

Life Between Systems

Martin Brynskov
AU Smart Cities

@brynskov

pit.au.dk
smartcities.au.dk

GOTO 2013



MA Information Studies
Semiotics
Classical Greek
“Digital Habitats”

PHD CS (Girls & Mobiles/LEGO)

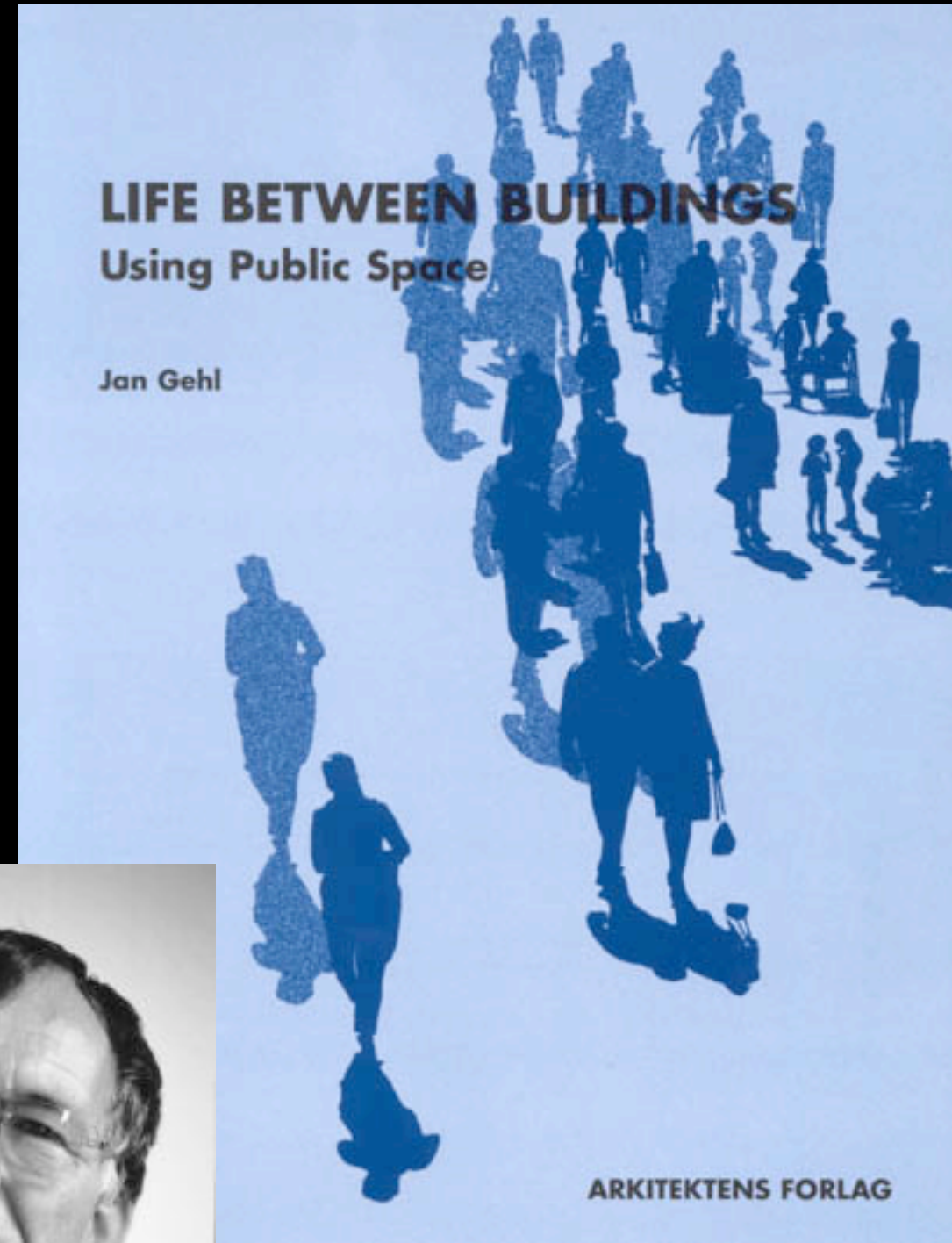
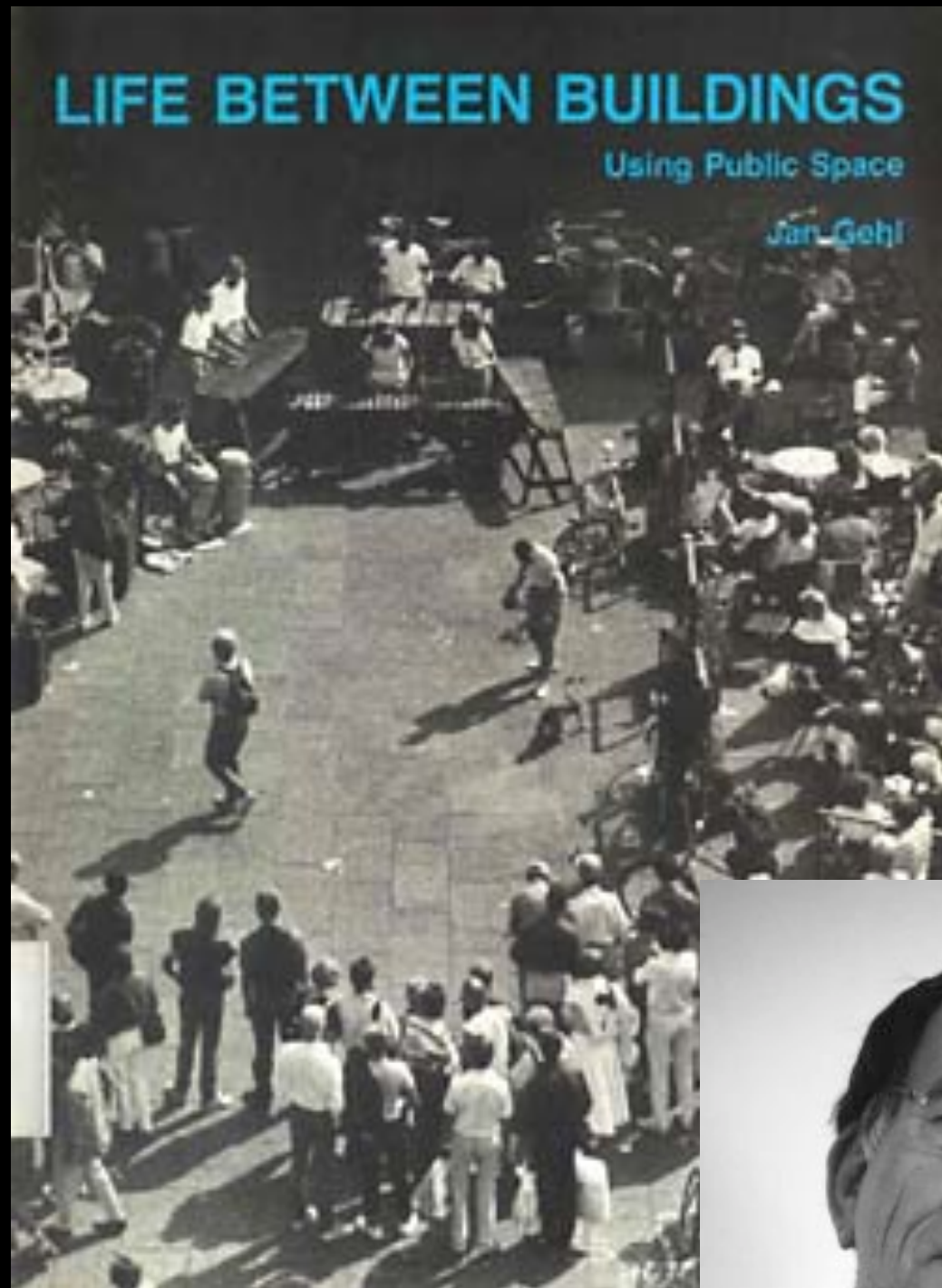
PROF Interaction Technologies
AU Smart Cities

AUSC AU Smart Cities

DUL Digital Urban Living

CAVI Visualization & Interaction

PIT Participatory IT



Jan Gehl

open data

smart cities

Plug-in City

Wired City

Virtual City

Intelligent City

Smart City



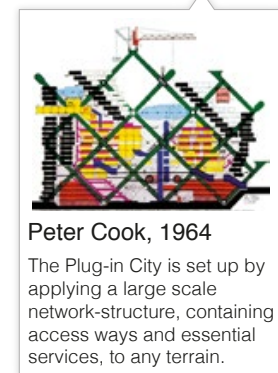
Ron Herron, 1964

Walking City imagines a future in which borders and boundaries are abandoned in favour of a nomadic lifestyle among groups of people worldwide.

Walking City

Layered City
Thompson S. (1994)

The city is "both a social and spatial 'coming together' of difference and diversity, chaos and order, fascination and intrigue - a sensual delight, at the same 'time challenging notions of tolerance and feelings of belonging."



Plug-in City

Peter Cook, 1964

The Plug-in City is set up by applying a large scale network-structure, containing access ways and essential services, to any terrain.

Livable Cities
1980s



CCTV
Roberts P. (1980s)
Embedding of CCTV technology into urban spaces

Virtual City

Wired City

Invisible City

Cyberville

Informational City
Castells M. (1992)
The city is an image society, with all its diversities, its processes, contradictions, struggles and asymmetries, and 'The Information City' is therefore 'the global city' of the information age.

Digital Cities

Emerged early 1990s

Graham S. (1997)

Digital cities can be considered as an attempt to build new secure public spaces and retain some characteristic of the cities as places for communication, interaction, economic opportunities, and social and cultural activities.

Komninos, 2002
All intelligent cities are digital cities, but all digital cities are not intelligent. The difference is in the problem solving capability of intelligent cities, while the ability of digital cities is in the provision of services via digital communication.

Paulos, H. (2004)
Comprehensive web-based representation and reproduction of several popular functions of a specific real city, open to non-experts.



Digital City
Sense of Place

The first digital city (DDS) was launched in Amsterdam in 1993. The name was chosen to emphasize the idea of a digital public space where people would meet and communicate.

Ubiquitous Computing

The term was coined by Weiser in his 1991 article "The computer for the 21st century"

Amenities
Emerged in the 1990s

ISTAG (1999)
People will be surrounded by intelligent and intuitive interfaces embedded in everyday objects around us and an environment recognizing and responding to the presence of individuals in an invisible way.
Graham S. (2007)
The city can be seen as an urban environment which contains a high density of computing technologies

Intelligent Cities (ICs)

Emerged in the 1990s

Initial focus has been on defining the virtual connection of cities and virtual cities (Drozd, 1999).
The term ICs has been used to describe a broad range of:

TeleCity

Siembab (1997)
Incorporates the capabilities of information technologies in order to support a high amenity life style that is economically and environmentally sustainable.

TeleCity

TeleCity (2000)
coined by the Japanese Ministry of Posts and Telecommunications to describe what 21st Century Japan would look like when its new broadband communications infrastructure was in place.

Smart Cities

Emerged Late 1990s

Komninos, 2002

In order for 'digital' cities to become 'smart' cities they therefore need to incorporate a new category of applications; that of the real community of people and products characterised by high levels of knowledge innovation and use.

Komninos, 2002
differentiate the 'digital' city from the 'smart' city, every digital city is not intelligent, but every intelligent or 'smart' city has a digital component

A Smart Community

Smart Communities, 2001
A smart community has made a conscious effort to use information technology to transform life and work within the community in significant and fundamental ways rather than incremental ways.

European Digital Cities
programme launched in 1996

Late 1990s

Late 1990s

2000

2003

2005

2013

Senseable City
MIT, 2004

Transdisciplinary research group that studies the interface between cities, people and technologies and investigates how the ubiquity of digital devices and the telecommunications networks that augment our cities are impacting urban living.

Urban Gaming

The first Urban Gaming Club was founded in 2006.

Smart Grid
Wollenberg B. (2005)
Term 'Smart Grid' is born in September 2005.



