

Heerlen

Annexes to the PULSE-TWIN project proposal

3rd Call of the EUI Innovative Actions

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Annex 1: Glossary

Abbreviation	Term	Definition within the project	Links
-	Undermining (crime)	Undermining is a form of crime that erodes the foundational structures of society by intertwining the criminal underworld with everyday social and civic life. It destabilises the rule of law and decent social relations, primarily in areas where authorities have limited influence. This type of crime is less visible and more covert, making it challenging to detect and combat. In NL, undermining is linked to illegal drug trade, resulting in secondary crimes like money laundering, illegal firearms trading, and gangland murders. These activities corrupt societal norms, weaken law and order, and pose serious threats to the security and integrity of society. Undermining can be considered as a form of organised crime but there is no directly translatable equivalent of 'undermining crime' in English.	https://www.government.nl/topics/crime-that-undermines-society
-	Social Safe	The Social Safe approach in Heerlen Noord is based on positioning, connecting, facilitating and supporting frontline professionals. The municipality, housing corporations, safety partners (Local Police, Safety Department of the Municipality), social partners and care partners (NGOs active in the social field) work together. It is a combination of a personal and an area approach, focusing on prevention and repression, with a strong connection between care and safety.	See Annex 2.

-	Liveability Meetings	Part of the Social Safe approach, stakeholder forum for discussing livability issues, comprising municipality, housing corporations, safety partner, social partners and care partners.	See Annex 2.
-	Together with the Neighbourhood chambers	Physical spaces for connecting residents and Heerlen Municipality, run by the municipality. Future locations of the Demo Corners in the project.	https://www.heerlen.nl/buurt-en-wijk See Annex 4.
BISS	Brightlands Institute for Smart Society	Project Partner in the PULSE-TWIN project. A research institute of Maastricht University where they use AI and data science to shape the society of tomorrow. BISS brings together academics, researchers, businesses, and government agencies to work on smart solutions for a sustainable and inclusive society.	https://www.biss-institute.com/
BOAs	Municipality investigators (translation: Special Outside Investigation Officer)	Each neighbourhood has its own local police agents and BOAs (Outside Investigation Officer). The BOAs, employed by the Municipality focus mainly on the impairment of liveability due to violations or nuisance, such as misplacing of household waste, illegally dumped waste or misparked cars. With direct communication channels to the police, BOAs are the first eyes in the neighbourhoods for the police.	https://www.heerlen.nl/boas-en-wijkagenten-in-uw-buurt
BSSC	Brightlands Smart Services Campus	Project Partner in the PULSE-TWIN project. Brightlands Smart Services Campus in Heerlen is a community of entrepreneurs, researchers and students. Together they develop new smart digital services to improve the quality of life.	https://www.brightlands.com/en/brightlands-smart-services-campus

CPTED	Crime Prevention Through Environmental Design	CPTED is a multidisciplinary approach to reducing crime and fear of crime by modifying the physical and social environments. CPTED strategies aim to decrease victimisation, deter criminal behaviour, and foster community engagement to enhance territorial control and minimise crime opportunities.	https://designforsecurity.org/crime-prevention-through-environmental-design/
CTAG	Citizens' Think Along Group	Integral part of the PULSE-TWIN project's community engagement activities, drawing on Heerlen's network with citizens and the user base of WESH app.	-
ELSA / EVF	Ethical, Legal, and Societal Aspects/ ELSA Validation Framework	The ELSA (Ethical, Legal, and Societal Aspects) methodology ensures that AI and digital solutions/products are developed in a socially responsible, legally compliant, and ethically sound manner. BISS, one of the founders of ELSA Labs and knowledge partner of the ELSA method utilises the ELSA-by-Design approach to create solutions that not only meet technical requirements but are also socially acceptable and aligned with societal values.	https://nlaic.com/en/bouwsteen/human-centric-ai/elsa-concept/
Incluzio	Buurtteams Heerlen	Social care in Heerlen, Project partner in the PULSE-TWIN project.	https://www.buurtteamsheerlen.nl/
JENS	JENS	Youth Care in Heerlen, Project Partner in the PULSE-TWIN project.	https://jenshelpt.nl/
LDT	Local Digital Twin	A Local Digital Twin is a digital representation of a city or local area, capturing its physical and environmental characteristics. They are primarily used for planning urban design and mobility.	-

MP	Multistakeholder Panel	Integral part of the PULSE-TWIN project's community engagement activities, drawing on Heerlen's Social Safe network, comprising stakeholder professionals of safety and liveability.	-
NPHN	National Program Heerlen Noord	The National Program Heerlen-Noord collaborates with 19 other areas in the Netherlands in the 'National Programme for Liveability and Safety'. In the National Programme Heerlen-Noord, residents, companies, governments and social organisations are working together for 25 years to create a better future for Heerlen-Noord.	https://www.heerlen-noord.nl/
PSSC	Public Smart Safety Center	A new organisation to be set up in BSSC Heerlen to advance public safety through advanced technologies. Founding fathers will be: Heerlen, National Police - iLab, BSSC, Maastricht University, Province of Limburg. The vision / strategy / business plan of the new PSSC to be finalised by late autumn. Organisation to be legally set up by the end of 2024. Scope of the organisation progressively expanding: Heerlen - South Limburg - national - international.	See Annex 9.
PULSE-DE	PULSE Data Engine	One part of the Social Digital Twin (SDT) component of the PULSE-TWIN innovative solution. It utilises AI to integrate and analyse data, capable of recognizing patterns, simulating interventions and predicting outcomes.	-
PULSE-DW	PULSE Data Warehouse	One part of the Social Digital Twin (SDT) component of the PULSE-TWIN innovative solution. It stores data of various sources from the safety and social sectors and beyond.	-

PULSE-SDT / SDT	PULSE Social Digital Twin	The key component of the PULSE-TWIN solution. It differs from LDTs by integrating social and safety data as well on top of the built environment.	-
WESH	WESH app	Heerlen's earlier UIA project, an innovative civic engagement platform. The platform uses blockchain technology to delegate accessible and relatively easy city maintenance tasks to Heerlen's citizens. For example painting a park bench, cleaning up playground equipment or weeding a public garden. When a certain task is completed, the citizen will be rewarded with local digital coins, named 'Heerlens Heitjes'. These Heitjes, whereas 1 Heitje equals 1 Euro, can be spent at local shops, bars and cultural facilities within the city. The goals of the project were therefore threefold, firstly to increase civic engagement, secondly to improve the quality of the public space and thirdly to stimulate the local economy of retail and hospitality.	https://www.uia-initiative.eu/en/news/wesh-highlights-achievements

Annex 2: Social Safe Approach

Social Safe approach of Heerlen



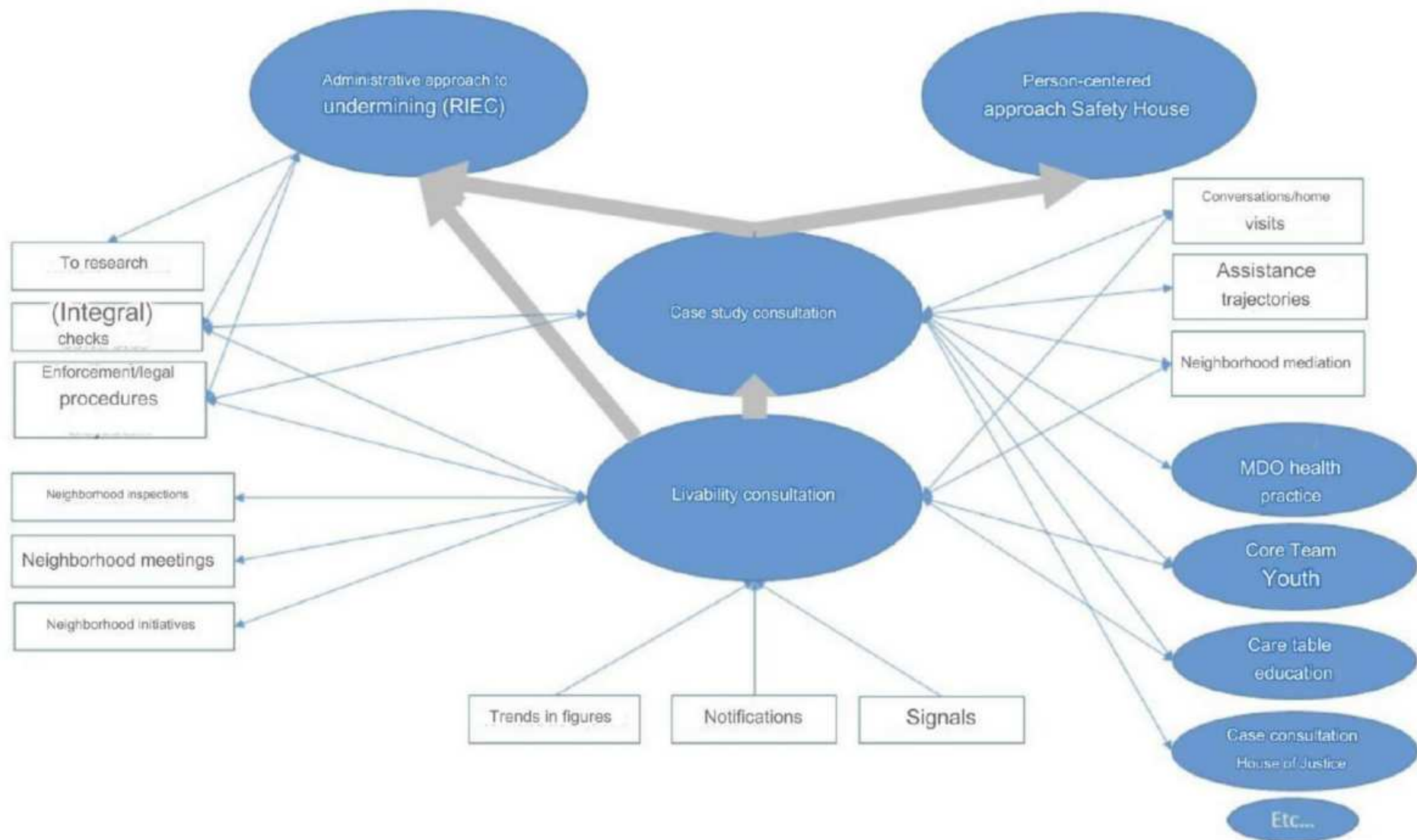
The Social Safe approach was started in June 2021 in Heerlen Noord. It is based on positioning, connecting, facilitating and supporting frontline professionals. In the Social Safe approach our municipality, housing corporations, safety partners (Local Police, Safety Department of the Municipality), social partners and care partners (NGOs active in the social field) work together. It is a combination of a personal and an area approach, focusing on prevention and repression, with a strong connection between care and safety.

The Social Safe approach is based on the so-called action logic, taken from Pieters Tops; "The quality of policy is determined in implementation." This basic philosophy captures the essence of

the approach. It involves putting frontline professionals in position, connecting, facilitating and supporting them. In order to thereby maximise cooperation between the ecosystem of professionals in the neighbourhood. Working according to the action logic implies being present, visible, involved, attentive and decisive. Information is being gathered from partners like housing corporations, the police, neighbourhood managers, etc. but also from enquiries among our inhabitants. The professionals are in charge, the residents are prominent and involved.

