The Mobility Policy Auto-Tuner

Lessons from AI-Informed Policy Making & The Perils of Innovation

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THE PROBLEM

The gap between many cities’ ambitious targets and their day-to-day management

Ambitious targets to reduce or eliminate CO2 in urban areas by shifting modal behavior

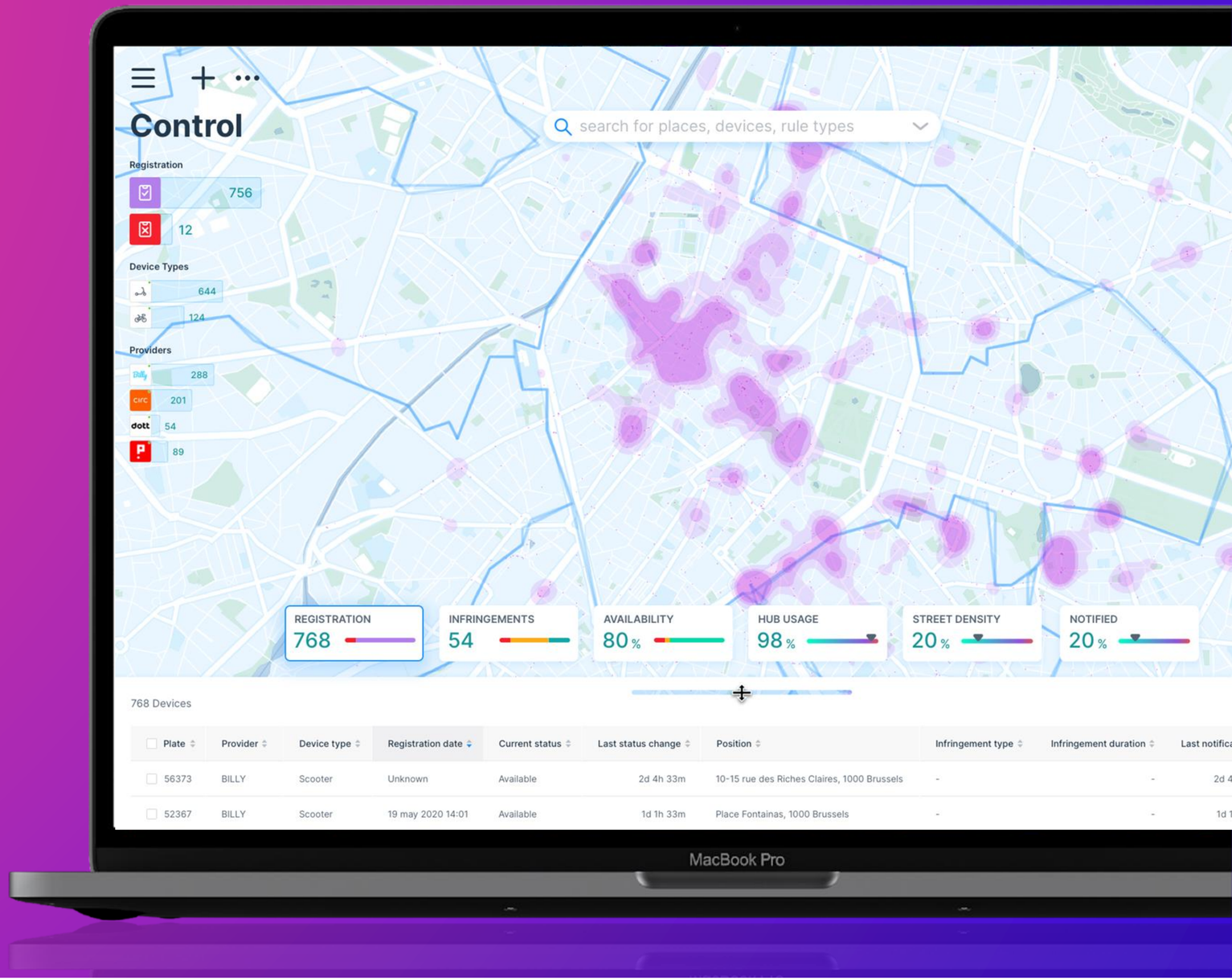
Potential for shared and active mobility to generate positive (and negative) impacts

