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SMART CITY CHALLENGE 2025
Solution idea for the city challenges

Max 3 pages
send to smartcity@taltech.ee by Nov 30, 2025

Solution Idea Title (max 5 words, no acronyms) - Gamified & Safer School Journeys
Planned pilot project duration – 24 months
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1. Which urban challenge or problem are you planning to provide a solution to?

- Which city challenge/-s proposed by the cities / counties you are targeting? NB! Please choose one from the list of urban challenges chosen for the Smart City Challenge 2025, i.e. Round 5.

  "Safer and Smarter School Mobility"

2. The solution you are proposing

- **What is the solution you are proposing for the challenge above?**

Morning school drop-offs create congestion, safety risks, and air pollution in urban areas. Traditional infrastructure (drop-off zones, speed bumps) has proven insufficient to change mobility habits. Cities need real-time data, digital incentives, and smart monitoring tools to encourage independent, active travel among schoolchildren.

WeRide.Today addresses that gap by supplying the behavioural layer the city is missing. It is a mobile app that turns the school commute into an activity children want to participate in, using rewards and friendly competition to make walking and cycling feel natural. At the same time, it gives parents real visibility into actual route conditions, thanks to community-sourced hazard reports and live route information. And for the municipality, WeRide.today delivers the monitoring and analytics needed to manage school mobility actively rather than reactively.

The result is a system that complements traditional infrastructure with the digital intelligence the city has been seeking. Congestion eases, routes become safer through data-driven improvements, children gain independence, and parents gain confidence. It's a practical step toward the long-term shift in habits that Cēsis is aiming for.

WeRide.Today is a fully functional, market-ready mobile platform that provides the core digital tool, gamified campaigns (like Bike2Work), and the behavioral framework needed to address Cēsis' core challenge: shifting deeply ingrained mobility habits away from car dependency toward independent, active transport for school commutes.

We believe the most impactful approach for this Challenge is to leverage our live data and technology platform as a "Living Lab" for rigorous academic inquiry. The goal of our joint effort with Researchers is to identify what drives consistent participation, what discourages it, and how we can design smarter engagement strategies by combining our user data with external factors like weather, air quality, and infrastructure density.

- How does it solve the city challenge you target?

The WeRide.Today platform solves this by deploying a Gamified Mobility Feedback Layer:

- **Real-time Safety Mapping** (The 'Hints' Feature): Children, parents, and school staff use the WRT app to crowdsource geolocated micro-reports on hazards, broken pavements, or near-misses on the school route. This provides the municipality with real-time, hyperlocal safety data for immediate action, addressing the infrastructural blind spots.
- **Behavioral Change & Digital Incentives**: The platform uses gamification (badges, personal goals, and school/class leaderboards) to actively reward walking and cycling trips. Challenges, like 'Bike to School Week,' are run via the app, motivating children and providing data-backed evidence of modal shift.
- **Data-Driven Planning for cities/ neighbourhoods/ municipalities**: The platform provides urban analytics that translate raw trip and hazard data into actionable KPIs (e.g., CO_2 savings, most dangerous intersections, preferred quiet routes) to inform targeted infrastructure investments and measure the impact against Cēsis's sustainability goals.

3. Innovation and piloting of your pilot solution.

- What are the best solutions available now that solve the challenge you target? (There are some solutions there for sure) How will your solution be better? What is the innovation in it?

Traditional solutions are global fitness trackers (like Strava) or static city reporting apps. They focus on performance or general complaints, not on hyperlocal, preventative school-route safety data or behavior change via gamification.

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The innovation of WeRide.Today is its identity as a Civic Engagement and Sustainability Tool rooted in data sovereignty.

