



# **An introduction to Movici**

Modelling and Visualization of Critical Infrastructure

# About me

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# Introduction

→ Infrastructure providers shift views on their role in society

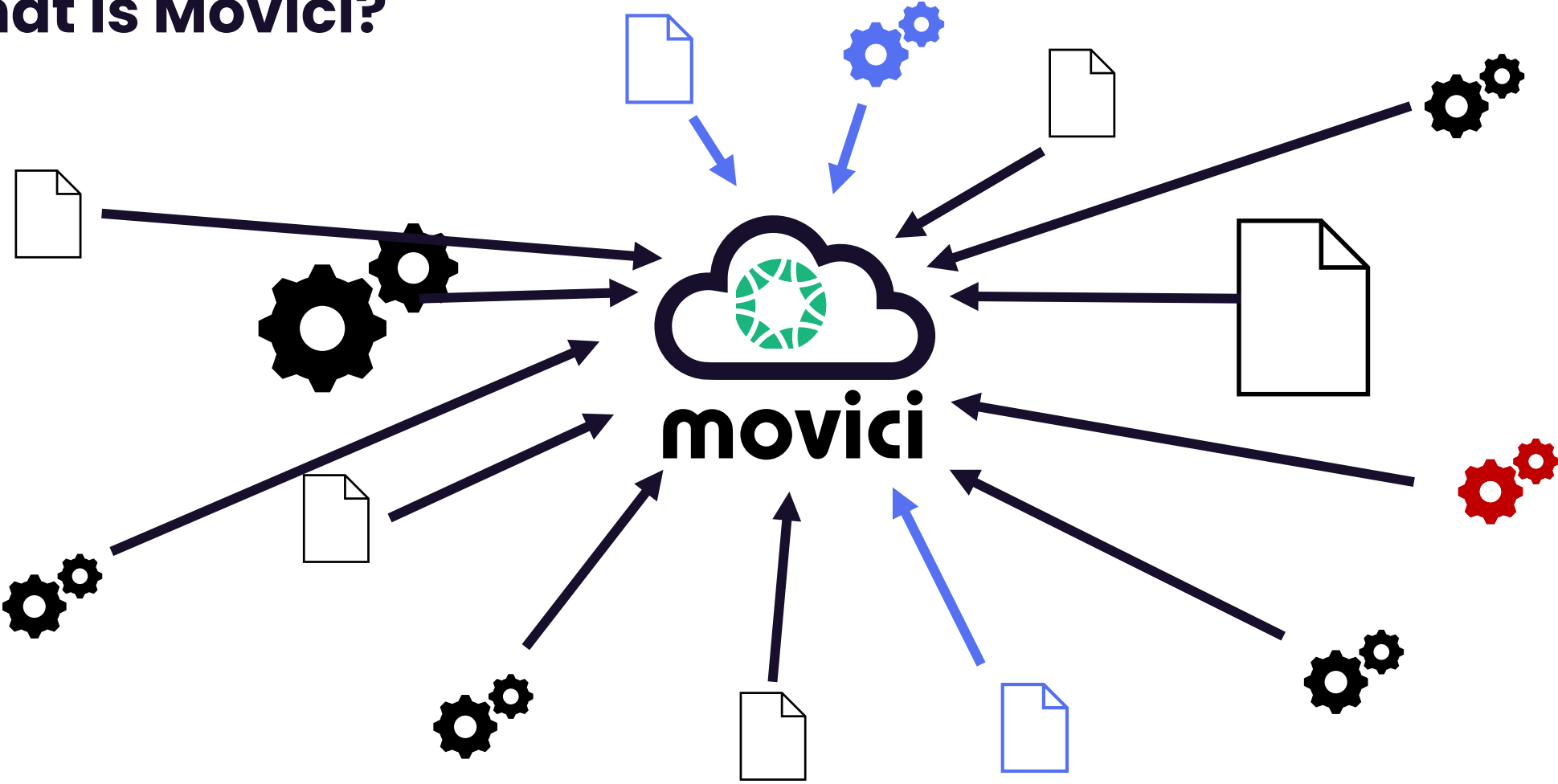
Historical	Next generation
Support economy (GDP)	Societal perspective Comprehensive wellbeing
Contained in a single network	Interaction between networks