Need to develop “muscle memory” for managing new modes

OUR SOLUTION

A tool to test hypotheses with a goal to getting impactful policies out quickly

The software solution to manage and regulate shared-mobility in cities



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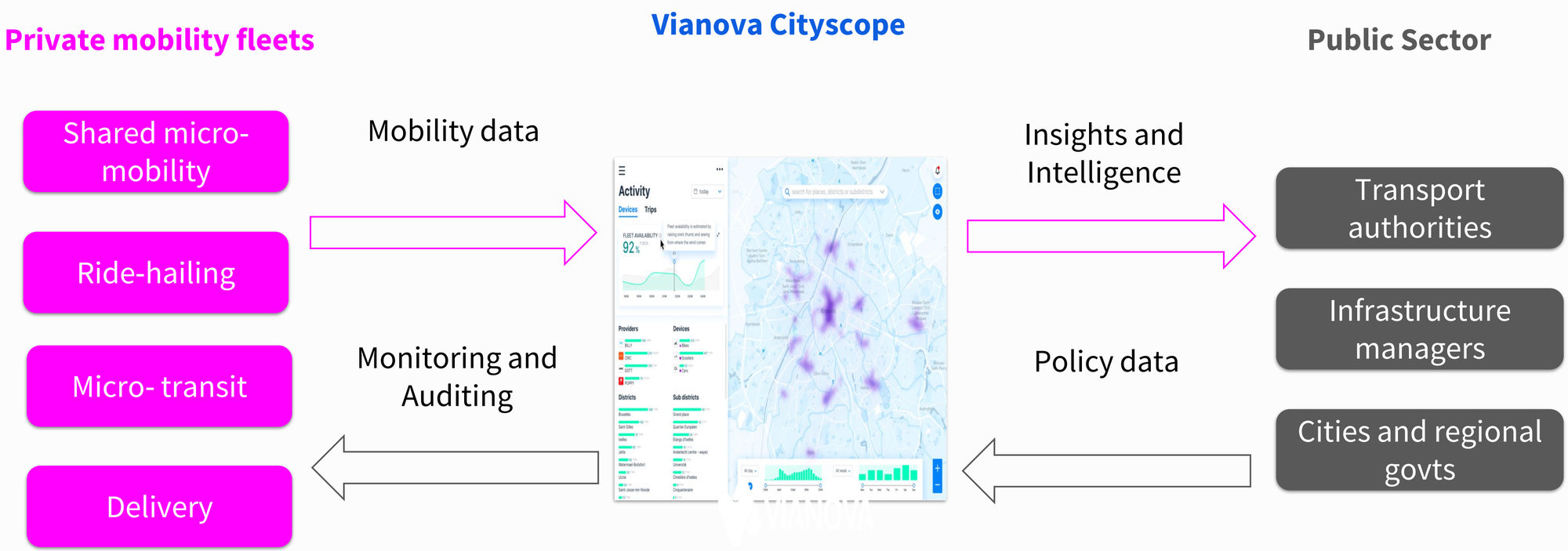
the good data to make cities greener

Aggregating mobility data and building unique insights



A standard baseline of the Co2 Impact of Modal Make-Up

Start with Existing Data:

