Chair for Information Architecture

Jan Halatsch
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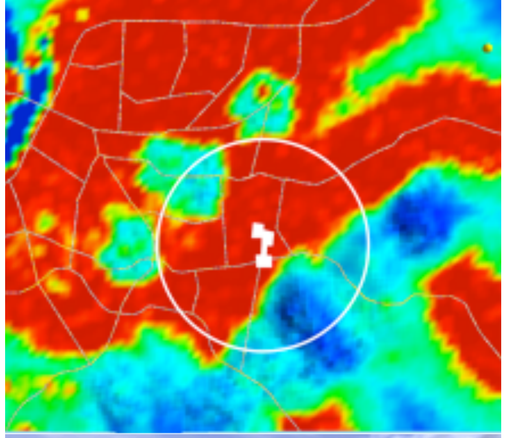
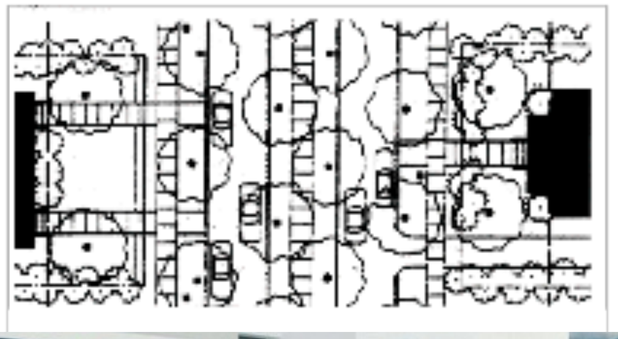
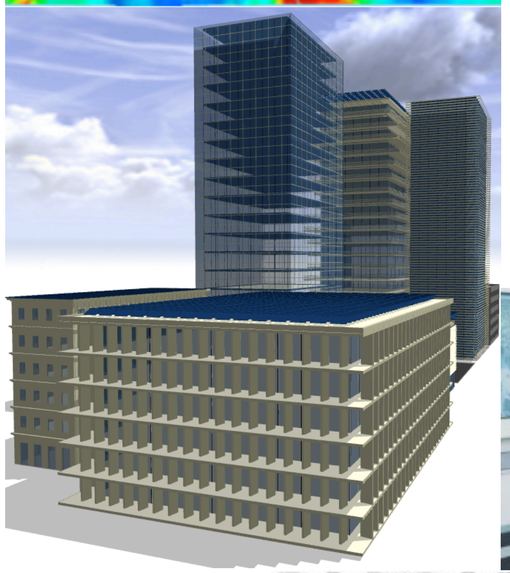
INTRODUCTION
COURSE OUTLINE

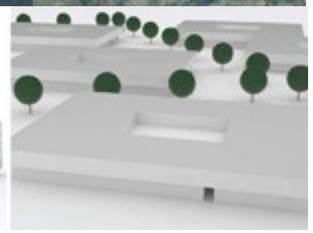
ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

INFORMATIONSARCHITEKTUR









“Wir entwickeln visuelle, digitale Methoden um die Analyse und den Entwurf von Stadtstrukturen zu unterstützen”

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ETH Zurich

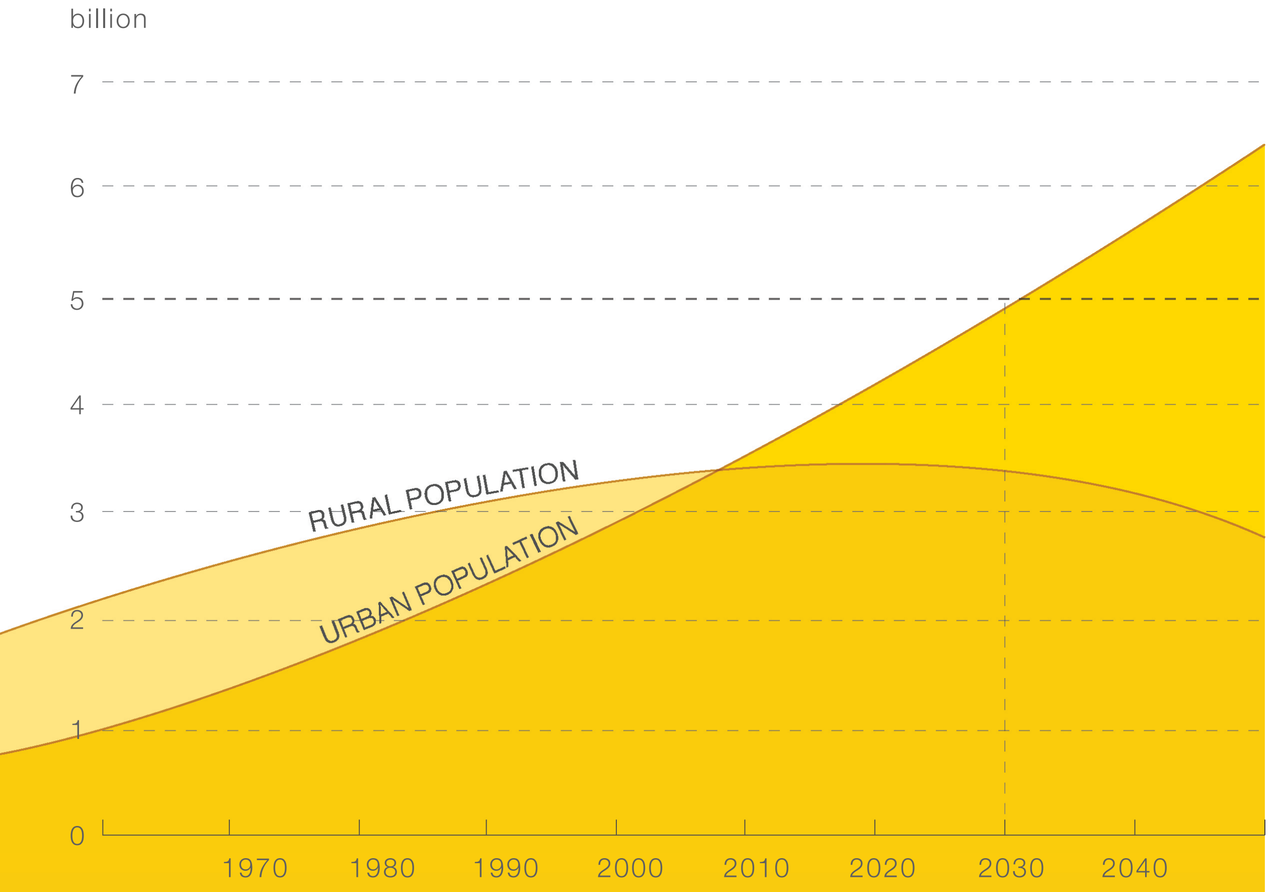
iA Chair for Information Architecture

CHONGQING, CHINA

CHONGQING, CHINA

CHONGQING, CHINA

MOTIVATION

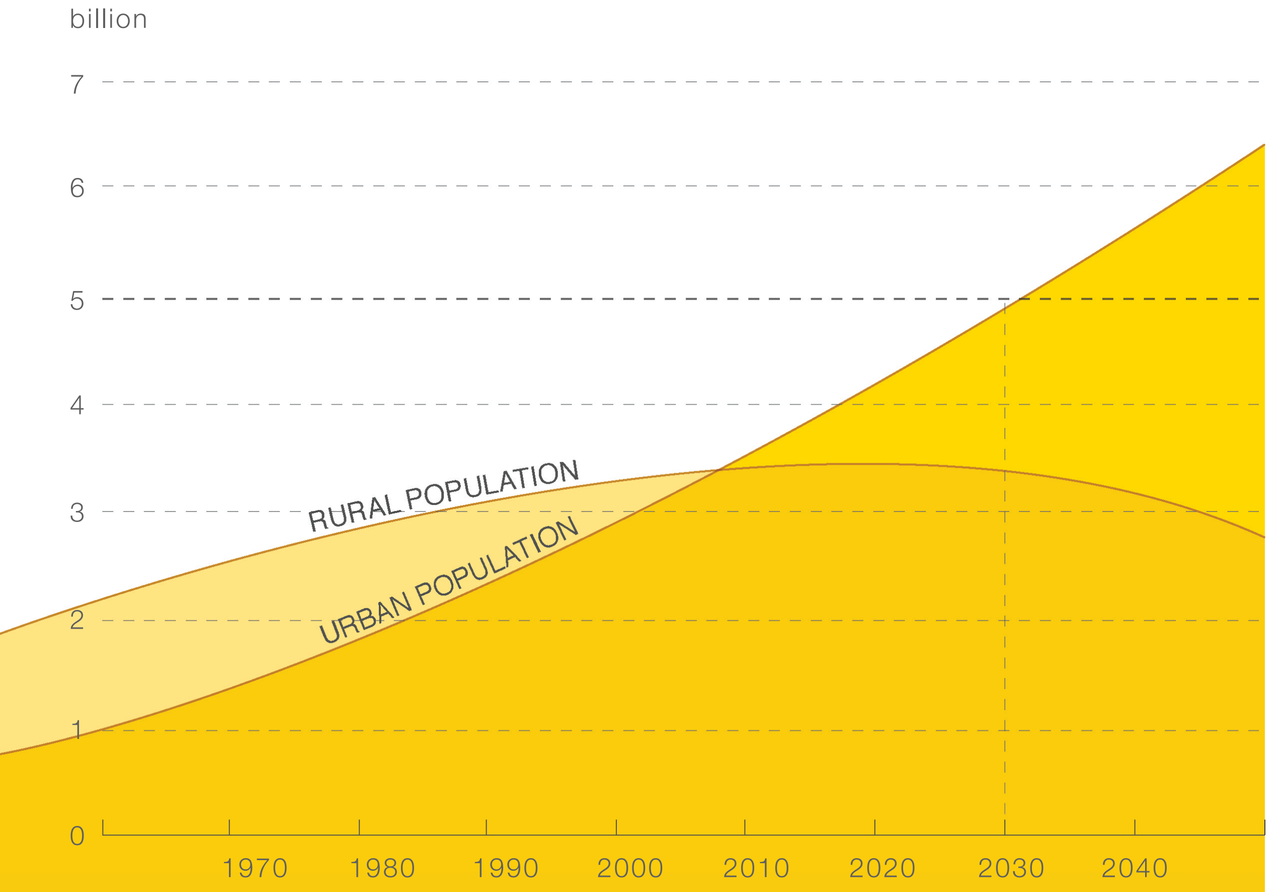


Expected urban and rural population growth
Source: GeoHive

Heute lebt über die Hälfte der Weltbevölkerung in Städten. Es ist zu erwarten, dass im Jahr 2030 diese Zahl auf 5 Milliarden ansteigen wird bei einer Gesamtbevölkerung von 8.1 Milliarden Menschen (UN Habitat Report 08/09).

Daher müssen wir besser verstehen, wie komplexe urbane Systeme in Städten zusammenwirken, damit Städte in Zukunft nachhaltiger geplant werden.

MOTIVATION



Expected urban and rural population growth
Source: GeoHive

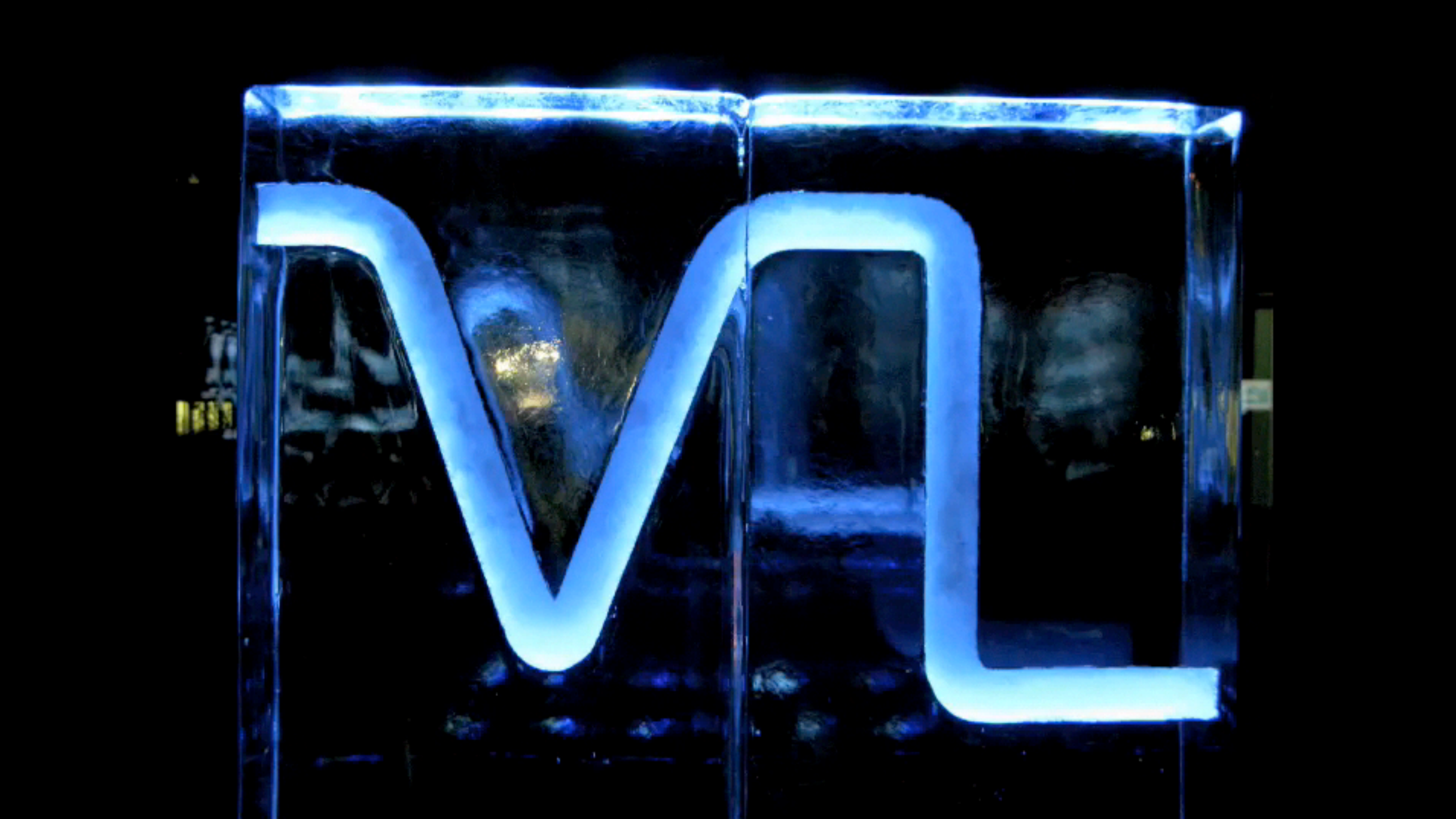
Weiterhin:

Metropolen müssen effizienter mit Energien umgehen.

Metropolen müssen sicherer werden.

Metropolen müssen mehr Lebensqualität bieten.

Caption of figure comes here
Source: Reference is stated here


VL

ETH VALUE LAB

Platform für partizipatorisches Forschen, Planen und Entwerfen von Zukunftsstädten.

Forschungslabor für Forschungsfragen zwischen Informatik, Geowissenschaften, Planungswissenschaften und Städtebau.

‘Front-End’ der Simulationsplattformen im ‘Future Cities Laboratory’ mit Singapur und in SNF Projekten.

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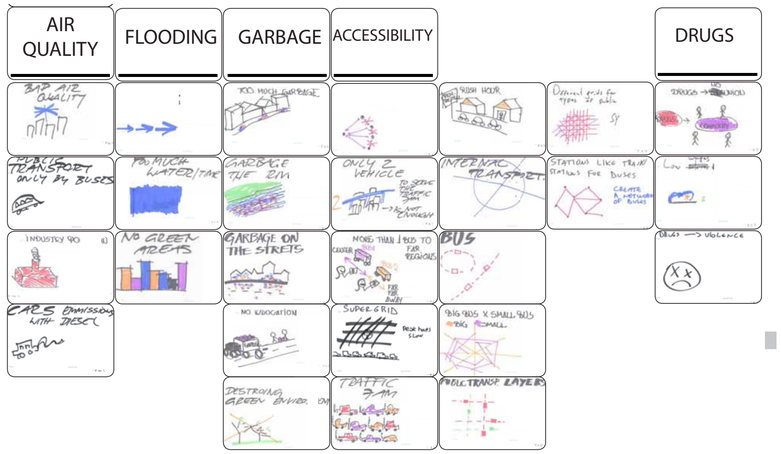
ETH VALUE LAB

ETH Value Lab
Chair for Information Architecture, ETH Zurich

PARTIZIPATIVES PLANEN

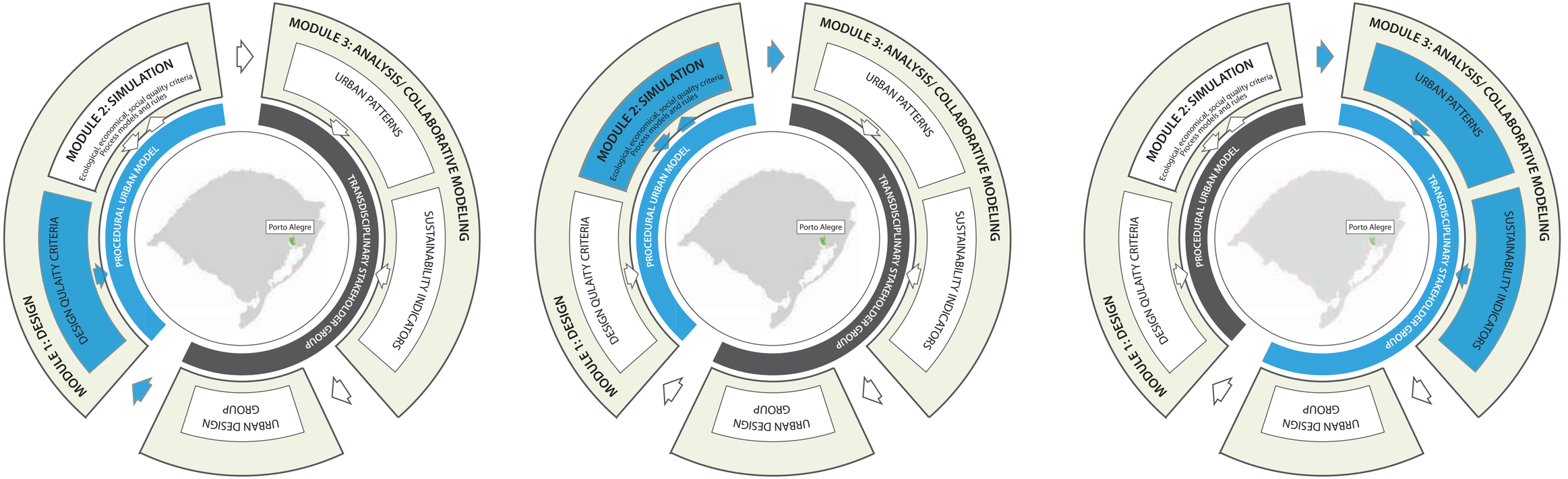
1. Anforderungen werden gemeinsam mit Stakeholdern und Urban Modeling Group definiert.
2. Urban Modeling Group entwickelt Szenarien.
3. Szenarien werden gemeinsam mit Stakeholder evaluiert und weiter angepasst.



Architectural Programming Workshop for Swiss Village Abu Dhabi
Chair for Information Architecture, ETH Zurich

Chair for Information Architecture

PARTIZIPATIVES PLANEN



Kreislauf partizipatorischen Planens - NFP 65 und Porto Alegre
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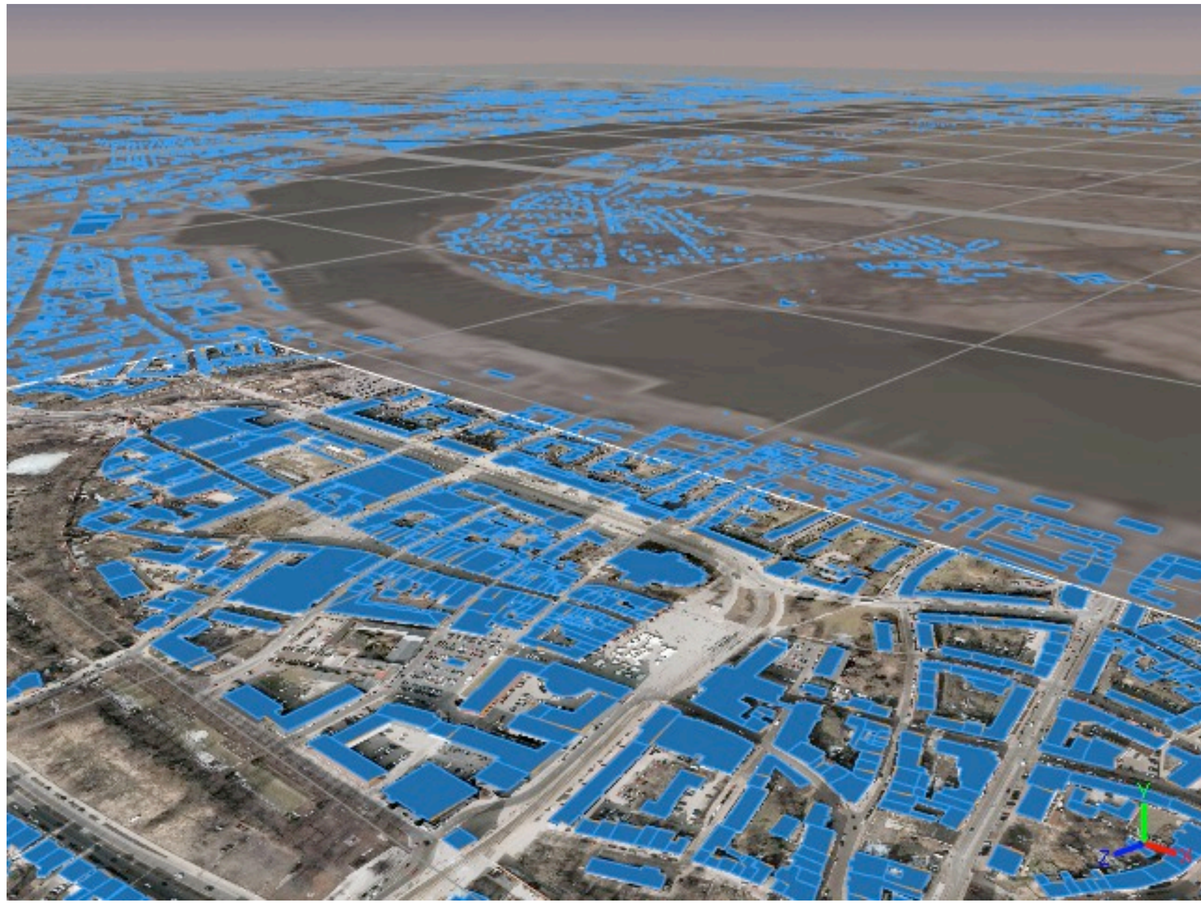
VON GIS ZU 3D

1. Regelbasierte Methode zur Generation von 3D Stadtmodellen.
2. GIS Daten assoziiert mit Grammatik.
3. Detaillierte parametrisch veränderbare Modelle.