→ Increase in complexity

# What is Movici?

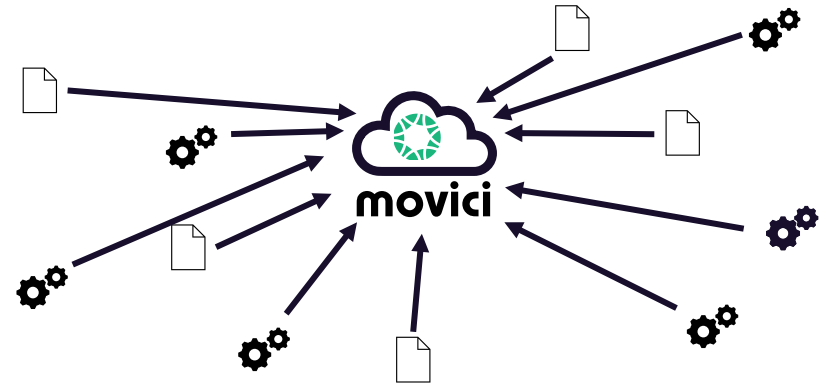
- Modelling and Visualization of Critical Infrastructure
- Extensible platform
  - Combine (calculation) models and data

# What is Movici?



# What is Movici?

- Modelling and Visualization of Critical Infrastructure
- Extensible platform
  - Combine (calculation) models and data
  - Perform analyses (simulations)
  - Visualise results
  - Web-based
  - Export results for further analysis
- Generic tool for analysing specific problem statements



# Scenario based simulations

→ “What if”

→ What if “this” investment is made in 2030?

→ What if there are dig activities between May and June?

→ What if there’s a flooding?

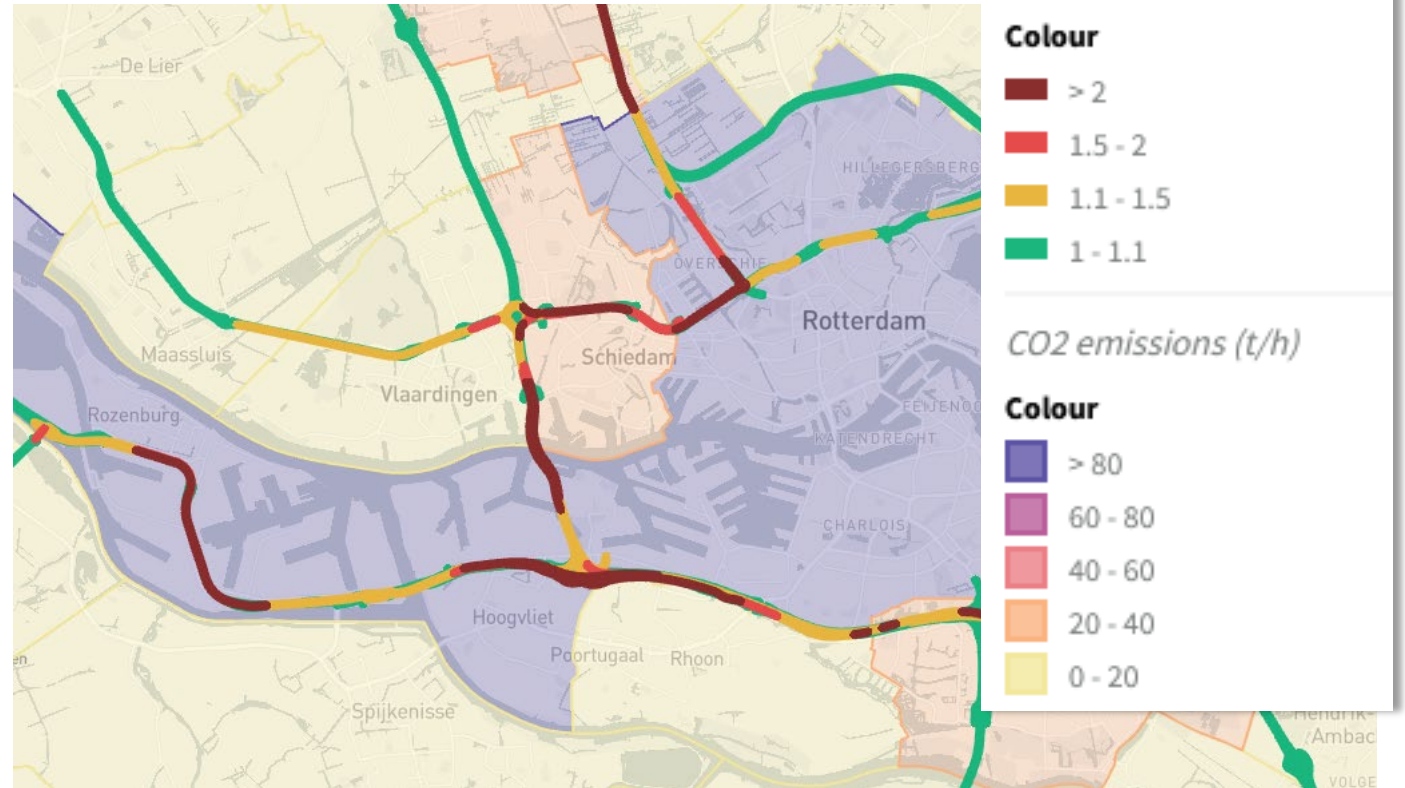
→ What if all energy becomes green in 2050?

