

Part A - Project Summary

Call EUI-IA Call 3

A.1 Project Identification

Acronym PULSE-TWIN

Title Proactive Urban Livability and Safety Engine with Integrated Social Digital Twin

Project Number EUI03-157

(Main) Urban Authority Municipality of Heerlen

ERDF rate 80%

Project Duration Start Date 01/10/2025

End Date 31/03/2029

Total Months 42

Topic Technology in cities

A.2 Project Summary

Description

Heerlen still grapples with social, economic, crime-related challenges decades after the closure of its once-thriving coal industry. It leads in "undermining" crime, with citizens feeling highly unsafe reflected in crime rates and social disturbances. Today, Heerlen is one of the least livable cities in the Netherlands.

As a remedy, Heerlen's Social Safe approach combines the security and social domains to combat undermining crime and improve livability, but it requires a technological scale-jump to fully realise its potential.

Unlike usual digital twins designed for built environment, Heerlen's solution, the Social Digital Twin, incorporates a social and security data layer in the city's digital twin, integrates data from official sources with frontliner, community inputs and uses AI technology to recognise patterns and predict outcomes, enabling better informed decision-making and frontline interventions, thus improving public services in both quality and efficiency.

The Solution's integral parts are its practical digital applications, allowing for faster, more informed or preventive actions, assisting both frontline professionals and citizens. Also, the strong focus on inclusive community engagement and compliance with ethical, legal, societal standards enhance social acceptance, public trust, community ownership and cohesion.

Social digital twins are much sought-after, highly scalable, transferable tools, which set a new standard for data-driven urban safety and livability.

Partner		ERDF co-financing		Contribution		Total		
Partner	Country	EUR	ERDF rate	Public	Private	Total	Budget	% of project budget
PP 1 - Municipality of Heerlen	 NL							
PP 2 - Dutch National Police (NPOL)	 NL							
PP 3 - Maastricht University (UM)	 NL							
PP 4 - Includio	 NL							
DO E - IENG								

Partner		ERDF co-financing		Contribution		Total		
Partner	Country	EUR	ERDF rate	Public	Private	Total	Budget	% of project budget
	NL							
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	 NL							
PP 7 - Brightlands Smart Services Campus (BSSC)	 NL							
PP 8 - Municipality of Piraeus	 EL							
PP 9 - SANT BOI DE LLOBREGAT CITY COUNCIL	 ES							
PP 10 - City of Genk	 BE							
Total (€)								

Part B - Partnership

B.1 Partnership - summary tables

B.1.1 Relevance of the partnership: why are these partners needed to implement the proposed solution and to achieve project objectives

The PULSE-TWIN project arose from MUA's search for a more data-driven solution - complementing its Socially Safe approach - to complex urban safety challenges, engaging Heerlen's innovation ecosystem, particularly BSSC, NPOL-iLab, and BISS. Each of these partners brings critical expertise: iLab provides cutting-edge technology and security elements, BISS ensures AI solutions are ethical & human-centred via its ELSA method, and BSSC - an innovation hub - drives collaboration with local technology stakeholders, ensuring community-driven solutions, well-integrated with local aspirations.

Inclusio and JENS, social care partners integral to MUA's Social Safe network, are deeply embedded in the community. By engaging with vulnerable populations, they ground the project in everyday realities. Finally, SVOB - Dutch ambassador of CPTED principles that Social Safe builds on - with its European networks, supports wider dissemination, helping scale and replicate outcomes in other Dutch cities and beyond.

This partnership embodies a balanced and complementary structure: Vertically, it connects multiple governance levels, from neighbourhood outreach (Inclusio, JENS) to municipal leadership (MUA), regional hubs (BSSC, BISS) & national stakeholders (NPOL, SVOB), ensuring strategic alignment across local, regional & national actors. Horizontally, the partnership creates a strong multi-stakeholder framework, integrating the public (MUA, NPOL) & private sector (BSSC & its innovation community), academia (BISS - University of Maastricht), and civil society organisations (JENS, Inclusio).

Moreover, the establishment of the Public Smart Safety Center (PSSC) by late 2024, with a mission to advance public safety via advanced technologies and with MUA, BSSC, BISS & NPOL-iLab among the founders will serve as a logical evolution of this collaboration. PSSC will join as a project partner in the Initiation Phase, with PULSE-TWIN as its flagship initiative, ensuring long-term project success.

B.1.2 Relevance of the partnership: contribution and role of the partners in the implementation of the proposed solution

Heerlen Municipality, as MUA coordinating project implementation, ensures alignment with local policies and community needs. Its specialised Social Safety & Neighbourhood Mgt team has a strong track record with innovative projects: UJA WESH & Interreg CITICISS, among many others. Links with relevant networks (Euregio Safety Network or CITICISS) will facilitate knowledge exchange on urban safety and transferability of the solution.

NPOL-iLab (National Police) coordinates the development of the Social Digital Twin (SDT) and its Data Engine, the technological backbone of PULSE-TWIN, leveraging its expertise in AI, data analytics and developing innovative digital tools to enhance public safety and improve operational efficiency.

BISS will contribute its expertise through the ELSA Lab methodology, focusing on ethical validation of the AI-led technologies in the public domain. By implementing ELSA-by-design principles across all project outputs, BISS ensures that developed solutions are ethically-, legally- and socially-sound and future-proof, enhancing social trust and community acceptance of innovations.

Inclusio and JENS will contribute with their direct experience working with citizens in Heerlen-Noord. Inclusio will engage vulnerable populations, provide vital data, and ensure that the developed tools are user-friendly. JENS will address the specific needs of young people in disadvantaged neighbourhoods, ensuring the project aligns with community needs.

SVOB will oversee dissemination activities, engaging other Dutch and EU cities in workshops to share the PULSE-TWIN solution. SVOB's experience in communication and extensive international connections will help ensure the project's innovations are widely shared.

BSSC will contribute its expertise in digital twin technology in NL/EU and provide access to its innovation community. The physical lab at BSSC will serve as a testing ground for the SDT's applications, enabling rapid prototyping and iterative development.

Total number of inhabitants

87,461.00

Role	Number	Country	Name of organisation
Main Urban Authority	1	NL	Gemeente Heerlen
Delivery Partner	2	NL	Politie Nederland
Delivery Partner	3	NL	Universiteit Maastricht (UM)
Delivery Partner	4	NL	Stichting Inclusio Uitvoering
Delivery Partner	5	NL	Coöporatie JENS U.A.

Role	Number	Country	Name of organisation
Delivery Partner	6	 NL	Stichting Veilig Ontwerp en Beheer
Delivery Partner	7	 NL	Campus Heerlen Management & Development BV (Brightlands)
Transfer Partner	8	 EL	Δήμος Πειραιά
Transfer Partner	9	 ES	AJUNTAMENT DE SANT BOI DE LLOBREGAT
Transfer Partner	10	 BE	Stad Genk

B.2 - Main Urban Authority

Organisation name (Original)	Gemeente Heerlen				
Organisation name (English)	Municipality of Heerlen				
Legal status of the organisation	Public	Organisation type	Local public authority		
Member state	Netherlands				
Number of inhabitants	87,461				
Comment					
Department(s)/unit(s)/division(s) concerned	Team Social Safety and Neighbourhood Management: coordinates the project and horizontal activities (WP1, 2, 3, 4 and 9, 10) but is especially active in WP5, ensuring multistakeholder engagement. Information Management dept (PSSC): contribute to WP6 and WP7, focusing on the data foundation for the SDT and ensuring IT infrastructure for data-driven applications (WP8). Finance Team: takes part in WP2. Communication Department: active contribution in WP4. Policy Advising Team: consulted as needed.				
Address	Street	Geleenstraat 25	Contact Person	Position	
	Post Code	6400AA		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position	Mayor			
	Title	Mr.			
	Forename	(geanonimiseerd)			
	Surname	(geanonimiseerd)			
	Email Address				
	Phone Number				
VAT number	NL001736206B01				
VAT recoverable	Yes				
Staff costs claimed on the basis of	Standard Scale of Unit costs				

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 2)

Organisation name (Original)	Politie Nederland				
Organisation name (English)	Dutch National Police (NPOL)				
Legal status of the organisation	Public	Organisation type	National public authority		
Member state	Netherlands				
Partner description and department/unit/division concerned	The Dutch National Police (NPOL) plays a critical role in ensuring public safety and security through various activities, incl. investigations, law enforcement, and crime prevention. With over 65,000 employees, the NPOL operates across the Netherlands in a decentralised structure that includes regional police units, national special units, and various support services. It has a strong track record in leading and participant roles in EU projects (e.g. HE CCI, HE KOBAN, ISF InterCOP, etc). Two key units within the NPOL contribute to the project: the iLab and the Local Police of Heerlen. The iLab (22 FTE), seated in BSSC in Heerlen, is the innovation hub of the Dutch police, where new technological solutions are developed to address challenges in public safety. It specialises in AI, data-driven approaches, and digital transformation, making the police more efficient, effective, and future-ready. The iLab has extensive experience collaborating with both internal and external partners, including municipalities and RIECs. In this context, iLab already works closely with the city of Heerlen on future-oriented joint initiatives (such as PSSC, see B1.2) The Heerlen Local Police (175 FTE) will participate in the ideation and co-creation phases of the project. By providing operational insights and testing environments, the Local Police will ensure that the solutions are applicable and beneficial to real-world policing challenges. Web: politie.nl/informatie/welkom-bij-ilab.html				
Address	Street	Smedestraat 2	Contact Person	Position	
	Post Code	6411 CR		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	n/a				
VAT recoverable	No				

Staff costs claimed on the basis
of

Standard Scale of Unit costs

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 3)

Organisation name (Original)	Universiteit Maastricht (UM)				
Organisation name (English)	Maastricht University (UM)				
Legal status of the organisation	Public	Organisation type	Higher education and research organisations		
Member state	Netherlands				
Partner description and department/unit/division concerned	Maastricht University's research institute, Brightlands Institute for Smart Society (BISS) as delivery partner within PULSE-TWIN partnership is focusing on using AI and data science to address complex societal challenges. With 23 employees, BISS combines expertise from diverse disciplines, including ethics, law, consumer behaviour, neuroscience, data science, and AI. The institute places a strong emphasis on responsible digital innovation, ensuring that technologies are developed in line with societal values, privacy, and ethical standards through their key project - ELSA Lab for Poverty and Debt. BISS has extensive experience in managing and participating in EU-funded projects. Notably, it has played a key role in projects such as BETTER (2023-2027), aimed at optimising healthcare research using AI, and Flying Forward 2020 (2020-2024), which focuses on developing urban air mobility infrastructures. These projects demonstrate BISS's ability to bridge the gap between research, practical solutions, and ethical considerations in technology deployment. Web: https://www.biss-institute.com/en				
Address	Street	Smedestraat 2	Contact Person	Position	
	Post Code	6411 CR		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	NLD03475268B01				
VAT recoverable	Yes				

Staff costs claimed on the basis
of

Standard Scale of Unit costs

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 4)

Organisation name (Original)	Stichting Inclusio-Uitvoering				
Organisation name (English)	Inclusio				
Legal status of the organisation	Private	Organisation type	Interest groups including NGOs		
Member state	Netherlands				
Partner description and department/unit/division concerned	Inclusio NL is a Dutch organisation dedicated to providing tailored social services and strengthening communities by addressing local challenges such as poverty, social isolation, and mental health through its neighbourhood-based approach. Inclusio Buurteams Heerlen is a local social services organisation committed to improving the lives of residents in Heerlen through targeted, community-based support working closely with MUA's Social Safety and Neighbourhood management Team. The organisation operates through its Neighbourhood Teams, which consist of over 80 experienced social workers, counselors, and community organisers deeply embedded in the local communities they serve. These Neighbourhood Teams have extensive knowledge of Heerlen's unique socio-economic landscape, allowing them to provide tailored support and effective interventions. Their primary focus is to connect residents with essential services, offer guidance in navigating complex social challenges, and help empower individuals to improve their overall well-being. Inclusio's approach is highly localised, with their teams being familiar with the specific needs, cultures, and challenges within each neighbourhood. While Inclusio's Buurteams Heerlen have not previously participated in EU-funded projects or international networks, their deep understanding of the local community and hands-on experience in addressing social issues make them a valuable partner in PULSE-TWIN. Web: inclusio.nl + buurteamsheerlen.nl				
Address	Street	Ruys de Beerenbroucklaan 29	Contact Person	Position	1
	Post Code	6417 CC		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position	3			
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	59324430				
VAT recoverable	Yes				

Staff costs claimed on the basis
of

Standard Scale of Unit costs

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 5)

