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for Smart Cities

SMART CITY CHALLENGE 2025

City Challenge

Max 3 pages

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

Challenge Title –Maintenance of sustainable drainage systems

City/county and country Tallinn Estonia

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

In urban areas, the implementation of sustainable drainage systems is becoming increasingly common. However, the planning of their maintenance and reconstruction is becoming more and more complex. It is no longer sufficient to rely solely on tabular data or to manage the system only when problems arise.

Regular maintenance and timely reconstruction of these systems are essential to ensure the climate resilience of the city. Integrating sustainable drainage systems into the urban stormwater management system is a clear priority for the city, as reflected in various strategic plans and the municipal work agenda developed in recent years.

There is a growing need for a dedicated tool to assess maintenance and reconstruction requirements, with the aim of considering the entire life cycle of these innovative solutions — not just the construction phase. We believe this is not a unique issue to our city. Other Estonian cities where municipalities are responsible for managing stormwater systems are likely facing similar challenges. In the past, stormwater systems were mainly limited to pipelines or ditches, whose maintenance and reconstruction needs are relatively straightforward to assess. However, with sustainable drainage systems, these processes are more complex and require new approaches.

2. Innovation.

Until now, maintenance has only been carried out when deemed necessary — for example, in response to flooding within the system. However, specific objects and a detailed maintenance plan have not been identified or implemented. The current approach, based on spreadsheets or reactive actions, is no longer sufficient. As the number of installations increases, ensuring the overall functionality of the system and the climate resilience of the city requires a well-thought-out and user-friendly solution.

There are no legal obstacles, as the systems are owned by the city.



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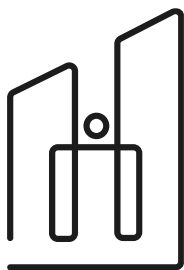


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The most important features of a future solution would be:

- The ability to enter and retrieve information in real time (operational data management)
- A clear and structured maintenance and reconstruction plan
- A system that supports the long-term functionality of the infrastructure and overall climate resilience of the urban environment.

3. Expected impact of your pilot solution.

Solving this issue will allow us to better plan resources and ensure the sustainability of existing infrastructure through regular maintenance. This will reduce the need for frequent reconstruction and minimize material costs. We expect that addressing this problem will help mitigate stormwater-related flooding caused by inadequate maintenance and delayed reconstruction.

For citizens, the visual appearance of the urban environment will improve as the systems will be well-maintained and not neglected. The proposed solution will also reduce the time spent on assessing, analyzing, and planning the maintenance or reconstruction of the systems. Furthermore, there will be fewer unplanned maintenance tasks, as the systems will be regularly maintained and proactively scheduled.

4. Piloting

We are very interested in becoming a piloting partner, as the city is currently in the process of implementing several sustainable drainage systems. Integrating these into a comprehensive framework — with clearly defined maintenance and reconstruction plans — would allow us to test the entire management process in a forward-looking and systematic way.

Given that the city already operates various administrative systems and engages with them on a daily basis, we believe we have the capacity to be a strong partner and an active contributor in developing a tool for planning the maintenance and reconstruction of sustainable drainage systems.



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