→ Time line

→ Various time scales (minutes, hours, days, months, years)

# Long term traffic simulation (RITRI)

- Scientific research<sup>1</sup>
- Prediction of multimodal traffic demand
  - Roads, railways, waterways
  - Socio-economic changes
  - Investments
  - Assessing road usage, congestion, emissions

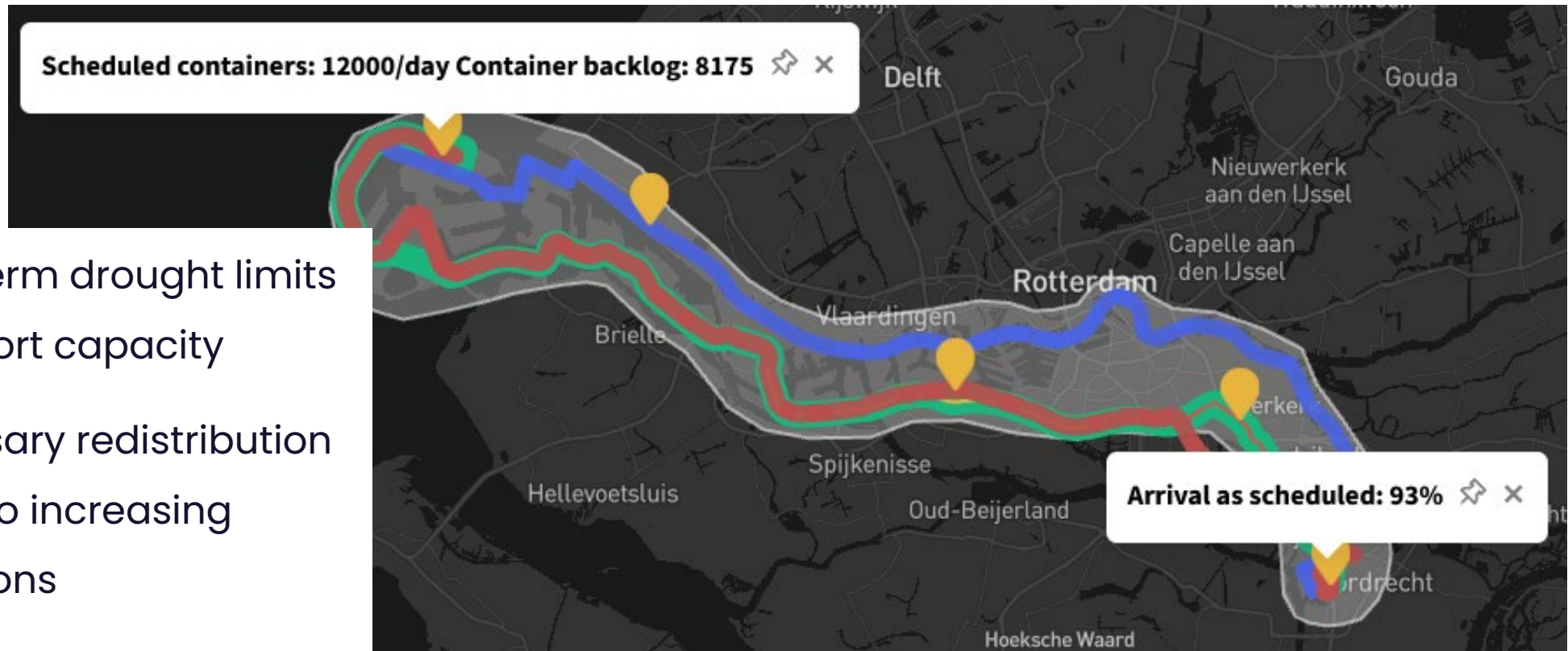


<sup>1</sup>Asgarpour, S., Konstantinos, K., Hartmann, A., and Neef, R. (2021). Modeling interdependent infrastructures under future scenarios.