Organisation name (Original)	Coöporatie JENS U.A.				
Organisation name (English)	JENS				
Legal status of the organisation	Private	Organisation type	Interest groups including NGOs		
Member state	Netherlands				
Partner description and department/unit/division concerned	JENS is a dedicated organization that provides guidance and treatment to young people aged 0-18 years, as well as their families, in the municipalities of Heerlen, Landgraaf, and Voerendaal. With a focus on promoting healthy and safe development in youth, JENS operates with a multidisciplinary approach, working closely with schools, local governments, and other social institutions to create a supportive environment for children and adolescents. The organisation works with over 15 professionals employed as contractors including social workers, youth counselors, and psychologists, and offers specialized programs that address the social, emotional, and educational needs of vulnerable young people. The partner previously hasn't participated in the EU projects but is willing to grow in this area. For this project, youth work will play an important role in WPS. JENS will contribute its expertise in youth engagement and prevention, specifically focusing on how technology-driven solution offered by PULSE-TWIN can facilitate preventing problems among young people in disadvantaged neighborhoods. JENS will ensure that the project's solutions effectively target and support young people who are at risk, helping them grow up in a safe and healthy environment. Web: jenshelpt.nl				
Address	Street	Kruisstraat 103	Contact Person	Position	
	Post Code	6411 BS		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	NL859128994B01				
VAT recoverable	Yes				

Staff costs claimed on the basis
of

Standard Scale of Unit costs

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 6)

Organisation name (Original)	Stichting Veilig Ontwerp en Beheer			
Organisation name (English)	Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)			
Legal status of the organisation	Private	Organisation type	Interest groups including NGOs	
Member state	Netherlands			
Partner description and department/unit/division concerned	The Stichting Veilig Ontwerp en Beheer (SVOB) is a Dutch platform focused on improving public safety through better urban design and management, following the Crime Prevention Through Environmental Design (CPTED) approach. SVOB brings together a small team of specialized Registered CPTED Experts (RCEs) who apply international and European safety standards, such as ISO 22341:2021 and CEN/TS 14383-2:2022, to make cities and neighborhoods safer. SVOB operates as an association and doesn't have employees but works with 17 self-employed experts and volunteers. SVOB has significant experience in EU-funded projects, having contributed to programs like Horizon 2020, Erasmus, and COST Action TU 1203. The organization has led work packages on communication, dissemination and urban safety and collaborates with international initiatives, including the UN Habitat Safer Cities Programme. SVOB's focus is on bridging safety with urban design, helping municipalities implement practical solutions that enhance security. For this project, SVOB will deploy its Registered CPTED Experts, including board members, to manage dissemination and contribute safety expertise. Web: svob.nl			
Address	Street	Van Diemenstraat 410 (DSP)	Contact Person	Position
	Post Code	1013 CR		Title
	Town	Amsterdam		Forename
	NUTS 2	Noord-Holland		Surname
	NUTS 3	Groot-Amsterdam		Email Address
				Phone Number
Legal representative	Position			
	Title			
	Forename			
	Surname			
	Email Address			
	Phone Number			
VAT number	n/a			
VAT recoverable	No			
Staff costs claimed on the basis of	Standard Scale of Unit costs			

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.4 - Delivery Partner (Partner 7)

Organisation name (Original)	Campus Heerlen Management & Development BV (Brightlands)				
Organisation name (English)	Brightlands Smart Services Campus (BSSC)				
Legal status of the organisation	Private	Organisation type	Business support organisation		
Member state	Netherlands				
Partner description and department/unit/division concerned	The Brightlands Smart Services Campus (BSSC) in Heerlen is a central part of the Limburg knowledge region, dedicated to fostering innovation in digital technology. As a collaborative hub, it brings together established companies, startups, educational institutions, and government bodies to develop innovative smart services that enhance quality of life. Currently, the campus hosts approximately 1,000 residents, including 80 companies, positioning itself as a leading ecosystem for digital innovation. The project will involve several key units. A special lab, Public Services Lab, provides thematic insights on innovative public services development. The Business & Community Development (Comdev) unit focuses on nurturing the ecosystem by attracting new partners and developing business opportunities. The Marketing & Communication unit is responsible for promoting the campus and its initiatives, ensuring effective outreach and engagement with stakeholders, most importantly tech developers, incl. SMEs and start-ups. The Facilities & Operations team manages event logistics, providing the necessary infrastructure to support project activities. BSSC has extensive experience with EU-funded projects, being selected as EDIH and a partner in Dutch Societal Innovation Hub (DSIH) and other innovation-driven projects, such as Interreg NWE "Digital Deconstruction". Web: brightlands.com/en/brightlands-smart-services-campus				
Address	Street	Smedestraat 2	Contact Person	Position	
	Post Code	6411 CR		Title	
	Town	Heerlen		Forename	
	NUTS 2	Limburg (NL)		Surname	
	NUTS 3	Zuid-Limburg		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	NL855424722B01				

VAT recoverable

Yes

Staff costs claimed on the basis
of

Standard Scale of Unit costs

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.5 - Transfer Partner (Partner 8)

Organisation name (Original)	Δήμος Πειραιά					
Organisation name (English)	Municipality of Piraeus					
Legal status of the organisation	Public	Organisation type	Local public authority			
Member state	Greece					
Partner description and department/unit/division concerned	The Municipality of Piraeus is situated in the Attica Region in Greece and constitutes the fifth biggest municipality and settlement in the country. As a port city, it plays a very important role in the regional and national economy, while it is considered as the maritime capital of the country and one of the most important maritime clusters worldwide. Piraeus port is the 4th biggest European port and the biggest in the European side of the Mediterranean Sea, while it serves as a crucial link between continental Greece and the islands. The city with a population of 168.151 includes in its broader area six additional suburban municipalities, with a total population of about 470,000 citizens.					
Address	Street	12, Dragatsi str	Contact Person	Position		
	Post Code	18535		Title		
	Town	Piraeus		Forename		
	NUTS 2	Attiki		Surname		
	NUTS 3	Please Select Nuts 2 Region First		Email Address		
Legal representative	Position				Phone Number	
	Title					
	Forename					
	Surname					
	Email Address					
	Phone Number					
VAT number	090001263					
VAT recoverable	No					

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.5 - Transfer Partner (Partner 9)

Organisation name (Original)	AJUNTAMENT DE SANT BOI DE LLOBREGAT				
Organisation name (English)	SANT BOI DE LLOBREGAT CITY COUNCIL				
Legal status of the organisation	Public	Organisation type	Local public authority		
Member state	Spain				
Partner description and department/unit/division concerned	Sant Boi de Llobregat is a mid-sized city in the Metropolitan Area of Barcelona that faces the challenge of consolidating itself as a resilient, safe, and socially and territorially cohesive space, integrated with both the environment and new technologies. Although the city does not present high levels of insecurity, the main challenges in terms of public safety are the effective management of minor crime: theft, small-scale drug trafficking, illegal home occupations, and low-intensity offenses. The priority of its public policies is to ensure a safe, inclusive, and welcoming public space, following a model based on prevention, reaction, and resilience. The incorporation of new technologies aims to provide quicker and better responses while reinforcing a proactive approach, turning public space into a guarantor of rights and a place for coexistence and cohesion. Within the current Mandate Plan, the city is committed to consolidating a community and proximity-based security service that is inclusive, participatory, and adaptable to changing needs. At the same time, Sant Boi promotes digitalization as a tool for good governance, with public services that are more accessible, personalized, and closer to citizens' needs, including the digital modernization of local administration and police activity. The municipal units concerned are: - Urban Technologies and Buildings Service - Digital and ICT Service - Local Police - Citizen Participation - EU Projects Office				
Address	Street	Plaça Ajuntament, 1	Contact Person	Position	
	Post Code	08830		Title	
	Town	Sant Boi de Llobregat, Barcelona		Forename	
	NUTS 2	Cataluña		Surname	
	NUTS 3	Barcelona		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				

Email
Address
Phone
Number

VAT number

P0815900B:

VAT recoverable

No

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

B.5 - Transfer Partner (Partner 10)

Organisation name (Original)	Stad Genk				
Organisation name (English)	City of Genk				
Legal status of the organisation	Public	Organisation type	Local public authority		
Member state	Belgium				
Partner description and department/unit/division concerned	The city of Genk will act as a transfer partner. Within the city, the department of urban safety is involved. Genk has a long tradition in improving urban safety and liveability within this department. The department, in coordination with the department "Gebiedsgerichte werking" has extensive experience with integrated, neighbourhood-oriented safety policies that combine social prevention, urban development, and community engagement.				
Address	Street	Stadsplein 1	Contact Person	Position	
	Post Code	3600		Title	
	Town	Genk		Forename	
	NUTS 2	Prov. Limburg (BE)		Surname	
	NUTS 3	Arr. Hasselt		Email Address	
				Phone Number	
Legal representative	Position				
	Title				
	Forename				
	Surname				
	Email Address				
	Phone Number				
VAT number	0207.201.797				
VAT recoverable	No				

Total Partner Budget

ERDF (€)

Total
Eligible
Cost (€)

Part C - Project description

C.1 Project relevance and innovativeness

C.1.1 Main challenge(s) to be addressed

Between 1900 and 1965, Heerlen's thriving coal industry fueled rapid population growth and infrastructure development, however, the closure of mines led to an economic and social crisis. The city faced significant challenges, such as poverty, high crime rates, and widespread addiction issues. Despite decades of revitalisation efforts - city centre renovations, enhanced social services, measures to reduce nuisance caused by addicts -, Heerlen still struggles with persistent social, economic challenges, alongside consequent crime issues. In Heerlen-Noord, home to 70% of residents, average income and education levels are significantly below the Dutch average, with 11% of households relying on social security benefits (Dutch average 5%), and low literacy rate being at 20% (national average: 12%). One in six families struggles with problematic debts (17% vs. Dutch 8%), 13% of young people are neither in education, work, nor receiving benefits (national data: 9%), leaving them "out of sight" of public services. Heerlen also faces the highest national risk of organised crime and leads in drug-related and "undermining" crime cases.

"Undermining crime" is a Dutch term for crime that erodes society's foundations by blurring the lines between the criminal underworld and everyday civic life (e.g. illegal drug trade, real estate fraud, money laundering, human trafficking). This type of crime is less visible, hard to detect, but corrupts societal norms, weakens law and order, fosters distrust in government and poses serious threats to security and social cohesion. Vulnerable areas and people, burdened by poverty and disadvantage, are particularly susceptible and more likely to become involved — as perpetrators or victims — in undermining criminality.

Citizens' feeling of unsafety is at 40% in Heerlen-Noord, well above the national average of 14%. The lack of safety is reflected in the crime rates as well, with 22 crimes per 1000 inhabitants compared to 14 nationwide. Drug-related and social disturbances, including youth-led nuisance, are also higher at 26% versus 12% in the rest of the country. In addition, recent police reorganisation due to budget cuts has led to centralisation under National Police, leaving the city with 30% fewer police officers, often transferred from other areas and unfamiliar with local context. The aforementioned factors have put the livability of Heerlen under pressure, making it one of the least livable cities in the Netherlands.

C.1.2 Proposed solution

Recognizing the complexity of the challenge, Heerlen launched the Social Safe approach, combining the security and social domains to combat undermining crime and improve livability and social cohesion. It blends personal and area-focused strategies, links care and safety through the collaboration of Municipality, police, social and care organisations, and housing corporations. It connects frontline professionals, facilitates information sharing, and integrates citizen insights beyond official data to swiftly address safety threats. Since its launch, crime rates have dropped by 10%, feelings of unsafety by 3% and social cohesion has risen by 0.2%.

As successful and exemplary as the Social Safe approach is, it requires a further scale-jump in terms of effectiveness and efficiency to fully realise its potential.

The Innovative Solution achieves just that. It creates Heerlen's Social Digital Twin (PULSE-SDT, WP7), integrating both "hard" data from official sources and "soft" data from frontline professionals and citizens, thus making better use of available information. The PULSE-SDT backed up by the AI-powered PULSE Data Engine sourced by the PULSE Data Warehouse (PULSE-DE, PULSE-DW, WP6), goes beyond the city's existing digital twin for built environment, by adding a social and safety layer. As a result, policies and frontline interventions will be better informed, allowing for tailor-made responses suited to the carrying capacity of sub-neighbourhood communities (such as streets, blocks) and enabling public services to be more efficient and effective.

The SDT will provide real-time visualisations, trends, predictions, simulations by integrating data from various sources: crime reports, sensors, social data, and citizen feedback. It can simulate the impact of interventions on neighbourhood safety, predict outcomes or provide accurate data during interventions (see Annex 7: Use Cases). Further technological solutions will be developed to supply the PULSE-SDT with data by citizens, enhance its practical application among frontline professionals and citizens, while also engaging them and the local technology ecosystem to co-create safer and more liveable neighbourhoods (WP8). In addition, these solutions will be developed in alignment with ethical, legal and societal standards and citizen needs, collaborating with local stakeholders and citizens (WP5).

