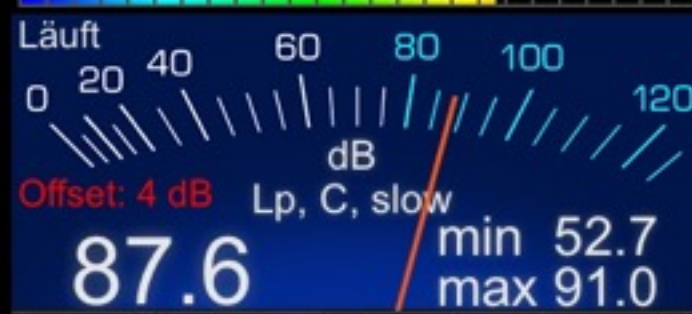
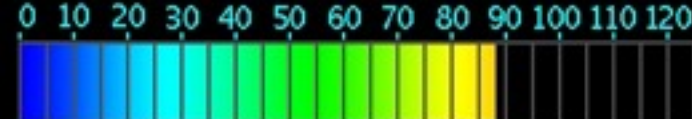


Information Architecture of Future Cities: Livable Cities

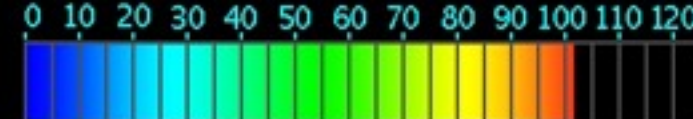




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08:03:51 - 00:00:22 Laufzeit

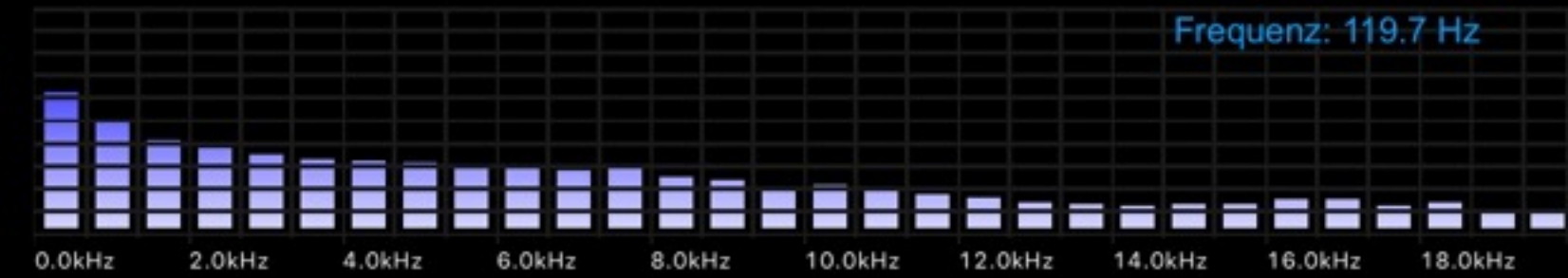


LCE: 95.2 dB
LCeqt: 81.8 dB
LAFTeq: 70.7 dB
LC01: 88.0 dB
LC10: 72.1 dB
LC50: 62.7 dB
LC90: 61.2 dB
LC95: 61.1 dB

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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

Welcome to one of the world's most liveable cities: Zürich





One of the world's most dynamic and fastest growing cities: Shenzhen





Livable Cities - Content

- **Analysis:** Urban livability and its criteria
- Urban climate and livability
- Urban energy and livability
- Mobility and livability
- Water, ecology and livability
- **Design:** Towards a citizen design science

Linked courses:

- ETH MOOC Livable Cities
- iA Creative data mining
- iA Digital urban simulation

How the course works

- Lectures in seminar form every Monday
- Specialists interactively describe the impact of their respective field on the livability of cities
- You connect to students from more than 100 countries in the working groups of the Massive Open Online Course on livable cities, running in parallel to your semester
- The exercises will be found in the MOOC - you send them to us
- You are expected to participate in at least 80% of the seminars
- On May 9, 2016, you will present selected results of the exercises, together with students from the parallel courses on Digital Urban Simulation and Creative Data Mining



Estefania Tapias

Estefania Tapias is a PhD candidate and a teaching assistant at the Chair of Information Architecture, ETH Zurich. After studying Architecture, she conducted a master on sustainable architecture at Politecnico di Torino. Her doctoral research is focus on a parameterized design-feedback tool that aims to correlate outdoor thermal comfort indices, microclimate data and building geometries on a micro-scale level in order to explore 'design spaces' of urban forms in tropical climates. She is also part of the PhD label program of Climate-KIC. Together with Dr. Reinhard König, she teaches the course 'New Methods in Urban Analysis and Simulation' where ETH students learn how to analyze and generate spatial urban configurations with advanced computational methods.

