FinEst Centre
for Smart Cities

SMART CITY CHALLENGE 2025

City Challenge

Max 3 pages

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

Challenge Title – (max 5 words, no acronyms) - Flood-Accessible Roads

City/county and country

Pärnu City, Estonia

Main contact from your city/county – name, organization, job title, e-mail, phone

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1. **What is the future urban challenge that would need a solution to?**

   Pärnu is a coastal city by the Baltic Sea that frequently experiences flooding. Extreme weather events, storms and rising sea levels often disrupt transportation inside the city and with surrounding areas. The main challenge is to know which roads remain open and accessible during floods to secure safety, emergency response and the continuity of vital services.

- **Please describe the challenge of your city / county neighboring a city?**
  Flooding does not only affect Pärnu but also neighboring municipalities. As Pärnu is a regional hub, commuting for work, school and services is common. When roads are blocked, it affects the entire Western Estonia region. Therefore, the problem is both local and regional.
- **Which category your challenge is primarily in: safe city, happy city, and climate resilient city?**
  Climate resilient city
- **Why is it important for your city to solve it? How big priority it is for you and why?**
  Flooding is one of the risks highlighted in Pärnu Development Strategy 2035. The city has the responsibility to ensure continuity of essential services even during extreme events. Road closures affect: hospitals and rescue services access, evacuation of residents, economic activity and supply security.

  Knowing which roads remain open is a critical priority, as it enables proactive planning and effective crisis response.
- **Is this a unique challenge/problem of your city, why or is this by your knowledge a challenge/problem that many cities have – which kind of other cities?**
  This is not unique to Pärnu – many coastal cities face similar risks (eg Lissabon, Hamburg) .

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However, due to its geographical position and low-lying coastal plain, Pärnu is especially vulnerable, making the challenge more acute compared to many other cities.

2. Innovation.

- How have you solved that issue so far? Why aren't the present solutions good enough? Are there legal obstacles, which ones?
- What should be the main features, characteristics of the future solution to be potentially best for that challenge or problem?

So far, the city relies on the knowledge of the Rescue Board, Road Administration and municipal services based on past cases. Maps and data exist, but they do not provide real-time forecasts or integrate mobility information.

The present solutions are not sufficient because:
- data is not dynamic or easily accessible to citizens,
- there is no systematic planning for flood scenarios,
- solutions do not cover the whole region including neighboring municipalities.

There are no direct legal barriers, but there is a lack of regulations and cooperation mechanisms for real-time data collection and sharing.

Future solutions should include:
- real-time data collection and modelling (GIS maps, sensors, satellite images),
- open and understandable information for citizens and authorities,
- automatic alert systems for residents,
- potential use across the Baltic Sea region.

3. Expected impact of your pilot solution.

Impact to city environment: improved preparedness for climate risks, more effective traffic management during crises.
Impact to citizens: improved safety, clear evacuation routes, ensured access to essential services.
Impact to city governance: evidence-based crisis management and improved cooperation between stakeholders (municipality, rescue services, transport authorities).

- What is the expected impact to your city environment you expect to see if the challenge gets solved?
- What is the expected impact to your citizens you expect to see if the challenge gets solved?
- What is the expected impact to your city governance you expect to see if the challenge gets solved?

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4. Piloting

Pärnu would be an excellent pilot partner because:
- the city has extensive experience with real flood cases,
- realistic testing environment is available,
- the city has a motivated team in crisis management and urban planning,
- ongoing cooperation with universities and international partners provides additional support.

- Why would you be interested to become a piloting partner of a proposed solution to the challenge you are describing here? Describe shortly your capability to participate.