Social digital twins are much sought-after yet underexplored tools, with high scalability and transferability.

C.1.3 Ownership of the Urban Authority(ies)

Heerlen's Social Safe approach to combating undermining crime is strongly aligned with the national policy priorities. It is a core element of the 25-year National Program Heerlen Noord (NPHN), launched in 2022 as part of the broader National Programme for Liveability and Safety, which targets the 20 most vulnerable areas in the country to improve quality of life and safety.

The project aims to enhance Heerlen's Social Safe approach by integrating an advanced technology-driven decision support system (PULSE Social Digital Twin) to optimise efforts in tackling undermining crime and improving liveability, directly supporting the achievement of NPHN objectives. It builds on previous MUA initiatives, such as the ongoing development of Heerlen's digital twin for built environment, the Social Safe Data Center accumulating two years of data generated in the Social Safe approach, the legacy of the WESH App, Heerlen's previous UIA project that laid the

groundwork for community engagement in community tasks, as well as on the principles of CPTED (Crime Prevention Through Environmental Design). While MUA - as project promoter and owner of existing technologies - will assume ownership and ensure the sustainability of developed technologies, the Public Smart Safety Center - to be founded by key local stakeholders, most of them involved as Project Partners, - aims to take over long-term responsibilities. The project's alignment with the NPHN further secures its sustainability and impact.

C.1.4 The proposed solution has not been previously tested

The core Solution, the Social Digital Twin (SDT) enhances the digital twin concept, used in EU primarily in the context of the built environment (urban design, mobility). While no similar initiatives exist in Europe and only a few globally (see Annex 6), this Solution is distinguished by its innovation and high scalability, also adaptable to sectors beyond safety & liveability (e.g. employment, education, health).

Its key components stand out for their innovative features:

The SDT(1)-centred technology offers advanced data integration: it combines hard, social & community-sourced datasets processed by AI to provide a comprehensive view of neighbourhood liveability & safety, enabling trend recognition, better informed decision making & early interventions. Its practical applications, AI COPILOT (2) and HEERLEN APP's SAFETY MODULE (3) enable faster, more informed or preventive responses by providing neighbourhood contextual data in frontline interventions, and enabling residents to report and access safety information directly, creating an efficient communication channel with local authorities.

Adding INCLUSIVE CITIZEN ENGAGEMENT (4) to SDT-centred technology & Heerlen's unique Social Safe approach fosters community ownership and cohesion.

Finally, applying legal, ethical, & societal (ELSA) PRINCIPLES in AI TECHNOLOGY DEVELOPMENT (5) enhances social acceptance and trust. Combining these aspects, Heerlen's SDT sets a new standard for data-driven urban safety and liveability.

C.1.5 The proposed solution builds on and goes beyond existing practices

Innovations in urban security technologies can be commonly found in projects such as Horizon Europe CCI and Icarus, H2020 popAI, ISF 3D-Forensics. These standalone innovations are typically in a pilot phase, not yet embedded in the local context.

Relevant projects within the UIA programme focusing on aspects of urban security such as TonITE and BSFS platforms were considered as baseline best practices for PULSE-TWIN. However, while the TonITE Urban Data Platform and the CURIM platform focus on specific aspects of urban safety—night-time safety and comprehensive risk management respectively—the Social Digital Twin provides a more holistic approach by modelling social interactions and their impacts on urban safety and livability. This broader scope allows for more nuanced insights into the social fabric of the city and enables proactive measures to enhance both safety and community well-being.

The project also builds on the experience of more than a dozen Local Digital Twins in various parts of Europe. While some are still in the prototype phase, many are already operational. Looking ahead, the LDT community is expected to grow significantly, thanks to initiatives like Living-in-EU, Gaia-X, EIF4SCC, and others supporting their mainstream adoption (e.g. the call "Towards networked LDTs in the EU"). Within this context, Heerlen (also joining Living-in-EU's Support Services for EU smart communities) would be one of the forerunners of the LDTs using a social and safety layer beyond the physical one.

The solutions building on top of the SDT are also of high degree of innovation. E.g. AI avatars for police so far are only being tested in New Zealand (Ella - AI officer), Hong Kong (AI chatbot kiosk) and Norway (see Benchmark, Annex 6). Moreover, the Horizon KOBAN project, led by NPOL, is researching an AI Assistant to aid community policing, which will inform the development and testing of the PULSE AI Copilot, enabling future expansion of its functions.

C.1.6 Relevant specific objectives of the EU Cohesion policy 2021-2027

Specific objective 5.1 "Fostering the integrated and inclusive social, economic and environmental development, culture, natural heritage, sustainable tourism and security in urban areas" (Europe closer to citizens)

C.1.7 Link to Policy and Specific Objectives of the EU Cohesion Policy (2021-2027)

Heerlen's project directly supports SO5.1 by fostering integrated and inclusive urban development through innovative digital tools that enhance social safety, livability, and citizen engagement. By deploying Social Digital Twin and AI-powered Data Engine, the project improves neighbourhood safety by integrating data from various urban sectors, as well as citizens themselves, thereby contributing to a safer, more cohesive urban environment. Economically, the project would enhance business confidence by improving urban safety. This aligns with the objective's focus on socioeconomic development, ensuring a secure urban area.

For SO4.3, the project addresses the needs of marginalised communities by improving livability and safety in disadvantaged neighbourhoods. The integrated approach combines social services, housing, and public safety efforts, supporting social inclusion and preventing marginalisation. The project builds on previous successes, such as UIA WESH and Interreg's CITICISS, and being a Transfer city for EUI Imperfect city, ensuring continuity and scalability.

Additionally, it supports SO1.2 by leveraging digitalization to benefit citizens, companies, public authorities, and research organisations, fostering a

smarter and more connected urban environment with the Social Digital Twin put in practical use by all stakeholders, opening the door for tech companies and research teams to take part in widening its application fields or contribute to technology advancements.

C.1.8 New Leipzig Principles: Integrated approach

The proposed digitalisation of the Social Safe approach in Heerlen exemplifies the New Leipzig Charter's principle of an integrated approach by seamlessly combining various urban policy areas to address the city's complex challenges. By integrating social cohesion, public safety, urban planning, and digital innovation, this solution ensures a holistic response to the issues undermining Heerlen's livability. The Social Safe approach built on principles of CPTED (Crime Prevention Through Environmental Design) already emphasises integrating social, care, and security/law enforcement efforts under MUA lead in key neighbourhoods in Heerlen Noord, involving stakeholders such as housing corporations, care partners, and local safety teams.

The Social Digital Twin (SDT) ensures that interventions are spatially and sectorally coordinated, balancing immediate safety needs with long-term sustainability. Moreover, it will ensure balanced expansion from pilot areas to the city as a whole. Positive outcomes include enhanced social cohesion and economic vitality. There are potential negative externalities, including the risk of gentrification and social displacement as neighbourhoods improve, concerns over data privacy and surveillance, and unequal resource allocation based on data-driven trends. To mitigate these risks, the project will carefully monitor impacts (A.3.4) and ensure that privacy regulations and equity considerations are fully integrated into the project's design (A.5.2).

C.1.9 Green and digital transitions

The innovative solution integrates advanced digital technologies such as AI, big data analytics, and digital twins to create a more livable and secure urban environment, whilst also addressing environmental and climate challenges.

Green: The Social Digital Twin (SDT) allows for the visualisation and simulation of various urban planning scenarios, which can help optimise the use of resources and eventually reduce the city's carbon footprint. For instance, a social digital twin integrated with an AI-powered safety and livability platform can optimise workforce deployment in public services, ensuring that personnel are efficiently allocated based on real-time needs. Further digital twin rollout to other areas will include biodiversity and sustainability layers. Cost-benefit analysis (D3.4.2) has an environmental cost aspect too.

Digital: The AI-powered Integrated Data Warehouse and Data Engine is at the core of Heerlen's digital transition. By collecting, integrating, and analysing data from official sources, frontliners, and citizens, the platform enhances urban management through real-time insights and predictive analytics. The Heerlen App, with its safety module, leverages digital tools to engage citizens in co-creating safer communities, thus fostering a connected and empowered society. The SDT, with its interactive approach, represents a cutting-edge digital solution that can be scaled and transferred to other cities, further promoting digitalisation in urban governance.

Part C - Project description

C.2 Partnership and co-creation

C.2.1 Involvement of wider stakeholders in project design and implementation

The key stakeholders for the PULSE-TWIN project beyond the partnership include local housing corporations, social care organisations, neighbourhood associations, and community leaders from Heerlen Noord, all members of MUA's Social Safe network (e.g. Stichting Buurtbeheer Vrieheide, VISTA College, Wonen Limburg). Their representatives were consulted by MUA area coordinators during the regular Livability Teams meetings and joint proposal preparation all-day workshop in the design phase and will be included in the Multistakeholder Panel (D5.1.1). Citizens themselves, especially those from vulnerable communities, are critical stakeholders, as their input and feedback will drive the co-creation and testing processes in WP6 to WP8, through the Citizens' Think Along Group (D5.1.2) and Demo Corners in the Together in the Neighborhood chambers (D5.3.3) and ensure that the digital solutions are tailored to real neighbourhood needs. Additionally, educational institutions (Zuyd University of Applied Science and Open University), research bodies (TNO - Netherlands Organisation for Applied Scientific Research), and local businesses invested in improving urban safety and livability will be consulted on a case by case basis in the development and testing phases. A key element in the project's design phase was a moderated full-day 'Focus Sprint session' involving experts from the Heerlen municipality, NPOL, iLab, BSSC and Open University. The sprint aimed to refine the problem statement, focusing on addressing both resident and organisational issues. The primary concerns identified were that residents feel unsafe and disconnected, while government organisations are not trusted or seen connected to the community. The sprint set a target to improve livability and social cohesion and build stronger cooperation between the government and residents in the next three years, particularly in the two pilot neighbourhoods. Additional group of stakeholders includes all possible data providers for the Data Engine/SDT. MUA's Social Safety and Livability Data Center has already established a foundation collaborating with all project partners, PGAX system, various departments in municipality, regional stakeholders (Parkstad Limburg Monitor), street coaches, Het Gegevenshuis (Data House), and many others. Nevertheless, the ambition for data expansion goes further and universities and private companies from Heerlen will be invited to participate in data provision (see D6.2.3).

C.2.2 Participation and co-creation

PULSE-TWIN has a deeply integrated participation and co-creation framework, drawing from Heerlen's Social Safe approach and network, and UIA WESH project. The Social Safe approach actively involves safety and care partners, housing corporations and citizens, ensuring shared responsibility in livability and safety issues. As part of this approach MUA engages citizens and community leaders in decision-making processes. Regular consultations, neighbourhood inspections, collaborative sessions have already set a solid foundation for stakeholder involvement, which will be continued in the forms of Multistakeholder Panel (D5.1.1) and Citizen Think Along Group (D5.1.2) throughout the project's implementation, i.e. design, development, testing & evaluation of the innovative solution. The lessons learned from existing collaborations, including how to handle conflicting interests or resource limitations, will inform the approach in PULSE-TWIN. Heerlen's WESH project has empowered citizens to actively participate in maintaining their environment through an incentivised online platform, establishing a clear link between civic engagement and urban improvements. Building on the legacy of the WESH project, its valuable lessons on collaborative governance and embedded participation, PULSE-TWIN takes citizen engagement to a new level by enabling residents to suggest and carry out safety tasks and report safety incidents in real-time via the Safety Module of the Heerlen App (A8.3).

C.2.3 Target groups

Primary beneficiaries comprise the end users of the new technologies:
Data analysts at Partners gain structured data and analytical tools via PULSE-DW and PULSE-DE, enabling deeper insights, trend analyses to inform evidence-based decision-making. (10 ppl)
Frontline professionals and Social Safe tactical decision-makers access the PULSE-SDT for contextual insights on neighbourhood dynamics, enhancing informed decision-making. The AI Copilot delivers relevant data for frontliners, enhancing on-the-ground interventions. (50 ppl)
Citizens in pilot neighbourhoods benefit from improved safety, liveability and community cohesion, faster resolution of community issues, and stronger collaboration with local government. The Safety Module empowers citizens to engage directly in neighbourhood improvement efforts, fostering a stronger sense of community and a safer and more resilient environment. (8380 ppl)

Secondary beneficiaries:

Policymakers in Heerlen and Parkstad province gain a deeper understanding of community dynamics to inform policy development and resource allocation. (10 ppl)
Through the implementation of innovative solutions in the pilot neighbourhoods, the broader community of Heerlen Noord experiences a reduction in crime and nuisances and an increase in liveability and community cohesion. (56000 ppl)
Further 3 EU transfer cities adopt components of the solution that help them enhance data-driven decision-making, improve safety, liveability, and

engage citizens in co-creating solutions for urban challenges.