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



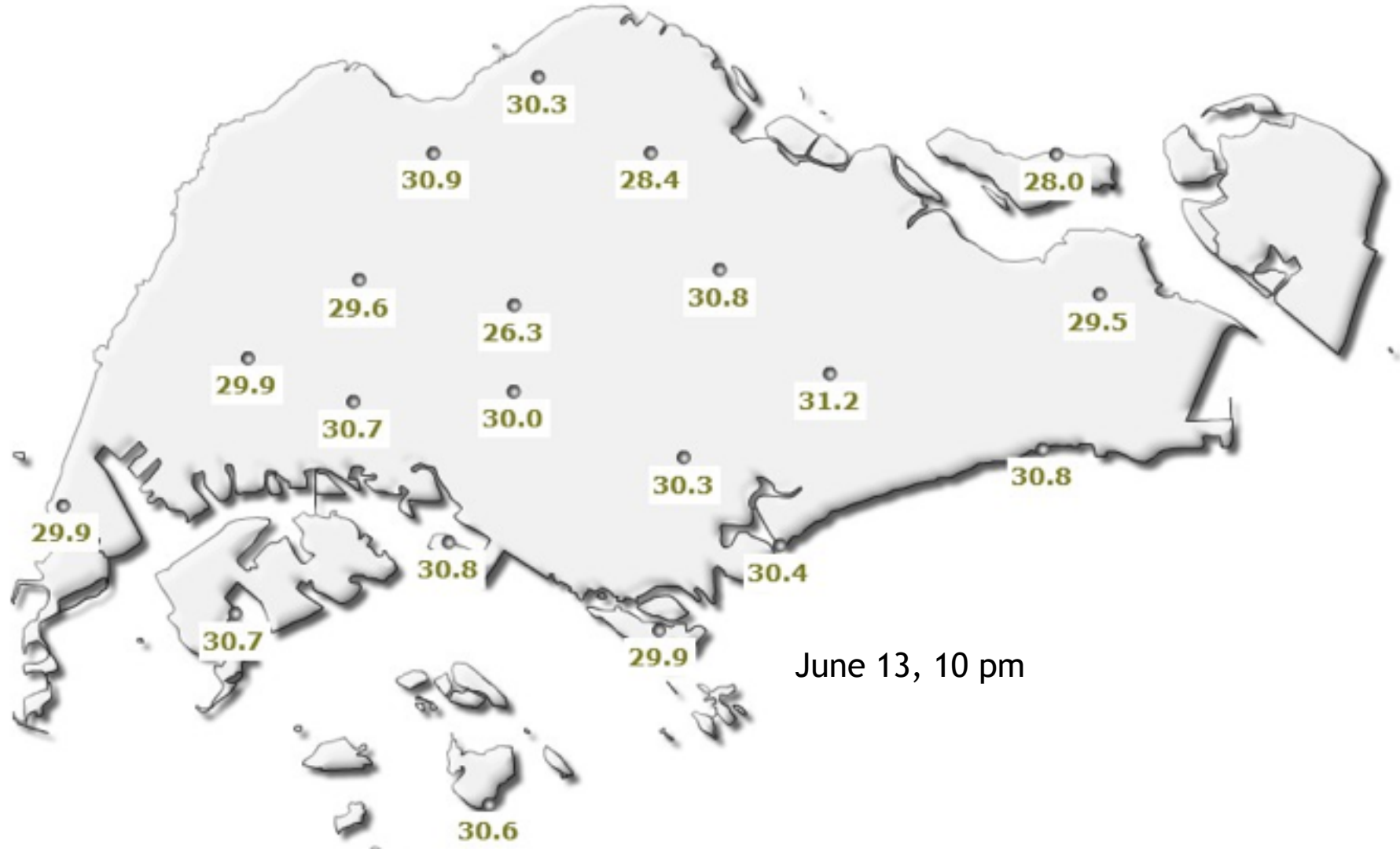
Criteria of livability



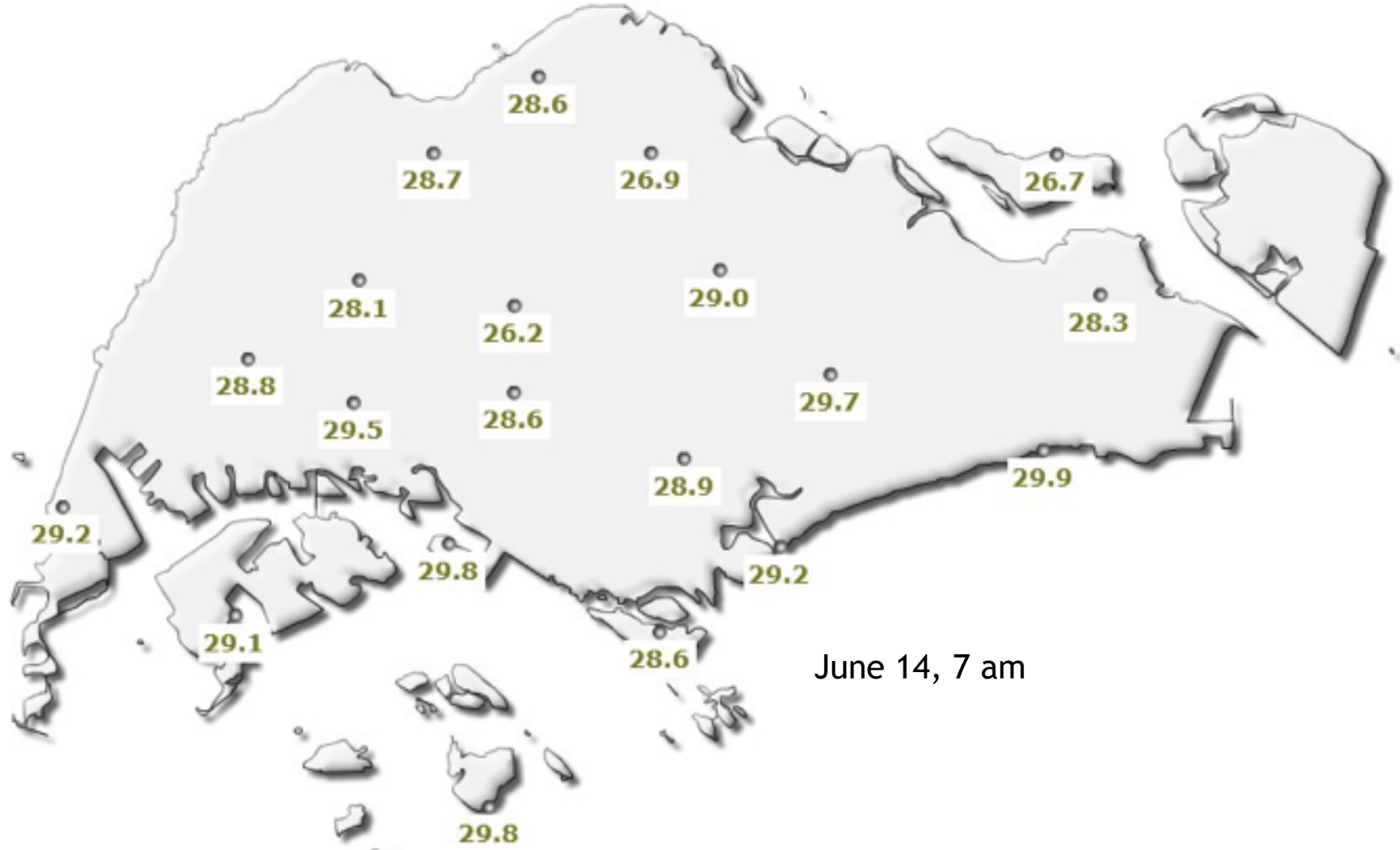
Giap, T. K., Woo, W. T., Tan, K. Y., Low, L. and Ee, L. G. A., 2012. *Ranking the Liveability of the World's Major Cities*. Singapore: World Scientific Pub.