Collaboration structure

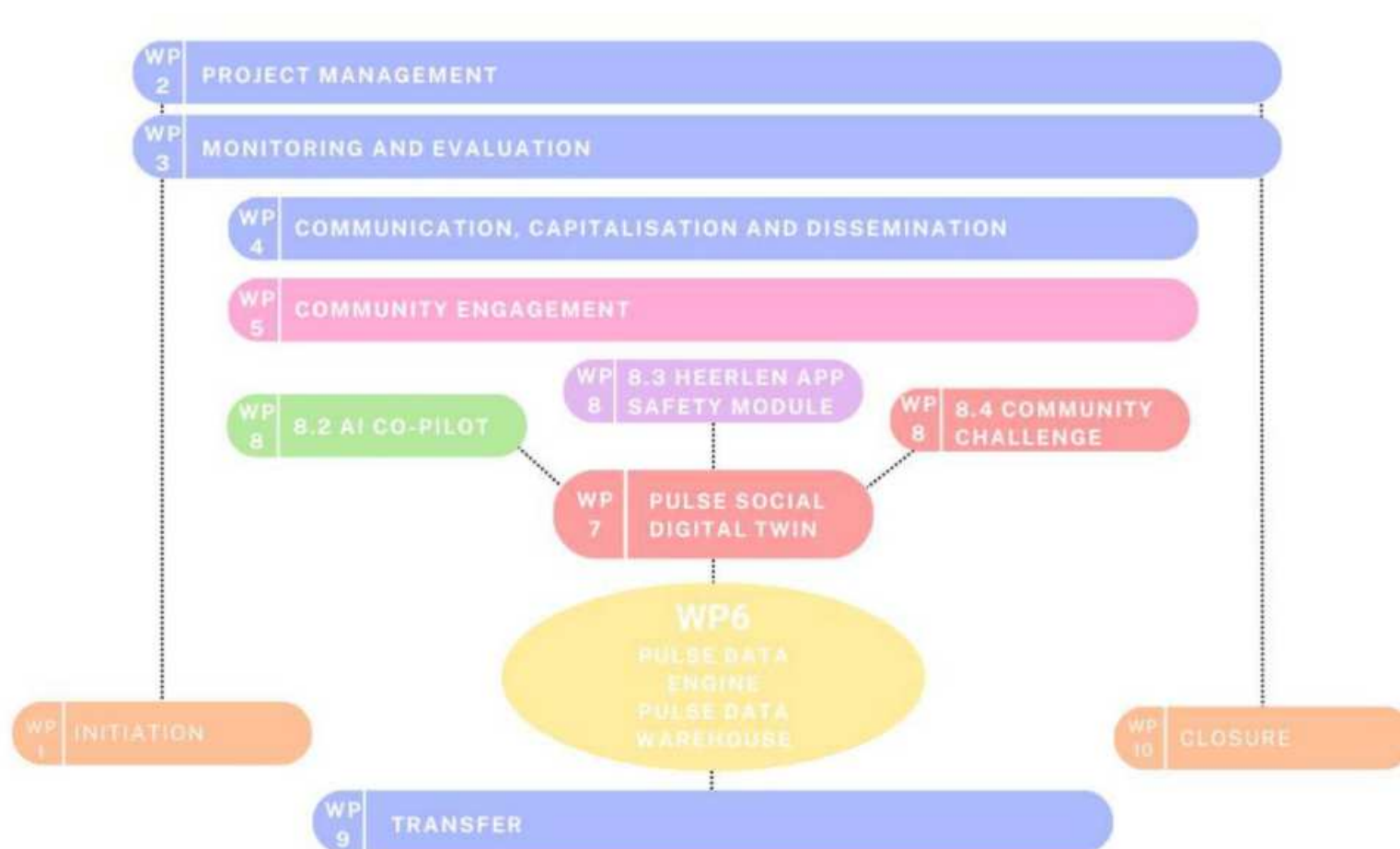
The cooperation is shaped through two forms of consultation: Liveability Meetings and Case Meetings. These two consultations are the flywheel of the approach and provide frontline professionals with the platform for cooperation. We connect to the residents in two ways: by organising so-called Liveability Meeting Citizen Forums and by carrying out individual case meetings, visiting people at home to check on social problems and criminal activities.



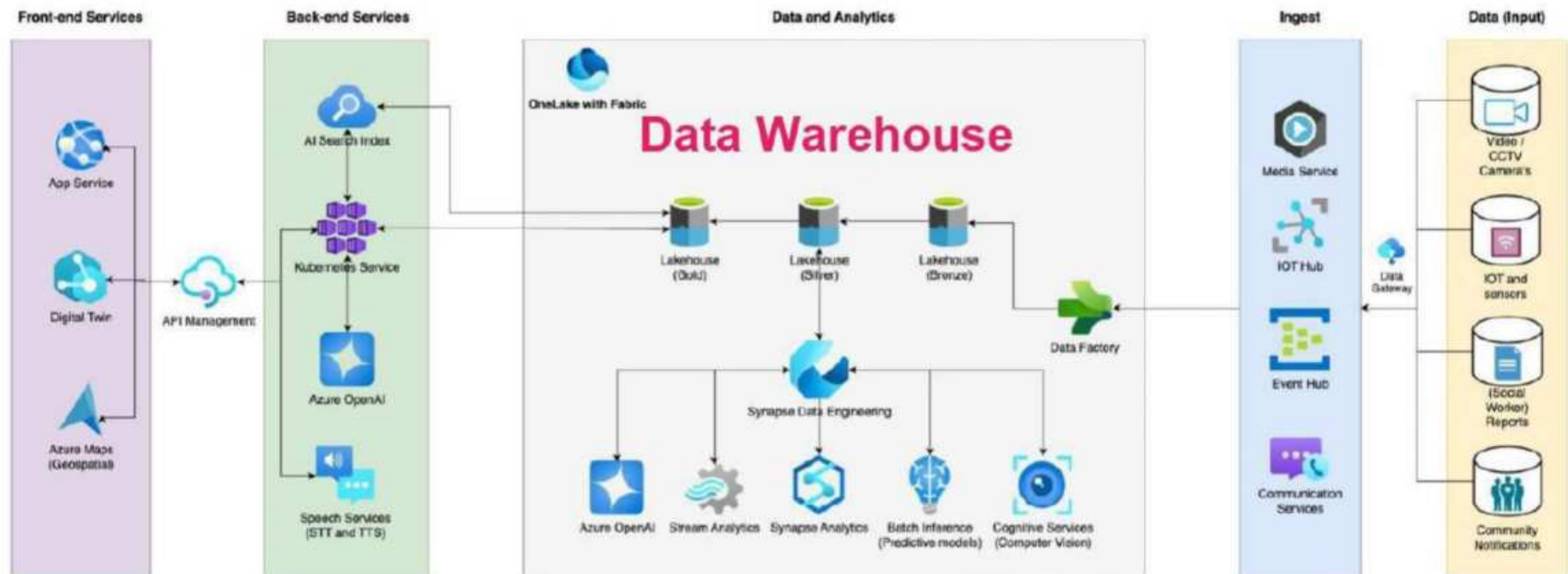
The process model below shows the way the Social Safety approach works. Central to this is the integral linking of information and processes of the various actors involved. Input for the consultations comes from reports and signals from the municipality, police and housing corporations, among others. But trends in statistics (police figures, nuisance figures, Parkstadmonitor) are also proactively monitored. Neighbourhood meetings, neighbourhood inspections and neighbourhood initiatives form input for the livability meetings and are discussed.

The integrated approach, working closely together, sharing information and acting together led by a neighbourhood manager, is innovative in our region. We look, hear, sense, investigate, act and react quickly in the neighbourhoods. We are visible and present. It is a very intensive form of monitoring and intervention, but it pays off. The approach increases the safety and liveability in our neighbourhoods.

Annex 3: Project Logic and IT Architecture



Social Digital Twin



Data Engine

Annex 4: Photos and maps

Photos from Social Safe approach in action (Municipality of Heerlen)

Opening of the first Together in the Neighborhood chamber (October 2024, Hoensbroek)



Together in the Neighbourhood posters





Maps of pilot areas



Annex 5: Letter of support from the National Programme Heerlen-Noord

Heerlen

Letter of Support for the PULSE-TWIN project

On behalf of the National Program Heerlen-Noord (NPHN), I am writing to express our full support for the **Proactive Urban Livability and Safety Engine with Integrated Social Digital Twin (PULSE-TWIN) project** led by the Municipality of Heerlen. This innovative initiative aligns with our mission to address socio-economic challenges in the Heerlen-Noord region from a safety perspective, and we believe it will significantly benefit our community.

Heerlen-Noord has historically faced numerous socio-economic challenges, including high unemployment rates, poverty, and social isolation. These challenges have contributed to a cycle of disadvantage that has proven difficult to break. The NPHN is committed to a comprehensive and long-term approach to addressing these issues, with a focus on improving employment opportunities, education, health outcomes, and public safety. In the National Programme Heerlen-Noord, residents, companies, governments and social organisations are working together for 25 years to create a better future for Heerlen-Noord.

The PULSE-TWIN project complements these objectives by providing a cutting-edge digital infrastructure that will allow the city and its partners to monitor, predict, and address public safety challenges in real-time.

The NPHN is committed to supporting the successful implementation of this project. We are confident that this project will not only help improve public safety but also serve as a model for other cities dealing with similar socio-economic challenges. We will provide ongoing support through our programs in the Safety topic (Prevention with Authority, Neighborhood mediation, Social Safe) and others, actively engage in the impact monitoring process, and collaborate with partners to ensure that the results of the project continue to benefit Heerlen-Noord for years to come.



PULSE-TWIN Benchmark Report: Inventory and Analysis of Relevant Projects & Technologies

I. Inventory of Relevant Current and/or Former Projects (European-Funded and Others)

❖ Building on the previous Heerlen projects

The following projects with leading role of Heerlen related to the city or neighbourhood-level initiatives for better social cohesion and urban security can be capitalised on:

CITICESS (Interreg Europe): CITICESS focuses on reaching **marginalised communities, low-income households, and disadvantaged groups by applying a new, innovative and holistic approach organising services around the target group**. The project's overall objective is to improve regional/urban development policies dealing with vulnerable target groups by exchanging experiences, jointly testing innovative approaches and building the capacity of partners by identifying, disseminating, and transferring good practices.

WESH – We.Service.Heerlen (UIA): A new digital platform is created by applying Blockchain technology. With this platform, citizens can perform tasks for the municipality of Heerlen with a rewarding system. This digital platform contains 3 main features: a mobile application for citizens (to find tasks and commit to a task), a web application for entrepreneurs (to receive payments) and a municipal dashboard to upload and control tasks. These tasks for instance are maintaining a small piece of the urban space. The reward takes the form of a local digital currency, so that it can only be issued within the local economy of the municipality of Heerlen. It is important to note that although the idea originated from the perspective of the public space (while tasks that first mainly focus on maintenance), **the concept should be applicable to several other domains (safety, prevention or care)**.

❖ Most relevant EU Programmes / Initiatives to the topic of urban security

Overall, various EU programmes cover the topic of innovations in urban security and crime prevention in cities, including Horizon Europe, URBACT, UIA/EUI, ISF. There is also a prominent European network that participates in various programmes and coordinates most important projects on the topic - EFUS, described below with most applicable projects and more general networks focusing on major issues European cities are confronted with (e.g. EUROCITIES).

- *EUI (ex.UIA)* - The European Urban Initiative (EUI), evolving from the Urban Innovative Actions (UIA), supports cities in testing innovative solutions for urban challenges through funding and capacity building. It focuses on sustainable urban development, fostering knowledge exchange, and improving urban policies across Europe.
- *Internal Security Fund (ISF-Police)*: The ISF-Police fund aims to ensure a high level of security in the EU. It supports projects that enhance police cooperation, crime prevention, and the fight against organised crime.

