An Institutional Perspective on Smart City Experimentation:

Comparing Ningbo, Hamburg and Amsterdam

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The SMART-ECO-CITIES Project

- **'Smart-Eco-Cities for a green economy'**
  - Rise of the smart city
  - Endurance of the eco-city
  - Where do they intersect?

- **Western Europe & China**
  - Manchester, Hamburg, Bordeaux, Amsterdam
  - Shanghai, Shenzhen, Wuhan, Ningbo

The SMART-ECO-CITIES Project

- **Approach**
  - global database exercise
  - national horizon scans
  - detailed case studies
  - cross-case comparisons

- **Additional info & updates**
  - Website: www.smart-eco-cities.org
  - Facebook: @smartecocitiesproject
  - WeChat: @smartecocities

Background

- **Transitions**

  - Growing attention for cities in thinking about transitions
  - Cities as 'resourceful contexts', 'agents of change' and 'path dependent places' in sustainability transitions.

- **Experiments**

  - Boom in attention for living labs and their pilot projects
  - Reflected in academic research

Background

- **Smart as the new kid on the block of urban futures**
    - Proponents and critiques in urban scholarship
    - Implications for *sustainability* transitions?

- **Institutional turn in transition studies**
    - Promises better understanding of relations between actors
    - Promises better understanding of dynamics of stability vs. structural change

Aim and research question

- **Aim**

  - Explore and compare relations between institutions and experimentation in three smart city initiatives

- **Research question**

  - How and why do smart city ambitions institutionalize in different ways across urban contexts?

  - How do these place-based institutionalizations shape experimentation?

Concept 1: Experimentation

- **A definition**
  - In the literature on Sustainability Transitions experiments are the seeds of change that should do to enable radical transitions in socio-technical systems, i.e. far-reaching change in dominant institutional-material structures
  - "An inclusive, practice-based and challenge-led initiative designed to promote system innovation through social learning under conditions of uncertainty and ambiguity" (Sengers et al. 2017)

Concept 1: Experimentation

- **A mode of governance**

  - Practice-informed', critical perspective on experimentation and its socio-political implications

  - Fluid, open-ended, messy, contingent, place-based and political reconfiguration process characterized by multiplicity

  - A way of enabling transitions vs. a way of stalling transitions

Concept 2: Institutions

- **A framework for analyzing what smart cities are and what they 'do'**
  - Material lens
  - Discursive lens
  - Institutional lens (this presentation)

- **Institutions**
  - "Regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 1995)

Concept 2: Institutions

Dimension	Description	Relation to smart city experimentation
Regulative	**Explicit regulatory processes**, such as formal rules, laws, policies, protocols, standards. Not complying to these rules may have implications in terms of legal sanctions.	Institutional analysis of smart city initiatives would elaborate on the formal dimensions of these initiatives, such as the ways in which they are **embedded in urban, regional, national or even international policy initiatives** for urban development (e.g. McCauley and Murphy, 2013)
Normative	Rules that introduce a **prescriptive, evaluative and obligatory dimension** and refer to things like values, role expectations, social norms, duties, responsibilities. Not complying to these rules may result in strong emotional responses related to a sense of shame or disgrace, or for those who exhibit rule-following behaviour, a feeling of pride and honour	Ongoing debates in smart city literature have increasingly emphasised the need for more inclusive development, which **prescribe a central role to citizens** next to public administrators and technology firms (Bolivar and Meijer, 2015). This also relates to questions such as **how economic, social or ecological challenges are prioritized in them**. What are considered as legitimate goals or priorities of smart city initiatives (Glasmeier and Chrisopherson, 2015)?
Cognitive	**Shared conceptions and frames through which meaning is given, and the world is interpreted**. They form implicit 'cultural reservoirs' or 'cognitive logics' for action. Not conforming with these schemes leads to confusion. Symbols, discourse and cultural categories, and the ways in which they are 'brought to life' in social interactions, are important elements of the cultural-cognitive pillar	In the case of smart city experimentation, the cultural-cognitive pillar of institutions would entail, for instance, an analysis of how smart cities are **framed as solutions to contemporary urban challenges** and such discursive approaches have received relatively much attention in this field, in particular from a critical perspective (e.g. Vanolo, 2014; Gibbs et al., 2013). In the current paper, we hone in on exploring **how the *scaling up* of smart city experimentation is framed**

Propositions for comparison

- (1) Prevailing (regulative, normative and cognitive) institutional pillars configure the form of new smart city institutional arrangements (or governance arrangements).

