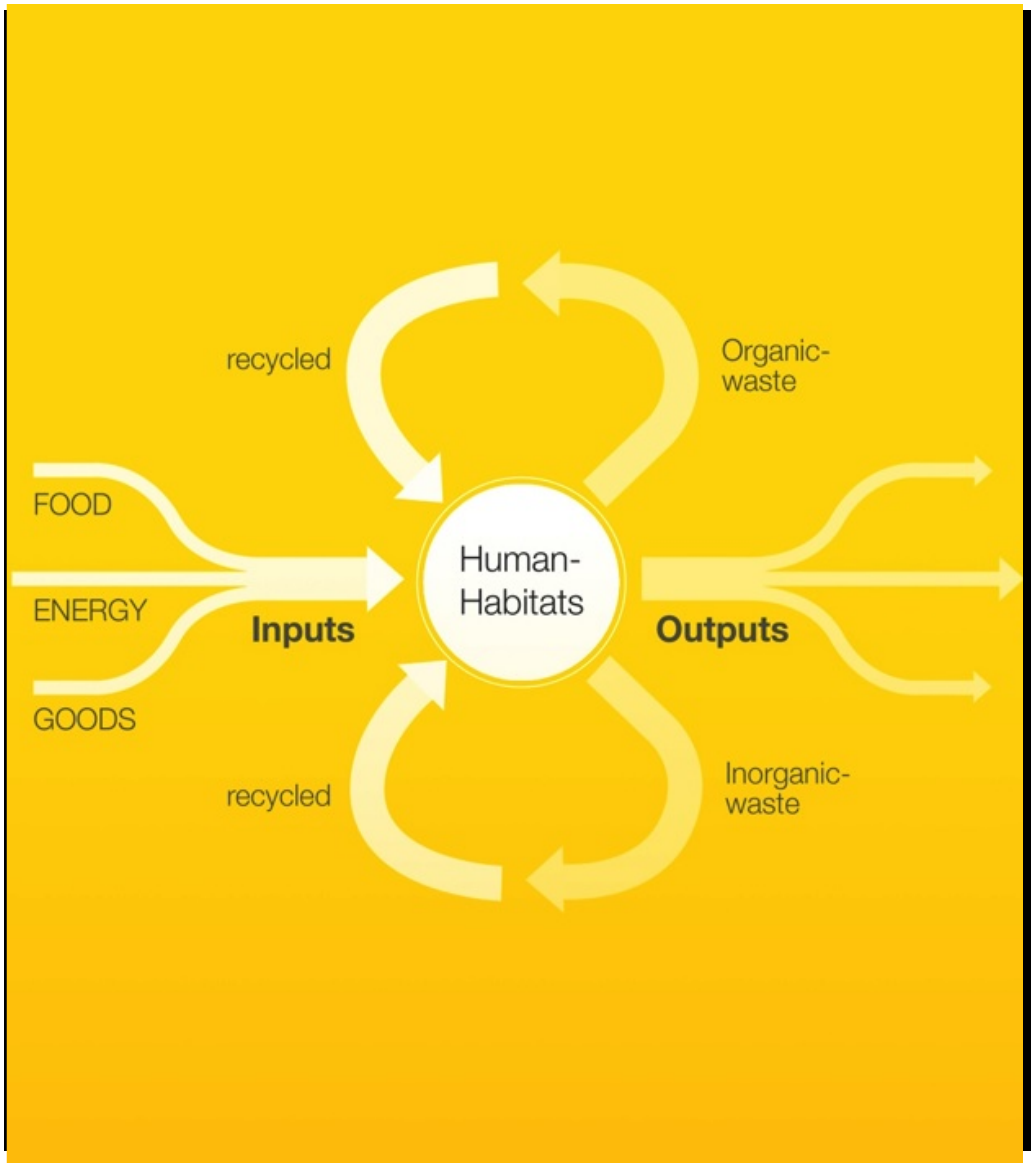
INFORMATION ARCHITECTURE OF CITIES

ETH zürich

Information Architecture

Prof. Dr. Gerhard Schmitt

(FCL) FUTURE CITIES LABORATORY 未来城市实验室



Urban Metabolism

Understand the city as a dynamic and complex system

Read and model this system in terms of Stocks and Flows

Recognize Urban Stocks as basic elements of the urban metabolism and as locally available resources



Stocks and Flows

Stocks are entities that rest.
Flows are entities that move.

People, materials, air, water, food, health, space, finances, data and information are examples for stocks and flows in the urban context.

They interact with each other in the city as a complex system.

(SEC) SINGAPORE-ETH CENTRE 新加坡－ETH 研究中心

(FCL) FUTURE CITIES LABORATORY 未来城市实验室



Complex Systems

Complexity science helps to model Systems in economics, physics, biology, chemistry, and others.

More recently, architecture and urban systems - in particular, urban networks - have become an area of interest for complexity science.

Information Architecture and Future Cities

With the city becoming the predominant living and working environment of humanity, livability or quality of life in the city becomes crucial. In this course, we explore the impact of information and information architecture on the livability of cities. After the introduction to affordable livability and its measurable criteria, we explore possibilities of participatory urban design by future citizens, leading towards the development of a citizen design science. By week four, we give special attention to 4 crucial urban stocks and flows for urban design: water, energy, the local climate, and mobility. During the following lectures, we bring together the previous topics to explore how these stocks and flows affect the livability of the city. By the end of the course, students will be able to recognize the different measurable criteria for the assessment of livability, and how to influence the design of livable cities. The edX MOOC on Future Cities is a good overview and starting point for this course.

Where

HIT H 31.4 (Video wall)

Supervision

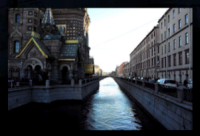
Prof. Dr. Gerhard Schmitt gerhard.schmitt@sl.ethz.ch
Denise Weber denise.weber@arch.ethz.ch
Dongyoun Shin shin@arch.ethz.ch

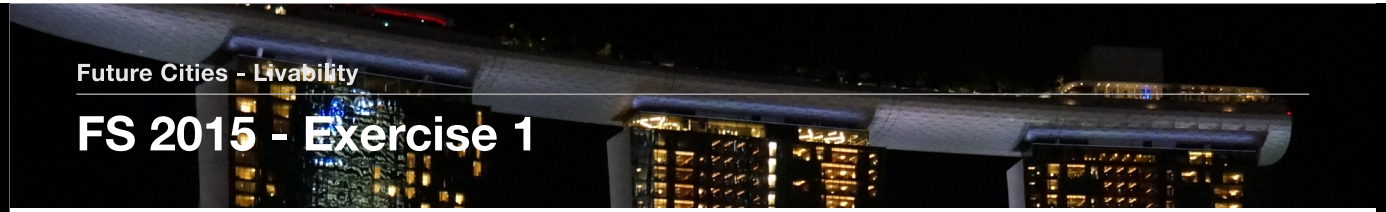
16.02.2015	**Die lebenswerte Stadt.** Introduction to livable cities
23.02.2015	**Messbare Kriterien der Lebensqualität.** Measurable criteria of livability (with Prof. Stephen Cairns, SEC Singapore)
02.03.2015	**Stadtklima und Lebensqualität I.** Urban Climate and livability I (with Prof. Jan Carmeliet)
09.03.2015	**Stadtklima und Lebensqualität II.** Urban Climate and livability II (with Prof. Matthias Roth, SEC Singapore)
16.03.2015	Seminar week (No lecture)
23.03.2015	**Energie und Lebensqualität I.** Energy and livability I (with Dr. Matthias Berger, SEC Singapore)
30.03.2015	**Energie und Lebensqualität II.** Energy and livability II (with Dr. Matthias Berger, SEC Singapore)
20.04.2015	**Mobilität und Lebensqualität.** Mobility and livability (with Dr. Alexander Erath, SEC Singapore)
27.04.2015	**Wasser, Ökologie und Lebensqualität.** Water, ecology and livability (with Dr. Ulrike Wissen)
04.05.2015	**Partizipativer Stadtentwurf.** Towards citizen design science (with Prof. Jane M. Jacobs, SEC Singapore)
11.05.2015	**The livable city.**
11.05.2015	**Final iA critique** **Combined critique with the other iA courses** (14:00 - 18:00)

Future Cities - Livability

Exercises FS 2015

These exercises introduce you to the interconnectedness of systems on the small, the medium, and the large scale. They focus on livability, on urban energy, urban climate, and urban ecology. Basis is the view of the city as a complex system, with an urban metabolism expressed in terms of stocks and flows.





FS 2015 - Exercise 1

LIVABILITY

The livability of a city is one of its most crucial qualities. Factors at the building scale and the urban design scale, and to some degree at the territorial scale determine the livability of a city. International organizations have established criteria that measure and compare cities and their livability. Examples are:

The Global Liveable Cities Index

The EIU's Global Liveability Report

Mercer's Quality of Living Survey

Monocle's Most Liveable Cities Index

Ranking the Liveability of the World's Major Cities

A summary you can find at : http://www.n.ethz.ch/~gkonosc/Layout/Layout.html

Exercise 1: Why do you live where you live?

Livability has developed into one of the most important competitive advantages of a city. It is therefore a key quality that every urban system government is struggling for. In order to understand what this means in practice, you will define your own criteria. This exercise has 3 parts:

Part 1: *Why* do you live where you live? Name the place (city, town, rural area) and 5 reasons. Order them with the most important at the top of the list. Do the same for the place where you lived before.

