
Conceptual Clarity and Smart Cities Research

**Nicole Goodman, Zachary Spicer and
Adam Churchard**

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The Problem

- Increased migration to smart cities research & application
 - Cities: to improve quality of life
 - Industry: \$757 billion USD market by 2020
 - Practical application flows from the research that is being done
- 12 core terms related to future urban environments:
 - Emphasis on different aspects
 - Conceptual overlap and no consistency of indicator areas

Variation in Terms

- Range of terminology
 - Knowledge City, Sustainable City, Green City, Eco City, Livable City, World (or Global) City, Innovative City, Resilient City, Future City
- Range of indicators
 - Economic Strength, Livability, Cultural Interaction, Labour Market Efficiency, Innovation, Local Capacity, Waste & Land Use

Research Questions

- Why leads to smart city adoption?
- What are the characteristics of a smart city?
- What are the consequences?



Argument

- Smart city characteristics different from consequences.
- ICT focus up front, but end result about quality of life.

Specifically:

- Urban issues, Environmental concerns, and ICT are primary elements that come before adopting a smart city model.
- Governance and ICT are its core characteristics.
- Social and Environment are the key outcomes.

Concepts Analyzed

Intelligent communities		Smart cities	
Intelligent Communities Forum	i-Canada	Giffinger et al 2007	Caragliu & Del Bo, 2012
Broadband	Place	Government	Smartness indicator
Knowledge workforce	Infrastructure	Economy	Human capital
Innovation	Collaboration	Mobility	Density
Digital equality	Solutions	People	Industry Mix
Advocacy	Life	Life	Attractiveness
Sustainability		Environment	Amenities

Methods: Evolutionary Concept Analysis

(Walker & Avant 1983; Chinn & Jacobs 1983; Rodgers 1989)

Evolutionary Concept Analysis: Core Analysis Steps

Surrogate terms	Other terms with the same meaning or that share something in common with the concept. e.g. Smart city; Intelligent community
Antecedents	Key terms (e.g. events or phenomena that precede the concept.
Attributes	The characteristics of the concept.
Consequences	Examples of the concept.
Examples	Effects that follow after an occurrence of the concept.

Methods

Literature search

- 12 databases
- 4702 unique results
- +4 sources via hand search

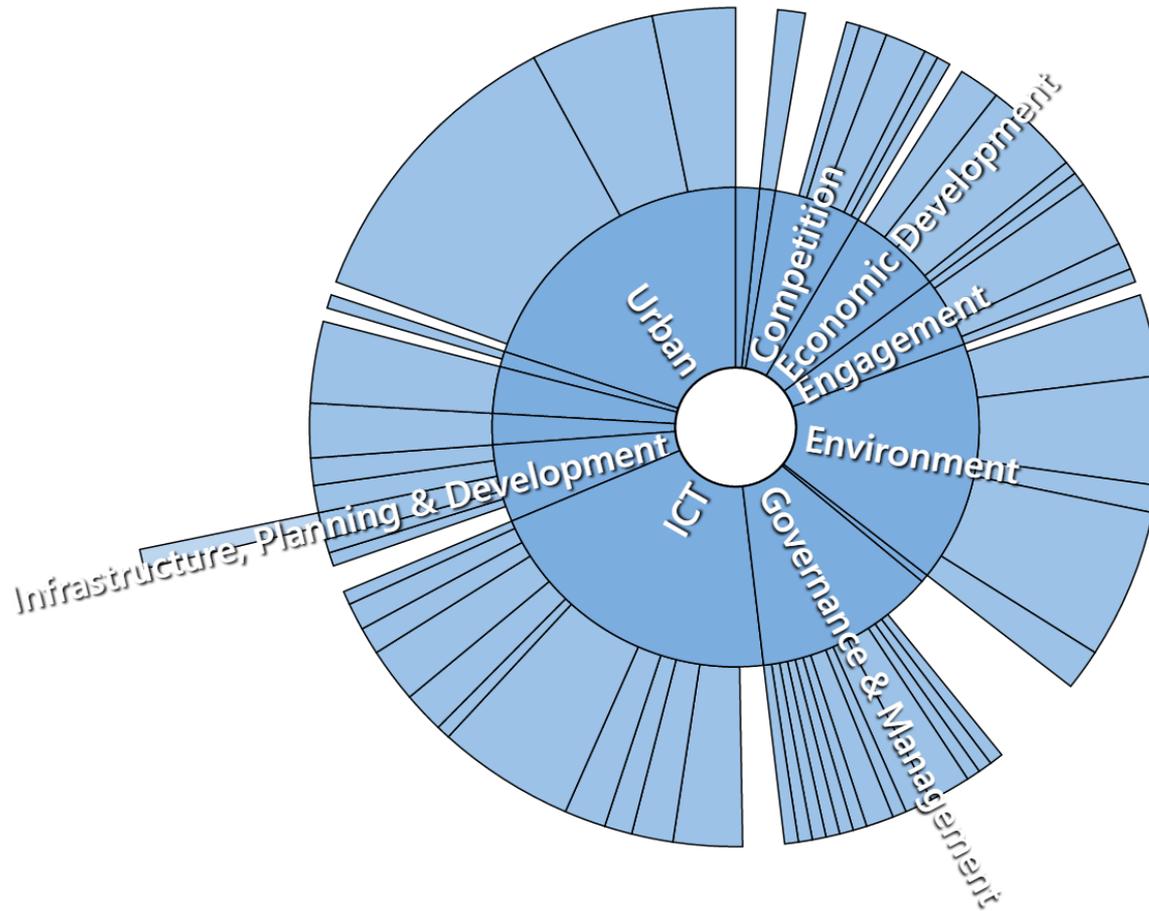
Substantively address key concepts?