- *Horizon 2020/Europe* - Horizon Europe, succeeding Horizon 2020, is the EU's key funding programme for research and innovation, aiming to address global challenges, enhance Europe's scientific and technological bases, and boost innovation capacity. It focuses on sustainability, digital transformation, and fostering collaboration across various sectors to achieve impactful scientific and societal advancements.
- *The URBACT programme* fosters sustainable urban development in Europe by promoting the exchange of best practices among cities and engaging urban stakeholders in collaborative projects. It emphasises citizen participation and addresses key urban challenges through innovative solutions and policy recommendations.
- *European Forum for Urban Security (EFUS)*: a network of local and regional authorities that promotes a balanced vision of urban security combining prevention, sanction, and social cohesion. EFUS supports cities in developing policies and practices in crime prevention and security, fostering cooperation among European cities. Example of projects:
 - [TRANSCEND](#) (Transdisciplinary Methods for Societal Impact Assessment and Impact Creation For Security Research Technologies) – the TRANSCEND project was built upon the following observation: civil society is too rarely involved in the research and development of technologies for security purposes. This is the reason why it is not always easy to understand and resolve societal injustice. TRANSCEND views security technologies, research and innovation as ways of creating opportunities for European societies. Technology brings forth certain vulnerabilities regarding data protection, ethics and human rights. It is essential to provide citizens with the possibility to get involved in these matters that directly affect them. Thus, TRANSCEND aims to enable individuals, and organisations that speak on their behalf, to participate actively and creatively in iterative processes of design and deployment.
 - [PRoTECT](#) – Public Resilience using Technology to Counter Terrorism (2018 – 2021), aimed to strengthen local authorities' capabilities in public spaces protection by putting in place an overarching concept where tools, technology, training and field demonstrations will lead to situational awareness and improve direct responses to secure public places before, during and after a terrorist threat (funded by the European Commission's 2017 Action Plan)
 - [CCI](#) – Cutting Crime Impact (2018 – 2021), the project **focused essentially on petty crime that has a negative impact upon citizens**. The objective of the project is to allow the police and other authorities, both local and national, in particular those responsible for security policies, to reduce the impact of petty crime and, as far as possible, prevent it altogether (Horizon 2020).
 - [Medi@4sec](#), led by the University of Warwick (UK), on the role of social media in enhancing public security (2016-2017). The programme focused on the "good, the bad and the ugly" side of this topic with "good" comprising social media usage for decreasing the rate as well as the fear of crime, "bad" covering social media related crimes, and the "ugly" meaning grey areas such as cyberbullying or tactical security operations. The project's proposed outcome was to provide an evidence-base and a roadmap for better policy making including best practice reports, a catalogue of social media technologies, recommendations for EU standards, future training options, and ethical awareness raising.
 - Efus was a partner in the [SURVEILLE](#) project (Surveillance: Ethical Issues, Legal Limitations and Efficiency) (2012-2015), which was focused on the use of surveillance technologies for the prevention, investigation and prosecution of serious crime. The project's main objectives were to survey the types of surveillance technologies used in Europe; to assess both the benefits and costs of these

technologies; to elaborate on the whole range of legal and ethical issues raised by them; and to communicate their results to a representative sample of stakeholders.

- Efus led the [Citizens, Cities and Video Surveillance](#) project (2009-2010) on video surveillance and the legal questions it raises. The main outcome of the project was a comprehensive knowledge base analysing CCTV usage from the viewpoints of law, politics and democracy, as well as a collection of good practices from participating European cities.
- *EUROCITIES*: a network of major European cities that collaborate on a wide range of urban issues, including security and crime prevention. While no major projects/initiatives have been initiated within the network, it can be utilised for knowledge sharing and search of transfer partners.

Ultimately, each of these respective programmes/ initiatives illustrate the EU's comprehensive approach to enhancing urban security through collaboration between cities, police forces, and other stakeholders. They leverage a mix of policy development, technological innovation, and community engagement to tackle organised crime effectively.

❖ Relevant Urban Innovative Actions (UIA, predecessor of the EUI programme) Projects

Project Title	City	Urban Challenge	Solution	Relevance
BeSecure-FeelSecure - Holistic Urban Security Governance Framework for Monitoring, Assessing and Forecasting the Efficiency, Sustainability and Resilience of Piraeus	Piraeus (GR)	Piraeus is the largest & busiest port in Greece, among the biggest European ports and the main hub connecting Europe, Asia and Africa, as well as among the most densely populated cities in Europe (15.065 citizens/km²). The urban threat landscape in Piraeus is mainly comprised by small scale crime (i.e. pickpockets, thieves), night crime activities, drug & cigarette smuggling and immigrants' trafficking. These events are hardly reported to the authorities due to the lack of transparency, cross-sectoral cooperation and exploitation of cyber-physical flaws. <u>The project targeted areas are characterised by an urban landscape with the following urban crime factors:</u> 1. Low social cohesion 2. High population density	The Be Secure-Feel Secure (BSFS) proposed solution aims to provide a holistic framework against urban security threats, focusing on crime prevention and improvement of the actual and perceived security. This can be achieved via efficient collaboration of key urban entities, infrastructures and the citizens, entailing seamless information sharing and increased social cohesion. In this line, BSFS will be implemented in three layers (governance, cyber and social & spatial actions). In the Governance layer, a Local Council for Crime Prevention (LCCP) will be established in the municipality of Piraeus, in order to promote collaborative decision making between the main urban stakeholders. LCCP will be composed of representatives of the urban authority, police, criminology (scientific) experts and cyber-security (technical) experts.	This project is highly relevant to Heerlen's idea from the technological standpoint. Piraeus could be invited as a transfer city.

		3. Sense of degradation 4. Fear of crime (citizens believe that urban insecurity is in the top 3 city problems according to a recent local poll). 5. Environmental degradation & urban design. 6. Weak collaboration among the critical information systems of the urban authority, the police and other key stakeholders is associated with the almost non-existent interoperability, entailing information losses and hampering timely reaction of the first responders.	These decision makers will be supported by the Cyber layer of the project, with the implementation of an Evidence-based Collaborative Urban Risk Management (CURiM) ICT platform. CURiM enables synergies among local stakeholders towards identifying, modelling, evaluation, forecasting and prevention of cyber/physical security threats. The output of the collaboration between LCCP and CURiM will be the definition and implementation of specific Social & Spatial actions, following the approach of modern CPTED "Crime Prevention through Environmental Design". These actions will be associated, inter alia, to the delivery of urban security awareness sessions to key citizen groups, beautification of selected abandoned or vandalised public property and victimisation support. Utterly, the BSFS project will deliver a governance framework and a collaborative urban security management platform in order to improve both the urban security landscape of Piraeus and increase its citizens' perception of safety. Upon their evaluation, the project results will comprise a set of best practices, which will be communicated outside the local boundaries, so that they can be adoptable by other Greek and European cities.	
To-Nite – Community-Based Urban Security	Turin (IT)	Enhancing the perception of urban safety through collaborative policies based on social empowerment and active participation of residents and stakeholders is the main objective of To-Nite. Urban services and public spaces are designed mainly for being used during the daytime, while recent lifestyle trends show how these spaces and	TO-Nite aims to deliver community-based urban security through community activation, empowerment and technology-based social sensing. This will allow the City to face the challenge by implementing multidisciplinary and co-designed solutions with communities aimed at improving the livability of public spaces and the perceived security of our communities.	Similar to the Heerlen mentality, Turin aimed to approach urban security through a community-based lens – cooperating with local stakeholders to tailor policies and actions to

		services are becoming increasingly attractive during the night, for the creation of new cultural, economic and civic opportunities. Making urban spaces safer during the night is a major issue for the city of Turin and its residents. While traditional policies on urban security are actually showing their limits in contrasting these phenomena, the adoption of an innovative approach based on fostering the attractiveness of public spaces will contribute to prevent urban blight, fostering at the same time the active inclusion of all the actors in the definition of night policies.	TO-Nite will also improve City's capabilities to monitor the current situation, detect the rise of new phenomena, understand communities needs, and measuring impacts of co-designed solutions by collecting, processing and visualising, in a coherent way, heterogeneous data generated by the city infrastructures and its communities in the context of urban security. To achieve such objectives, the project intends to: - conduct ethnographic and social enquiry activities in target neighbourhoods and engage key stakeholders to understand the current culture of security (with specific regard to the night/evening experience), - define the enabling role of infrastructure technology that could be placed in those areas, and elaborate a baseline and a model in support to City's policy and services; - develop an improved and integrated technology infrastructure (i.e. platform, beacons, geofences) to understand, analyse urban insecurity phenomena (security sensing) and to provide open intelligence (data as urban commons) to improve citizens' awareness regarding their culture and perception of security; - co-design with communities opportunities for urban regeneration and services aimed at improving social cohesion and protection in the use of public spaces at night/evening time. Impact oriented and sustainable co-defined solutions will be supported by dedicated acceleration programmes.	the specific needs of the community. Furthermore, this project also had a relatively strong tech base (e.g. using security tools to enhance security sensing and urban platforms). Still, this project largely focused on the safety of urban public spaces, specifically how to adapt to the new needs of community members (e.g. the all-day use of public spaces and services; the transition from day-time use – as they were originally designed – to more night-time use; combating crime, etc.). Thus, it does not have the unique neighbourhood-level approach or the complex understanding of organised crime/ necessary social interventions that are present in the Heerlen proposal.
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SURE - Smart Urban Security and Event Resilience	Tampere (FI)	The urban challenge tackled by SURE is based on the rapid growth, major urban changes and related urban security challenges and development needs in Tampere. There are various popular and busy event areas in the Tampere city centre. The key challenge of SURE is how to efficiently manage large crowd concentration- (in general) and event-related (in specific) urban security in Tampere - especially in complex and evolving urban environments? How to maintain the high level of urban security in Tampere in connection with the rapid urban change, and to prevent a severe security incident without over-securing security-sensitive urban areas which may cause the undermining of the citizens' sense of security?	The proposed solution focuses on safety and security of security-intensive urban environments in Tampere - with event areas, infrastructure and actual events, and their smooth and seamless integration with the surrounding urban environment and infrastructure as the core focus. Technically, the solution comprises and focuses on data- and user-driven urban security planning, proactive analytics and monitoring, simulation and training of large crowd concentration- and event-related urban security in a complex and evolving urban environment, as well as on related investments.	This UIA was focused on event-related urban security, therefore, not specifically relevant, but the user-driven urban security concept is interesting.
ForwArt - Moving forward with the power of art: from a place to hide to a place of pride	Tilburg (NL)	Young people from North Tilburg have narrow perceived life opportunities and are hardly grasping their full potential in education or talent development. North Tilburg is the district with the highest proportion of residents with a low level of education (43.5% compared to 35.8% for the city as a whole). From as early as the age of 8 the street culture is dominant in influencing the behaviour of youth. Criminal activities are undermining the social structures of the neighbourhood and exposure to criminal behaviour is high. Public service providers (such as police, youth work, housing association) are losing ground in reaching out and engaging with the youth.	ForwArt explores how culture can become an agent for social transformation. It creates a cultural ecosystem in North Tilburg to help youth express the intrinsic culture inherent in them and thus built up subjective well-being. Supported by more responsive public services it works on the expressed challenges to turn the tide of criminal undermining in the area. ForwArt offers youth at risk wider perspectives, positive role models and alternative pathways than those leading to criminality; it aims to explore, discover, engage, develop, support & exhibit talent from the fringes of society, while their statuses shift from outcasts to role models. ForwArt also creates permanent art expressions, to make the urban texture welcoming and open for individual expressions of culture and identity. Reflecting the identity of people living in North	- Addresses a similar urban challenge (e.g. youth attraction to crime/ street culture, socio economic challenges in city neighbourhoods, lack of engagement with youth population, crime undermining social structures of the neighbourhood) - However, the proposed solution is different. ForwArt utilises art and culture as a means to engage the youth population. Though there would

			Tilburg, art could become an everyday experience for them. Various art products will be co-created (mountable sculptures, murals, graffiti, internal corridor designs) to which people can easily relate.	be an emphasis on engagement and neighbourhood-level solutions, Heerlen would not approach this solution through the lens of art and culture. - Still an important benchmarking example in the Dutch context.
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❖ Other Relevant Projects/Initiatives

Project	City	Programme	Overview
UrbSecurity: Planning safer cities	Leiria (PT) Mechelen (BE) Pella (EL) Madrid (ES) Szabolcs (HU) Longford (IE) Parma (IT) Michalovce (SK)	URBACT	This Action Planning Network analyses strategies and projective concepts of cities' design that could contribute to prevent segregation and anti-social behaviour, and consecutively to improve citizen's quality of life and their perception of urban security and safety. The main objective is to implement an integrated and participatory approach to urban security by involving all relevant stakeholders in the process. Relevance: Integrated approach to urban security + participatory methods were used to come up with the Action Plans. Highlighted approaches are: urban design, working with minorities, spillovers from working with local police (new comm channels), nudging positive social behaviour.
SAFE-CITIES: riSk-based Approach For the protEction of public spaces in European CITIES	Transnational	Horizon	The project aims to help protect public spaces by providing a security and vulnerability assessment framework supported by an interactive platform. This platform will enable the simulation of complex scenarios, taking into account the behaviour of the crowd and various types of attacks in any space in a realistic 3D virtual environment, allowing for comprehensive and dynamic risk and vulnerability assessments of the tested locations. Relevance: Digital twin is to be developed as a tool, 3D visualisation for scenarios (baseline and threat scenarios)
Cutting Crime Impact –	Transnational	Horizon	The aim of the CCI project is to enable Law Enforcement Agencies (LEAs) and security policymakers to adopt a preventative, evidence-based and sustainable approach to tackling high-impact petty crime.