Part 2: For each of the places you listed (or for the respective countries, if city data are not available), identify the number of inhabitants, the Human Development Index (HDI), the GDP, the Gini Coefficient, and the form of governance of the city and the surrounding country.

Part 3: For each of the above places, list the latitude, the altitude, the mean annual temperature, the main energy supplies, and describe the quality of the urban environment (air, water, ecology).

Send in .ppt format until March 6, 2015 to shin@arch.ethz.ch, with cc: to denise.weber@arch.ethz.ch

New York City goes 11 days without a homicide -- a modern record

By Lorenzo Ferrigno, CNN
Updated 0544 GMT (1344 HKT) February 14, 2015

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ART

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More Top Stories


ISIS seizes U.S. weapons


New virus discovered in Kansas

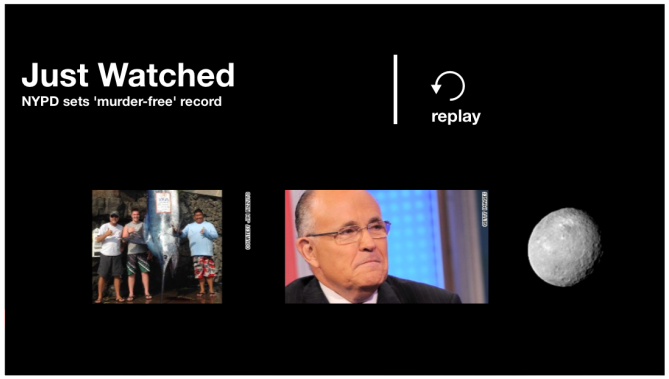

Giuliani: I'm getting death threats


NASCAR suspends Kurt Busch


Cancellations have dogged Cosby's tour


TV show exec dead at 30


Kim Jong Un's new hairdo



NYPD sets 'murder-free' record 01:22

(CNN)—New York City has gone 11 days without a homicide, its longest stretch without any on modern record, the New York Police Department said Friday.

The record was broken midnight Thursday. It was the 11th full day without a reported homicide.

The last reported homicide was February 1, or Super Bowl Sunday, in Upper Manhattan, a police representative said Friday.

Police then responded to a 911 call about multiple shots being fired and found five individuals with gunshot wounds, New York police said. One of those five, Graham Shadale, 28, was pronounced dead at the scene.

The streak has been the longest since the New York Police Department began recording statistics with a computerized program called Compstat in 1994, the police representative said.

Story highlights

Eleven days without a homicide is longest stretch for city on modern record, police say

The last reported homicide was February 1 in Upper Manhattan, police rep says

http://edition.cnn.com/2015/02/13/us/new-york-homicide-record/

Delhi hat die schmutzigste Luft der Welt

Die Menschen in der indischen Metropole Delhi bezeichnen den Smog über ihrer Stadt als «Nebel». Eine gefährliche Verniedlichung: Indien hat die meisten Toten durch Atemwegserkrankungen.



«Jeder sollte jegliche Anstrengung draussen vermeiden»: Fussballspieler im Smog Delhis. (Archivbild)
Bild: Keystone

04.02.2014

Jeden Winter hängt dichter Smog über Peking und Delhi. Die Bewohner von Delhi sehen im Winter oft kaum noch etwas. Sie nennen es Nebel, doch laut Experten ist es Smog. Möglicherweise hat Delhi noch schmutzigere Luft als Peking und damit die schmutzigste Luft der Welt.

Tweet 5
Mail 8



Artikel zum Thema

Smog-Alarm in Peking



Der schlimmste Smog dieses Winters hält Peking im Würgegriff. Das erste Mal übersteigen die Luftwerte den Spitzenwert von 500 - wo die Skala normalerweise endet. Mehr...

http://www.tagesanzeiger.ch/wissen/medizin-und-psychologie/Delhi-hat-die-schmutzigste-Luft-der-Welt/story/27936592

A critical view by Joel Kotkin

The top city on Cox's list, San Jose, Calif., epitomizes both the strengths and weaknesses of the American city. The heartland of Silicon Valley, the San Jose region has generated one of the world's most innovative–and well-paid–economies. On the other hand, its mass transit usage is minuscule, its cultural attributes measly and its downtown hardly a tourist destination.

Meanwhile, pricey and scenic Zurich, No. 2 on the Mercer list and No. 10 on *The Economist* rankings, comes in 74th when considering adjusted per capita income. *Economist* favorite Vancouver, one of the most expensive second-tier cities on the planet, ranks 71st. For the average person seeking to make money and improve his or her economic status, it usually pays not to settle in one of the world's "most livable" cities.

http://www.forbes.com/2009/08/10/cities-livable-elite-economist-monocle-rankings-opinions-columnists-joel-kotkin.html

Prof Dr Stephen CAIRNS



BIO

Stephen Cairns completed an undergraduate degree in anthropology and classical studies at the University of Otago. He trained in architecture at the University of Auckland, and practiced as an architect in New Zealand, Australia and the Pacific, designing the competition-winning entry for the Headquarters for the Secretariat of the Pacific Community in Noumea. He subsequently undertook doctoral studies at the University of Melbourne writing a thesis on the colonial architecture in Java, with an emphasis on aesthetics and the politics of representation.

On completion of his PhD he was appointed to a Lectureship at the University of Melbourne. He took up a Senior Lectureship at the University of Edinburgh, and was appointed Professor of Architecture and Urbanism there in 2009. He served as Head of Department of Architecture, and Director of the newly founded Edinburgh School of Architecture and Landscape Architecture. He is currently based in Singapore where he is Scientific Director of the Future Cities Laboratory.

RESEARCH

Stephen Cairns' research is focused on architecture, design and urban planning, and takes theoretical and practical forms. His books include *Drifting: Migrancy and Architecture* (edited) (Routledge 2004), and *The Sage Handbook of Architectural Theory* (Sage 2012, edited with Greig Crysler and Hilde Heynen). His co-authored book (with Jane M Jacobs) *Buildings Must Die: A Perverse View of Architecture* (MIT Press 2014) is forthcoming.

His current architectural and urban practice is organized through the Jakarta based NGO KRUPUC. His most recent work is focused on the Tropical Town project, an architectural and urban plan for migrant housing in Batam, and the planning of peri-urban, or *desa-kota*, regions around Jakarta.

This work builds on a number of research grants funded by the UK's Arts and Humanities Research Council (AHRC), and the Environmental and Physical Sciences Research Council (EPSRC). These include: *Cultures of Legibility: Emergent Urban Landscapes in Southeast Asia* (2007-2010) that investigated so-called 'desa-kota' landscapes on the fringes of the city of Jakarta; *Difference and Repetition: An Investigation of the Residential High-Rise as a Global Form* (2004-2007); and Orienting the Future: Design Strategies for Non-Place (2005-2006). Material from these projects were published in journals such as Urban Studies, Journal of Architecture, SLUM Lab and Geographical Research, and exhibited at the International Architecture Biennale Rotterdam (IABR) in 2010 and 2012, and at the AEDES Gallery, Berlin in 2013.

http://futurecities.ethz.ch/person/prof-dr-stephen-cairns/

The top ten cities
(100=ideal; 0=intolerable)

Country	City	Rank	Overall Rating (100=ideal)	Stability	Healthcare	Culture & Environment	Education	Infrastructure
Australia	Melbourne	1	97.5	95	100	95.1	100	100
Austria	Vienna	2	97.4	95	100	94.4	100	100
Canada	Vancouver	3	97.3	95	100	100	100	92.9
Canada	Toronto	4	97.2	100	100	97.2	100	89.3
Australia	Adelaide	5	96.6	95	100	94.2	100	96.4
Canada	Calgary	5	96.6	100	100	89.1	100	96.4
Australia	Sydney	7	96.1	90	100	94.4	100	100
Finland	Helsinki	8	96.0	100	100	90	91.7	96.4
Australia	Perth	9	95.9	95	100	88.7	100	100
New Zealand	Auckland	10	95.7	95	95.8	97	100	92.9

The bottom ten cities
(100=ideal; 0=intolerable)