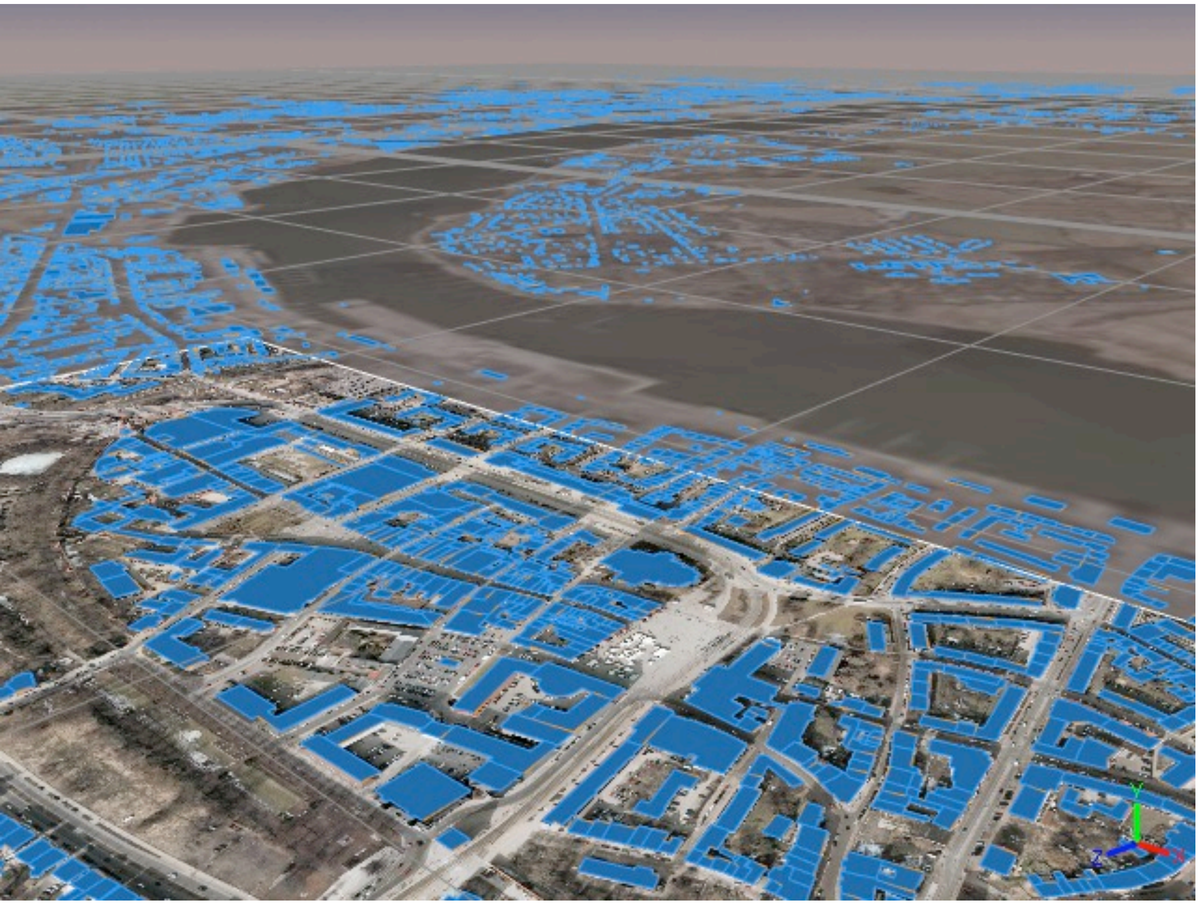
Rostock, Deutschland
Satellitenbilder: Google Maps

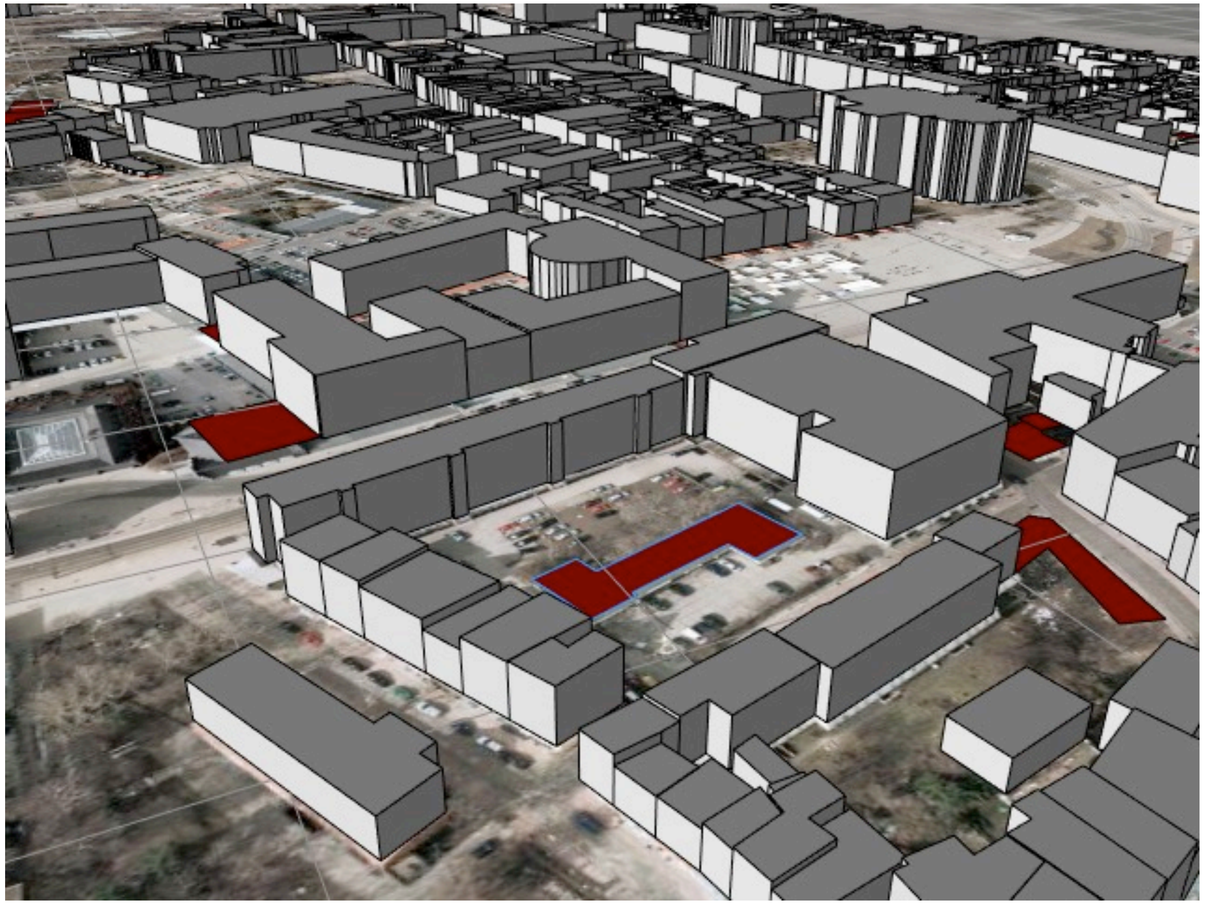
VON GIS ZU 3D

Rostock, Deutschland
Satellitenbild: Google Maps

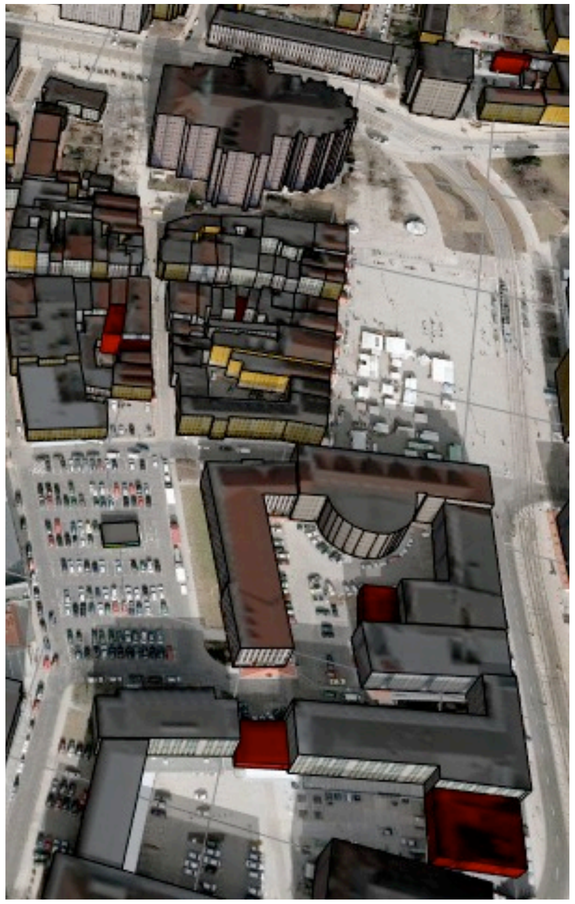


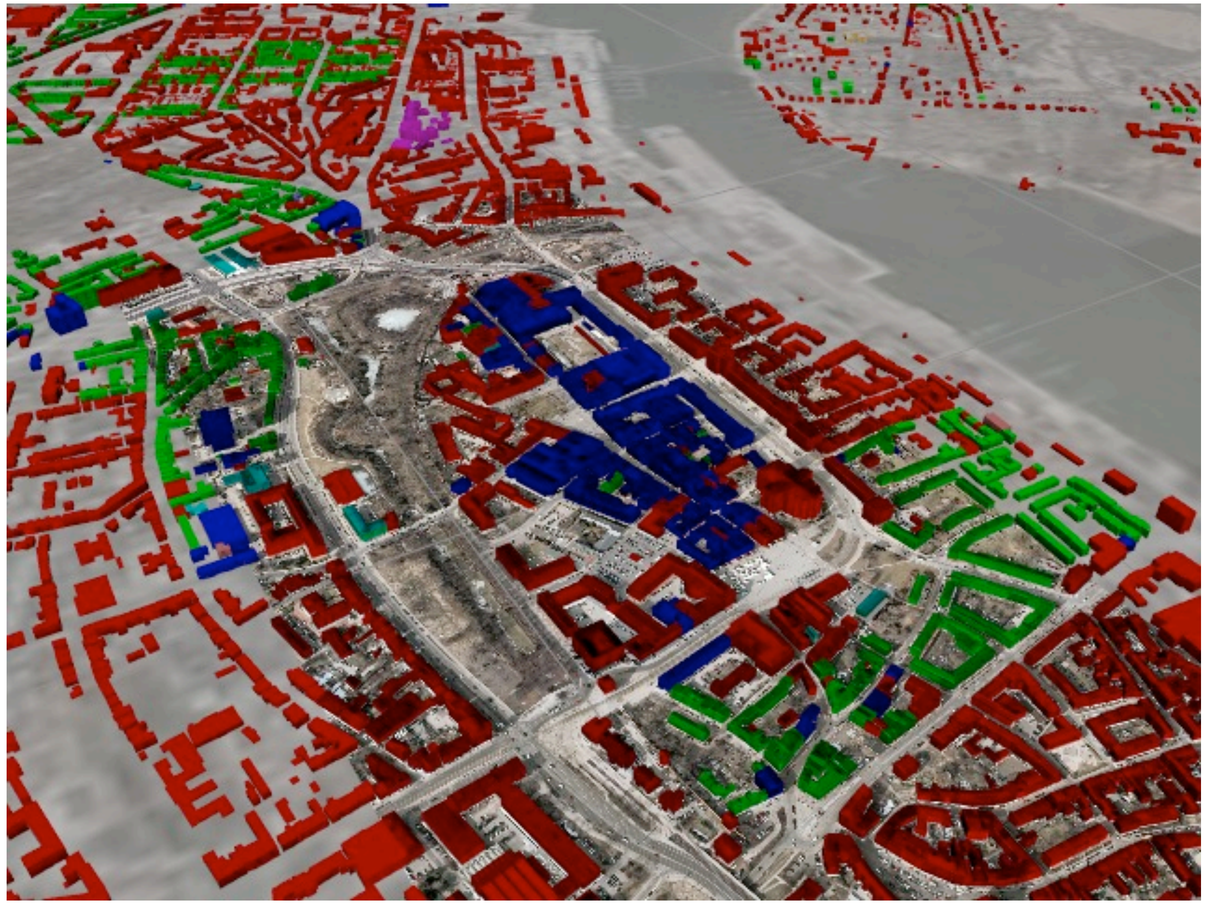
VON GIS ZU 3D



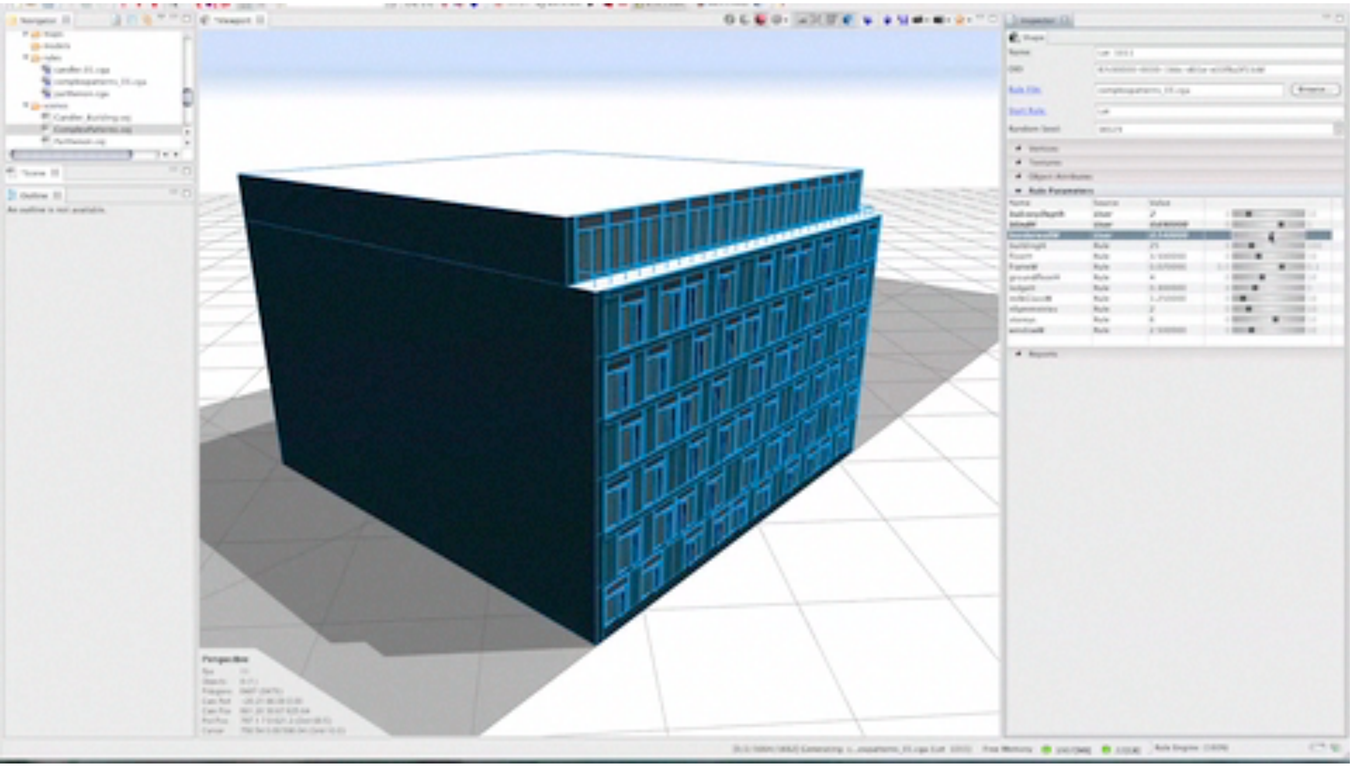


VON GIS ZU 3D





INTERAKTIVE STADTMODELLIERUNG



1. Regelbasierte Methode zur Generation von 3D Stadtmodellen.
2. GIS Daten assoziert mit Grammatik.
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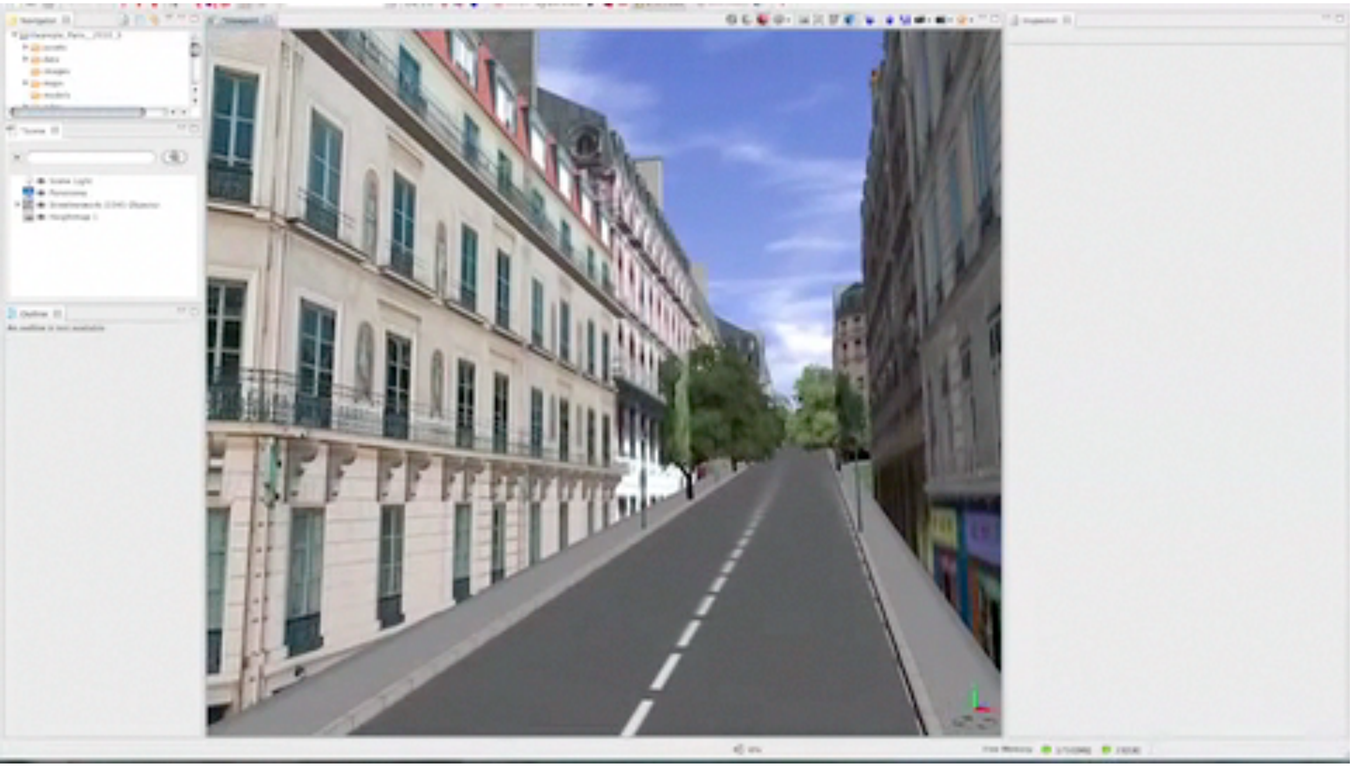
INTERAKTIVE STADTMODELLIERUNG



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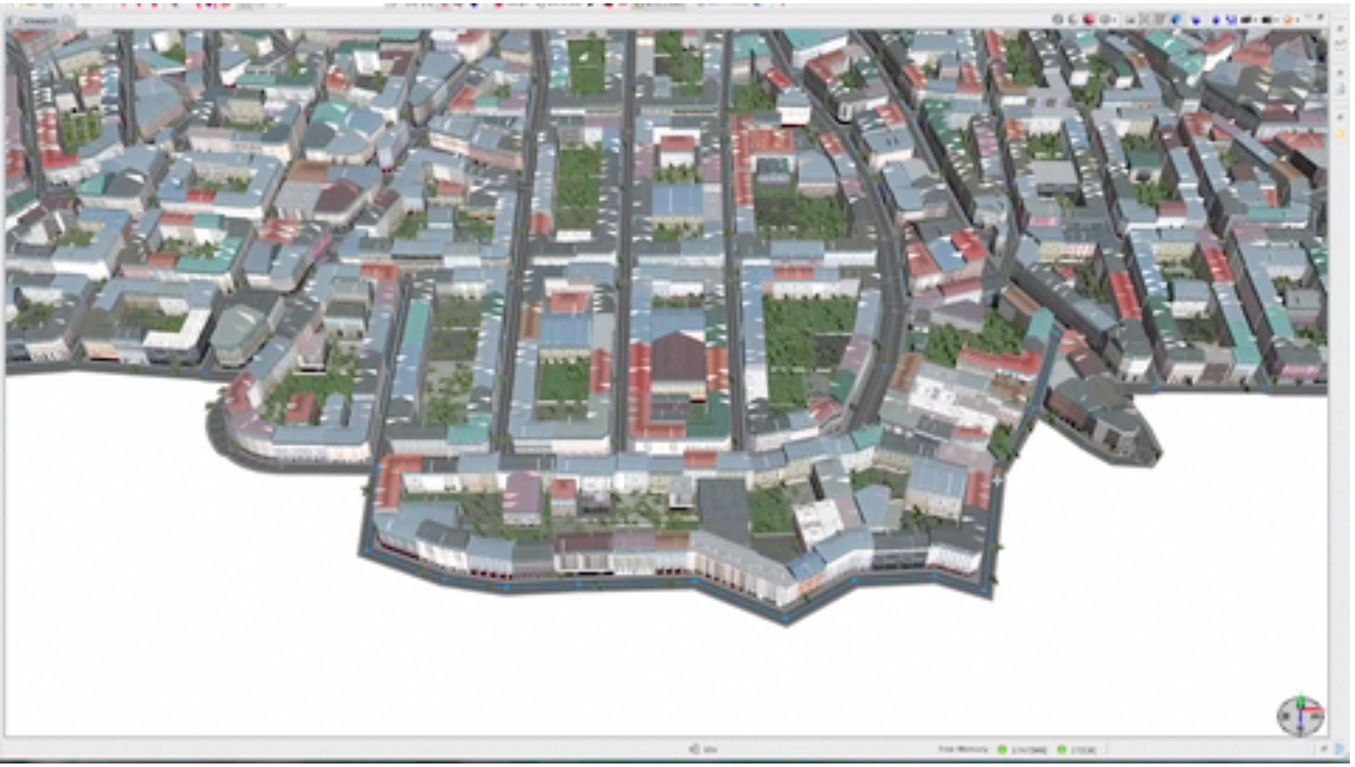