3 Urban climate and livability: heat islands. Prof. Dr. Jan Carmeliet





June 13, 10 pm



June 14, 7 am

Temperature anomaly: The term temperature anomaly means a departure from a reference value or long-term average. (<http://www.ncdc.noaa.gov/cmb-faq/anomalies.php>)

Base period: 1951-1980

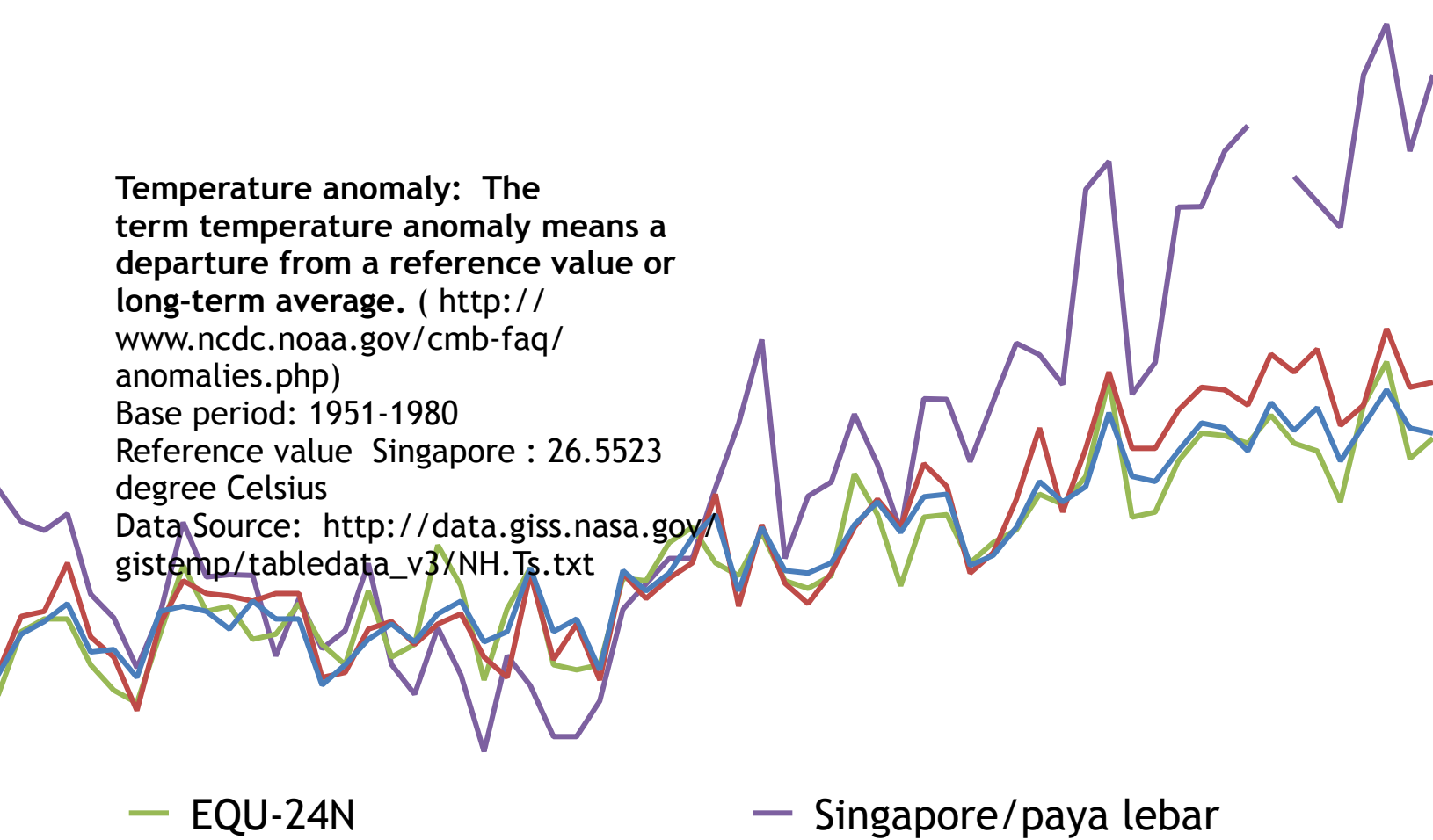
Reference value Singapore : 26.5523

degree Celsius

