



Foto: Namphuong Van, www.unsplash.com

Integrated Planning Collaborative Approaches for Smart Cities

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Evolution of “Smart City”

When the term ‘Smart City’ appeared for the first time in mid 1990s, mainly the role of information and communication technologies was in focus.

The initial idea based on the assumption, that the efficiency of cities is not only dependent on the physical infrastructure but also the availability and quality of communication- and social infrastructures.

An important aspect in that discussion has been the topic of e-governance, that should have ensured an increased participation of people of a city.

(Coe et al. 2001)

The exclusive focus on ICT is not sufficient anymore:

“Although several different definitions of smart city have been given in the past, most of them focus on the role of communication infrastructure. However, this bias reflects the time period when the smart city label gained interest, viz. the early 1990s, when the ICTs first reached a wide audience in European countries. Hence, in our opinion, the stress on the internet as “the” smart city identifier no longer suffices.”

(Caragliu et. al. 2009)



Evolution of “Smart City”

Graphic: startupbootcamp.org



Evolution of “Smart City“

Andrea Caragliu (2009):

A city could be called “smart” if the investment into human capital, social capital and into traditional (transport) as well as modern (ICT) infrastructures convey a sustainable economic growth and high qualities of live. In a Smart City, this should be in line with a responsible handling of natural resources and a participative governance.

The Chicago School: Definition of Urbanity

“The city is not, [...] merely a physical mechanism and an artificial construction. It is involved in the vital processes of the people who compose it; it is a product of [...] human nature.”

Park, Burgess 1925, p.1



Chicago in th 1920th © CC

Smart City = Resilient City

Challenges that cities need to manage today and in future:

- Demographic change
- Climate change
- Security of data networks
- Social cohesion
- Protection against terrorism
- Possible resource scarcities
- Renewal and development of urban and infrastructure systems



Resilience – Challenges

Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;

In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“



Smart City = Sustainable City

1 NO POVERTY
 End poverty in all its forms everywhere

2 ZERO HUNGER
 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

3 GOOD HEALTH AND WELL-BEING
 Ensure healthy lives and promote well-being for all at all ages

4 QUALITY EDUCATION
 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

5 GENDER EQUALITY
 Achieve gender equality and empower all women and girls

6 CLEAN WATER AND SANITATION
 Ensure availability and sustainable management of water and sanitation for all

7 AFFORDABLE AND CLEAN ENERGY
 Ensure access to affordable, reliable, sustainable and modern energy for all

8 DECENT WORK AND ECONOMIC GROWTH
 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

10 REDUCED INEQUALITIES
 Reduce inequality within and among countries

11 SUSTAINABLE CITIES AND COMMUNITIES
 Make cities and human settlements inclusive, safe, resilient and sustainable

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
 Ensure sustainable consumption and production patterns