Urban Media
Façades

An umbrella term for installations in which digital displays are integrated into architectural structures

Urban Computing

The term first used in 2003 by Eric Paulos

Ubiquitous City

Emerged in 2005

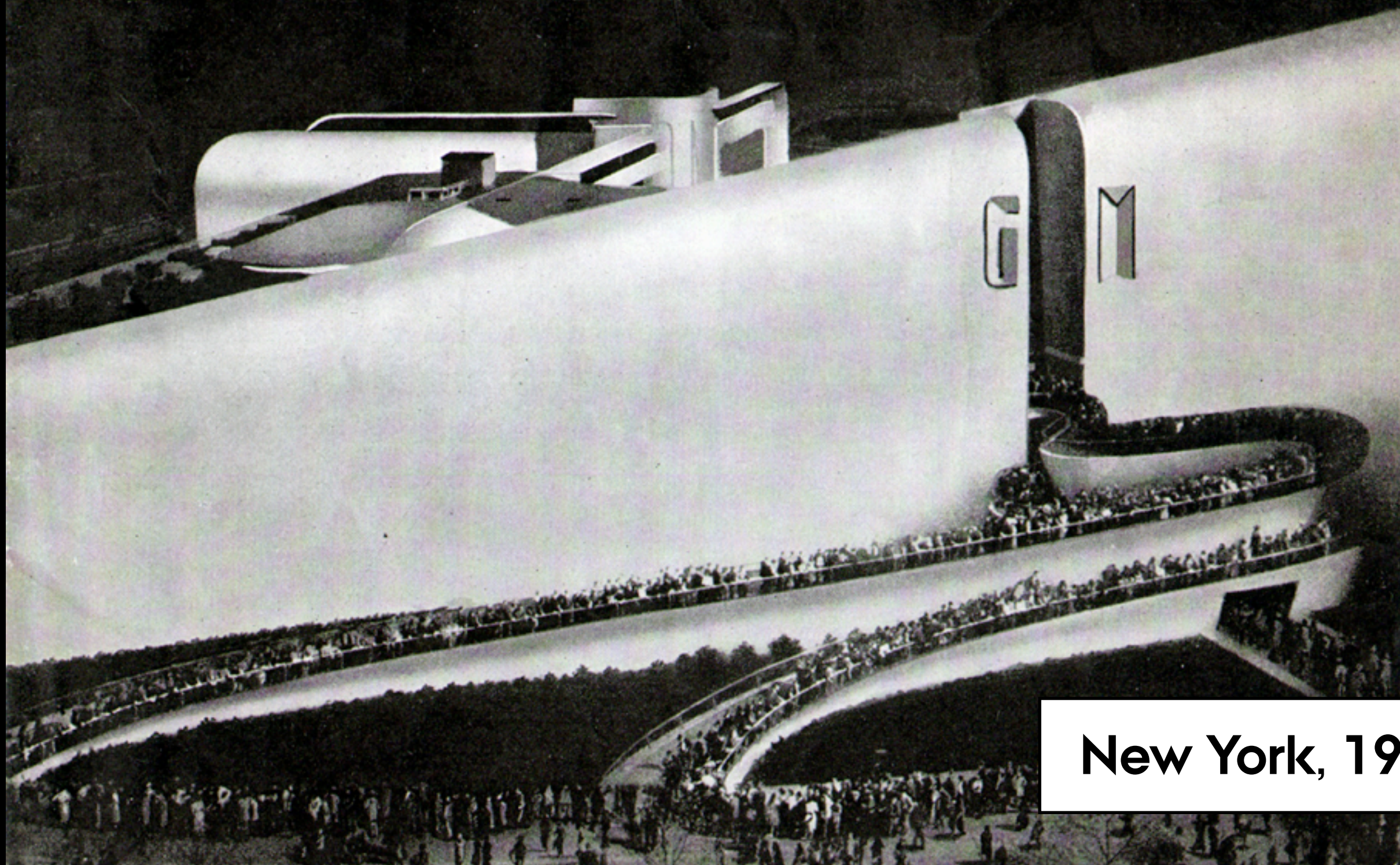
Myung-Je (2009)
The term ubiquitous city was first used by South Korea after adopting the ubiquitous computing concept from the US and deciding to create the world's first U-City.

Korea U-City Association (2003)
U-City aims to help all residents, everywhere, not just private customers, or residents using personal computers at home, with the aim of enriching life, reducing congestion and enhancing environmental sustainability

Amplified City
Falk (1999)

The use of ubiquitous technology in public spaces also enables the city to move beyond mixed or augmented reality environments towards an amplified city, where objects express additional information about themselves to other objects, residents and users.

FUTURAMA

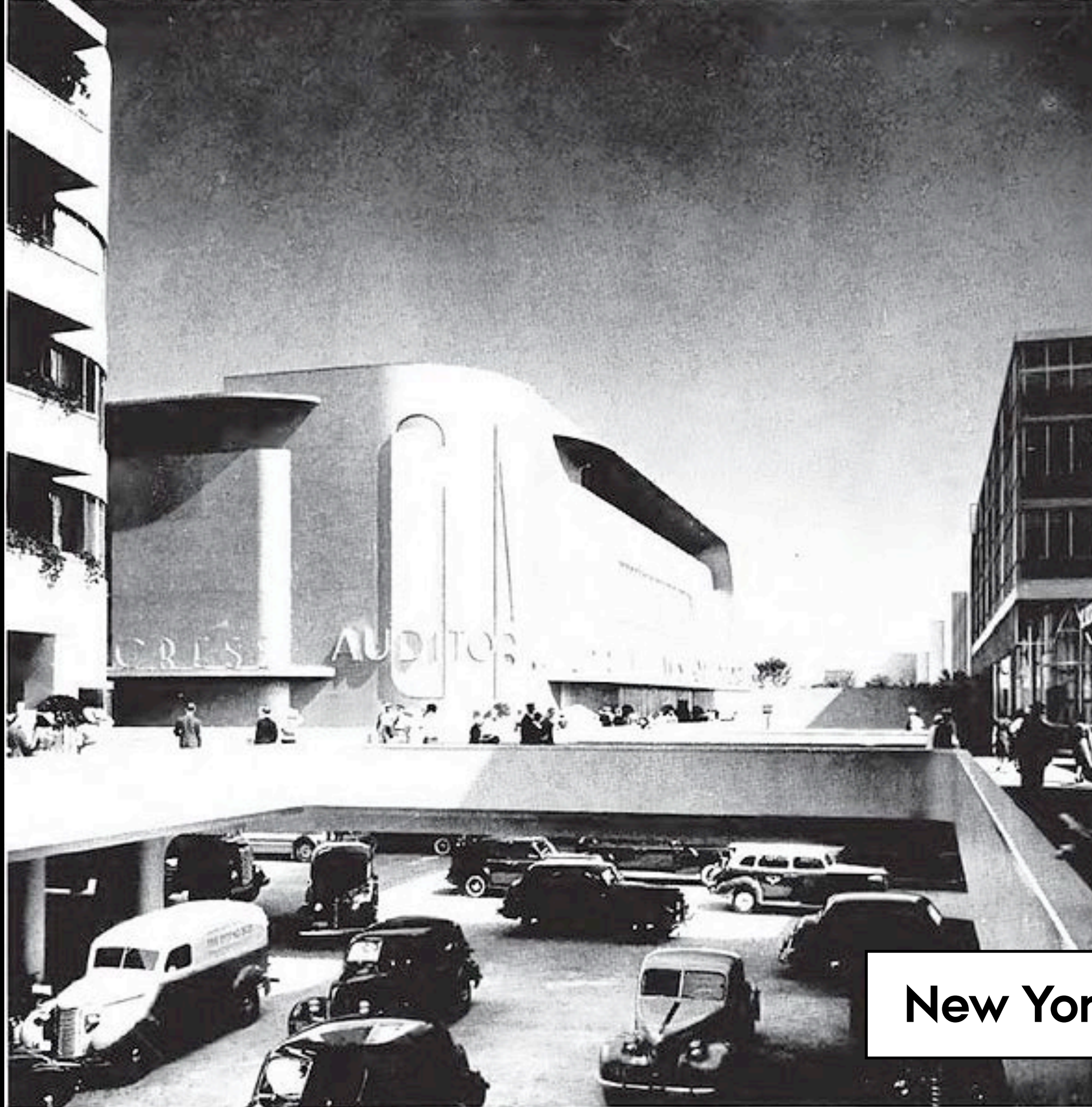


New York, 1939

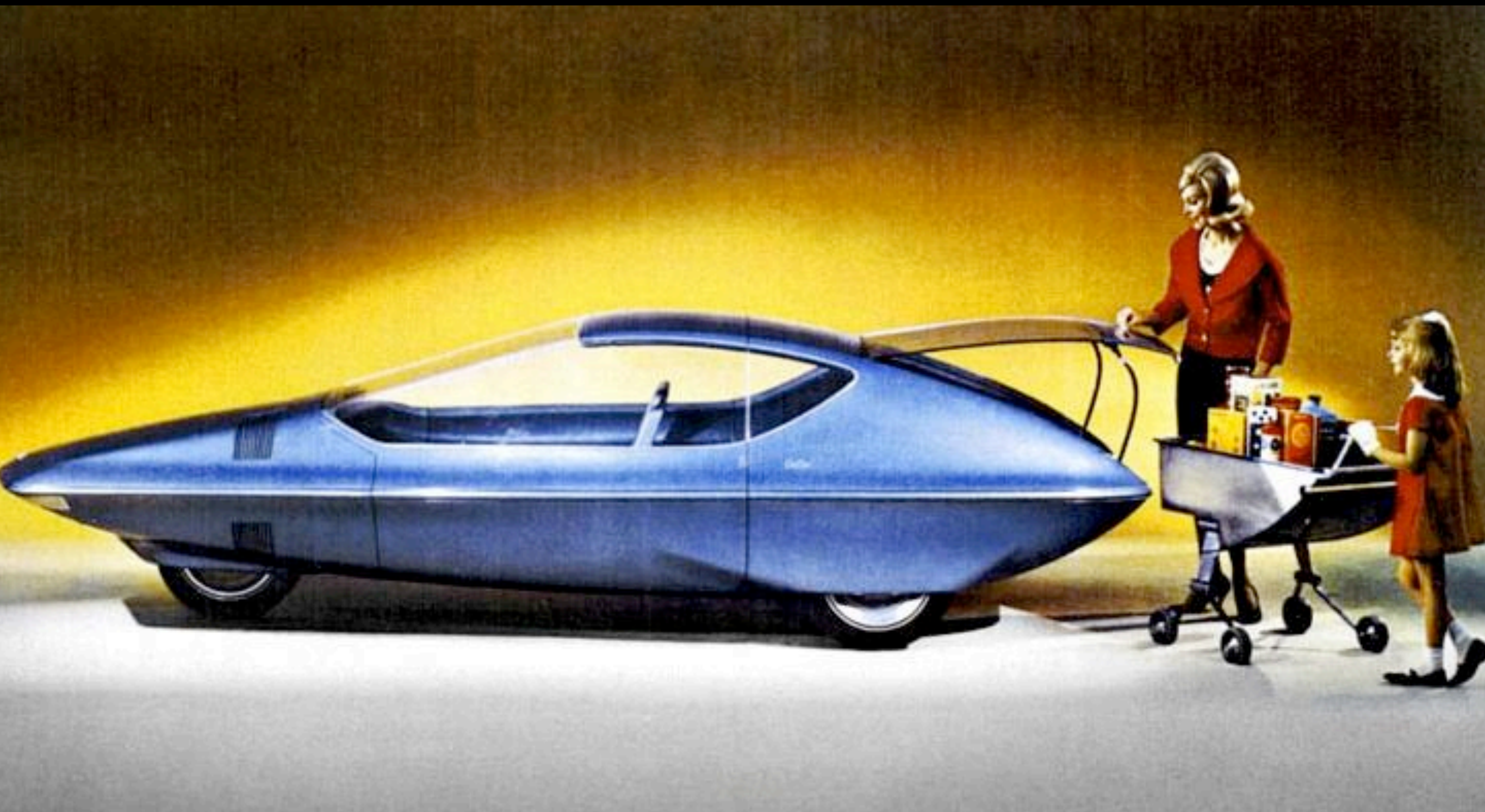


New York, 1939

LIFE



New York, 1939



New York, 1964



Habitat 67, Montréal



Songdo, Sydkorea, 2011



New York, 1939



“A good science fiction story should be able to predict not the automobile but the traffic jam.”

