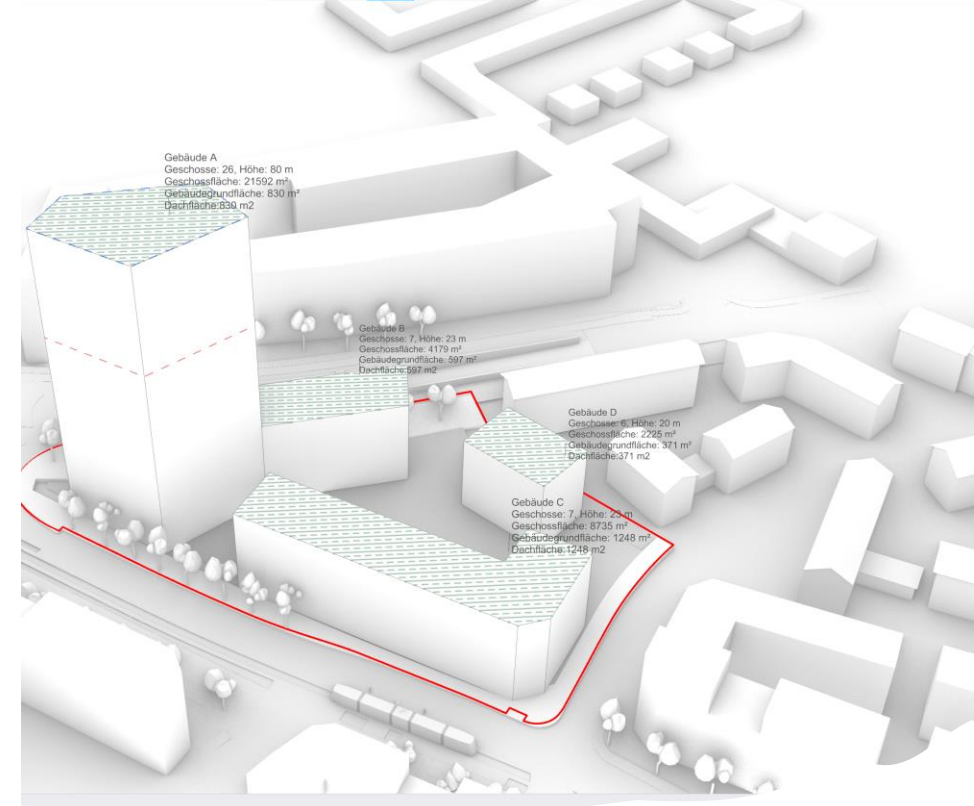
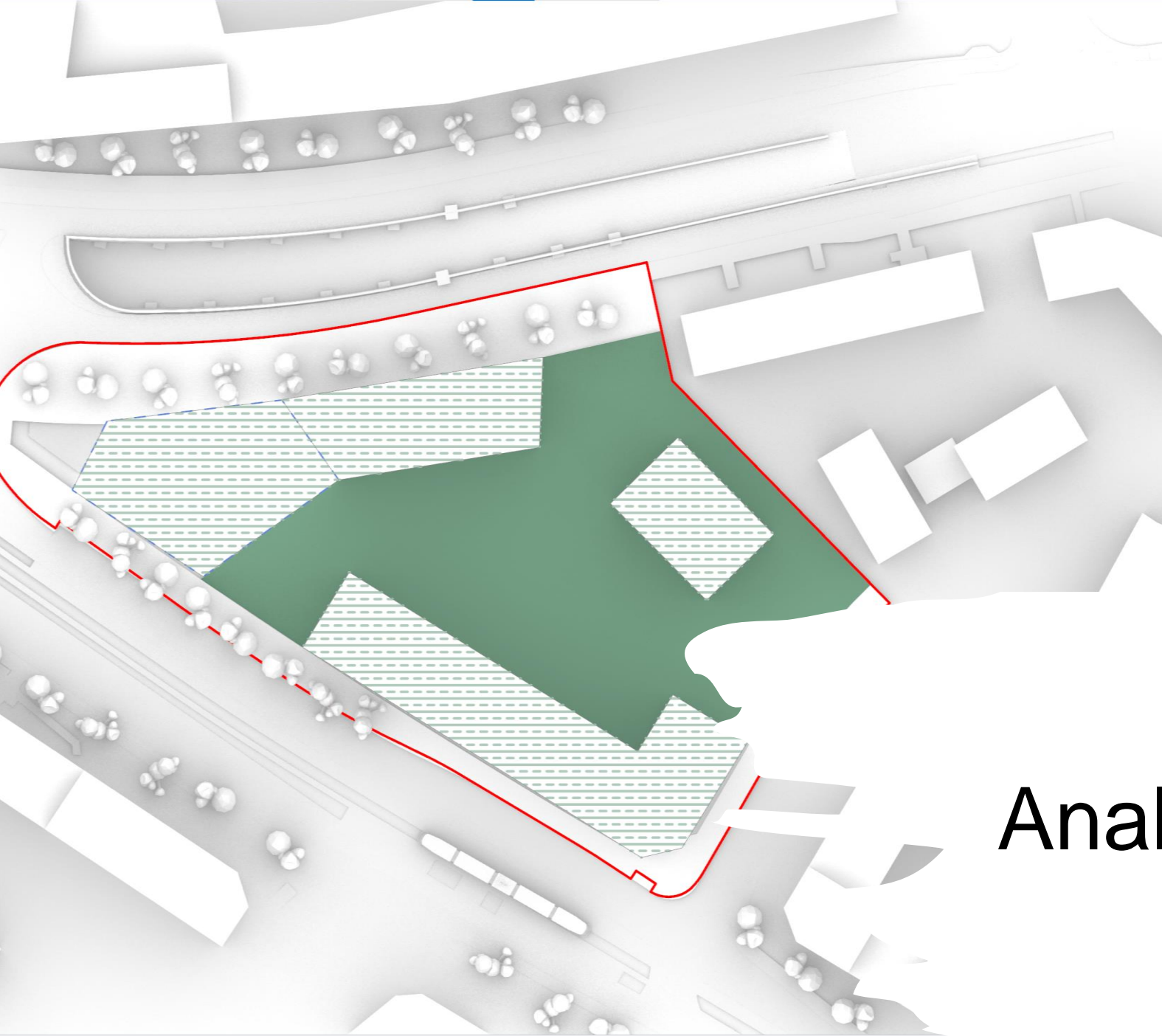
- öV-Haltestellen
- Freizeitanlagen
- Sportanlagen
- Schrebergärten
- Parkplätze
- Hochhäuser
- Schulen