Data Source: http://data.giss.nasa.gov/gistemp/tabledata_v3/NH.Ts.txt

— EQU-24N

— Singapore/paya lebar



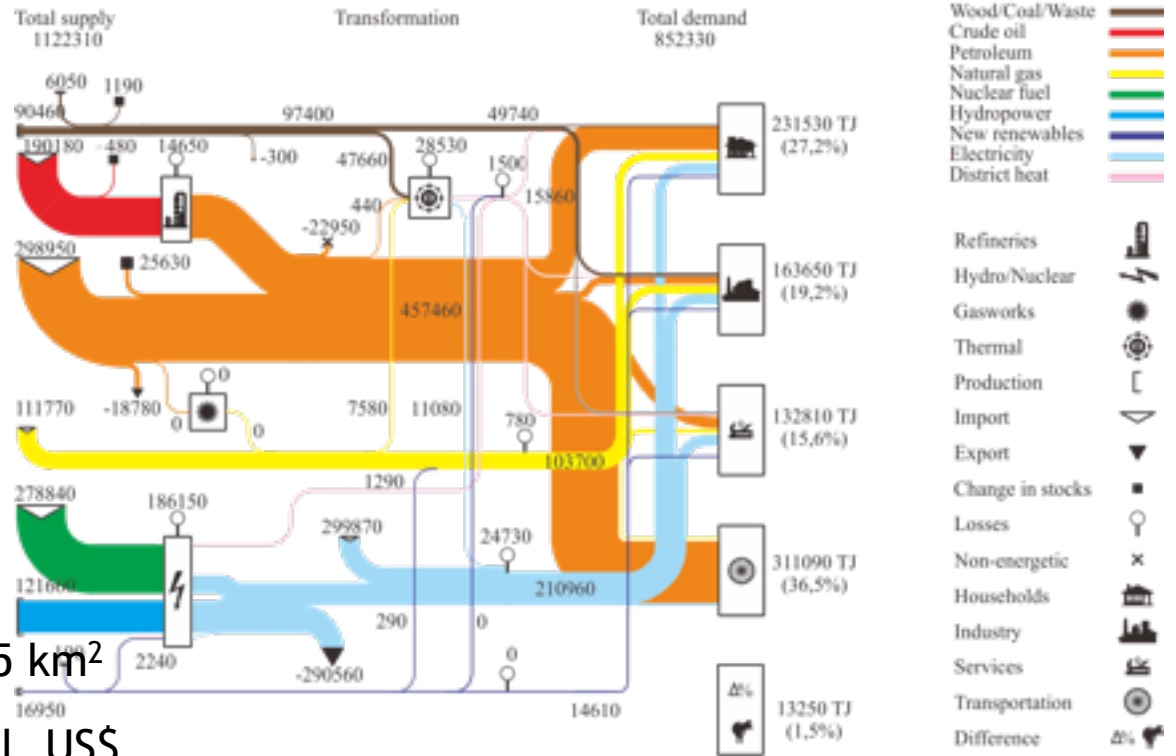
4 Urban energy and livability: foundations. Dr Matthias Berger



Energy flows in TJ for Switzerland



Population 8'014'000
 Energy dem. 852'330 TJ
 Area 41'285 km²
 Density 194/ km²
 GDP(PPP) 340 bil. US\$



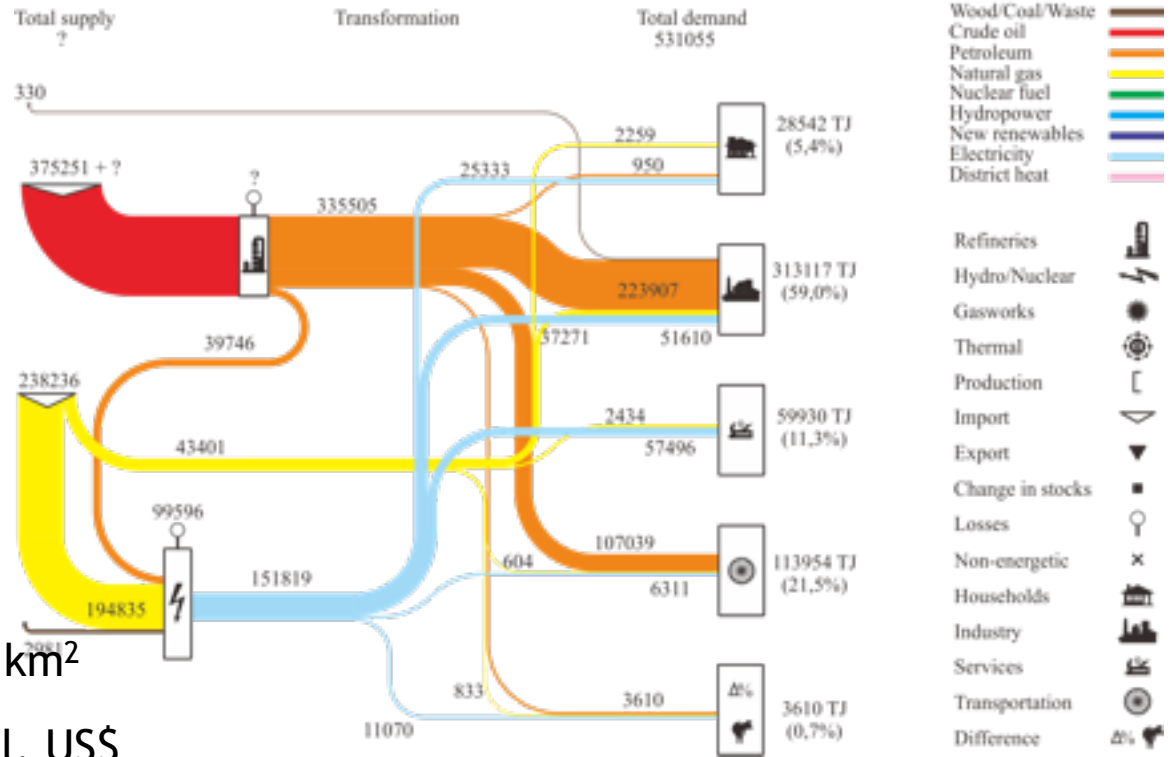
Total Primary Energy Supply (TPES)

