Cities, events, buildings, and mobility planning are implemented and planned for people. Today's technologies offer great possibilities for effective innovations and developments in urban cities.

Telia, Ramboll and KONE are able to provide effective and crucial people flow solutions for different stages of the project.

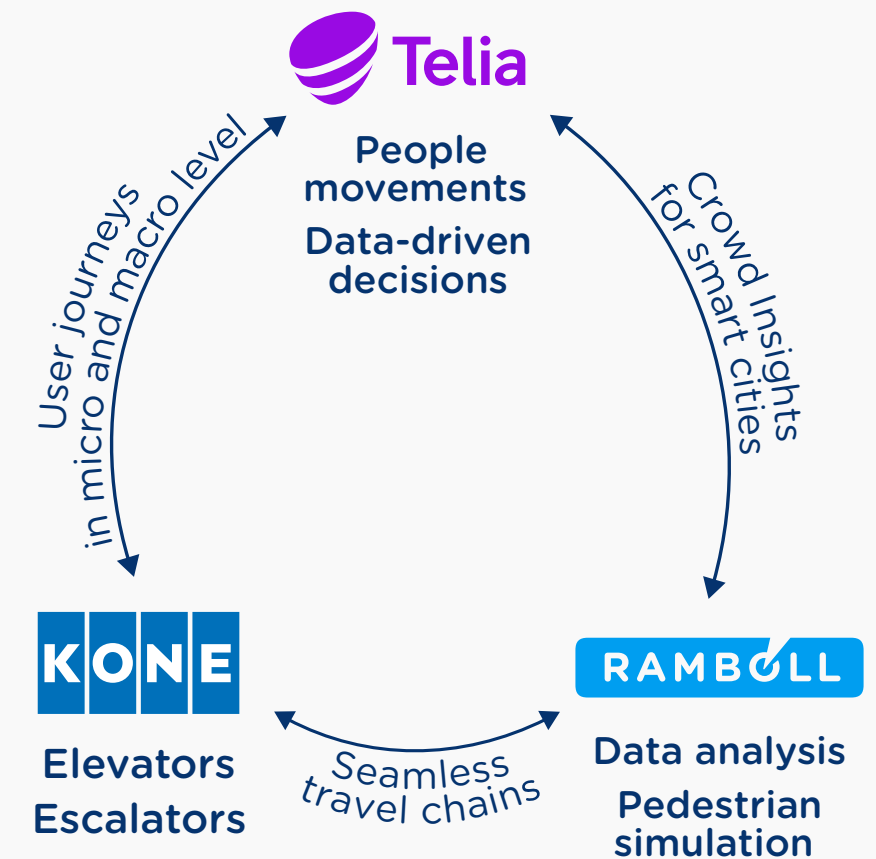# Effective people flow management solutions

Understanding mobility needs and behaviour is key to the successful planning of sustainable transport. This requires reliable and representative data and sophisticated analyses and modelling tools. Telia, Ramboll and KONE are able to provide effective and crucial people flow solutions for different stages of the project. Our services guarantees that end users – the people – are in the center throughout the project lifecycle, and the future development is planned for all user groups.

Telia Crowd Insights mobility data provides insight of people movement and can be utilised as input to many different modelling assignments and analyses. Ramboll utilises Crowd Insight origin–destination data frequently for modelling, strategic transport corridor level analyses, public transport planning, and commuter train demand analyses. Similarly, activity data is made use of for urban development, impact area, and tourism related analyses. In our analyses, we conduct

several kinds of data analyses, and for instance, measure the attractiveness and liveability of urban areas.

Pedestrian modelling is an effective way to study the movement of individual people in a defined observation area that includes many different travel modes. Macro-level travel data analyses can be used in the calibration and validation of pedestrian simulation models, with the purpose of ensuring necessary realism in the number of trips generated.

For analysing and simulating individual buildings' such as public transportation terminals, shopping centres or offices internal circulation and people flow, with real vertical transportation equipment, elevators and escalators, KONE's building traffic simulation tools and people flow consultation services help to make right design decisions early on in building planning and modernisation project.

Telia
People movements
Data-driven decisions

User journeys in micro and macro level

Crowd Insights for smart cities

KONE
Elevators Escalators

Seamless travel chains

RAMBØLL
Data analysis
Pedestrian simulation

Better decisions with Telia Crowd Insights

By measuring the movement of mobile phones between base stations in our network, we can measure the movements of crowds at different times of the day. This lets us measure for example

- How commuters travel – to improve public transport services
- Where crowds form – to help retailers choose their next location
- High emission travel patterns – to help prioritize green activities