- 134 articles

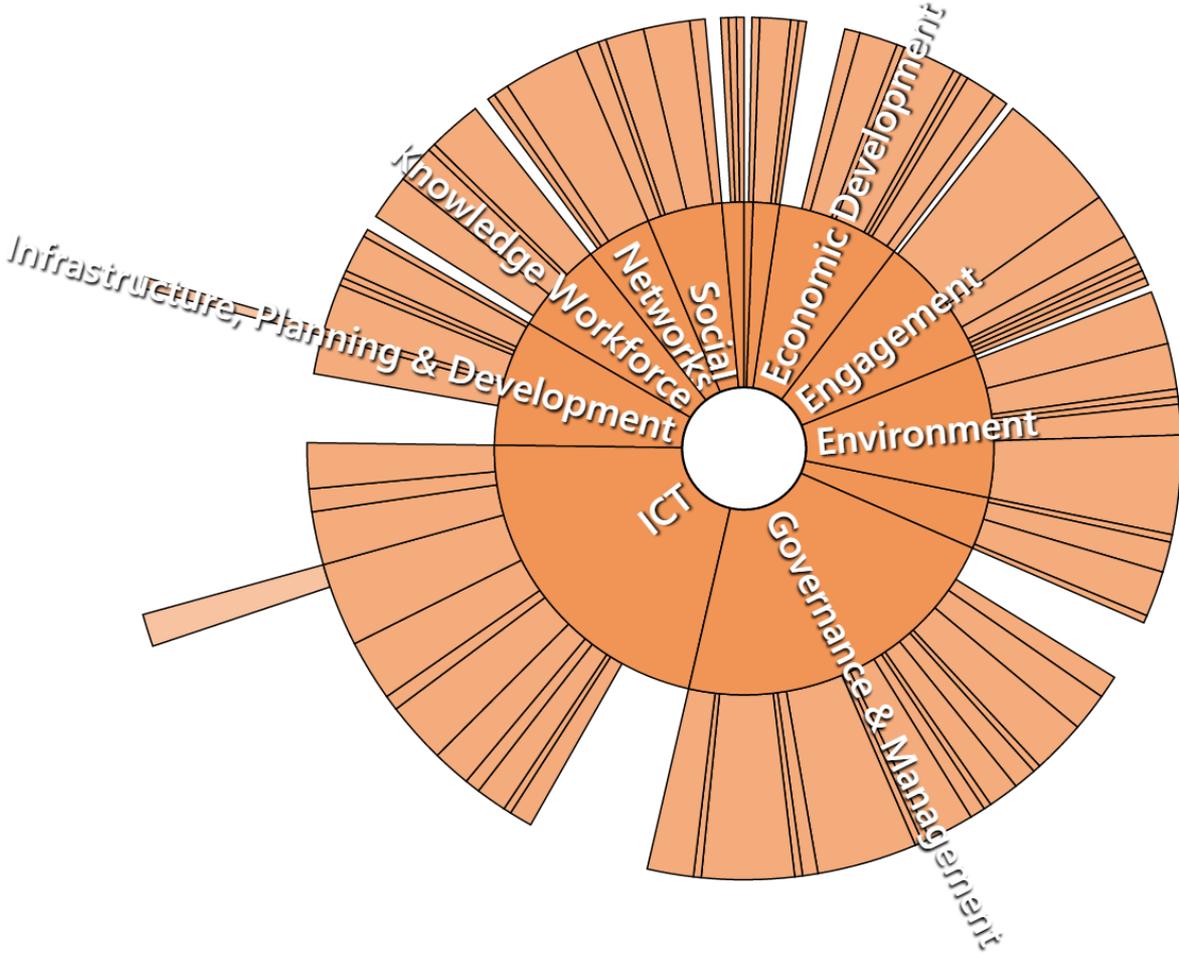
Clarity & originality of framework; Explicit aspects of concept?