Country	City	Rank	Overall Rating (100=ideal)	Stability	Healthcare	Culture & Environment	Education	Infrastructure
Cote d'Ivoire	Abidjan	131	45.9	30	45.8	54.2	50.0	53.6
Libya	Tripoli	132	44.2	45	41.7	37.0	50.0	51.8
Cameroon	Douala	133	44.0	60	25.0	48.4	33.3	42.9
Zimbabwe	Harare	134	42.6	40	20.8	58.6	66.7	35.7
Algeria	Algiers	135	40.9	40	45.8	42.6	50.0	30.4
Pakistan	Karachi	136	40.9	20	45.8	38.7	66.7	51.8
Nigeria	Lagos	137	38.9	25	33.3	53.5	33.3	46.4
PNG	Port Moresby	138	38.9	30	37.5	44.2	50.0	39.3
Bangladesh	Dhaka	139	38.7	50	29.2	43.3	41.7	26.8
Syria	Damascus	140	30.5	15	29.2	44.7	33.3	32.1

http://de.scribd.com/doc/237225698/Liveability-Rankings-August-2014

Choices

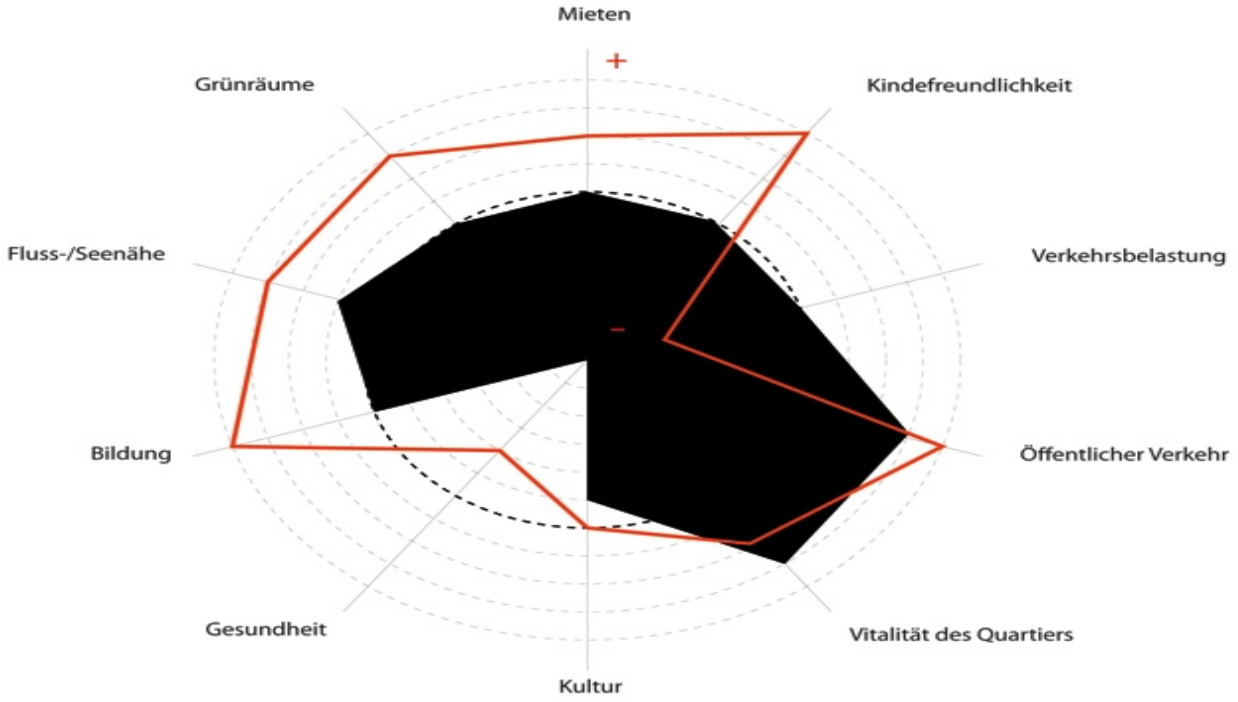
Move to existing cities, select best places