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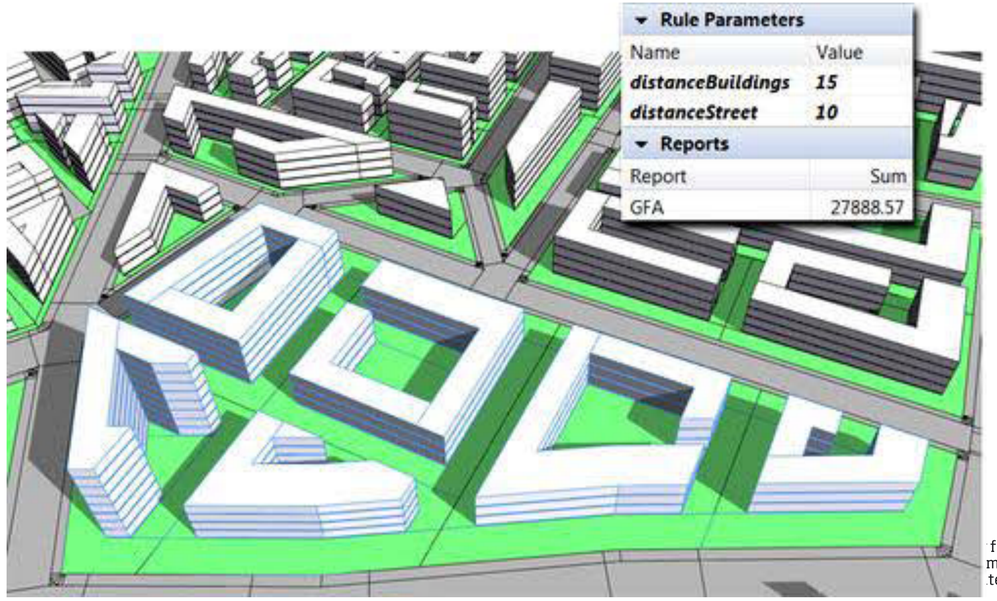
REGELBASIERTE MODELLIERUNG

CGA Shape Grammar

- Einfaches Encodieren von Fassaden- und Gebäudetypologien
- Split Grammar
- Verhalten vom Kontext abhängig
- Produkt CityEngine (http://www.procedural.com)



Pascal Müller, Jan Halatsch
Procedural AG, ETH Zurich

for
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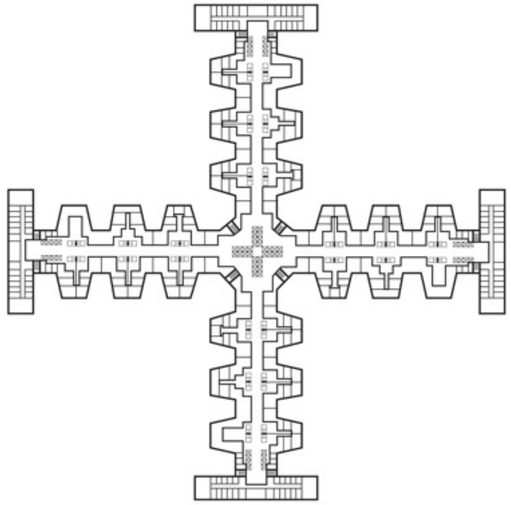
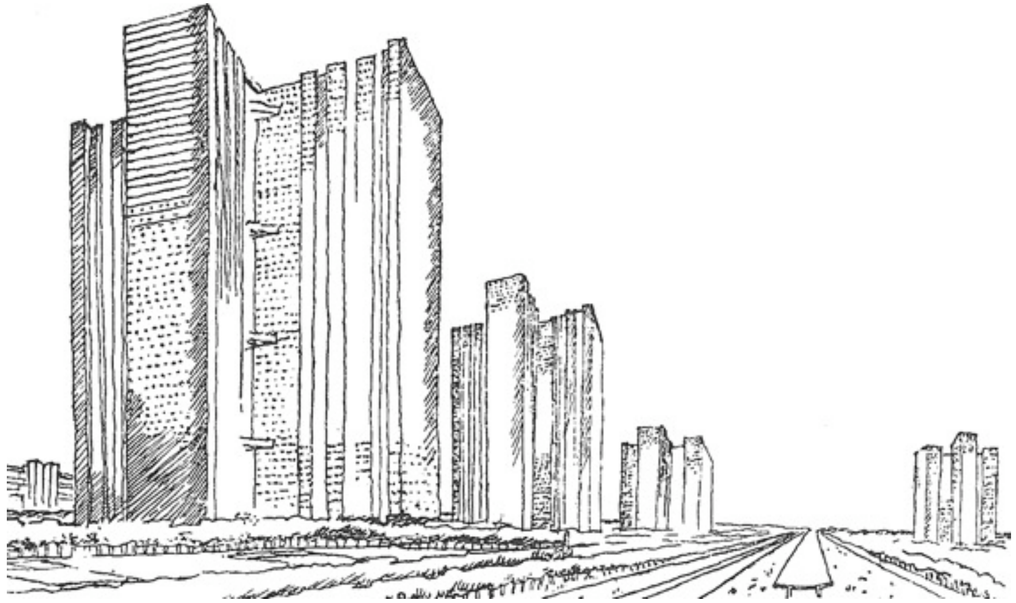
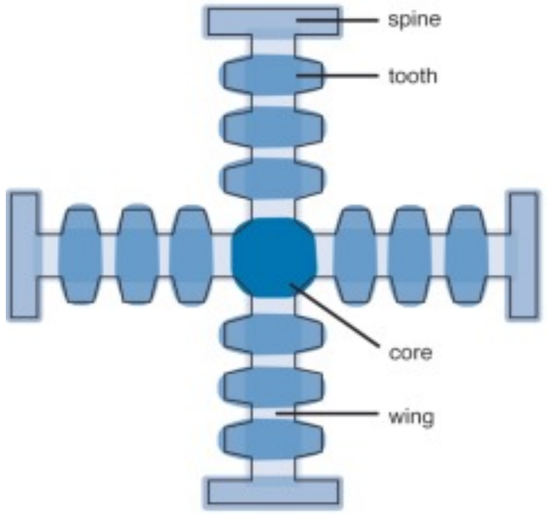


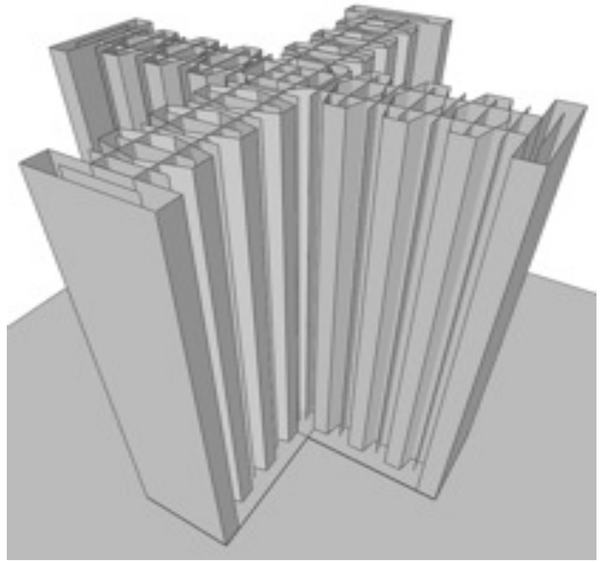


PARAMETRISCHE TYPOLOGIEN

Beispiel

Jan Halatsch
ETH Zurich





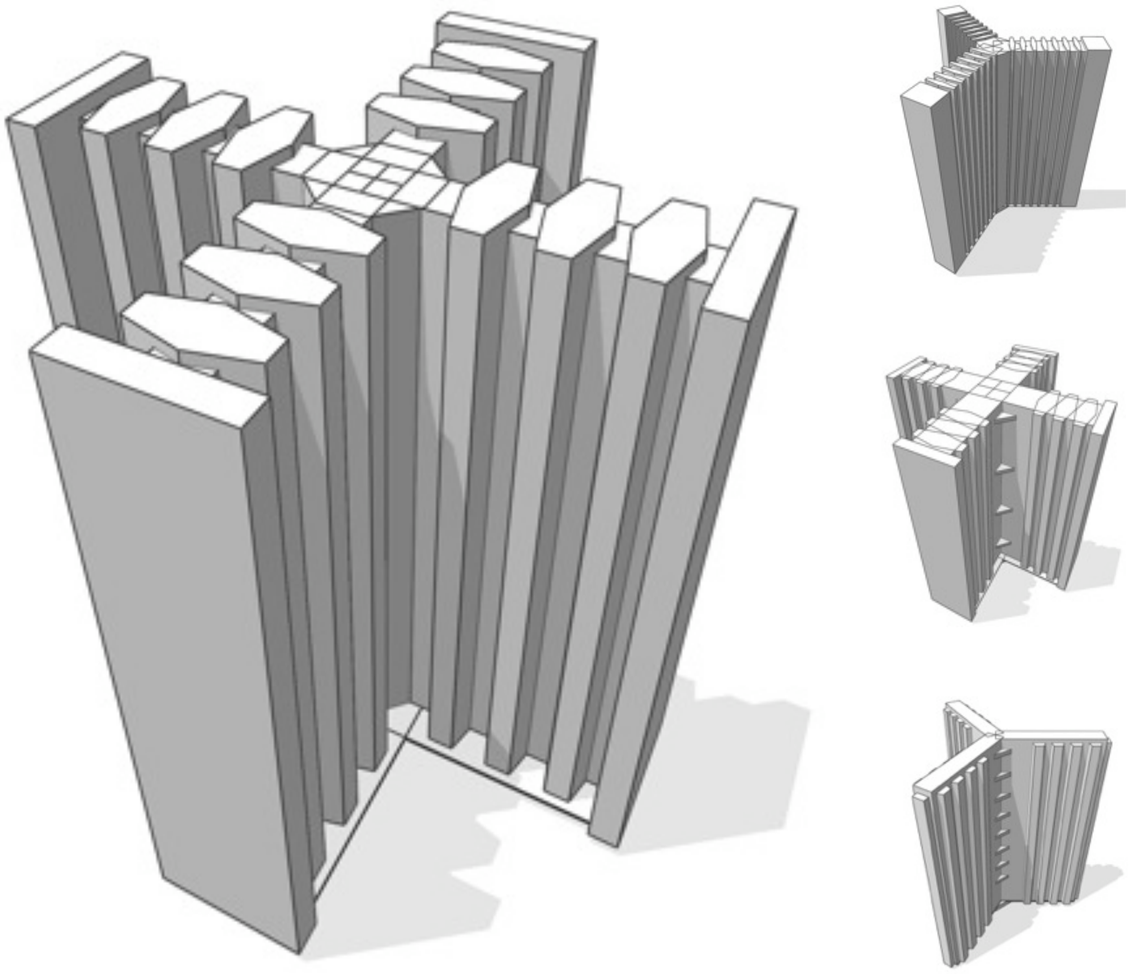
KONTROLL PARAMETER

BUILDING_H = 220
BUILDING_W = 100
GROUNDFLOOR_H = 6
WING_W = 16
SPINE_W = 50
TEETH_PROJ = 10
TEETH_DIST = 12

Jan Halatsch
ETH Zurich

PARAMETRISCHE TYPOLOGIEN

Beispiel



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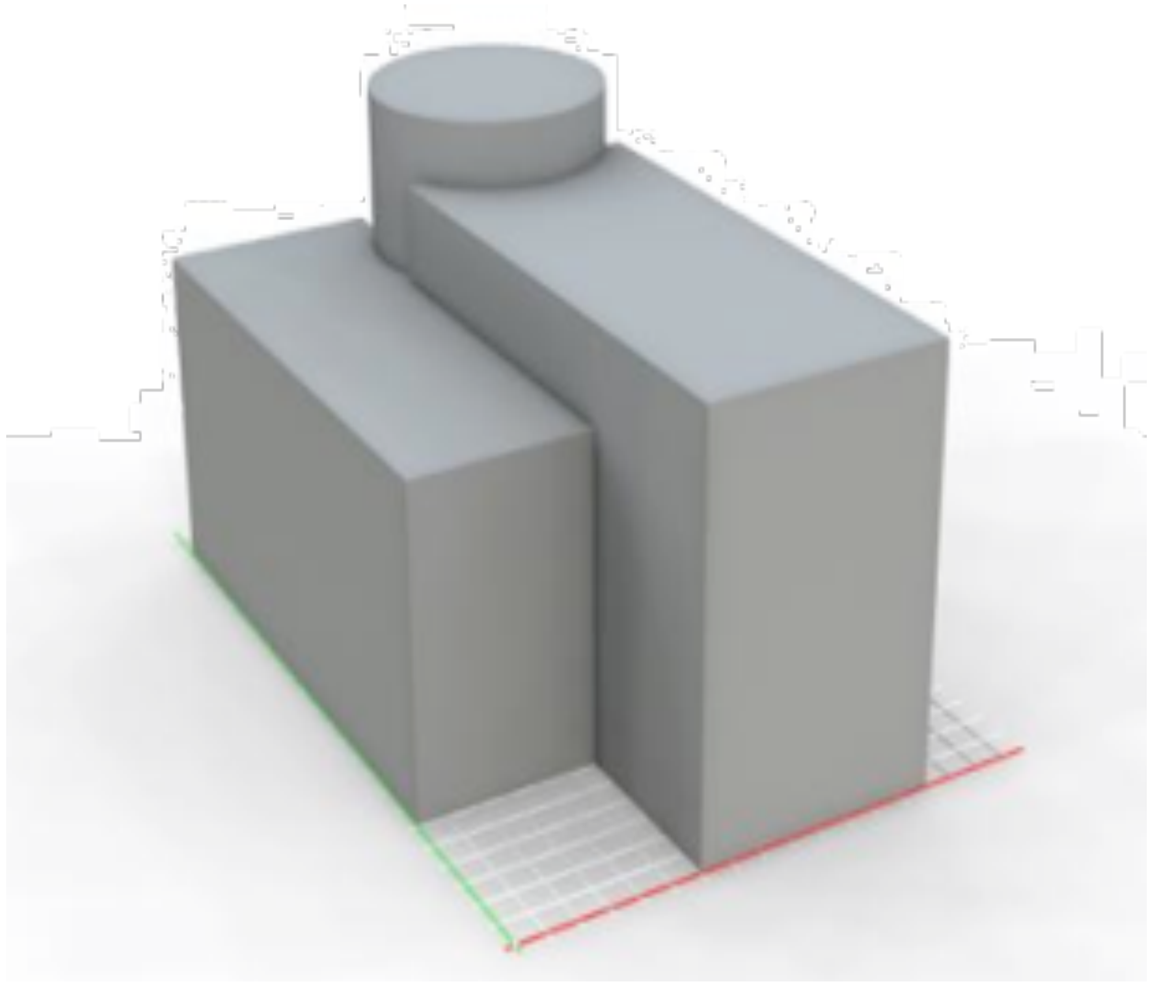
ETH Zurich

BEISPIEL MASS MODELING

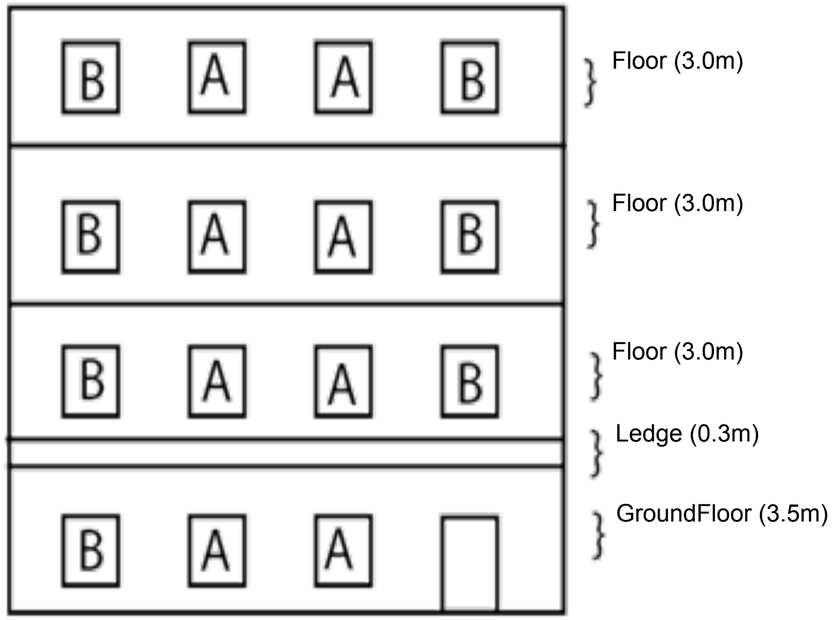


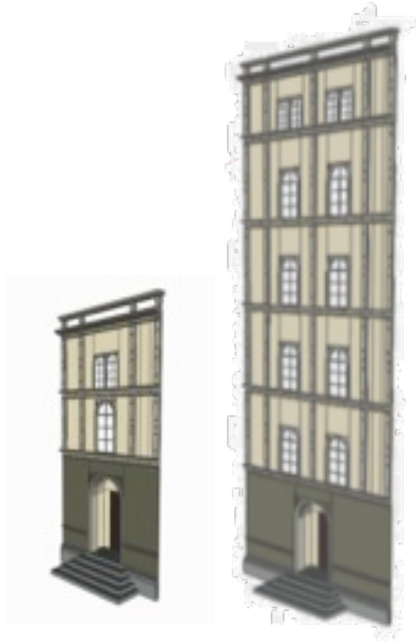
Geometry Insertion: i(objId)
Transformations: t(tx,ty,tz), s(sx,sy,sz), r(rx,ry,rz)
Branching: [...]
Simple example:

```
A  ->[ t(0,0,6) s(8,10,18) B ]
       t(6,0,0) s(7,13,18) C
       t(0,0,16) s(8,15,8) i(cylinder) D
```

Pascal Müller
ETH Zurich

BEISPIEL FASSADEN





Example

Facade -->

split(y) **{** 3.5: GroundFloor | 0.3: Ledge | **{** 3: Floor **}*** **}**

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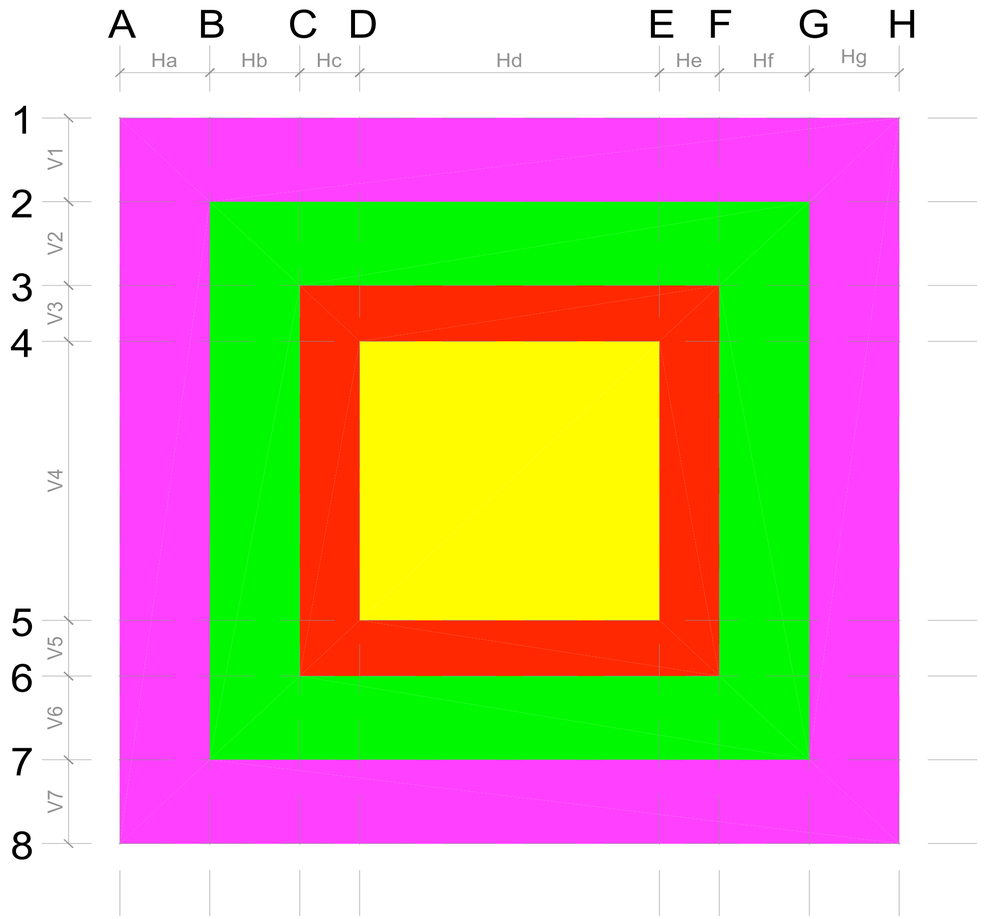
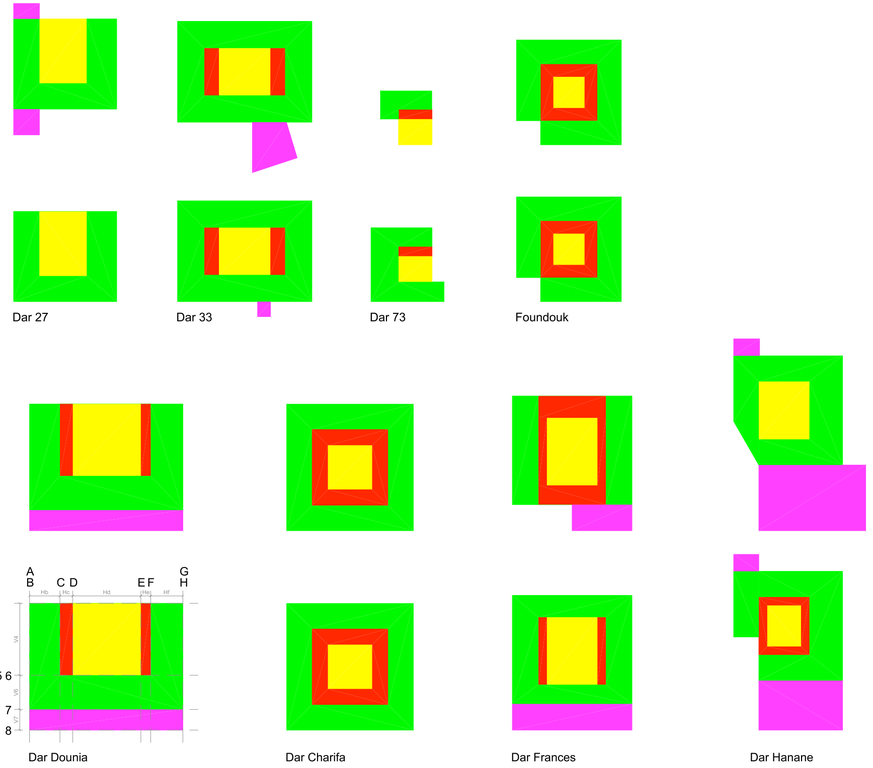
BEISPIEL TYPOLOGIEN