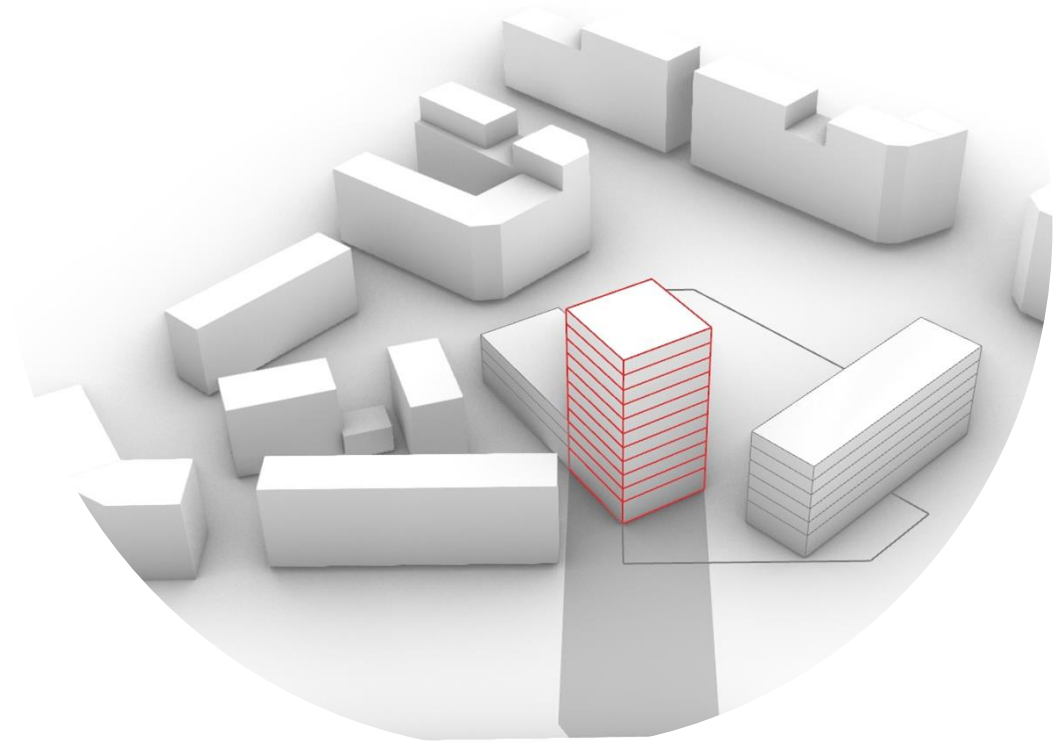
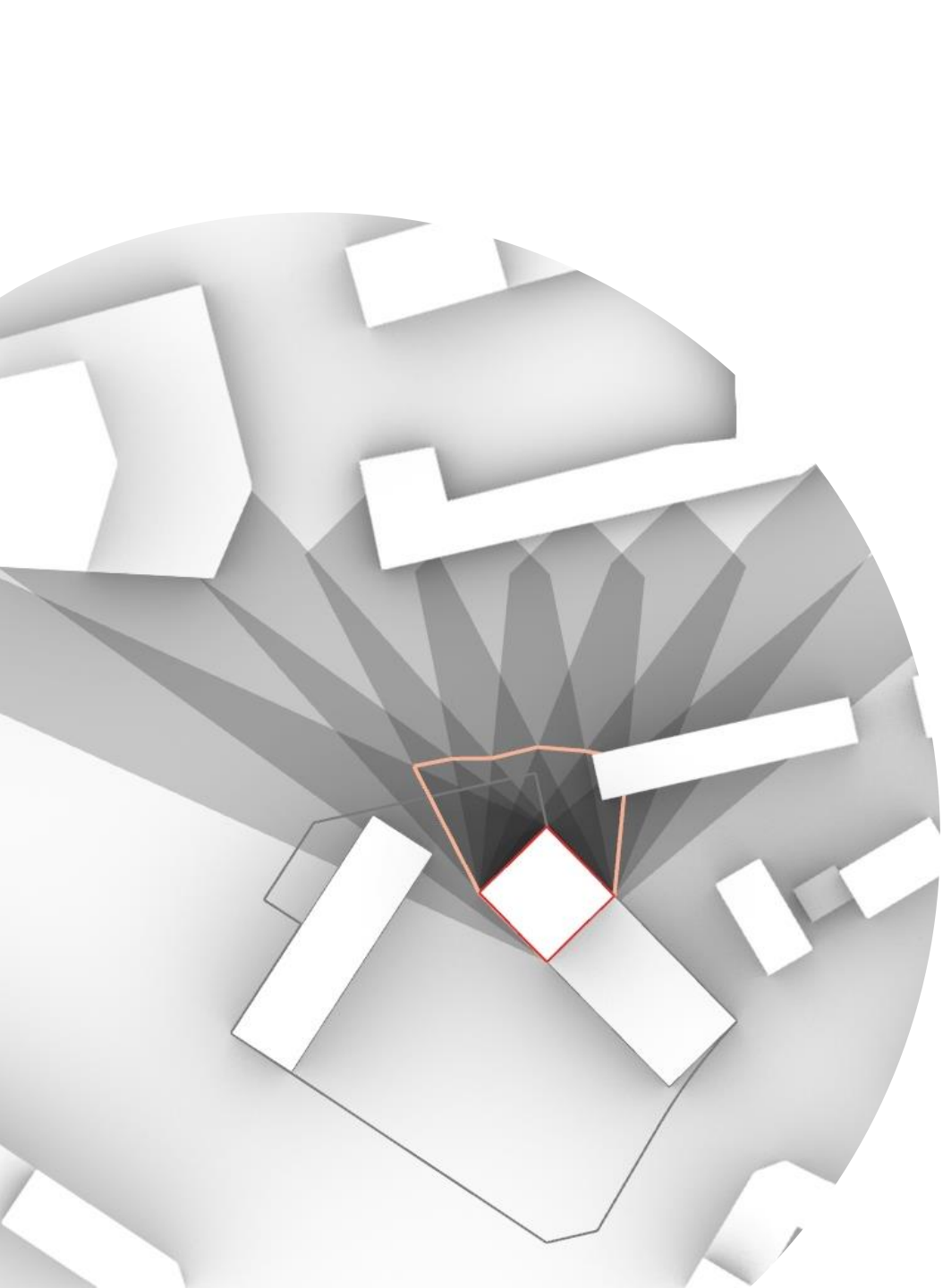