Practice-based innovation in preventing, investigating and mitigating high-impact petty crime			Tailored to the needs of end-users, CCI will design, develop and demonstrate <u>four Toolkits</u> covering: (i) predictive policing; (ii) community policing; (iii) crime prevention through urban design and planning; and (iv) measuring and mitigating citizens' feelings of insecurity. Relevance: GMP Community Connect - An evidence-based Tool to ensure continuity of Community Policing in Greater Manchester Local authorities involved: Dutch Police, Lisbon, Catalonia, Lower Saxony, Manchester, Estonian police
IcARUS – Innovative Approaches to Urban Security Concludes Aug. 2024	Transnational	Horizon 2020 (w/ EFUS)	The IcARUS project (Innovative AppRoaches to Urban Security) is coordinated by Efus, with a consortium of 17 European partners, including universities and research institutions, local authorities as well as civil society and private sector organisations. IcARUS aims to learn from past experiences in urban security policies and practices throughout Europe. The project's main objective is to rethink, redesign and adapt existing tools and methods to help local security actors anticipate and better respond to security challenges. The project's main objective is to rethink, redesign and adapt existing tools and methods to help local security actors anticipate and better respond to security challenges in the context of: - A decline in citizens' trust in institutions, local elected officials and other security and prevention actors; - Drastic budgetary cuts and various contemporary crises that affect local and national authorities; - The development of smart cities, which implies the efficient inclusion of technological innovations in crime prevention. IcARUS will focus on four areas that have been identified by local and regional authorities as enduring security challenges: - Preventing juvenile delinquency; - Preventing radicalisation leading to violent extremism; - Designing and managing safe public spaces; - Preventing and reducing trafficking and organised crime. These will also be examined in the light of four cross-cutting issues of: governance and diversification of actors, technological change, gender, transnational & cross-border issues. The project will review and reassess past and present urban security policies to provide socially and technologically innovative strategies and tools adaptable to specific local contexts. We will develop custom-made solutions to security challenges, which will incorporate social as well as technological

			innovations. The tools will be designed through a constant process of defining, ideating, prototyping, testing, evaluating and adapting by local authorities. This process will ensure that they are effective and meet the collective needs of citizens. Local authorities involved: City of Stuttgart (DE), City of Riga (LV), City of Rotterdam (NL), City of Nice (FR), City of Lisbon (PT), City of Turin (IT)
CO-SECUR – Knowledge building and social innovation for a successful, more effective and CO-produce urban SECURITY solutions	Spain	Horizon Europe	Amidst the evolving landscape of security challenges in public spaces, there is a growing need for effective and socially accepted solutions. As massive events and crowded places become potential targets, the demand for innovative security measures intensifies. Trust, acceptance, and heightened security behaviours are essential. With this in mind, the EU-funded CO-SECUR project aims to cultivate knowledge and tools to expedite the adoption of social innovations and responsible principles in security solutions. Through meticulous phases, including literature reviews, case studies, and collaborative development, the project will redefine security paradigms. Overall, the project will pave the way for a new era of public safety, fostering smart communities and innovative, transferable security technologies. Currently running - no major outputs. Relevance: use of social innovation methods.
STEPWISE: a Simulation, Training, and Evaluation Platform for the Protection of Crowded Public Spaces	Transnational	ISF	The project aims to support the improvement of public spaces, notably those open to the general public (from simple events in public spaces to stadium events but also shopping centres, museums, etc.). Starting from the observation that it was impossible to carry out physical security audits on all potential targets / soft targets (insufficient human resources and time), the project coordinator, DIGINEXT, developed the idea of working on augmented reality mock-ups to assess risks and scenarios/potential threats. This would avoid taking over public spaces and upsetting people. Relevance: Digital platform to evaluate safety risks in urban environment
3D-Forensics FTI: Mobile high-resolution 3D-Scanner and 3D data analysis for forensic evidence fast track to innovation	Transnational	ISF	In High Volume Crimes, such as burglary, a common trace type are footwear and tyre track traces. At present the recording and analysis of such traces can only be mitigated (if at all) through time consuming procedures. In the last years the FP7 project 3D-Forensics (www.3D-Forensics.eu) developed and evaluated a promising approach to fill gaps in the performance of actual tools. Footwear and tyre traces are captured using modern optical 3D-scanning technology and investigated using a 3D analysis software focussed on forensic end users. 3D-Forensics / FTI will bridge the so-called "valley of death" between a successful research and technological development and market introduction of innovation. It will finish off the footwear and tyre trace 3D scanning and analysis idea from an already advanced project output to make it market mature and ready for launch. Relevance: Technological use-case familiar to the Dutch Police (the region of Zeeland West-Brabant).

ELSA Lab Heerlen	Heerlen	National/regional	ELSA Lab's goal is to reduce poverty and debt using data science and artificial intelligence (AI). One of the projects works with the AR/VR tech: A government employee can go on a virtual 'walk' with a homeless person to get an idea of what their daily life is like, and see what that person is up against. Relevance: Government employees can enhance crime prevention and urban security by participating in virtual 'walks' that simulate the daily lives of individuals in high-crime areas or those directly affected by urban insecurity. Utilising VR or AR technology, these immersive experiences allow employees to navigate unsafe environments, encounter the challenges faced by these communities, and understand their struggles firsthand. This deeper empathy and insight can inform more compassionate, effective policies and interventions, fostering collaboration between government agencies and local communities, and ultimately leading to safer, more resilient urban environments.
Transforming Cities with the Neighbourhood Approach: Bottom-up Solutions for Sustainability and Equity	Mexico	World Urban Forum	UNEP and C40 are developing a common Neighbourhood Approach to promote a people-centred, integrated and sustainable vision of urban development and regeneration. The Neighbourhood Approach is a pathway for cities to initiate transformation, promote inclusiveness, and ensure equal access to urban resources and opportunities. Neighbourhoods can pursue integrated urban planning at a less complex scale than cities – this approach encourages designers, citizens and local authorities to collaboratively create green and thriving communities. Neighbourhoods are key to implementing holistic, bottom-up and innovative solutions that consider communities' needs, including the most marginalised and vulnerable ones. Transforming urban systems for the purposes of a green and thriving neighbourhood not only support the delivery of carbon-neutrality and resource-efficiency, but it also is attributed to tackling inequalities, poverty and vulnerability by ensuring inclusiveness in the decision-making process, food security, improved public health, increased (green) density, affordability and resilience, and a better quality of life. Relevance: confirming the viability of Heerlen's approach
CANVAS - Towards Safer and Attractive Cities: Crime and Violence Prevention through Smart Planning and Artistic Resistance	Portugal (Lisbon, Porto, Albufeira)	ERDF	Promoting innovative partnerships between academia, administration, police, artists and community (namely NEET) in neighbourhoods in three Portuguese cities, CANVAS is a major step forward as it assumes a holistic place-based approach to crime and social exclusion, emphasising both spatiality and sociality. First, based on the concepts of crime concentration, territorial stigmatisation and smart policing it will develop a pioneering GIS crime prevention DST that can be applied by local authorities and police forces to understand geo-patterns of behaviour, crime and insecurity, and thus test and apply scenarios of urban and socio-cultural requalification. Second, based on the concepts of community planning/policing, collective efficacy and arts-in-action it will capitalise on the potential of cultural capital to be a catalyst for youths to gain a sense of belonging and thus cope with, and help prevent, violence and insecurity. Using digital humanities' techniques, important cognitive maps of insecurity and the socio-spatial impact of cultural transformations will be made, whilst through the creation of cultural outputs, commitment for prevention and social integration is fomented. Then, fed by a geocoded database of crime,

			socio-economic, morpho-functional and cognitive variables, the DST will generate important knowledge on the socio-urban causes that lead to insecurity hotspots. A safe map-app and a digital CP-UDP monitoring dashboard will be developed to enhance the skills of decision-makers and dwellers. Relevance: this innovation is already existing in EU, needs a twist
Präventionsprojekte	Germany	N/A	Germany's Präventionsprojekte represents a comprehensive approach to crime prevention, emphasising community involvement, social support, environmental design, and technological innovation. • <u>"Prävention im Team" (Prevention in Team) in Berlin:</u> ◦ Community centres offering after-school programs, sports activities, and vocational training to address youth violence and gang involvement ◦ https://www.pufii.de/nano.cms/initiativen?xa=details&id=597. • <u>"Sicher im Alter" (Safe in Old Age) in Munich:</u> ◦ Educational seminars and support services to protect elderly citizens from fraud and abuse. • <u>"Kein Raum für Missbrauch" (No Room for Abuse) Nationwide:</u> ◦ Training for teachers and social workers, public awareness campaigns, and support services to prevent child abuse and exploitation. Relevance: integrated approach in local crime prevention by itself is not an innovation and already used in Social Safe approach

II. Expanded benchmark for selected ideas / technologies

This benchmark follows Focus Sprint with main project technological stakeholders, elaborating on the ideas discussed there.

The structure follows the Socially Safe approach, which integrates:

- Security domain: Technologies and initiatives aimed at enhancing public safety.
- Social domain: Solutions focused on improving social well-being and community engagement.
- Overarching principles: Core principles such as citizen engagement, co-design, and transparency that foster community cohesion.

Security domain: Law enforcement, policing aspect	
Sprint ideas	Benchmark
Real-time Crime Reporting	Real-time (crime) reporting apps: • In NL and Heerlen: WhatsApp buurtpreventie groep and a municipality website for reporting exist • CITYCoP Citizen Interaction Technologies Yield Community Policing developed SecureU, a new app tested in RO, IT, PT, IE. • The Safe Community App from South African context • The Police.UK platform offers Android and Apple users nationwide functionality for reporting crime and other incidents, as well as providing tailored information on local teams of officers and community initiatives • StreetSafe (UK) is a service that allows you to report safety concerns in public places anonymously. This includes issues like poorly lit streets, abandoned buildings, or vandalism, as well as instances where you feel unsafe due to someone following or verbally abusing you. (<i>StreetSafe is not for reporting crimes</i>). • OWL, or Online Watch Link, is a platform in the UK used by police and communities to manage and expand neighbourhood watch programmes. It provides members with the latest local alerts and crime prevention advice via email, phone or SMS, and includes features such as live chat and surveys OWL app functionality (such as alerts, crime prevention advice, live chat) to be included in the real time crime reporting app and to be expanded to receiving reports, feedback and follow-ups on reported crimes for citizens in order to build trust and encourage the use of the app. • Chirp = Bird Elia Formisano - News - Maastricht University With the results of this research, we started building our own neural network that is getting even closer to the working of the human brain. With this research and technology, we can contribute to the development of better sound recognition software". For example: alarm systems, hearing robots or systems for elderly people to help them around the house. When they are going out the door, the system could remind them that the tea kettle is boiling, because it can recognise the sound".