– Frederik Pohl



Mon Oncle (Tati), 1958

Digital Post NemID Rejsekortet IC4

...


THE PUBLIC LOGIN COMMUNITY - NEMLOG-IN

Dansk | **English**  

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NEM ID Log on with code card >

NEM ID Log on with code file >

 Digital Signatur Log on with digital signature >

NEM ID

Enter code

Code card: E297-346-518 ?

#	Key
8898	076971
?	

You have 138 codes left.

Log on

Stop

☐ Remember I want to log on with my code card

[Read more about cookies and NemLog-in >](#)



Links

- > [Get help now](#)
- > [Information on Log-on types](#)
- > [About NemLog-in](#)
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Remember the security

Log off and close all browser windows when you have finished using the services that require NemLog-in. [Read more >](#)

Skjul menu

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Post og sms

Digital Post

NemSMS

Digital Post

Din post

Oversigt

Indbakke

Adressebog

Tilmeldinger

NemSMS

Indstillinger

Hjælp

eBoks.dk

Oversigt

Profiloplysninger

Martin Brynskov (Ret)
Cpr-nr.: (Vis)

e-mail-adresser:
martin@brynskov.dk (Ret)

Mobilnummer:
30680424 (Ret)

Post

Der er ikke ny post i indbakken

Gå til indbakken

Vi har forbedret din digitale post løsning

I den nyeste udgave af digital post har vi ændret og forbedret en række funktioner.

Se alle de nye ændringer og hvad de betyder for jer

Serviceinformation

Indhold i NemSms

Datatilsynet har tilladt, at NemSms fra offentlige myndigheder til borgere kan indeholde følsomme oplysninger.

Hvis du er tilmeldt NemSms fra offentlige myndigheder, vil du således kunne modtage følgende typer af beskeder på sms.

Skjul menu

Vis alle emner

▾ Post og sms

▸ Digital Post

NemSMS

Digital Post

Din post



Oversigt

Indbakke

Adressebog

Tilmeldinger

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Indstillinger

Hjælp

 **eBoks.dk**

Mappefunktioner ▾

Ny post

Flyt ▾

Arkivér

Slet

Flere ▾

Martin Brynskov




Visninger ▾


Sorteret efter: **Dato** ▾

Skriv søgetekst



[Avanceret](#)

 Indbakke

 Kladder

 Sendt post

 Papirkurv

Søgemapper


 **Ulæst post (2)**

 Afsendere

Arkivmapper

 AffaldVarme

 Bil

 BS-betalinger

 Danske Bank

 Diverse

Ingen post fundet

Denne mappe kan indeholde post fra private virksomheder - [Vis post fra private virksomheder](#)

“New” is easy.
“Right” is hard.

– Craig Federighi

They're here...

"Min mobil skal
kunne følge med
mit aktive liv"

Laura Christensen, Skuespillerinde



Nye muligheder. Overalt.
Samsung
GALAXY S4 ACTIVE | Life companion



samsung.dk/active



AARHUS
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The smart city

The ? city

The good city

Smart cities are
first and foremost
**a cultural and
organizational
transition.**





Ron Herron, 1964

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Layered City
Thompson S. (1994)

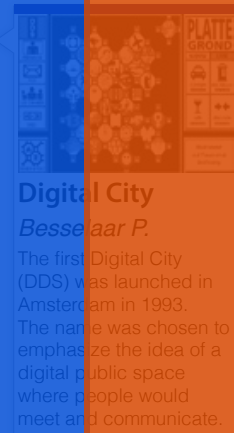
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Couclelis H. (2004)
Comprehensive web-based representation, or reproduction, of several aspects or functions of a specific real city, open to non-experts.



Digital City

Besseelaar P.

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Smart Cities
Emerged Late 1990s

Komninos, 2002
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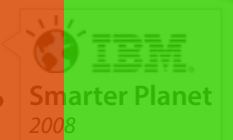
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Smart Communities, 2001
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The use of ubiquitous technology in public spaces also enables the city to move beyond mixed or augmented reality environments towards an amplified city, where objects express additional information about themselves to other objects, residents and users.

Ubiquitous Cities
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Korean U-City Association (2003)
U-Cities to help all residents, everywhere, not just private customers, or residents using personal computers at home, with the aim of enriching life, reducing congestion and enhancing environmental sustainability

Ambient Cities
Emerged late 1990s

ISTAG (1999)
People will be surrounded by intelligent and intuitive interfaces embedded in everyday objects around us and an environment recognizing and responding to the presence of individuals in an invisible way.

Crang and Graham, 2007
The ambient city can be seen as an urban environment which contains different ubiquitous computing technologies

Ubiquitous Computing
The term was coined by Mark Weiser in his 1991 article "The computer for the 21st century"

Intelligent Cities (ICs)
Emerged late 1980s

Initially ICs have been defined as virtual reconstructions of cities, as virtual cities. (Droege, 1997)

The term ICs has been used broadly as an equivalent of:

TeleCity
Siembab (1997)
Incorporates the capabilities of information technologies in order to support a high amenity life style that is economically and environmentally sustainable

Teletopia
Eger (2005)
Telecommunications Utopia is a term first coined by the Japanese Ministry of Posts and Telecommunications to describe what 21st Century Japan would look like when its new broadband communications infrastructure was in place.



Plug-in City

Peter Cook, 1964
The Plug-in City is set up by applying a large scale network-structure, containing access ways and essential services, to any terrain.

Livable Cities
1980s

CCTV
Roberts P. (1980s)
Embedding of CCTV technology into urban areas

Virtual Cities
Winn, 1992
Virtual cities are digital reconstructions of real cities, as virtual cities.

Informational City
Castells M. (1992)
The city is an image of society, with all its diversities, ongoing processes, contradictions, struggles and asymmetries, and 'The Informational City' is therefore 'the global society' of the information age.

Cluster

Sector

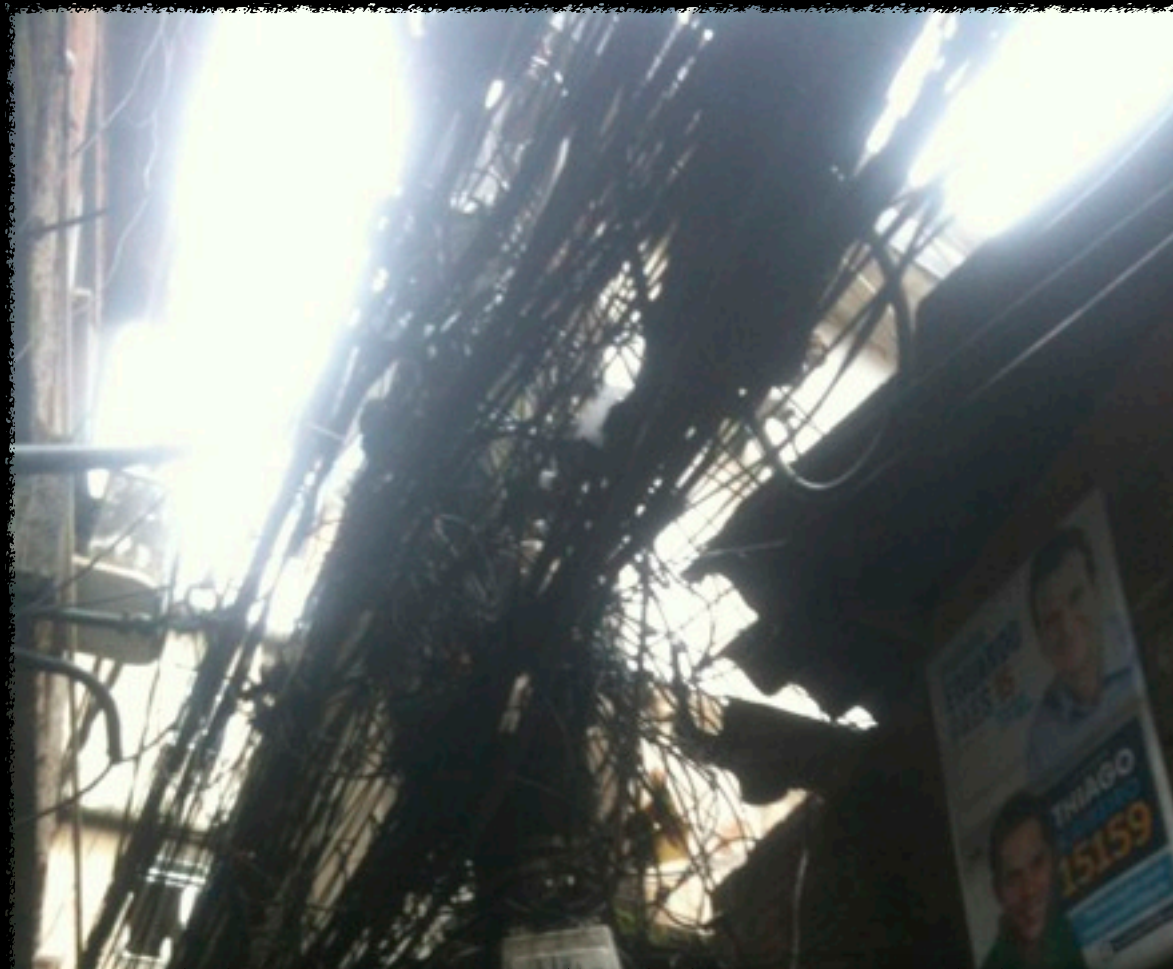
City

The participatory city

Polis

Political.





Rocinha, Rio



“Digital” is easy.

“Open” is easy.

“Right” is hard.

– Who Cares

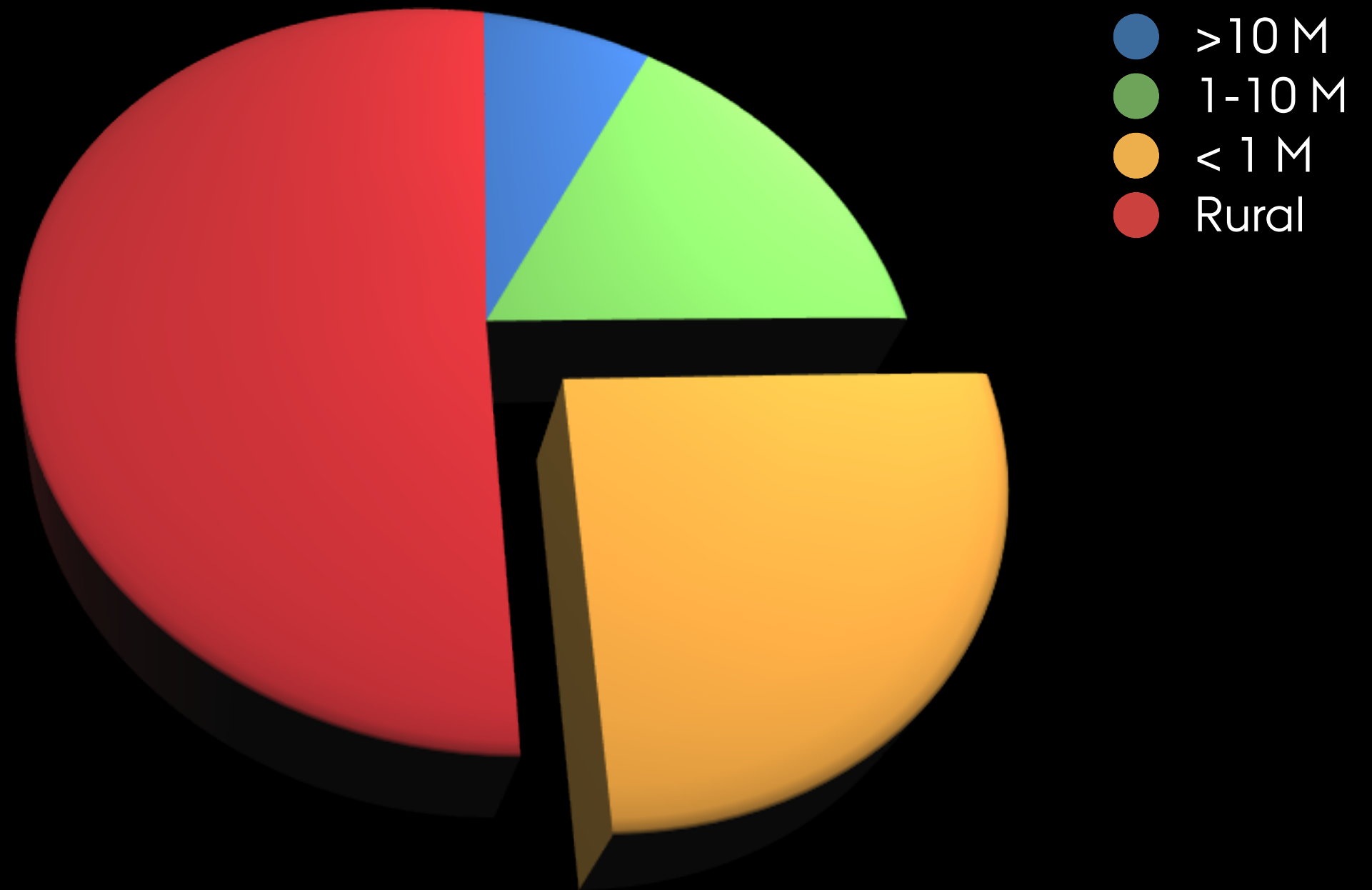
Apple-style
vs.
Favela-style

Denmark-style?