Analyse Strassenlärm

Nacht Lr: 71



Analyse Freiflächen



Analyse
Schattenwurf

Light Performance

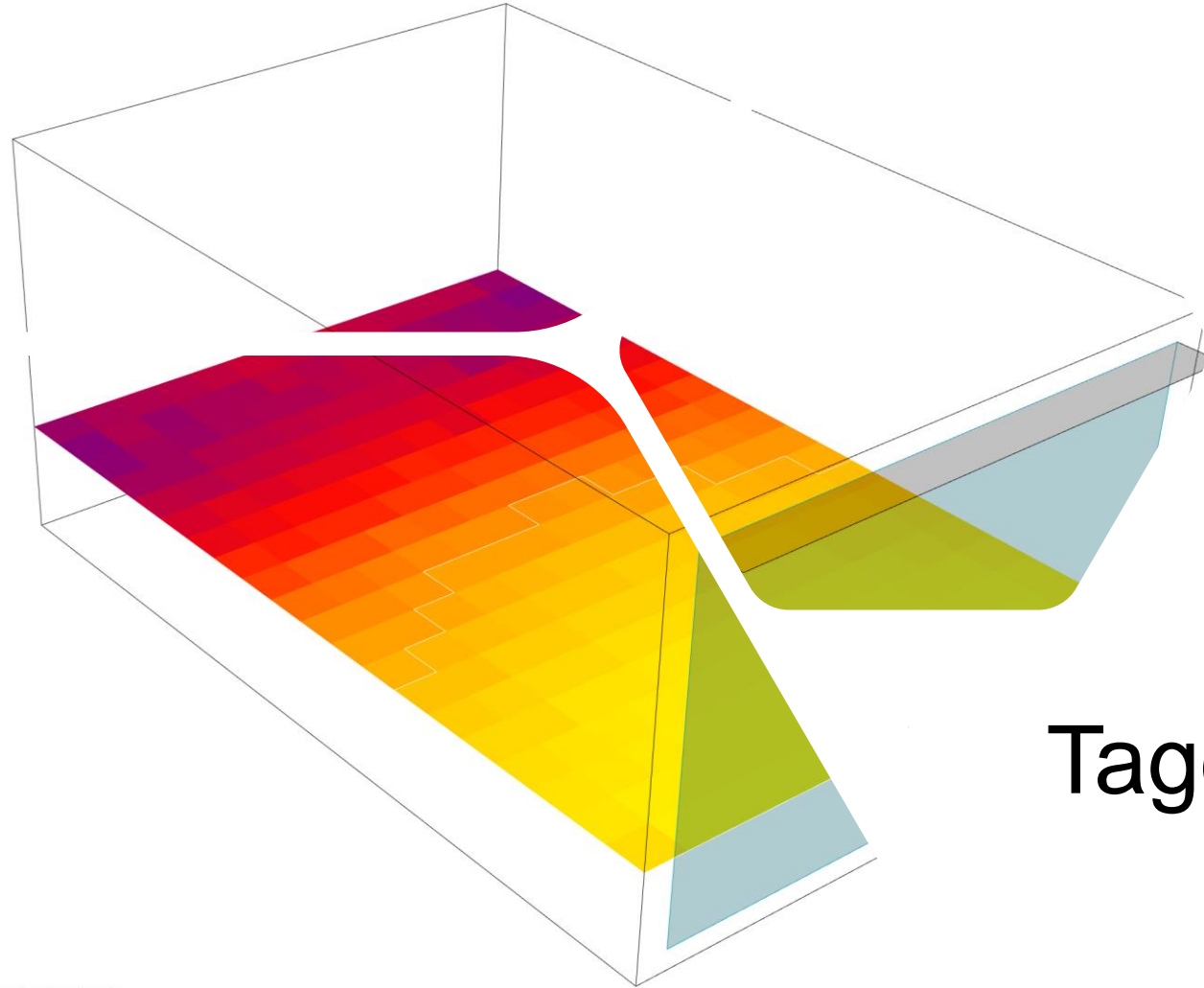
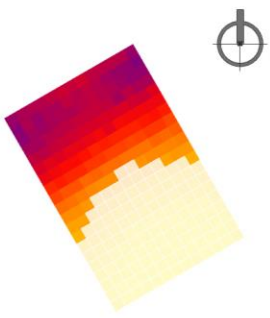
Autonomy (DA) 66.93% of floor area
 > 50%

Daylight Autonomy (sDA) 68.46% of floor area
 > 50%

Light Autonomy (cDA) 82.33% of floor area
 > 50% + partial credit

Light exposure (ASE) for LEED 46.92% of floor area
 more 250 hours < 10%

Failed LEED.