$$dE = \delta Q + \delta W = [J]$$

Energy flows in TJ for Singapore



Population 5'312'400
 Energy dem. 531'055 TJ
 Area 712.4 km²
 Density 7126/ km²
 GDP(PPP) 315 bil. US\$



Total Primary Energy Supply (TPES)

$$dE = \delta Q + \delta W = [J]$$

5 Water, ecology and livability. Dr. Ulrike Wissen



Eco systems services – Dr Ulrike Wissen

„Ecosystems deliver goods and services of enormous value to human society. However, human transformations of ecosystems are among the largest sources of change on Earth. Thus, we urgently require an improved understanding of the fundamental nature of how human activities, embedded in the global change context, are affecting ecosystem services and feed back to the long-term dynamics of the human-environment system (HES).“

<http://www.uns.ethz.ch/res/irl/ecoserv>

6 Mobility and livability. Dr. Alex Erath



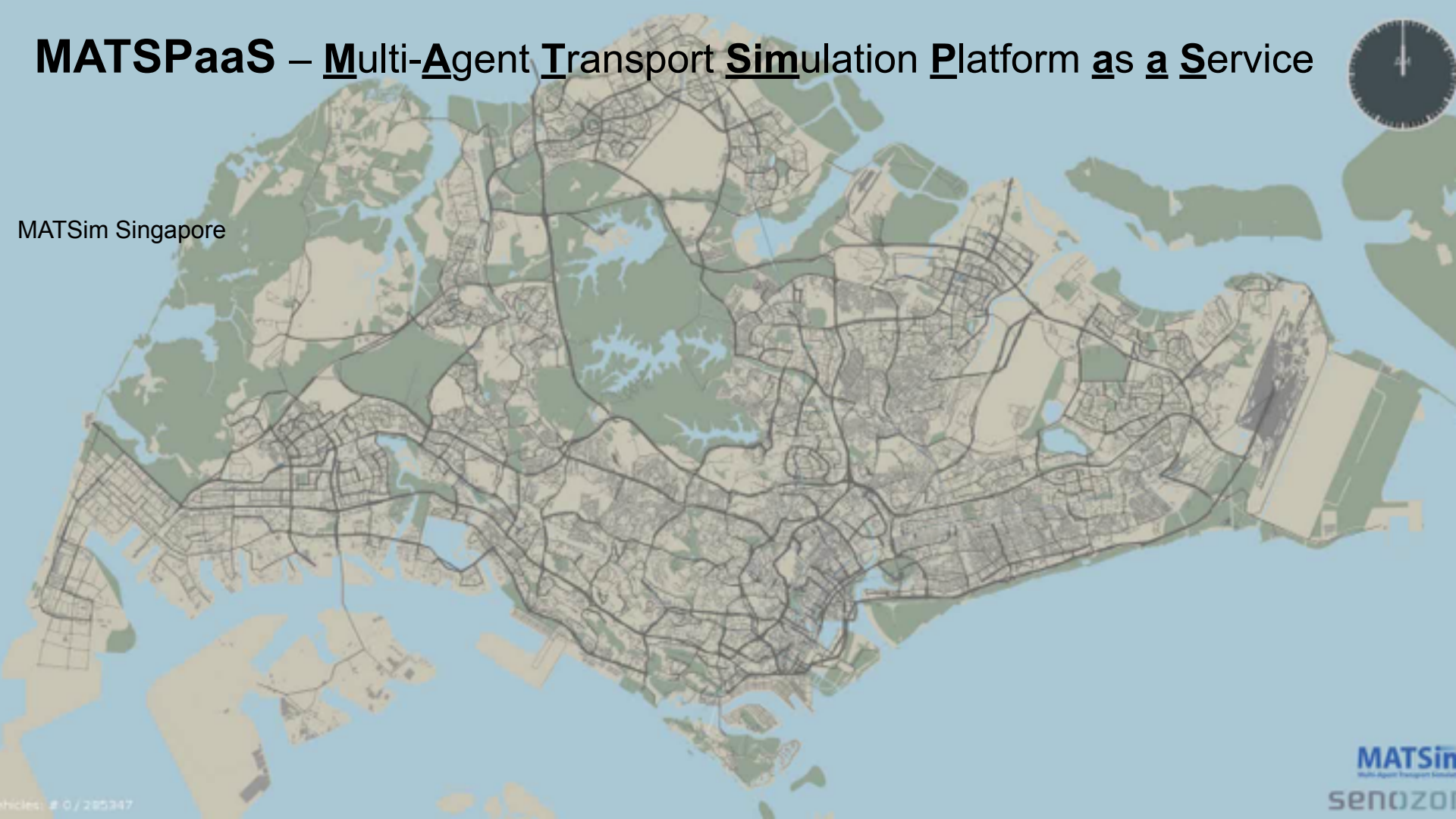
Mobility and transportation

Mobility has many meanings, but in this context we refer to it as the capacity of citizens to freely move between their living place, their working place, their education place and any other location by any mode of transportation, using the infrastructure of the urban system or the territory surrounding it. Mobility has a growing impact on the planning and management of cities.

