FIG WORKING WEEK 2019

22–26 April, Hanoi, Vietnam

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"Geospatial Information for a Smarter Life and Environmental Resilience"

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"Geospatial Information for a Smarter Life and Environmental Resilience"

Integrating Negotiations on Investments in Housing and Mobility

Geo-Based Gaming to Stimulate Land Use Transport Integration

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Research Project

Radboud Universiteit

Provincie Noord-Holland

Ministerie van Infrastructuur en Waterstaat

provincie ZUID HOLLAND

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

Problem statement

- Land use transport integration (LUTI) could be improved in the Netherlands: suboptimal plans and investment decisions
- Sectoral divide: mobility vs. real estate
  - Financial sources: national funding vs. local business case
  - (level of) Decision-making: national vs. local
  - Between organisations and within organisations
- Currently effort to further integrate decision-making in new Environment and Planning Act (2021)
- However, unclear what the conditions for integrating decision-making on real estate and mobility are

Goal

"To explicate current decision-making on mobility and housing programming and investments, and to stimulate further integration of this decision-making"

- Simulate decision-making with a serious game:
  - It is real, not a game!
  - Different levels: local, regional, national
- Assess tradeoffs between land use and transport indicators
- Reveal argumentation for investment decisions

Research design: Serious Game

- Combine information on housing and mobility plans in province of Noord-Holland
- Build a game structure for programming investment decisions around 4 indicators
    1. Market balance: supply and demand of housing
    2. Accessibility: change to accessibility due to investments/plans
    3. Finances: sum of revenues (housing) and expenses (mobility)
    4. Spatial goals: degree to which TOD and redevelopment goals are reached

Case region of Zaanstreek-Waterland

Research design: Serious Game

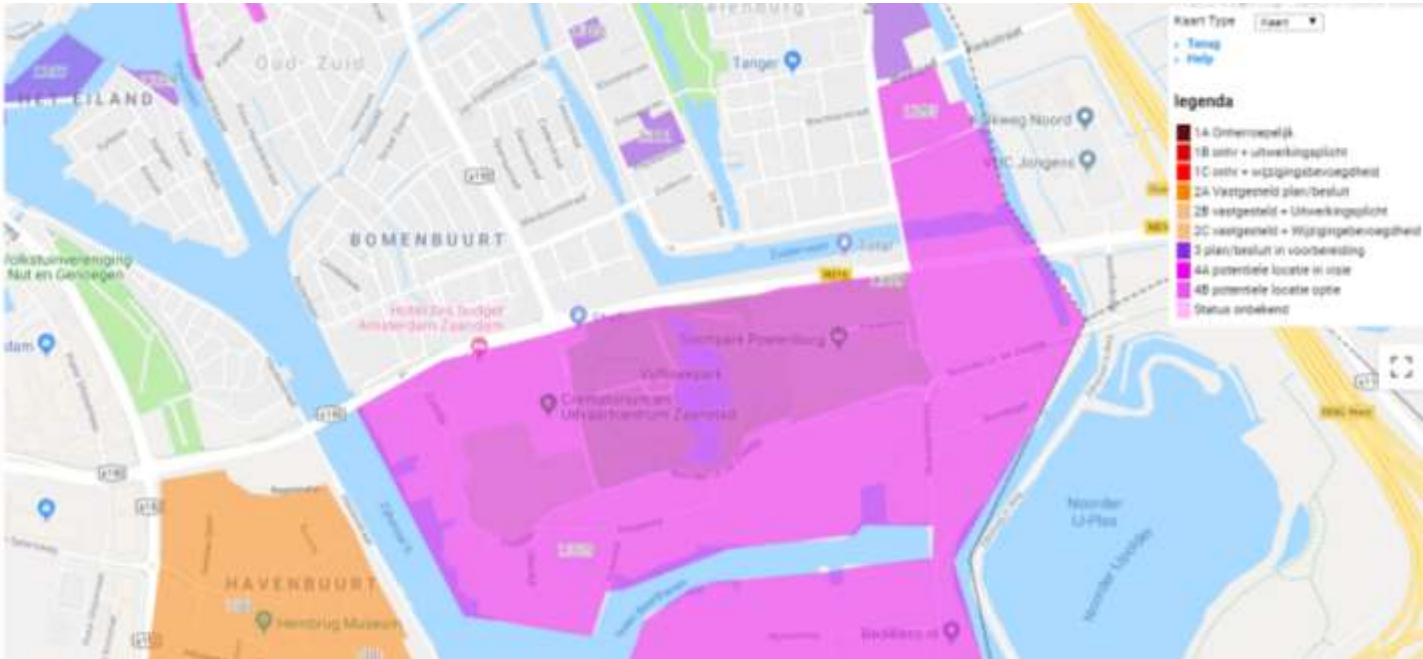
- Combine information on housing and mobility in province of Noord-Holland
- Determine development program voor Zaanstreek-Waterland

But:

- No scripted players
  - Players are free to behave as they would like
- No fixed end goal or total score
  - Players can make their own tradeoffs of goals

Data

- QGIS with Python plugin: real estate and mobility models
- Based on:
  - Ministerial Long-range investment programs for transport infrastructure (until 2030)
  - Provincial mobility and infrastructure plans
  - Provincial inventory of housing development plans



Game facilitation

- 2D Maptable
  - 6-8 participants
  - Direct and inclusive negotiations
  - Link arguments/reasoning to GIS features
- Policy-makers, politicians, mobility experts, real estate experts, developers, etcetera

User Interface

Preliminary results

Increases transparency of decision-making

- Mobility and housing in one overview
- Local and regional level
- Financial consequences of development decisions
  - Housing costs and revenues are more transparent than mobility
  - Raises the issue of compensation between municipalities

Preliminary results

- **Priorities of indicators**
  - 1) Market balance (housing demand minus supply)
  - 2) Accessibility
  - 3) Finances
  - 4) Spatial goals

- **Expert player vs. Decision-maker player**
  - Data and indicators are interpreted in several ways

Lessons: Game design

- **How ‘serious’ can you make a game?**
  - Continuous change: new developments, new actors, new insights, new indicators, new plans
  - Find a balance or else games will be
    - obsolete for policy-making, because new developments are not taken into account
    - will never finish, because new developments have to keep being included in the game

Lessons: Game results

- **Tension between upscaling and implementation of game**
  - Transferring game to other spatial contexts requires generalizations in development (same structure, same information, same players)
  - Generalizations lead to loss of localized information and limits the ‘seriousness’ of a game
  - Strike a balance between locally grounded ‘seriousness’ and transferability of a game

- **Can game experiments really fail?**
  - It is not about the result of the game, but about the interaction between players
  - Participation indicates that organisations are willing to improve
  - But, how are lessons learned applied in daily practice?

Questions?

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