	CONCLUSION: Many neighbourhood watch types of solutions exist. Distinctive features of our project: interactivity with police officers component or including public workers / delivery people into the system.
Digital twin for safety // predictive analytics	• vCity is an adaptable, data-driven platform to help assess the impact of new interventions on all aspects of city life. See Proximity City digital twin (developed in Barcelona, Spain). • UK Digital twin for communities and healthy cities developing digital twins for improved service delivery, drawing on connections between health, education, crime and housing. • Integrated sensors system (feeding eventually into the digital twin). Project example: SYnergy of integrated Sensors and Technologies for urban sEcured environMent (Horizon2020, countries participating: IT, UK, SE, PL, DE, SK, EL) • Another technology from a Horizon project that can be fed into the digital twin: a novel, ultra-low-power, intelligent, miniaturised, low-cost, wireless, autonomous sensor ("FORENSOR") for evidence gathering. Its ultra-sensitive camera and built-in intelligence will allow it to operate at remote locations, automatically identify pre-defined criminal events, and alert LEAs in real time while providing and storing the relevant video, location and timing evidence. (countries participating: IT, EL, PT, FR, ES, BE). • The Horizon's NOSY project is focused on the development of a miniaturised yet highly sensitive platform, for the detection of illicit or suspicious substances (countries participating: UK, IT, SE, PT, FR). CONCLUSION: Application of Digital Twin in social / crime context has high innovation potential. See also below under 'Social layer of Digital Twin'.
AI-powered (avatars) / digital community policemen	• Meet Ella: New Zealand Police unveil first artificial intelligence officer • AI Chatbot Kiosk for Police Foundation Training in Hong Kong: new project • Norway's AI-based virtual avatar for police interview training (child abuse) • Singaporean officers may be trained with artificial intelligence (AI) avatars in simulation exercises by 2025 • AI for law enforcement: EU funded project popAI - A European Positive Sum Approach towards AI tools in support of Law Enforcement and safeguarding privacy and fundamental rights CONCLUSION: good innovation potential, many examples from beyond the EU to be looked at and adapted!
Sharing of best practices, self-learning	• Pilot experiments in one neighbourhood can be fully transferred to the digital twin in order to extrapolate the results on other neighbourhoods using predictive analytics. • Training in VR for police: SHOTPROS (Improve performance of European police officers by developing VR enhanced training) project aims to improve the training for European Police officers. (countries participating: NL (Dutch police), BE, DE, AT, SE, RO). • GMP Community Connect - An evidence-based Tool to ensure continuity of Community Policing in Greater Manchester, UK (continuous storage and sharing of data among officers)

Social domain: Social aspect of crime prevention	
Sprint ideas	Benchmark
VR simulation on the consequences of decisions	• Virtual Decisions: GANGS programme, an interactive, choose-your-own-path VR simulation developed in Manchester, UK, that explores the consequences of gang culture popularity and raises awareness about violence and exploitation. • Providing meaningful alternatives • Working with schools • Working with social media CONCLUSION: Highly innovative idea to transfer this best practice into Heerlen relevant crime context via the Challenges
WESH local currency (Heerlen Heitje)	This needs to be better elaborated to avoid surveillance culture and erosion of trust among residents. WESH could be expanded to include a neighbourhood watch patrol and reporting suspicious activity
Social layer of Digital Twin	Digital twins with social layers are really scarce and even if existing, not very much advanced in their technology and practical applications. • Digital twin can help with social challenges, as planned in 2023 by BSSC Public Services Lab • ELSA Lab tools could be used to tackle poverty and add layers to the digital twin

Overarching principles for community cohesion: Citizen engagement; Co-design; Transparency.	
Sprint ideas	Benchmark
Digital Twin for neighbourhood engagement	• Norway's Troindheim experimented with giving access to the 3D model of the city and gathering feedback, identifying problematic hotspots in the city this way. Ideas: • Drawing up problem hotspots on the map based on citizen inputs • Chatbot / AI for responses and analysis
Co-creation	Block by Block project inspired tool (an innovative partnership between the UN and Mojang Studios, developers of Minecraft) Ideas: • Explore how citizens ideas submitted to Frisse Wind can be realised in simulation, e.g. Simcity - during evaluation of Fresh Wind project ideas; use of digital twin public interface

	• Citizens co-create a neighbourhood safety app throughout the duration of the project
Transparency	DUTUS tool (by ICARUS Horizon2020 project) ensures that the deployment of innovative technologies like drones, CCTV, and predictive algorithms in our cities respects our democratic values and civil liberties. See first version of the tool at the end of the page HERE. CONCLUSION: All tech solutions are supposed to have an ethical validation, a co-design layer - we can also use the DUTUS tool as an inspiration on how to make the tech solutions all more democratic. ELSA Lab can ensure this.

Annex 7: Use Cases for Social Digital Twin technology

List of Potential Use Cases for the Social Digital Twin (SDT)

Real-Time Incident Awareness and Response	The SDT can analyse CCTV footage, citizen and frontline/field professionals' reports in real-time to detect incidents like violence, fires etc. Citizens can interact with the SDT to ask what's happening in their area, and the SDT provides immediate updates on incidents. Local authorities can respond quickly, while citizens stay informed through the platform/app.
Predictive Policing and Resource Allocation // Proactive Crime Prevention in High-Risk Areas	Integrating police data with anonymous crime reports, local complaints, and historical sanctions to create real-time simulations of crime patterns. The SDT could predict potential crime hotspots and suggest proactive interventions (e.g., increased patrols or surveillance or social safety team intervention) before incidents occur. Welfare data could add insight into economic distress in certain areas, helping identify high-risk zones for social unrest.
Public Safety Hotspot Identification Based on Citizen Behavior	SDT could combine data on migrant workers, personal demographics, and local permits to identify areas with potential social tensions (e.g., overcrowded housing or unlicensed business activities). Reports from frontline professionals and local complaints could add real-time inputs, allowing municipalities to preemptively manage public unrest or improve social integration programs in vulnerable neighbourhoods.
Crowd Behavior Prediction and Intervention	The SDT detects movement and movement patterns (e.g. young people gathering in front of a supermarket, people crossing the street to avoid specific areas) and analyzes why this behavior occurs. Police and neighborhood managers can monitor gathering hotspots and deploy interventions to prevent potential disturbances. Movement patterns analysis can draw neighbourhood managers' attention to potential public safety risks and deploy appropriate interventions.
AI Copilot	Newly recruited police officers can be guided by AI Copilot using SDT data. It provides real-time advice based on historical and current data for efficient decision-making during patrols. It ensures effective police action by using data-driven insights to enhance the decision-making process of new officers.
	During neighbourhood walks by Liveability Meeting members, the AI Copilot provides real-time data on the demographic and social makeup of the area, helping frontline professionals understand the community's needs. Data-driven site visits where neighbourhood managers can address issues based on real-time insights.

Monitoring of Second-hand Goods Trade to Reduce Theft and Fraud	The SDT could track transactions in the second-hand goods market by cross-referencing the dealers' register with local crime reports. This could help authorities identify patterns of stolen goods entering the market and suggest targeted interventions, such as increased inspections or monitoring of certain vendors. This system could be used to reduce fencing operations and prevent fraud related to second-hand sales.
Illegal Housing and Land Use Monitoring	This use case focuses on identifying illegal land use or unregistered housing units. By cross-referencing municipal enforcement data, land use plans, and housing association records, the SDT could flag properties that are violating zoning laws, housing regulations, or being used for unregistered business activities. The system can simulate different enforcement scenarios and suggest actions to mitigate risks like overcrowding or illegal construction.
Youth Safety and Early Intervention in Schools	The SDT could combine school safety incident reports, early school-leaving data, and social surveys to identify trends that signal youth at risk of criminal behaviour. It could simulate the effects of various interventions, such as after-school programs, mental health counselling, or increased supervision in certain areas. The system could also provide real-time alerts to school administrators when concerning patterns emerge, allowing for rapid preventive action.
Proactive management of public disturbances	The SDT could aggregate data on individuals exhibiting erratic behaviour, including public complaints and enforcement actions, to simulate hotspots where disturbances are likely to occur. By predicting these hotspots, municipalities can proactively deploy social services or law enforcement to prevent incidents from escalating, providing timely care to individuals in distress while maintaining public safety.
Social Cohesion Heatmaps	The SDT could generate social cohesion heatmaps that analyse how well different communities integrate based on variables like housing density, social welfare registration, and feedback from local surveys. It could suggest where municipalities should focus on improving social programs, or where to place community centers, language classes, or conflict-resolution initiatives to enhance community bonds and reduce social tensions.
Neighborhood Blind Spot Detection	The SDT could identify areas with low community engagement or where there is a lack of citizen action based on feedback from local surveys, professionals reports, nuisance registrations, CCTVs. It then offers solutions for improving social cohesion and activating citizen participation. Neighbourhood managers can focus efforts on underperforming areas to boost community involvement and cohesion.
Monitoring neighbourhoods' carrying capacity and predicting impact of	The SDT predicts the social and behavioural effects of moving a family out of a neighbourhood and replacing them with another. It simulates how the change would affect the community's social cohesion. Municipalities use this to plan housing policies and

interventions	reduce social disruption.
	The SDT helps determine the best locations for individuals or communities with "big baggage" who need specialised spaces. It calculates the carrying capacity of neighbourhoods for certain populations. Efficient space allocation for vulnerable groups in the community.
	The SDT predicts the best locations for public facilities, such as skate parks or venues for large gatherings (e.g., a 500-person rock concert), based on traffic, behaviour, and community needs. Informs urban planning decisions to enhance liveability and community satisfaction.
	The SDT simulates potential physical interventions in a neighbourhood and predicts the impact, such as placing a skate park or organising a large event. It could also provide cost estimates for different interventions. Helps municipalities assess the financial and social impact of proposed community interventions.
Social Cohesion Forecasting	As the SDT scales, it can forecast factors affecting social cohesion, such as changes in demographic patterns, economic shifts, or policy interventions, supporting long-term planning for neighbourhoods, ensuring sustainability and growth in social cohesion.
Strategic decision making support	The SDT provides a "helicopter view" of multiple physical interventions, showing how they interact with each other. It helps planners understand the collective impact of various interventions beyond a localised view. It enables holistic urban planning and decision-making, minimising negative side effects from unrelated interventions.

Potential Use Cases for the Heerlen App Safety Module

Community-sourced crime reporting	Citizens report crimes, suspicious activities via the app and earn rewards for actionable reports. Verified reports inform crime hotspot detection and resource allocation.
Public nuisance reporting	Residents report minor public nuisances (e.g., noise complaints, illegal parking), earning rewards for improving neighbourhood orderliness. Reports feed into municipal action plans.
Infrastructure hazard reporting	Residents report hazards like broken streetlights, vandalised public domain objects such as graffitied bins or unsafe infrastructure. Reports feed into a predictive system to prioritise repairs, with contributors earning rewards for their participation.
Crisis Reporting and Emergency Response	During emergencies, citizens provide real-time reports (blocked roads, safe zones) through the app. Verified reports help first responders and earn rewards for contributors.
Vulnerable people support	The app could promote citizen involvement in supporting vulnerable populations, such as reporting areas where elderly or homeless individuals need help. Contributions are rewarded with recognition.
Feedback on reports	The app could provide feedback on reported incidents, safety issues to citizens/neighbourhood watch groups.
Neighborhood Watch participation	Residents join neighbourhood watches through the app, earning rewards for reporting safety concerns. Neighbourhood watch integration will also allow for notifying citizens about ongoing incidents so they can avoid affected areas. Aggregated data guides local safety efforts, with rewards for contributors.
Community Safety and Liveability Initiative Participation	The app encourages participation in local safety projects (e.g., neighbourhood patrols, public maintenance, neighbourhood clean-ups, planting greenery, and social cohesion activities), rewarding users for volunteering. The Heerlen app could also provide information on group and individual tasks, task locations, so citizens can follow up or join these tasks.
Gamified Safety Tasks	The app could offer gamified safety challenges, tasks for youth, raising their awareness on public safety. Rewards are given for completing an amount, variety of challenges and areas.
Learning capsules	Citizens living in certain areas can follow in-app learning capsules on crime awareness, learning how to spot undermining etc. They will be rewarded by coins for completing these capsules.
Feeling of safety surveys and feedback	The app sends safety-related surveys to users, rewarding them for participation. Feedback is integrated into urban planning, helping to adapt strategies based on public sentiment.