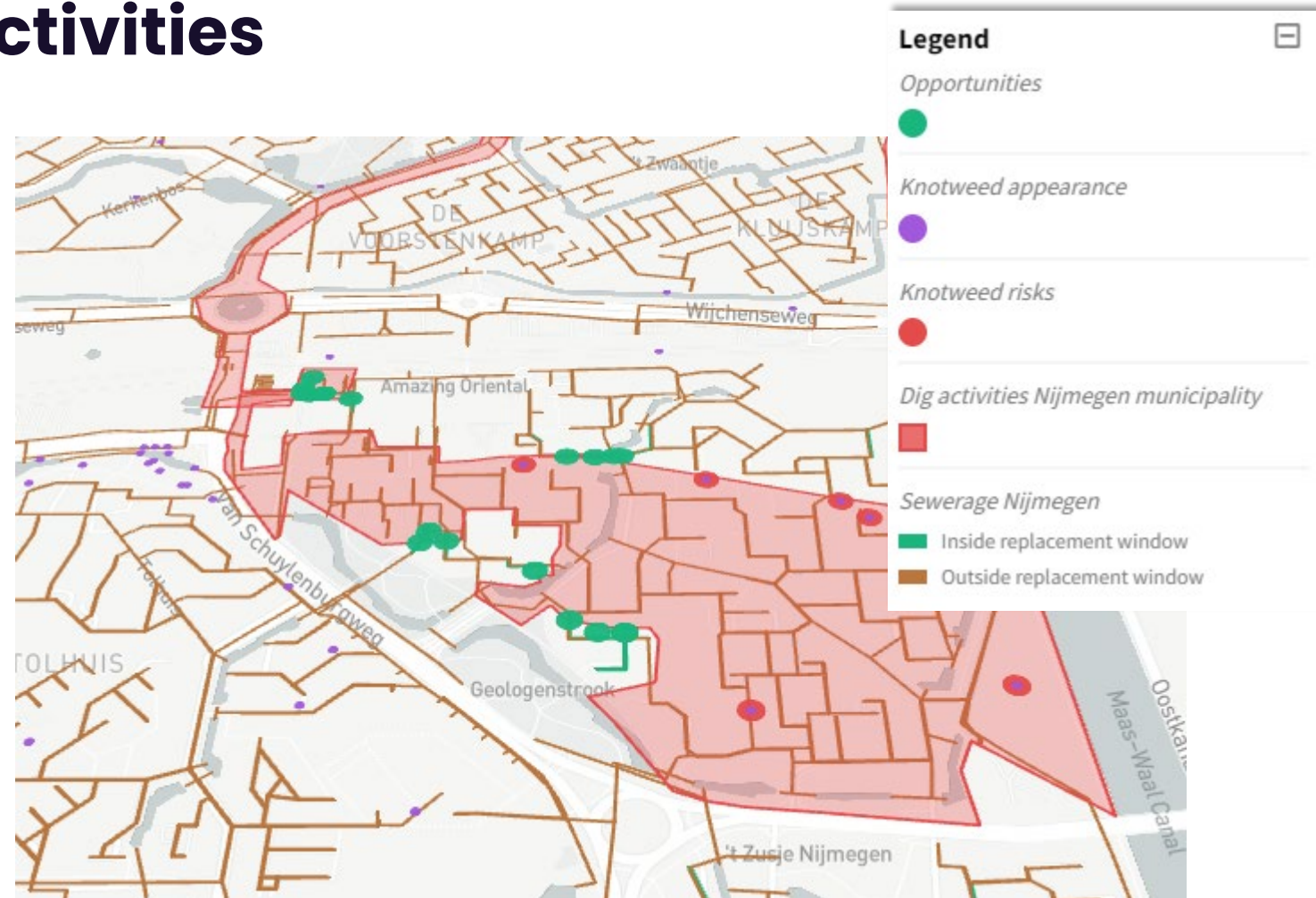
# Effects of drought on freight transport

- Long term drought limits transport capacity
- Necessary redistribution leads to increasing emissions



