FinEst Centre
for Smart Cities

SMART CITY CHALLENGE 2025
Solution idea for the city challenges

Solution Idea Title - Inclusive Night Safety Toolkit

Planned pilot project duration – The 24-month pilot will follow a phased structure: 6 months for safety mapping and co-design, 12 months for implementation and monitoring of spatial interventions, and 6 months for evaluation, adjustment, and cross-city transferability analysis.

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

This solution addresses the challenge "Women's Safety in Public Space"proposed by the City of Amsterdam for the Smart City Challenge 2025 (Round 5). Women, girls, LGBTQ+ people, and other vulnerable groups often experience fear, harassment, or avoidance in certain public spaces—especially during evening hours, on park routes, waterfronts, transit connections, and semi-enclosed areas.

This challenge is strongly aligned with inclusive urban planning, which asks how cities can ensure that all groups—regardless of gender, age, or cultural background—can safely access, use, and enjoy public spaces. As a South Korean researcher, I bring comparative insight from dense Asian urban environments, where gender-based safety has been a major policy priority for more than a decade (e.g., Seoul's Women Safe Routes, neighborhood safety audits, and lighting standards).

The proposed solution focuses on enhancing women's safety through environmental design, visibility, path networks, lighting, and participatory co-creation, rather than relying primarily on surveillance technologies. This matches the challenge's emphasis on inclusive, inviting, and human-centered public space design.

2. The solution you are proposing

The proposed solution is the **"Inclusive Night Safety Toolkit,"** a spatially-driven, gender-inclusive urban planning framework designed to improve women's safety and comfort in Amsterdam's public spaces. The solution integrates evidence-based spatial analysis, inclusive design principles, and community participation to redesign nighttime public environments in ways that reduce fear, increase accessibility, and create equitable mobility options for women and other vulnerable groups. The Toolkit operates through four mutually reinforcing components:

(1) Spatial Safety Mapping

A targeted diagnostic combining spatial data, lighting patterns, path configurations, land-use characteristics, and women's lived experiences. This mapping identifies unsafe segments and exclusionary spatial conditions that disproportionately affect women after dark. A comparative reference is drawn from Seoul's small-scale nighttime safety audits, illustrating how micro-level assessments can reveal gaps not capt

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ured by traditional crime data.

(2) Inclusive Nightscape Design

Urban design interventions that improve visibility, eliminate blind corners, reorganize path networks, and enhance openness. These modifications follow inclusive planning principles—prioritizing accessibility, intuitive navigation, and social surveillance in order to transform public spaces into environments where all users feel they belong.

(3) Gender-Sensitive Mobility Network Reconfiguration

Reconfiguring walking routes, transit access points, and public-space circulation to ensure safe, continuous movement after dark. This includes reinforcing high-visibility paths with adequate lighting and supporting equitable mobility for women travelling alone. A minimal reference to Korean practice—such as Seoul's improvement of lighting along major pedestrian corridors—demonstrates the feasibility of low-cost, high-impact upgrades

(4) Community Co-Design with Diverse User Groups

Structured participation processes—such as safety walks and collaborative workshops—enable women to articulate spatial barriers and co-create interventions. This ensures that planning decisions reflect diverse lived realities and align with principles of equity and spatial justice.

3. Innovation and piloting of your pilot solution.

3.1 Why this solution is innovative

(1) Design-centered, not surveillance-centered

Existing solutions often rely heavily on CCTV expansion or AI monitoring. Our approach shifts the focus to inclusive spatial design, nighttime legibility, and perception-based planning, combining:

- Environmental psychology
- Urban design
- Gender-sensitive planning
- Micro-sensor data

This makes safety improvements visible, tangible, and user-driven.

(2) Low-cost, high scalability

Minimal hardware, modular interventions, and micro-scale installations make the solution feasible for Amsterdam, Estonian cities, and international partners. Costs remain manageable—an essential factor noted in the Smart City Challenge FAQ.

(3) Cross-cultural transferability (Amsterdam ↔ Estonia ↔ Korea)

Using lessons from Korean high-density cities—where gendered safety solutions have been systematically tested—gives the model global applicability.

3.2 Piloting Requirements

Cities Need:

- Access to pilot sites (parks, transit paths, waterfronts)
- Basic lighting infrastructure for upgrades

- Permission for temporary installations (LED markers, reflective cues)
- Local women's groups for co-design workshops
- Support for surveys and site audits

3.3 Team Capabilities & TalTech Collaboration

Proposer (South Korea):

- Inclusive urban planning
- CPTED-informed public space evaluation
- Cross-cultural gender safety comparative studies
- Participatory co-design facilitation
- Environmental psychology-informed spatial interpretation

Required TalTech expertise:

- Sensor data analysis and environmental measurements
- Urban analytics and spatial modeling
- Pilot coordination and reporting
- Multi-city scaling methodology

This structure fulfills the Smart City Challenge requirement that non-TalTech researchers must include TalTech partners.

4. Expected impact of your pilot solution.

(1) Impact on city environments

- Safer, more visible, and more inclusive public spaces
- Reduced dark spots and avoidance areas
- Stronger nighttime connectivity between key destinations

(2) Impact on sustainability

- Encourages walking and public transit use during evening hours
- Reduces reliance on motorised travel
- Supports a socially sustainable city where women can participate fully in urban life

(3) Impact on citizens

- Increased sense of comfort, freedom, and belonging
- Greater participation of women in social and economic activities
- Reduced fear of crime and improved mental well-being
- Strengthened trust between citizens and city institutions
- Multi-city scaling methodology

By integrating sensor-informed diagnostics, inclusive co-design, and visibility-based spatial improvements, th e Inclusive Night Safety Toolkit provides a scalable and low-cost model for improving women's nighttime safe ty in Amsterdam, with clear applicability across Estonian cities and Korean urban contexts.