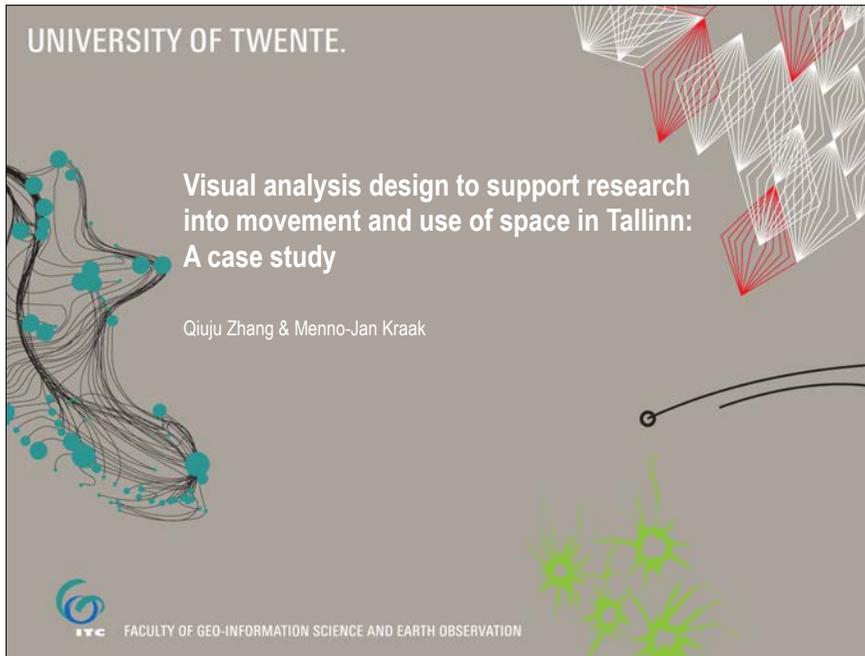## Slide 1

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Visual analysis design to support research into movement and use of space in Tallinn: A case study

Qiuju Zhang & Menno-Jan Kraak

FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

Slide 2

Product: http://vimeo.com/72028093

Qiuju Zhang[1], Aidan Slingsby[2], Jason Dykes[2], Jo Wood[2], Menno-Jan Kraak[1], Connie A. Blok[1] and Rein Ahas[3]

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Slide 3

Planning in Tallinn, Estonia

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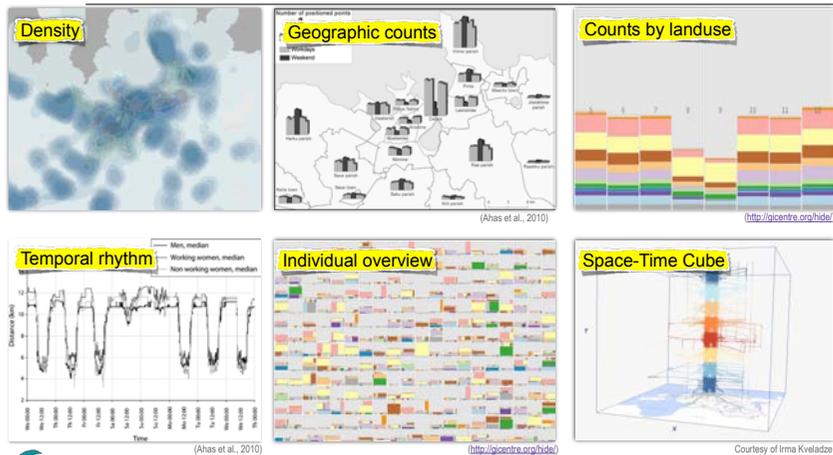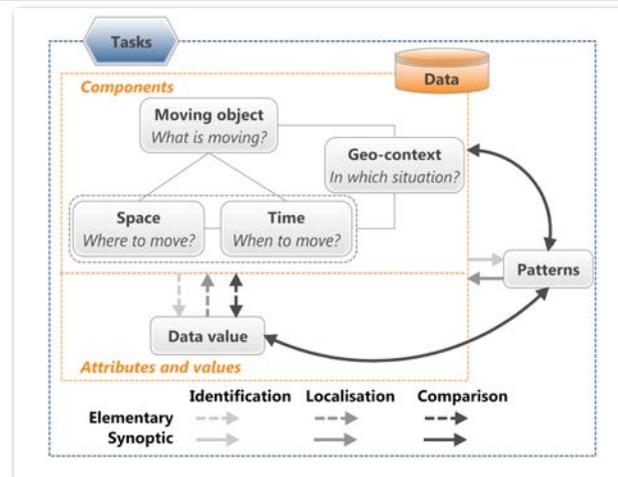CITY UNIVERSITY LONDON