Question

What is the primary motivation?

- (a) Tech solutions
- (b) Environment
- (c) Ownership
- (d) Economy
- (e) Quality of Life



The World's Cities

Challenges of Smart Cities

Questions

Complexity

Open?

Sectors



Answers

Open!

Rights

Partnerships



AARHUS
UNIVERSITY

The Danish Smart City Network



- State/Ministeries
 - Municipalities
 - Regions
 - Universities
 - Organisations
- Aalborg
 - Aarhus
 - Kalundborg
 - København
 - Vejle

+ ad hoc people



Aarhus



- Strategic partnership
- Two tracks
- Top-up model
- “A scandinavian 3rd way”



SMART AARHUS

A SCANDINAVIAN THIRD WAY

PURPOSE

- **Coordination**
 - Debate, engagement, guidelines
- **Initiatives**
 - Funding, strategy
- **Visibility**
 - Local, national, international

ORGANIZATION: TOP-UP

- City
- Region
- University
- Industry
- Workgroups
- Secretariat

Smart Aarhus: Work groups

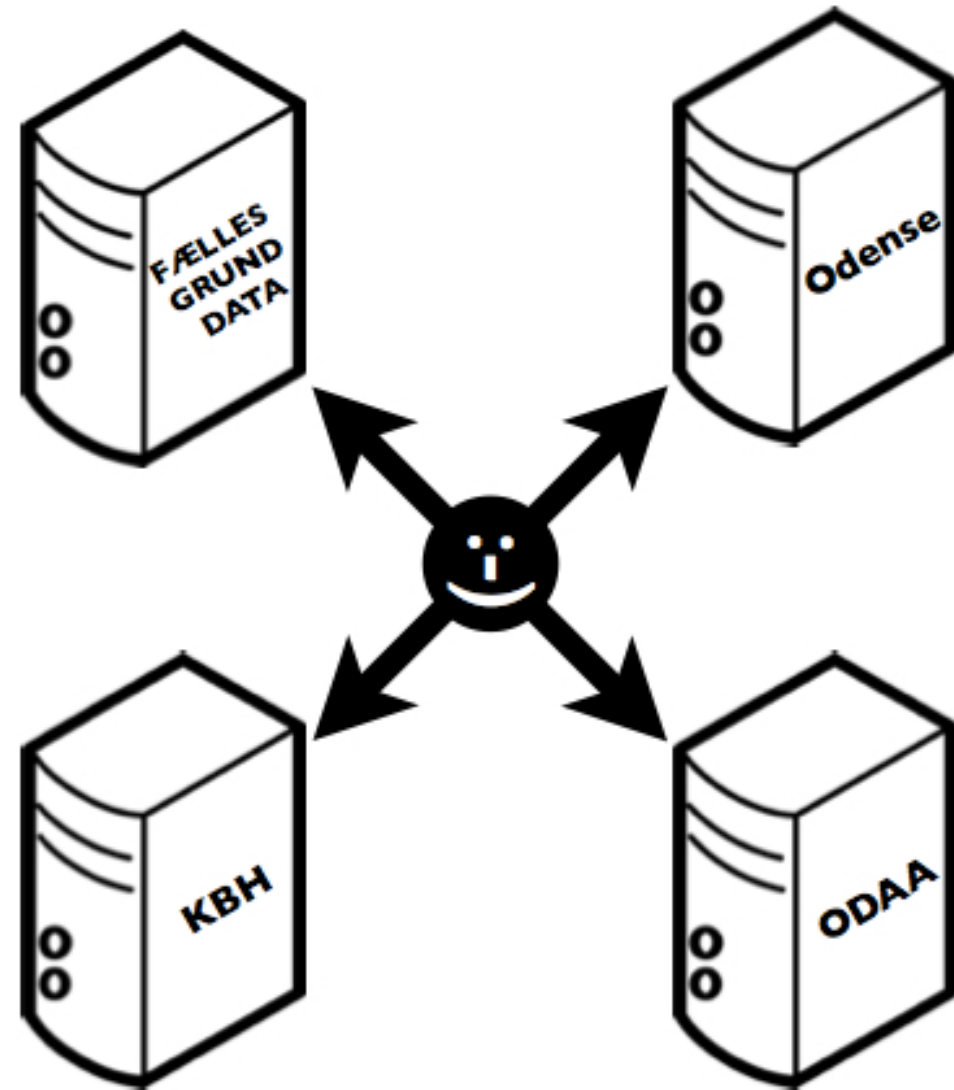
Open data
Digital entrepreneurship
Digital Cultural Heritage
Smart Utilities
Sustainability
Smart Governance
Smart Culture
Digital Infrastructure
Urban Media Space
Smart Education
Social Innovation
Citizen Engagement
Smart Future
Smart Citizen Services
Design in a Digital City

Digital Public Space
Digital tourism
Urban Space
Smart Well being
Mobility
Privacy
Gellerup
New Districts
Research
News & Media
Mobil services
Smart Retail
Campus
Emergency Response
Smart Activism
Crazy ideas



OPEN DATA PLATFORM: ODAA.dk

- Distributed
- Open
- Scalable
- License-based
- CKAN/Drupal



From components to knowledge by partnership

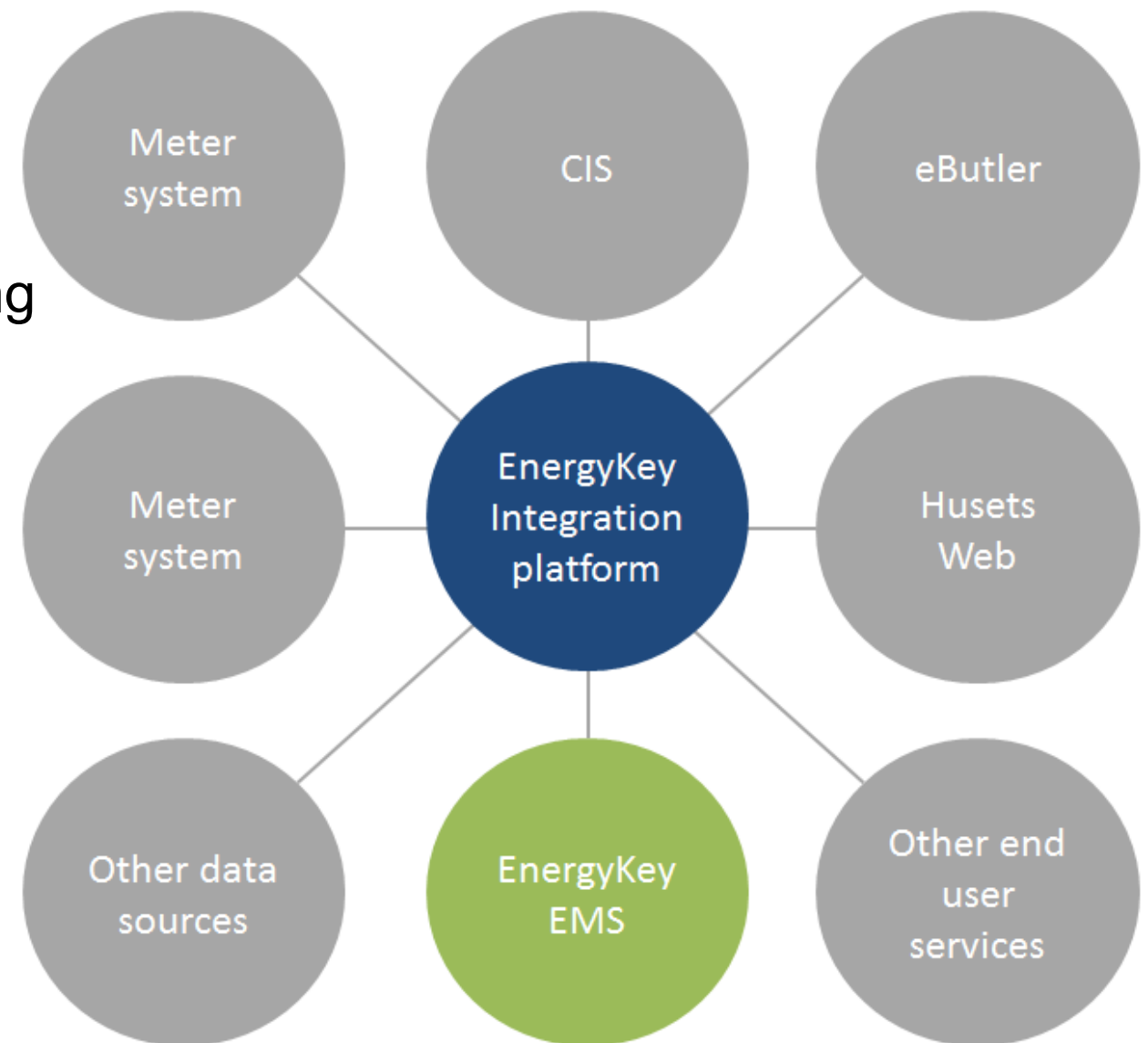


Remote data collection



Smart Aarhus – the system landscape (simplified “snap shot”)

- Meter systems from different vendors
- Administrative systems (CIS – Customer information and Billing System)
- Professional Energy Management System (EMS)
- Systems to support end user services
- Open interfaces for future integrations



