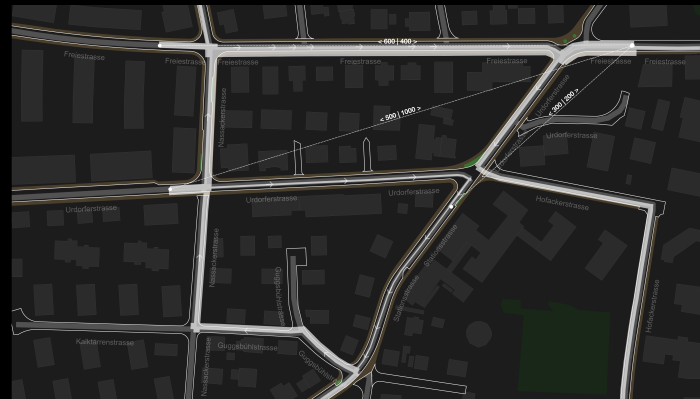
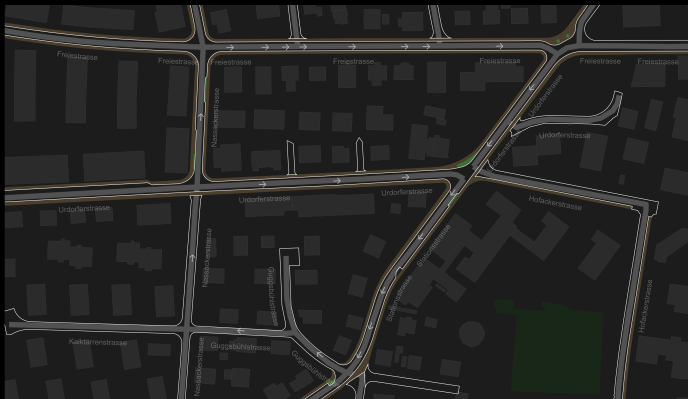


USE CASE

Network Redesign

Road space allocation & modal scenario analysis



WHAT IS NETWORK REDESIGN?

Network redesign is a strategic planning study that analyses how street space and the street network are allocated between transport modes — and what alternative allocations are possible within the existing network. Depending on the scope, it may take the form of a general transport plan, a sectoral transport plan, or a network-level scenario study examining the effects of modal rebalancing and new infrastructure.

Network redesign is used by municipalities, planning authorities, and engineering firms working on sectoral transport plans, urban mobility strategies, or construction management studies. Typical users include cities developing general transport plans, regional transport authorities preparing sectoral plans, and public agencies managing large-scale infrastructure programmes.

- How is road space currently divided between motorised traffic, cycling, public transport, and pedestrians?
- What alternative network configurations are feasible within existing street widths, and how do they compare on key metrics?
- How does a proposed change — a new cycle network, a bus stop reconstruction programme, a shift in mode priorities — affect accessibility, network coherence, and the broader transport system?

OUR SOLUTION

The agentic system automates the generation and evaluation of road space allocation scenarios. Planning teams use its outputs to explore a wide range of alternatives quickly, with the heavy analysis work executed in the background.

Our agentic system delivers:

WHAT YOU RECEIVE

- **Precise network model:** A lane-level digital model of the road network for the study area, generated automatically from public data sources (OpenStreetMap, aerial imagery, cadastral plans) and enriched with client data where available
- **Alternative scenarios:** Multiple road space allocation alternatives per street or network section, each with a consistent cross-section and network-level properties
- **Network metrics:** For each scenario, quantitative indicators including share of road space per transport mode, total length of cycling infrastructure, detour factors, and network coherence
- **GIS-exportable outputs and slide decks:** All results delivered as geodata and a presentation-ready slide set

ANALYTICAL PROCESS

1

BASE MODEL

The agentic system runs on a logically consistent spatial model of the built environment. For network redesign use cases, the base model represents the street network and public space at lane level (geometry, widths, connections, and key constraints), and can be extended with client-provided datasets where available.

2

SCENARIO CONSTRAINTS (USER-DEFINED)

The user defines the scenario constraints to be modelled — for example priority cycling variants, modal rebalancing options, or design constraints. Fixed constraints such as protected elements, no-go zones, and third-party project interfaces are incorporated.

3

SCENARIO GENERATION

For each scenario, the agentic system computes consistent road space allocations across the network: adjusting lane widths, reassigning lanes between modes, and verifying that minimum operational widths are maintained throughout.

4

NETWORK METRICS

Each scenario is evaluated against a standard set of quantitative indicators:

- Share of road space per transport mode
- Distribution of traffic volumes
- Total cycling infrastructure length and connectivity
- Network detour factors and directness
- Coherence and legibility of the resulting network

5

REPORT

Outputs are delivered as a slide deck plus GIS-ready geodatasets and tabular exports (e.g. Excel spreadsheets), so results can be reviewed, communicated, and integrated into standard planning workflows.

CASE STUDIES

- P0001 — Dornbirn network redesign (Dornbirn)
- P0002 — Lucerne network redesign (E-Bike City) (Luzern/Lucerne)
- P0018 — Pinneberg network redesign (Pinneberg)
- P0019 — Street networks in new residential developments (United States)
- P0037 — Serial construction (Hamburg)
- P0016 — Mobility planning (Hackney) (London, Hackney)
- P0045 — Neighbourhood network redesign for priority cycle routes (Zürich)