Best- Recent travel demand survey

Good- Multimodal traffic simulation

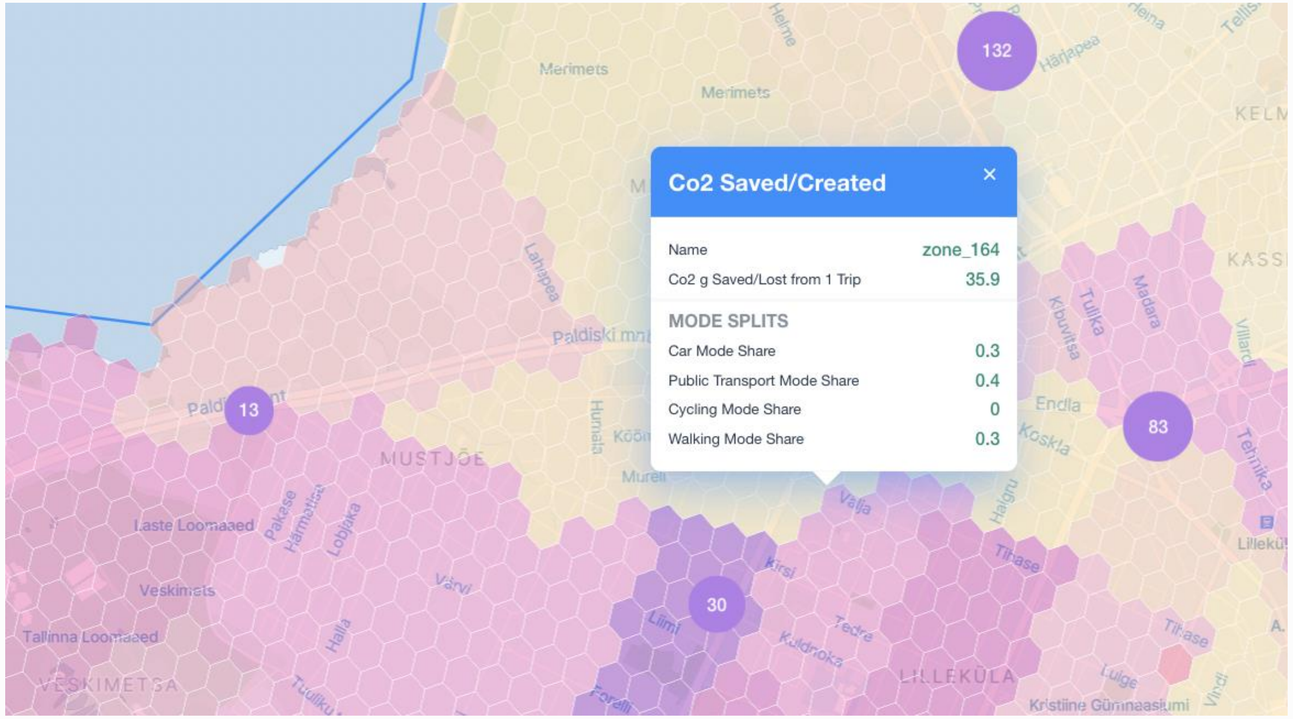
Ok- Descriptive statistics of subdistricts to benchmark

Diffuse Mode Splits to sub geographies

Use localized or standardized g/km per mode type (OECD study)

Generate an overall blended value based on weight of trip popularity

Evaluate net difference resulting from a trip on a shared electric device vs the existing modal mix



