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: Resk.us: Community Mapping

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?

The proposed solution addresses the challenge: Safe and Climate Resilience Cities – Safety in case of natural or human disasters

We specifically target the critical lack of real-time, unified situational awareness and optimized resource allocation during and immediately following catastrophic flood events. Disasters often result in chaotic and fragmented responses, meaning resources do not reach the most critical areas quickly or equitably. This problem is felt in coastal cities prone to flooding, such as Pärnu, Estonia (where road accessibility is crucial during floods), and large urban centres experiencing extreme climate impacts, such as Porto Alegre, Brazil, which lacks the capacity to dynamically map danger zones, locate people in need, and coordinate both official and volunteer rescue/resource management). Our solution provides a centralized system to mitigate communication failures and logistical chaos. Pitch:

2. The solution you are proposing

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

We propose implementing and scaling Resk.us – a platform leveraging open data and geospatial technology to map and optimize the distribution of emergency resources following a natural disaster. Resk.us is designed to connect individuals in need with support through a community-driven, data-centric application. The platform utilizes analysis of demographic, meteorological, and spatial data (GIS/OpenStreetMap) to create an interactive map that categorizes affected areas by urgency — urgent aid, medium aid, and low aid. Core functionality includes tracking available resources, listing shelter details (occupancy, specific needs like medication, food), and calculating the safest transit routes for users.

● *How does it solve the city challenge you target?*

Resk.us provides a solution to the identified problems of fragmentation and communication failure:

* Unified Situational Awareness: The interactive map provides disaster response teams and community members with a comprehensive spatial representation of affected areas, enabling them to prioritize assistance and coordinate efforts efficiently.

* Resource Optimization: By showing current resource distribution and identifying specific needs at each location (e.g., shelter-specific item requests), the platform minimizes redundancy and ensures that aid is directed to regions that need it most urgently, supporting effective logistics management (a key challenge in Porto Alegre).

* Safety and Accessibility: It integrates high-resolution weather and climate data (sourced from NASA and Meteomatics) to provide additional contextual safety information, enabling the calculation of the safest routes to shelters. This directly addresses the safety and accessibility concerns facing cities like Pärnu during floods.

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?*

Current emergency response systems often struggle with dynamically integrating and visualizing real-time data from disparate sources (governments, NGOs, citizens) and frequently suffer from a lack of transparency. Resk.us is innovative in three keyways:

*Data-Driven Urgency Categorization: It moves beyond simple mapping by creatively modeling community issues based on physical and social geography, transforming complex data into simple, actionable urgency categories (urgent, medium, low aid). This data-driven approach allows decision-makers to base actions on predictive analysis rather than assumptions.

*Transparency and Accountability: The platform offers a centralized, transparent overview of available aid and its destination, fostering trust and accountability among all stakeholders, including government agencies and citizens.

*Citizen Empowerment and Gamification: The architecture is inherently community-driven. Features like personalized profiles that track donations and award badges (e.g., "Gold Donor") foster continued engagement, transforming citizens into active participants rather than passive recipients of information.

More information about the idea: https://www.spaceappschallenge.org/nasa-space-apps-2024/find-a-team/data-for-community-change/?tab=project

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

The pilot requires close collaboration with the city teams to integrate the Resk.us platform (developed using React.js, Node.js, and Python) with local infrastructure and data systems.

● *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.*

The core development team (Team Resk.us, Citizen Activists) provides expertise in Full-Stack Development (React.js, Node.js), Geospatial Application Development (OpenStreetMap, GIS principles), and Data Processing (Python). Our foundational work utilized strategic partnerships with organizations like NASA and Meteomatics for climate and weather intelligence.

To meet the requirements of the FinEst Centre and ensure the academic rigor, scalability, and integration with Estonian strategic goals, we are integrating researchers from Tallinn University of Technology (TalTech).

4. Expected impact of your pilot solution.

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

For City Environments and Sustainability: The project aims to build resilient cities and communities (SDG 11) and support Climate Action (SDG 13). By optimizing resource allocation, Resk.us minimizes redundancy and inefficiency in disaster response, contributing to the sustainability goals of the FinEst Centre. The ability to base decisions on real-time data mitigates the consequences of extreme climate events, creating a measurable, positive effect on the overall living environment.

For Citizens: The platform ensures the equitable distribution of resources, targeting aid to the most vulnerable populations without logistical bias. By providing the safest routes and empowering users to track donations, it fosters transparency and trust. The user-centric design allows community members to actively participate in disaster response, thereby fostering stronger community ties and contributing to urban well-being. The solution ensures citizens receive instant, accurate, and life-saving information during chaos.

Disclaimer: by submitting this form you will give the FinEst Centre for Smart Cities the right to share this idea with cities and other researchers, companies through FinEst Centre homepage. If this idea is selected, the FinEst Centre for Smart Cities has the right to implement this idea with offering you an active role in conducting the pilot. If this pilot is selected then the financing is an investment by the FinEst Centre for Smart Cities.

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.