Transform existing cities towards more vivability

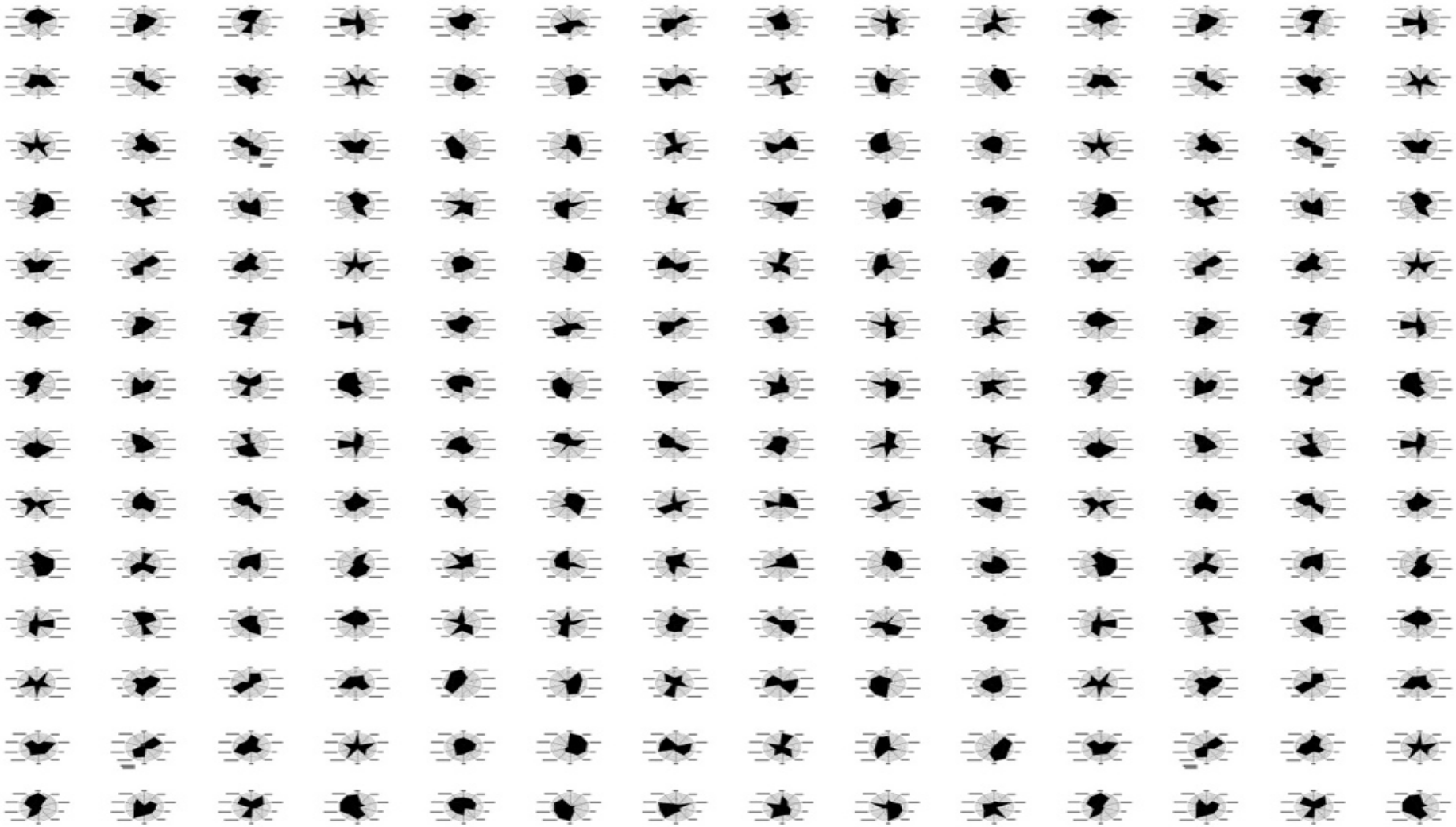
Design and build new livable cities

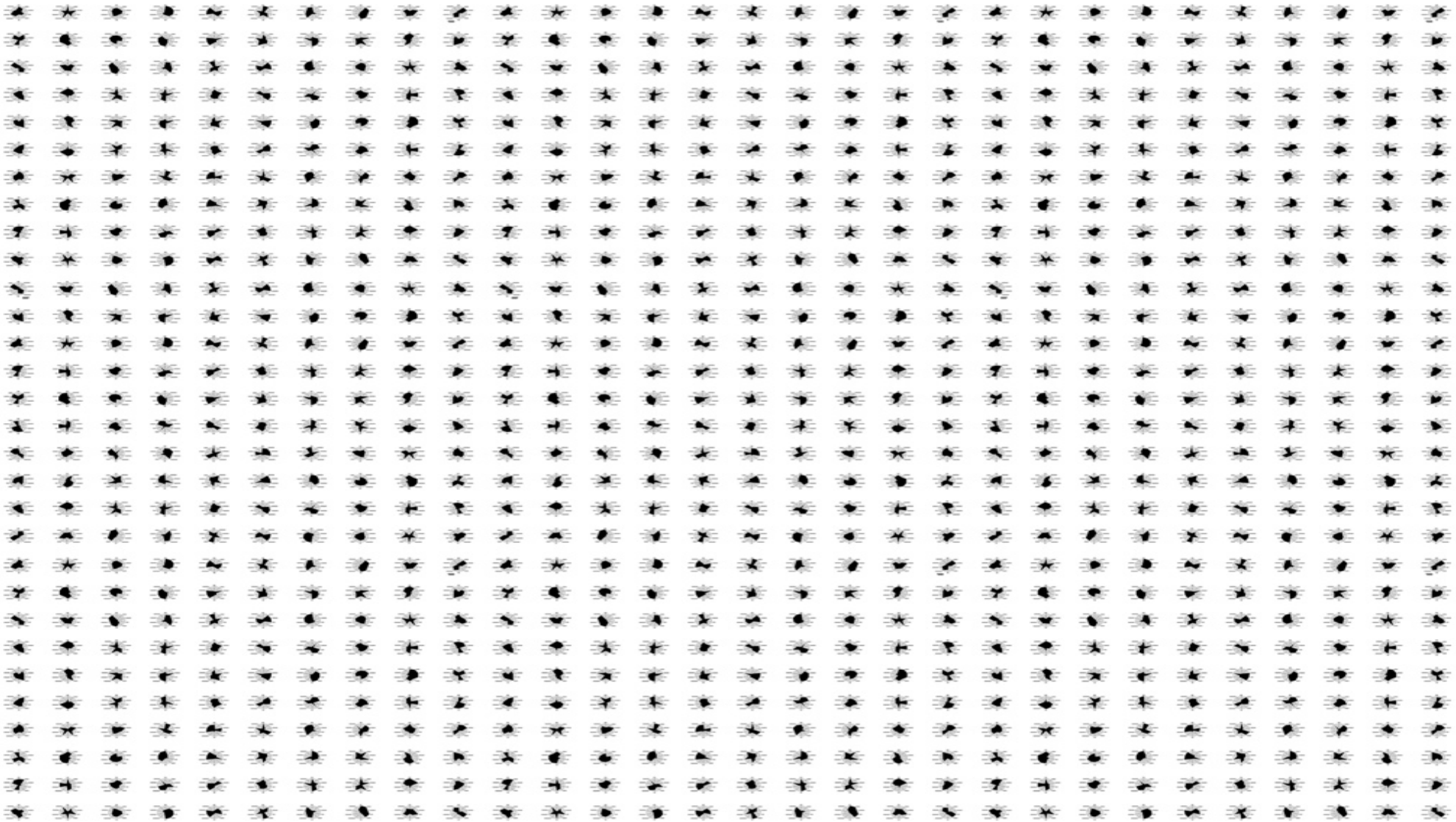
YOUCITY

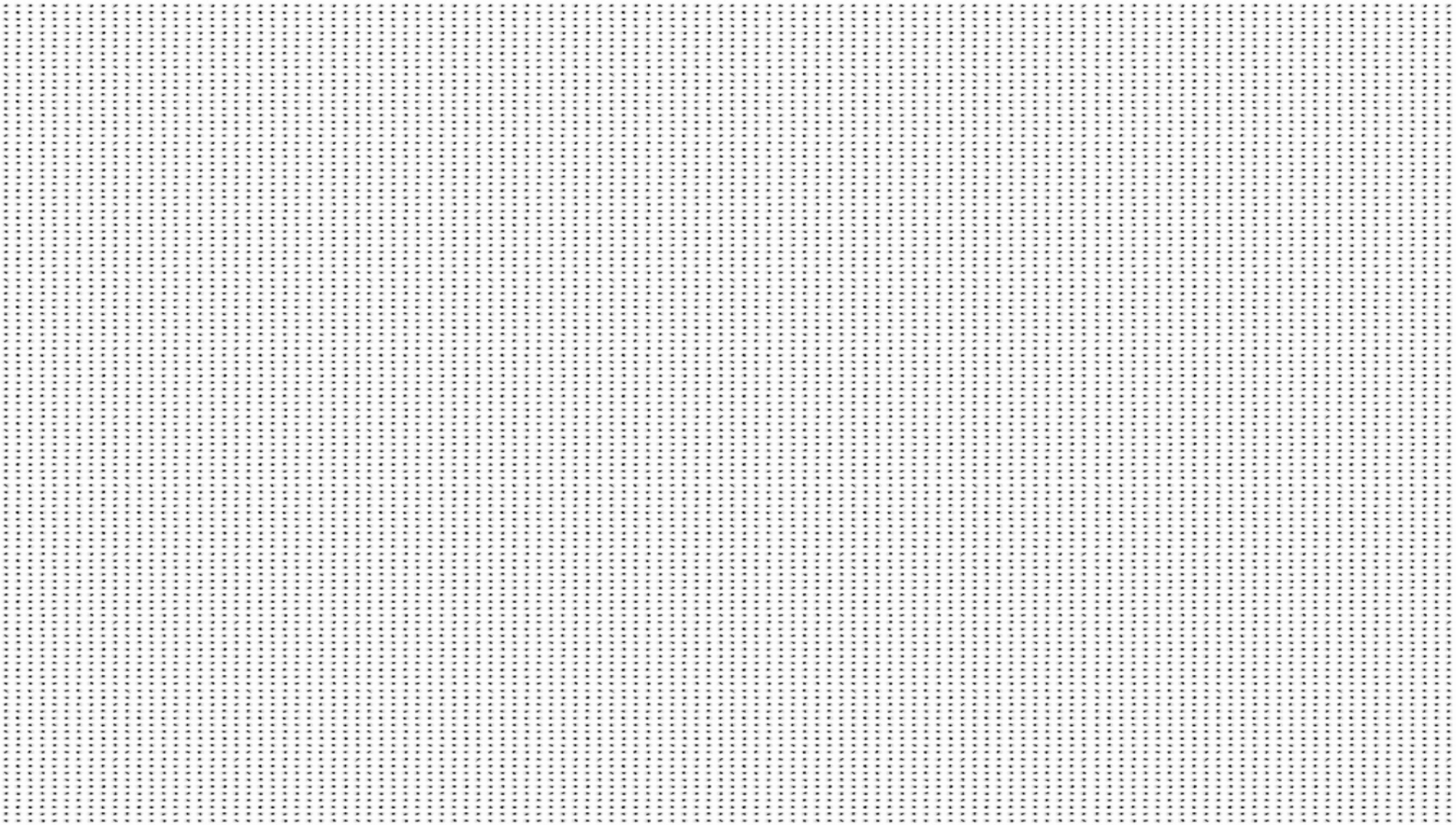
Anne Mikoleit I Moritz Pürckhauer I Niels Lehmann