Through extensive dissemination of the scalable innovative solution, further Dutch and EU cities, as tertiary beneficiaries, are engaged in replication, enhancing their own urban safety and liveability strategies.

Finally, improving urban safety boosts business confidence and empower educational institutions, research bodies, innovation hubs to leverage innovative knowledge, contributing to long-term economic growth and a more resilient local economy.

Part C - Project description

C.3 Project objectives, results and outputs

C.3.1 Overall objectives and expected results (changes in the local situation)

The project aims to empower Heerlen's fight against undermining crime and goal to enhance livability and social cohesion by supporting the city's Social Safe approach with cutting-edge data-driven technology. By leveraging the power of AI and integrating official, frontliners' and community-sourced data, the project will enable better informed decision-making and tailored frontline interventions, increasing the quality, efficiency of public services - in line with EUI goals. Additionally, the project seeks collaboration with local stakeholders and citizens to ensure solutions align with societal values, foster social cohesion, and build trust, creating safer and more livable neighbourhoods.

C.3.2 Specific objectives

Specific objectives

To develop an advanced technology decision-support system - spearheaded by Social Digital Twin (PULSE-SDT) - that enhances frontline decision-making, urban planning, political decision-making in the fight against undermining crime. By combining official data with frontline professionals and citizens' insights and leveraging the potential of AI, the project will enable better informed decisions through advanced data processing, pattern and trend recognition, simulation, prediction and visualisation. This will allow for better prevention, detection, management of crimes and nuisances, enabling faster, tailored interventions, better aligned with the carrying capacity of smaller communities.

To boost the capacities of local tactical and operational-level professionals through accessing PULSE-SDT's data and analytics. By developing, testing and training on the SDT and its data driven AI Copilots in real-life settings across various sectors (police, social care, youth care), professionals will not only gain a deeper understanding of neighbourhood and case contexts in a fraction of the time but will also be able to respond more swiftly, and make better informed decisions. This will lead to improved service quality and operational efficiency. Testing results will provide valuable insights, facilitating future expansion and replication on a broader geographic and sectoral scale.

To ensure that the solutions developed rely on a societal consensus and promote social cohesion, the project will actively engage citizens and professionals in the development and testing of SDT and its data-driven applications, apply co-developed ethical, legal and societal standards throughout the developments and incentivize the efforts of citizens and local technological ecosystem to co-create more liveable neighbourhoods. Through these co-creation elements the project also aims to foster trust in and connectedness with government, raise crime awareness among citizens to avoid engaging in undermining criminal activities and strengthen the integrity of neighbourhood communities.

C.3.3 Expected results

Expected results

As a result, an advanced decision-support system will be created, featuring the PULSE-SDT, supported by the AI-powered PULSE-DE that integrates demographic, crime, liveability, housing statistics, sensors' data, and reports from frontline professionals and citizens, stored in the PULSE-DW. It will recognize and display patterns in crime and unsafety, citizen behaviour, provide predictive analytics, suggest interventions, run simulations, monitor neighbourhood liveability. It will be complemented by two practical applications, one assisting professionals and one engaging community in safety and livability. By project's end, 200 users will use its data and features.

As the project's result, 60 professionals' capacities from the Municipality, police, social and youth care sectors will be improved through their involvement in the development, testing and training on the use of PULSE-DE, PULSE-SDT, its data-driven AI Copilot and the Safety Module of the Heerlen App. This is expected to lead to tailored and more effective interventions combating undermining crime, consequently increasing safety and liveability, and improving citizens' feeling of safety in the pilot neighbourhoods of Hoensbroek and Vrieheide.

By project's end, broad community engagement lead not only to higher acceptance and uptake of new technologies, but also and most importantly, to increased sense of ownership, crime awareness, better connectedness, improved public trust, and enhanced community cohesion. The project will engage 100 community members through:
Co-development of ELSA technology validation framework
Technology acceptance activities

Expected results

Engagement of citizens and professionals in co-creating solutions via the Citizens Think Along Group and Multistakeholder Panel
Community safety projects in Heerlen App's Safety Module
Engagement of local technology ecosystem in the Community Challenge
Targeted communication activities

C.3.4 Rationale for result indicators

The result indicators were designed to track the impact of project activities, measuring changes in technology uptake, performance in professionals' practice, social transformation through community engagement, as well as overall changes in liveability and social cohesion, aligning with the project's Overall and Specific Objectives. The underlying rationale is that successful technology integration, increased professional efficiency, and active community participation will collectively lead to positive outcomes in safety and liveability in pilot neighbourhoods. To effectively measure the results and impact of the PULSE-TWIN solution, 1 predefined and 25 project specific indicators have been selected or developed strongly building on existing monitoring systems.

Technology uptake indicators (PSR1-5) measure end users adopting the technology, linked to SO1/ER1. Target values are based on users involved in the testing phase of the new technologies.

Technology performance indicators (PSR6-8) measure the operational efficiency of the technologies in the daily practice of trained professionals, linked to SO2/ER2. Target values are based on professionals trained in the project (PSR6), their documented interest in the solutions (PSR7) and historical data and anticipated usage patterns (PSR8).

Social transformation indicators (PSR9-17) measure the change in community cohesion induced by community engagement, linked to SO3/ER3. Target values are based on MUA's previous community engagement trends.

Finally, liveability and social cohesion indicators (PSR18-25) will measure the impact of the project in pilot neighbourhoods, relating to the Overall Objective of the project. The indicators and baseline values are derived from the 2023 metrics of Burgemonitor, MMM, Parkstad Monitor, Leefbaarometer. The target values combine historical data trends and an estimated value added by the project.

Methodology, baseline and target values will be further specified in the Initiation Phase.

C.3.5 Result indicators

Name	Description	Unit	Baseline	Target Value
Level of participation achieved in the engagement with local communities – information, consultation, co-creation, co-decision	Level of participation achieved in the engagement with local communities – information, consultation, co-creation, co-decision	percentage of the local population engaged	0	20
Other PSR1 Users of new Social Digital Twin	This indicator measures the yearly count of users for the newly developed Social Digital Twin in the last year of the implementation period.	users/year	0	150
Other PSR2 Users of Social Digital Twin data-driven AI Copilot among professionals in pilot neighbourhoods	This indicator measures the yearly count of users for the newly developed AI Copilot among professionals in the 2 pilot neighbourhoods in the last year of the implementation period.	users/year	0	20
Other PSR3 Users of the Heerlen App Safety	This indicator measures the yearly count of users for the newly developed Safety Module of the Heerlen App among professionals of Liveability	users/year	0	20

Name	Description	Unit	Baseline	Target Value
Module in pilot neighbourhoods among professionals	consultations in the 2 pilot neighbourhoods in the last year of the implementation period.			
Other	This indicator measures the yearly count of users for the newly developed urban safety module of the Heerlen App among citizens in the 2 pilot neighbourhoods in the last year of the implementation period. Counting users who:			
PSR4 Users of the Heerlen App Safety Module among citizens in pilot neighbourhoods	- Complete liveability and safety tasks in pilot neighbourhoods - Report crime or nuisance through the app in pilot neighbourhoods - Subscribe to Neighbourhood watch through the app in pilot neighbourhoods - Complete learning capsules from pilot neighbourhoods	users/year	0	60
Other	The indicator measures the proportion of tasks in the Heerlen App Safety Module suggested by the PULSE-SDT and taken up by citizens in the last year of the implementation period in the 2 pilot neighbourhoods. It measures the usefulness of SDT's analytical and predictive capabilities.	%	0	60
PSR5 Tasks suggested by SDT taken up by citizens in Heerlen App Safety Module				
Other	The indicator measures the number of professionals with increased capacities to use new technologies developed as part of the innovative solution in the 2 pilot neighbourhoods in the last year of the implementation period. It will be measured by counting the number of trained professionals in WP5, WP6, WP7, WP8.	persons	0	60
PSR6 Professionals with improved capacities				
Other	The indicator measures the proportion among professionals, who claim that the use of new technology facilitates their work, in pilot neighbourhoods. It will be measured through user evaluations and satisfaction surveys during testing of the innovative solution's components over the last year of the implementation period.	%	0	80
PSR7 User satisfaction among professionals				
Other	The indicator measures the annual number of Social Safe cases where new technology is used in determining interventions in pilot neighbourhoods in	Number of cases	0	20
PSR8 Social Safe cases where new technology is				

Name	Description	Unit	Baseline	Target Value
used	the last year of the implementation period.			
Other	This indicator measures the level of interaction between a project partner and the local youth in pilot neighbourhoods. It assesses how well the project engages with young (16-24 yo) community members of the 2 pilot neighbourhoods at different stages of participation, measured in the last year of the implementation period.	Persons /year	0	20
PSR9 Level of participation achieved in the engagement with local youth				
Other	This indicator measures the % of people that can recognise signals of undermining in the pilot neighbourhood, using the Burgemonitor's latest value at the end of the project's implementation period.	%	54	59
PSR 10 Recognition of undermining in Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)				
Other	This indicator measures the % of people that can recognise signals of undermining in the pilot neighbourhood, using the Burgemonitor's latest value at the end of the project's implementation period.	%	47	52
PSR 11 Recognition of undermining in Vrieheide-De Stack (pilot neighbourhood)				
Other	This indicator measures the % of people that are willing to report signals of undermining in the pilot neighbourhood, using the Burgemonitor's latest value at the end of the project's implementation period.	%	57	62
PSR 12 Willingness to report undermining in Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)				
Other	This indicator measures the % of people that are willing to report signals of undermining in the pilot neighbourhood, using the Burgemonitor's latest value at the end of the project's implementation period.	%	60	65
PSR13 Willingness to report undermining Vrieheide-De Stack (pilot neighbourhood)				
Other	This indicator measures the number of anonymous tips about undermining in the pilot neighbourhood, using the Meld Misdaad Anoniem's latest value at the end of the project's implementation period.	tips	14	20
PSR14 MMA tips in Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)				
Other	This indicator measures the number of anonymous tips about undermining in the pilot neighbourhood, using the Meld	tips	28	40

Name	Description	Unit	Baseline	Target Value
PSR15 MMA tips in Vrieheide-De Stack (pilot neighbourhood)	Misdaad Anoniem's latest value at the end of the project's implementation period.			
Other				
PSR16 Level of trust in government among Heerlen App users	This complex indicator measures the change in trust in government among Heerlen App users. Measurement methodology will use the number of App users who contacted the government regarding liveability issues in pilot neighbourhoods and regular surveys during testing among App users to explore their level of trust in government. Measured in the last year of the implementation period.	%	100	130
Other				
PSR17 Community cohesion in pilot neighbourhoods among Heerlen App users	This complex indicator measures the change in community cohesion in pilot neighbourhoods among App users. Measurement methodology will use the numbers of citizens involved in community safety projects in pilot neighbourhoods and regular surveys during testing among App users to explore their sense of community. Measured in the last year of the implementation period.	%	100	130
Other				
PSR18 Reduction of the feeling of unsafety in Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)	This indicator measures citizens' feeling of unsafety in the pilot neighbourhood using the Parkstad Monitor's latest value at the end of the project's implementation period.	% of people feeling unsafe	33	28
Other				
PSR19 Reduction of the feeling of unsafety in Vrieheide-de-Stack (pilot neighbourhood)	This indicator measures citizens' feeling of unsafety in the pilot neighbourhood using the Parkstad Monitor's latest value at the end of the project's implementation period.	% of people feeling unsafe	61	56
Other				
PSR20 Social cohesion Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)	This indicator measures social cohesion in the pilot neighbourhood using the Parkstad Monitor's latest score at the end of the project's implementation period. Scoring range: 0 (= very low) to 10 (= very high)	score	5.9	6.5
Other				
	This indicator measures social cohesion in the pilot neighbourhood using the	score	4.5	6.5

Name	Description	Unit	Baseline	Target Value
PSR21 Social cohesion Vrieheide-de Stack (pilot neighbourhood)	Parkstad Monitor's latest score at the end of the project's implementation period. Scoring range: 0 (= very low) to 10 (= very high)			
Other				
PSR22 Quality living environment Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)	This indicator measures quality of living in the pilot neighbourhood using the Parkstad Monitor's latest score at the end of the project's implementation period. Scoring range: 0 (= very low) to 10 (= very high)	score	7.1	7.5
Other				
PSR23 Quality living environment Vrieheide-de Stack (pilot neighbourhood)	This indicator measures quality of living in the pilot neighbourhood using the Parkstad Monitor's latest value at the end of the project's implementation period. Scoring range: 0 (= very low) to 10 (= very high)	score	5.1	6
Other				
PSR24 Increase in the liveability score Maria Gewanden Terschuren (in Hoensbroek) (pilot neighbourhood)	This complex indicator measures liveability in the pilot neighbourhood, using the Leefbaarometer's latest score at the end of the project's implementation period. The indicator takes into consideration: - Housing stock - Physical environment - Facilities - Social cohesion - Nuisance and safety Scoring interpretation: 0= optimal Negative Values =far from optimal Positive Values= better than optimal	score	-0.09	-0.07
Other				
PSR25 Increase in the liveability score Vrieheide-de Stack (pilot neighbourhood)	This complex indicator measures liveability in the pilot neighbourhood, using the Leefbaarometer's latest score at the end of the project's implementation period. The indicator takes into consideration: - Housing stock - Physical environment - Facilities - Social cohesion - Nuisance and safety Scoring interpretation: 0= optimal Negative Values =far from optimal Positive Values= better than optimal	score	-0.25	-0.15
Other				