Contests to improve liveability and community cohesion	Citizens can participate in community contests, suggested by SDT, aiming to improve liveability, safety and community cohesion in smaller communities (the greenest street, the nicest-looking block etc).
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Adaptability of Social Digital Twin in other sectors

A social digital twin (SDT) can be used for a wide range of applications beyond safety and liveability, leveraging its ability to simulate and analyse complex social dynamics in real-time. Some potential use cases:

Healthcare Planning	SDT can model population health trends, predict healthcare needs, and optimise resource allocation. For instance, it can simulate the spread of diseases and help design targeted interventions to improve public health.
Education Optimization	SDT can be used to simulate educational systems, helping policymakers analyse the impact of changes in curriculum, infrastructure, or technology on student outcomes. This can also help identify areas where educational inequalities exist.
Urban Development and Housing	SDT can help simulate the social and economic impacts of new housing projects or urban developments. It could model how new infrastructure affects housing demand, gentrification, or displacement and offer insights into more equitable development strategies.
Environmental Impact and Sustainability	The SDT can help measure the environmental behaviour of communities, predicting how changes in urban policy, climate, or consumption habits might impact sustainability goals such as reducing carbon footprints or increasing green spaces.
Workforce and Employment Planning	An SDT can model labour market dynamics, forecasting job growth, skills gaps, or workforce displacement due to technological advances. This can assist cities or organisations in planning reskilling or upskilling initiatives.
Cultural and Tourism Development	Using SDT, cities can explore how to boost tourism and cultural engagement. It can simulate visitor behaviour and cultural participation, allowing policymakers to design events, museums, and other initiatives that resonate with the community and visitors.

Disaster Preparedness and Resilience	An SDT can model how populations might react to disasters like floods, fires, or pandemics. It helps in preparing evacuation plans, distributing aid, and improving overall community resilience to natural disasters.
Economic Development and Inequality Reduction	The SDT could track and analyse economic activity in real-time, offering insights into how different policy decisions could impact poverty levels, wealth distribution, and overall economic growth.
Civic Participation and Policy Engagement	It could help governments model and improve citizen engagement in policy-making processes, facilitating better public consultations and testing the potential impacts of new laws or initiatives on social behaviours.

Annex 8: Demo video of CCTV analyses by Social Digital Twin technology

eu-ltm concept-vid-analysis.mp4 [Download](#)

Video Frame Analysis Results

[Show Summary](#)

Video Summary

The video frames depict a bar or post-hall setting with multiple instances of potential altercations or assaults. Notable incidents include: 1. "Physical Confrontation": Several frames show individuals engaging in physical altercations near a pool table. One specific incident involves a person lying on the floor while another individual appears to kick or step over them. 2. "Person on the Ground": Numerous frames capture individuals lying on the floor while others walk past, indicating possible assaults or instances of confrontations. 3. "Aggressive Stance": A person is observed in a boxing-like stance, suggesting a potential escalation towards violence. These incidents involve multiple individuals across different frames, though specific times or individual identities are not detailed. The setting consistently implies a bar or recreational area with a pool table, emphasizing the repeated occurrence of altercations.



frame_0.jpg
Timestamp: 00:00:01
Description: Indoor scene in a bar or post hall.



frame_30.jpg
Timestamp: 00:00:01
Description: Two individuals are in a room with.



frame_60.jpg
Timestamp: 00:00:02
Description: Two individuals in a room with a

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in Dutch of PSSC concept of August 2024.
You can make a request to the 

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VERSION 0.1 | AUGUST 31, 2023 | HEERLEN



Public Smart Safety Center

VERSION 0.1 | AUGUST 31, 2023 | HEERLEN



Public Smart Safety Center (PSSC) STARTING NOTE

Safety is a basic need of every person and organization. Safety enables people to move freely, do business with each other and work together. Safety also gives trust in each other and in institutions. For organizations, safety is also important because it can improve productivity, quality and reputation.

However, the safety of citizens, companies, institutions and our society as a whole is constantly being tested. Criminal and subversive elements abuse the achievements of our society and threaten the rule of law. But sometimes the threat to safety also arises from unexpected or unforeseen developments that in turn can lead to vulnerabilities, abuse, exclusion, polarization, radicalization, etc. Safety is therefore a social task in which not only public institutions such as (local)

government, police and justice have a task, but where this increasingly requires private-public partnerships.

Friend and foe are using technological developments and the availability of large amounts of data. The trend is unstoppable and will increase exponentially. At the same time, technology in combination with and under the influence of artificial intelligence (algorithms) is becoming increasingly smarter, increasingly self-thinking.

As an organization, as a government, we want to be and remain reliable. We accelerate with society and do not lag behind, people may trust an alert and vigilant organization/

government. We look at coherence and cooperation. We are transparent where possible. We work data and knowledge driven and we do this from the circle education-operation-innovation.

What is a Public Smart Safety Center?

A Public Smart Safety Center (PSSC) is an innovative facility that applies advanced technologies and develops data-driven solutions to enhance and improve public safety. It combines elements of artificial intelligence, sensors, data analytics and predictive modeling to gain insight into safety issues, identify trends and take preventive measures.

Why is a PSSC important?

Enhanced Safety Measures: A PSSC uses data-driven insights to develop effective and proactive safety measures. It enables us to anticipate safety issues before they occur and implement targeted, evidence-based solutions.

Effective Collaboration: By bringing together diverse stakeholders, a PSSC promotes a coordinated and holistic approach to public safety. Government agencies, private companies, nonprofits, and the community can work together to develop and implement shared solutions.

Education and Research: As a center for research and education, a PSSC enables professionals and students to learn about the latest methods and technologies in public safety. It promotes continuous improvement and innovation in safety practices.

Central Management of Technologies:

A PSSC can serve as a central hub for the management, maintenance and development of technology applications. This removes the burden from individual public organisations to update and manage these technologies themselves. This improves efficiency and saves costs, while ensuring that the latest and most effective technologies are implemented.

Collaboration with Knowledge Institutes: Crucial to the success of a PSSC is the involvement of leading knowledge institutes, such as universities and TNO. Their expertise and research capabilities are indispensable for the operation of the centre and contribute to the continuous flow of new knowledge and technologies. This enables the PSSC to remain at the forefront of innovation in the field of public safety.

National and International Representation: A PSSC has an important role at national and international level. It can serve as a model for other cities and regions, contribute to national

policy measures, and putting the Netherlands on the map as a world leader in smart safety technologies and innovations.

Conclusion

A PSSC is more than just a physical location or an organization; it is a concept that embodies the future of public safety - a future that is technology-driven, proactive, collaborative, and constantly innovating. With its national and international appeal, a PSSC can serve as a model for other regions and position the Netherlands as a global leader in smart safety technologies.

Deploying a PSSC means investing in this future and ensuring a safer and better prepared society.

By joining forces with various stakeholders and leveraging the latest technologies and scientific insights, a PSSC can significantly improve the efficiency and effectiveness of our public safety efforts.

Overall strategy

The PSSC has 'safety' as its core theme. Safety in a broad sense, but from two important perspectives, namely:

- Data-driven work, and
- Knowledge-driven work.

From these two aspects there is a focus on policy, capability and the operation of the participants in the PSSC.

This approach also immediately makes clear what the input and importance of the founding fathers is, namely what binds us is working towards a safe society (police), data-driven work (Brightlands), knowledge-driven work (UM – TNO).

The PSSC assists participants in the field of physical and digital security in developing policies.

The PSSC functions as a knowledge center. In addition, knowledge development is also being worked on. In this way, we help with the

to achieve social and organizational objectives, taking into account the needs of the participating organizations and citizens.

The PSSC supports and develops new methodologies, new analyses, new applications. All developments and advice are always developed on the basis of ELSA (Ethical, Legal, Social Aspects) principles.

Taking into account the conditions of the participant concerned.

From the start of a development, attention is also paid to the acceptance of the person and organization that will have to work with it. The question 'what if it works?!' is always asked, based on the fact that working with new technologies and methodologies always also requires attention from the professional development and the culture of people and organization.

Veiligheid

Datagedreven werken + Kennisgedreven werken

Beleid

Beleidsontwikkeling
Beleidsondersteuning

- Bijzondere leerstoel 'Public Safety'
- TRL level 1-3
- Kennisontwikkeling
- Kenniscentrum

Capabiliteit

Sluit aan bij de ontwikkelingen in de maatschappij en de doelstelling en capaciteit van de organisatie

- Technologie verkenning
- TRL level 4-9
- Prototype
- Proof of Concept (PoC)
- Legal / Ethics

Operatie

Proeftuin, ontwikkeling en development

- Validatie
- Meerwaarde bepaling
- Vooraf en achteraf
- Behoeft articulatie

← Wat is het effect en welk vervolg is gewenst.
Ontwikkelingen in de maatschappij die weer een behoefte kunnen genereren. →

Figuur 1 Overall strategie PSSC

Mission

Strengthening the public safety (experience) of society by developing and supporting data-driven and knowledge-driven work.

Objective

To enable safety organizations to work data-driven and knowledge-driven by offering tools and data infrastructures within an innovation environment with innovative methods.

Framework

Within the framework of an innovative environment and innovative methods, the focus is on developing a data infrastructure and instruments, such as analysis techniques, digital twinning, robotization, artificial intelligence, video analysis, predictive policing, sensing, etc. (see below under the heading 'What'). Especially in activities within the framework of 'public safety' it is essential to take ELSA aspects into account. These aspects relate to the ethical, legal and social implications of the technologies that are used to improve safety. By integrating the ELSA aspects into the initiative, possible negative consequences for society can be prevented and a balance can be found between safety and other social values.

The ELSA principle can therefore contribute to creating a sustainable and responsible initiative that is in line with the values and needs of society.

Of course, combinations are also possible, such as within the domain of (personal) security where a combination of risk analysis, predictive policing, video analysis and sensing is obvious.

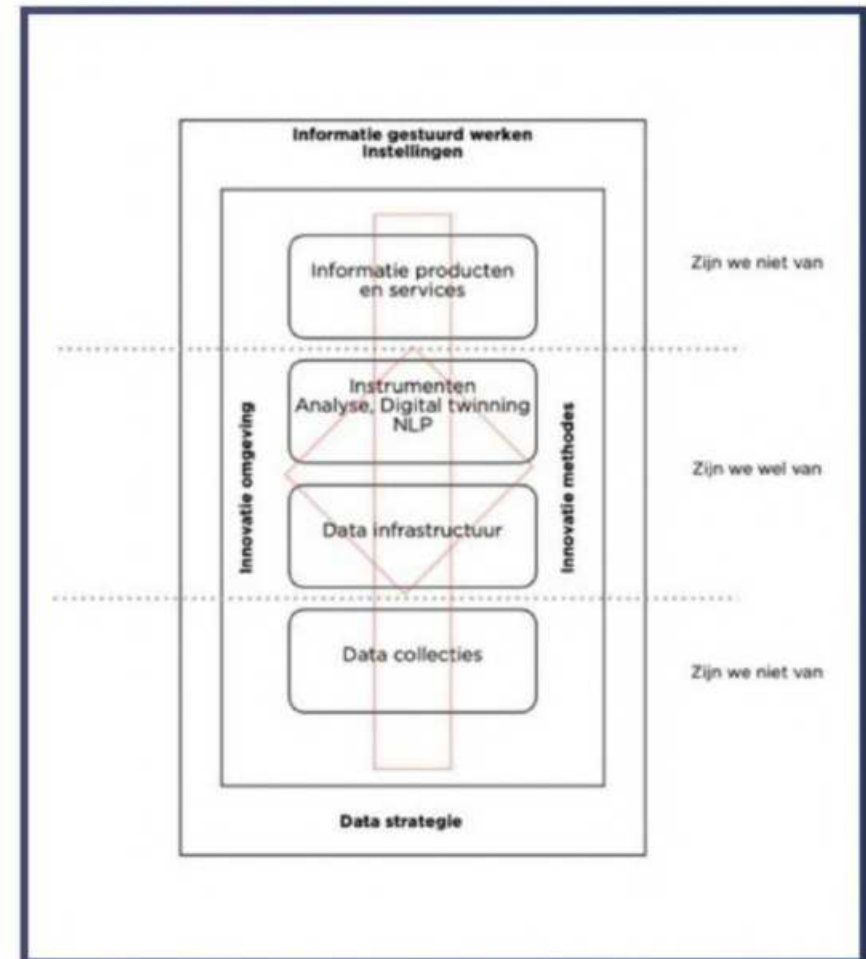
There are various safety domains in which several aspects come together, such as:

- Physical security •
- Economic security • Ecological security • Social security •
- Territorial security •
- Infrastructural security •
- Political security

But also other aspects, such as:

- Monitoring/Security • Smart community • Social unrest/

- dissatisfaction
- 'Fake' news



Figuur 2 Framework PSSC

Stakeholders

The PSSC will not only focus on the development of innovations that contribute substantively to the approach to specific safety issues, but also on innovations that will strengthen the implementation, application and scaling up of a 'knowledge and information-driven' approach in the safety domain in a more generic sense. This means that on the one hand we are working on a renewal and strengthening of the action perspective for safety professionals in the operation and related (implementation) policy.