MATSPaaS – Multi-Agent Transport Simulation Platform as a Service



MATSim Singapore



8 Towards a citizen design science. Prof. Jane Jacobs



Citizen Design Science

With citizen design science, we want to expand the possible actions of citizen scientists towards design and planning the future. We assume that people living in an urban environment in a concrete place at a concrete time will know most about this environment, about its advantages, its shortcomings, its dangers, and its potential. The raw feedback from people in real situations in real cities is invaluable and represents a form of crowdsourcing. We can use this knowledge to inform and in some cases drive the transformation of existing into the design of new, more sustainable and resilient cities around the world.

9 The liveable city – Final Critique and Presentations – May 9, 2016, 14:00 – 16:00





MOOC on Livable Future Cities
Massive Open Online Course

Chair of Information Architecture - Future Cities Laboratory
Prof. Gerhard Schmitt & Team

Massive Open Online Courses MOOCs

- Offene Lernplattformen, auf die Spitzenuniversitäten Inhalte stellen
- Beispiele: edX (Harvard&MIT), Coursera (US, for profit)
- Sammlungen von Kursen zu einzelnen Themen
- Kurssequenzen, die auch breitere Wissensgebiete abdecken
- nur diejenigen belegen ein MOOC, die am Inhalt interessiert sind.
- nur diejenigen schließen ein MOOC mit einem Zertifikat ab, die alle Anforderungen erfüllt und die Prüfungen bestanden haben
- Zahl der Einschreibungen ist hoch, die Zahl der Abschlüsse ca. 5%
- es gibt erst sehr wenige Architektur-MOOCs, und das D-ARCH lancierte die weltweit ersten MOOCs für Städtebau

Massive Open Online Courses in Architecture and Urban Planning

- open access to high-quality information
- no prerequisites
- no discrimination
- worldwide reach
- forces instructors to prepare precisely
- generates unprecedented feedback culture
- opens new possibilities for architectural education in places without universities
- No direct contact with students during seminars
- different levels of knowledge
- Internet access needed
- global, less local information
- less spontaneity, content difficult to retract
- a technical medium between partners
- quality control of results beyond foundations may be difficult to achieve continuously



MOOC 1 - FUTURE CITIES: 1ST round:

- September 2014 - December 2014
- 10 weeks
- Financed by LET ETH Zürich
- 12'553 registered participants
- 1'245 active students in the last week of the course
- 711 certificates achieved
- 2'000 annotated images submitted by students (as answers to assignments)



MOOC 2 - LIVABLE FUTURE CITIES: 1ST round:

- September - December 2015
- 10 weeks
- 8'184 registered participants
- Financed by SEC
- 1'115 active students in the last week of the course
- 453 certificates delivered
- 2'500 annotated images submitted by students (as answers to assignments)

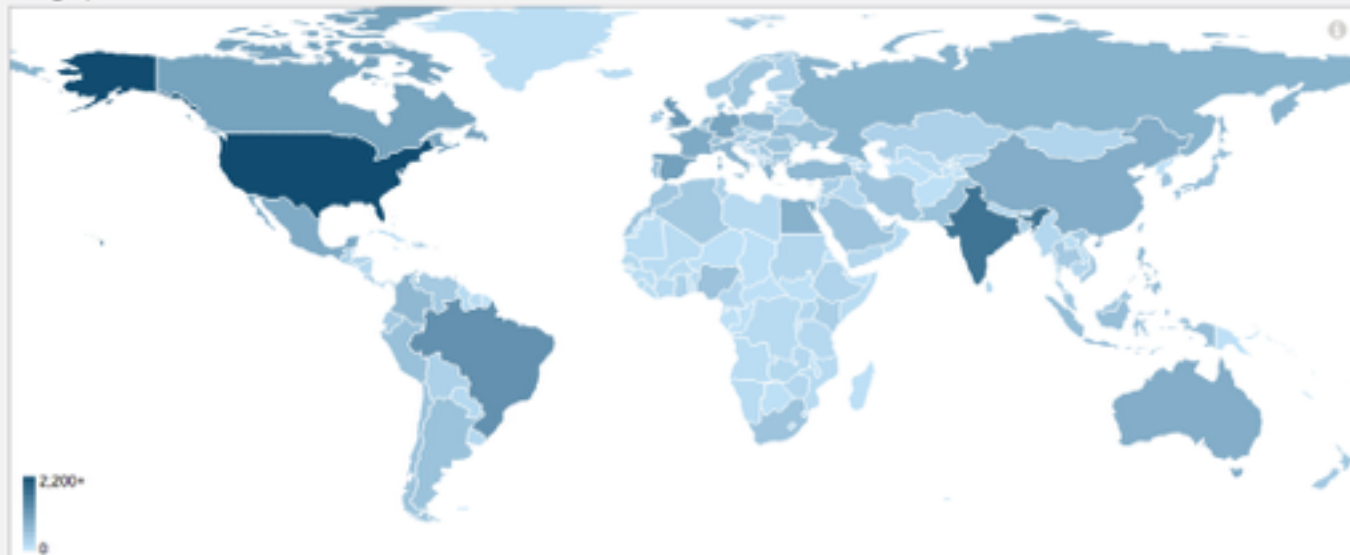
Facts & Figures from edX INSIGHTS (16/11/14)

Students - enrollment



Geographic Distribution

Where are my students?