- ❖ Differentiation: Unlike global apps, WRT offers real-time hazard layers, municipal planning dashboards, and custom corporate/school gamification built for local context.
- ❖ Digital Incentives and Feedback Loops: We integrate gamification systems (like the collaboration-based 'accumulation' model) to reward contributions and active travel, creating an "always-on" feedback loop that is intuitive and scalable.
- ❖ Focus on Trust: Our data governance model centers on user data ownership, anonymization, and opt-in protocols, which is crucial for building trust with parents concerned about their children's location data. This approach accelerates data sharing and citizen buy-in.

- **What do the cities need for piloting the proposed solution? How could piloting work?**

  Target Cities: Cēsis Municipality, Latvia (Primary Pilot Partner); Jõhvi, Estonia; Tartu, Estonia; Tartu county, Estonia; Saaremaa, Estonia; Linz, Austria; Lagoa, Portugal

Cēsis Municipality, and other piloting partners, will need to provide:

- **Access to School Communities:** A defined pilot area (e.g., 2-3 schools) and administrative support to engage teachers, parents, and students. Participate in cross-city knowledge exchange, provide comparative baseline data. Qualitative interviews with parents, teachers, students.
- **Data Sharing:** Existing spatial data (e.g., bike routes, POIs, speed zones) to localize the application.
- **Operational Commitment:** Designation of a lead liaison (like Ms. Jenerte's team) for data exchange, policy alignment, and advocacy.
- **Targeted Infrastructure Support:** Commitment to address the top 3-5 immediate safety hazards identified by the WRT data during the pilot phase.

- Please provide short information about the capabilities of the research and development proposed team. Your team should have members from TalTech as well for sure. In case you do not have them yet, which skills would you need from TalTech.

Tumba Solutions has 10 years of experience in complex software, mobile solutions, and mobility systems. Our capabilities include:

- Product: The WeRide.Today platform is an off-the-shelf, market-ready solution focusing on active mobility, data for action, and gamification.

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- Technical: Expertise in ICT, mobile application development (native and cross-platform), GeoJSON mapping, and distributed backend systems (as proven by our technical modernization project for WRT).
- Partnerships: This pilot brings together three essential partners who each solve a critical piece of the puzzle. Cēsis Municipality provides the real-world challenge and community access - they know their streets, schools, and families. WeRide.Today delivers the proven technology platform and mobility expertise from 10+ successful campaigns - we know how to change behavior at scale. TalTech researchers will contribute academic rigor across geospatial modeling, behavioral psychology, and smart infrastructure and that will ensure findings are publishable and replicable across Europe.

What makes this solution feasible is that we will not just collaborate - we will be genuinely interdependent. The city gets data-driven answers to their congestion problem. WeRide.Today validates our platform in a new domain with academic credibility. TalTech gains access to rich, real-world datasets that are nearly impossible to generate in lab settings. And the follower cities learn from our collective experience without bearing the risk of being first.

We would specifically need to collaborate with TalTech researchers with expertise in Data Analytics and Predictive Geospatial Modeling (e.g., to forecast where future school hazards may occur) to enrich the city-level dashboards.

Capability Area	**Expertise and Assets (Tumba)**
Active Mobility & Software Development	Over 10 years of experience in custom mobile application development (native and cross-platform) and specialized software solutions. We possess the technical staff, hardware, and specialized source code required to enhance and deploy the WRT platform.
Core Product & Digitalization	**WeRide.Today** is an established, market-ready solution for urban cycling safety, community engagement, and data collection. Our internal project focuses on **digitalizing and expanding the product's capacity** through the acquisition of distributed backend systems and web platform source code to accelerate the development of new functionalities and modules, such as gamified incentives and loyalty programs.

