

TU/e technische universiteit eindhoven SimLandscape

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A method to generate plausible land-use plans and related landscape designs

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Challenge

Modern strategic spatial plan-making processes are complex: e.g.

- problems to solve are complex (living, mobility, water, nature, socio-economic and agriculture)
 - plan making vs. realisation
 - regional planning level
- different stakeholders/actors (specialists vs. specialists and specialists vs. laymen)
- disconnection (digital) planning support systems & (simulation) models & users
- participation and communication support (specialists vs. laymen) by using plan/design visualisation and evaluation

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Main research objective

...to **develop** and **test** a **method**, which generates plausible **land-use plans** and related **landscape designs** using user-defined **types**, as a tool for **participatory spatial plan-making** processes.

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Spatial Planning Process

```

    graph LR
      A[Define Planning problem] --> B[Research plan area]
      B --> C[Develop Plan(scenarios)]
      C --> D[Decision-making]
      C --- E[design]
      C --- F[evaluation]
      D --- G[design]
      D --- H[evaluation]
      I[global] <--> J[local]
      E --- I
      F --- I
      G --- J
      H --- J
  
```

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Main concepts SimLandscape

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Global planscenario

-current: zones + informative text (and often there it stops...)
 - future: zones + related zone types

identify useful attributes

- Name
- Target description
- Economic function
- Associative photos
- Layout quantity ind. to evaluate (numbers or parcel types)

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Local planscenario

-current: architectbureaus design locational examples on demand
 - future: manually & semi-automatically layout simulation within process

manually

semi-automatically identify useful parameters?

parcel design by user (bottom-up) or parcel type design by user (top-down) parcel layout or group of parcels (f.e. new industrial terrain)

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Local planscenario

occupation -> layout-objects/parcel components

- buildings (shape)
- land-cover (shape)
- trees (shape/points)

networks -> layout-objects/parcel components

- roads (lines/networks)
- waterbodies (lines/networks)

substrate -> physical layer

- soil
- water
- etc.

source: <http://www.ruimtexmilieu.nl/>

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Local Planscenario (locate shapes – buildings & trees & landcover)

parcel type + parcel geometry

adjacency + distance

Empty parcel Initial allocation Final allocation

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Continue...

- extend method to locate sub-networks (lines)
- verification of results
- extend method to generate 3d-objects
- verification of results
- extend method to locate parcel types on higher design level
- verification of results
- validation of results in specific case study
- validation about how the type-editors are perceived
- validation of results to IMRO