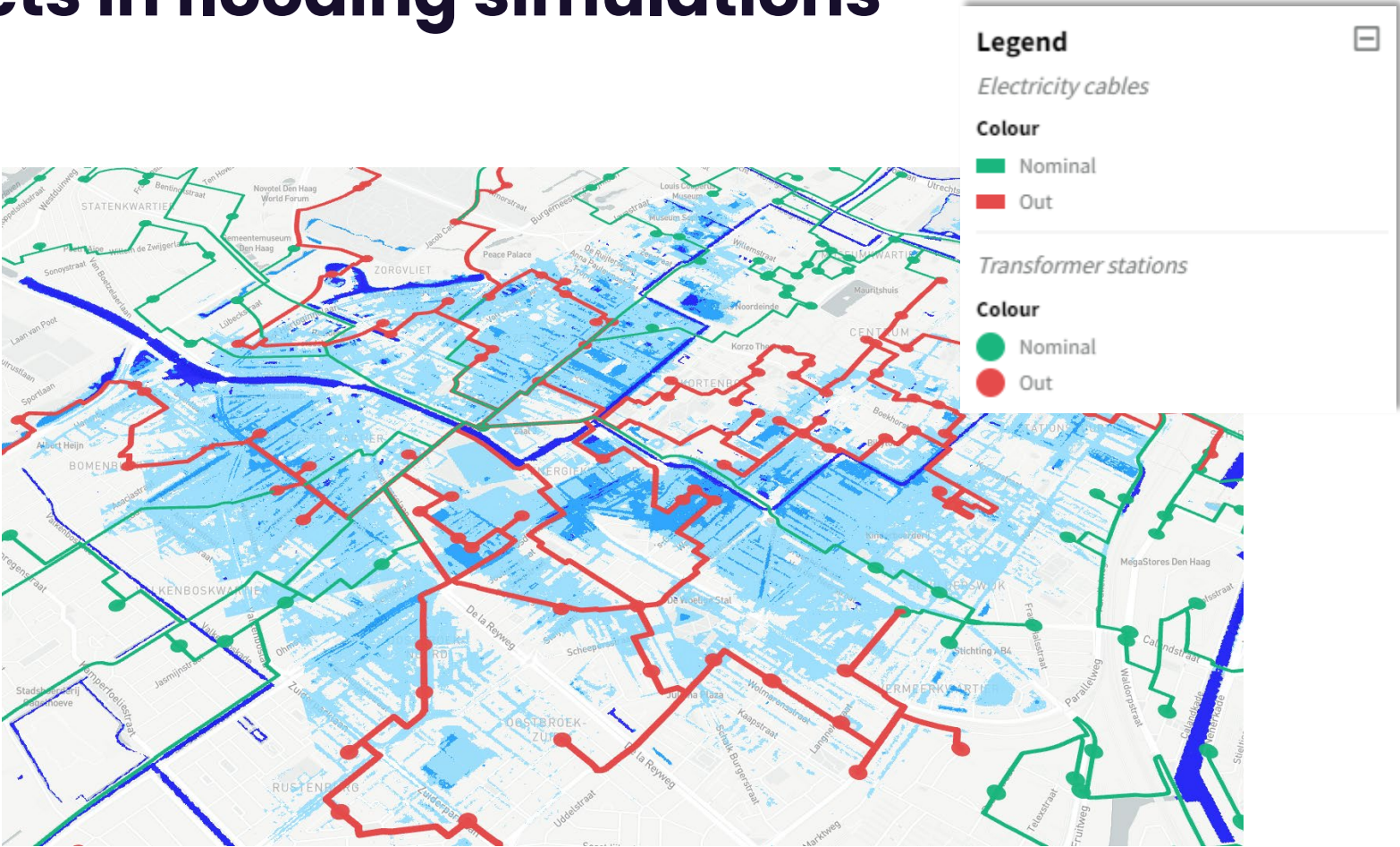
# Optimizing dig activities

- Combine cable/pipe replacement plans
- Detect opportunities for joint efforts
- Detect nearby risks



# Cascading effects in flooding simulations

- Flooded roads
- Evacuation
- Power outage
- Telecom outage





# Usage

- Policy/decision making
  - Liveability
  - Investment planning
- Requirements
  - "What if"
  - Time
  - Physical objects / localized effects

## Next up...

- Connecting partners
- Open source release for scientific users
- Building a model library

**Questions?**