An Annual Predictive Model

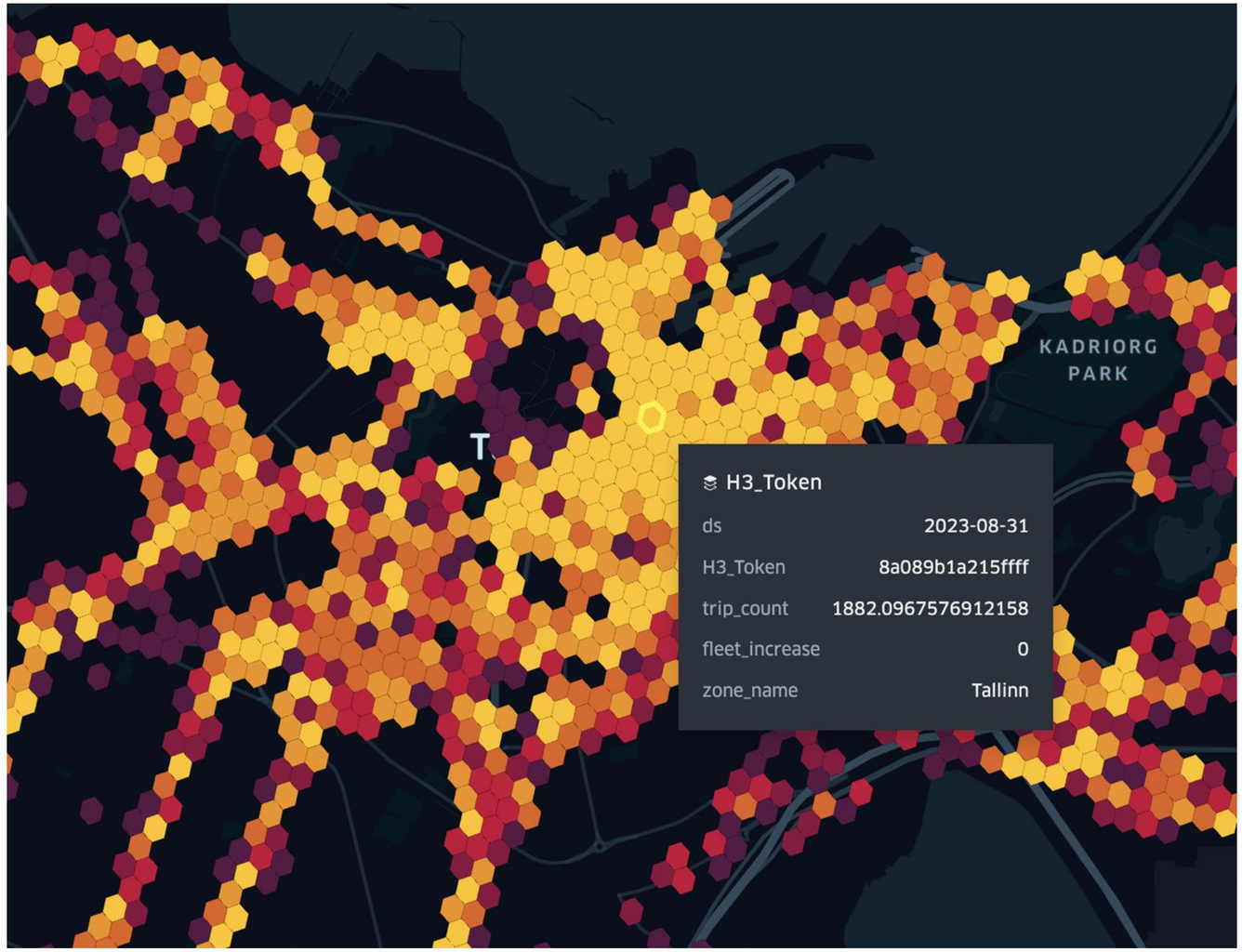
Start with Existing Data:

Historic observations of vehicle locations, trip distances, trip counts
MDS (preferred) or GBFS

Considered several different forecasting methods before deciding on Prophet

Model in the same geographies as Co2 layers for consistent results

Forecast total device hours available in a hex each month and the resulting count of trips