- (2) Because these pillars are place-specific and multi-scalar, institutional arrangements across urban contexts will differ.

- (3) Hence, smart city experimentation 'styles' will be place-specific with differentiating features and outcomes across urban contexts
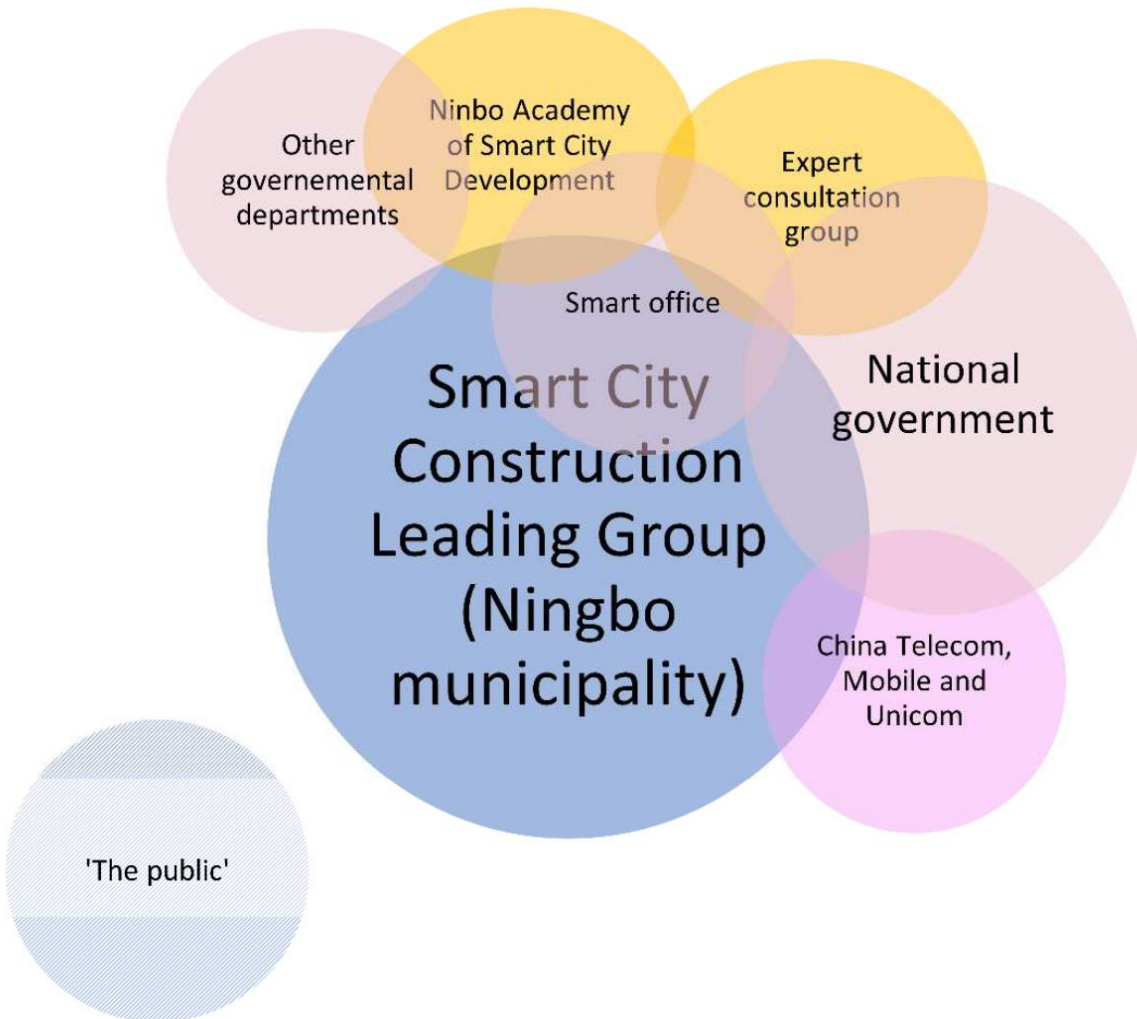
3 Cases: Ningbo, Hamburg, Amsterdam