Work Package	Output Number	Project output	Output indicator	Unit	Target value of project expected output(s)
WP 5 Ensuring inclusive community engagement in improving public safety and liveability	O 5.1	Stakeholders engaged in improving public safety and liveability	Stakeholders involved in the preparation and co-implementation of the project	participations of stakeholders	20.00
WP 5 Ensuring inclusive community engagement in improving public safety and liveability	O 5.2	Citizens engaged in improving public safety and liveability	Citizens involved in the preparation and co-implementation of the project	persons	155.00
WP 5 Ensuring inclusive community engagement in improving public safety and liveability	O 5.3	Stakeholders supported to increase their technology acceptance	People supported (trained, upskilled, accompanied or assisted)	persons	60.00
WP 5 Ensuring inclusive community engagement in improving public safety and liveability	O 5.4	Demo Corners created	New products and services created	new products/services	3.00
WP 6 Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine	O 6.1	Stakeholders engaged in the development of joint ambitions for technology development	Stakeholders involved in the preparation and co-implementation of the project	participations of stakeholders	45.00
WP 6 Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine	O 6.2	PULSE Data Warehouse (PULSE-DW)	New products and services created	new products/services	1.00
WP 6 Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine	O 6.3	PULSE Data Engine (PULSE-DE)	New products and services created	new products/services	1.00
WP 6 Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine	O 6.4	Trained professionals on the use of the PULSE Data Warehouse and Engine	People supported (trained, upskilled, accompanied or assisted)	persons	10.00
WP 7 Development of Heerlen's Social Digital Twin for urban safety and livability	O 7.1	PULSE Social Digital Twin (PULSE-SDT)	New products and services created	new products/services	1.00
WP 7 Development of Heerlen's Social Digital Twin for urban safety and livability	O 7.2	Trained professionals on the use of the PULSE Social Digital Twin	People supported (trained, upskilled, accompanied or assisted)	persons	130.00
WP 8 Development and testing of SDT data background-driven applications to enhance urban safety and liveability	O 8.1	AI Copilot with prototypes for 4 user groups	New products and services created	new products/services	4.00
WP 8 Development and testing of SDT data background-driven applications to enhance urban safety and liveability	O 8.2	The Safety Module of the Heerlen Heltje App	New products and services created	new products/services	1.00

Work Package	Output Number	Project output	Output Indicator	Unit	Target value of project expected output(s)
WP 8 Development and testing of SDT data background-driven applications to enhance urban safety and liveability	O 8 . 3	PULSE-SDT data-driven Community Challenge solutions	New products and services created	new products/services	3.00
WP 8 Development and testing of SDT data background-driven applications to enhance urban safety and liveability	O 8 . 4	Trained professionals on the use of the AI Copilot	People supported (trained, upskilled, accompanied or assisted)	persons	42.00
WP 8 Development and testing of SDT data background-driven applications to enhance urban safety and liveability	O 8 . 5	Spatial Lab	New products and services created	new products/services	1.00

Part C - Project description

C.4 Project sustainability scaling up and transferability

C.4.1 Sustainability and self-sufficiency of the proposed solution

MUA, as promoter of the PULSE-TWIN Solution, will assume ownership and ensure the sustainability of developed technologies, combining its regular revenues with calculable external resources, potential funding opportunities (e.g. Digital Europe), explored in the Upscaling and Rollout Vision.

Nevertheless, the Public Smart Safety Center (PSSC), to be established in late 2024 by MUA and key DPs, will join the project in the Initiation Phase, serving as a logical successor of sustainability responsibilities, as it will be sealing the long term cooperation and pooling the complementary expertise and resources of its founders to help sustain key components of the Innovative Solution. With a sustainable business model backed by an initial five-year financial commitment from its founders, the PSSC is positioned to drive the long-term success of PULSE-TWIN.

Moreover, by actively involving citizens and local stakeholders, the project ensures that the solutions developed align with real needs, boosting social acceptance, public trust and awareness of undermining crime, safety and liveability in the broader community, enhancing the solutions' long-term viability.

PULSE-TWIN's alignment with the 25-year NPHN, along with the integration of long-term performance indicators of regional, national monitoring systems (see C3.4, C3.5), further secures its sustainability and impact, ensuring consistent evaluation, continuous improvement, and alignment with evolving community and policy goals.

C.4.2 Durability of project outputs and results

Durability will be ensured by embedding the main outputs into the workflows of professionals, prepared & trained for their use, as well as into existing community spaces, ensuring continued use and impact beyond the project's end.

PULSE-TWIN's core solutions, i.e. the PULSE-DW, the PULSE-DE and the PULSE-SDT, will be embedded into the workflows of operation-level professionals. This includes data analysts at MUA and NPOL-Lab (D6.5.1), and frontline professionals of Partners, such as Social Safe Team members, police officers, BOAs, social and youth workers (D7.3.1). Similarly, the AI Copilot will be incorporated into workflows of frontliners mentioned before, further enhancing their operational effectiveness (D8.2.3).

Since PULSE-SDT will engage an even broader user base, incl. citizens of Heerlen Noord, further groups of frontliners, tactical decision-makers, policy-makers, it will help ensure the SDT's lasting effect on the city.

The Safety Module's durability will be ensured via integrating it into the Heerlen App, building on its predecessor WESH App's established user base (A8.3).

The project's two investments will also be added to existing community spaces with solid user bases: the Demo Corners (D5.3.3) to the "Together in the Neighbourhood" Chambers, contact points for citizens; while the Spatial Lab (D8.1.2) to the region's tech ecosystem hub, BSSC, to be used for boosting digital twin technology developments, especially in safety and liveability after project's end.

C.4.3 Link with other local/regional/national strategies and policies

Locally, the project is based on and supports the Social Safe approach and the National Programme Heerlen-Noord (NPHN), particularly the focus on neighbourhood liveability, resilience to organised crime, and increased sense of community. It complements the municipality's policy on neighbourhood management, "Together in the Neighborhood" which emphasises citizen engagement and collaborative safety initiatives.

At the regional level, PULSE-TWIN contributes to the Limburg Safety Agenda, which addresses crime prevention and social safety, particularly in combating organised crime, drug-related violence, and improving overall security in Limburg.

At the national level, the project aligns with the Dutch undermining strategy, which targets organised crime and illegal activities that threaten societal foundations. Additionally, PULSE-TWIN integrates into the Dutch Digitisation Strategy, supporting smart cities, AI applications, and data-driven public safety innovation. It also fits into the National Programme for Resilience to Organised Crime (RIEC), which encourages innovative municipal actions against undermining. SVOB, as the Dutch chapter of International CPTED Association, organically integrates PULSE-TWIN into the national framework of crime prevention standards.

These linkages ensure that PULSE-TWIN is integrated into a broader strategic framework, driving innovation in advanced technologies while enhancing urban safety and community engagement at multiple governance levels.

C.4.4 Potential for scaling up of the proposed solution

The PULSE-TWIN solution has strong potential for both geographical and sectoral scaling. MUA will test the Solution in two Heerlen Noord neighbourhoods with the lowest liveability indicators, and if successful will expand its use to other neighbourhoods. Leveraging MUA's Social Safe network in the project, which connects all safety and social sector actors in Heerlen Noord, scaling to additional neighbourhoods and expanding the user base to other members beyond the current Partners will be straightforward once the solution proves effective.

The PULSE-SDT is a GIS tool with potential applications beyond safety and liveability, from natural disaster preparedness to health planning. As the

PULSE-DW expands its data pool to gain a more nuanced understanding of neighbourhoods; potential upscaling to new sectors will open up. Moreover, the Solution is highly cost-effective and scaling entails low additional marginal costs, to be further examined in the Solution's cost-benefit analysis, while funding possibilities are explored in the Upscaling and Rollout Vision (URV).

To explore scaling possibilities, several activities will be undertaken, such as identifying new data sources, collecting SDT use cases, and elaborating on ELSA considerations in future scaling. These will inform the URV and the Solution's Factsheets.

Finally, P5SC's later joining adds further expertise and resources, enhancing the Solution's readiness for wider adoption, in Heerlen, nationally and internationally.

C.4.5 Evidence of demand for your project in other urban areas, Identification of Transfer Partners

Increasing urban safety concerns, alongside a growing need for data-driven approaches, have positioned many European cities to benefit from the replication of PULSE-TWIN's innovative Social Digital Twin technology. Heerlen's extensive network, from participation in Interreg, Urbact, CERV, and other EU projects & networks, helped identify European cities with similar urban challenges and technological ambitions that could benefit from replicating the innovative solution. Selection aimed at engaging cities 1) diverse in terms of regional development and size, 2) having sufficient capacity & level of preparedness to adopt the innovative solution and 3) with interesting practices of their own allowing for mutual learning. Following intensive outreach activities, we have received written interest and pre-selected 3 cities:

Sant Boi de Llobregat, Spain (more developed):

A medium-sized city in the Metropolitan Area of Barcelona, the city faces low-intensity public security challenges (e.g. petty crimes, home occupancy). Sant Boi collaborates closely with regional security forces and is already advancing digital safety tools, including the M7 App enhancing citizen-police communication and a camera surveillance system. It aims to integrate SDT for improved urban safety and governance.

Piraeus, Greece (transition)

Piraeus, as a key port city and commercial hub, faces unique security challenges related to traffic and tourism. The city has experience implementing digital solutions, notably through the Buildspace Horizon 2020 and UIA BSFS projects, which involve community-driven safety innovations. Piraeus's development of digital platforms for urban safety like CURIM aligns with PULSE-TWIN goals, allowing for fast integration.

Ústí nad Labem, Czech Republic (less developed):

Ústí nad Labem confronts socio-economic vulnerabilities that heighten crime in certain areas. Though still developing its digital infrastructure, Ústí nad Labem is keen to adopt PULSE-TWIN technology. Integrating data from different sources (like crime statistics & social services) would allow better targeting of social and urban safety interventions, and improve resource allocation in its marginalised neighbourhoods. Current work on integrating Heerlen's WESH solution in Ústí eases future integration and alignment with PULSE-TWIN.

Embeddedness of MUA and DPs into various EU networks and projects will allow for agility in Transfer Partner final selection in the Initiation Phase.

C.4.6 Transferability of the main elements of the solution

The PULSE-TWIN project offers a highly transferable model for improving urban safety and liveability through innovative technological and social solutions. Its core solutions—Social Digital Twin with Data Engine, App-based community engagement mechanism, ELSA methodology—are adaptable across diverse urban areas in the EU. The flexibility of its components makes it suitable for cities of different sizes and governance structures, provided they have the necessary infrastructure, data management capacities, and citizen-engagement frameworks:

To replicate the SDT and Data Engine solution designed to collect, analyse, and model neighbourhood data, urban areas will need a basic data infrastructure and the capacity to integrate and manage diverse datasets. Dedicated IT dept, an open data platform and policies supporting real-time data collection would be essential for successful adaptation.

A citizen-centred app with a module on urban safety can easily be adapted in other cities with basic IT infrastructure and governance systems that can respond to real-time feedback. The ability to act on citizen inputs and integrate them into local decision-making processes is key to success. Ústí nad Labem, a prospective Transfer Partner, has already started implementing Heerlen's WESH solution creating a good basis for further replication. A unique aspect of PULSE-TWIN is its strong emphasis on community engagement into highly complex technological solution co-creation, particularly involving underrepresented groups such as youth. A city replicating the solution should have mechanisms for community outreach and citizen participation.

The project also emphasises adherence to ELSA principles, ensuring compliance with EU regulations on AI and data protection. The ELSA framework helps build public trust and ensures the long-term sustainability of the solution. Cities adopting PULSE-TWIN must ensure alignment with these regulations, particularly around data privacy and AI governance.