RETHINKING THE CITY

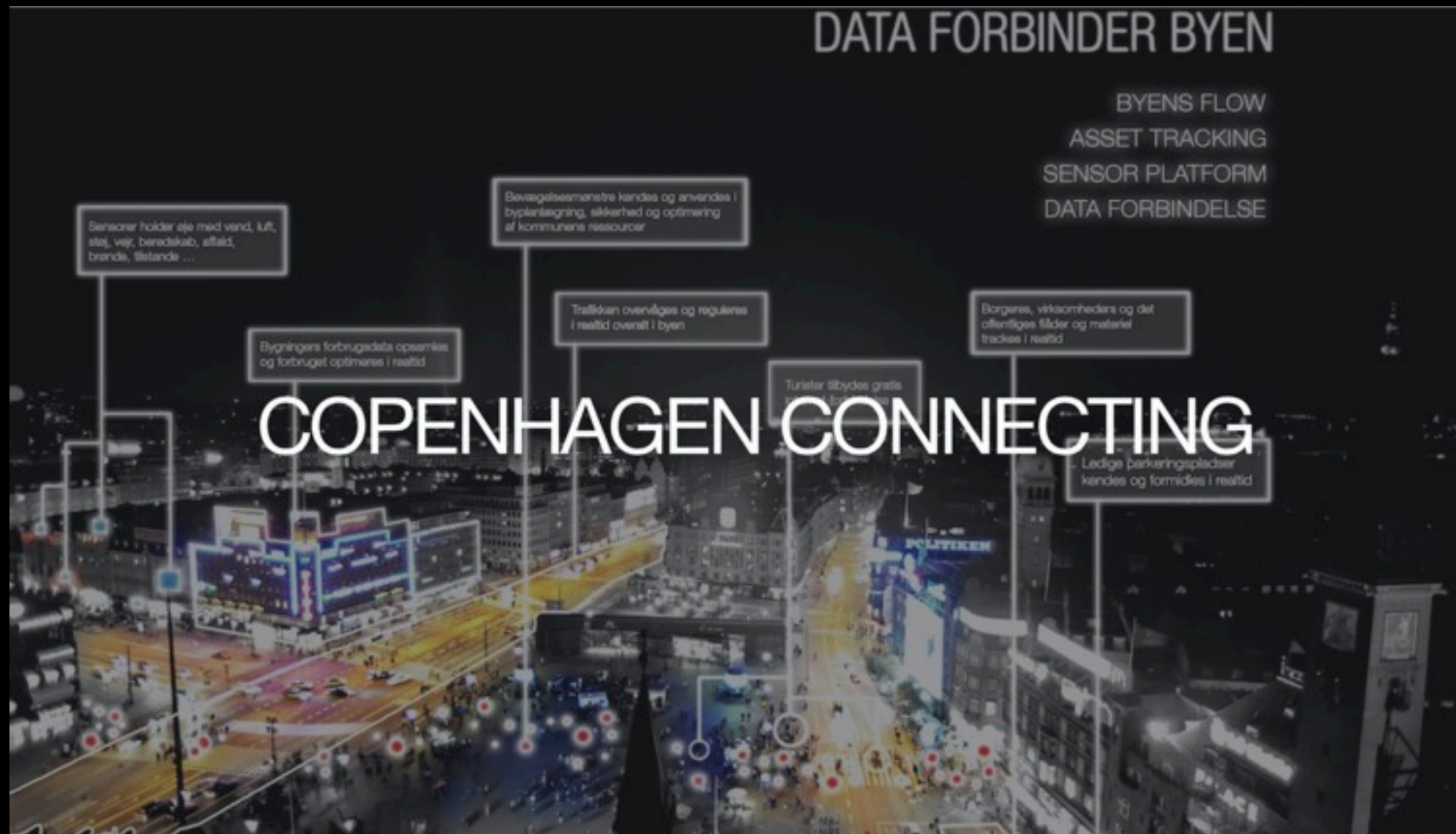
Smart Aarhus aims to be an
internationally leading,
scandinavian model for
urban development based on
partnerships.

made
with
Aarhus



AARHUS
UNIVERSITY

Copenhagen

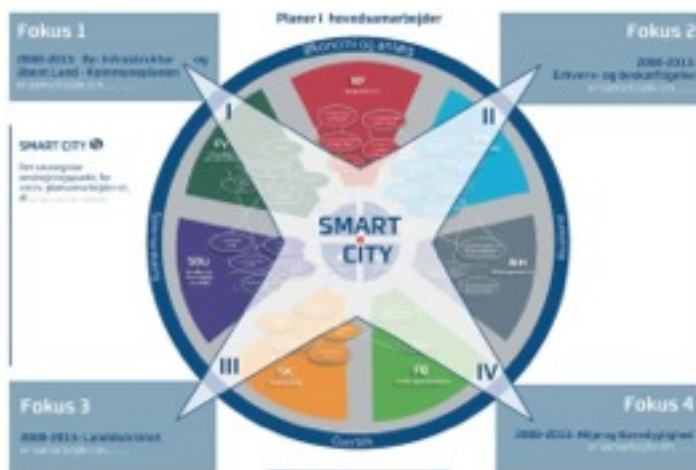


Aalborg



AALBORG UNIVERSITET

- Strategic city/university cooperation
- From hard to soft infrastructure



Kalundborg



- Cleantech
- Demonstrator
- Eco-system

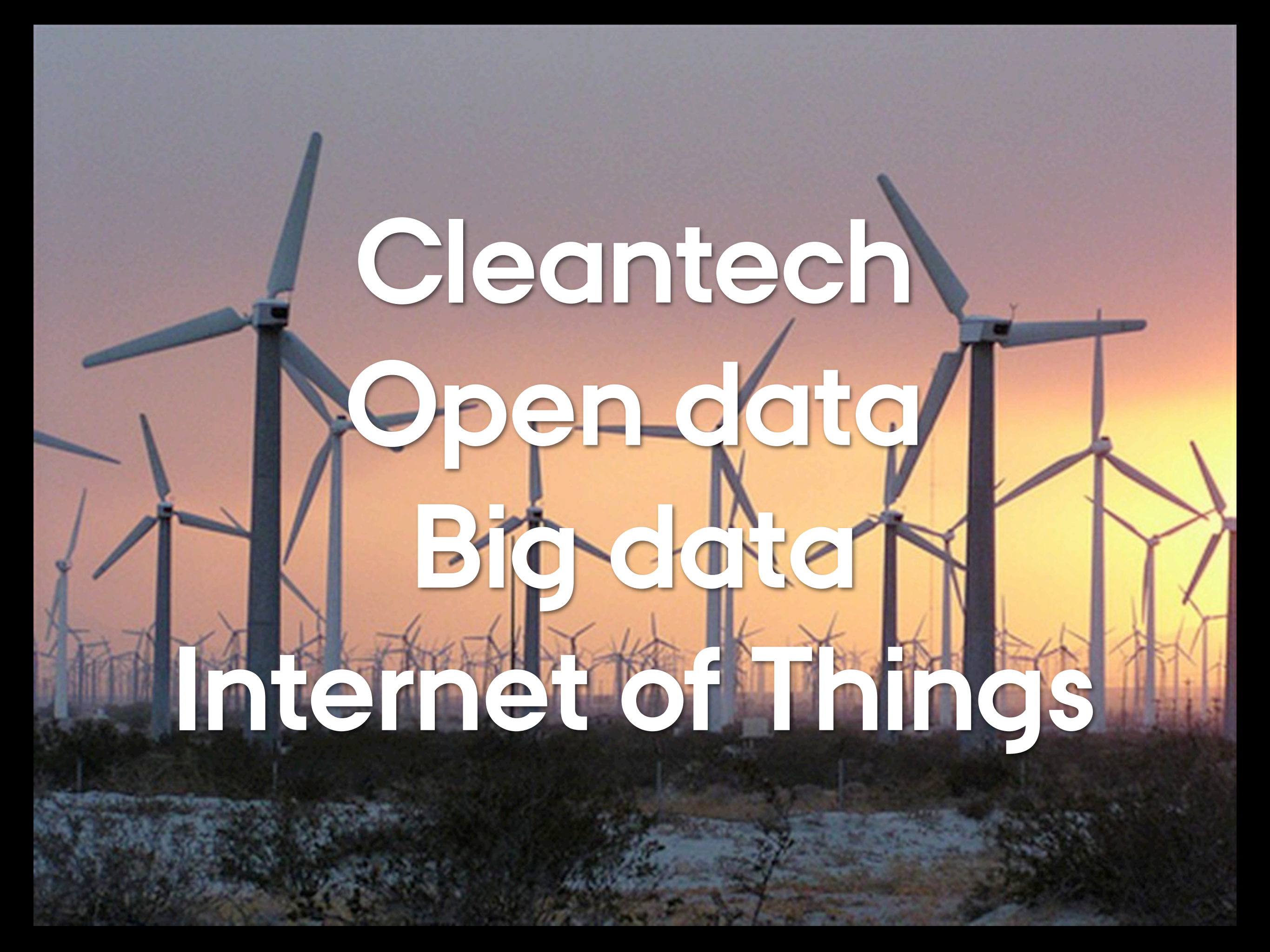
Vejle



Smart City i øjenhøjde

Focus on

- Informal organization
- Strategic urban development
- Partnerships
- **Instruments and technologies are backgrounded (but still important)**

A photograph of a large field of wind turbines at sunset. The sky is a mix of orange, yellow, and purple. The turbines are white with three blades each. The foreground shows some dark, low-lying vegetation.

Cleantech
Open data
Big data
Internet of Things

Ranking

Stadt	Eco	Peo	Gov	Mob	Env	Liv	Total
LU Luxembourg	1	2	13	6	25	6	1
DK Aarhus	4	1	6	9	20	12	2
FI Turku	16	8	2	21	11	9	3
DK Aalborg	17	4	4	11	26	11	4
DK Odense	15	3	5	5	50	17	5
FI Tampere	29	7	1	27	12	8	6
FI Oulu	25	6	3	28	14	19	7
NL Eindhoven	6	13	18	2	39	18	8
AT Linz	5	25	11	14	28	7	9
AT Salzburg	27	30	8	15	29	1	10
FR Montpellier	30	23	33	24	1	16	11
AT Innsbruck	28	35	9	8	40	3	12
AT Graz	18	32	12	17	31	5	13
NL Nijmegen	24	14	14	3	51	24	14