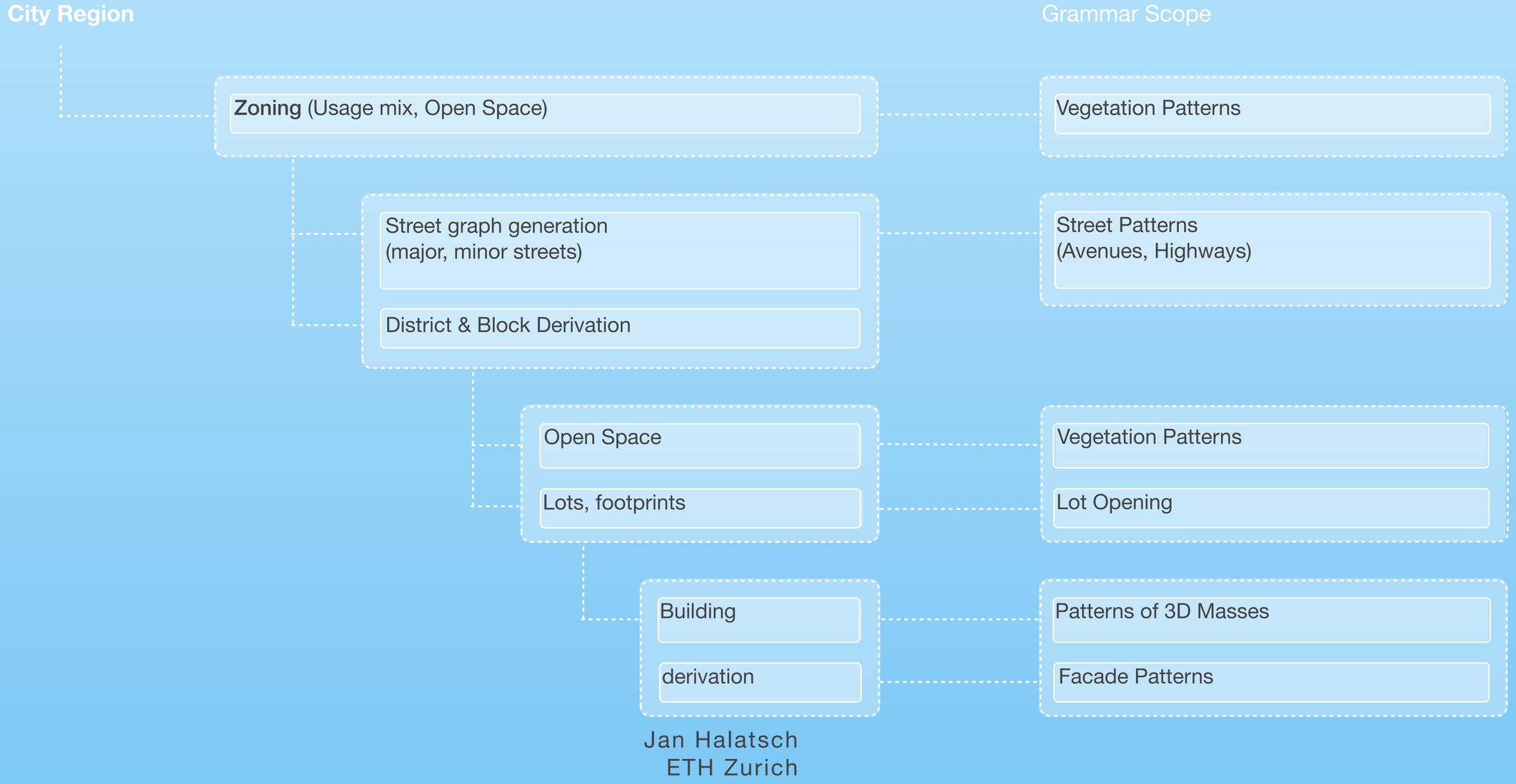


José Duarte
TU Lisbon

Chair for
Information
Architecture

MASSSTABSFREIES STADTMODELL

Grammar Scope



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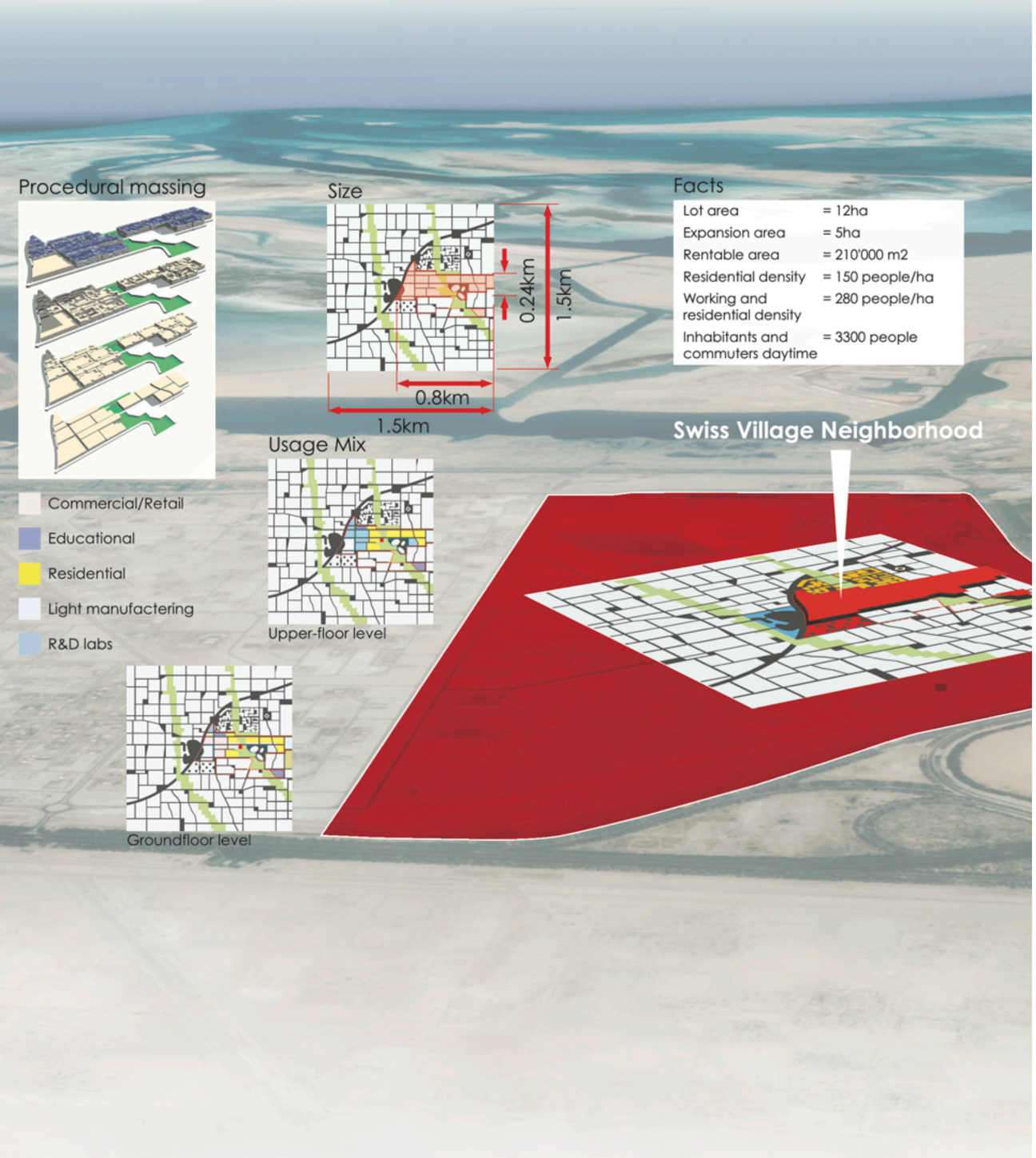
SWISS VILLAGE ABU DHABI

Masdar Masterplan



Swiss Village Abu Dhabi
Chair for Information Architecture, ETH Zurich
Foster+Partners, ffgs.org

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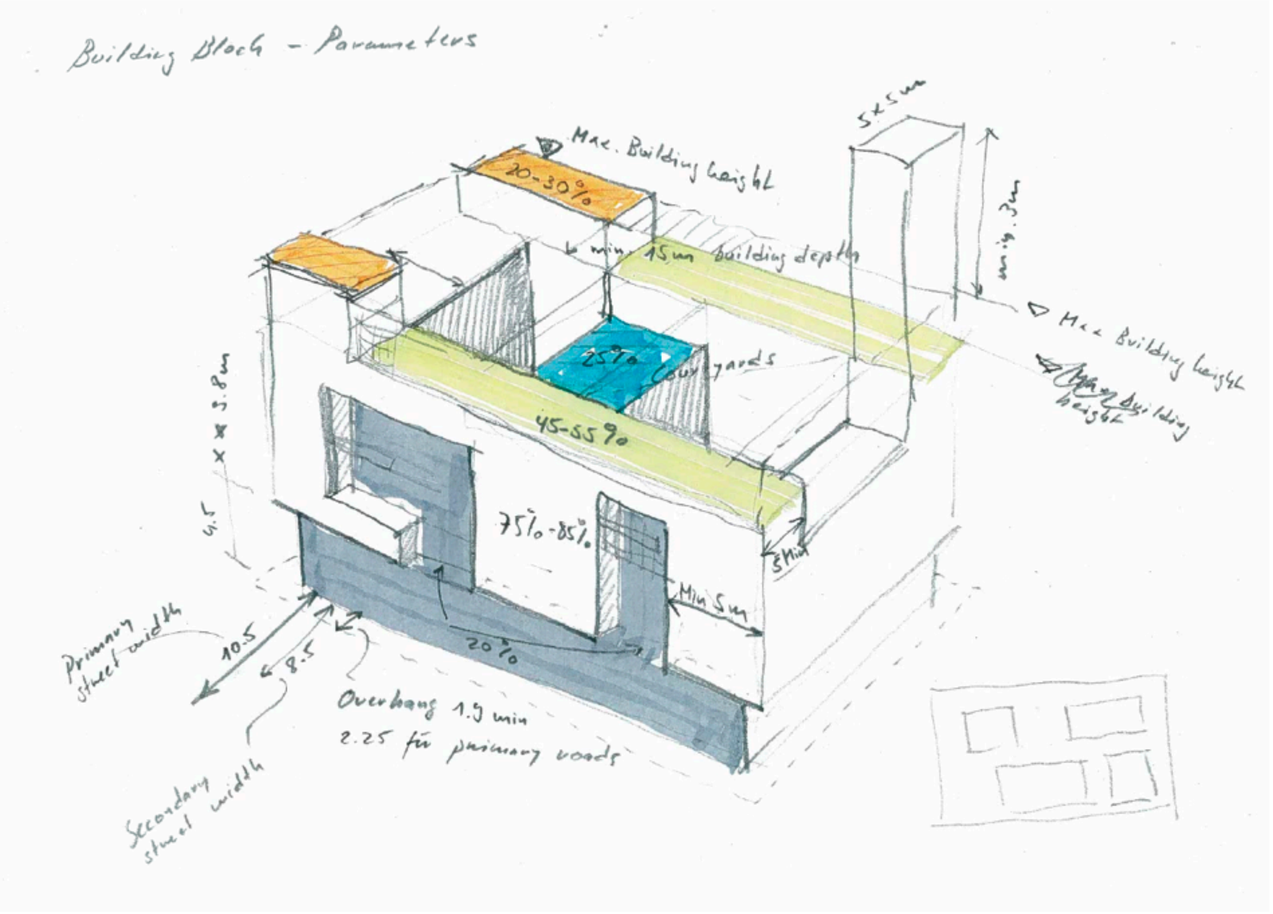
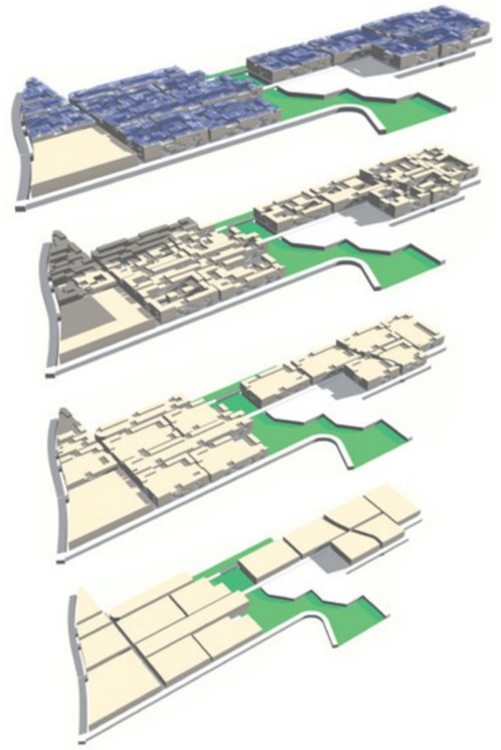
Masdar Masterplan