Slide 4

Motivation

- Understand **urban sprawl** in Tallinn
- Through studying **spatial mobility** of suburbanites
- By interpreting their **temporal connections** to the city centre and the consumption of **land-use space** in the city

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Visualization options

Density

Geographic counts

Counts by landuse

(Ahas et al., 2010)

(http://gicentre.org/hide/)

Temporal rhythm

Individual overview

Space-Time Cube

(Ahas et al., 2010)

(http://gicentre.org/hide/)

Courtesy of Irma Kveladze

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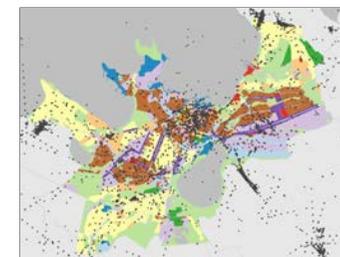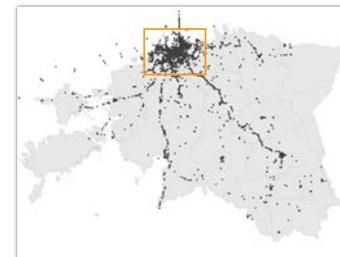
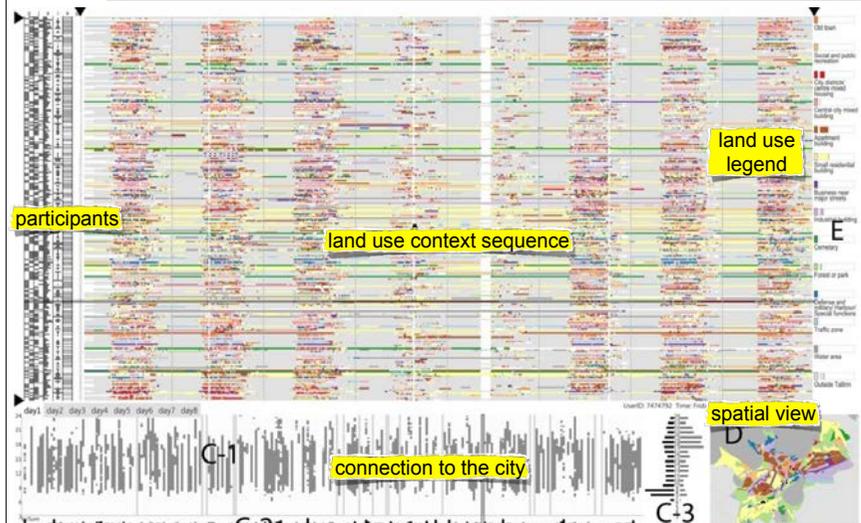## Qiuju Zhang's approach

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Tasks

- Identification refers to searching for data values or movement patterns at the given location and time
  - *"How many persons have regular connection to the city centre?"*

- Localization looks for when and where data values or movement exhibit patterns
  - *"Which geographical locations and land-use types are connected with jobs of suburbanites?"*

- Comparison determines what relations exist between data components
  - *"How diverse are the destinations and land-use functions during regular trips to city?"*

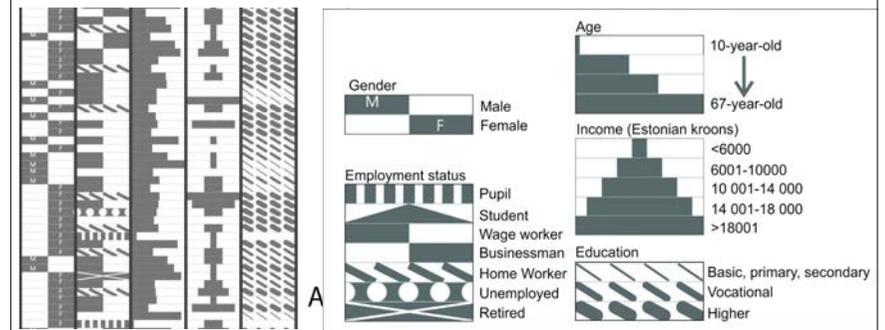UNIVERSITY OF TWENTE.