13 CLIMATE ACTION
 Take urgent action to combat climate change and its impacts*

14 LIFE BELOW WATER
 Conserve and sustainably use the oceans, seas and marine resources for sustainable development

15 LIFE ON LAND
 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

16 PEACE, JUSTICE AND STRONG INSTITUTIONS
 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

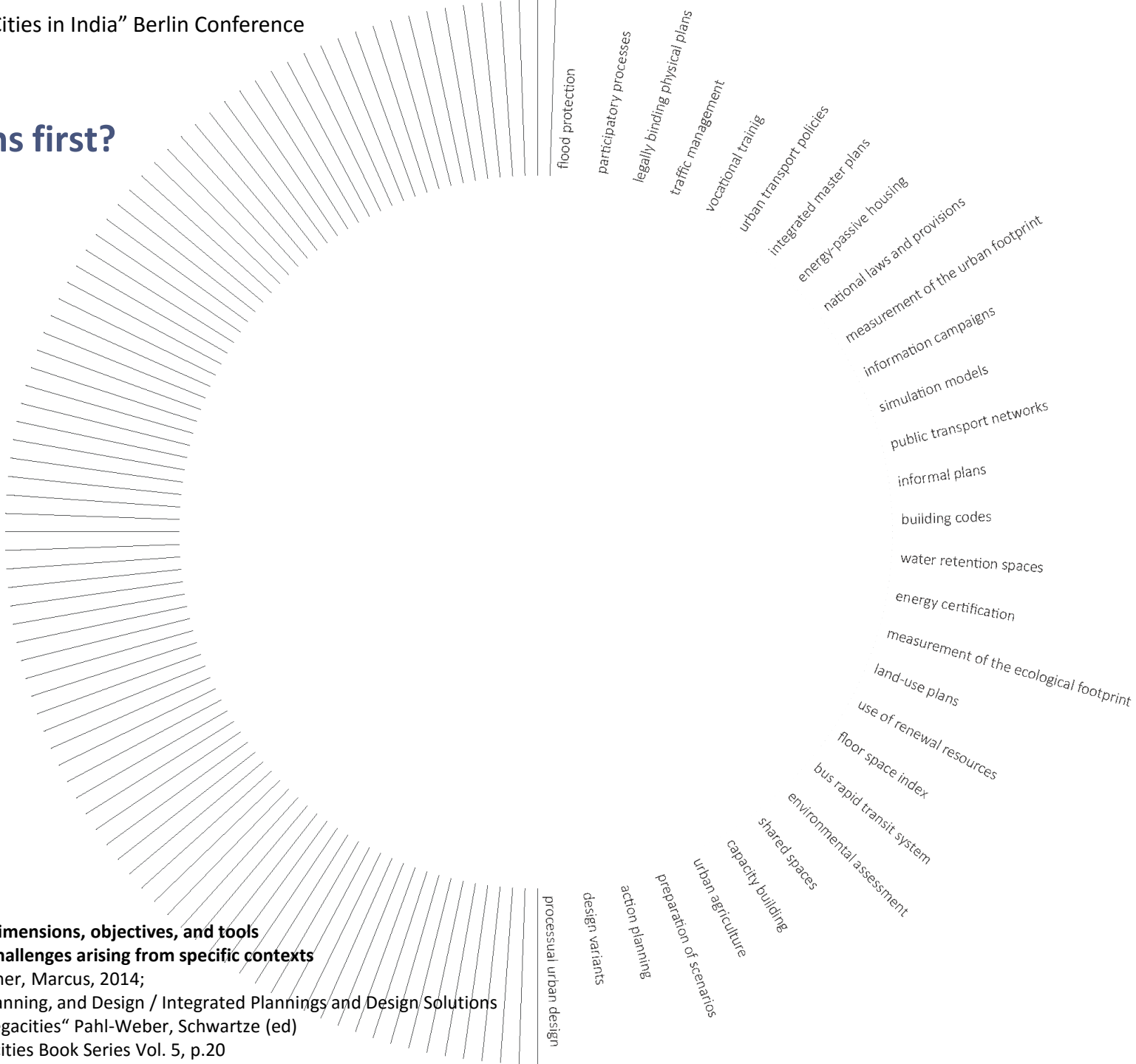
17 PARTNERSHIPS FOR THE GOALS
 Strengthen the means of implementation and revitalize the global partnership for sustainable development