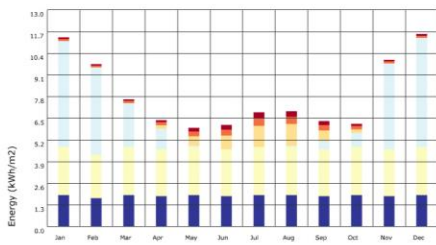
Tageslicht Energie Behaglichkeit

96

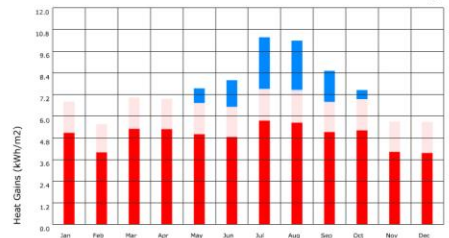


Baseline

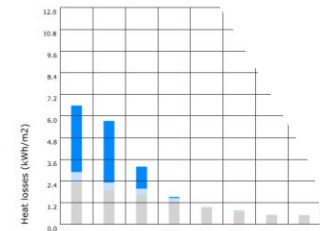
- Pumps
- Fans
- Cooling
- Heating
- Lighting
- Equipment



- Pumps (Monthly)
- Fans (Monthly)
- Cooling (Monthly)
- Heating (Monthly)
- Lighting (Monthly)
- Equipment (Monthly)



- Gazing surfaces (Monthly)
- Opaque surfaces (Monthly)
- Filtration (Monthly)
- Occupancy (Monthly)
- Solar (Monthly)



