SMART CITY CHALLENGE 2024

ParkWise

Max 3 pages

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

Solution Idea Title (max 5 words, no acronyms) – ParkWise - Smart Urban Parking Management

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.
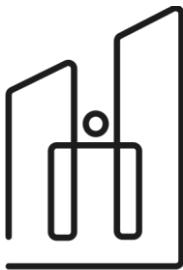
The original challenge focuses on urban freight loading zones, addressing pedestrian safety and efficient curbside operations. We propose expanding this to tackle urban loading and parking holistically, considering the broader context of dense city centres where cars—residents', office workers', and shoppers'—compete for limited curb and parking space. By combining real-time occupancy sensors, digital navigation and payment platforms, flexible allocation of housing, office, and commercial parking areas, and smart loading zones, the city can reduce cruising, congestion, and illegal parking, improve pedestrian safety, and optimize the use of existing infrastructure for both freight and private vehicles.

2. The solution you are proposing

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

We propose a unified smart curbside and parking management system that integrates real-time sensors, digital navigation, and flexible use of existing parking and loading assets. Sensors installed at parking spaces and loading bays provide live occupancy data, which is fed into a platform connected to the city's parking app to guide drivers directly to available spots and enable seamless payment. A key component is dynamic parking sharing, where under-used private parking areas in housing, office, and commercial buildings are opened for broader use at times when their primary users do not need them—for example, office parking can serve residents and visitors in the evenings

and weekends, while residential parking areas can be used by office staff during work hours. Commercial parking that peaks on weekends can provide capacity for commuters on weekdays. This time-based, rule-governed "parking swap" model unlocks significant latent capacity, reduces the need for new parking construction, cuts cruising time, and balances demand across the entire district, while smart, time-windowed loading zones support freight operations.

- How does it solve the city challenge you target?

The solution addresses the city's challenge by turning scattered, inconsistently used parking and loading areas into a coordinated, data-driven system that reduces illegal parking, cruising, and curbside conflicts. Real-time occupancy data and app-based navigation help drivers find legal spaces quickly, cutting congestion and emissions, while dynamic sharing between housing, office, and commercial parking unlocks unused capacity at different times of day. Smart, time-windowed loading zones give freight vehicles predictable, legal access without blocking sidewalks. Together, these measures improve pedestrian safety, reduce street clutter, and optimize limited curb space without requiring major new infrastructure.

## 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?

Existing solutions typically address only parts of the problem: cities use parking guidance systems, separate loading bay management tools, or private building access controls, but these operate in silos and do not coordinate curb, public parking, and private parking supply together. Smart loading zones exist in some cities, as do real-time parking dashboards, but they rarely integrate with residential, office, and commercial parking or support dynamic time-based sharing. Our solution is innovative because it unifies all of these elements—public curb space, private parking areas, and freight loading zones—into one real-time, data-driven system that actively reallocates capacity throughout the day.

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

To pilot the proposed solution, cities need a defined test area with diverse parking types, permission to install sensors on curbside and private parking spaces, and agreements with local housing, office, and commercial property owners to enable time-based sharing. They also need an agreement with the parking app software provider to integrate real-time occupancy data, navigation, and dynamic access rules into the existing platform. The pilot would equip selected streets and parking lots with
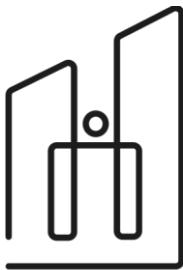
sensors, activate flexible parking and loading rules, and monitor usage through the integrated system. The city would then measure occupancy, cruising time, and user satisfaction to assess how coordinated, data-driven parking and loading management improves safety and efficiency before expanding the approach citywide.

- 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.

The proposed team will combine expertise in urban planning, mobility and smart-city technologies. As the project lead, I bring experience as an architect and urban planner, supported by an MBA focused on technology entrepreneurship, enabling me to bridge spatial design, operational needs, and innovative digital solutions. While the team is not yet formed, I aim to collaborate with TalTech researchers, particularly in fields such as IoT systems, sensor technology, data analytics, mobility, and user-centered digital service design. These capabilities would ensure robust technical development, data collection and processing, and evaluation of the pilot, and I welcome new partnerships with TalTech experts to co-develop and test the solution.

4. Expected impact of your pilot solution.

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

The proposed solution can significantly improve city environments by reducing the number of cars circulating in search of parking, which in turn lowers congestion, emissions, and noise in dense urban areas. More efficient use of existing parking and loading spaces frees up sidewalks and streets from illegal or obstructive stopping, creating safer, more comfortable public spaces for pedestrians and cyclists. Dynamic sharing between housing, office, and commercial parking areas reduces the need for constructing new parking supply, supporting more sustainable land use. For citizens, the benefits include quicker, less stressful parking, safer and clearer streets, and a cleaner urban environment. For cities, the solution provides a powerful, data-driven tool to manage curb space more efficiently, make informed planning decisions, and optimize existing infrastructure without costly expansions.