Sustainable Development Goals

<https://sustainabledevelopment.un.org/?menu=1300>



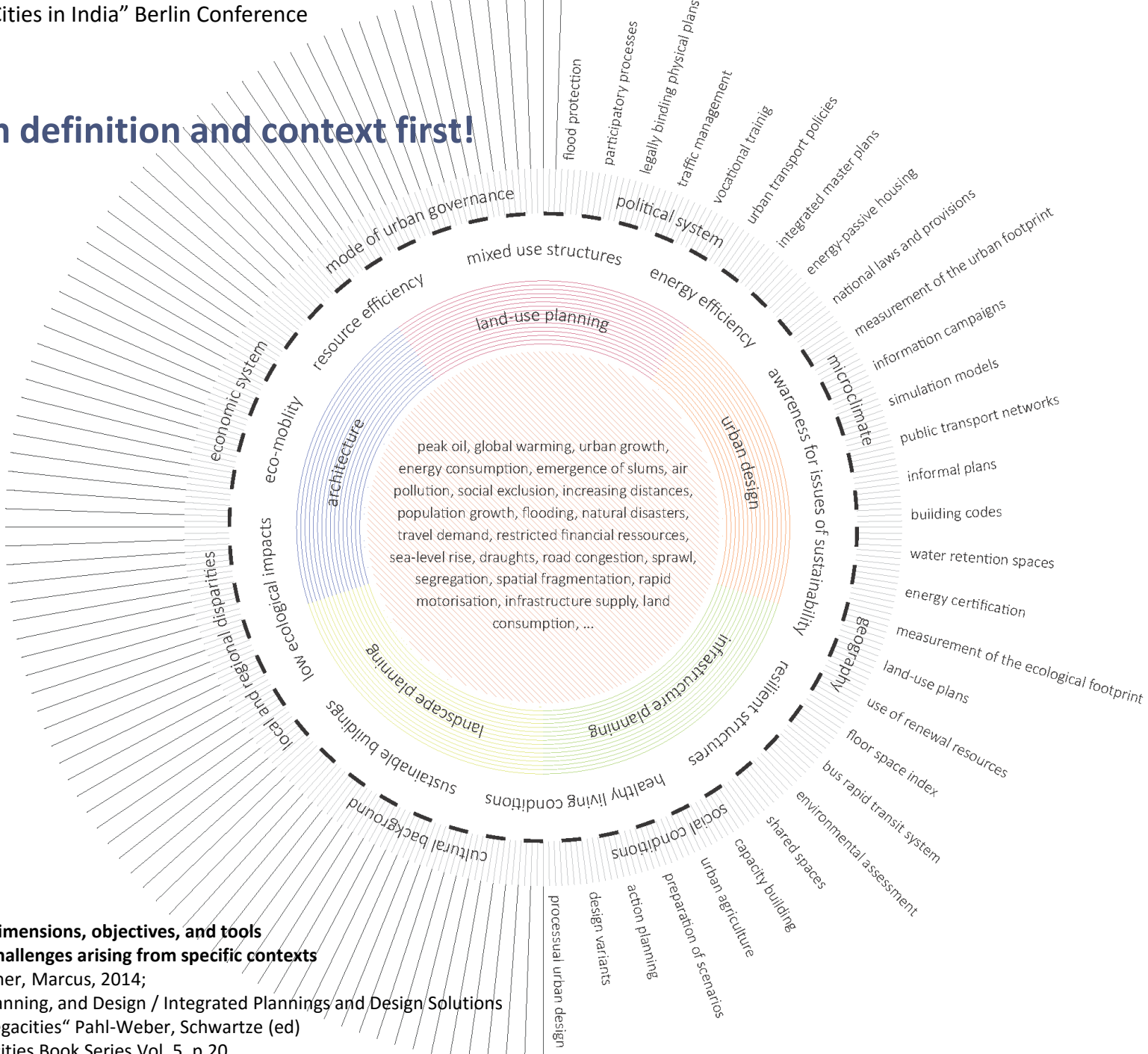
Solutions first?



Challenges, dimensions, objectives, and tools to confront challenges arising from specific contexts
 Graphic: Jeutner, Marcus, 2014;
 In: „Space, Planning, and Design / Integrated Plannings and Design Solutions for Future Megacities“ Pahl-Weber, Schwartz (ed)
 Future Megacities Book Series Vol. 5, p.20



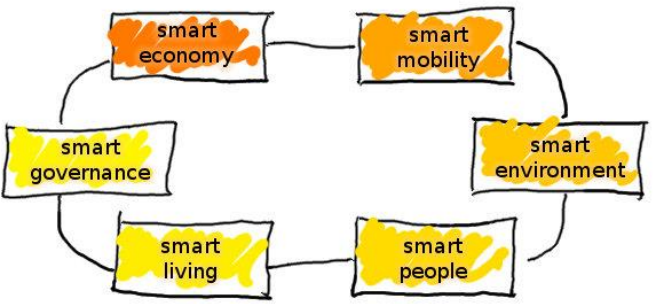
Problem definition and context first!