A Customizable Process for Scenario Building

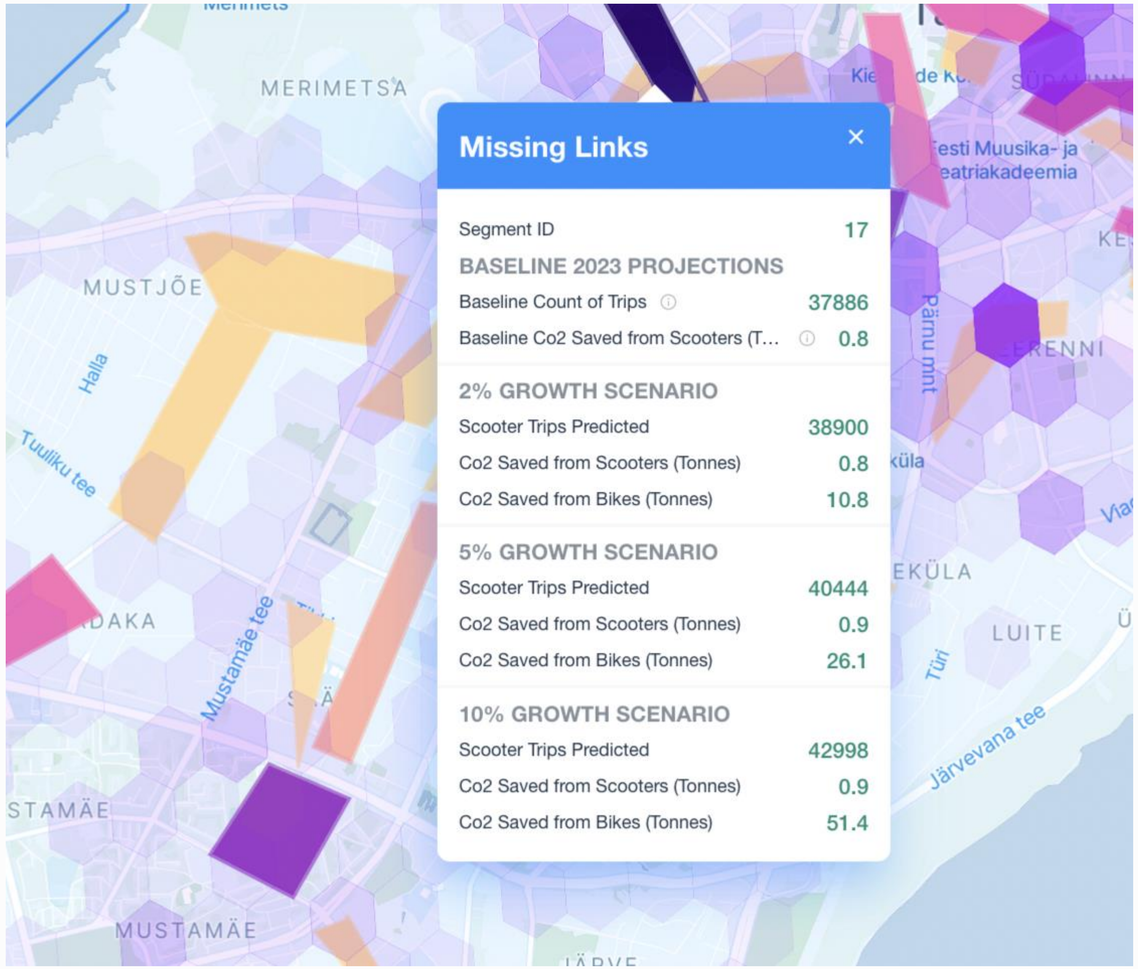
Identify the research question

Develop an approach to identifying what could happen in a zone or a corridor

Re-run the projections with the variable changed

Account for reality (optional, but suggested)

Sophistication for the model will grow over time with real world before-and-after results



What is the Co2 Impact of Filling In Missing Links in the Cycling Network?

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Co2 Approach

Work off of Tallinn's existing travel demand model
- Significant car usage for short trips citywide, very low cycling usage
- Identifying the 100 origin/destination pairs where Co2 "capture potential" is greatest

Ai Approach

Forecast trips with all available shared mobility data

Policy Simulation

Identify the existing cycling network
Potential gaps = areas with shared mobility trips along shortest path of a top 100 O/D pair without a cyclepath
Forecast scenarios where shared devices and private trips grow by 2%, 5%, 10%

	Shared Micro-mobility Usage		Private Bike Usage	
Tallinn Total Co2 Savings Potential	End of Year 1 (2023)	End of Year 3 (2025)	End of Year 1 (2023)	End of Year 3 (2025)
Low Adoption (2%)	+1.03 Tonnes	+3.17 Tonnes	+130.02 Tonnes	+401.88 Tonnes
Medium Adoption (5%)	+2.57 Tonnes	+7.94 Tonnes	+296.14 Tonnes	+915.3 Tonnes
High Adoption (10%)	+5.18 Tonnes	+16 Tonnes	+559.43 Tonnes	+1,729 Tonnes

What are the best spots to put mobility hubs to maximize the Co2 value of mopeds?