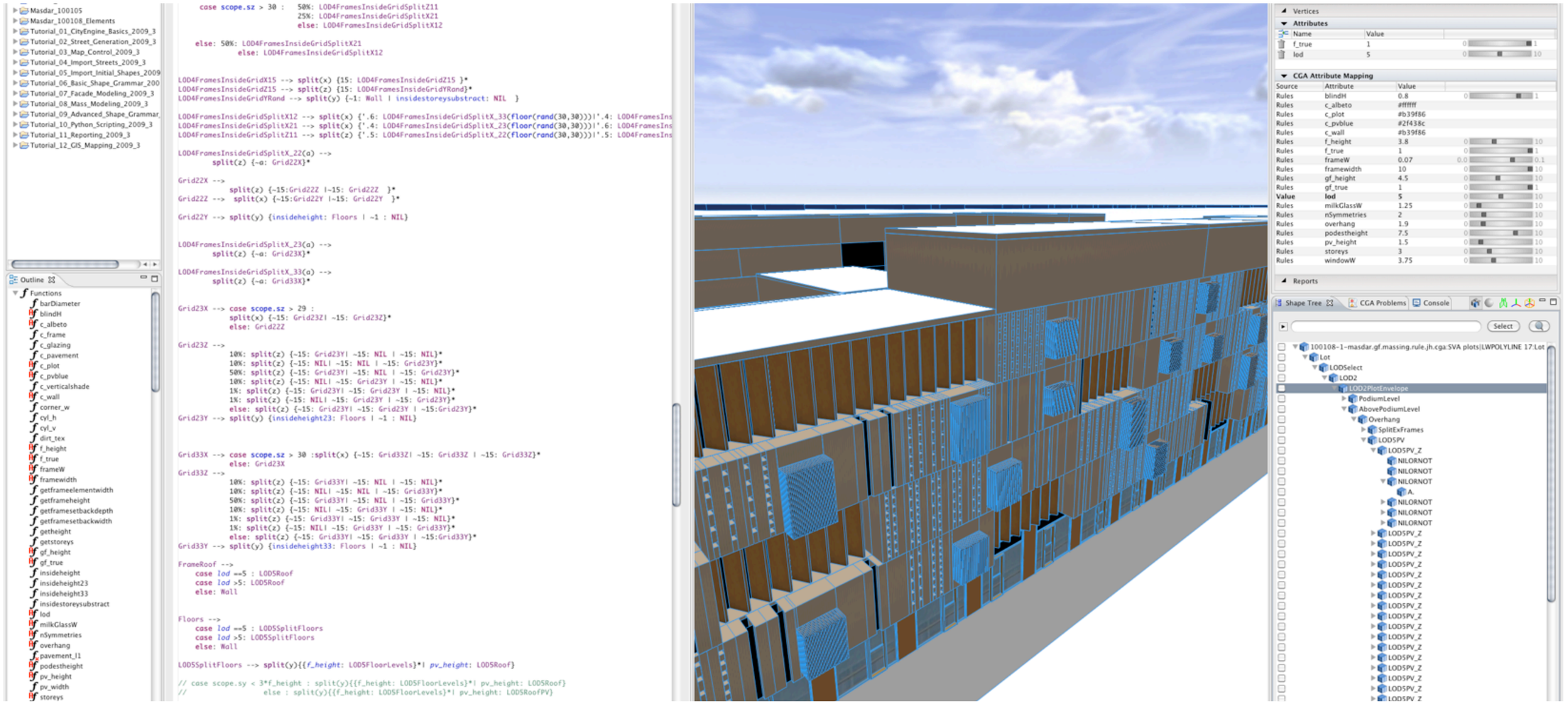




Passive design guidelines from Foster+Partners → Procedural Model

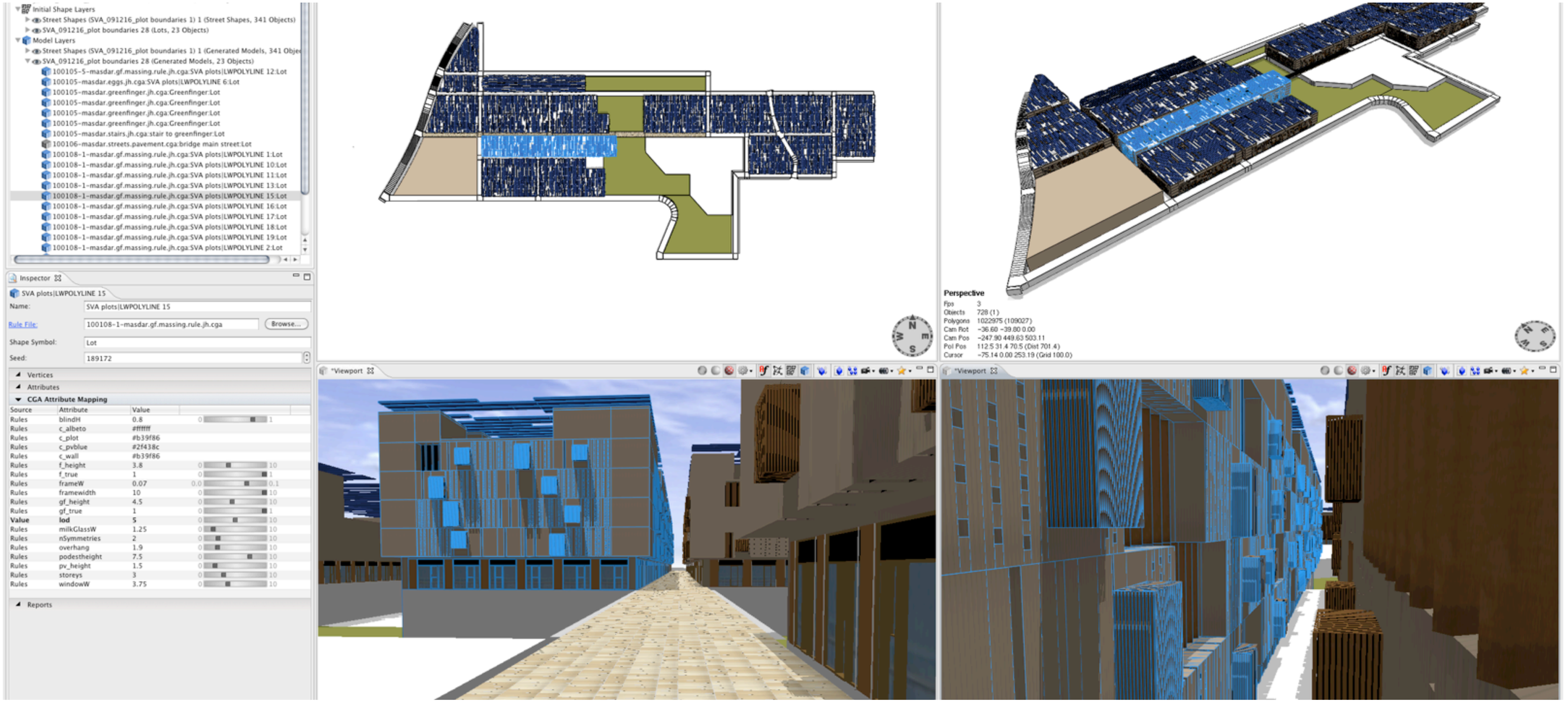
SWISS VILLAGE ABU DHABI

Masdar Masterplan



SWISS VILLAGE ABU DHABI

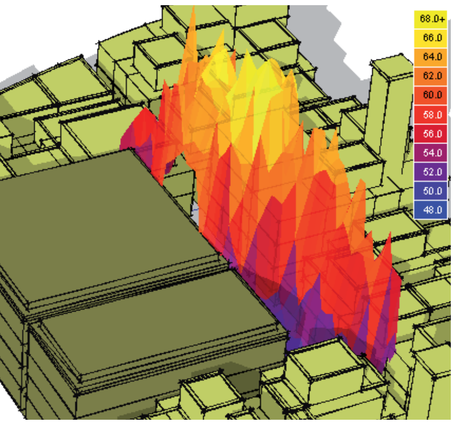
Masdar Masterplan

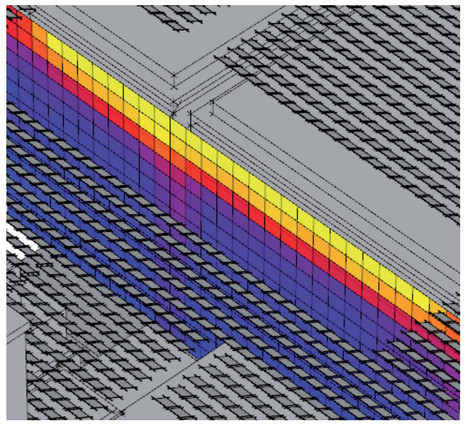


SWISS VILLAGE ABU DHABI

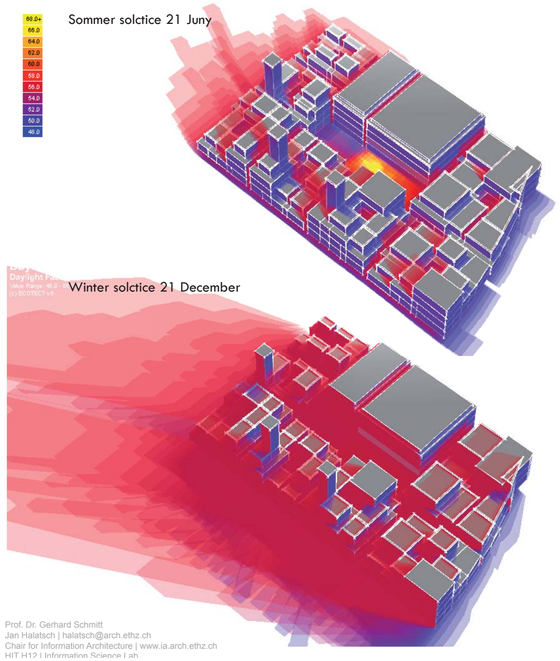
Masdar Masterplan

Evaluierung der Gebäudestrukturen
hinsichtlich gegebener
Passiv-Design-Regeln

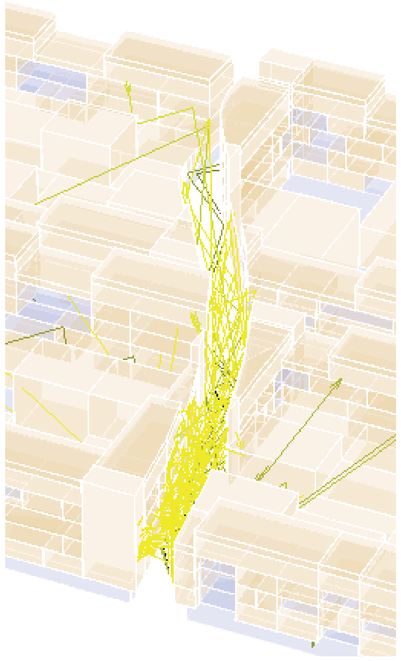




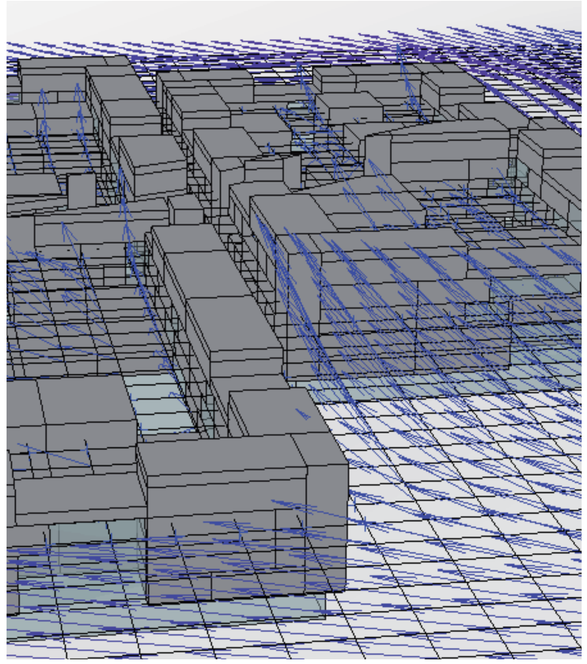
Sonnenlast auf Fassaden und Stadtraum
ETH Zürich



Verschattungsstudien



Akkustikanalysen

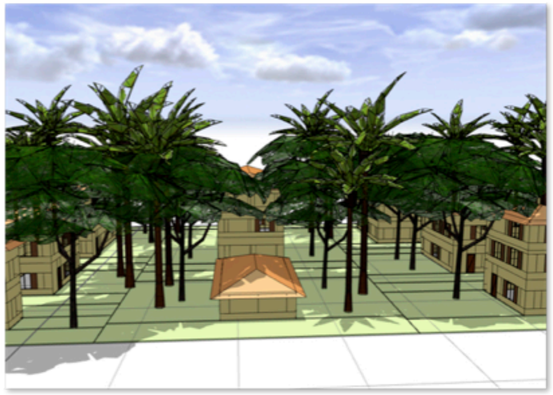


Windströmungen

SWISS VILLAGE ABU DHABI

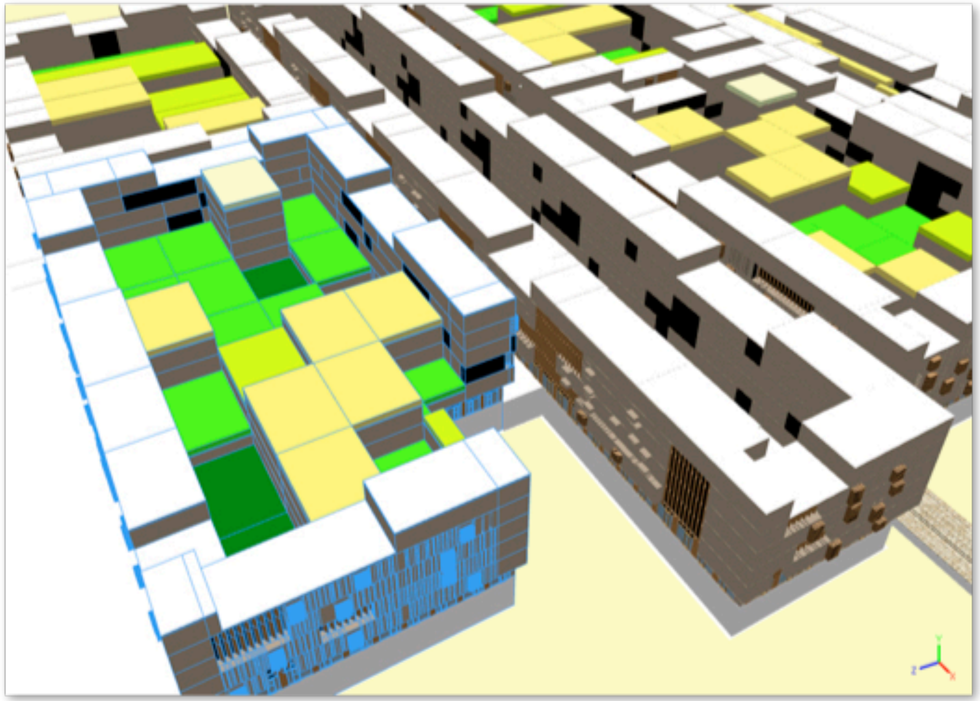
Masdar Masterplan

Abklärung von Habitatsanforderungen
und natürlichen Potentialen



Report	Number of instances	Sum
Phoenix dactylifera	16	16
Pinus pinaster	9	9
Shadow area (m^2)	25	1941.2
Water usage (m^3)	25	3690.0

Natürliches Verschattungspotential
ETH Zürich



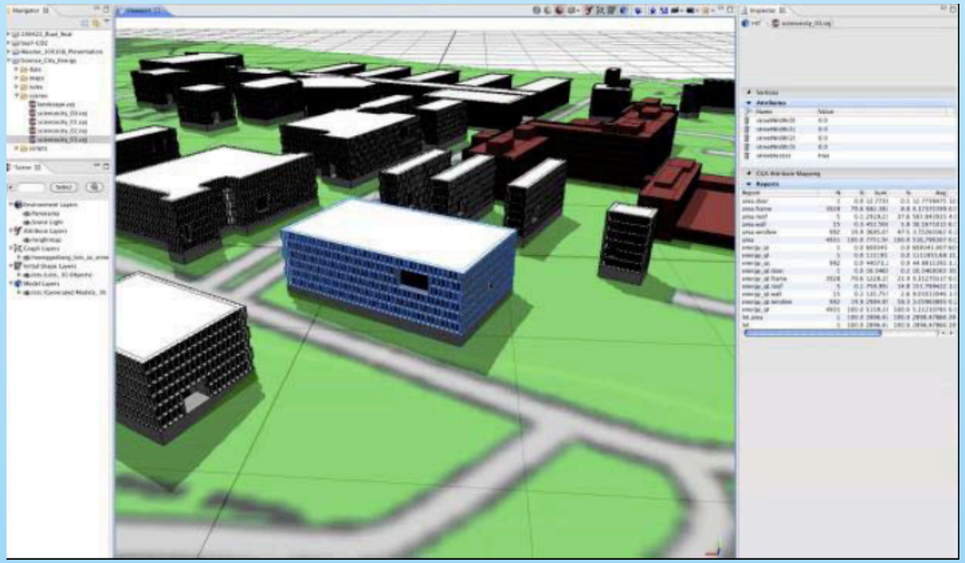
Report	Number of Area types	Area type %	Sum Area (m^2)
Area	24	100.0	10685
Area.Level 0	4	16.6	1576
Area.Level 1	11	45.8	5112
Area.Level 2	2	8.3	658
Area.Level 3	6	25.0	2862
Area.Level 4	1	5.1	477

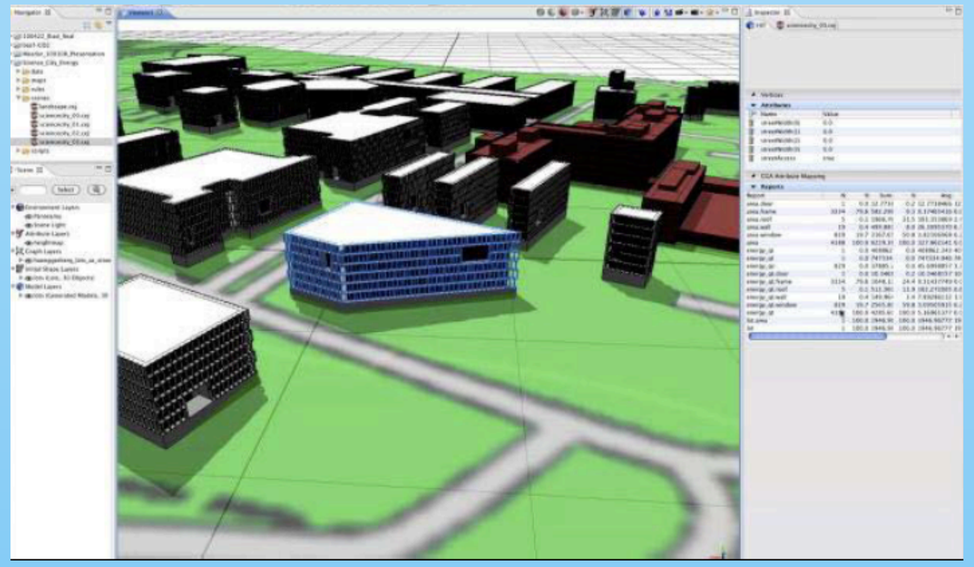
Habitatsanforderungen für Foki-Spezien
U. Wissen Hayek, PLUS, ETH Zürich

SWISS VILLAGE ABU DHABI

Lehre FS2010

EVALUATION SCIENCE CITY

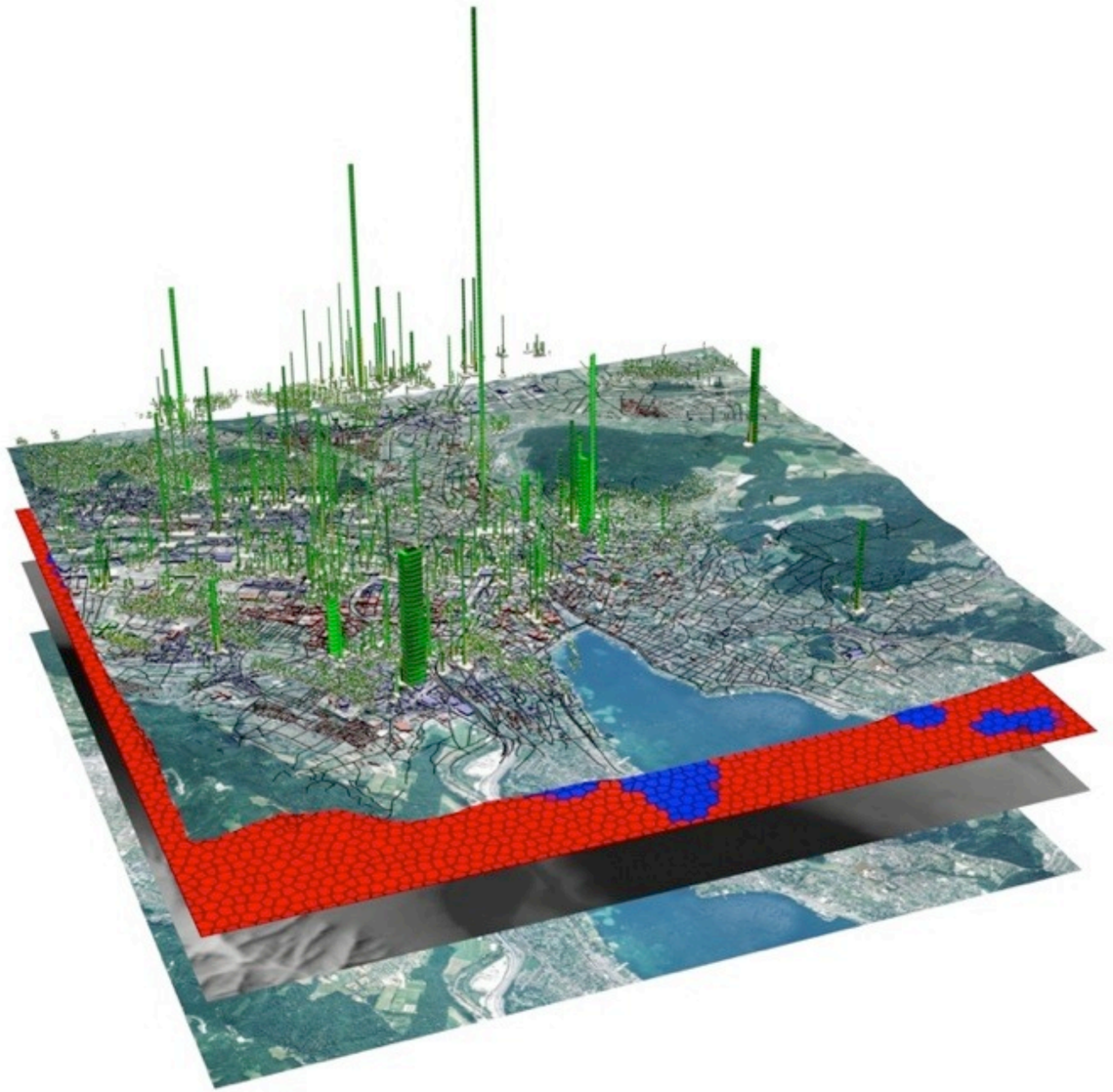




CO2 Simulation, Science City
Chair for Information Architecture, ETH Zürich

Bewertung des ETH Campus Science City hinsichtlich seiner CO2 Emissionen

1. Präzise Nachbildung der Gebäudestrukturen.
2. Berechnung von CO2 Emissionen pro Gebäude.
3. Interaktive Exploration von Verbesserungspotentialen.



CO2 Simulation, Stadt Zürich
ETH Zürich

CO2 EMISSIONEN STADT ZÜRICH

1. Prototyp zur stadtmassstäblichen Berechnung von CO2 Emissionen.
2. 3D Stadtmodell zur Berechnung der CO2 Emissionen pro Gebäude.
3. GIS Daten assoziiert mit Evaluation.
4. Resultate Informationsvisualisierung und parzellengenaue Listenauswertung.

CO2 Zurich

Visualization of the CO2 consumtion of every building

EVALUATION VON ZUKUNFTSSZENARIEN

Wie sähe ein Zürich in 100 Jahren aus, wenn kein Atomstrom und keine fossilen Brennstoffe mehr zur Verfügung stehen?

1. Kompakte Gebäudestrukturen.
2. Stadt der kurzen Wege.
3. Langdistanzen über Schienenverkehr.
4. Lokale und exportierte Energieerzeugung.

A celebração de eventos mundiais vem gerando grande impacto nas cidades anfitriãs. Além de trazer visibilidade e investimentos, as sedes acabam recebendo benefícios permanentes, o chamado legado do evento. Cidades como Barcelona, Atlanta e Sydney tiveram melhorias significativas em infra-estrutura e outros aspectos urbanos, elevando a qualidade de vida de seus cidadãos não só durante mas também após o evento.

No Rio de Janeiro, os Jogos Pan-americanos de 2007 deixaram um legado de novas instalações esportivas e uma cidade mais organizada. A capacidade do Brasil em sediar grandes eventos desportivos também foi reforçada, resultando na bem-sucedida campanha do país para sediar a Copa do Mundo de 2014 e os Jogos Olímpicos de Verão de 2016 nos anos seguintes. Eventos mundiais esportivos constituem oportunidade real de mudança de cenários urbanos, motivados pela paixão das nações pelo esporte.

Porto Alegre, uma das cidades brasileiras que vai sediar jogos da Copa do Mundo de 2014, conjetura uma série de alternativas de desenvolvimento considerando tanto as demandas específicas do evento como a solução de problemas antigos . A Universidade Federal do Rio Grande do Sul, em parceria com a ETH Zurique, está realizou uma oficina colaborativa de desenho urbano no período de 18 a 28 de Junho de 2010, tendo como pano de fundo soluções urbanísticas para cinco grandes vazios urbanos inseridos na malha urbana de Porto Alegre em diferentes regiões da cidade. Com os investimentos planejados para a Copa do Mundo de 2014, tais áreas podem contribuir decisavamente para articular a consolidação da malha urbana da capital do Estado.

A Oficina Cenários Urbanos da Copa do Mundo de 2014 foi concebida como estratégia para criar alternativas de ocupação de áreas-chave de Porto Alegre e, simultaneamente, possibilitar a aferição das reações do público às alternativas. Utilizando ferramentas de colaboração e comunicação, como vídeo conferência, maquetes eletronicas animadas, compartilhação de arquivos na internet e redes sociais, a oficina promoveu a troca de informações em tempo real entre a equipe de composta pela UFGRS e pela ETH Zurique, e uma rede on-line de políticos, líderes comunitários, especialistas, profissionais, pesquisadores da UFRGS e de outras universidades brasileiras. Foi a primeira de uma série de oficinas a serem repetidas em outras cidades-sede em colaboração com diferentes universidades brasileiras, a fim de explorar e simular os impactos do maior evento futebolístico do planeta no planejamento urbano das cidades-sede da Copa de 2014.

FALLSTUDIE PORTO ALEGRE

iA Chair for Information Architecture

Twelve cities in different states were chosen as World Cup host cities. Manaus, Fortaleza, Natal, Recife, Salvador, Cuiabá, Brasília, Belo Horizonte, Rio de Janeiro, São Paulo, Curitiba and **Porto Alegre**.

Porto Alegre is the eleventh most populous municipality in Brazil and the centre of Brazil's fourth largest metropolitan area. It is also the capital city of the southernmost Brazilian state of Rio Grande do Sul. The city is the southernmost capital city of a Brazilian state. Porto Alegre is one of the most important cultural, political and economic centers of Brazil. Two Mercosul countries, Argentina and Uruguay, border Rio Grande do Sul.

Porto Alegre was the seat of the World Social Forum in 2001, 2002, 2003 and 2005. As the second largest city in southern Brazil, it is also an important industrial center in this geographical área. Important Brazilian universities, such as UFRGS, UFCSPA and PUCRS are located there.