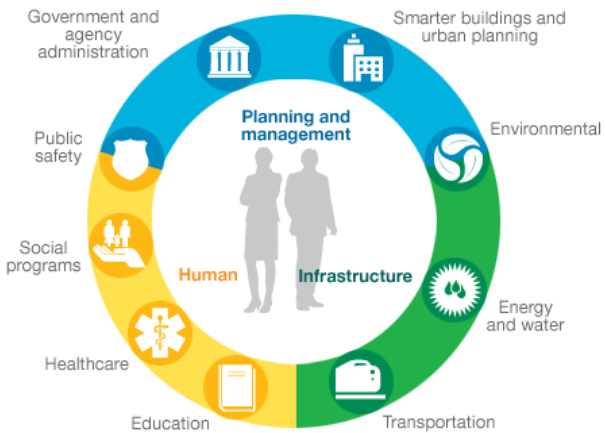
Challenges, dimensions, objectives, and tools to confront challenges arising from specific contexts
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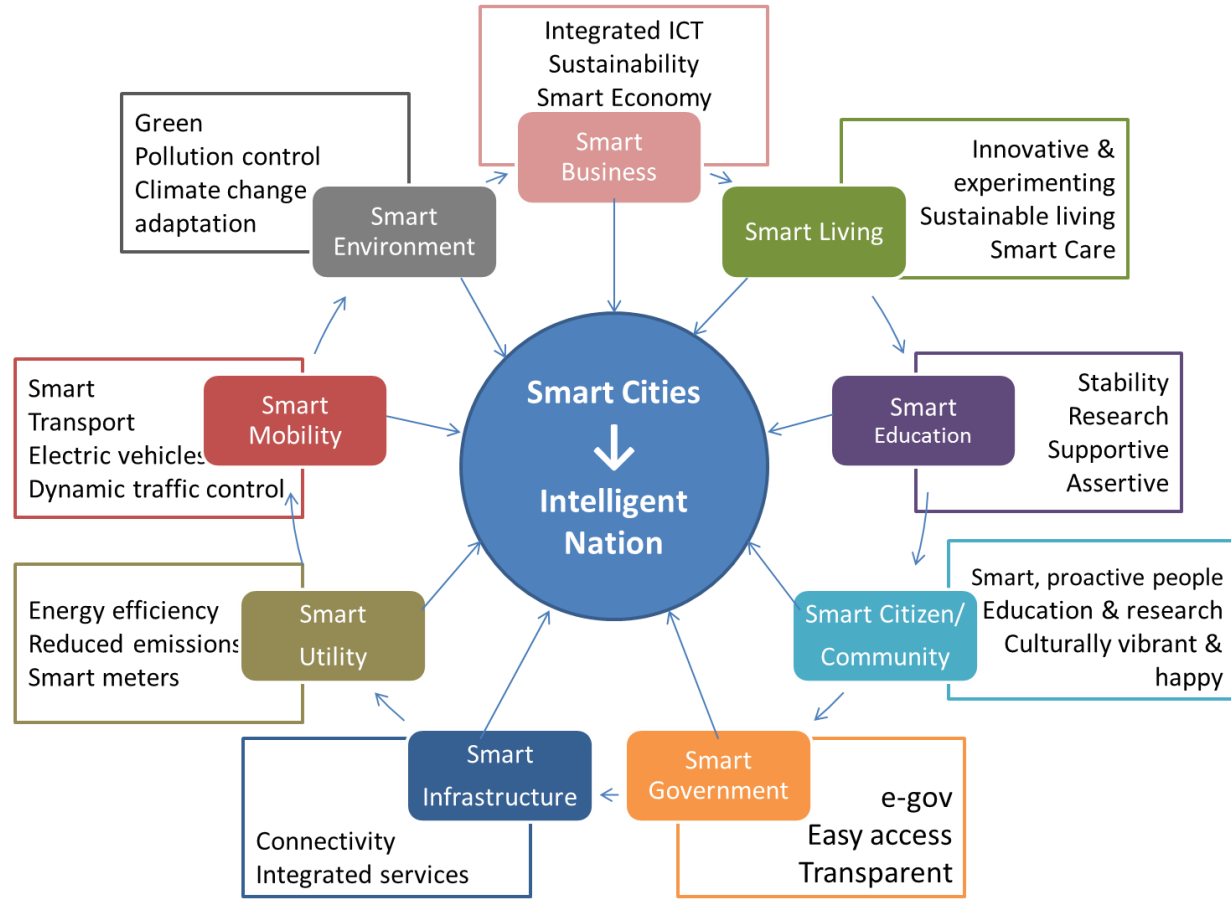
Smart City: Integrated Urban Planning and Development as a basis, combined with opportunities of ICT



Smart cities characteristics (R. Giffinger).
http://www.smartid.it/sites/all/themes/theme549/images/smart_city.jpg



IBMs Smarter Cites characteristics.
http://www.ibm.com/smarterplanet/global/images/us_en_us_cities_smarter_cities_eco_chart_460x350.gif