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Behavioral Analytics & Predictive Modeling	**WeRide.Today**: Real-world mobility data from partner organization and campaigns including GPS traces, engagement patterns, churn events, gamification effectiveness. **Tumba.Solutions will provide**: Cutting-edge AI architecture, research rigor, ability to extract insights from complex data. **Concrete Output:** Build predictive models that answer questions like "Which students are about to drop out?" or "Why did participation crash last Tuesday?" Instead of just collecting data, we create an intelligent system that explains patterns and recommends interventions—like a behavioral scientist working 24/7. **Impact for Pilot:** Municipality gets natural language insights ("Participation dropped 15% because three rainy days coincided with two safety reports near School X") instead of raw spreadsheets. TalTech researchers get validated ML models for academic publication.
Crowdsourced Data & Mapping	Proven experience with crowdsourcing tools (Hints, voting) and infrastructure for collecting rich behavioral data (routes, CO_2 saved, distance, obstacles) using Mapbox and Firebase Firestore.

While Tumba.Solutions, by leveraging WeRide.Topday, provides the core application and behavioral framework, a successful Smart School Mobility pilot that rigorously measures and analyzes habit change requires specific academic specialization from our partner, TalTech.

We seek complementary expertise in the following key areas:

Required Skillset	**Justification for Project Success (TalTech)**
Advanced Geospatial and Temporal Data Modeling	To move beyond descriptive analytics, we need support in building Predictive Geospatial Models and Spatial-Temporal Models (e.g., graph-based neural nets). This is crucial for: forecasting where obstacles or congestion might occur next week around school zones; and building multi-factor models like “commute probability as a function of temperature, daylight, and road safety perception”.

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Behavioral & Psychological Research on Mobility	Expertise is needed to apply and validate models such as the Theory of Planned Behaviour or advanced Gamification Analytics. This will help us rigorously measure which types of badges or challenges trigger re-engagement and ensure the incentives are correctly framed to maximize long-term adoption of active mobility habits by children and parents.
Causal Inference and Churn Analysis	To provide Cēsis with robust evidence of impact and address policy questions, we require support in implementing Diagnostic Models like Survival Analysis (Cox proportional hazards) to study user churn/retention , and Causal Inference models (e.g., difference-in-differences) to reliably estimate the effect of the pilot campaign on activity frequency.
Smart Infrastructure Integration	Expertise is needed to evaluate and integrate third-party sensor-based systems that make crossings safer or intelligent bike parking solutions, ensuring the WRT platform can effectively interface with the next generation of physical smart city infrastructure.

4. Expected impact of your pilot solution.

- What is the potential impact for city environments, sustainability and citizens?

For the Kids: Imagine children who actually look forward to their morning commute- earning badges, competing with friends, feeling proud of their independence. They'll learn navigation skills, build confidence, and develop habits that stick for life. Plus, they're outside moving instead of sitting in a car seat. That's not just healthier—it's how childhood should feel.

For Parents: No more frantic morning car lines. No more guilt about contributing to traffic chaos. Instead, parents wake up knowing their child has a safe, mapped route and that they're part of a community watching out for each other. The stress of the morning school run? It just... disappears. And when parents see their kids proud of cycling to school independently, that's a parenting win.

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For the City: Right now, Cēsis is making infrastructure decisions with incomplete information. After nine months, they'll have a clearer picture: "Here's where 200 kids are walking, here's the dangerous intersection they all avoid, here's where we need better lighting." Every euro invested becomes strategic instead of hopeful. And when they show residents actual data - "We reduced morning traffic by 25%" - that builds trust and political capital for future initiatives.

For the Community: School zones become calmer, quieter, cleaner. The air quality improves because dozens of idling engines disappear. Streets feel safer because more eyes are on them. And there's something intangible but powerful: when you see groups of kids biking together, chatting and laughing on their way to school, it just feels like a healthier, happier community.

The Numbers We're Targeting:

- 20-30% fewer cars in morning drop-off chaos
- 40%+ of pilot students actively participating weekly
- 50+ specific safety improvements identified for the municipality
- Measurable CO_2 reduction that the city can proudly report

But Here's What Really Matters:

A year from now, when a parent says "My kid actually wants to bike to school now," or when a city planner can point to data and say "This investment reduced congestion exactly as predicted"—that's when you know this worked. It's not just about hitting KPIs. It's about fundamentally shifting how a community thinks about getting kids to school.

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