Porto Alegre in Numbers

- Population (2008): .....1.438.830 habitants
- Area (2008): .....496,8 km²
- Density (2008): .....2.896,0 hab/km²
- Urbanization Rate (2008): .....98,1 %
- Illiteracy Rate (2000): .....3,45 %
- Life Expectancy (2000): ..... 71,59 years
- GDP (2007): .....R$ 33.434.026.000
- GDP per capita (2007): .....R$ 23.53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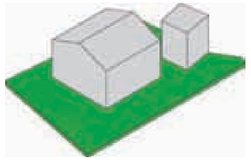
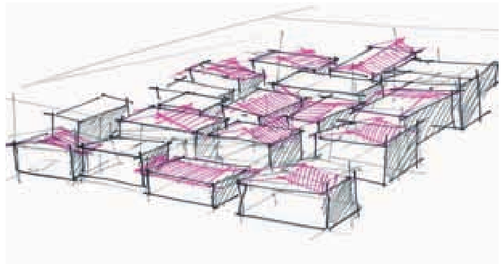
BUILDING TYPOLOGY ANALYSIS

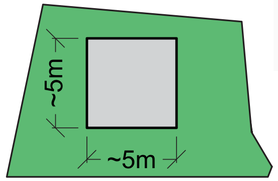
RESIDENCIAL DE BAIXA RENDA | LOW INCOME RESIDENTIAL

VILAS
SQUATTERS

Exemplo: Vila Dique

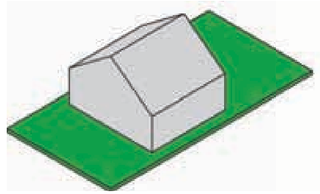


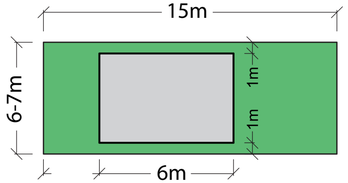




HABITAÇÃO DE INTERESSE SOCIAL
SOCIAL HOUSING

Exemplo: Vila Farrapos

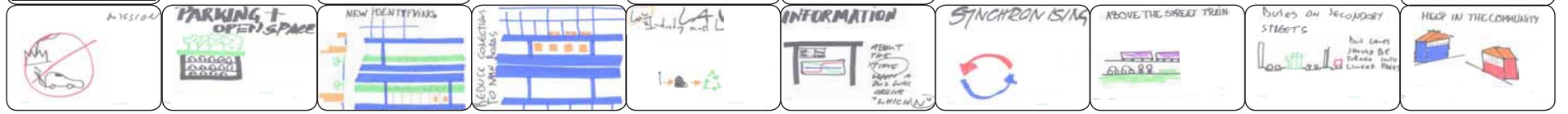


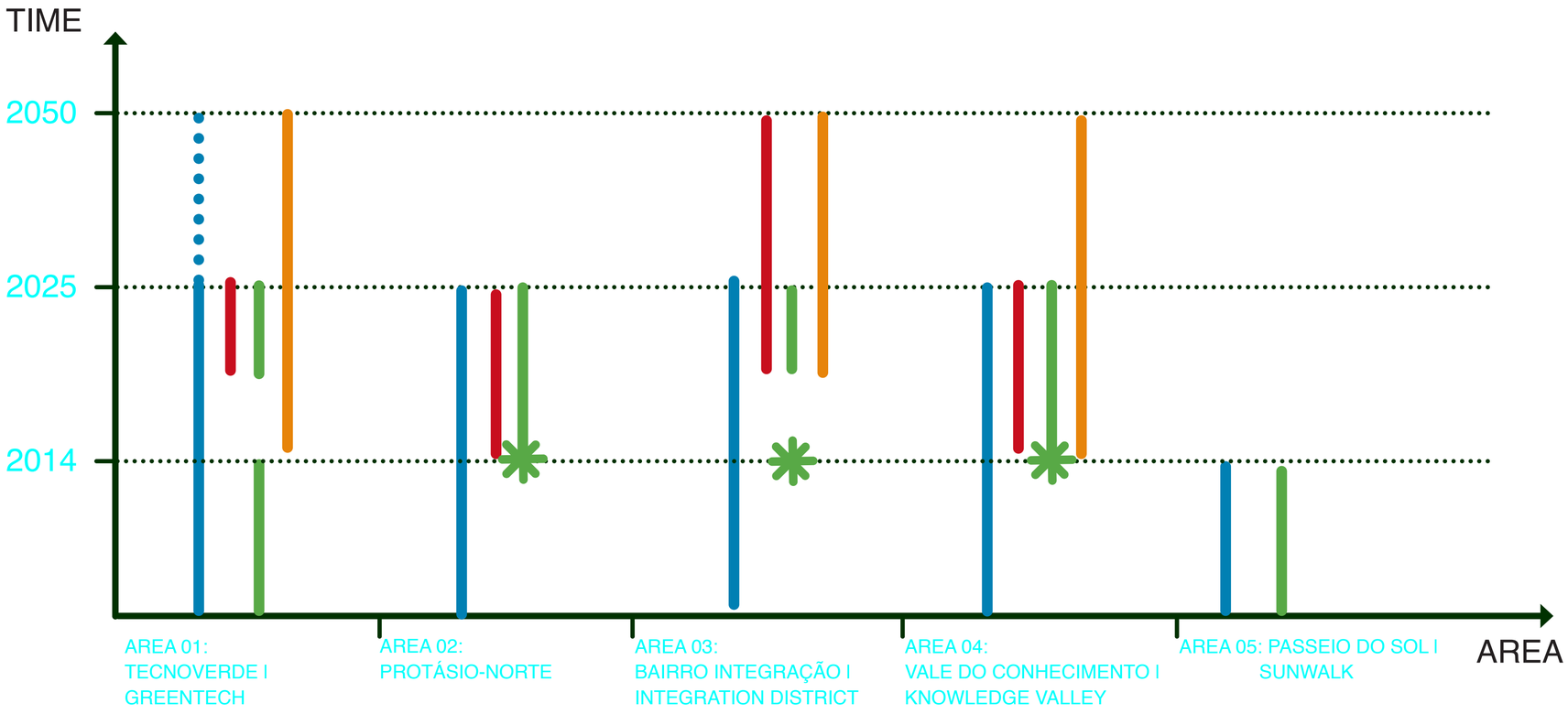


TOP TEN DEVELOPMENT GOALS - REGIONAL

SOCIAL	• Adress the drugs consumption problem • Facilitate the integration between social groups of different income
ECONOMICAL	• Attract new high tech industry • Prepare the city infrastructure to increase income and positive visitor perception during World Cup 2014
ECOLOGICAL	• Improve air quality • Protect vital green areas • Upgrade waste management methods

AIR QUALITY | FLOODING | GARBAGE | ACCESSIBILITY | DRUGS



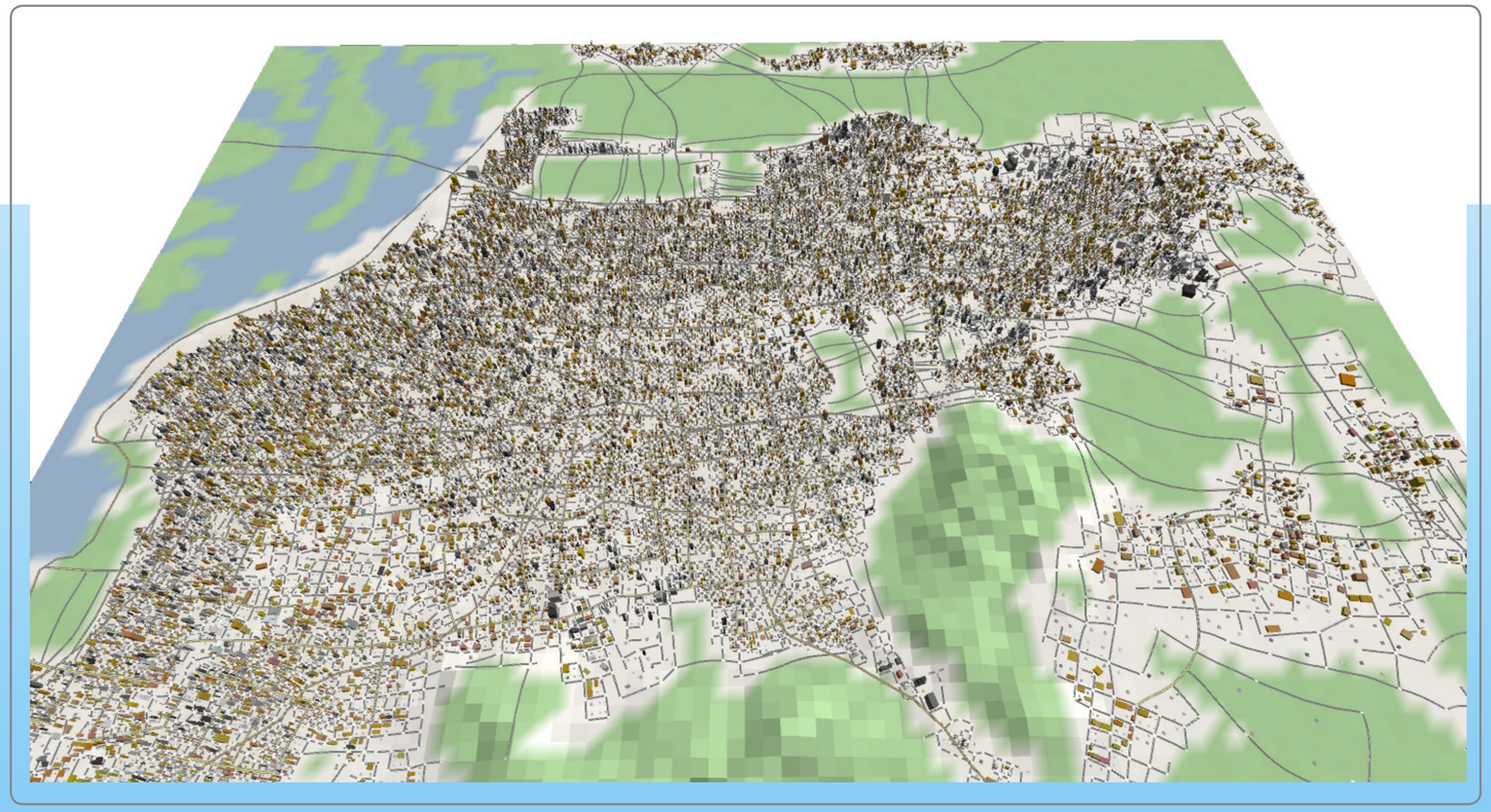


- TRANSPORT (NETWORK, INSTALLATIONS)
  TRANSPORTE (REDE, INSTALAÇÕES)
- RESIDENTIAL
  RESIDENCIAL
- INDUSTRY
  INDÚSTRIA
- SERVICES (SPORT STADIUM, COMMUNITY, CONVENTION CENTER, PORTALS, HOTELS, SHOPPING)
  SERVIÇOS (ESTÁDIOS, COMUNIDADE, CENTROS DE CONVENÇÃO, HOTÉIS, SHOPPING)

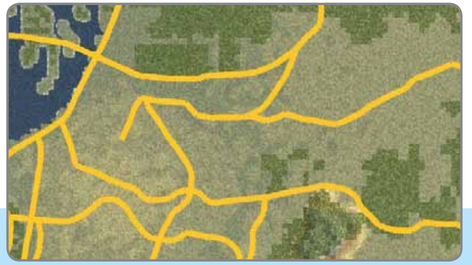
✱ INITIAL PROJECT (SPORT ACTIVITIES, PUBLIC VIEWING)
PROJETO INICIAL (ATIVIDADES ESPORTIVAS, APRESENTAÇÃO PARA O PÚBLICA)

PORTO ALEGRE - 2014

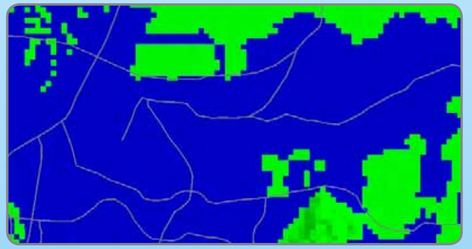
MODELO PROCEDURAL URBANO ESTIMADO | FORECASTED PROCEDURAL URBAN MODEL



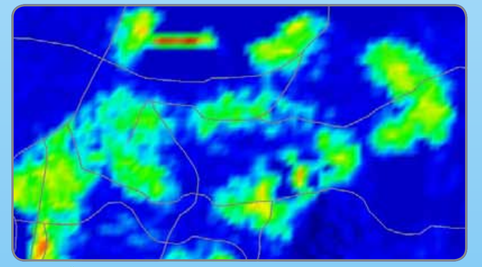
MAPAS BASE | INPUT MAPS



TOPOGRAFIA E RODOVIAS | TERRAIN AND HIGHWAYS

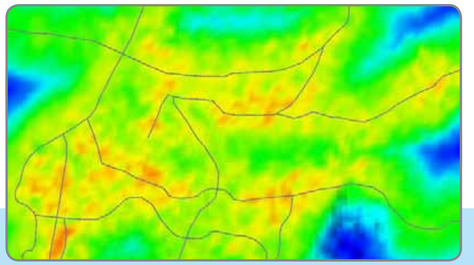


ÁREAS DE RESTRIÇÃO | RESTRICTED AREAS

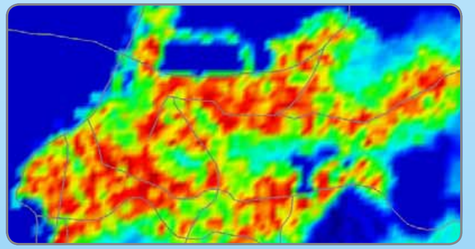


PROJEÇÃO DE EMPREGOS | PLANNED EMPLOYMENT

MAPAS RESULTANTES |OUTPUT MAPS



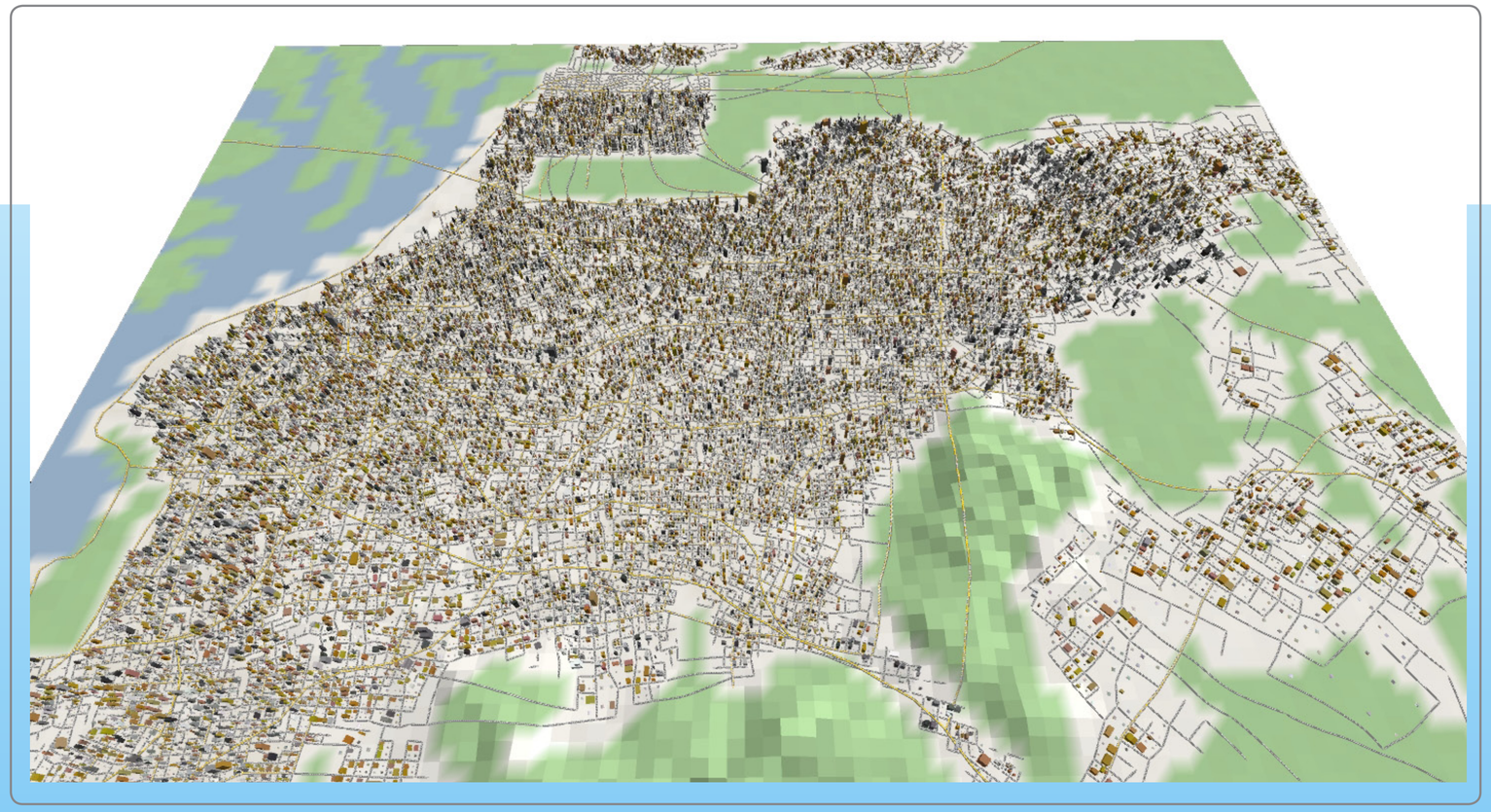
ACESSIBILIDADE | SIMULATED ACCESSIBILITY



PROJEÇÃO DA POPILAÇÃO | SIMULATED POPULATION

PORTO ALEGRE - 2025

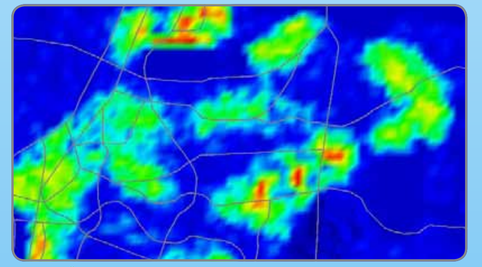
MODELO PROCEDURAL URBANO ESTIMADO | FORECASTED PROCEDURAL URBAN MODEL



MAPAS BASE | INPUT MAPS

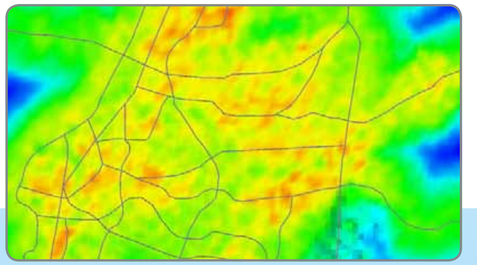
TOPOGRAFIA E RODOVIAS | TERRAIN AND HIGHWAYS

ÁREAS DE RESTRIÇÃO | RESTRICTED AREAS

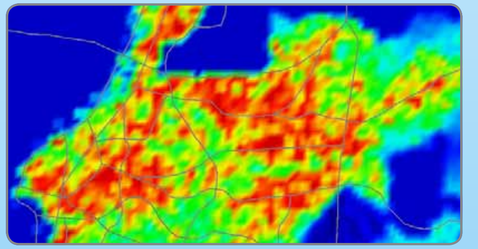


PROJEÇÃO DE EMPREGOS | PLANNED EMPLOYMENT

MAPAS RESULTANTES |OUTPUT MAPS



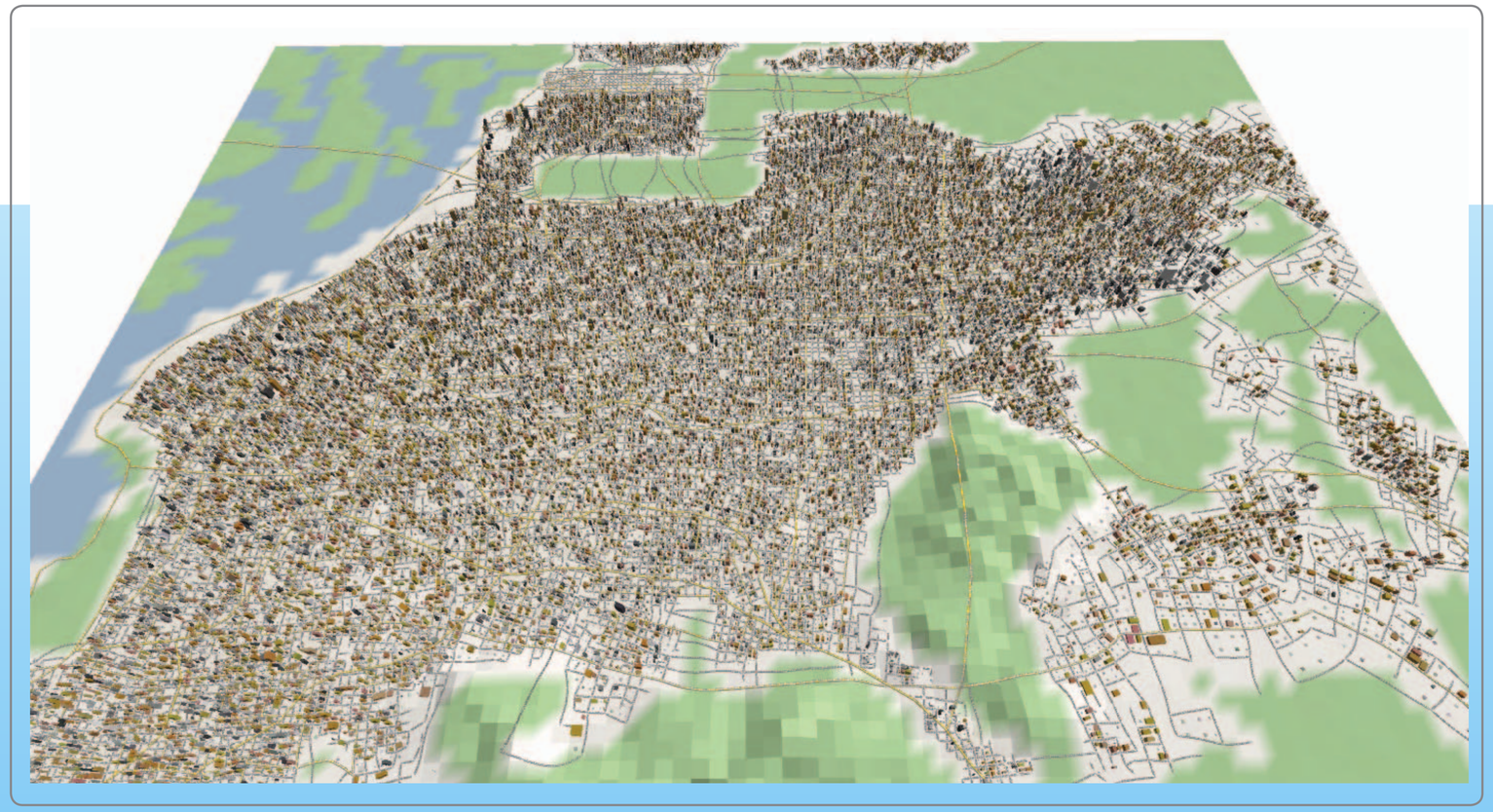
ACESSIBILIDADE | SIMULATED ACCESSIBILITY



PROJEÇÃO DA POPILAÇÃO | SIMULATED POPULATION

PORTO ALEGRE - 2050

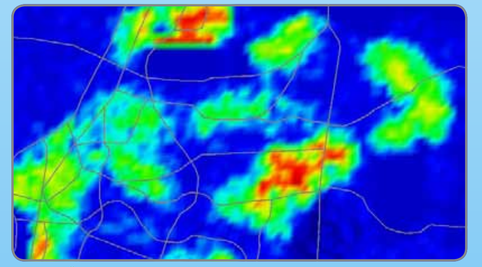
MODELO PROCEDURAL URBANO ESTIMADO | FORECASTED PROCEDURAL URBAN MODEL



MAPAS BASE | INPUT MAPS

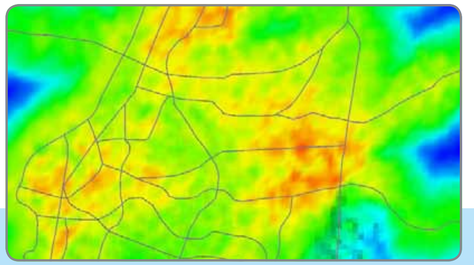
TOPOGRAFIA E RODOVIAS | TERRAIN AND HIGHWAYS