PRIORITÄT
BEWERTUNG







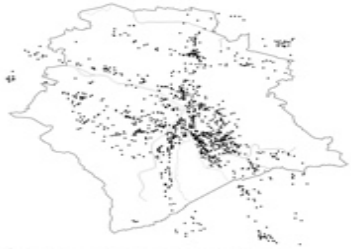




See und Flüsse



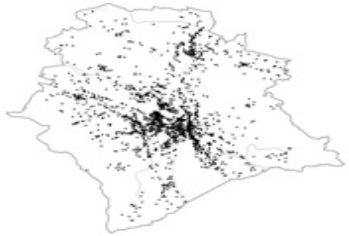
Bildungseinrichtungen



Gesundheitseinrichtungen



Kultureinrichtungen



Vitalität



Öffentlicher Nahverkehr



Kinderfreundlichkeit



Wald und Grünräume

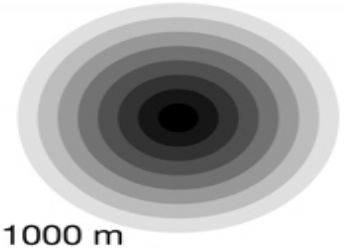


Miethöhe

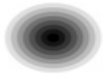


Verkehrsbelastung





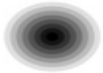
1000 m
See und Flüsse



300 m
Bildungseinrichtungen



200 m
Gesundheitseinrichtungen



300 m
Kultureinrichtungen

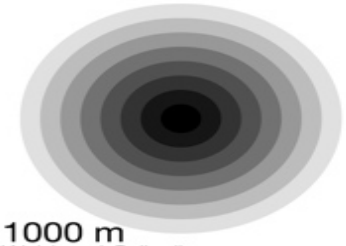
50 m
Vitalität



200 m
Öffentlicher Nahverkehr



150 m
Kinderfreundlichkeit



1000 m
Wald und Grünräume

600 - 4000 CHF
Miethöhe

0 - 44 µg/m³ NO2
Verkehrsbelastung

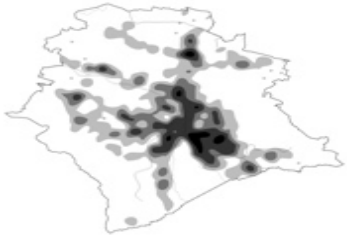




See und Flüsse



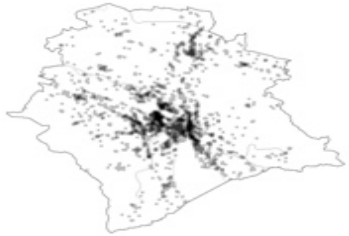
Bildungseinrichtungen



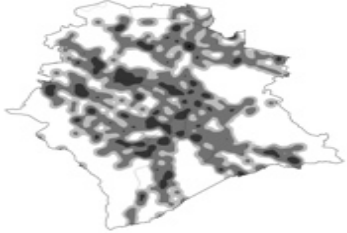
Gesundheitseinrichtungen



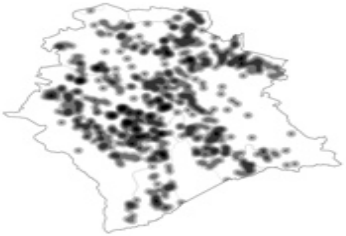
Kultureinrichtungen



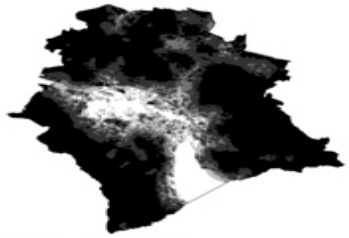
Vitalität



Öffentlicher Nahverkehr



Kinderfreundlichkeit



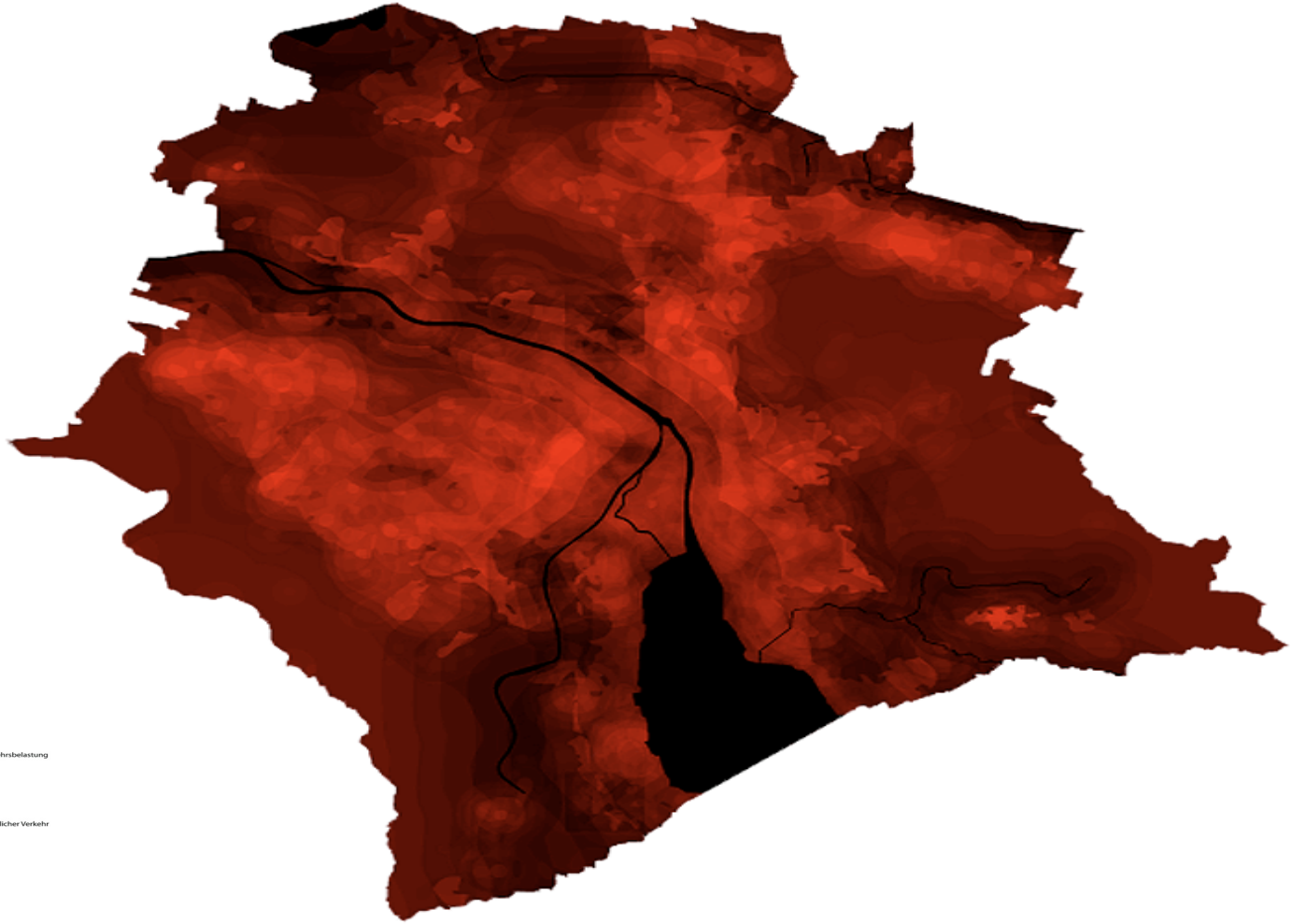
Wald und Grünräume

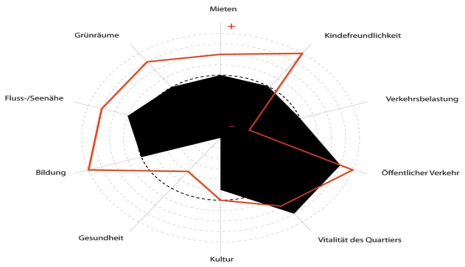


Miethöhe

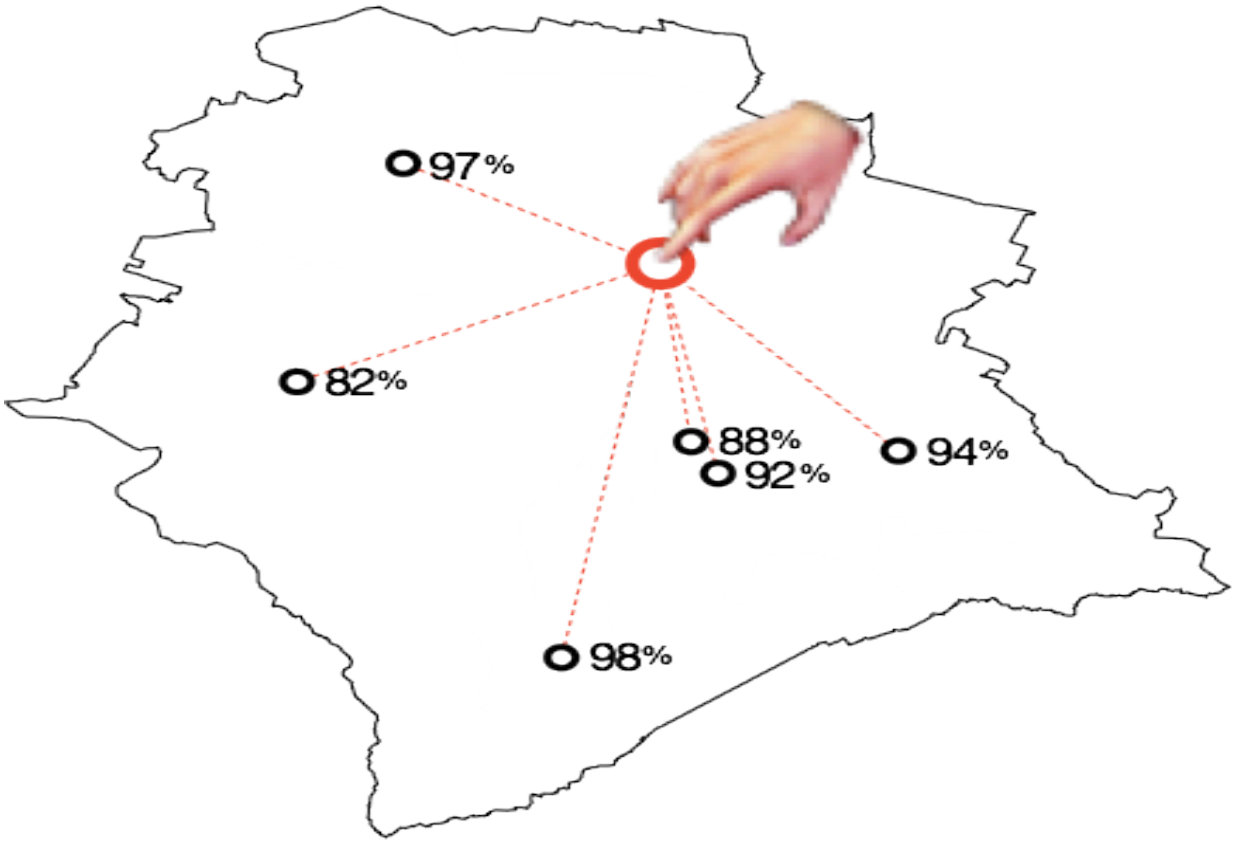


Verkehrsbelastung





PRIORITÄT
BEWERTUNG





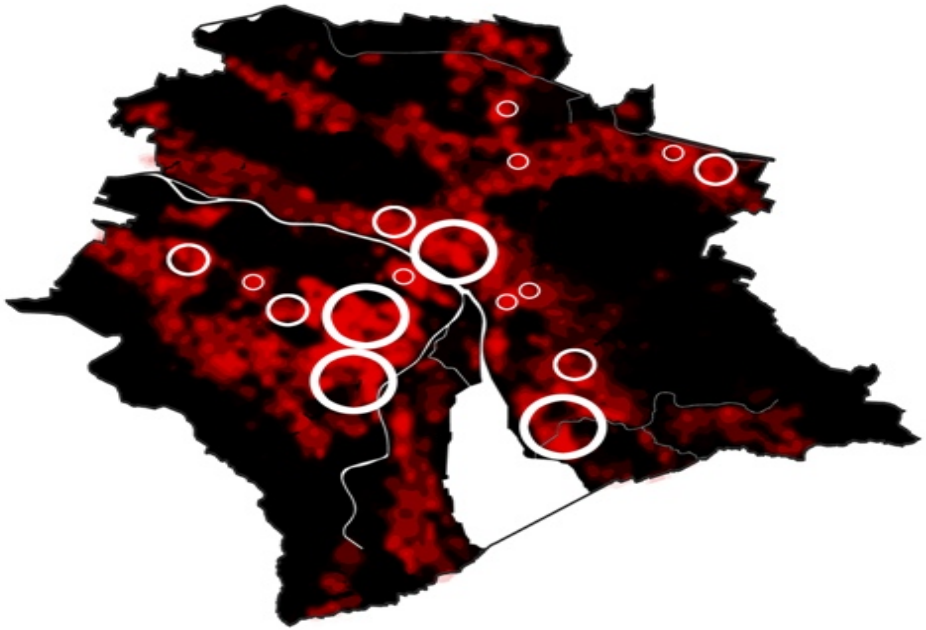
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97%

94%

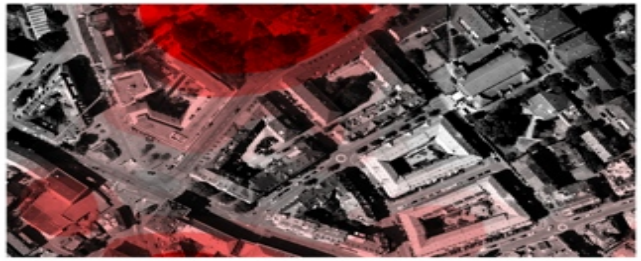
YOUCITY
ZÜRISPOTS

- Gesundheitseinrichtungen
- See und Flussraum
- Vitalität des Quartiers
- Natur- und Grünräume
- Mieten
- Verkehrsbelastung
- Kultureinrichtungen
- Bildungseinrichtungen
- Öffentlicher Nahverkehr
- Kinderfreundlichkeit