Insights on **people movements** based on Telia's anonymized and aggregated mobile network data – since 2018
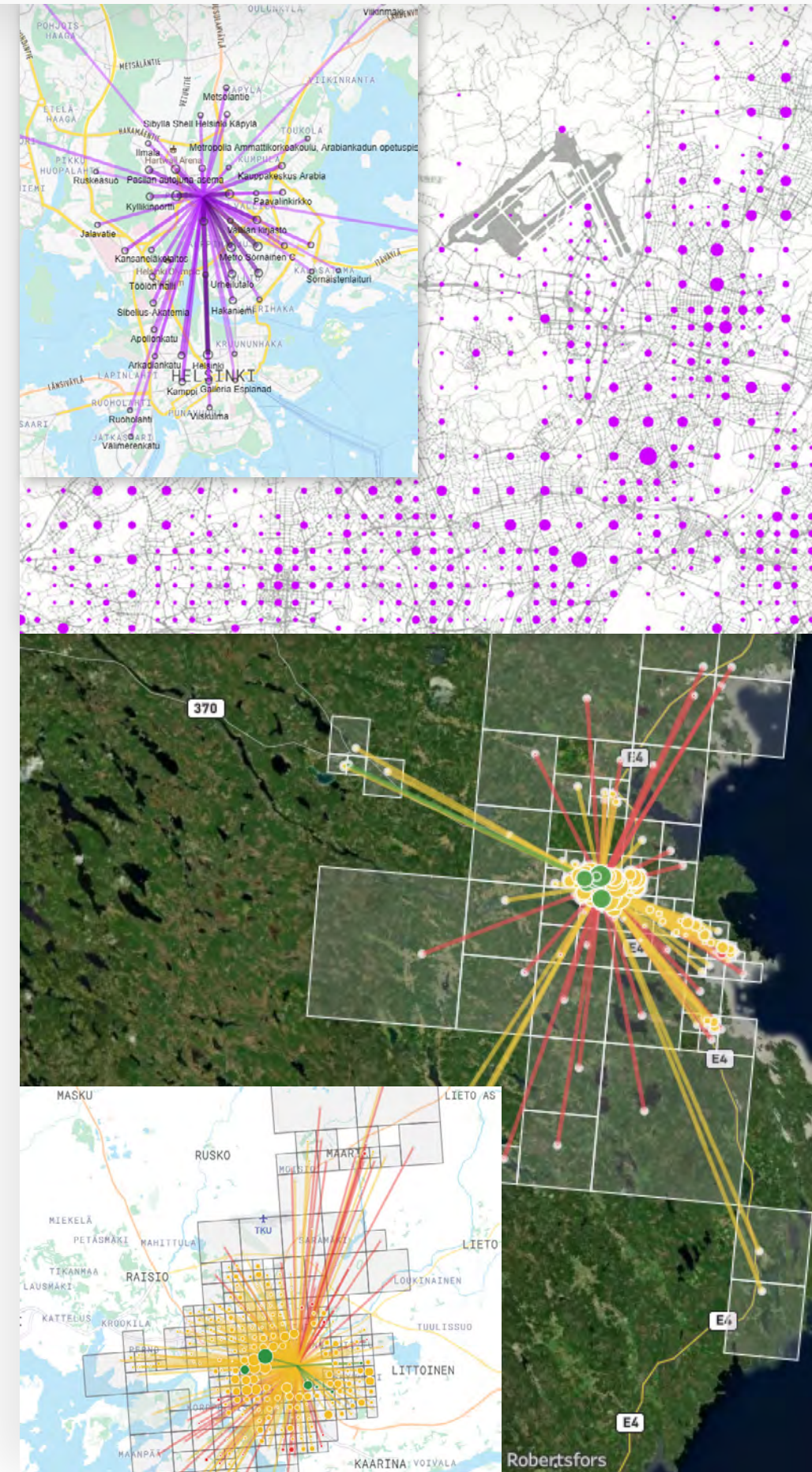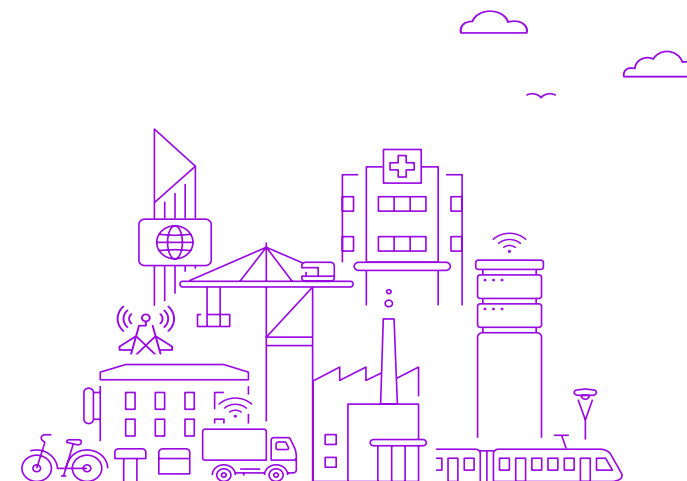
The provided insights enable decision makers to make **data-driven decisions** in many segments, such as urban planning, transportation, retail and tourism.

Understand people flows

With Telia Crowd Insights you can learn from real- world data and keep building better decisions.