Geography Metrics

166

Total Countries
Represented

United States

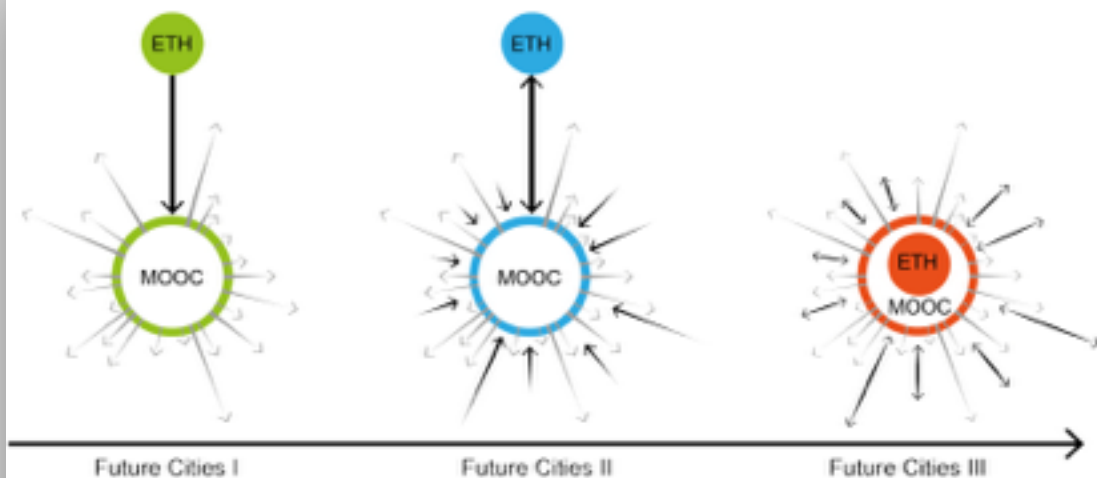
Top Country by
Enrollment
18% of students

India

Second Country by
Enrollment
10% of students

Brazil

Third Country by
Enrollment
5% of students



Future Cities I: (i) ETH iA course on "Future Cities" and Singapore-ETH Centre (SEC) Future Cities Laboratory research results translated to MOOC. (ii) MOOC I disseminates information to participants. Participants send extensive feedback and images as results of exercises.

Future Cities II: (i) ETH iA course on "Livable Cities" is taught as pilot with ETH students only in FS 2015. Integration of feedback from MOOC I. (ii) ETH iA course and new SEC Future Cities Laboratory research results translated to MOOC II. (iii) MOOC II disseminates information to participants. (iv) Participants contribute their experiences.

Future Cities III: (i) ETH iA course on "Responsive Cities" is taught as pilot with ETH students only in HS 2015. After feedback from this course and from MOOC II it is adapted for simultaneous learning with MOOC III. (ii) Participants from both course settings interact, build upon each other's experiences and create new knowledge.

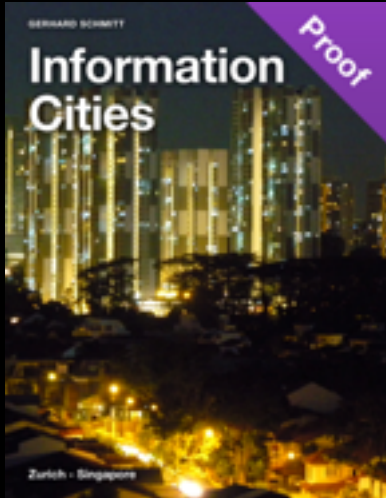
The Team – Development & Co-ordination

- **Prof. Gerhard Schmitt – Professor**
All over responsibility content
- **Denise Weber – Executive Assistant**
Co-ordination / timing / finances / assistance video clip recording
- **Estefania Tapias – Phd Candidate & Research Assistant**
Preparation details content & planning video clips / design & content slides / management discussion platform / writing scripts
teleprompter / assistance video clip recording
- **Athina Korfiati – Student Assistant**
Assistance video clip recordings / input all course ware into edX edge platform / management discussion platform / weekly update videos / writing weekly e-mails to students via edX platform
- **Charis Gkonos – Student Assistant**
Assistance video clip recordings / input all course ware into edX edge platform / management discussion platform / weekly update videos / writing weekly e-mails to students via edX platform