- Cities elected on the basis of extensive country mapping of smart eco-cities in each country (Horizon scan reports, see website)

- Three case example here: Ningbo (CN), Hamburg (DE), Amsterdam (NL)

- Explorative, iterative research process on the basis of longitudinal engagement of nationally-based researchers

- Institutional pillars as flexible 'sensitizing devices' (what to look for)

Case 1: Ningbo

- Second largest city in Zhejiang province; South of Shanghai; ~8 million inhabitants; tier-2 city; port city; pilot city for 'smart' (one of many national buzzwords in China)
- 2011-2015 smart city plan of 6,4 $billion; 2010 Ningbo Smart City Construction leading group and Expert Consultation Committee of Smart City (Smart Office) and range of other smart organizations established (for expertise/research); specialization in transport and healthcare

Case 1: Ningbo

Other governemental departments

Ninbo Academy of Smart City Development

Expert consultation group

Smart office

Smart City Construction Leading Group (Ningbo municipality)

National government

China Telecom, Mobile and Unicom

'The public'

Experimental style: Urban Management ('China Telecom platform' example)

Case 2: Hamburg

- 1.8 million inhabitants (5 million in metropolitan area); second biggest in Germany; port city
- 2014 MoU with Cisco; 2015 new government of greens and social democrats made digitization key theme; 2015 Digital City Strategy with coordination office 'Leitstelle Digitale Stadt' (note that 'smart' is not used); the harbor as experimental site (HafenCity)

Case 2: Hamburg
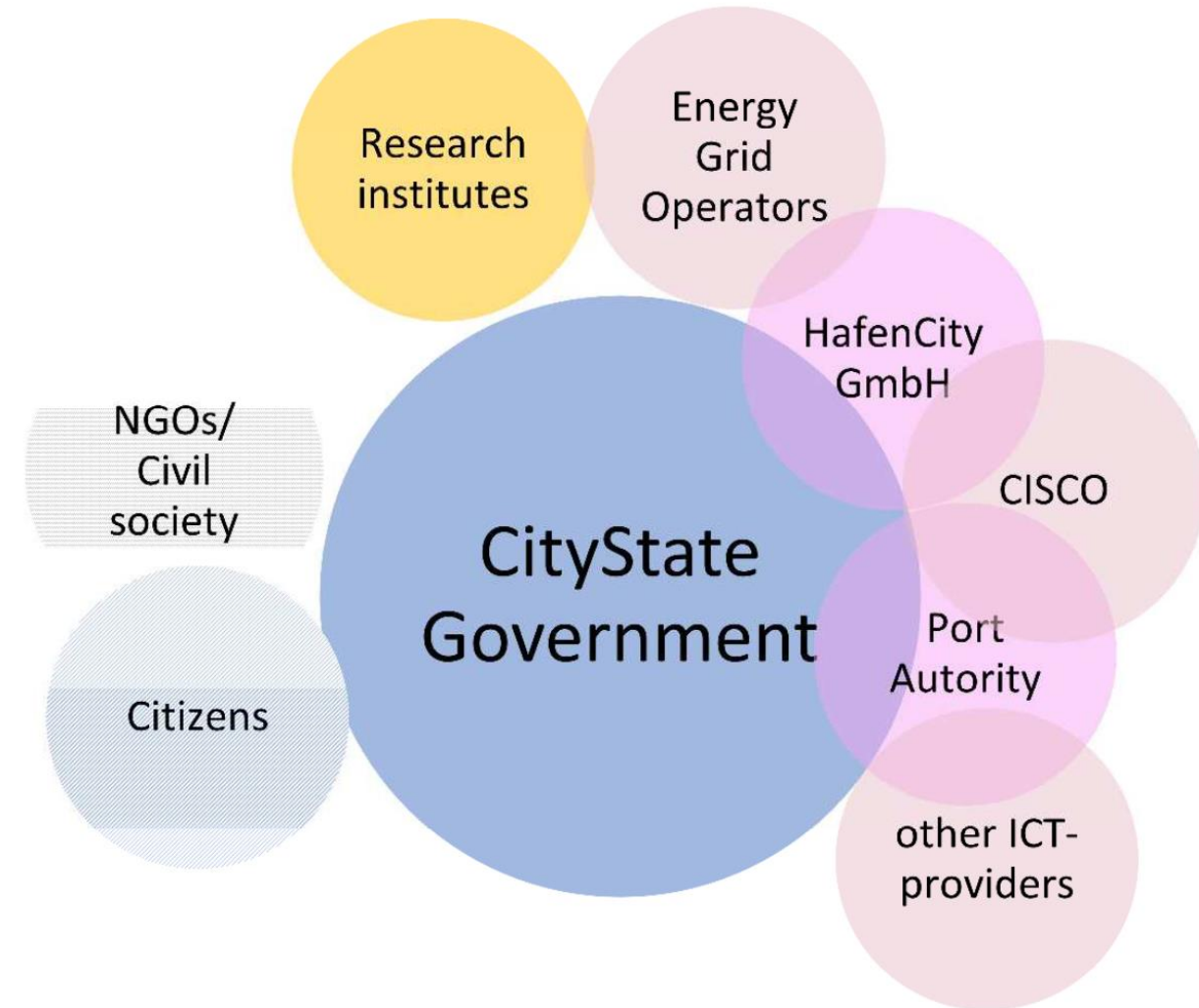
Experimental style: Social Learning
('Finding Places' example)