- Where do people come from and where do they go?
- How many people visit the area?
- How long are people staying in the area?
- How have the visitor numbers developed?
- What is the busiest moment of the day?
- How many passers-by are there in a location?
- When do people arrive and leave?
- How do the number of visitors vary at different times of the day?

— Traffic planning

— Location planning

— City vitality development

— CO_2 calculations

— Out-of-home-media

— Travel and impact of events

— Service network optimization

— Targeting of marketing and sales

Pedestrian modelling

Pedestrian modelling is valuable tool or designing safer, more efficient, and more accessible urban environments, ultimately enhancing the quality of life for the end users. Ramboll provides pedestrian modelling services designed to offer an end user perspective, enhancing understanding of pedestrian behaviour. Ramboll's services are covering all kind of urban environments as like public transport terminals, different kind of buildings, large gathering spaces, events, attractions, stadiums, and airports.

Pedestrian simulations may answer for example these questions:

- How long will it take to pass through the facility for different connections?
- What queuing/crowding is expected at process points?
- Which is optimal number of ticket- and security gates on the area?
- Is there any risk of choke points within he facility and where are they?

- How many elevators/escalators/stairs is needed to cope with peak flows?
- What is the perfect balance between patial provision and efficient design?
- How functional constriction-time arrangements may be ensured?
- Which is the level of service on the area?

Proposed Design → Performance Data → Level of Service → Assess Choke Points → Visualize Operations → Validate Design → Optimized Redesign

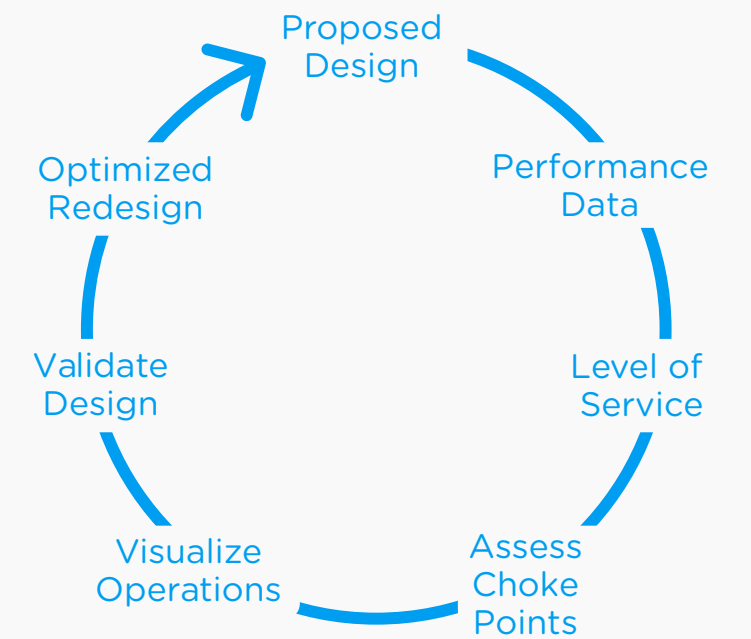| Level of service A	Level of service B	Level of service C	Level of service D	Level of service E	Level of service F
Free circulation	Uni-directional flows and free circulation. Reverse and cross-flows with only minor conflicts.	Slightly restricted circulation due to difficulty in passing others. Reverse and cross-flows with difficulty.	Restricted circulation for most pedestrians. Significant difficulty for reverse and cross-flows.	Restricted circulation for all pedestrians. Intermittent stoppages and serious difficulties for reverse and cross-flows.	Complete breakdown in traffic flow with many stoppages.

KONE People Flow Design Services

Analyze and Design seamless people flow in and between buildings with KONE People Flow services

KONE People flow design and solutions are an essential part of user experience in any building. KONE People Flow design services help you to create buildings where people move around smoothly, safely, comfortably and without waiting. We collect and analyze data and simulate real building environment to find out what works and what not – and why.

Building use and population change over the lifetime of the building and therefore it is essential to revisit the traffic analysis from time to time and assess if vertical transportation capacity is up to the requirements.

NO CROWDS	CLEAR PATHS	NO CROSS FLOWS	CLEAR GUIDANCE AND INFORMATION
OPTIMAL USER EXPERIENCE	ADVANCED DIGITAL SOLUTIONS	EFFICIENT VERTICAL TRANSPORTATION	FAST AND SAFE PASSAGE

Ramboll, KONE, Telia and Maas Global jointly organized People Flow seminar in September 2023.

Cities, events, buildings, and transportation services are designed for people, so understanding human flows enables viable and efficient development. The seminar presented into the topic from the perspectives of available information, modelling, planning, and the act of moving itself.

Link to the event page:
People Flow -seminaari 26.9.2023 (ramboll.com)

Stay tuned for what's next: we're brewing an exciting follow-up to last year's event. Want to be in the loop? We'll share more details closer to the date, but if you're eager to learn more right now, feel free to reach out to us!

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