Generator framework for stress test scenarios

Traffic managers need to know how their multimodal traffic system behaves under pressure - whether from a sudden surge in demand, an infrastructure failure, or a disruption to public transport services. It is often difficult to predict how such situations interact across transport modes, or where small issues may escalate into major network failures. Without systematic stress testing, vulnerabilities remain hidden, and operators' risk being unprepared for real-world disruptions.

What is the product?

We propose a **generator framework for stress test scenarios** that provides a structured approach to addressing this challenge. It enables the systematic creation of diverse and realistic disruption scenarios, which can then be analysed using simulation models.

Through this process, the framework helps identify critical weaknesses in the system, assess the robustness of traffic management strategies, and determine which factors have the greatest impact on performance metrics such as travel time or network stability. By making vulnerabilities explicit, it supports more informed decision-making and more effective preparation for real-world events.

Who is it for?

The framework is particularly relevant for:

- **Transport authorities** that aim to assess system vulnerabilities, test traffic management strategies, and prepare for disruptive events before they occur;
- **Transport planners** that seek to evaluate infrastructure changes, policy measures, and long-term resilience under a wide range of stress scenarios;
- **Transport modellers and analysts** that want to generate, simulate, and analyse realistic disruption scenarios in a structured and systematic way.