

GeoSmart Asia 2015

# Geospatial Solutions—Empowering Government and Enterprises

## Remaking Our Cities

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September 2015

# Geospatial solutions / Asia urbanization in a digital era

- ▶ Asia urbanization: unprecedented challenges and opportunities
- ▶ Reimagine cities in a digital era
- ▶ Role of government and enterprises
- ▶ City as a living lab
- ▶ Governance of a digital city

# Asia urbanization: unprecedented challenges & opportunities

- ▶ The century of Asia urbanization
- ▶ Much faster pace and greater scale
- ▶ Challenges
  - Coping with resource constraints (infrastructure, institutions, human capital), environmental impact, and demographic transition
- ▶ Opportunities
  - Digital technologies
    - ◆ Global integration
    - ◆ Transforming urban economy and urban living

# Reimagining cities in a digital era

- ▶ City as a peer-to-peer economy
  - Slow manufacturing employment growth due to high productivity
  - Rise of new service industries
    - ◆ Urban logistics, urban farming (circular economy), health care, education ....
  - Disintermediation
    - ◆ Disappearing of big department stores, music stores, travel agents ...; rise of e-commerce, iTunes, Airbnb, crowd funding ...
    - ◆ Peer-to-peer economy: empowering people to employ themselves
  - Transformations in urban infrastructure and governance to enable a peer-to-peer economy

# Role of government and enterprises

## ▶ Role of government

- New digital infrastructure
  - ◆ Data governance
- Risk management
  - ◆ New system risks in the context of more interrelated urban systems and interdependent economy
- Funding for urban R&D, education and retraining
- Co-production of urban services, citizen participation in governance

## ▶ Role of enterprises

- Innovation: new platforms for a peer-to-peer economy
  - ◆ Alibaba, Airbnb, Uber ...

# City as a Living Lab

- ▶ Unprecedented opportunities as the digital era unfolds
  - Instrumented and networked city
    - ◆ Unprecedented capabilities of urban surveillance, intelligence, automation, and data-driven urban design and policy interventions
      - Quantified Community: New York City's Hudson Yards development
    - ◆ What do we do with these capabilities?
  - Welcome to the drone age ...
    - ◆ “In 2010 America’s Federal Aviation Authority estimated that there would, by 2020, be perhaps 15,000 such drones in the country. More than that number are now sold there every month.” *The Economist* Sept 26, 2015.
  - An ecosystem for experimentation

# Governance of a digital city

## ▶ Data governance

- Open city data to support innovations
  - ◆ Seattle: one of the first cities to embrace an open data initiative
  - ◆ Shanghai Open Data App competition
    - Government is opening 1 TB public transportation data to crowdsource smart solutions to tackle urban traffic congestion
- Conflict between open data and digital privacy
  - ◆ Indexical data vs attribute data / data meshing
- Management of data indexation and public release
  - ◆ To enable efficient data meshing without compromising digital privacy
- Data veracity
- Cyber security

# Governance of a digital city

## ▶ Fostering an ecosystem for innovations

- The power of agglomeration economies (Marshall) / local competitive advantage (Porter)
  - ◆ Agglomeration of rivalry, specialized suppliers and skills, supporting institutions, and demanding consumers
  - ◆ Shared spaces and infrastructure

## ▶ Competitive environment

- Reducing entry barrier for new enterprises
  - ◆ US transport industry deregulation and rise of Amazon
  - ◆ China's online banking and rise of Alibaba
    - More than 8,000 express enterprises in China by 2013 (Deloitte). 14b parcels were received by express delivery in 2014. Delivery cost is 1/10 of that in US
- Other entry barriers
  - ◆ Data access, venture capital, scale-up capability ...



# Governance of a digital city

- ▶ Investing in factor creation (R&D, education & retraining)
  - More public funding /co-funding for R&D
    - ◆ Urban innovations as public good
  - Importance of education
    - ◆ Digital skills / innovation skills / social responsibilities
- ▶ Inclusive development
  - Labor retraining to cope with disruptive innovations
- ▶ Singapore Infocomm Media 2025
  - Master plans for R&D, skill training, and an innovation ecosystem to take advantage of a digital economy





- ▶ Urbanization
- ▶ Transform urban economy and living
- ▶ Connect people
  - Bottom up
    - ◆ Infrastructure: data, payment, delivery
    - ◆ Human capital—skills
- ▶ Quantified community
- ▶ Singapore Infocomm Media Masterplan 2025

- ▶ Until recently, Manhattan's skyscrapers had been about the success of the city as a place of business... The WTC had its business inscribed in its name; Gehry's tower was a condo building. It also housed, in its base, a public school and facilities for a hospital... Could this be the future of the city? High-end housing subsidising public amenity in a complex, shimmering form?



8 Spruce Street, New York

- ▶ **"The Quantified Community and Neighborhood Labs: A Framework for Computational Urban Planning and Civic Technology Innovation"**
- ▶ **CONSTANTINE E. KONTOKOSTA, New York University - Center for Urban Science and Progress**
- ▶ Email: [ckontokosta@nyu.edu](mailto:ckontokosta@nyu.edu)
- ▶ This paper presents the conceptual framework and justification for a “Quantified Community” (QC) and a networked experimental environment of neighborhood labs. The QC is a fully instrumented urban neighborhood that uses an integrated, expandable, and participatory sensor network to support the measurement, integration, and analysis of neighborhood conditions, social interactions and behavior, and sustainability metrics to support public decision-making. Through a diverse range of sensor and automation technologies -- combined with existing data generated through administrative records, surveys, social media, and mobile sensors -- information on human, physical, and environmental elements can be processed in real-time to better understand the interaction and effects of the built environment on human well-being and outcomes. The goal is to create an “informatics overlay” that can be incorporated into future urban development and planning that supports the benchmarking and evaluation of neighborhood conditions, provides a test-bed for measuring the impact of new technologies and policies, and responds to the changing needs and preferences of the local community.