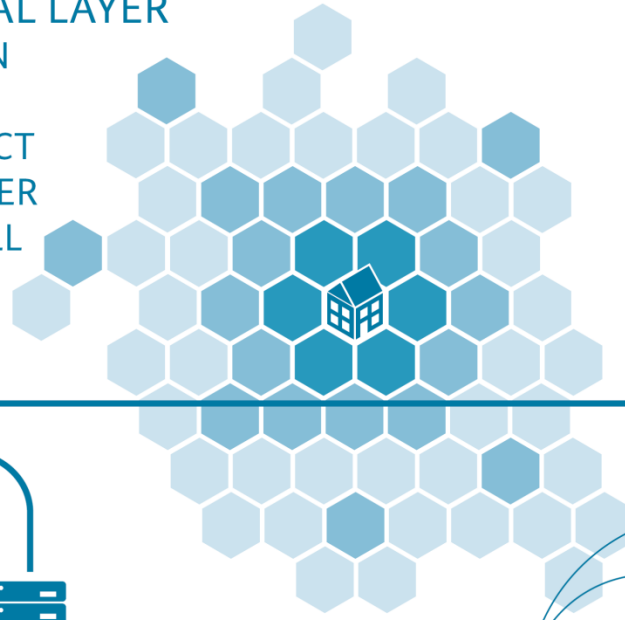


Smart Cities Reference Diagram.
<http://www.smartcity.center/en/?p=95>

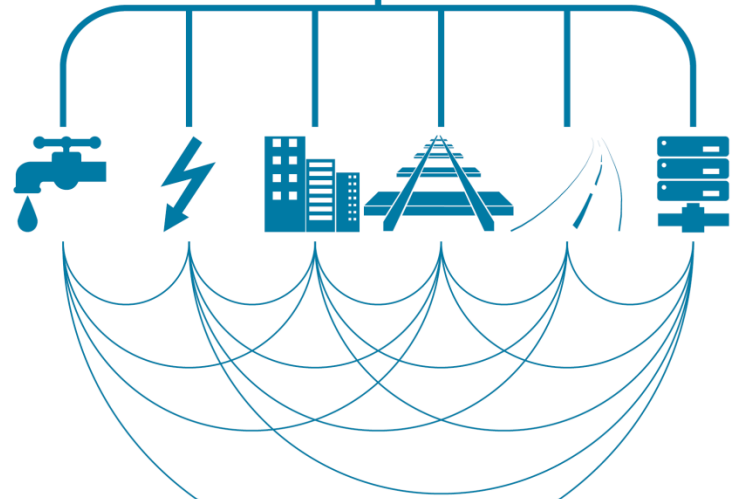


Smart City: Layers of Action of transformation processes

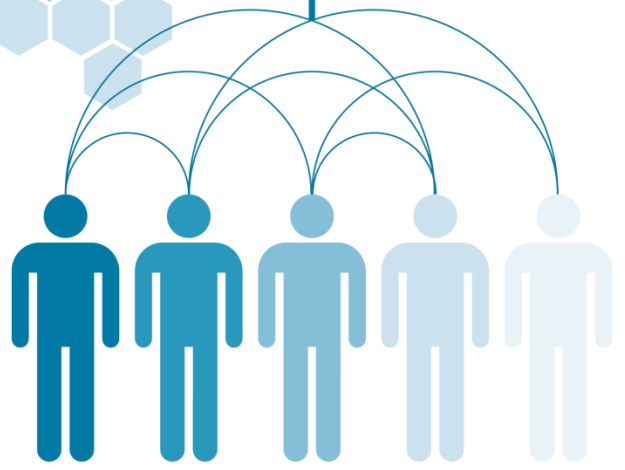
SPATIAL LAYER
 REGION
 CITY
 DISTRICT
 QUARTER
 PARCELL



SYSTEM LAYER



STAKHOLDER

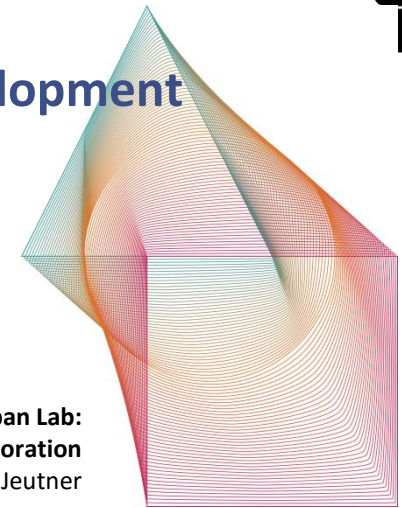


Energy Resources and technical Infrastructure systems
 Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;
 In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“