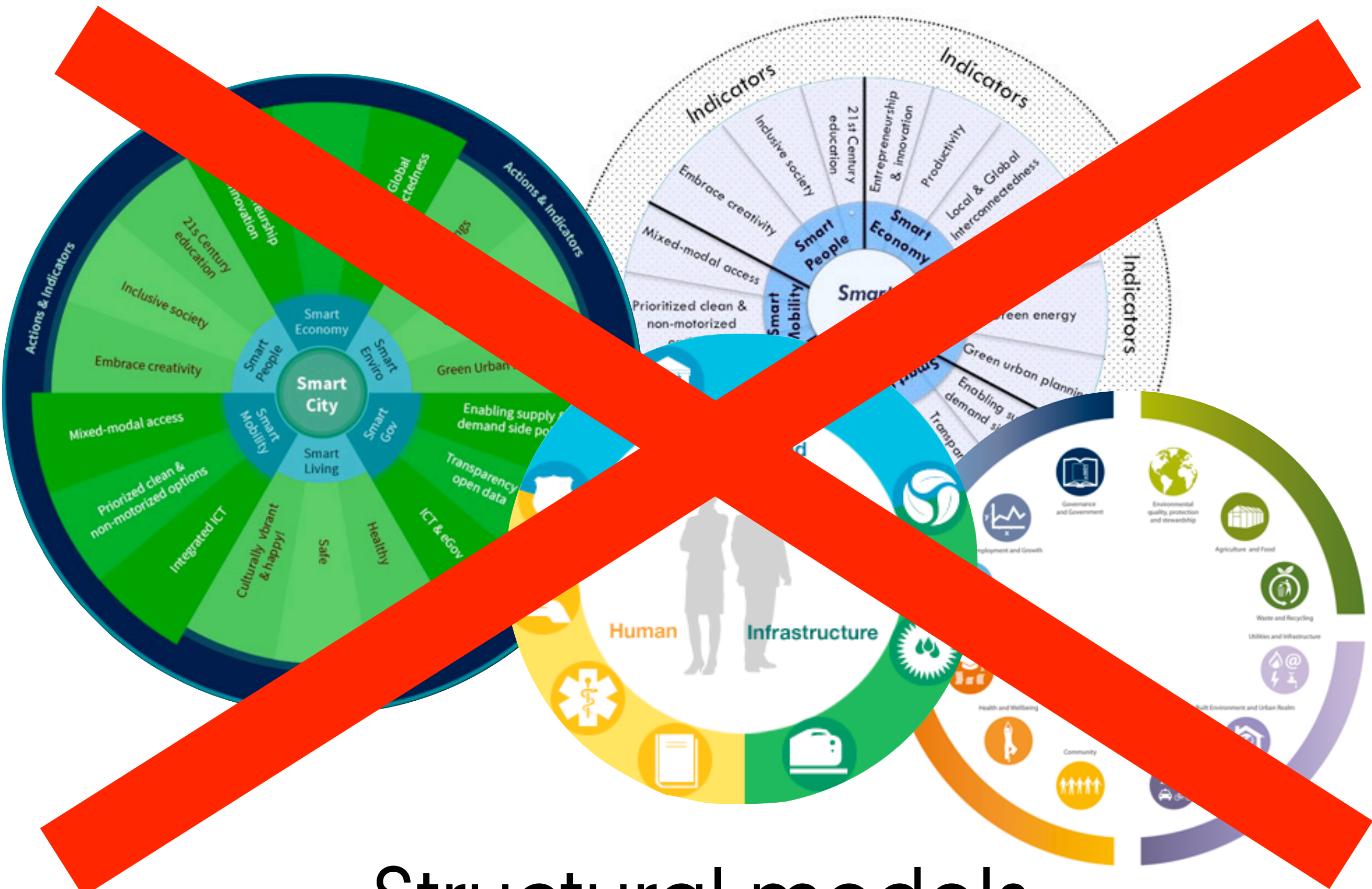
why smart cities?
smart cities model

► the ranking
benchmarking
press & ressources

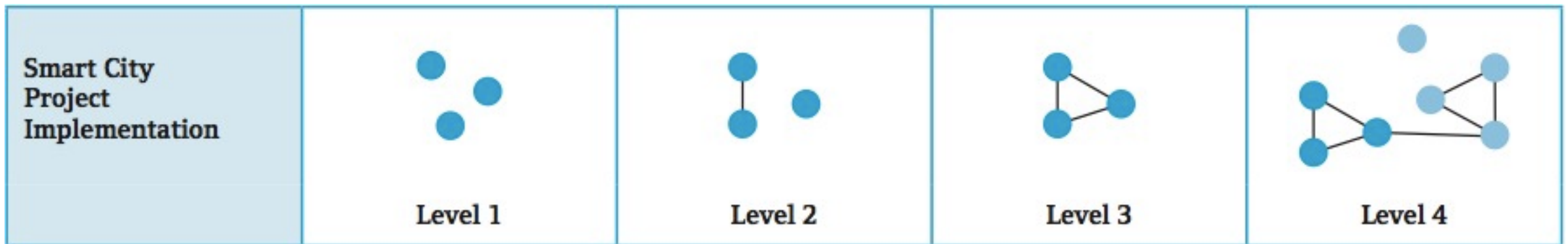
and
the team

Giffinger, 2007

Indicator models



Structural models



1

Cluster

2

Sector

3

City

Maturity and phases

Arup, 2011

Brynskov, 2012

Drivers

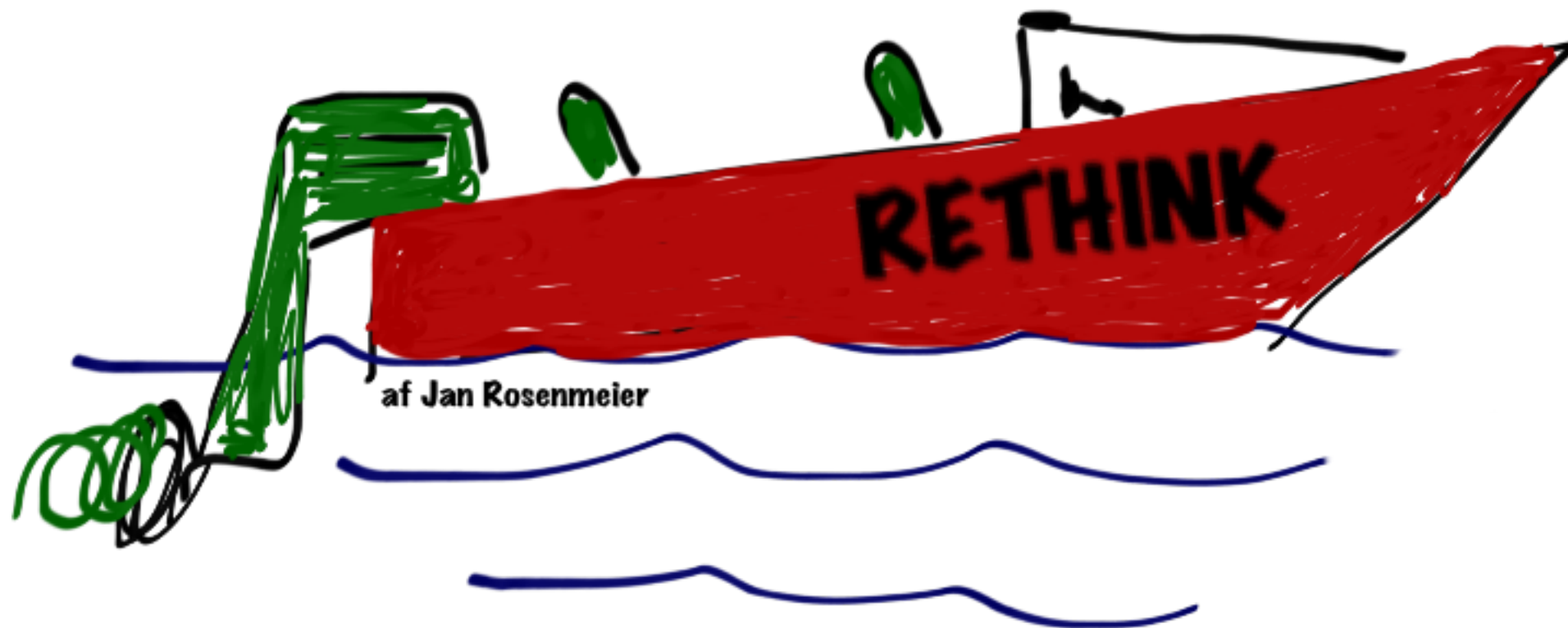
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Who's on board?