VARIANTENANALYSE



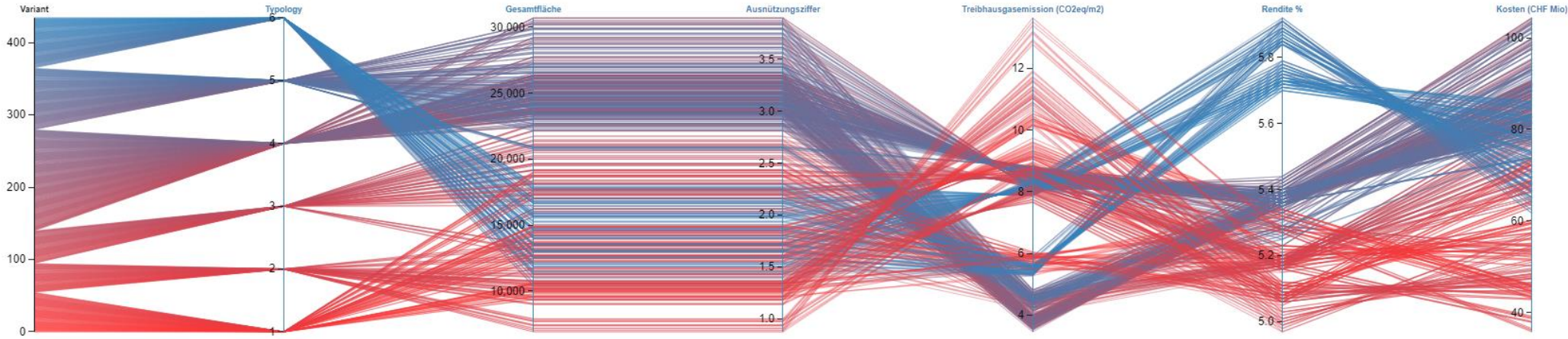
Get Data

ESD_V1

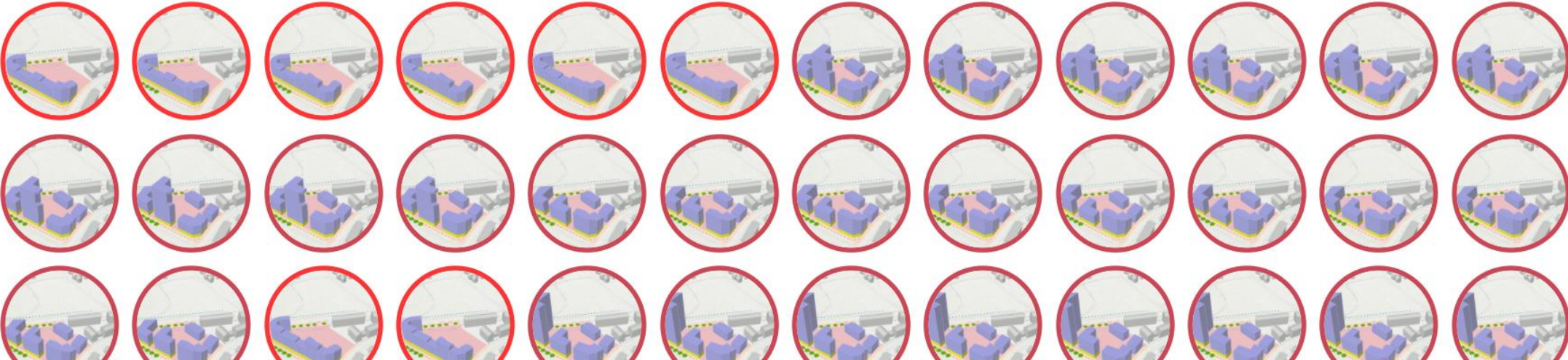
02.08.21

Reset Selection Exclude Selection Zoom to Selection Save Selection to File My Static Link