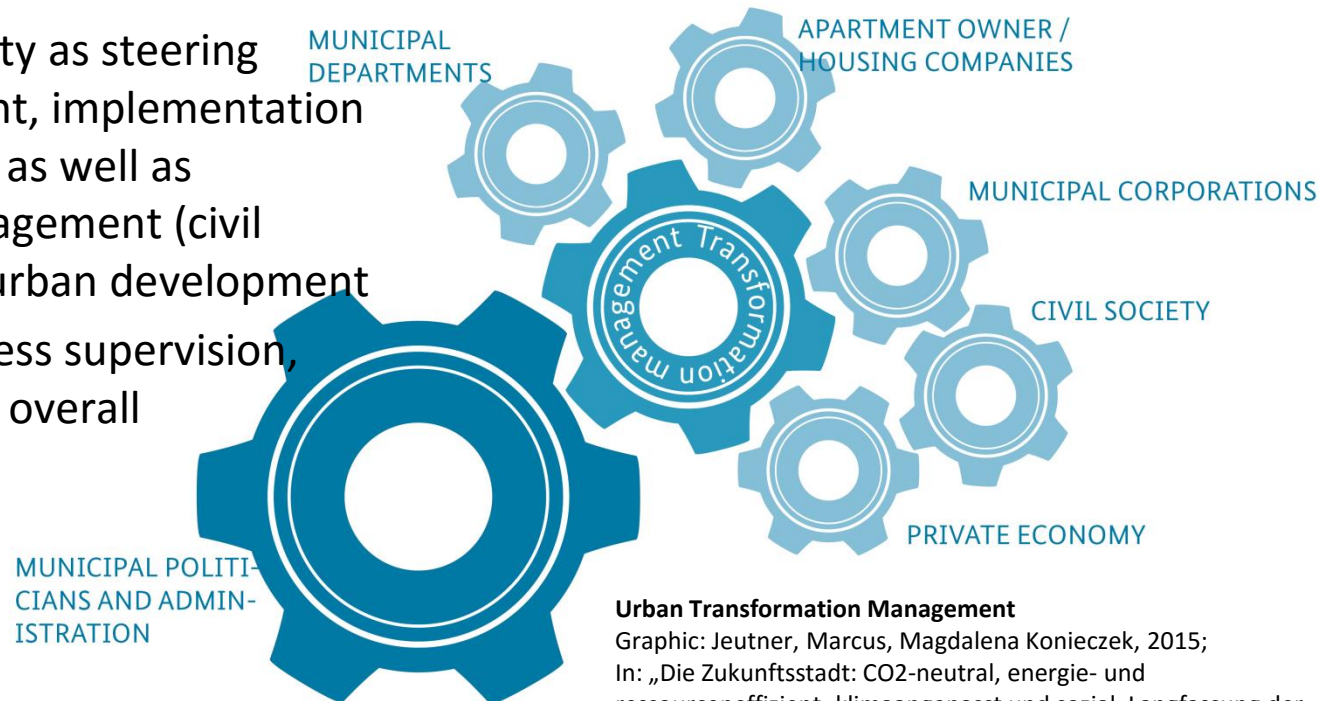
How to handle complexity?

Transfer of the Triple Helix as cooperative model in urban development

- **Industries and enterprises, also housing companies, small and medium enterprises and local businesses** for innovation and implementation in urban transformation processes
- **Governance** with municipality as steering entity in concept development, implementation in politics and administration as well as promoter for active user engagement (civil society) and participation in urban development
- **Sciences** for invention, process supervision, reflection, evaluation and for overall comparison



TU Urban Lab:
Economy-governance-science collaboration
Graphic: Marcus Jeutner

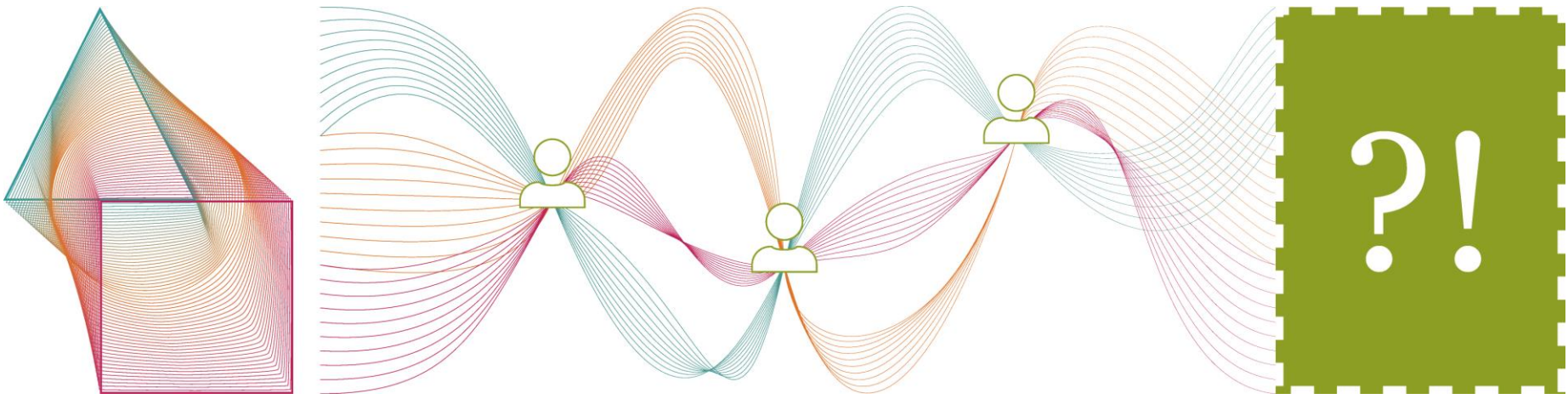


Urban Transformation Management

Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;
In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“ 11