-
-
-

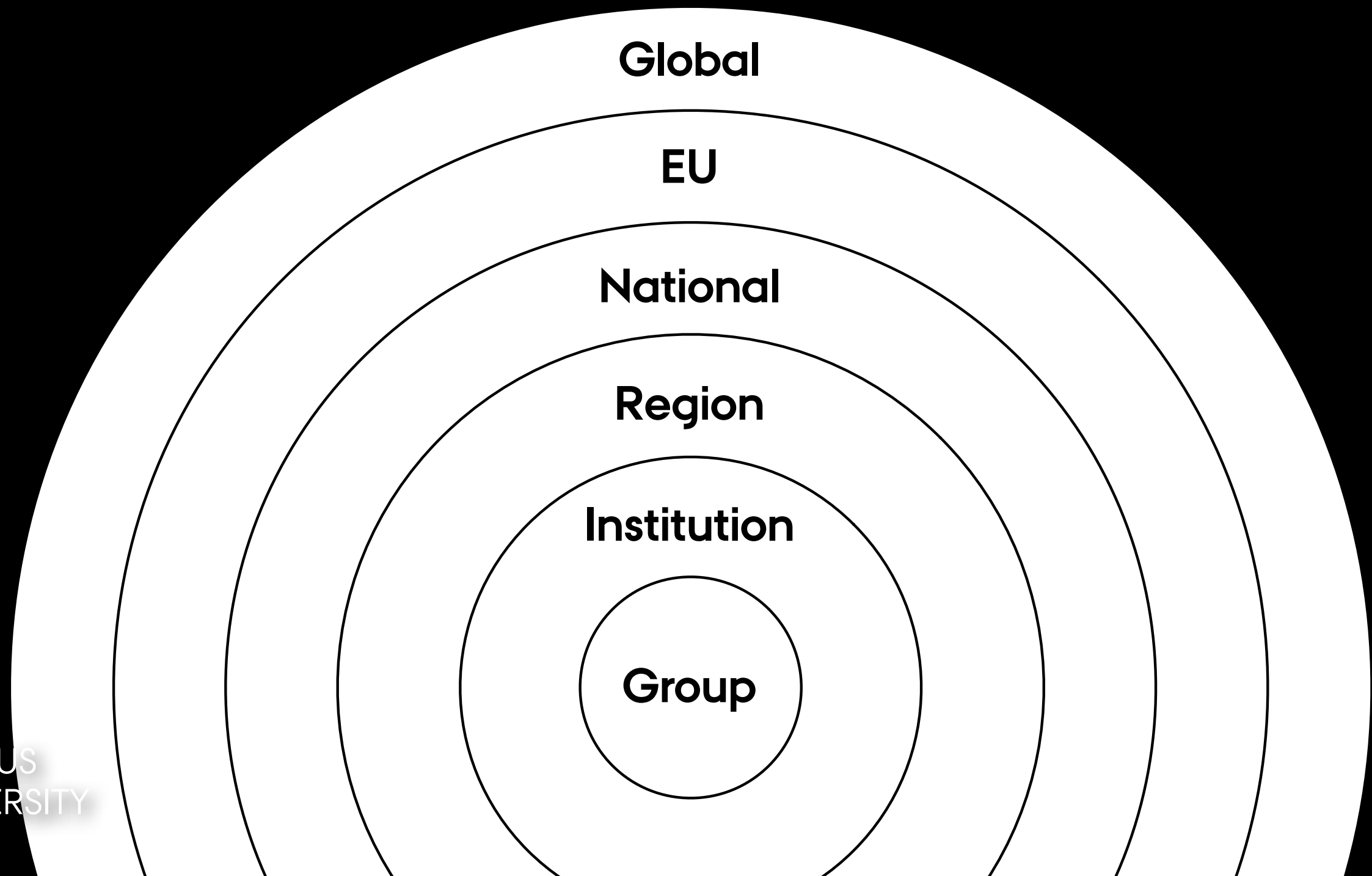
Goals

-
-
-



AARHUS
UNIVERSITY

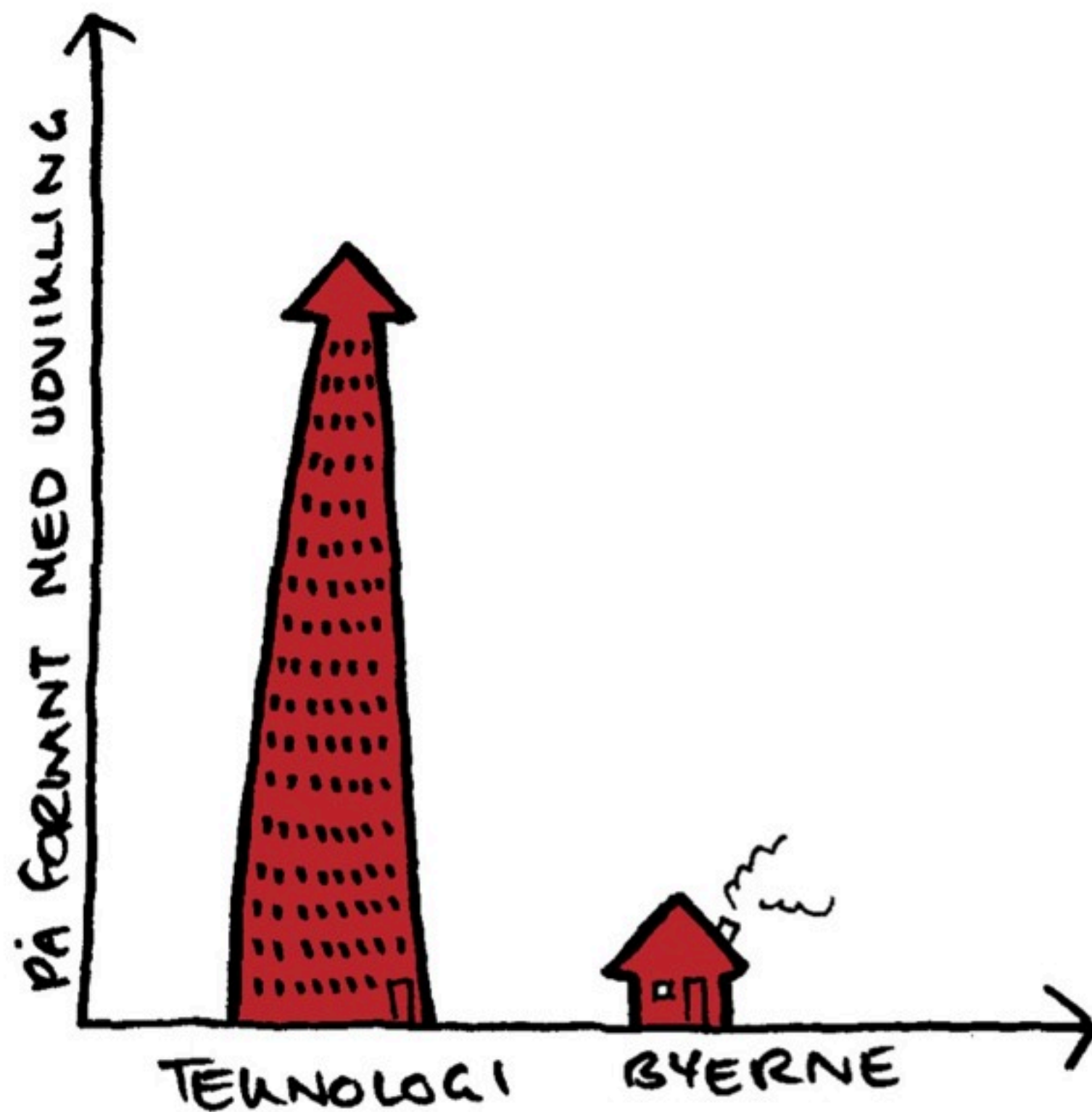
Landscape of Partnerships

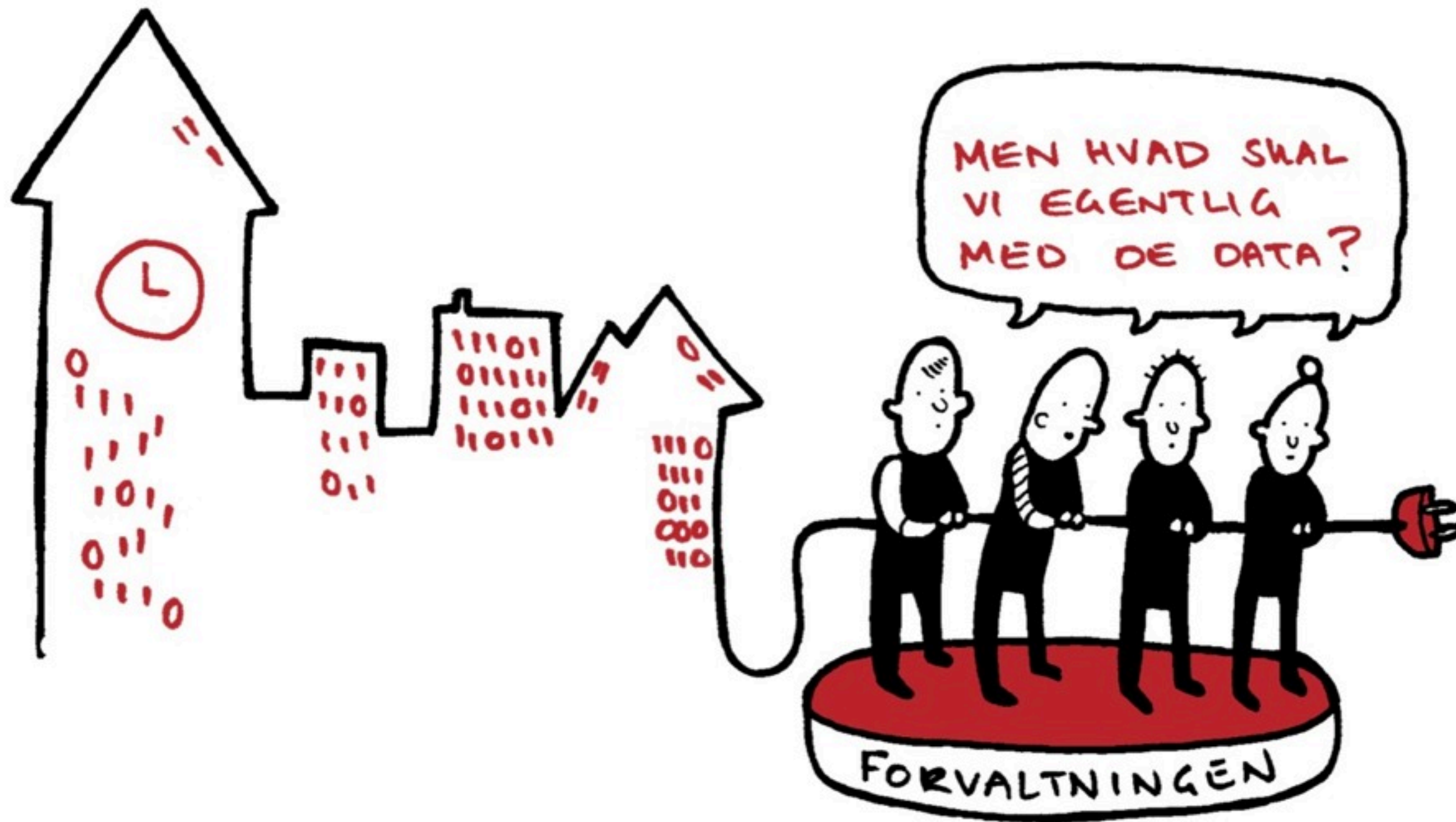


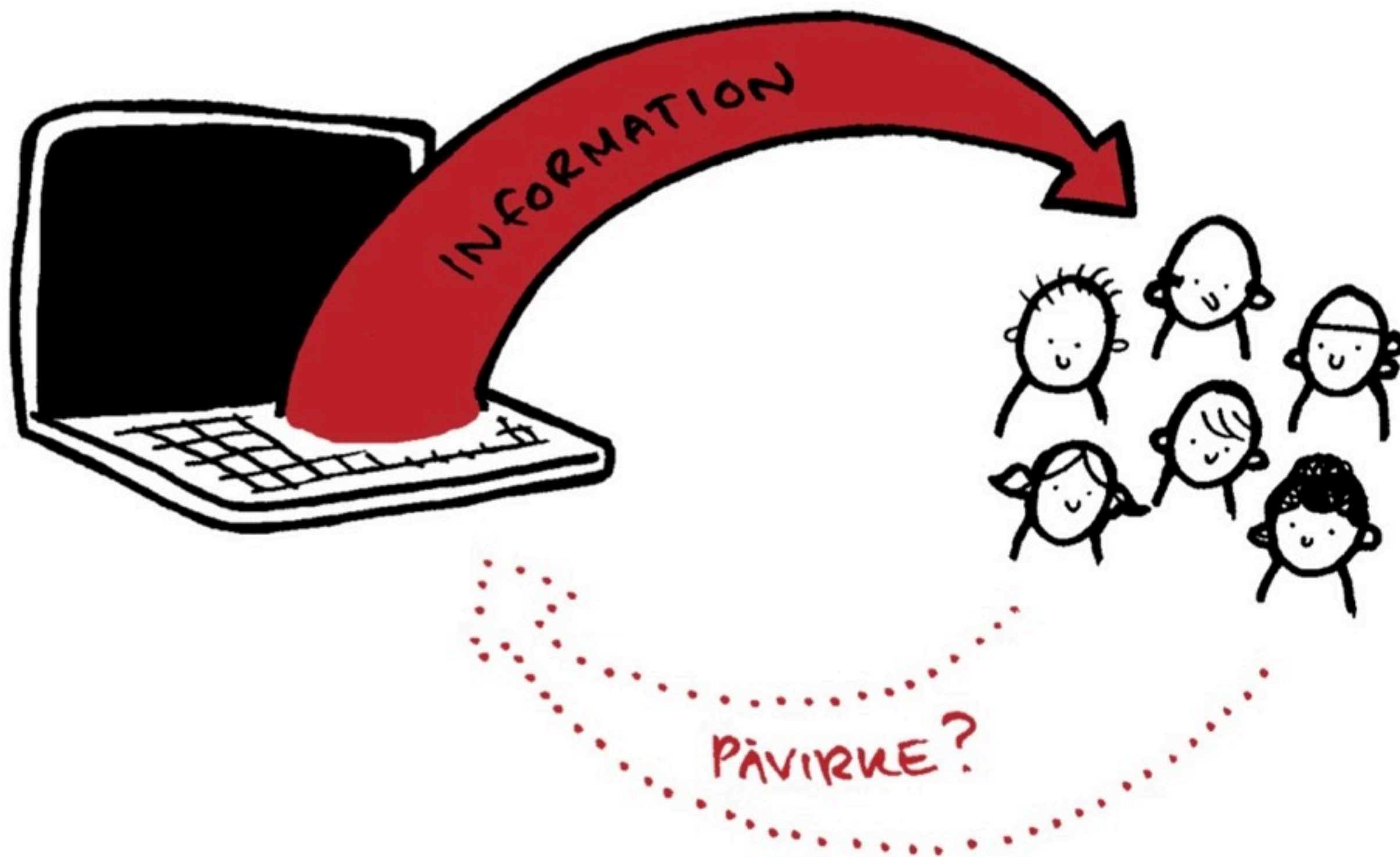
Formats of Smart Cities

- Tools & Systems
- Practice
- Partnerships
- Governance
- Guides (people)

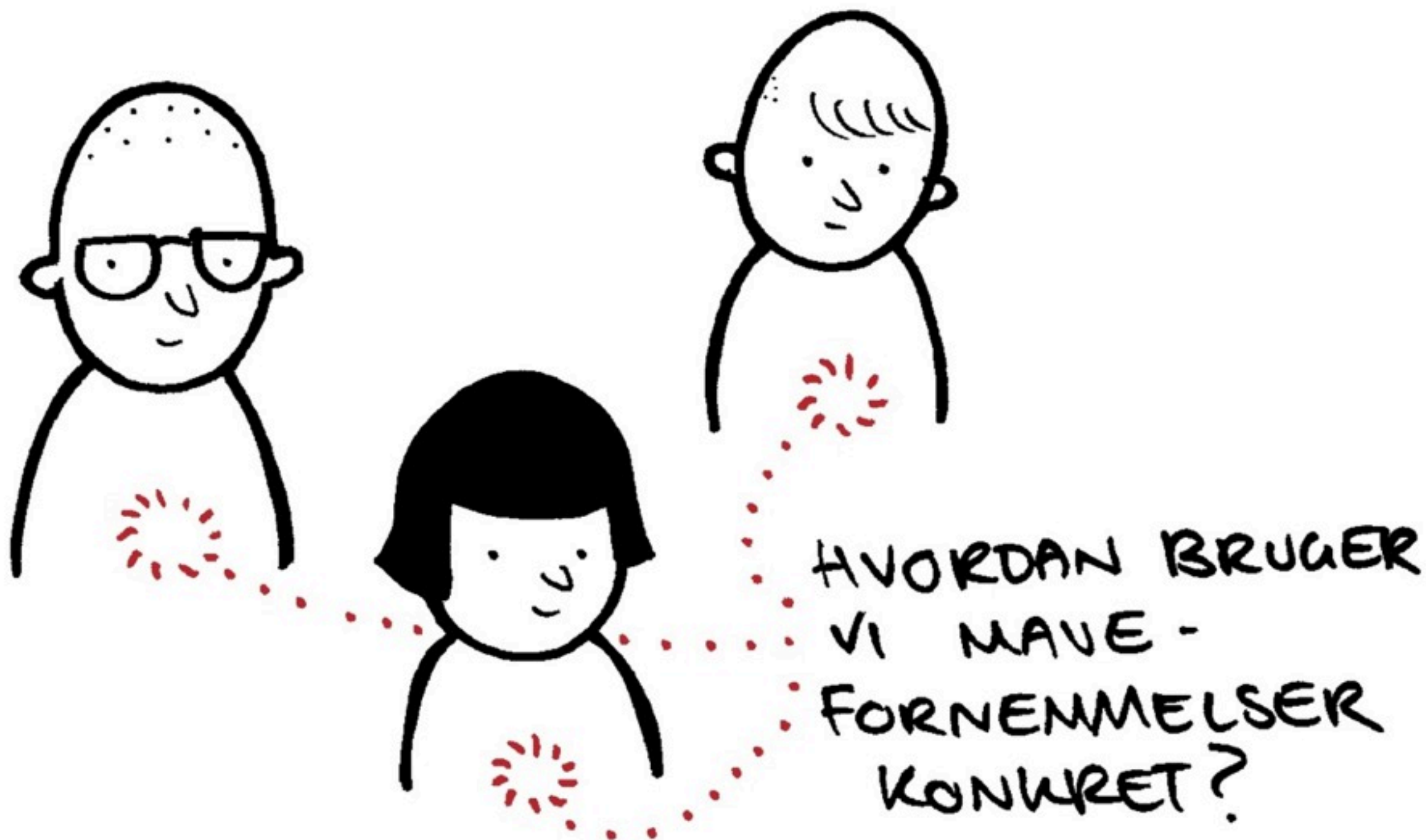
open data











No Economy Yet

“It’s too early to say just what kinds of products might result for Intel, [Ken] Anderson says.

“When you talk about **the data economy**, it’s **really something that doesn’t yet exist**,” he says. “There are people who [are] trying to control a lot of your personal data. But that’s not an economy—that’s just profit for one company.”

