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 Urban climate sprint model

Planned pilot project duration – 24 months

Main contact/-s – name, e-mail, phone, university + department or company name

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1. Which urban challenge or problem are you planning to provide a solution to?

Managing Urban Heat Islands

2. The solution you are proposing

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

We propose a Public–Private Climate Action Model built around an Urban Climate Sprint, a structured, repeatable 8-step process that enables the city, local businesses, property owners, and GBG-service providers to jointly identify climate-stress hotspots, run rapid 30–60-day pilots that aim at mitigating the heat island, evaluate their impact, and convert successful pilots into permanent green–blue–grey (GBG) solutions. The model defines clear roles for each stakeholder, establishes transparent cooperation procedures, and integrates data-driven decision-making, enabling Warsaw or any city to systematically scale nature-based and cooling solutions across priority areas while sharing costs, responsibilities, and long-term benefits between public and private actors. Mobile hyperlocal mapping and impact verification will be carried out by IdealSens, using on-site sensors and environmental data collection to quantify the benefits of each intervention. In parallel, the TalTech team will perform advanced heat modelling and oversee the operation of the GBG mobile infrastructure, ensuring that each pilot is scientifically validated, technically sound, and optimized for measurable urban cooling and comfort improvement.

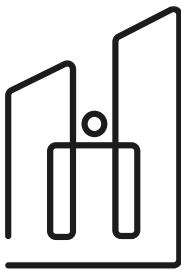- How does it solve the city challenge you target?

The model directly tackles Warsaw's urban heat, limited green infrastructure, and fragmented stakeholder involvement by creating a predictable collaboration framework that mobilizes private sector participation, accelerates climate adaptation, and ensures that interventions are tested, measured, and refined before permanent investment. By combining public leadership, private-sector co-financing, and expert GBG service delivery, the model expands the city's capacity to implement effective cooling and nature-based solutions, increases local ownership, and delivers more resilient, attractive and comfortable public spaces—especially in dense, heat-vulnerable areas of the New Centre of Warsaw.

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?

Global cities are already experimenting with advanced climate-resilience approaches (see references). Three examples include Cooling Singapore 2.0, which employs a national Digital Urban Climate Twin to simulate and optimise heat-mitigation strategies before implementation; Paris's OASIS Schoolyards programme, which transforms sealed schoolyards into "cool islands" that provide shade, permeable surfaces, and social co-benefits; and Medellín's Green Corridors, which convert major roadways and waterways into linear green infrastructure capable of reducing temperatures by several degrees while enhancing biodiversity and mobility. While these and similar programmes demonstrate strong potential, they are typically public-sector led, rely on heavy infrastructure investments, or focus on narrowly defined, single-use areas such as schools or parks. Moreover, globally there is limited service availability for fully integrated hyperlocal heat mapping, dynamic heat

modelling, and mobile GBG infrastructure operation—key capabilities needed to scale climate adaptation efficiently. The Urban Climate Sprint model brings these missing elements together into a single, repeatable framework: combining mobile environmental sensing (IdealSens), advanced heat modelling and GBG infrastructure operation (TalTech), and a structured public–private cooperation process. This integration allows cities to run fast, data-driven 30–60-day pilots, evaluate real impacts, and convert successful interventions into permanent investments. As a result, the model is more scalable, flexible, and collaborative, accelerating climate adaptation in mixed-ownership districts where traditional top-down programmes struggle to deliver.

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

To pilot the Urban Climate Sprint model, cities primarily need three enabling conditions: (1) a designated priority area—such as a street, square, or mixed-use block—where heat, comfort, or environmental challenges are clearly present; (2) a committed cross-departmental coordination team empowered to grant temporary permits, manage communication, approve measurements, and coordinate with local stakeholders; and (3) willing private-sector partners, including property owners, businesses, and operators in the selected area, who allow access for measurements, participate in co-design, and commit to hosting temporary interventions. In addition, cities need baseline measurement capacity (either internally or via service providers), basic budgeting flexibility for low-cost pilots, and a predefined legal/administrative pathway for short-term installations in public space.

Piloting can work through a simple, repeatable 8-step sprint cycle:

Phase / Action	City (Public Sector)	Private Sector (Businesses, Properties)	GBG Service Providers (Design, Measurement, Installation, Maintenance)
1. Site Selection	Selects priority heat- or discomfort-affected areas	Express interest and offer sites	Provide early feasibility input on technical suitability
2. Baseline Measurement	Grants permits, coordinates data collection	Provides access to courtyards, entrances, outdoor areas	Conducts heat, air-quality, noise, shade and 3D/ LiDAR mapping
3. Problem Visualization	Publishes findings and defines priority issues	Gains insights into customer experience and risks	Creates maps, models and visual analyses (GIS, digital twins)
4. Solution Co-Creation	Sets objectives (cooling, shading, comfort) and opens design call	Co-designs concepts and proposes business-driven solutions	Proposes GBG technologies: modular green systems, shading, water elements, cooling units
5. Temporary Pilot	Issues pilot permits and allocates public space	Co-finances pilots or provides location	Installs mobile GBG modules; sensors; water & shade structures
6. Impact Assessment	Monitors outcomes and reports findings	Gains ESG and customer-experience data	Performs sensor analytics and maintenance during pilot
7. Scale-up Decision	Decides on permanent implementation	Commits to co-financing or long-term maintenance	Designs permanent systems and prepares implementation plans
8. Permanent Investment	Builds long-term GBG infrastructure	Contributes financing or sponsorship	Delivers and maintains permanent climate-resilience solutions