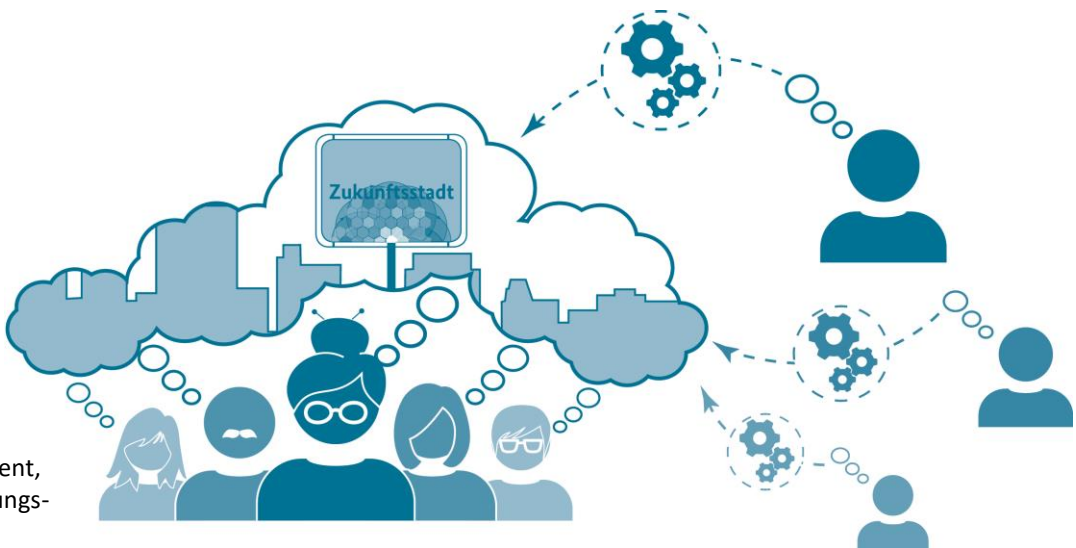


How to handle complexity? Transfer of the Triple Helix as cooperative model in urban development



Transformation as dialogic Process – Innovation by urban Co-Production

Graphic: Jeutner, Marcus, TU-Berlin, 2015;