- 47 documents

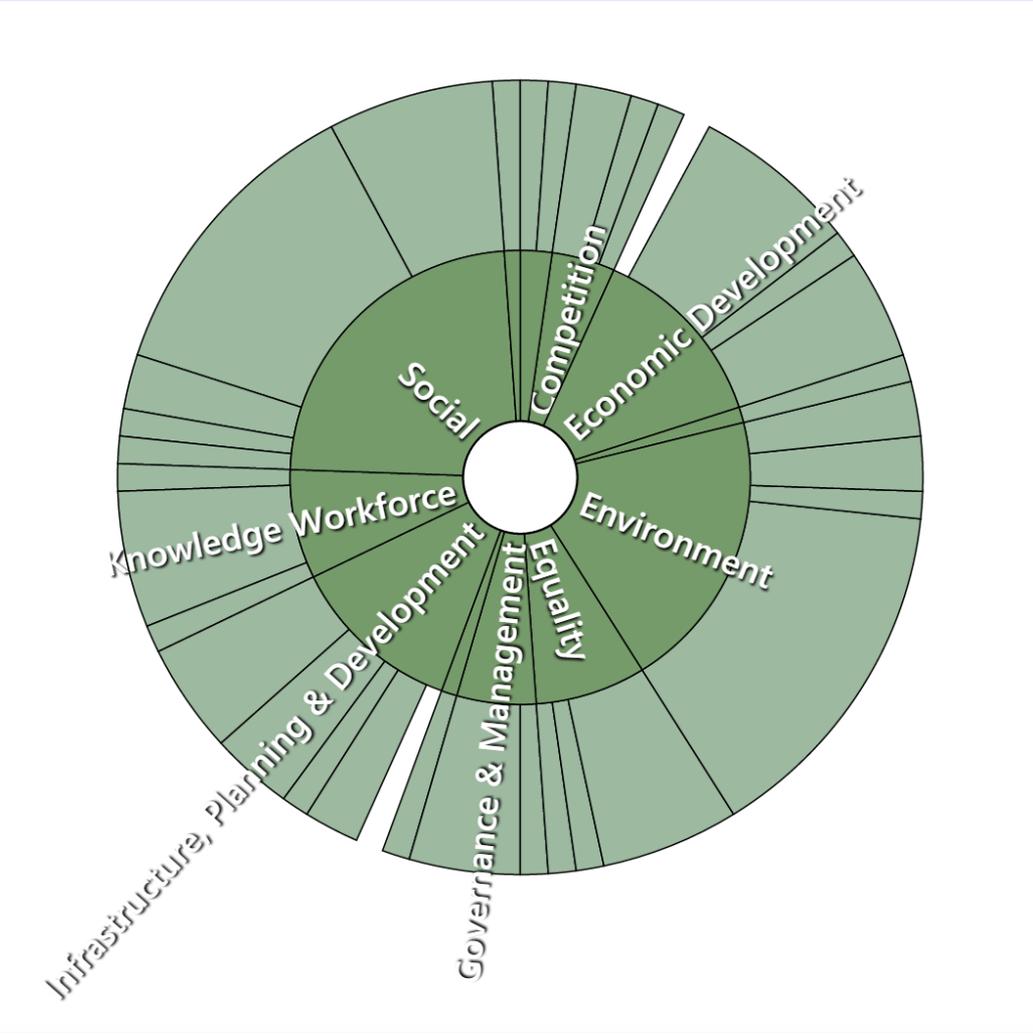
Findings - Antecedents



Findings - Attributes



Findings - Consequences



Overview of Findings

- Key differences between:
 - What leads to smart city adoption
 - Smart city characteristics
 - Consequences
- Issues, concerns and the ICT pipe dream
 - Urban issues, environmental concerns, ICT competition and potential as a solution and smart city enabler
- Management and technology key facilitators of smart cities
 - Governance and ICT core characteristics
- Quality of life is the ultimate goal
 - Social and Environment key outcomes

Next Steps

- Sense of the academic and industry perspective
- What about the citizen perspective?
- Administrators and elected representatives?
 - 2 national surveys
 - 3,000 residents in Canadian CMAs
 - Admin and elected reps in 33 CMAs
- Research & practical outcomes
 - AMCTO Smart City Summit
 - Partner Report

Questions?

- Thank you!