On the other hand, there are those bodies that must fulfil the organisational and infrastructural preconditions for information-driven work.

The PSSC is centrally located within the various major (inter)national distribution hubs (MAA airport as the 2nd cargo airport in the Netherlands, Liège airport (B), Ruhr area (D), but also wedged between Maastricht, Aachen (D), Liège (B).

Furthermore, the NATO Air Base is located here and is the linchpin of the NATO 'Airborne warning and control system (AWACS). The Allied Joint Command (JFC) in Brunssum is also located in the immediate vicinity.

The presence of large quantities of (inter)national logistic flows creates major challenges in various areas, including public safety. The presence of NATO military units also has a significant impact on public safety aspects.

From the Ppolitie a Transport Facilitated Organised Crime (TFOC) approach has been developed that also covers important aspects of public safety. Think of national transports between the main port seaport area Rotterdam-Antwerp including the multi-modal transshipment points (train, road, inland waterway).

On this basis, a wide range of (inter)national stakeholders can be identified:

- Ministry of Justice & Security
- Ministry of Economic Affairs and Climate
- Police •
 - Police Services Center (PDC) • Police
 - National Intelligence Service Organization (DLIO)
 - Police Infrastructure Service (LE)
- Royal Marechaussee • Public Prosecution Service • Tax Authorities • Customs
- Tax Information and Investigation Service (FIOD)
- National Cooperation against Undermining Crime (NSOC)
- Organizations and platforms active in logistics •
 - Transport and logistics Netherlands
- Maastricht University
- Open University (OU)
- TNO
 - Defence & Security
- Police Academy
 - Intelligence Lectorate
- Rheinisch-Westfälische Aachen University, Aachen (D) • Rheinisch-Westfälische Technische University of Applied Sciences (RWTH)
- PXL University College, Hasselt (B) • Hasselt University, UHasselt, Hasselt (B) • LIEC, RIEC and EU-RIEC



Where

Initially, the PSSC will start with separate business operations within the iLab. In addition, research is being conducted into how the PSSC can also exist digitally, not only with a website, but perhaps also with an innovation portal and perhaps also within the metaverse.

It must be investigated whether and which legal entity is involved.



Who

Primarily the four founding fathers; however, attention will have to be paid to new stakeholders who want and can participate as a participant. This (potential) participant list will have to be validated.



What

- Smart safety
- Data strategy
- Risk analysis
- Video analysis
- Digital Twinning
- Predictive policing
- Artificial intelligence
- Smart wearables
- Analyze and work with large amounts of data
- Speech and language analysis
- Autonomous patterns
- Smart community
- Sensing



How

- An innovation culture focused on sustainable investment
- We innovate and experiment together where possible
- Learning from each other, we think together and think of each other on new topics
- We stimulate and reflect on each other, but also...
- Capacity and expertise/ we bring knowledge into
- Commitment in financing to stimulate innovation



An open innovation environment

The PSSC will be an open innovation environment, a dynamic and inspiring setting where knowledge sharing, collaboration and transparency are central. This environment literally has open doors and other organizations are welcome to participate and contribute to the joint creative process.

The open innovation environment brings together multidisciplinary knowledge and expertise from various fields. This creates new ideas, solutions and insights that would otherwise have been unattainable.

Transparency plays an important role in the process, because sharing information

and ideas form the basis for growth and development. All results will be traceable, so that those involved can easily trace the origin of ideas and concepts.

However, this is done in a way that keeps additional bureaucratic work to a minimum, in order to maintain the speed and flexibility of the innovation process.

Walk-in consultation hours are an important aspect of an open innovation environment, so that professionals can meet each other and discuss new possible collaborations or ask for advice. Inspiration sessions and knowledge sessions are organized, where experts

share their knowledge and experiences to motivate and inspire others. This can be done in the form of workshops, lectures or brainstorming sessions.

Conferences are a crucial part of the open innovation environment, bringing together participants from different disciplines to discuss the latest trends, technologies, insights and results from the PSS center. Publishing white papers enables professionals to share their findings and ideas with a wider audience, further increasing the reach and impact of the innovation, and helping the PSSC to develop thought leadership.

1. Current status

WE.Service.Heerlen (WESH) successfully completed its European pilot period under the UIA call at the start of 2023. The municipal council of the mayor and aldermen, and the board of the municipality of Heerlen have commissioned a further three-year development period to advance the project, and explore additional uses for the product. This aims to create a greater impact for the city and ensure its long-term sustainability by more closely aligning it with the city's vision, goals, and existing funding.

2. Project vision

To build a truly innovative platform that serves Heerlen, featuring a robust digital currency and significantly boosting civilian participation, we need a unified app. This app should integrate all the features of Heerlen's current apps and incorporate future municipal services that have yet to be digitalised. This app can be seen as a new initiative in its own right, building on the experiences and lessons learned from the WESH project and other projects using WESH's technology. It will retain and expand upon the core features of the WESH app. For the sake of this document the new app will be called the Heerlen App, the coin will remain the *heitje* for now.

Goals

Drawing on experiences with the product to date and evaluating the current offerings of the municipality and associated organisations, this new app will focus on the following objectives:

- Enhance **civic engagement** by promoting volunteer work.
- Improve **the liveability** of Heerlen's neighbourhoods and **the vitality** of its residents.
- Support **poverty alleviation** and ensure **equitable opportunities**.
- Stimulate **the local economy** by supporting local businesses, encouraging conscious shopping, and boosting community purchasing power.
- Strengthen Heerlen's reputation as a city of **digital innovation**.
- Helping unemployed citizens towards **employment through participation**.

Long term goal: **expanding the Heerlen app to the Parkstad region.**

Ideology

In our modern society, anything that isn't directly monetizable often seems to lose value under capitalism. The Heerlen App provides an opportunity to reward activities

that benefit society and humanity, even if they aren't economically profitable. By rewarding citizens for contributing to their neighbourhoods, building stronger and safer communities, engaging in debates, research, and democracy, and caring for others, we support the qualities necessary for a thriving society. Although these contributions may not have immediate monetary value, a strong, cohesive community can reduce long-term costs.

3. The Heerlen App

The Heerlen app includes several key features, which can be implemented simultaneously or rolled out gradually in any preferred sequence. The main point of these features is to make the app indispensable for Heerlen citizens, workers, students or entrepreneurs, creating compelling incentives from different use cases to actively open and browse the app frequently to ultimately be directed towards civic engagement. To use a metaphor, the app can be thought of as a LEGO baseplate, to which both the features mentioned in this scope and yet to be invented features can be added as building blocks.

Technology

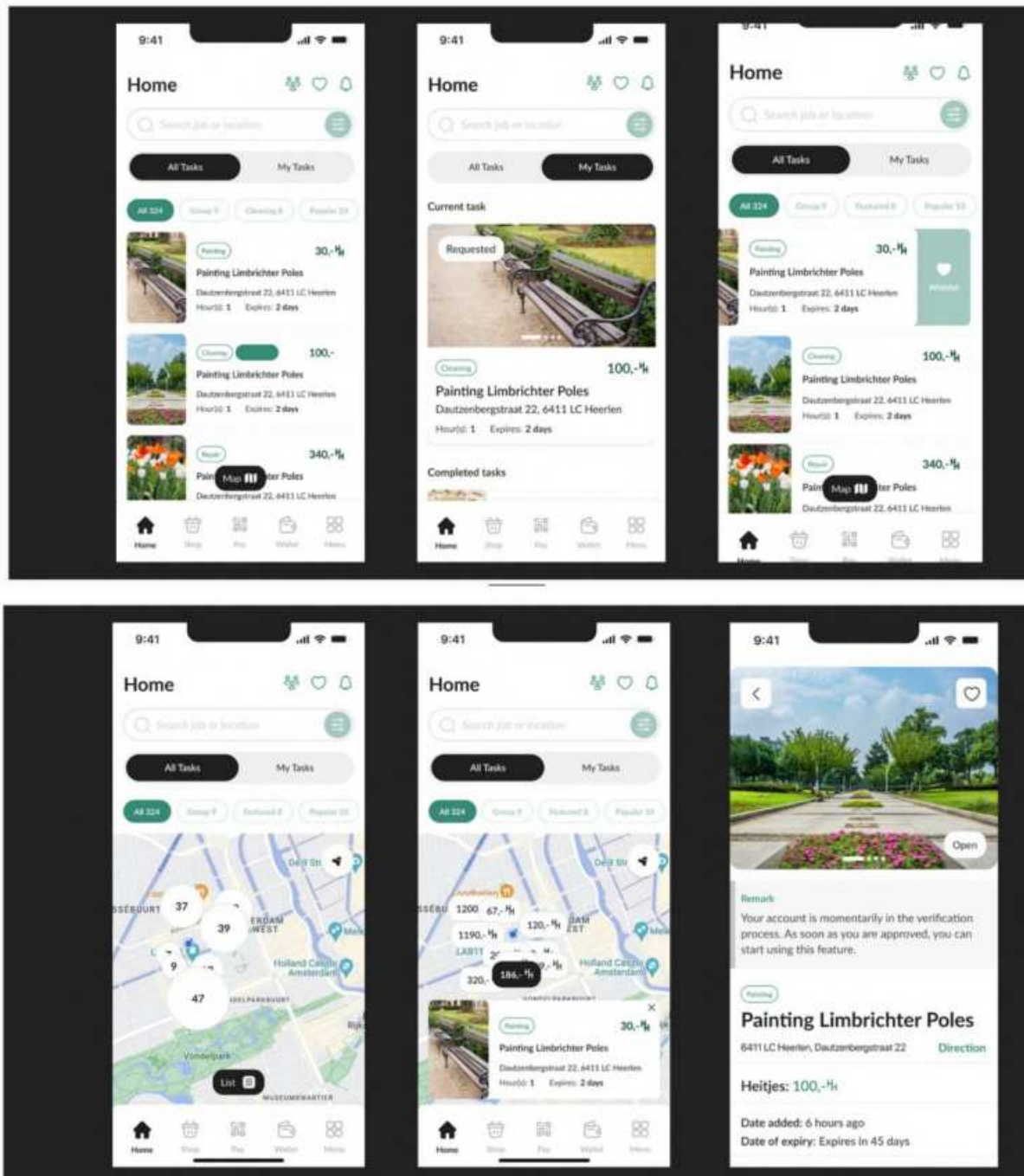
Our current technology primarily relies on blockchain integrated with a CMS system. In developing the new app, a robust financial system and a solid framework - akin to the LEGO baseplate mentioned earlier - are crucial for creating a product that can evolve alongside the municipality and technological advancements for decades to come.