Case 3: Amsterdam

- 0.9 million inhabitants (2.4 in Amsterdam Metropolitan Area); Dutch capital; most prominent smart city in NL; long tradition of tolerance and trade;

- Smart City Amsterdam (ASC) platform founded in 2009; ~150 experiments in several 'living lab' locations; no top-down in smart city experiments (but emphasis on energy and mobility)

Case 3: Amsterdam
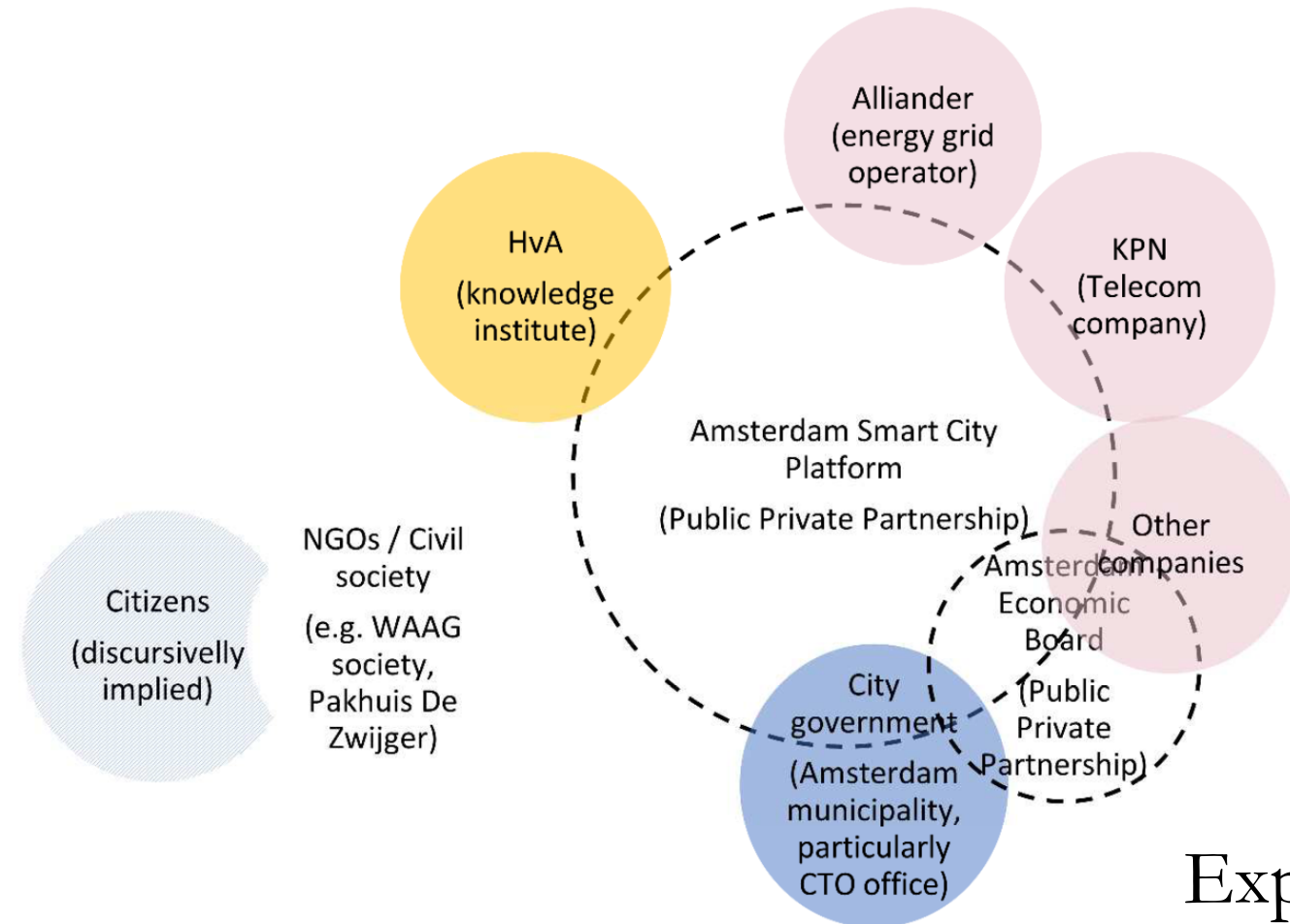
Experimental style: Innovation Ecosystem ('Zoncoalitie' example)

3 Cases: Ningbo, Hamburg, Amsterdam

	Regulative	Normative	Cognitive
Amsterdam	Locally-based public-private partnership/intermediary organization; Dutch 'Polder model' with many informal relations; limited involvement of national government; no direct EU funding in platform	Explicit focus on sustainability; promotion of active citizenship and social inclusion; neo-liberal agenda of governing without government	The city as a highly dynamic innovation eco-system where entrepreneurship is rewarded.
Hamburg	Regional state/municipality-led process to establish formal relations with system providers (IBM, Sisco, etc); emphasis on attracting EU Horizon 2020 funding (but failed); involvement of Hafencity district and local universities.	Municipality sees itself responsible for ensuring public interests (e.g. data safety, sovereignty); closed circle of public and private experts; democratic lip-service to the role of citizens (representative democracy)	Visions of a flourishing digital economy fuel close collaborations between state and university to enable social learning and upscaling, through private investments
Ningbo	Embedded in national-level 12th five-year development; strong focus on sectors that matter for city management (smart health, smart transport, smart education)	Government driven; but with strong involvement three major Chinese communication firms; economic and tech development are prioritised; strengthening Ningbo's role in (inter)national urban competitiveness and status development; citizens only exist as 'the people'	Initial strongly oriented on learning from Singapore, US, Europe, but significant differences between governance systems let do a more particular Chinese orientation.

Discussion and conclusion

- We find distinct ways in which smart cities developments institutionalize in the three cases

- The work suggests that these differences relate to prevailing city/national level factors, such as:
    - National policy/political frameworks/traditions
    - Incumbent socio-economic/industrial focus
    - Prevailing (lack of) public-private-citizen collaborations

Discussion and conclusion

- These shape difference in (focus in) experimental styles
    - Innovation eco-system in Amsterdam
    - Social-learning processes in Germany
    - Urban management in Ningbo

- Further work is needed for exploring different patterns in how smart city experiments may or may not reconfigure prevailing institutions for urban development.

Thanks for your attention!

The SMART-ECO-CITIES Project

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Preliminary framework