Part D - Work plan

WP Nr.	Title	Work package type	Start date	End date
1	Project Preparation and Initiation Phase	Project Preparation and Initiation Phase	06/05/2024	30/09/2025
2	Project Management	Project Management	01/10/2025	31/03/2029
3	Monitoring and Evaluation	Monitoring and Evaluation	01/10/2025	31/03/2029
4	Communication and Capitalisation	Communication and Capitalisation	01/10/2025	31/03/2029
5	Ensuring inclusive community engagement in improving public safety and liveability	Thematic	01/10/2025	30/09/2028
6	Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine	Thematic	01/10/2025	30/09/2028
7	Development of Heerlen's Social Digital Twin for urban safety and livability	Thematic	01/07/2026	30/09/2028
8	Development and testing of SDT data background-driven applications to enhance urban safety and liveability	Thematic	01/10/2025	30/09/2028
9	Transfer	Transfer	01/03/2026	31/03/2029
10	Closure	Closure	01/04/2029	30/06/2029

Work Plan Per Work Packages - Work Package 1 Project Preparation and Initiation Phase

Title Project Preparation and Initiation Phase

Number	Title	Start date	End date	Budget
1.1	Project Preparation	Start date 06/05/2024	End date 14/10/2024	
1.2	Project Initiation Phase	Start date 01/04/2025	End date 30/09/2025	

Partners Involvement

Responsible Partner PP 1 - Municipality of Heerlen

Involved Partners PP 1 - Municipality of Heerlen

Summary

Work Package Project Preparation and Initiation Phase covers two stages related to project development and getting ready for the implementation, prior the start of the project implementation phase. Under Project Preparation, the Work Package includes activities needed for the definition and the design of the project proposal (Application Form). Under Initiation Phase, the Work Package includes all tasks that are carried out before the official start of the project implementation and dedicated solely to administrative preparation to receive the EU funds and the set-up of the project management team. Please note that start and end dates for the listed below deliverables are indicative and should serve applicants to understand the logic and sequencing of the initiation Phase steps, as well as to prepare in advance for on-time delivery of the expected deliverables.

Activities and Deliverables**A 1.1 - Project Preparation**

Title	Start date	End date
Project Preparation	06/05/2024	14/10/2024

Description

Project Preparation

D 1.1.1 - Application Form submitted

Deliverable title	Target value	Start date	Delivery date
Application Form submitted	1	06/05/2024	14/10/2024

Description

Preparation and submission of the Application Form version 1.

A 1.2 - Project Initiation Phase

Title	Start date	End date
Project Initiation Phase	01/04/2025	30/09/2025

Description

Project Initiation Phase

D 1.2.1 - Initiation Meeting

Deliverable title	Target value	Start date	Delivery date
Initiation Meeting	1	01/04/2025	14/04/2025

Description

Remote meeting between the project managers and the Permanent Secretariat to initiate the first contacts, present the overall Initiation Phase process, steps, and calendar, and notably discuss the recommendations from the Selection Committee and the project readiness check.

D 1.2.2 - Signature of the Subsidy Contract

Deliverable title	Target value	Start date	Delivery date
Signature of the Subsidy Contract	1	01/04/2025	31/05/2025

Description

The Subsidy Contract is the legally binding document between the project and the EUI-IA. It sets out all the conditions under which the project is approved and stipulates the legal basis for funding. It is issued by the EUI Entrusted Entity and sent to the Main Urban Authority to be signed at the beginning of the Initiation Phase.

D 1.2.3 - Set up of the project management team and administrative prerequisites for EU funds reception

Deliverable title	Target value	Start date	Delivery date
Set up of the project management team and administrative prerequisites for EU funds reception	1	01/04/2025	31/05/2025

Description

The project management team is hired to carry out the Initiation Phase and set up the main administrative prerequisites for project management. Information on the composition and contact details of the project management team and bank account details must be filled on the EEP system.

D 1.2.4 - EUI – Innovative Actions training seminar

Deliverable title	Target value	Start date	Delivery date
EUI – Innovative Actions training seminar	1	01/04/2025	31/05/2025

Description

Compulsory training seminar for project managers to present the basic information to manage an EUI-IA project: project and financial management, reporting, monitoring, control, deviations, changes, communication, and transfer.

D 1.2.5 - Addressing Selection Committee Recommendations and other adjustments

Deliverable title	Target value	Start date	Delivery date
Addressing Selection Committee Recommendations and other adjustments	1	01/04/2025	30/06/2025

Description

To address the list of Recommendations issued by the Selection Committee, the project managers submit to the Permanent Secretariat for validation a proposal reflecting how they intend to address each recommendation (either by providing a clarification and/or by explaining how the necessary adjustments will be reflected in the Application Form).

D 1.2.6 - Updated Application Form

Deliverable title	Target value	Start date	Delivery date
Updated Application Form	1	01/04/2025	31/08/2025

Description

Based on the joint work with the Permanent Secretariat carried out in 1.2.5 and 1.2.7, the project Application Form (version 1) must be updated accordingly and submitted in the EEP system within 3 months following the Initiation Meeting. The new version must reflect the Selection Committee Recommendations, (ii) include approved minimum set of Results Indicators, and (iii) potentially reflect minor adjustments to the project Work Plan addressing the readiness check. This new version validated by the Permanent Secretariat becomes the new official project document.

D 1.2.7 - Readiness check and ex-ante audit

Deliverable title	Target value	Start date	Delivery date
Readiness check and ex-ante audit	1	30/06/2025	31/08/2025

Description

Project readiness check is carried out by the First Level Control during the ex-ante audit and by the Permanent Secretariat. It covers project management, administrative, financial, and operational issues likely to affect the sound execution of the project and the achievement of targeted project results and examines if the project has a reliable strategy and sufficient anticipation regarding the topics addressed in the Application Form risk management section. A positive outcome is conditional to the successful completion of the Initiation Phase.

D 1.2.8 - Project Monitoring Plan

Deliverable title	Target value	Start date	Delivery date
Project Monitoring Plan	1	01/04/2025	30/09/2025

Description

Based on the latest version of the Application Form (1.2.6), project managers draft a Monitoring Plan including the main project milestones. This document is jointly agreed with the Permanent Secretariat and will be the basis for the ongoing monitoring throughout project implementation.

D 1.2.9 - Partnership Agreement signed by all Project Partners and formalized Identification of Transfer Partners

Deliverable title	Target value	Start date	Delivery date
Partnership Agreement signed by all Project Partners and formalized Identification of Transfer Partners	1	01/04/2025	30/09/2025

Description

The Partnership Agreement is the legally binding document signed between all Project Partners, setting out all the duties and responsibilities of each Project Partners before, during and after the project implementation. A Partnership Agreement Template is provided by the Permanent Secretariat but needs to be tailored to the Partnership needs. An electronic copy of the Partnership

Agreement signed by all Partners shall be sent to the Permanent Secretariat. At the end of the Initiation Phase, Transfer Partners must also be formally identified (e.g., letter of intent).

Work Package Budget

Partner name	Staff cost (€)	Office and administration (€)	Travel and accommodation (€)	External expertise and services (€)	Equipment (€)	Total (€)
Municipality of Heerlen						

Work Plan Per Work Packages - Work Package 2 Management

Title Project Management

Start Date 01/10/2025

End Date 31/03/2029

Budget

Partners Involvement

Responsible Partner PP 1 - Municipality of Heerlen

Involved Partners

PP 1 - Municipality of Heerlen PP 2 - Dutch National Police (NPOL) PP 3 - Maastricht University (UM) PP 4 - Inklusio
PP 5 - JENS PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)
PP 7 - Brightlands Smart Services Campus (BSSC)

Summary

The PULSE-TWIN project will be managed through a structured framework to ensure smooth operations at strategic and operational levels. Key management bodies include the Project Management Group (PMG), Project Board (PB), and Steering Committee (SC), each responsible for overseeing tasks, decision-making, ensuring project alignment with plans and expectations. A project management plan guide the process, covering risk management, reporting procedures, and communication rules. External support is planned to ensure high-quality implementation in various areas: process oversight, reporting, quality control, project communication, and financial management.

The project will kick off with a meeting to establish roles and responsibilities, followed by regular monthly meetings of Working Groups (WG), each led by a WG Leader. WGs will focus on specific aspects, horizontal WGs on Monitoring, Communication, Transfer and thematic WGs on PULSE-TWIN Innovative Solution's components: Social Digital Twin, AI Copilot, Heerlen App's Safety Module, Community Engagement, and ELSA compliance to ensure that every work package is delivered on schedule and meets the project's objectives.

An online platform is used for daily operations with real-time progress tracking and streamlined internal communication. Monthly progress is tracked in WG meetings, and PMG will ensure smooth information flow across partners. Quarterly Steering Committee reviews will track progress, with adjustments made as needed.

Activities and Deliverables

A 2.1 - Set Up of the Project Management Structures and Governance framework

Title	Start date	End date
Set Up of the Project Management Structures and Governance framework	01/10/2025	31/03/2029

Description

This activity is setting up the core management framework, ensuring all governance and decision-making processes are formalised. It involves defining the roles of key bodies like the Project Management Group (PMG), Project Board (PB), and Steering Committee (SC), ensuring smooth coordination from the outset. Kick-off meeting is part of the activity.

WGs are responsible for delivering specific activities and WPs of the project: there are 3 horizontal ones (Monitoring WG, Communication WG, Transfer WG) and 5 thematic (SDT WG, AI Copilot WG, Heerlen App Safety Module WG, Community Engagement WG and ELSA WG). Each WG is led by a WG Leader and typically meets monthly (the frequency may vary based on the needs of the WG).

Resp: MUA

Part: all PPs

D 2.1.1 - Daily project management and thematic coordination bodies established and operational

Deliverable title	Target value	Delivery date
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Daily project management and thematic coordination bodies established and operational

11

31/03/2029

Description

The Project Management Group (PMG) composed of MUA's Project Manager, Financial Manager, Communication Manager, the operational core of the project, is formally established. This group, meeting bi-weekly will manage daily project operations and ensure thematic activities are coordinated across all working groups (WGs) through the Project Board (PB), which is composed of PMG members and all WG leaders, meeting bi-weekly to address ongoing needs. The target value refers to the 11 project bodies established.

Coord: MUA

Part: all PPs

D 2.1.2 - Steering and evaluation body established and operated**Deliverable title**

Steering and evaluation body established and operated

Target value

1

Delivery date

31/03/2029

Description

A Steering Committee (SC) serves as the highest decision-making and supervisory body for the project, comprising the high level representatives of all participating partners (PPs). To ensure effective oversight, the SC will meet quarterly online and biannually in person to ensure the project aligns with its strategic objectives, with additional communications taking place as needed through other channels. SC meetings will also be open to all transfer PPs, offering them the opportunity to learn about project progress and contribute their own experiences and insights.

Coord: MUA

Part: all PPs

D 2.1.3 - Kick off meeting held presenting project governance and training on financial management**Deliverable title**

Kick off meeting held presenting project governance and training on financial management

Target value

1

Delivery date

31/10/2025

Description

The kick-off meeting for the PULSE-TWIN project brings together all participating partner teams, including project managers, financial managers, and experts responsible for thematic implementation. During this meeting, PPs will review the project management framework, expectations of the EUI Programme, the roles and responsibilities of project bodies PMG, PB, SC and WGs and all relevant internal procedures. Additionally, the Project and Financial Management Handbooks will be discussed in detail. The meeting will include training sessions on: Financial management; Procurement and legal procedures; Digital skills development to enhance the use of online communication tools.

Coord: MUA

Part: all PPs

A 2.2 - Project Coordination and Internal Communication among Partnership**Title**

Project Coordination and Internal Communication among Partnership

Start date

01/10/2025

End date

31/03/2029

Description

This activity ensures effective coordination and communication across partners. The PMG will manage day-to-day tasks via an online platform for tracking progress. The Project Board online/hybrid meetings are held bi-weekly with all WG leaders, with PMG preparing the

agenda, facilitating the meeting and sharing meeting minutes.

Monthly WG meetings will ensure collaboration, with the Communication Manager additionally facilitating information flow. Regular updates on achievements and challenges will be shared via newsletters.

Coord: MUA

Part: all PPs

D 2.2.1 - Operational project management and thematic management process coordinated

Deliverable title

Operational project management and thematic management process coordinated

Target value

11

Delivery date

31/03/2029

Description

The PMG is responsible for day-to-day coordination of project activities and reporting duties. Through the PB it also ensures that all WGs are aligned and tasks are executed as planned. Bi-weekly online/hybrid PB meetings are organised to discuss current and upcoming project tasks of whole PULSE-TWIN relevance. On a regular basis, thematic coordination is maintained through meetings of the 5 Thematic Working Groups (WGs). During these meetings, teams review and discuss specific thematic tasks, responsibilities, and deadlines related to their respective WPs. The outcomes of WG activities are presented at PB meetings, ensuring a continuous flow of information and alignment between thematic and operational management. The target value refers to the 11 project bodies coordinated.