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Co2 Approach

Work off of Amsterdam's existing mode split survey info
- Majority of trips today are happening in areas where they generate more Co2, on average, than they save

Ai Approach

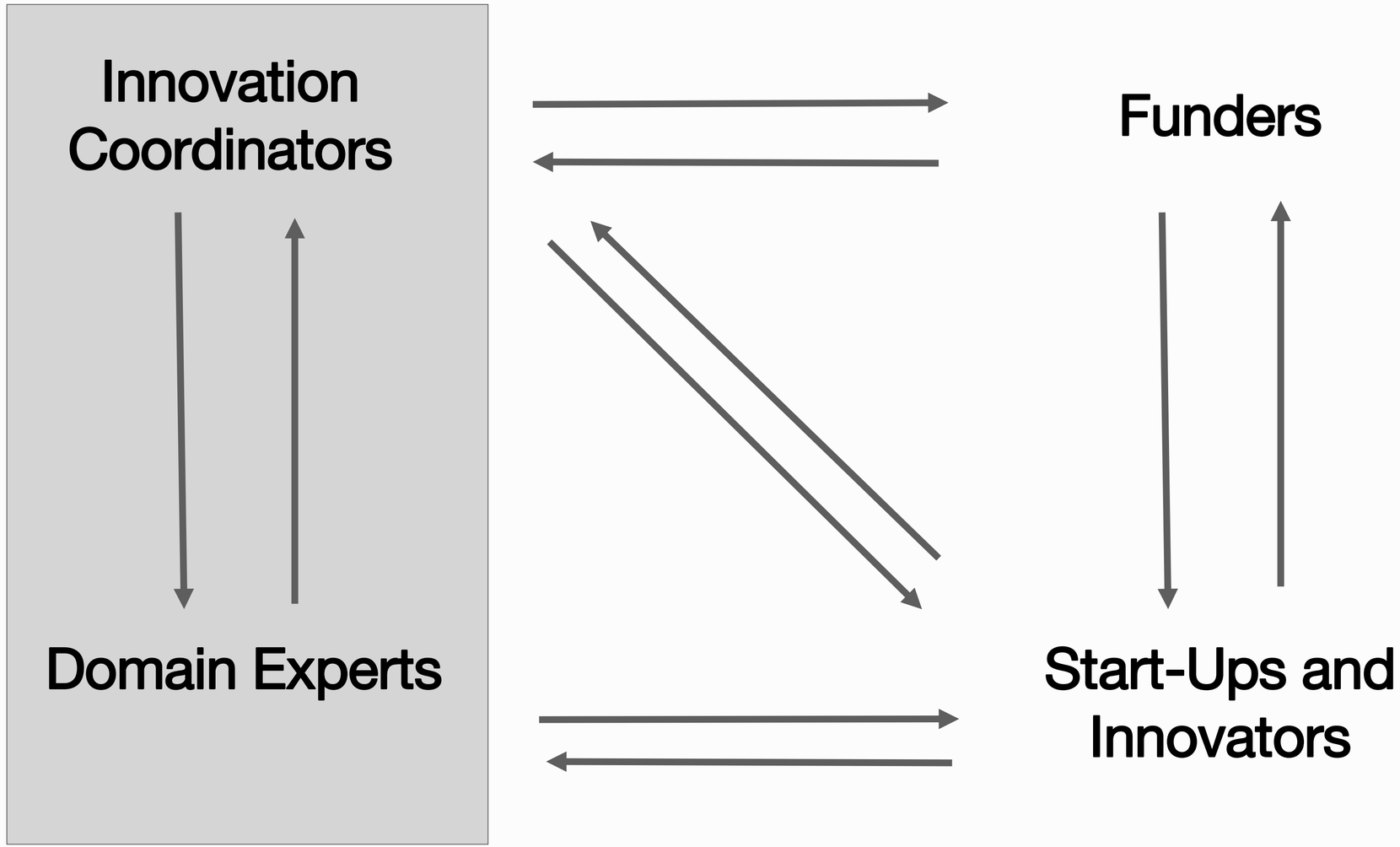
Forecast trips with all available shared mobility data