Setting L M S



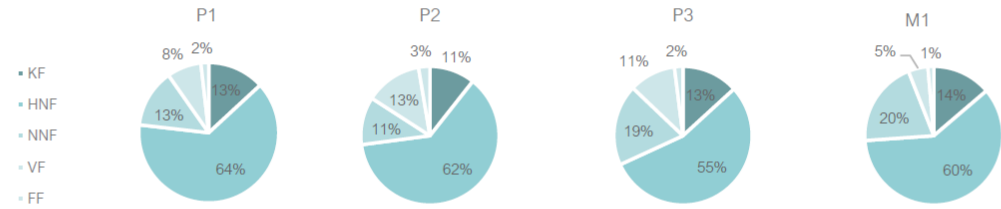
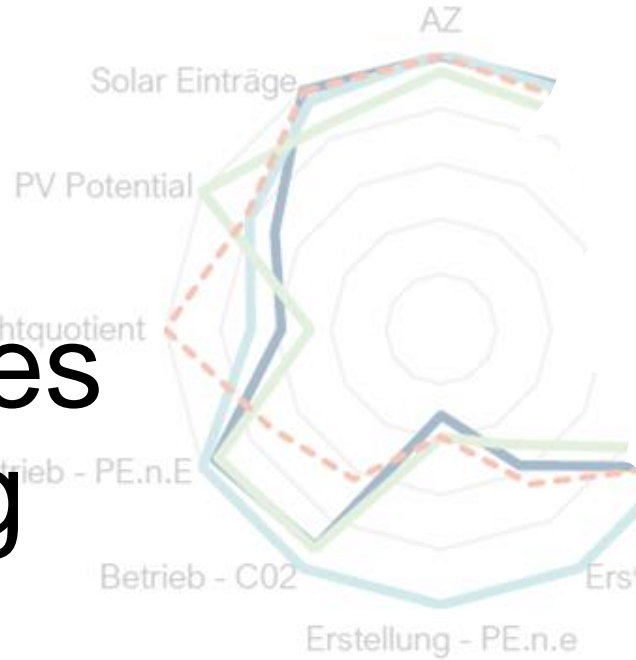
Sort by: Variant



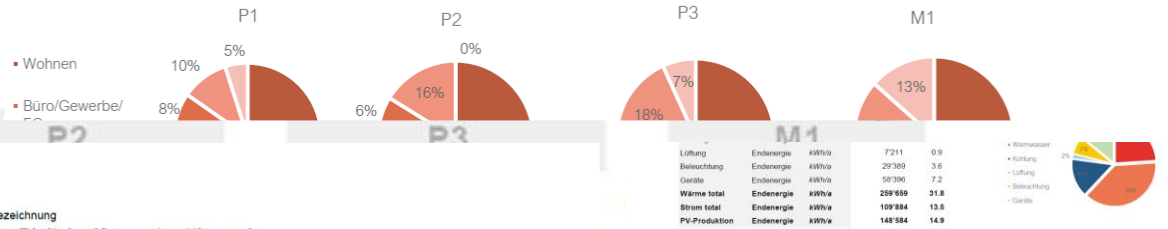
Gegenüberstellung Eingaben Konzeptwettbewerb