Coord: MUA

Part: all PPs

D 2.2.2 - Efficient steering and evaluation process managed

Deliverable title

Efficient steering and evaluation process managed

Target value

7

Delivery date

31/03/2029

Description

Steering Committee (SC) meetings play a crucial role in coordinating the project by overseeing overall progress, tracking changes, and discussing strategic decisions, including risk mitigation and upcoming tasks with related timelines. PMG prepares a detailed agenda for these meetings and may occasionally invite external actors relevant to the topics being addressed. In-person SC meetings will be held every six months during the implementation phase, with interim online meetings to ensure continuous oversight. Transfer cities will also be invited to provide updates and exchange insights on their roles in the project's tasks.

Coord: MUA

Part: all PPs

D 2.2.3 - Internal communication system for smooth collaboration is operational

Deliverable title

Internal communication system for smooth collaboration is operational

Target value

1

Delivery date

31/03/2029

Description

A formal internal communication system is established, which includes a shared project management platform for document sharing, meeting schedules, progress updates, and financial tracking. This system is designed to facilitate collaboration between all partners, WGs, and decision-making bodies.

Coord: MUA

Part: all PPs

A 2.3 - Project Work Plan Management and Reporting

Title	Start date	End date
Project Work Plan Management and Reporting	01/03/2026	31/03/2029

Description

This activity manages the work plan through monitoring project progress as defined in Work Packages against timelines and subsequent reporting. Internal small thematic reports will follow each WG meeting, capturing progress, updates and risks reports for quarterly SC reviews, then transformed into the milestone-related Internal Thematic Reports on the dates agreed in each WG separately. Annual reports will provide comprehensive updates on the project's status. Quality Assessment Reports are produced mid-project and at the end to ensure swift risk management.

Coord: MUA

Part: all PPs

D 2.3.1 - Internal Thematic Reports (10) produced

Deliverable title	Target value	Delivery date
Internal Thematic Reports (10) produced	10	31/03/2029

Description

10 thematic reports are produced at internally agreed milestone dates, each focusing on specific work packages or themes, as coordinated by the PMG and relevant WGs. These reports provide detailed insights into the progress of thematic areas and are used for internal reviews by the Project Board (PB).

Coord: MUA

Part: all PPs

D 2.3.2 - Annual Progress Reports (3) prepared

Deliverable title	Target value	Delivery date
Annual Progress Reports (3) prepared	3	31/03/2028

Description

Three comprehensive Annual Progress Reports are prepared, summarising the entire project's progress over each year. WG leaders, responsible for collecting data from the PPs involved in their respective WPs, complete the internal offline templates provided by the PMG. These documents are then consolidated and finalised by the PMG before being submitted to the Programme within the required deadlines.

These reports are also presented to the SC for high-level review and feedback, before the submission to the EUI Programme.

Coord: MUA

Part: all PPs

D 2.3.3 - Quality Assessment Reports (2) developed and reviewed

Deliverable title	Target value	Delivery date
Quality Assessment Reports (2) developed and reviewed	2	31/03/2029

Description

Two detailed quality assessment reports are produced (interim and final), ensuring that project outputs and processes meet agreed-upon quality standards. Quality Assessment Report Nr.1 will be produced after the first Annual Progress Report (November 2026), the PMG will conduct the interim assessment, including: 1) identifying risks encountered and proposing solutions related to key deliverables and outputs, 2) implementing risk mitigation strategies for investment activities, and 3) evaluating financial deviations. The results will be presented to the PB and SC, with mitigation measures integrated into the updated work plan. As a review, the 2nd report will be delivered at the end of the implementation phase, linked to the Final Annual Progress Report (March 2029) (also as a source for the Final Quality Assessment Report at the end of the monitoring year).

Coord: MUA
Part: all PPs

A 2.4 - Project Financial Management

Title	Start date	End date
Project Financial Management	01/10/2025	31/03/2029

Description

This activity handles financial oversight, led by the MUA. A financial monitoring system will track expenses and ERDF transfers. The Financial Manager will ensure compliance with budget forecasts, reporting to the PBL. A training session during the kick-off meeting on financial reporting and eligibility rules will be provided to partners. The MUA will coordinate expense verification and maintain an audit-ready trail, ensuring transparency and accuracy in all financial transactions. Based on the internal monitoring system results & supporting documents, MUA will submit the Financial Claims.

Coord: MUA
Part: all PPs

D 2.4.1 - Financial management capacity building

Deliverable title	Target value	Delivery date
Financial management capacity building	1	31/10/2025

Description

During the kick-off meeting, MUA will provide training on financial requirements for all PPs. The training will cover essential topics, including financial implementation based on advance payments, cash flow management and co-financing contributions, effective planning and utilisation of staff costs, and the process for preparing financial claims. Following the meeting, all PPs will receive a user-friendly Financial Management Handbook that summarises key financial features specific to the EUI, along with templates for financial monitoring.

Coord: MUA
Part: all PPs

D 2.4.2 - Internal financial monitoring system set up and operated

Deliverable title	Target value	Delivery date
Internal financial monitoring system set up and operated	1	31/10/2025

Description

A robust internal financial monitoring system is established to track expenditures, financial claims, and budget usage across all partners. This system, managed by the Financial Manager within the PMG, ensures that financial activities are transparent and in compliance with the project's requirements. All data from project partners (PPs) and supporting documents will be uploaded to a centralised online repository, where they will be reviewed and validated by the Main Urban Authority (MUA). Validation will include feedback reports with advice on maintaining proper audit trails and recommendations for budget adjustments, if necessary.

Coord: MUA
Part: all PPs

D 2.4.3 - Financial Claims management

Deliverable title	Target value	Delivery date
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Financial Claims management

2

31/03/2029

Description

Financial claims from partners, including expense reimbursements and project-related costs, are processed and monitored by the PMG, specifically the Financial Manager, who ensures timely and accurate submission of Financial Claims to the EUI Secretariat in line with the programme requirements.

Financial inputs from project partners will be gathered every four months. This process will generate cumulative figures at both the partner and project levels for reporting eligible costs. At the same time, supporting documents, meeting audit requirements, will be continuously uploaded and tracked in the online repository, ensuring all necessary information is in place for the submission of Financial Claims (FCs).

Coord: MUA

Part: all PPs

A 2.5 - Procurement and Legal proceedings**Title**

Procurement and Legal proceedings

Start date

01/10/2025

End date

31/03/2029

Description

This activity manages procurement and legal processes for the project's successful implementation. The MUA will ensure all procurement follows EU rules, with public tenders where needed.

Following project focus on the data, Data security and GDPR guidance will be delivered in a report (D2.5.2). BISS and MUA will support compliance with legal and ethical standards through the Transparency Statement.

Coord: MUA

Part: all PPs

D 2.5.1 - Procurement and legal procedure support**Deliverable title**

Procurement and legal procedure support

Target value

1

Delivery date

31/03/2029

Description

The Financial Handbook designed by PMG for the kick-off meeting will also contain a dedicated Procurement section. Procurement procedures are to be carried out fully in line with the Programme, national and internal organisational rules by dedicated staff of the relevant legal department within affected PPs (mainly MUA and BSSC).

Additional external legal experts might be hired to assist the procurement processes, especially concerning innovation procurements related to the BSSC Lab (D8.1.2).

Coord: MUA

Part: all PPs

D 2.5.2 - Data security and GDPR guidance report**Deliverable title**

Data security and GDPR guidance report

Target value

1

Delivery date

31/03/2026

Description

MUA manages the involvement of knowledgeable GDPR and data security experts to assist the introduction of the Social Digital Twin (WP7) supported by an AI-powered data engine (WP6), where data sharing among various stakeholders (municipality, police, social and youth care, citizens) and assigning appropriate access rights to users need a careful examination of GDPR and data security aspects. A guidance report is elaborated to feed the setting up and operation of the data engine and Social Digital Twin.

Coord: MUA

Part: all PPs

D 2.5.3 - Transparency statement

Deliverable title

Transparency statement

Target value

1

Delivery date

31/03/2026

Description

The TS will outline the project's commitment to ethical use of sensitive data and AI. It will proactively address potential concerns from society and NGOs by clearly explaining how data is collected, processed, and protected, while ensuring adherence to privacy regulations and ethical standards. It will provide transparency on the AI models used, decision-making processes, and potential risks. The statement will emphasise accountability and outline mechanisms for oversight, public engagement, and responsiveness to any societal or organisational feedback throughout the project's lifecycle.

Coord: MUA

Part: all PPs

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	Project management team (financial manager, project manager) coordinating project with 1 FTE capacity (supported by external experts experienced in EU)	N/A	N/A	Preparing internal mgt guides, prep. & facilitation of kick-off meeting+its costs; Supporting the steering/evaluation process; Compiling reports; Operating internal financial monitoring system.		
Amount (€)						

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	51 staff days for project management	N/A	N/A			

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
	support (0,08 FTE)					
Amount (€)						
PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	55 staff days: Project manager with approx. 0.07 FTE capacity	N/A	N/A			
Amount (€)						
PP 4 - Inclusio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	29 staff days: Project manager with approx. 0,04 FTE capacity	N/A	N/A			
Amount (€)						
PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	29 contracted youth worker/project manager days x		
Amount (€)						

PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	In-house experts support in the project management.		
Amount (€)						

PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	55 staff days: Project manager with approx. 0,07 FTE capacity	N/A	N/A			
Amount (€)						
Total (€)						

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Work Plan Per Work Packages - Work Package 3 Monitoring and Evaluation

Title Monitoring and Evaluation

Start Date 01/10/2025

End Date 31/03/2029

Budget

Partners Involvement

Responsible Partner PP 1 - Municipality of Heerlen

Involved Partners

PP 1 - Municipality of Heerlen ⓘ PP 2 - Dutch National Police (NPOL) ⓘ PP 3 - Maastricht University (UM) ⓘ PP 4 - Inluzio ⓘ
PP 5 - JENS ⓘ PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB) ⓘ
PP 7 - Brightlands Smart Services Campus (BSSC) ⓘ

Summary

WP3 aims at measuring, quantifying and evaluating the change generated by PULSE-TWIN in Hoensbroek and Vrieheide pilot neighbourhoods as a result of the tested Innovative Solution.

Monitoring activities are led by Monitoring WG linking up with all thematic WGs (see WP2) to ensure proper data inputs and feedback flow based on the result indicators, measuring the performance of the Innovative Solution's components, such as:

- 1) PULSE Social Digital Twin, including PULSE Data Warehouse, PULSE Data Engine performance;
- 2) AI Copilot performance;
- 3) Heerlen App's Safety Module performance;
- 4) Community Engagement levels;
- 5) ELSA compliance in AI-based technology developments;
- +1) Reach via communication activities;

As data is continuously collected on the five components of the solution, narrative evaluations are conducted in pilot neighbourhoods to counterbalance quantitative methods with qualitative ones and gain better understanding on citizens' feeling of safety, crime, and liveability.

Lessons learned from the project are summarised in five factsheets, providing recommendations for sustainability, scalability, and future rollout. It will be complemented by a cost-benefit analysis that compares the financial and social value of the solution, including improved safety, liveability, and crime reduction. These insights are compiled into a final report, contributing to the project's closure phase and ensuring the project's impact is well demonstrated for future applications.

Activities and Deliverables

A 3.1 - Monitoring of project performance

Title	Start date	End date
Monitoring of project performance	01/10/2025	31/03/2029

Description

First, a Monitoring Working Group is set up by MUA. It cooperates closely with the Thematic Working Groups (set up in WP2), to ensure continuous flow of information, systematic collection of data, and feedback:

- 1) Regular meetings are organised by the Monitoring WG with relevant Thematic WGs
- 2) MUA provides regular updates at PB meetings and delivers quarterly reports to the SC meetings on the monitoring process and progress of indicators, providing valuable inputs on the project progress and potential interventions needed to keep the project on track
- 3) Furthermore, the inputs prepared by WG also feed into the 6-monthly Milestone Reviews to be submitted for Secretariat.

Resp: MUA,

Part: All partners

D 3.1.1 - Monitoring Working Group set up and operated

Deliverable title

Monitoring Working Group set up and operated

Target value

1

Delivery date

31/03/2029

Description

The Monitoring WG is set up in M7 by WG representatives, led by MUA and operates during the whole implementation phase ensuring regular exchanges and meetings with the relevant Thematic WPs for a continuous collection of data and information and to provide a platform for feedback regarding the project performance. MUA, leading the Monitoring WG, provides weekly/bi-weekly updates on the progress of project indicators towards the PB to allow for timely interventions and corrective actions in case of underperformance or deviations.

Resp: MUA,

Part: All Partners

D 3.1.2 - Quarterly reports to SC to support risk management

Deliverable title

Quarterly reports to SC to support risk management

Target value

12

Delivery date

31/03/2029

Description

Monitoring WG compiles quarterly reports on monitoring (performance of indicators, measurement related issues, etc.) to be presented at the SC meetings. These will be efficient tools to support decisions by the SC related to corrective measures in case of major risks or suggest changes in measurement of data collection processes. The EUI expert, invited on occasions to the SC meetings, is also expected to provide support with improving the monitoring & evaluation process.