- 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.
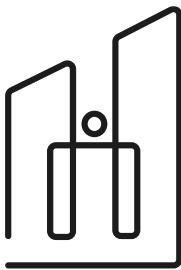
For the project, we require a university-based team with strong expertise in modelling urban microclimate conditions, designing and facilitating Urban Climate Sprints, and coordinating public–private stakeholder engagement—all of which we seek from TalTech. Juha Kangasluoma and Petri Koskinen, as part-time TalTech employees, will jointly lead the project to

ensure scientific grounding, methodological consistency, and seamless integration with city partners. TalTech's role will include developing and providing advanced modelling capacity, sprint methodology expertise, and governance support for the cooperation framework, ensuring that stakeholder roles, decision-making processes, and co-financing mechanisms are well structured. Additionally, the TalTech team will work with us on the design, selection, and installation of GBG mobile infrastructure, making sure that temporary pilot solutions are technically robust and optimized for measurable climate impact. IdealSens will complement this by delivering urban measurement services for baseline mapping and impact assessment, including sensor deployment, environmental data collection, and technical analysis. Together, the combined team forms a robust consortium capable of delivering a rigorous, data-driven Urban Climate Sprint piloting programme.

4. Expected impact of your pilot solution.

- What is the potential impact for city environments, sustainability and citizens?
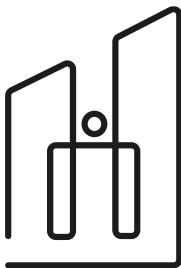
We expect that the team formed together with TalTech will constitute the basis for launching a new company acting as an integrated GBG solution provider, operating Urban Climate Sprints and delivering end-to-end climate-resilience services for cities.

The proposed Urban Climate Sprint model has the potential to significantly improve city environments, sustainability, and everyday quality of life for citizens. By rapidly deploying and scaling green–blue–grey interventions—such as shade structures, cooling elements, vegetation modules, and permeable surfaces—the model can measurably reduce urban heat, improve thermal comfort, enhance air quality, and transform previously hard or inhospitable areas into attractive public spaces. From a sustainability perspective, the approach accelerates the adoption of nature-based solutions, increases urban resilience to extreme weather, and enables more efficient use of resources through data-driven planning and shared public–private investments. For citizens, the benefits include cooler, more comfortable outdoor environments, safer conditions during heatwaves, increased opportunities for social interaction, and higher-quality urban spaces that support wellbeing, walkability, and local economic vitality. Ultimately, the model helps cities create healthier, more liveable and climate-adaptive districts in a faster, more collaborative, and more scalable way than traditional approaches.

5. References

- Cooling Singapore 2.0 – Digital Urban Climate Twin https://www.cares.cam.ac.uk/research/cooling-singapore/
- OASIS Schoolyards Programme (Paris) https://climate-adapt.eea.europa.eu/en/metadata/case-studies/paris-oasis-schoolyard-programme-france
- Green Corridors Initiative (Medellín) https://www.oppla.eu/case-study/alcaldia-de-medellin-green-corridors-initiative
- Cool Neighborhoods NYC https://www.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf
- Cloudburst Management Plan (Copenhagen) https://use.metropolis.org/case-studies/cloudburst-initiative-copenhagen
- Superblocks Barcelona https://www.feut.org/wp-content/uploads/2021-OCDE-SUPERBLOCKS-CASE-STUDY-OVERVIEW.pdf
- Urban Greening Factor https://www.london.gov.uk/programmes-strategies/planning/implementing-london-plan/london-plan-guidance/urban-greening-factor-ugf-guidance
- Cool Pavements / Reflective Materials Pilot https://www.nypost.com/2025/10/08/us-news/cool-pavement-pilot-program-could-come-to-nyc-streets-by-2026-under-council-bill/

CHECKLIST AND FAQ

Are you a researcher from TalTech? - Yes – you are warmly welcome to propose one or more solutions ideas.

Are you a researcher from another university? - Yes – you are warmly welcome to propose a solution but form a team with TalTech researchers. Need help with contacts, please ask.

Are you from a company? - Yes - you are warmly welcome to propose a solution but form a team with TalTech researchers. Need help with contacts, please ask. NB! But keep in mind that we cannot finance the costs of companies as partner. The companies are welcome to propose ideas in case they would need researchers to develop their solutions considerably further and they would like to become the commercialisation partners of these solutions. The companies need to be mature enough to cover their own expenses for participation.

Are you a city, municipality or a campus / private real estate developer? - Yes – do not propose solution ideas but wait the researchers and companies to propose the solutions and read their proposals from our homepage from Dec 2.

Which urban challenge can the solution idea address? - Please choose one from the list of the urban challenges chosen for the Smart City Challenge 2025, i.e. Round 5. The challenge needs to have minimum 1 city from Estonia and one from another country interested, the more the better.

How will the proposed solution ideas be evaluated? – We will not evaluate the proposed initial solution ideas but cities/municipalities/campuses/private real estate developers will say to you if they are ready to join your proposal and pilot the solution proposed by you or not. You will need minimum one Estonian city/county and one city/county from another country to make the pilot project proposal already together with them by Febr 28, 2026.

Can we have private real estate developers or campuses instead of cities as partners? – No, you need minimum one Estonian city/county and one city/county from another country but you are welcome to have private real estate developers and campuses as additional partners. In several cases they are more likely future customers for your solution. And there can be other possible customer segments who are worth to involve in one or other way as well. We can cover the costs of any private partner.

Do we need to send a confirmation letter from the cities with the challenges we address? – No, you do not. But you are very welcome to discuss and develop your idea with these cities already in this phase. That would raise the probability to be successful in the next phases considerably. The city contacts are available at FinEst Centre homepage under the Smart City Challenge 2025 challenge list.