<http://www.technologyreview.com/news/514386/intel-fuels-a-rebellion-around-your-data>

“Open Data”



“Good”

Improvements
Efficiency
Simplicity

“Ugly”

Just there
Exhaust
Who cares

“Bad”

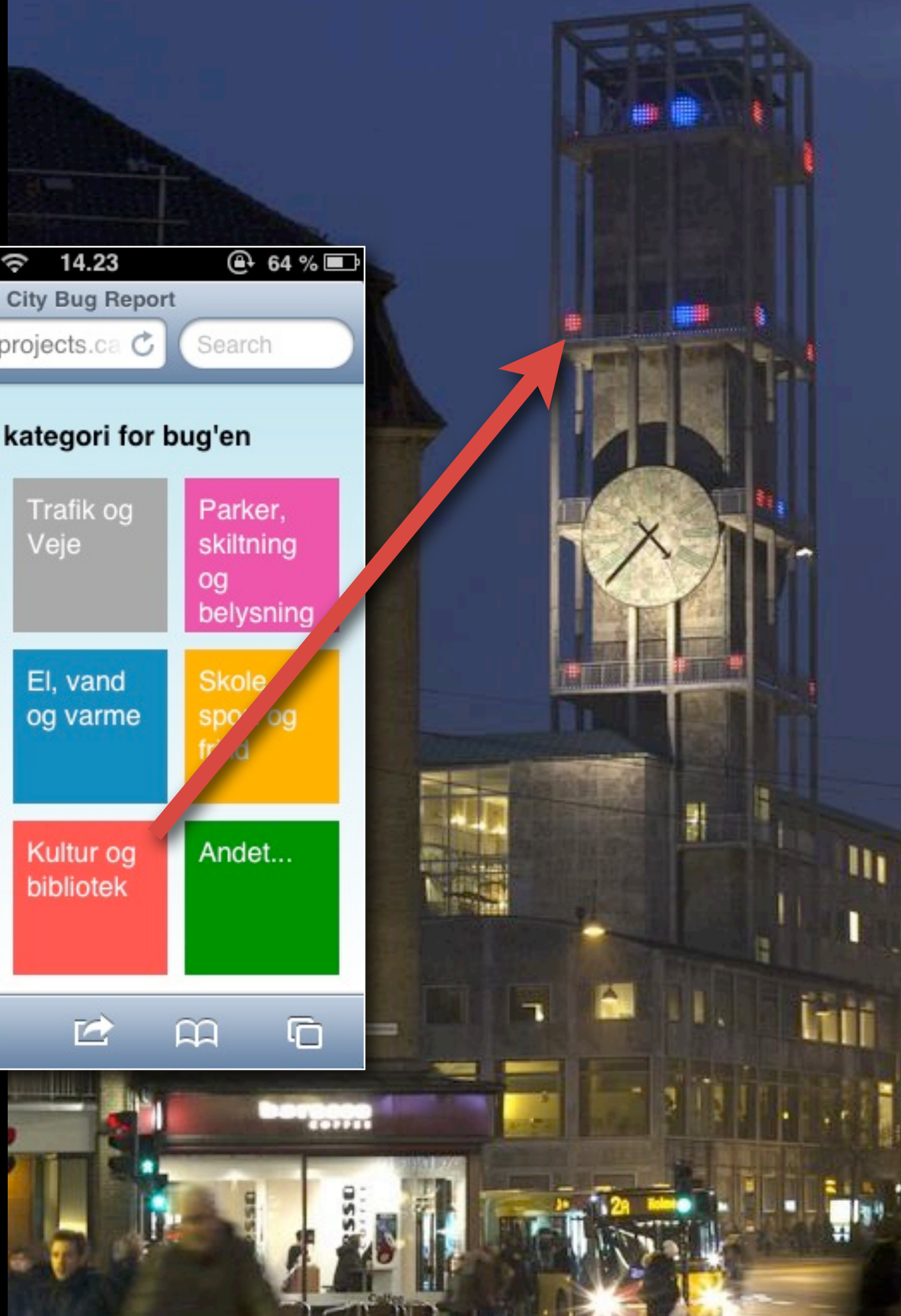
Revealing
Invasive
Disrupting

Apologies and thanks to Ben Hammersley



AARHUS
UNIVERSITY

City Bug Report



Library + Citizen services



Urban Media Space

Aarhus 2014

Smart cities are
first and foremost
**a cultural and
organizational
transition.**



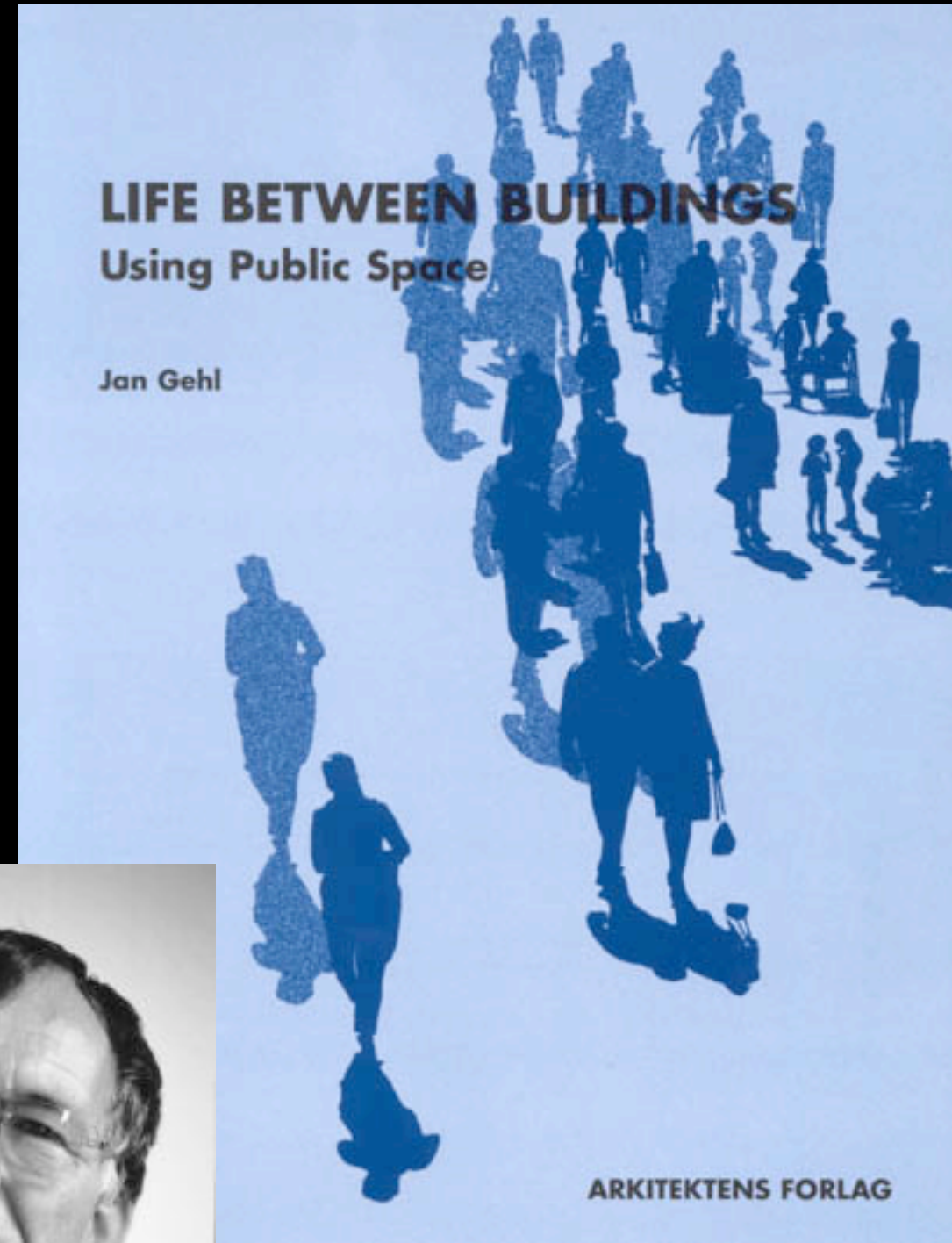
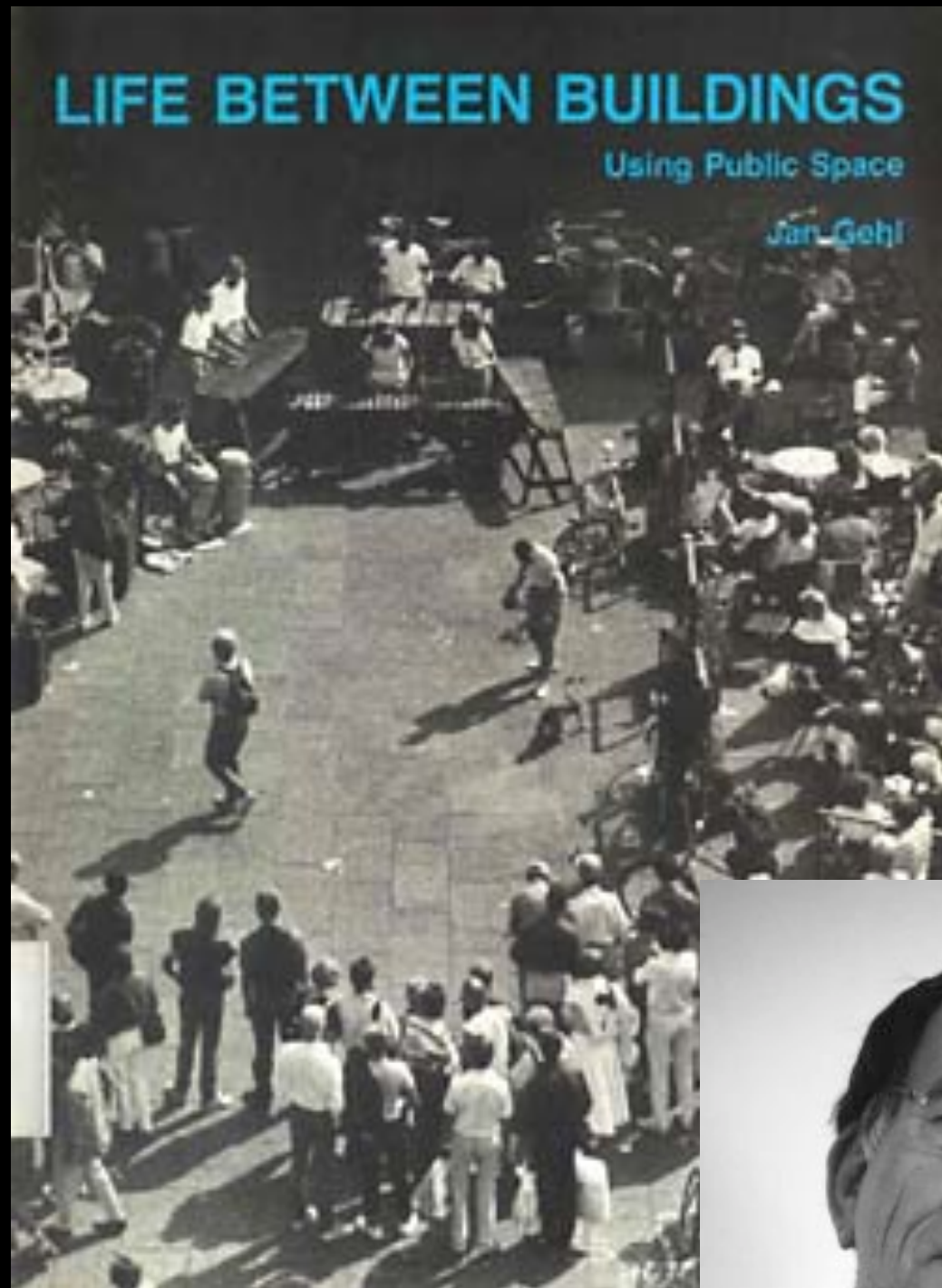
Some advice

- Don't focus on shiny solutions.
- Be nimble.
- Build speedboats, not pyramids.
- Smart is not a feature, it's an experience.
- A city is a rights-based partnership + a place.



DNA profiling the world





Jan Gehl