ÁREAS DE RESTRIÇÃO | RESTRICTED AREAS

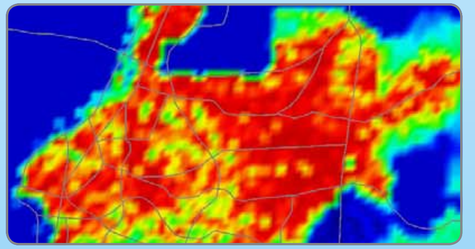


PROJEÇÃO DE EMPREGOS | PLANNED EMPLOYMENT

MAPAS RESULTANTES |OUTPUT MAPS

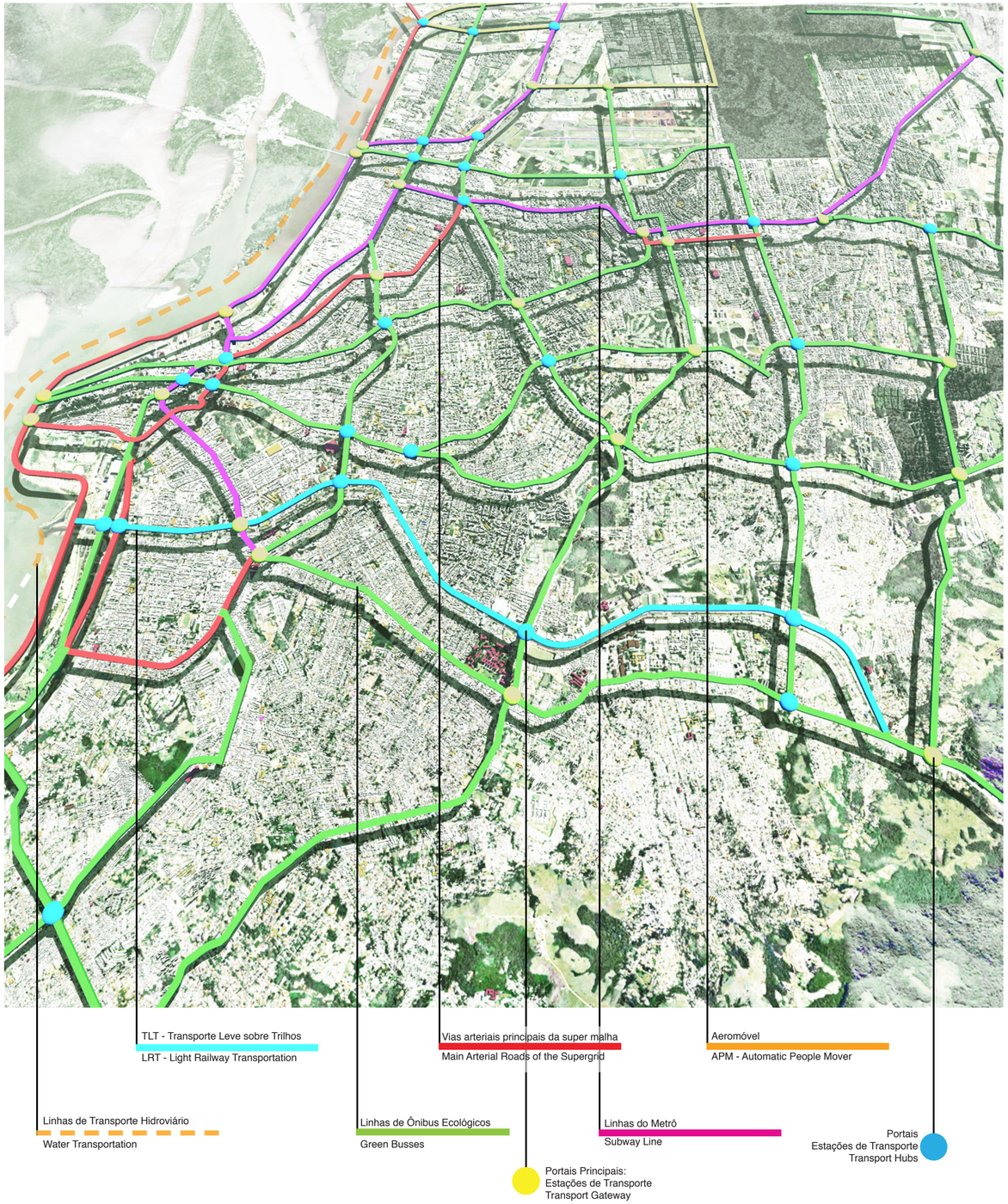


ACESSIBILIDADE | SIMULATED ACCESSIBILITY



PROJEÇÃO DA POPILAÇÃO | SIMULATED POPULATION

NEW TRANSPORT SUPERGRID



TLT - Transporte Leve sobre Trilhos

LRT - Light Railway Transportation

Vias arteriais principais da super malha

Main Arterial Roads of the Supergrid

Linhas de Transporte Hidroviário

Water Transportation

Linhas de Ônibus Ecológicos

Green Busses

Aeromóvel

APM - Automatic People Mover

Linhas do Metrô

Subway Line

Portais
Estações de Transporte
Transport Hubs

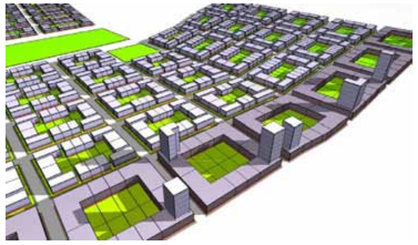
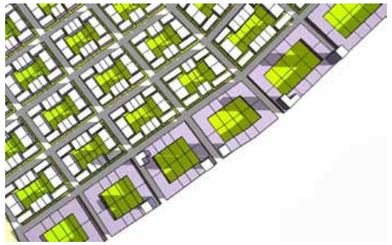
Portais Principais:
Estações de Transporte
Transport Gateway

LEISTUNGSFÄHIGKET

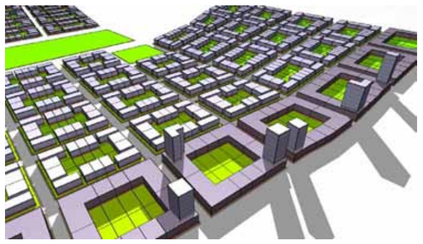
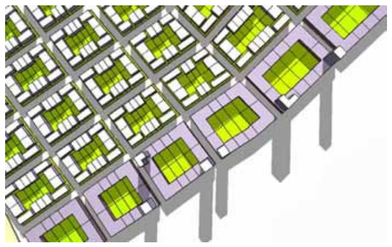
verão 9h | summer 9am


verão 15h | summer 3pm

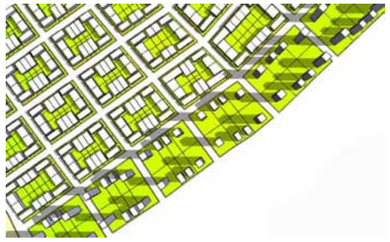

inverno 9h | winter 9am

inverno 15h | winter 3pm

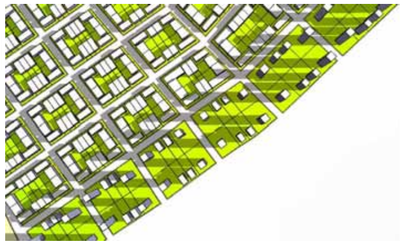



verão 9h | summer 9am

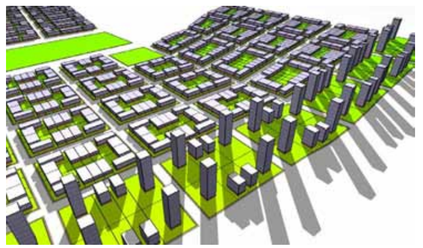
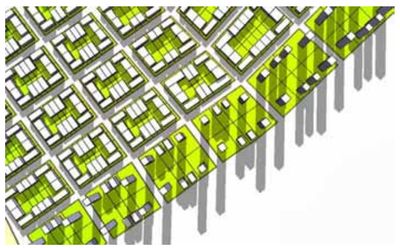



verão 15h | summer 3pm


inverno 9h | winter 9am

inverno 15h | winter 3pm

EVALUIERTE PLANUNGSSZENARIEN

AVALIAÇÃO DA PROPOSTA NO CITYENGINE I CITYENGINE PROPOSAL EVALUATION

EVALUIERTE PLANUNGSSZENARIEN

AVALIAÇÃO DA PROPOSTA NO CITYENGINE I CITYENGINE PROPOSAL EVALUATION

CLOUD-BASIERTE MODELLIERUNG UND VISUALISIERUNG

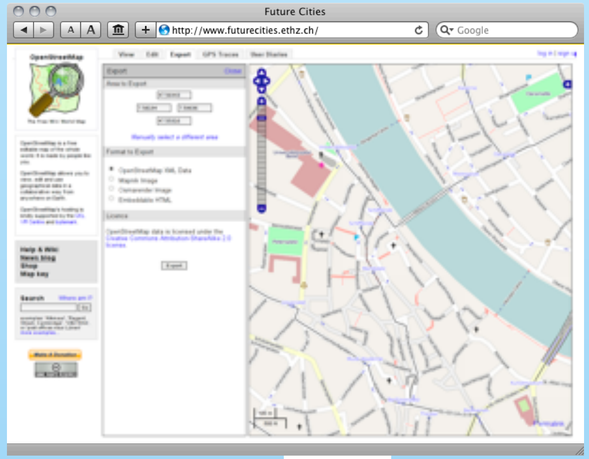
Partizipatives Planen benötigt interaktive Werkzeuge, um Visualisierung und Simulation mit den Menschen zusammenzuführen.

1. Zugriff auf GIS oder Web GIS.
2. Steuerung von Simulationsparametern.
3. Auswertung in Echtzeit.

Herkömmliche Verfahren sind langsam und teuer in der Wartung (Hardware und Personenstunden).

CLOUD-BASIERTE MODELLIERUNG UND VISUALISIERUNG

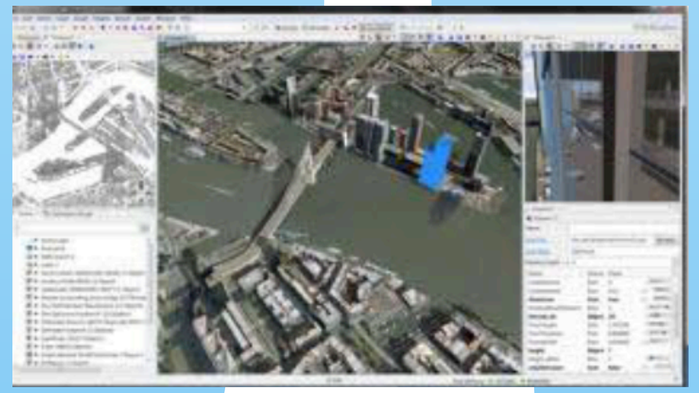
Web GIS



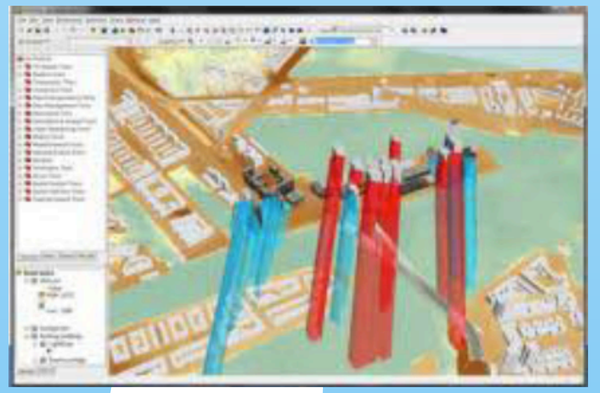
nVidia RealityServer

ArcMap

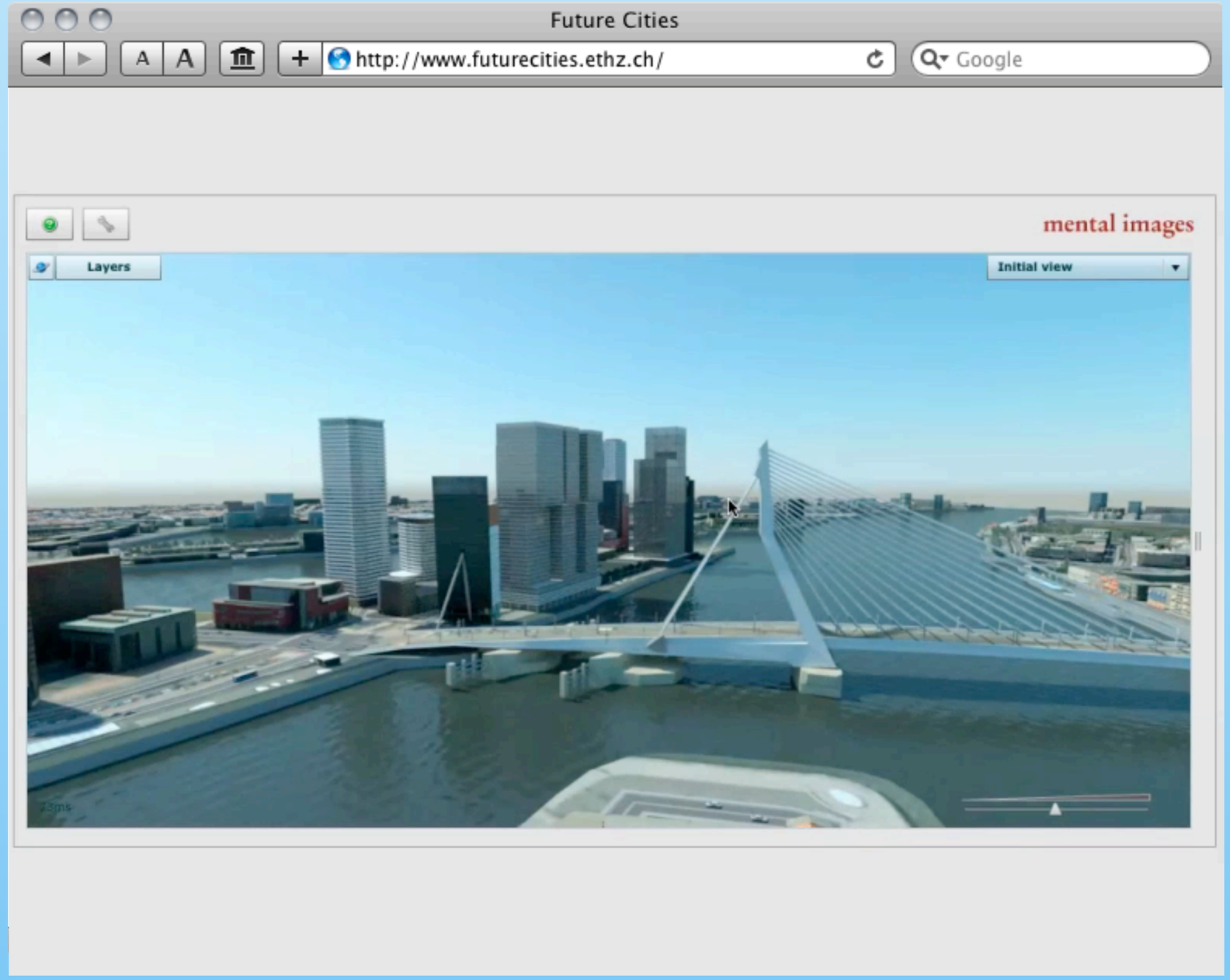
CityEngine



ArcScene



CLOUD-BASIERTE MODELLIERUNG UND VISUALISIERUNG



TEAM

FINAL ENROLLMENT

COURSE WEBSITE

DOWNLOAD LINKS

STUDENT SERVER

COURSE STRUCTURE

EXCERCISES OUTLINE

COORDINATE

Chair for
Information
Architecture

COURSE TEAM

I Prof. Dr. Gerhard Schmitt
Head of Chair for Information Architecture

II DIPL ING JAN HALATSCH

III DIPL ING ANTJE KUNZE

IV MSC ARCH JULIA DYLLONG

V HANS LEIDESCHER

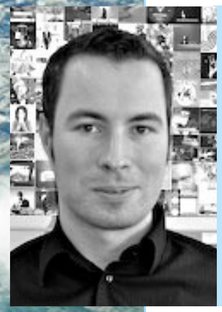
V BINGYI LI

VI TIM HOFFMANN

VII DENISE WEBER

COURSE TEAM

I PROF DR GERHARD SCHMITT



II Dipl Ing Jan Halatsch
Course lecturer, research scientist
Emphasis on urban simulation and modelling

III ANTJE KUNZE

IV MSC ARCH JULIA DYLLONG

V HANS LEIDESCHER

V BINGYI LI

VI TIM HOFFMANN

VII DENISE WEBER

COURSE TEAM

I PROF DR GERHARD SCHMITT

II DIPL ING JAN HALATSCH

III Dipl Ing Antje Kunze
Research scientist
Emphasis on participatory planning

IV MSC ARCH JULIA DYLLONG

V HANS LEIDESCHER

V BINGYI LI

VI TIM HOFFMANN

VII DENISE WEBER

COURSE TEAM

I PROF DR GERHARD SCHMITT

II DIPL ING JAN HALATSCH

III DIPL ING ANTJE KUNZE

IV MSc Arch Julia Dyllong
Phd student
Teaching and research assistant

V HANS LEIDESCHER

V BINGYI LI

VI TIM HOFFMANN

VII DENISE WEBER

COURSE TEAM

I PROF DR GERHARD SCHMITT

II DIPL ING JAN HALATSCH

III DIPL ING ANTJE KUNZE

IV MSC ARCH JULIA DYLLONG

V Hans Leidescher, Bingyi Li, Tim Hoffmann
Course assistants, MSC architecture students

VI DENISE WEBER

COURSE TEAM

I PROF DR GERHARD SCHMITT

II DIPL ING JAN HALATSCH

III DIPL ING ANTJE KUNZE

IV MSC ARCH JULIA DYLLONG

V HANS LEIDESCHER

VI BINGYI LI

VII TIM HOFFMANN

VI Denise Weber
Executive assistant, secretary office
Support for room access, etc.
Office hours: 9:00-15:30 (except Wednesday)

COURSE WEBSITE

iA – Chair for Information Architecture » FS2012 | NEWSIM

http://www.ia.arch.ethz.ch/category/teaching/fs2012-newsim/

Outlook Web App | iA – Chair for Information Archite...

iA Chair for Information Architecture

FS2012 | NEWSIM

MAJOR COURSE: NEWSIM

NEW METHODS IN URBAN SIMULATION AND MODELLING

COURSE NUMBER: 063-1358-12L

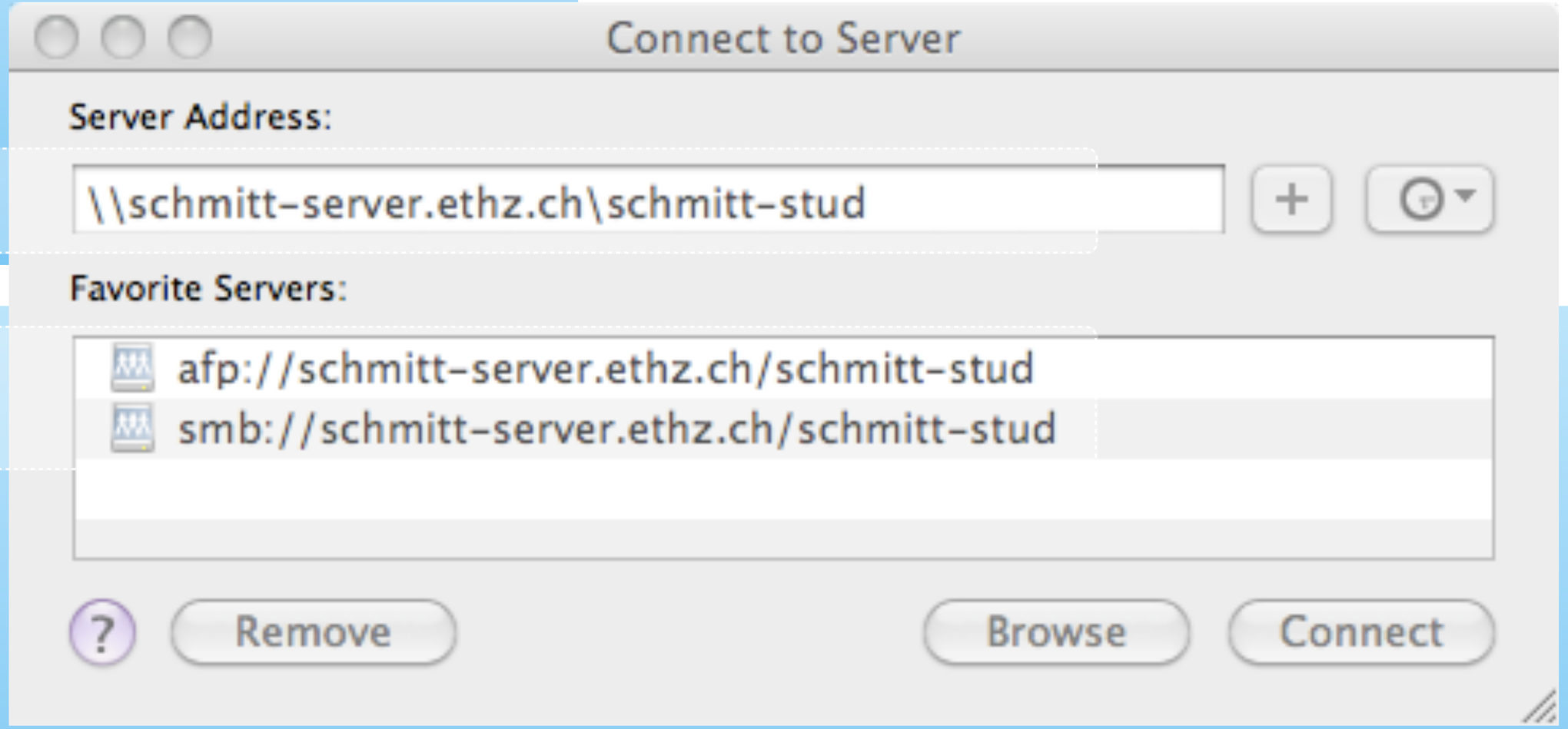
The course is structured into nine lectures, including one guest lecture, nine exercises, individual coaching hours every Thursday and independent work. Working in groups is a core part of the didactic concept.
The course is coordinated with Simulating Urban Design Futures

Lecture, Mo 9:00-10:30, HIT F22 - Value Lab: Jan Halatsch, Antje Kunze, Lukas Treyer

STUDENT SERVER

Windows

Mac OS X



COURSE STRUCTURE

Lecture

Theory in urban simulation, modeling and participatory planning.