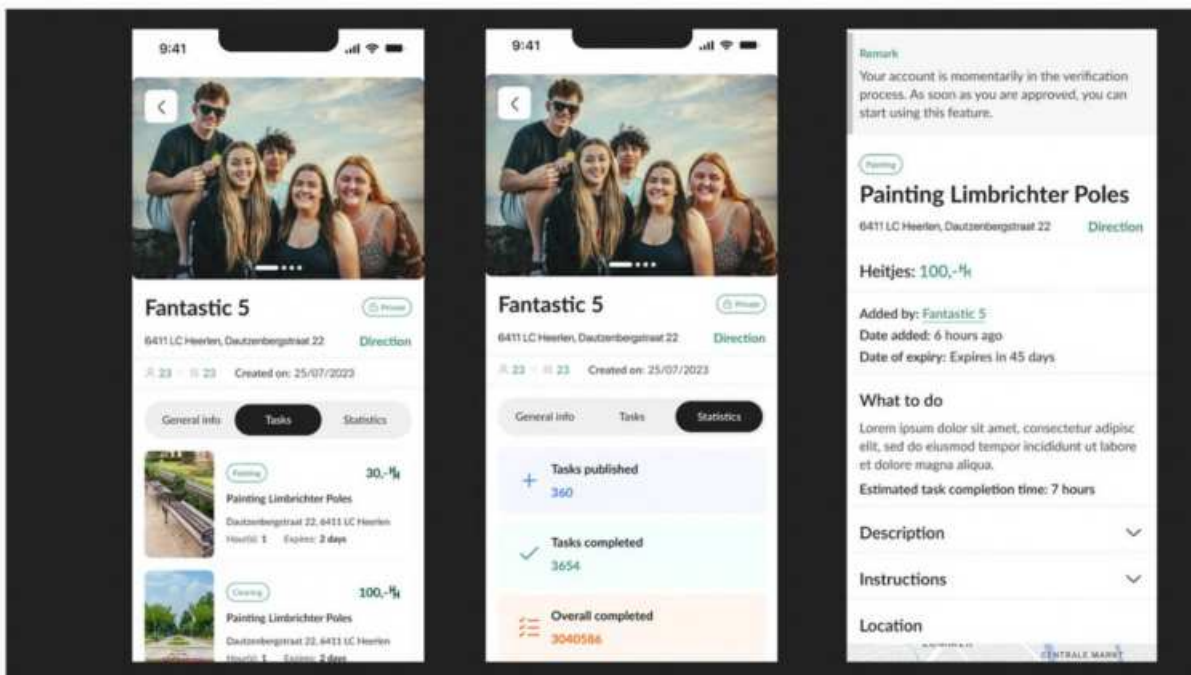
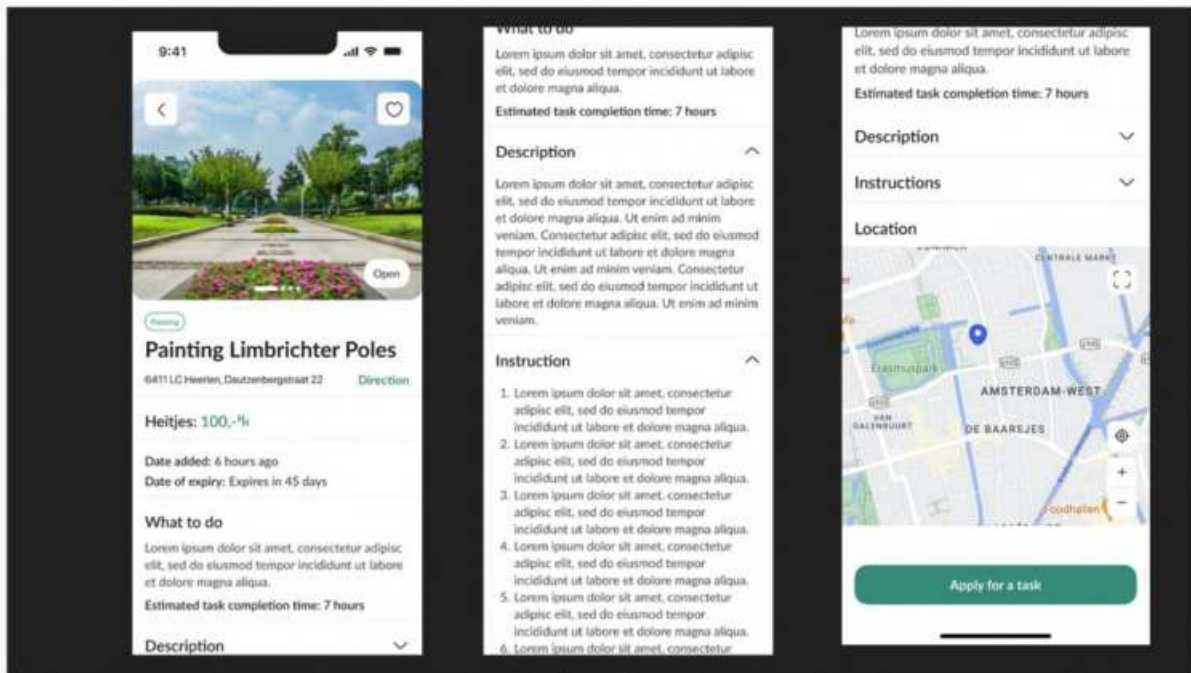
We are planning on incorporating automated income checks connected to a DigiD (the Dutch national identity) login, so citizens with a low income can receive any municipality benefits automatically in the form of earmarked digital 'heitjes'. The combination of automated income checks and the ability to earmark coins can greatly improve both municipality workflows and costs and the financial situation of citizens, who often struggle to apply for these benefits. Also, the truly innovative part of this project is to connect all municipal arrangements among a great variety of domains to a digital wallet, creating many more incentives to participate in volunteer work and other types of activities that improve and benefit society.

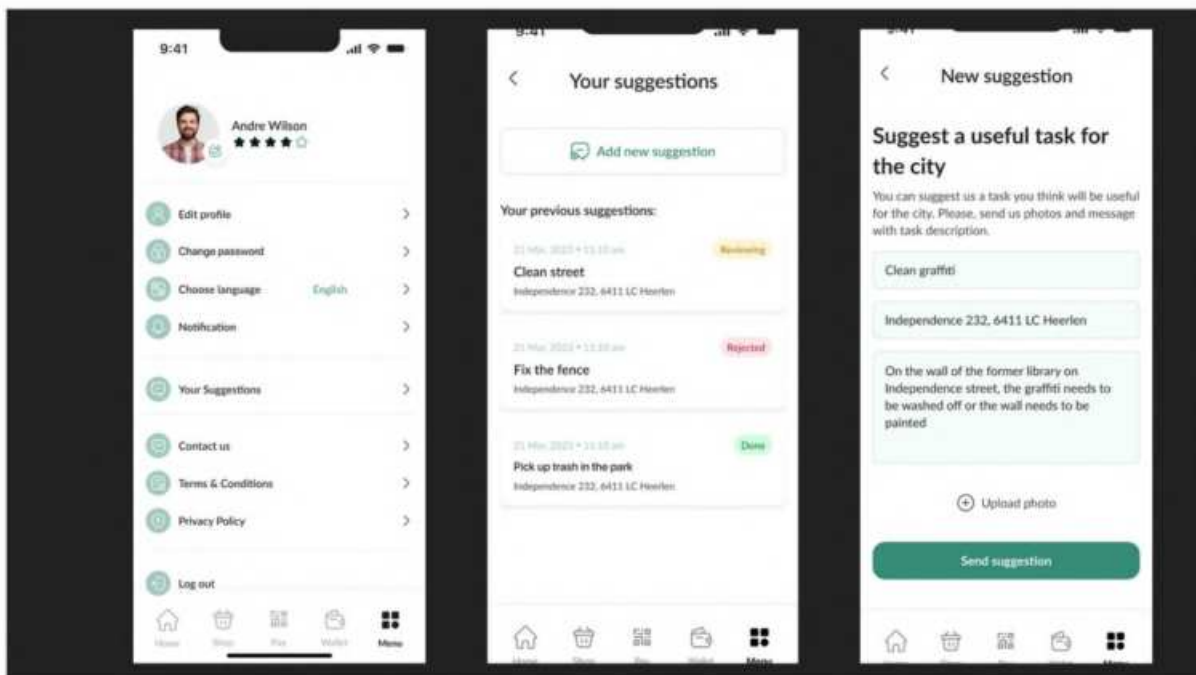
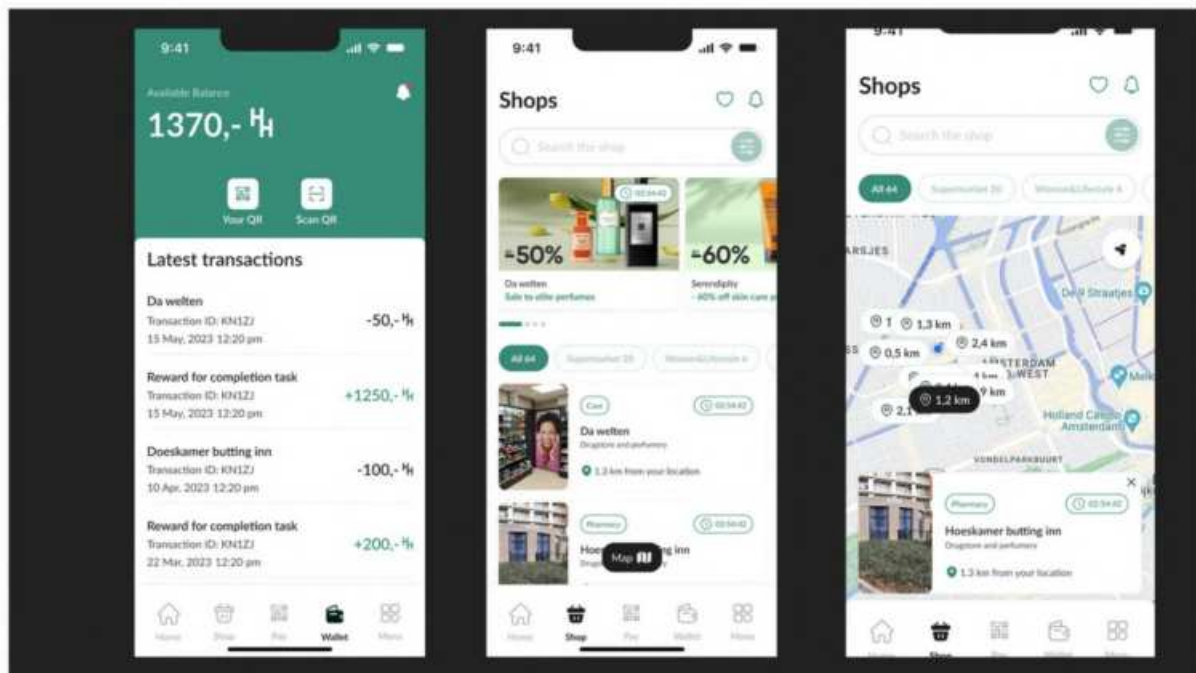
Upscaling

Other Parkstad municipalities, along with potential stakeholders and investors, have expressed strong interest in the Heerlen app, particularly in features like the city pass, highlighting its immediate potential for scaling across the Parkstad region.

Mockup of Heerlen App







Toelichting grondslagen

In dit document kunt u secties vinden die onleesbaar zijn gemaakt. Deze informatie is achterwege gelaten op basis van de Wet open overheid (Woo). De letter die hierbij is vermeld correspondeert met de bijbehorende grondslag in onderstaand overzicht.

J Art. 5.1 lid 2 sub e

Het belang van de openbaarmaking van deze informatie weegt niet op tegen het belang van de eerbiediging van de persoonlijke levenssfeer van betrokkenen

M Art. 5.1 lid 2 sub h

Het belang van de openbaarmaking van deze informatie weegt niet op tegen het belang van de beveiliging van personen en bedrijven en het voorkomen van sabotage