Policy Simulation

Select locations with the most Co2 savings potential (trips*distance*Co2 Savings)
Incorporate rankings for "most expected demand" to balance priorities and assume an aggregation effect
Forecast the effect of a 25%/50%/75% increase in device availability

Amsterdam Total Co2 Savings Potential	End of Year 1 (2023)	End of Year 3 (2025)
Baseline Co2 Avoided (No change)	33.62 Tonnes	83.92 Tonnes
Total Co2 Avoided, 30 Small Hubs (25% fleet Increase)	+4.85 Tonnes	+17.72 Tonnes
Total Co2 Avoided, 30 Medium Hubs (50% fleet Increase)	+9.96 Tonnes	+35.47 Tonnes
Total Co2 Avoided, 30 Large Hubs (75% fleet Increase)	+14.6 Tonnes	+52.79 Tonnes

How Do We Innovate Better?



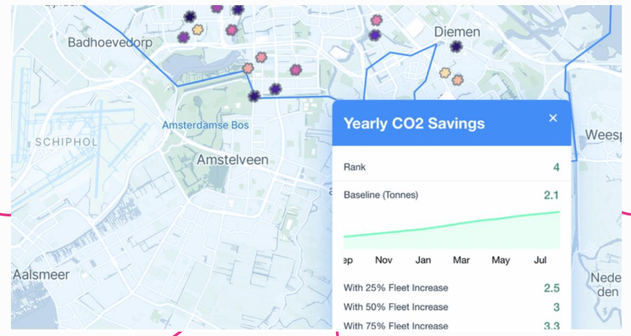
The Bigger and Better Questions Out There

“How much Co2 will increasing bus frequency save?”

“How do we get shared mobility to net co2 neutral in 5 years?”

“What is the sustainable RoI for this new tram line?”

“Where should we be offering incentives for carshare?”



“What would the Co2 impact of doubling parking fees here be?”

“What districts are generating Co2 above the per capita average?”

“How much Co2 is the personal transport system generating this year?”

“Can improving walking infrastructure generate Co2 savings?”

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Download the MPAT brochure

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Mobility Policy Auto Tuner

The Opportunity

As cities try to accelerate their efforts to reach carbon neutrality, it becomes increasingly critical that they can measure the effectiveness of new policies and processes designed to produce sustainable outcomes. Today, this *"carbon accounting"* requires significant effort, cost, and time, blunting its effectiveness.

The Mobility Policy Auto Tuner (MPAT) tool seeks to expedite decision making and policy evaluation by using Machine Learning and statistical analysis to produce fast yet reliable modelling of impact, particularly of CO2 reduction. We offer a no-code experience to identify the potential impact of a policy prior to implementation, and to monitor the results after implementation.

The first pilots of the project test the optimal approaches to managing shared and micro-mobility. Rather than focusing solely on *"mitigating the bad"* aspect of shared mobility, the MPAT tool helps cities *"optimize the good"* by setting policies to maximize positive benefits such as CO2 reduction.

The Team

ABBEL

- Dutch-led, global strategic advisory firm specializing in Big Data
- Global experience in public transport and ticketing
- Expertise in climate accounting and strategic planning for cities looking to meet their sustainability targets

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- France based mobility SaaS start-up
- +60 clients across Europe and overseas using our platform to manage shared mobility services
- Expertise in GDPR-compliant mobility data management and analysis
- +25 employees with backgrounds in software, urban planning and transport

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The good data to make cities greener

Vianova enables cities, infrastructure owners and transport providers to better integrate and manage connected, shared and autonomous mobility in the public space. Our mobility intelligence platform helps multiple clients foster greener and safer streets while optimizing their operations' economics.

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Thank you!

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