COURSE STRUCTURE

Exercises

Represent the practical implementation of specific aspects of the theory taught in lectures. All exercises result in one urban planning project.

Dues are:

(a) written form,

(b) computed simulation examples

The case study area is Altstetten, Zurich. Target of this course is to learn the important tools and methods for the modeling, simulation, visualization and analyses of the large scale urban models.

COURSE STRUCTURE

Graded test

Oral examination: to be announced.

Each test will be 20 minutes.

One student per test.

Pre-requisites are:

(a) Participation at least 80% of all ‘official’ events (e.g. lectures, mid-term critics)

(b) successful participation on exercises

COURSE STRUCTURE

Semester Project

Final presentation May 07, 2012.

Semester project covers aspects of theory and practical implementation. Final delivery of project in written form and presentation.

COORDINATES

Lecture

HIT F22 Value Lab
Every Monday, 9:00- 10:30

Exercise

HIT H12
Every Monday, 10:45- 13:00

Lecturer

Jan Halatsch
iaurbansim@arch.ethz.ch

Administration

Denise Weber
denise.weber@arch.ethz.ch
Office hours: 9:00-15:30 (except Wednesday)

CONDITIONS

Participation

- at least 80% of all ‘official’ events
- signature at end of lecture and exercise

Certification and Grades

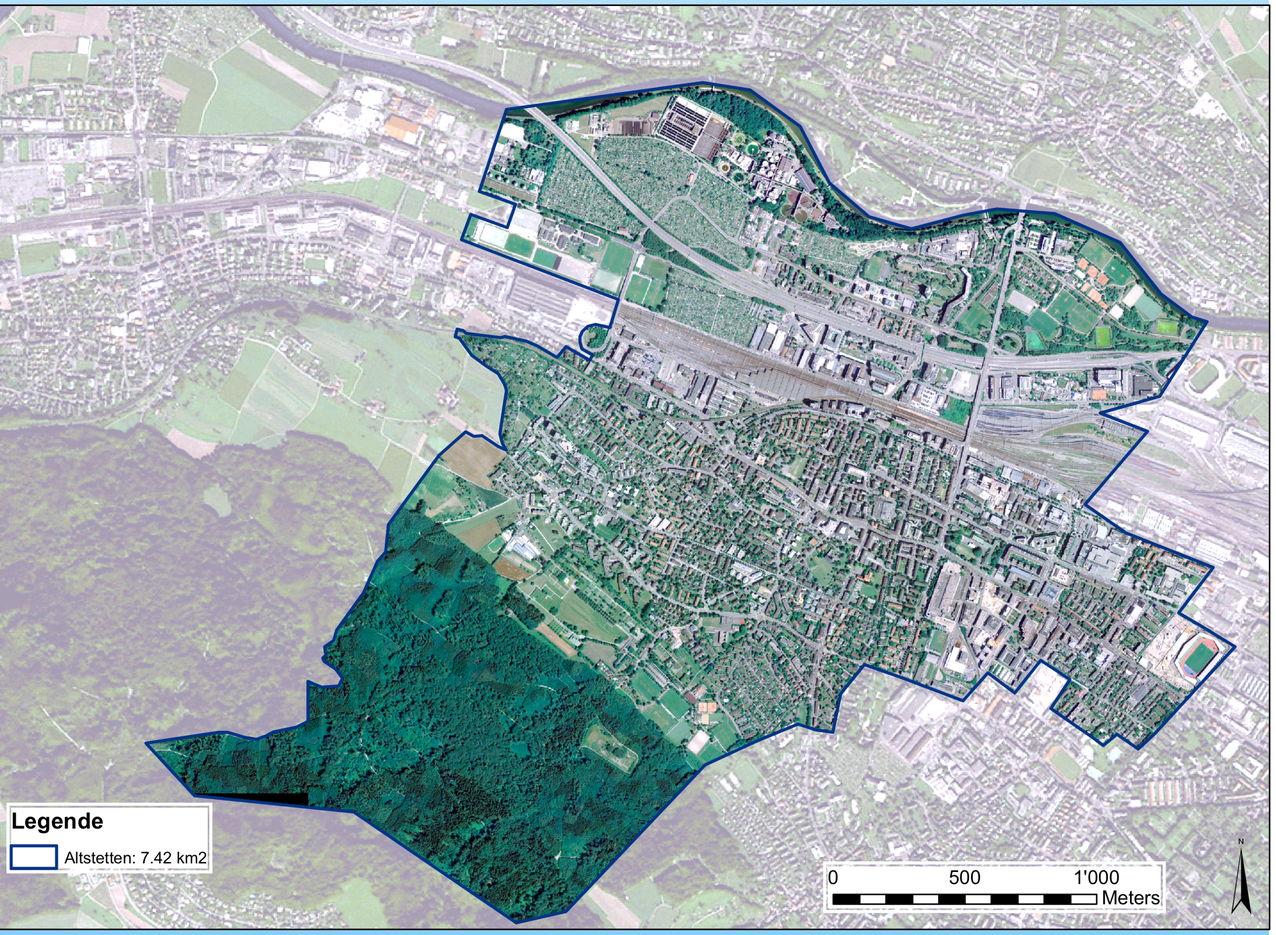
- successful participation on exercises, semester project
- oral exam: to be announced

EXERCISES OUTLINE

Case-study Altstetten (Zurich)

- Area 7.47 km²
- Population of 29,348

Exercises will be online each Monday after Lecture



Case-study Altstetten
Source: Noemi Neuenschwander, Plus, ETH Zurich

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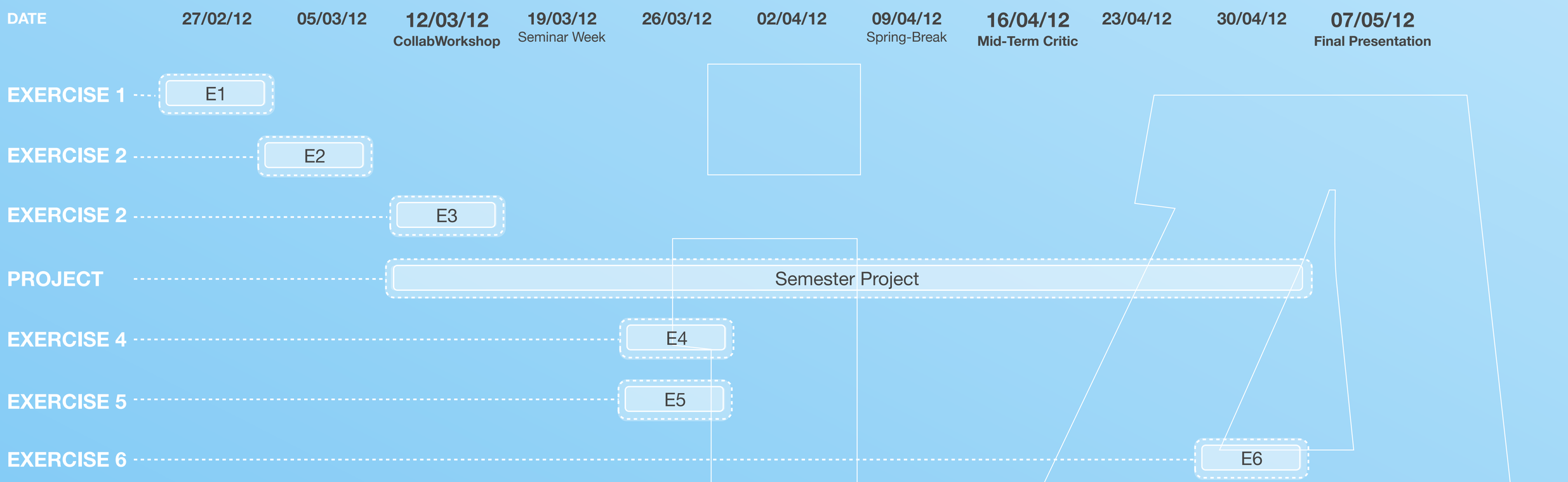
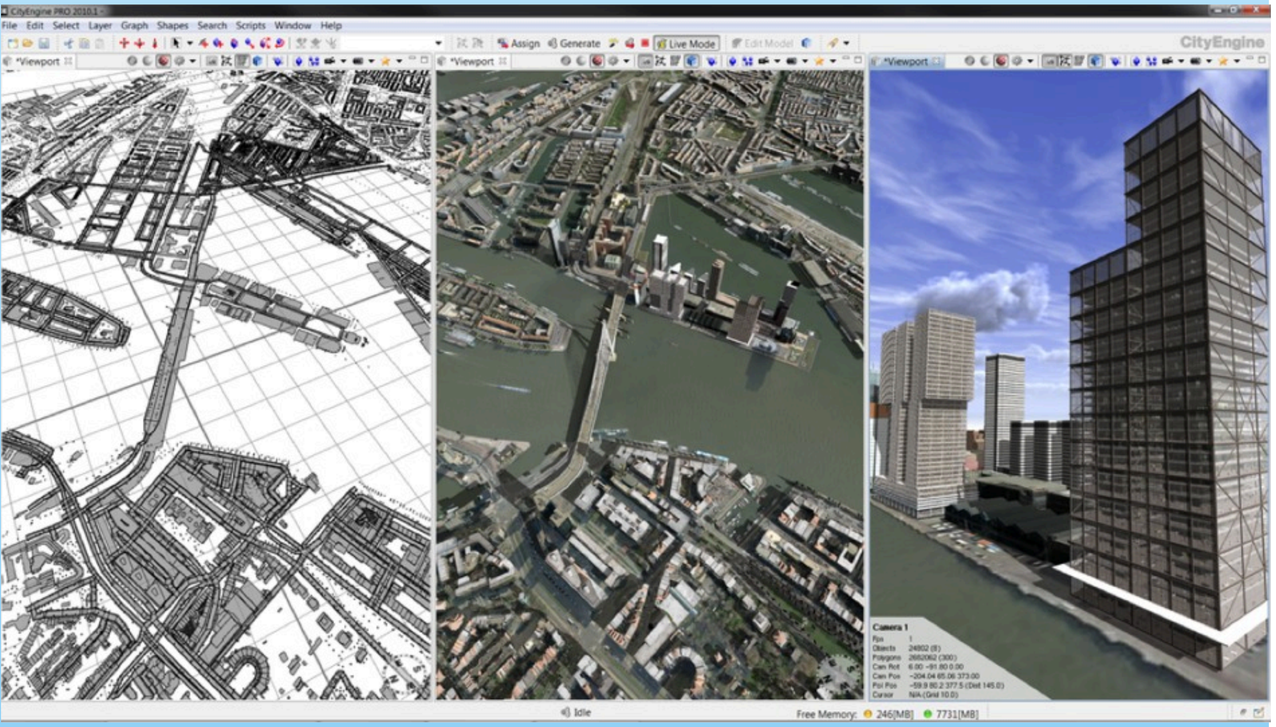
EXERCISES TIMELINE



- E1 CityEngine tutorials Part I
- E2 CityEngine tutorials Part II
- E3 CollabWorkshop: DesignCode for Altstetten
- E4 Using GIS for procedural modeling and as data warehouse
- E5 Simulating development goals, economic growth and congestions
- E6 Creating a web-based interactive model of Altstetten

ETH Eidgenössische Technische Hochschule Zürich Swiss Federal Institute of Technology Zurich

E1 - CITY ENGINE TUTORIALS I



CityEngine Rotterdam example
Source: www.procedural.com

Individual learning. Work through the ten selected CityEngine tutorials and the prepared “Altstetten” CityEngine file.

- Please start early enough as it takes a lot of time to work through tutorials and learn the software

Demos: http://www.esri.com/software/cityengine/demos.html

E2 - CITY ENGINE TUTORIALS II

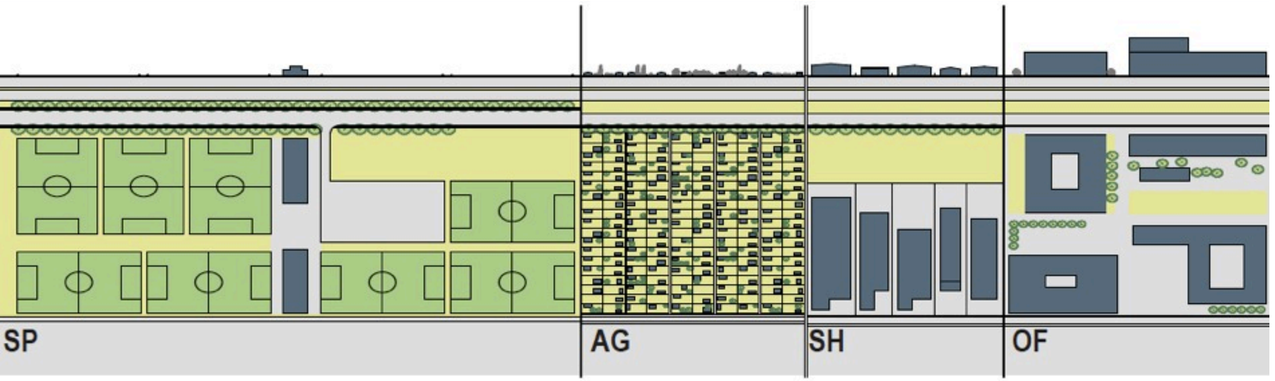
CityEngine Altstetten
Source: Tim Hoffmann_Bingyi Li

Individual learning. Work through the ten selected CityEngine tutorials and the prepared “Altstetten” CityEngine file.

- Please start early enough as it takes a lot of time to work through tutorials and learn the software

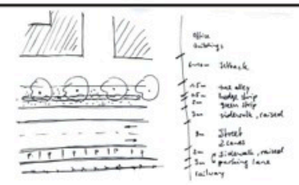
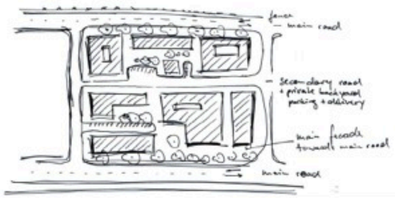
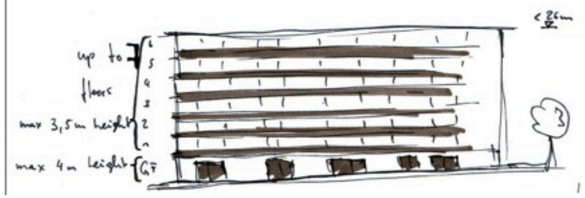
Demos: http://www.esri.com/software/cityengine/demos.html

L3 - DESIGN CODE CATALOGUE



Collaborative Workshop

- Create a design code catalogue for Altstetten regarding the main design patterns e.g. street profile, block, building shape, facade, ..

Of	GUIDELINES	PATTERNS
STREET PROFILE	fence, sidewalk (raised,3m), 1 parking lane (2m), street (2lanes, 8m), sidewalk (raised, 3m), green strip (3m: 2m green, hedge strip 1*0.5m with tree alley(8m planting distance), setback distance(asphalt, 6m), main building lights (200m distance, at 1 side) few raod signs	
BLOCK	minor street taps the lots, 2 way oriented lots (main entrance side / parking and delivery backside) mainly office buildings located at street side, parking at backyard, ca 15% green space to main street: deviding green strip with tree alley or hedge no fences	
BUILDING FORM	25m height, rectangular, flat roofs, 7 stories + attic on top	

SmartCode Catalogue: Special Districts
Sports | **A**llotment **G**arden | **S**torey **H**all | **Of**fice

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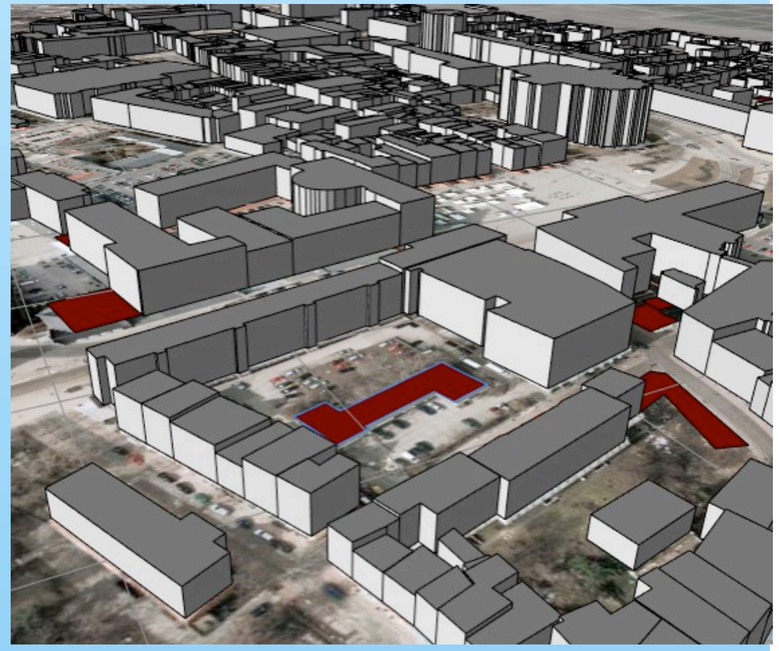
CityEngine Model second iteration for case study Switzerland
Source: Yuliya Schlegel_WFA_Urban Patterns

E3 - CITY ENGINE

Determining urban rules for Altstetten

- First building prototypes: massing and arrangements
- Street profiles according to the traffic concept
- Open space design inside CityEngine (parks, water features, vegetation, etc.)



CityEngine model: height extrusion
on GIS based building shapes

E4 - GEOGRAPHIC INFORMATION SYSTEMS FOR CITY MODELING

Using GIS for procedural modeling and as data warehouse

-Creation of large-scale urban patterns in CityEngine using GIS data
-Visualization of different usages, densities, ..

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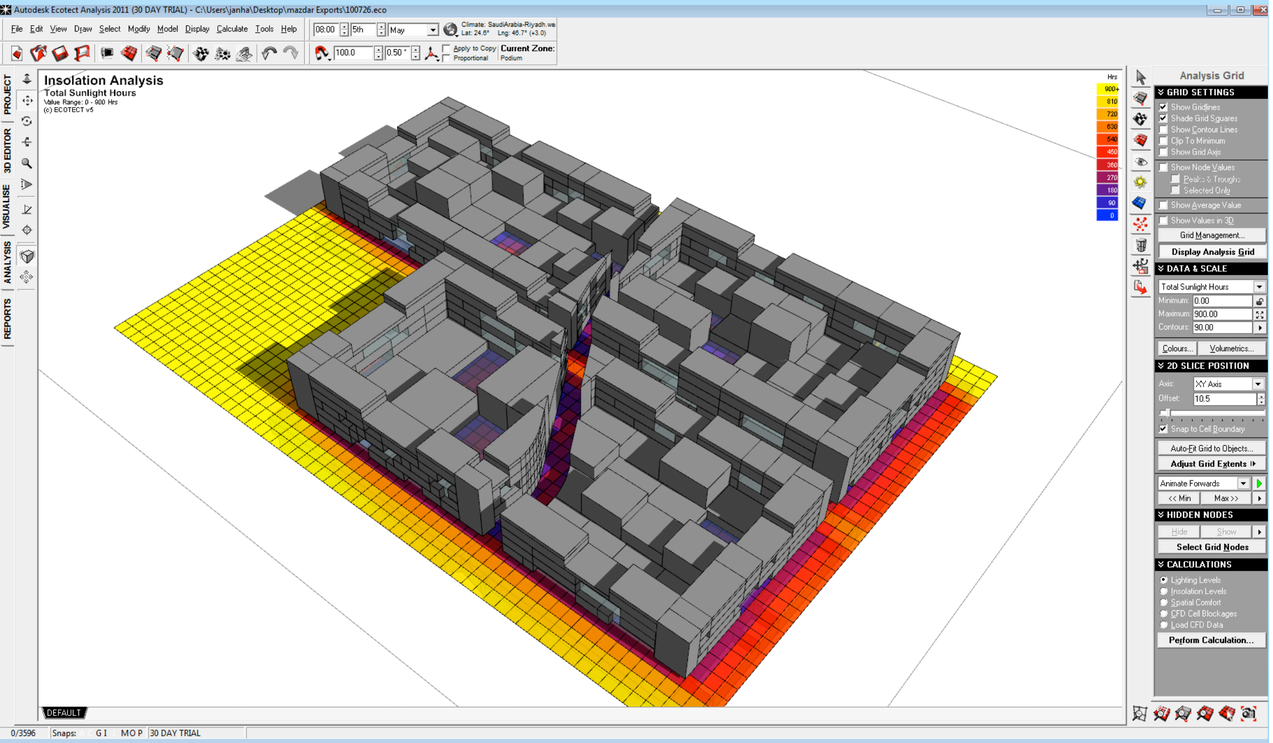
E5 - URBAN SIMULATION

Simulating development goals, economic growth and congestion

- Creation of future scenarios and visions for Altstetten, Zurich
- Designing urban patterns such as street networks or building dimensions based on diverse flow calculations (e.g. commuters, goods, heat, wind, ..)



Ecotect Insolation Analysis 2D Diagram
Source: Yuliya Schlegel

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E6 - VISUALIZATION

Perspective view on Altstetten from WebViewer Application
Source: CityEngine Altstetten_WFA_Tim Hoffmann_Vedran Brasnic

Creating a web-based interactive model of Altstetten

-Simulating large-scale urban environments
-Programming realistic city models and revealed information as interactive as they can be

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Value Lab
Source: IA Chair ETHZ

FINAL PRESENTATION

Presentation in Value Lab

- Final Presentation in .ppt format
- Presentation of the 3D urban model with Showcase
- 15 min. per group

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Zurich sustainable future vision 2100
Source: Jan Halatsch

THANK YOU!

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