Information Architecture of Cities – Support

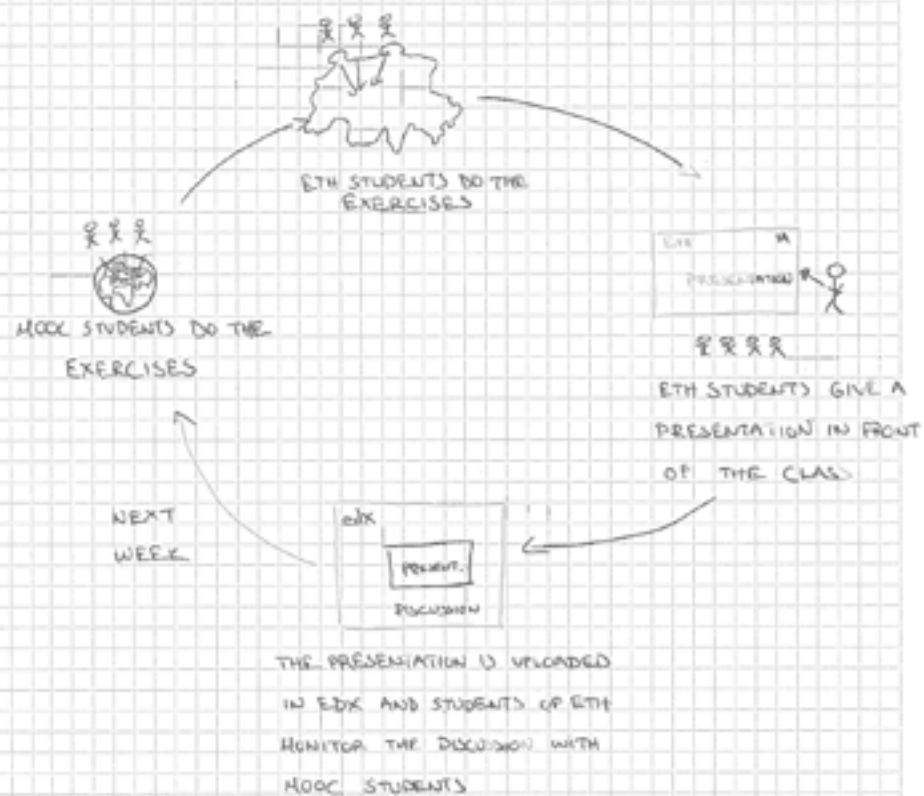


The BOOK – Basic Open
Offline Knowledge
Information Cities

MOOC discussion panel presentations

Discussion Panel: The MOOC platform offers to participants a space for discussion called the 'Discussion Panel'. This tool enables the integration between participants from around the world in order to share experiences and knowledge.

Aim of presentations: Each week, starting on February 29, 2016, one group of ETH students from this course will present to the whole class a **summary** of the MOOC discussion panel from the previous week. Each ETH Student group has to highlight **3 main contributions** from MOOC participants and give their own opinion. The presentation time is up to 10 minutes followed by a discussion.



How to interact with the MOOCs

1. Open a Web browser and navigate to www.edx.org

2. Click on the "Register" button on the top right of the page and create a new account. In case that you already have an edX account, just "Sign In" using your existing account.

3. After you have successfully registered to the platform, use the search tool on the top of the page to find the course: "Quality of Life: Usability in Future Cities" (hint: if you type the word "livability", the course appears on the top of the list)

Week 1

Search all posts

Show all by most activity

Help

Back to Basic 16

Let People Be The Solution (Introduction&Thought) 7

Introduction From The Netherlands 6

Santa Ana City 5

How do you personally define livability? 4

Livable Cities 4

HABITABILITY 4

An Anthropological View of The City 4

Liveable City = Social Rights 4

Introduction 4

Hello 3

Back to Basic

discussion posted 12 days ago by [lauraov](#)

1 Vote



I think we need to try, to go back to the basics.

I have a small example, in the city where I live 35 or 40 years ago started snowing every time november comes, it rained during the spring, at this day I seen snow fall 7 times, one time we had a really cold days of -18 degrees Celsius and now instead of rain 12 or 20 times a year, it rains 1 time and causes a really bad flood, which ends up hurting more than helping. And it's all for the drastic change in weather.

So what was the difference between now and then? How people lived. They did not need to use the car to look for a supermarket, they walk or used bicycles or public transport to get to places, they did not have to spend too much electricity, they had all kinds of fruit in their yards, they had maybe 5-7 trees at home.

Maybe we need to flip back and learn how to combine the technology of today with the knowledge of yesterday.

I remember a quote from Renzo Piano "We have to balance between gratitude of the past and the desire of invention"

Related to: [Week 1 / Week 1 - First Discussion](#)

This post is visible to everyone.

iA MOOC Access and Review Process

- Create Account
- Find the course
- Enroll into the course
- Go to Course tab
- Go through individual weeks 1 and 2 and 3
- Answer review questions
- First exercise will be online under 3.7
- Sign up to Review Groups who will each be responsible for 1 exercise: read the answers, reflect on them, make a presentation in in class (the 1st exercise starts on February 22, 2016 and the Review Presentation by the first Review Group will be on February 29, 2016)
- This Review Presentation will be placed as feedback video on the MOOC website
- Each student takes all exercises described in the MOOC + 1 exercise review in the Review Group

Information Architecture and Future Cities: Livable 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 Quality of Life: Livability in Future Cities is a good overview and starting point for this course.

- 22.02.2016** **Die lebenswerte Stadt**
Introduction to livable cities
- 29.02.2016** **Messbare Kriterien der Lebensqualität**
Measurable criteria of livability
- 07.03.2016** **Stadtklima und Lebensqualität**
Urban Climate and livability (Prof. Jan Carmeliet)
- 14.03.2016** **Seminar week (No lecture)**
- 21.03.2016** **Energie und Lebensqualität**
Energy and livability
(with Dr. Matthias Berger)
- 04.04.2016** **Wasser, Ökologie und Lebensqualität**
Water, ecology and livability
(with Prof. Adrieboe Grêt-Regamey)
- 11.04.2016** **Mobilität und Lebensqualität**
Mobility and livability (with Dr. Alexander Erath)
- 25.04.2016** **Partizipativer Stadtentwurf**
Towards citizen design science
- 02.05.2016** **The livable city**
- 09.05.2016** **Feedback lecture**

Final IA critique
Combined critique with the other IA courses
(14:00 - 16:00)

Where

HIT H 31.4 (Video wall)

Supervision

Prof. Dr. Gerhard Schmitt schmitt@arch.ethz.ch
Estefania Tapias tapias@arch.ethz.ch

EdX MOOC

Quality of Life: Livability in Future Cities
www.edx.org
Search for ETH

Prof. Dr. Gerhard Schmitt
Chair of Information Architecture
Information Science Lab
Wolfgang-Pauli-Strasse 27, 8093 Zurich
www.ia.arch.ethz.ch

* Total 60 h = 2 ECTS

6 Exercises (25%) = 75%

Attendance and participation = 25%

The most recent outline will be found on www.ia.arch.ethz.ch



Discussion and Questions