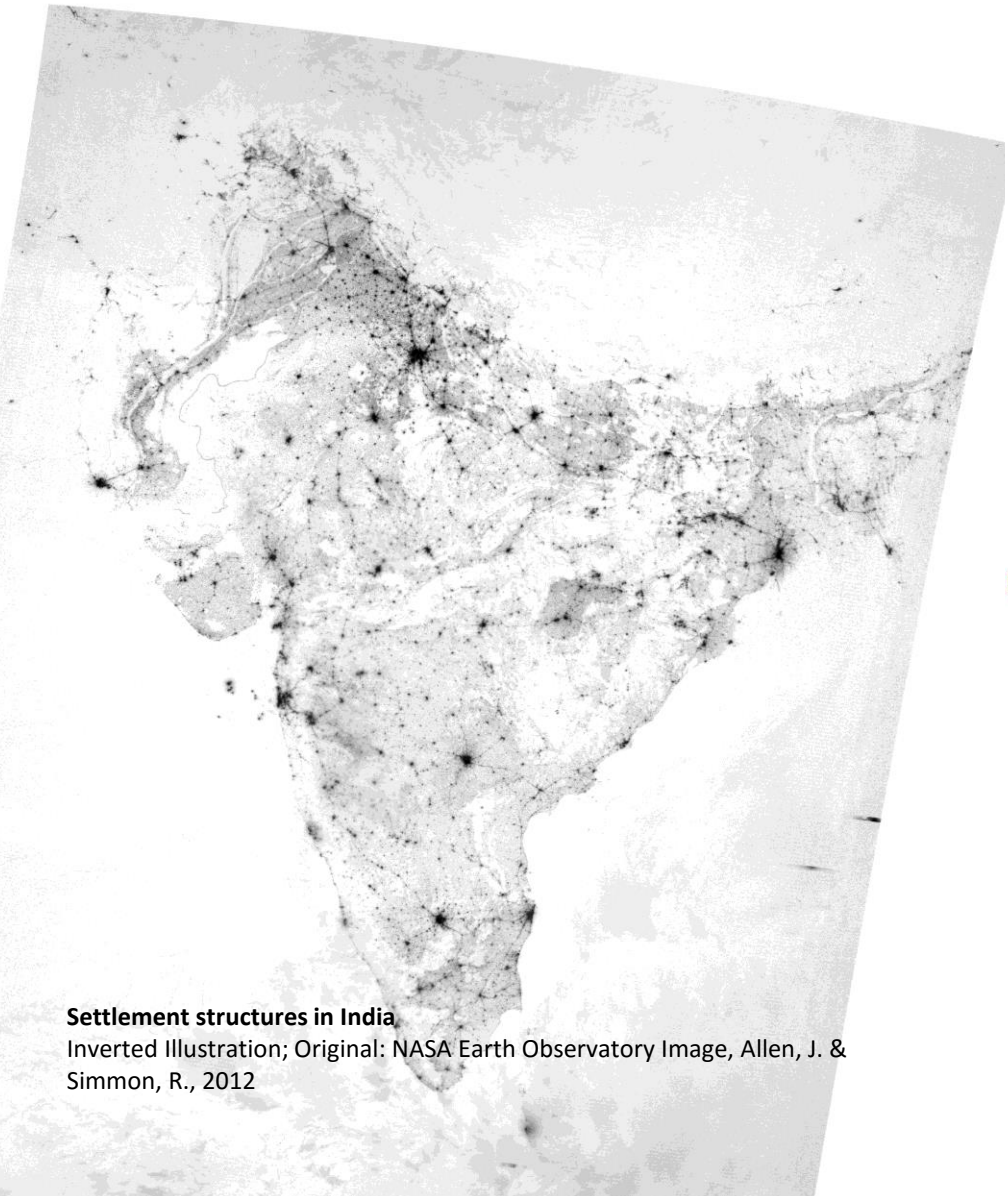


Involvement of People and Stakeholder

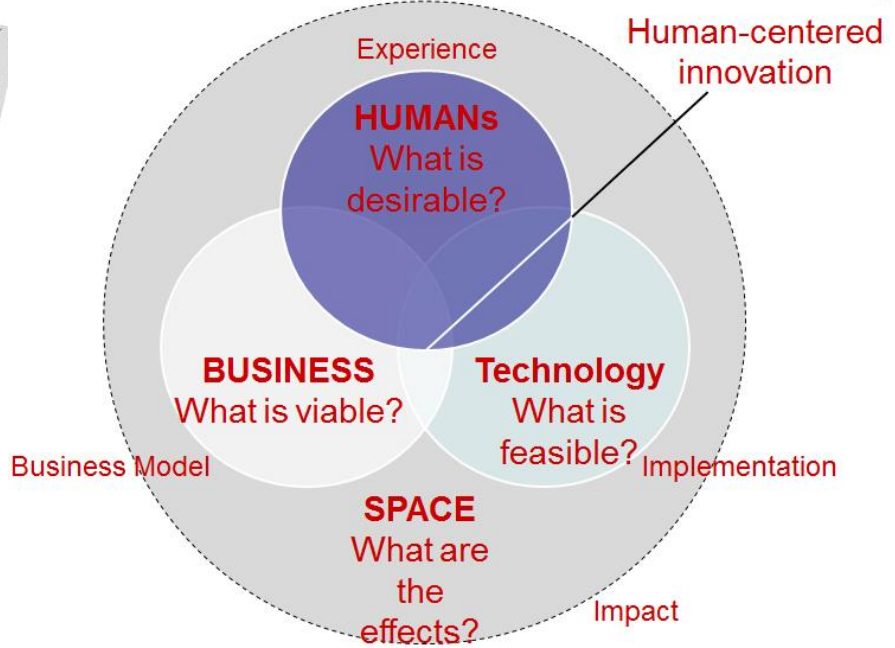
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Urban Transformation – Urban Space



Settlement structures in India
Inverted Illustration; Original: NASA Earth Observatory Image, Allen, J. & Simmon, R., 2012



Urban Design Thinking – TU Berlin
Graphic: Nadja Berseck, 2015

The city of tomorrow in many places is already built, its buildings, infrastructures, and open spaces do exist. Since centuries, cities are developing in dynamic ways. Today, we are standing on the steps to a city of technical revolutions:

- 1. Transformation of built cities means transformation of existing urban contexts towards the city of tomorrow.**
- 2. Cities are not only conglomerates out of concrete, steel and glass. They are places where people live, work, recreate and interact.**
- 3. Transformation of built cities of today requires urban co-production between – on different layers – involved and affected people and stakeholder.**

Photograph: Marcus Jeutner



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