Integriertes Reporting

Geschossfläche	GF	m2	P1		P2		P3		M1	
				100%		100%		100%		100%
Konstruktionsfläche	KF	m2	1'311	13%	952	11%	1'305	13%	1'434	14%
Nettogeschossfläche	NGF	m2	8'656	87%	7'978	89%	8'561	87%	8'968	86%
Hauptnutzfläche	HNF	m2	6'294		5'534		5'575		6'248	
Hauptnutzfläche IFC	HNF	m2	6'344	64%	5'561	62%	5'420	55%	6'252	60%
Nebennutzfläche IFC	NNF	m2	1'340	13%	996	11%	1'867	19%	2'093	20%
Verkehrsfläche IFC	VF	m2	792	8%	1'183	13%	1'077	11%	480	5%
Funktionsfläche IFC	FF	m2	180	2%	237	3%	197	2%	143	1%



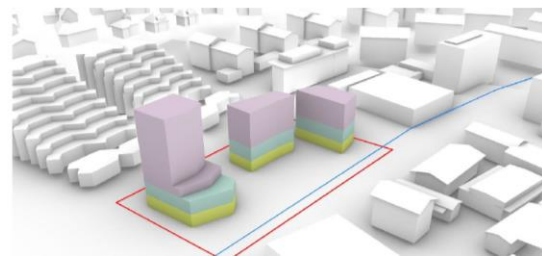
Gebäudevolumen	GV	m3	P1		P2		P3		M1	
				100%		100%		100%		100%
Wohnen	GV_oberflir	m3	22'254	77%	20'702	78%	19'749	61%	23'650	69%
Büro/Gewerbe/ EG	GV_oberflir	m3	2'289	8%	1'610	6%	4'702	14%	1'005	3%
Lager, Technik	GV_unterflir	m3	3'008	10%	4'309	16%	5'811	18%	4'996	15%
Liefergarage	GV_unterflir	m3	1'430	5%	0	0%	2'212	7%	4'605	13%



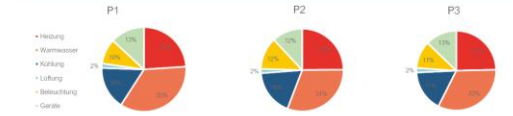
		P1	
AZ	%	200%	
Effizienz	%	63%	
Kosten	tsd. CHF	28'272	
Ertrag	Tsd. CHF/a	2'135	
Rendite	%	8%	
Erstellung - CO2	CO2eq/m2.a	14.9	
Erstellung - PE.n.e	kWh/m2.a	25	
Betrieb - CO2	CO2eq/m2.a	2.8	

Auftragsbezeichnung Analyse Digitaler Konzeptwettbewerb

Berichttitel
XXX



EBF	m2	P1		P2		P3	
			38.7		38.7		38.7
Energiebedarf	kWh/a	330'293.8	38.7	270'615.9	35.8	302'191.2	38.7
Heizung	Nutzenergie kWh/a	79'003	9.5	67'230	8.9	74'478	9.5
Warmwasser	Nutzenergie kWh/a	118'188	14.8	83'705	11.1	90'076	12.7
Kühlung	Nutzenergie kWh/a	54'263	6.5	45'992	6.4	50'841	6.5
Lüftung	Nutzenergie kWh/a	5'967	0.7	4'523	0.6	5'413	0.7
Beleuchtung	Endenergie kWh/a	31'911	3.8	34'092	4.5	33'704	4.3
Geräte	Endenergie kWh/a	43'172	5.2	32'314	4.3	38'680	5.0
Wärme total	Endenergie kWh/a	198'886	23.7	182'366	20.1	178'073	22.4
Strom total	Endenergie kWh/a	82'907	11.2	81'218	10.7	88'952	11.4
PV-Produktion	Endenergie kWh/a	103'734	12.6	118'968	15.7	148'584	19.0
National gespeicherte Energie	kWh/a	204'572	31.8	223'382	29.5	247'934	31.7
Primärenergie nicht erneuerbar	kWh/a	204'472	31.8	228'194	30.2	251'171	32.2
Treibhausgasemissionen	CO2eq/a	23'507	2.8	19'703	2.6	21'963	2.8



DISKUSSION



KONTAKT



Gruner

Benjamin Breuckelmann

+49 40 3562393-12

benjamin.breuckelmann@gruner.eu

Manuel Frey

+41 31 917 20 90

manuel.frey@gruner.ch

www.earlystagedesign.ch