98,7% Escher Wyss

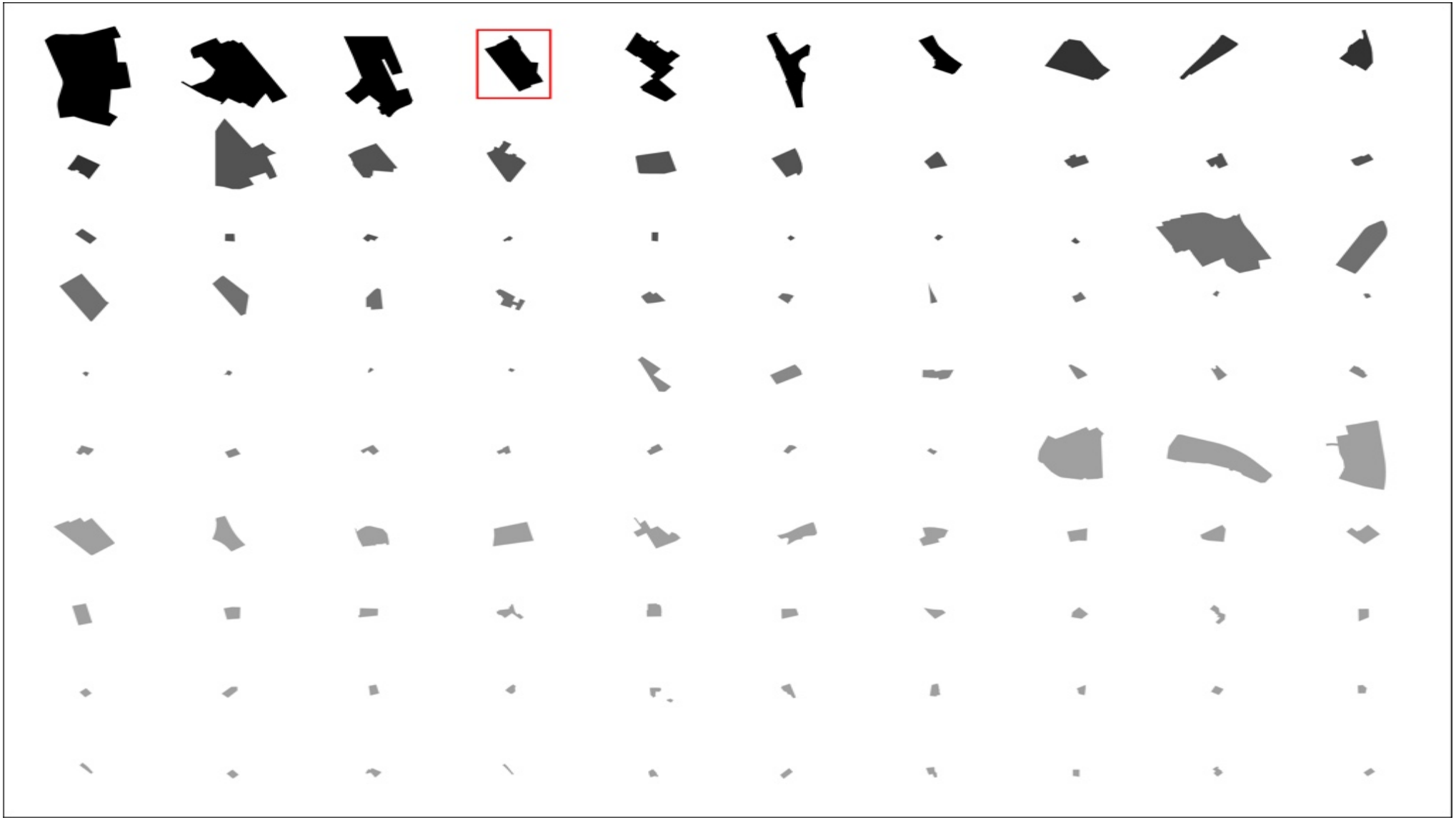


96,3% Hottingen



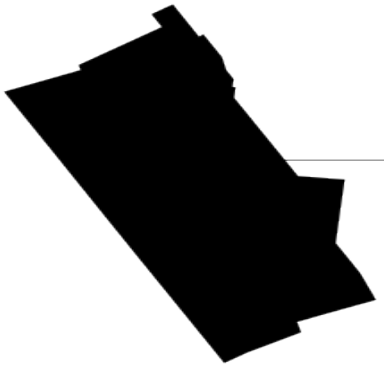
91,6% Tonhalle Areal

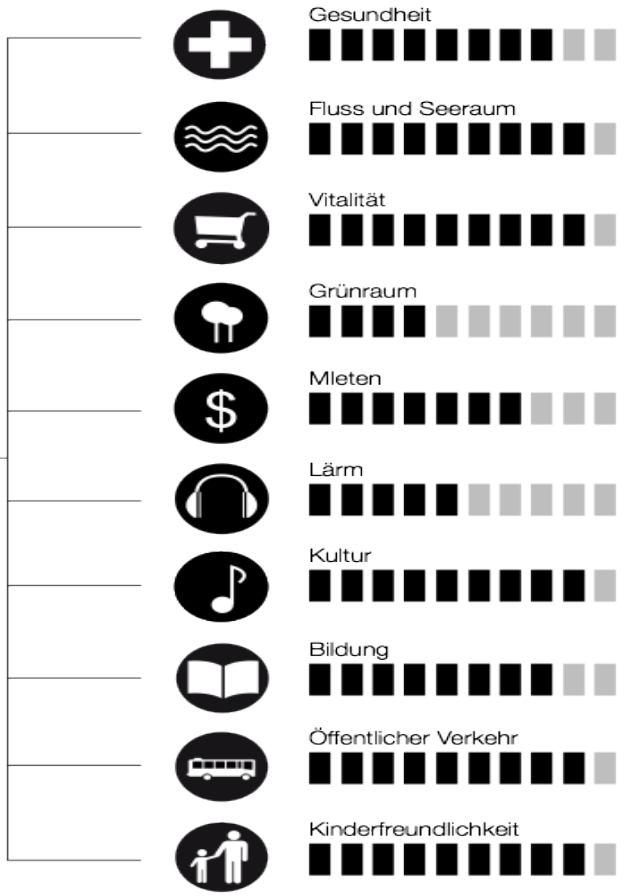




Seefeldstrasse 91

RI 10186





YOUCITY DOSSIER

ZÜRICH

AUFTRAG

Auftraggeber	UBS Real Estate Switzerland AG
Suchprofil	Entwicklung hochwertiger Wohnimmobilien

EINGABE

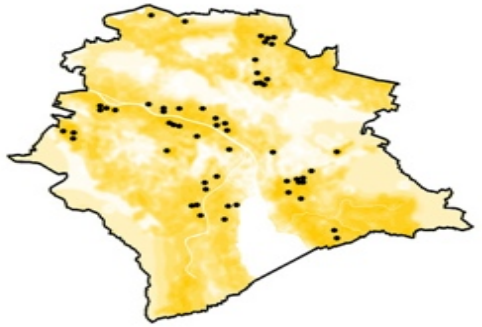
Bauzone	Q1/Q5d	17%
Steuerlast	6,2 %	13%
Einkommensdurchschnitt	> 8000,- CHF	7%
Altersdurchschnitt	45 - 60 Jahre	28%
Grünräume	0 - 300 Meter	9%
Kultureinrichtungen	hohe Dichte	11%
Vitalität	mittel	6%

RESULTAT

Identifizierte Objekte **74**

Trefferquote **87%**

274 weitere Treffer im Bereich 70 - 80%

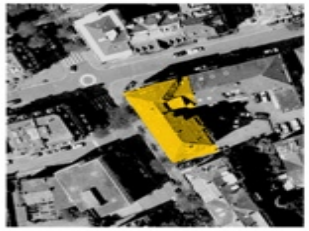




97,2%

Mainaustrasse 34
Seefeld

Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel



95,2%

Mainaustrasse 34
Seefeld

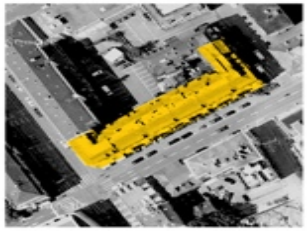
Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel



94,6%

Mainaustrasse 34
Seefeld

Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel



92,0%

Mainaustrasse 34
Seefeld

Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel



89,9%

Mainaustrasse 34
Seefeld

Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel

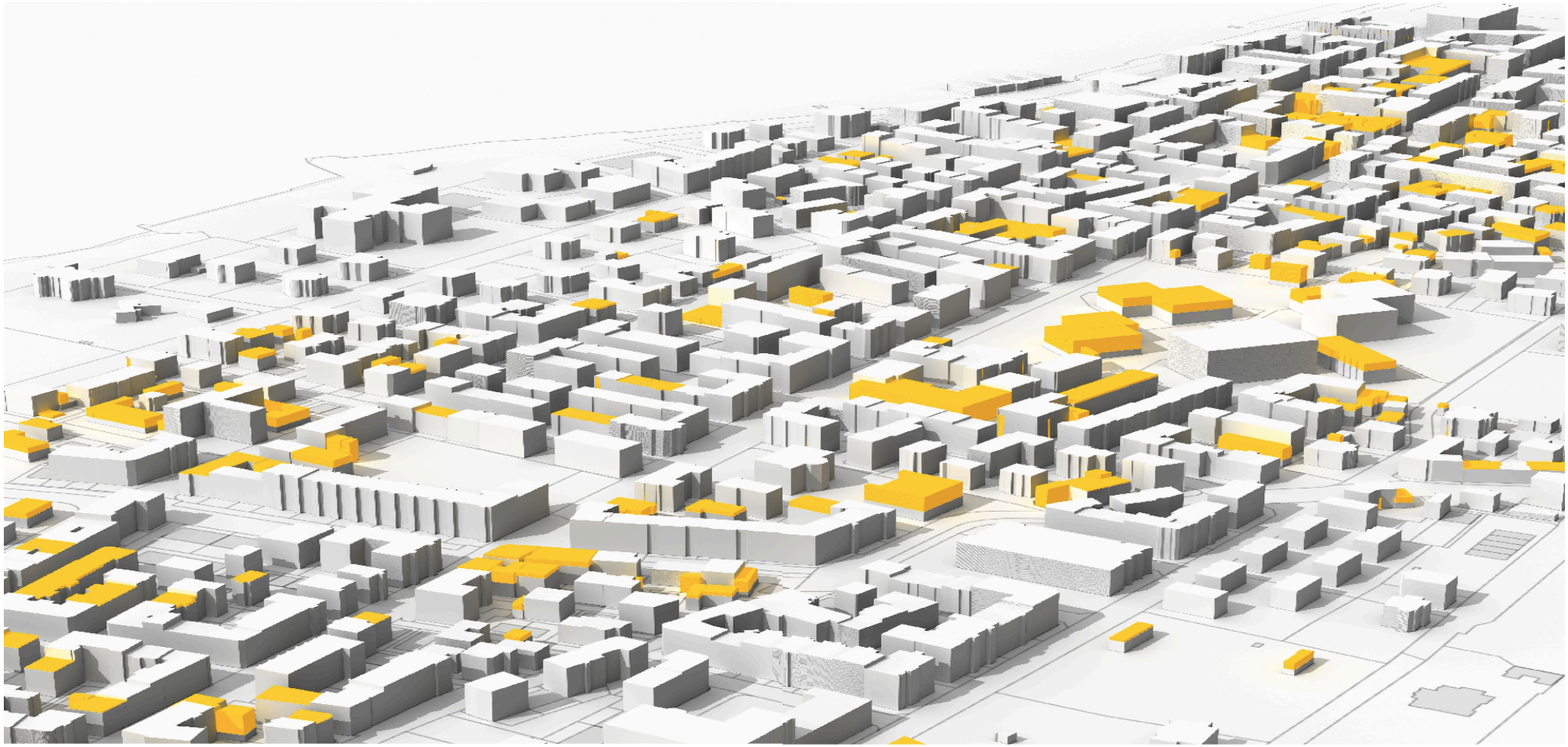


89,7%

Mainaustrasse 34
Seefeld

Bauzone	Q1/Q5d
Steuerlast	6,3 %
Einkommensdurchschnitt	7500,- CHF
Altersdurchschnitt	55 Jahre
Grünräume	290 Meter
Kultureinrichtungen	hohe Dichte
Vitalität	mittel

bitte umblättern: Seite 01/ 52



Information Architecture of Cities - Motivation

- In the next 25 years, 2 billion more people need living and working spaces in existing and new cities
- In the next 75 years, 3-4 billion more people, mostly in Africa, need living and working spaces in urban systems
- The livability of these cities will form the basis for their sustainability and resilience