Getting insight

- Temporal connections to the city: temporal periodicity

- Land-use consumption in the city: movement sequences and durations

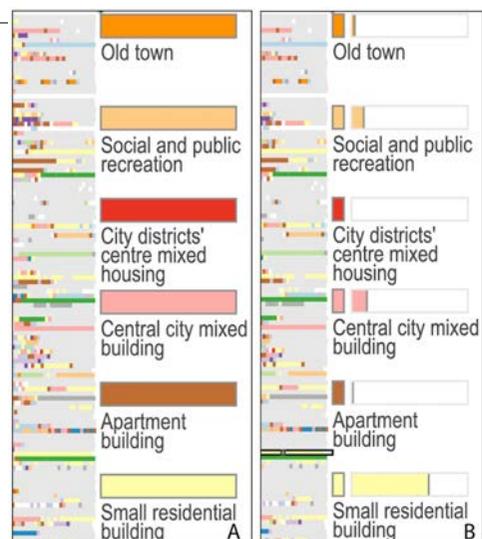- Social characteristics of the phone users: different professions

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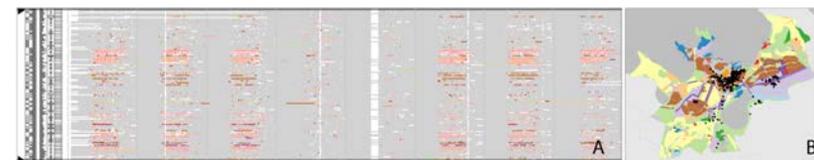
The 'prototype'

participants
land use context sequence
land use legend
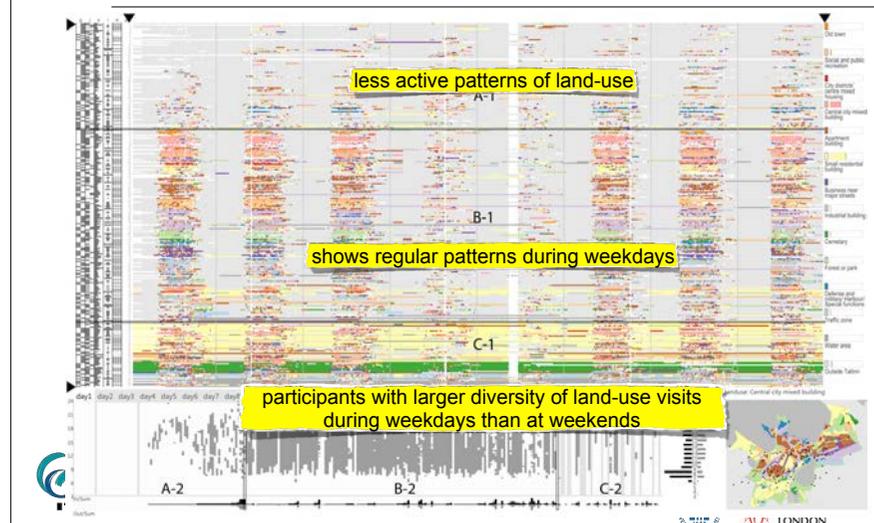spatial view
connection to the city

Participant and sequence view

The dynamic legend shows land-use types (A) and the total length of stay over 8 days of the identified participant (B)

At work

less active patterns of land-use
shows regular patterns during weekdays
participants with larger diversity of land-use visits during weekdays than at weekends

Feedback

- Useful and has high relevance because of end-user friendly design and very high demand for monitoring tools in the urban planning process.

- The design for **identification** and **localization** tasks can be used directly in urban researches and planning applications.

- The design for **comparison** tasks is good to motivate suitable research questions for further analyses

Qiuju's next steps

- To incorporate data sets with different spatial and temporal granularities

- Combining sequence analysis functions

- Empirical cognitive studies that examine the effectiveness of using the prototype to address user tasks

- Write a thesis.....