Information Architecture of Cities - Support

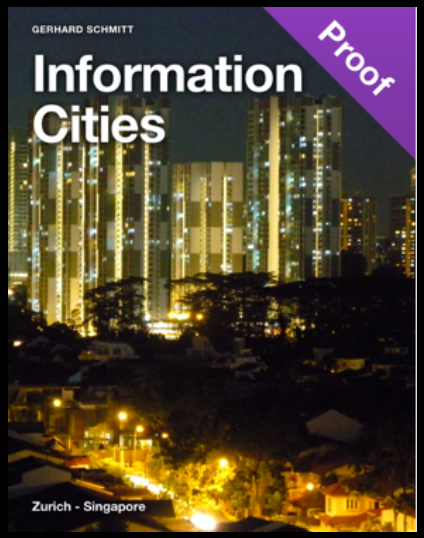
The MOOC – Massive Open Online Course

https://www.edx.org/course/ethx/ethx-fc-01x-future-cities-1821



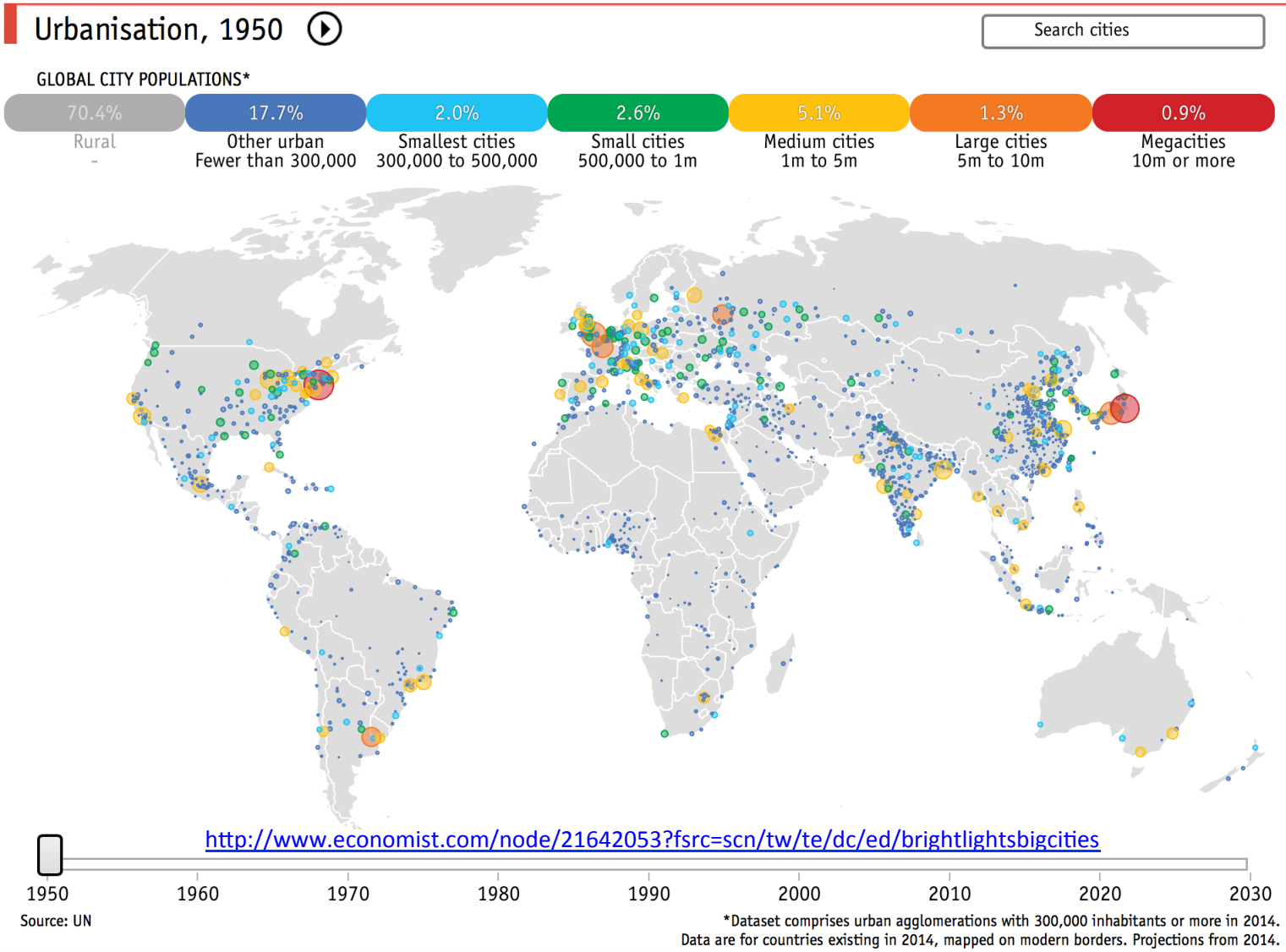


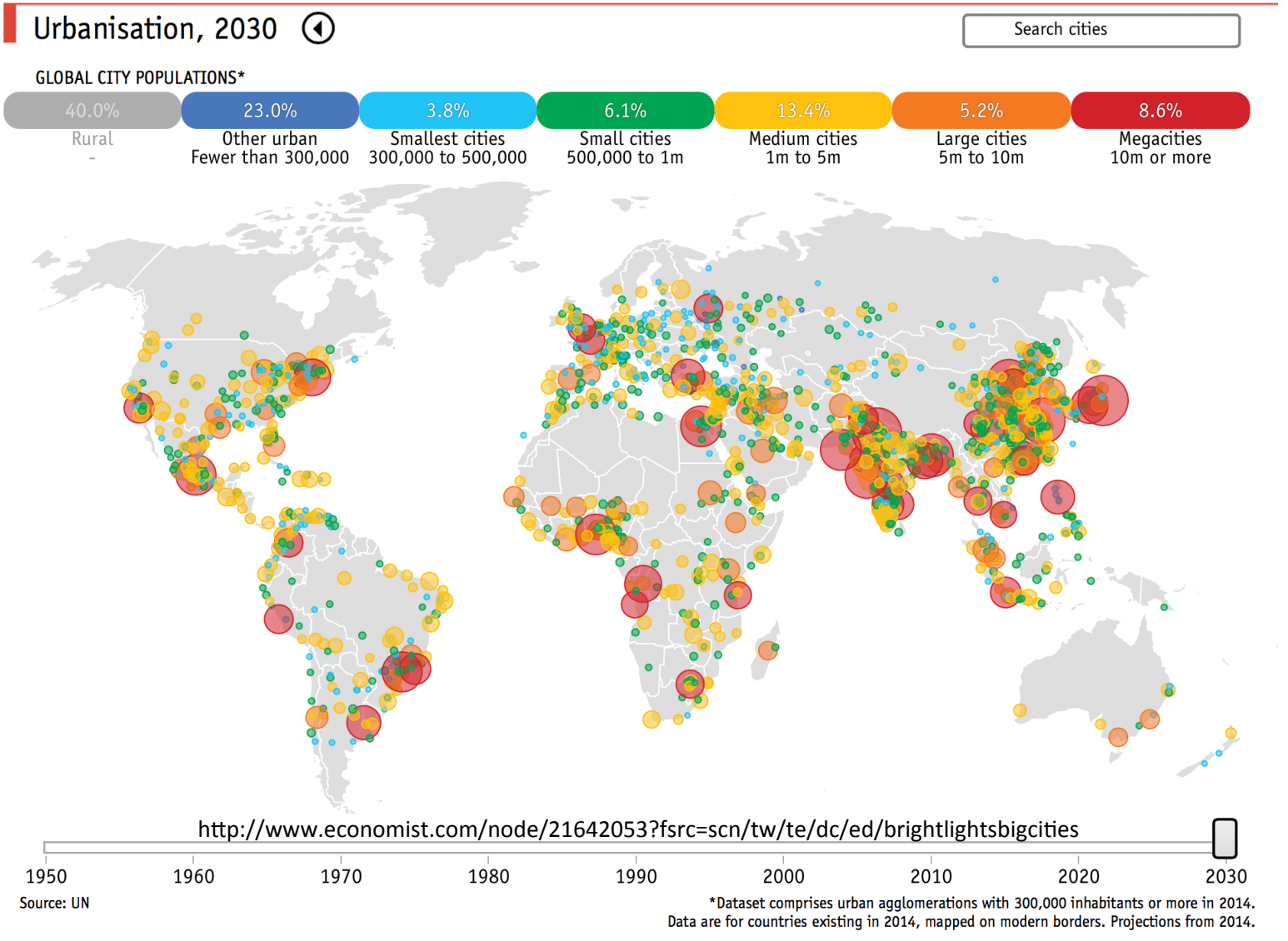
Information Architecture of Cities – Support



The BOOK – Basic Open Offline Knowledge

Information Cities


Urbanisation, 1950
Search cities
GLOBAL CITY POPULATIONS*
70.4%
Rural
-
17.7%
Other urban
Fewer than 300,000
2.0%
Smallest cities
300,000 to 500,000
2.6%
Small cities
500,000 to 1m
5.1%
Medium cities
1m to 5m
1.3%
Large cities
5m to 10m
0.9%
Megacities
10m or more
http://www.economist.com/node/21642053?fsrc=scn/tw/te/dc/ed/brightlightsbigcities
1950
1960
1970
1980
1990
2000
2010
2020
2030
Source: UN
*Dataset comprises urban agglomerations with 300,000 inhabitants or more in 2014.
Data are for countries existing in 2014, mapped on modern borders. Projections from 2014.


Urbanisation, 2030
Search cities
GLOBAL CITY POPULATIONS*
40.0%
Rural
-
23.0%
Other urban
Fewer than 300,000
3.8%
Smallest cities
300,000 to 500,000
6.1%
Small cities
500,000 to 1m
13.4%
Medium cities
1m to 5m
5.2%
Large cities
5m to 10m
8.6%
Megacities
10m or more
http://www.economist.com/node/21642053?fsrc=scn/tw/te/dc/ed/brightlightsbigcities
1950
1960
1970
1980
1990
2000
2010
2020
2030
Source: UN
*Dataset comprises urban agglomerations with 300,000 inhabitants or more in 2014.
Data are for countries existing in 2014, mapped on modern borders. Projections from 2014.

1 The liveable city

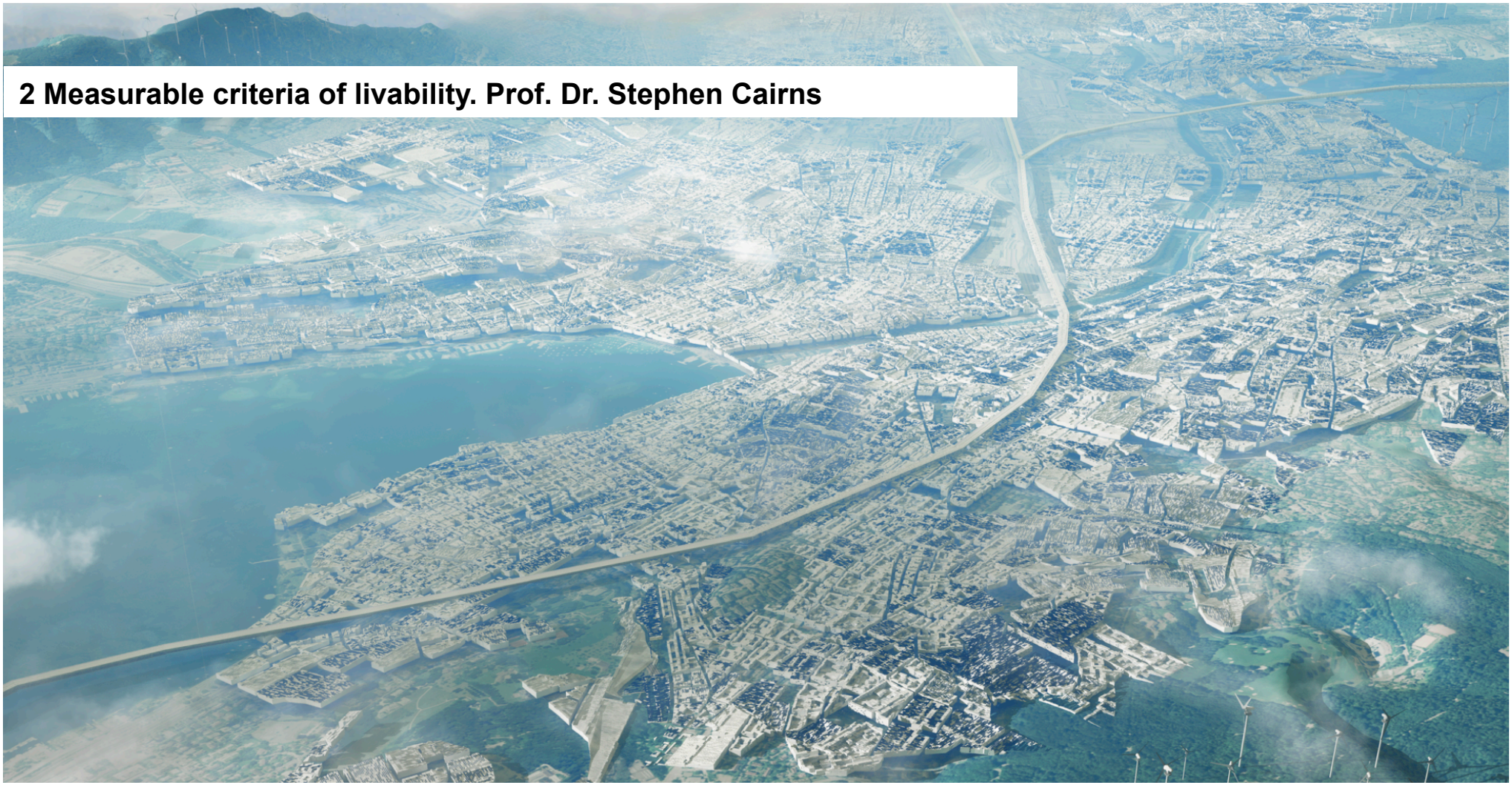


What is livability? A definition

„Livability is the sum of the factors that add up to a community's quality of life—including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation possibilities.“ http://livable.org/about-us/what-is-livability

Korfiati and Gkonos:
http://www.n.ethz.ch/~gkonosc/Layout/Layout.html

2 Measurable criteria of livability. Prof. Dr. Stephen Cairns



ETH zürich

Information Architecture

Prof. Dr. Gerhard Schmitt

(FCL) FUTURE CITIES LABORATORY 未来城市实验室



Criteria of livability



Giap, T. K., Woo, W. T., Tan, K. Y., Low, L. and Ee, L. G. A., 2012. *Ranking the Liveability of the World's Major Cities*. Singapore: World Scientific Pub.

Exercise 1: Why do you live in the city you live in, and what would be the criteria to move to a new one? Which one would this be?

The exercises

1. Personal criteria defining livabity, and the reasons for it
2. Energy and the city
3. The urban eco-system