Resp: MUA,

Part: All partners

D 3.1.3 - Inputs to 6-monthly Milestone Reviews on indicator performance

Deliverable title

Inputs to 6-monthly Milestone Reviews on indicator performance

Target value

6

Delivery date

31/03/2029

Description

Performance of result indicators in the context of targets defined in the RI Matrix are followed-up by Monitoring WG and channelled into the 6-monthly Milestone Reviews submitted to the Permanent Secretariat. The inputs also build on quarterly reports prepared for the SC meetings.

Resp: MUA, Part: Partners

A 3.2 - Establishment of the evaluation framework of the innovative solution

Title

Establishment of the evaluation framework of the innovative solution

Start date

01/10/2025

End date

30/06/2027

Description

First, a Result Indicator (RI) Matrix is created, based on the Monitoring Plan fine-tuned during the Initiation Phase. The RI Matrix goes beyond the result indicators table in the AF by further detailing them and adding more indicators in accordance with possible modifications following clarifications with EUI. By M12, building on the RI Matrix, the Monitoring & Evaluation Framework is created, providing the details of the measurement & evaluation process (WHO, WHAT, HOW, with what FREQUENCY), an evaluation timeline and the division of partner

roles in the process. This will then be updated by M27 following experiences from the first testing period.

Resp: MUA, Part: All partners

D 3.2.1 - Result Indicator Matrix

Deliverable title

Result Indicator Matrix

Target value

1

Delivery date

31/03/2026

Description

A fine tuned Result (RI) Matrix is prepared based on EUI recommendations linked to the clarification following project approval. This includes more in-depth descriptions of technical indicators on the innovative solution's performance, social indicators related to safety and liveability, ELSA and social acceptance indicators and financial indicators to be monitored measuring cost-benefit efficiency and viability of the proposed solutions. D3.2.1 starts in M1 (Oct 2025) of the implementation phase and finishes by M6 of the implementation phase.

Resp: MUA, Part: All partners

D 3.2.2 - Monitoring and evaluation framework

Deliverable title

Monitoring and evaluation framework

Target value

1

Delivery date

30/06/2027

Description

The Monitoring and Evaluation Framework (MEF) is elaborated by M12, with revisions by M27 (following experiences from the first testing period). Building on the RI Matrix and the Communication Strategy, the MEF provides the detailed methodology and process framework of measurements, i.e. which partners (WHO) measure which data (WHAT) with which methodology/measurement tools (HOW), the FREQUENCY of data collection, and the timeline for evaluations.

The distribution of roles is discussed in the provision of information and data and feedback channels are established to ensure the efficiency and feasibility of the monitoring process. Finally, data storage and GDPR aspects are also clarified.

D3.2.2 starts at M2 - thus with a bit of delay compared to D3.2.1 - and the first version is ready also by M6 (Mar 2026) of the Implementation Phase, then reviewed based on the first year's experiences of the Implementation Phase (June of 2027).

Resp: MUA

Part: All partners

A 3.3 - Data collection on the implementation/performance of the innovative solution

Title

Data collection on the implementation/performance of the innovative solution

Start date

01/07/2027

End date

30/09/2028

Description

Continuous data collection is carried out with respect to the result indicators linked to the 5 key components of the innovative solution (+ communication), i.e.

- 1) PULSE-SDT;
- 2) AI Copilot
- 3) Safety Module of the Heerlen App
- 4) Community Engagement
- 5) ELSA in AI development

In addition to result indicators, narrative evaluations will be carried out in pilot neighbourhoods to gain deeper insights into citizens' feeling of safety, crime perceptions, and liveability.

Finally, a mid-term evaluation of the components is elaborated, serving as a template for the final evaluation.

Resp: MUA

Part: WG Leaders

D 3.3.1 - Database of result indicator measurements**Deliverable title**

Database of result indicator measurements

Target value

1

Delivery date

30/09/2028

Description

Ongoing data collection related to the performance of the innovative solution components and their result indicators is the responsibility of the thematic WGs in charge of the given component, as well as the Communication WG for measuring reach of communication activities, all supervised by MUA. By the end of the testing phase, a comprehensive database (available in online repository) is created with all data collected throughout the implementation (components: Community Engagement, ELSA compliance) and testing periods (components: PULSE-SDT, AI Copilot, Heerlen App Safety Module).

Resp: MUA & WG Leaders

Part: All Partners

D 3.3.2 - Narrative evaluation in neighbourhoods**Deliverable title**

Narrative evaluation in neighbourhoods

Target value

1

Delivery date

30/09/2028

Description

In addition to result indicators, narrative evaluations will be conducted in pilot neighbourhoods to provide deeper insights and a more comprehensive understanding of three key areas: citizens' feeling of safety, perceptions of crime, and liveability. The methodology will include an entry and exit survey at the beginning and end of the project. These evaluations will offer a more nuanced assessment of the project's overall objectives, serving as qualitative complements to the quantitative data. By capturing subjective experiences and contextual factors, the narrative evaluations will enhance the overall quality and depth of the evaluation process.

Resp: MUA

D 3.3.3 - Mid-term evaluation**Deliverable title**

Mid-term evaluation

Target value

1

Delivery date

31/07/2027

Description

A mid-term evaluation (M26-28) is carried out for those components where it is relevant and feasible: i.e. 1) the operational effectiveness of the PULSE-SDT; 3) the operational effectiveness of the Safety Module of the Heerlen App 4) the community engagement levels reached in terms of operating the consultation panels (DS.1.1, DS.1.2), involving them in tech developments and testing (PULSE-DW/DE/SDT and Safety Module), as well as in the Community Challenge (A8.4); 5) ELSA compliance in tech development and testing. Finally, outreach of communication actions will be evaluated to allow for further tailoring of the activities.

Resp: MUA

Part: Relevant WG Leaders

A 3.4 - Final evaluation of the innovative solution and reporting on result indicators**Title**

Final evaluation of the innovative solution and reporting on result indicators

Start date

01/08/2028

End date

31/01/2029

Description

The final evaluation assesses the social, economic and technical viability and impact of the Innovative PULSE-TWIN Solution after its testing. All components are evaluated using quantitative and qualitative methods, summarised in 5 factsheets with lessons learned and recommendations for sustainability, upscaling, future rollout, informing A4.5 Forum, DB.5.1 Upscaling Vision and DB.5.2, WP9 transfer. A cost-benefit analysis compares the costs of the Solution with benefits like enhanced safety, liveability, and reduced crime in the pilot areas.

Findings from the Factsheets and cost-benefit analysis will be compiled into a final evaluation report to assess the project's overall impact, feeding into the Closure phase.

Res: MUA

Par: WG leaders

D 3.4.1 - Final assessment of innovative solution components and lessons learnt

Deliverable title

Final assessment of innovative solution components and lessons learnt

Target value

1

Delivery date

31/01/2029

Description

The report assesses all components of PULSE-TWIN's innovative solution, via quantitative & qualitative tools based on A3.3. 4+1 Factsheets - one for each component of the innovative solution - on lessons learnt and suggestions for sustainability, upscaling and rollout are drawn up and added to the respective project deliverables: A4.5 project closing Forum on Future Scenarios and EU and Wider Policy Influence, DB.5.1 Upscaling and Rollout Vision, DB.5.2 Summary of the Transferable Solution and WP9 transfer activities.

Res: MUA

Part: WG leaders

D 3.4.2 - Cost-benefit analysis

Deliverable title

Cost-benefit analysis

Target value

1

Delivery date

31/01/2029

Description

A comprehensive evaluation of the economic and social value of implementing the innovative solution and its components in the two pilot neighbourhoods (Hoensbroek, Vrieheide) will be carried out. It will analyse the costs associated with developing, deploying, maintaining and upscaling the Social Digital twin technology and its practical applications, alongside the benefits it brings in terms of improved safety, liveability, and reduction of crime rates. The analysis will consider financial returns (e.g., reduced crime-related costs), social gains (e.g., enhanced community quality of life and cohesion), and long-term viability, offering evidence-based insights into the solution's economic and societal impact.

Res: MUA

D 3.4.3 - Final Evaluation Report

Deliverable title

Final Evaluation Report

Target value

1

Delivery date

31/01/2029

Description

A Final Report on Project Results based on the RI Matrix (D3.2.1), the Factsheets (D3.4.1), the narrative evaluations (D3.3.2) and the cost-benefit analysis (D3.4.2) is prepared to feed into EUI reporting in the project closure phase, detailing how each of the indicators performed compared to the planned targets, and what impact the project had on liveability and undermining crime, providing an analysis of the factors behind their performance and conclusions for the future.

Res: MUA

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	148 staff days for coordinating Monitoring and Evaluation activities (approx 0.2 FTE)	N/A	N/A	Subcontracting for the external Monitoring and Evaluation services to help establish overall framework, methodology and support data collection and compiling evaluation reports		
Amount (€)						
PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	36 staff days for monitoring support (0.05 FTE)	N/A	N/A			
Amount (€)						
PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	35 staff days for monitoring support (0.05 FTE)	N/A	N/A			
Amount (€)						
PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	12 staff days for monitoring support (0.02 FTE)	N/A	N/A			

PP 4 - Inluzio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Amount (€)						
PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	12 contracted youth worker days x daily rate		
Amount (€)						
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	In-house experts help in the monitoring activities (11 days x daily rate)		
Amount (€)						
PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	13 staff-days: Contributions to monitoring tasks with 0.02 FTE	N/A	N/A			
Amount (€)						
Total (€)						

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Work Plan Per Work Packages - Work Package 4 Communication and Capitalisation

Title Communication and Capitalisation

Start Date 01/10/2025

End Date 31/03/2029

Budget

Partners Involvement

Responsible Partner PP 1 - Municipality of Heerlen

Involved Partners

PP 1 - Municipality of Heerlen PP 2 - Dutch National Police (NPOL) PP 3 - Maastricht University (UM) PP 4 - Inclusio
PP 5 - JENS PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)
PP 7 - Brightlands Smart Services Campus (BSSC)

Summary

Communication is vital to PULSE-TWIN's success ensuring transparency and mobilisation across all target groups in a very high-technology project. Our strategy tailors outreach to specific audiences embedding communication into core project activities with WP4 is at the heart: from the setup and moderation of ongoing on-/offline communication channels, the production of promotion materials and contents to events and continued evaluation synchronised with WP3. Promo activities will include both traditional (e.g. local media, printed materials) and social media presence to residents and key stakeholders through creative campaigns like the "Safety on Tour". External parties will be targeted by SVOB in seminars and an EU-level Conference will be organised.

Communication is also woven into the thematic WPs: In WP5, it contributes to citizen engagement through the CTAG, supporting co-creation efforts. In WP6-7, it will help demystify complex technical topics such as AI and data management, breaking barriers for non-technical stakeholders and help ensure transparency around the PULSE Data Warehouse and SDT developments. Citizen-focused communication linked to WP8 engages residents into the usage of the urban safety module of the Heerlen App. The PULSE-TWIN community challenge will further connect local and EU audiences, encouraging grassroots innovation. Finally, in WP9, communication efforts will scale the project's impact, sharing solutions via transfer activities with EU cities.

Communication Objectives

1. We aim to make PULSE-TWIN's innovative urban safety approach widely recognized in Heerlen and beyond. Engaging with EU cities and international forums will position our project as a model for urban safety solutions, generating interest in data-driven safety measures.
2. Communication strategies will be customised for diverse audiences, from technical experts to local residents. By simplifying complex topics like AI and using relatable examples, we will foster tech inclusivity through social media, events, and interactive platforms.
3. Through our campaigns, we aim to shift mindsets, encouraging citizens to co-create solutions, enhance public trust, and embrace technological innovations for a shared responsibility in safety.

Target groups

At local level we reach 15,000 residents and community leaders in pilot neighbourhoods and across Heerlen. We also reach out to 60+ policymakers and professionals, e.g. police, social workers, community services directly, and target further 100 via professional publications.

Additionally, we involve 30+ wider stakeholder organisations like local businesses, housing corporations, and NGOs via the Social Safe approach. Through the BSSC innovation ecosystem, we engage 50+ organisations, including academia, start-ups and tech companies at local/regional level.

Nationally and beyond, we connect with 10 Dutch, 10 EU cities to replicate our Solution, and reach approx. 100 members of EU smart cities&communities network for wider dissemination.

Reach out and engagement of target groups

To engage our target groups we will implement a multifaceted outreach strategy.

For local residents: we organise social media outreach, interactive community promo events and a festival.

For local professionals & policymakers: professional social media (LinkedIn) and PULSE Café sessions.

For wider stakeholders, we facilitate networking opportunities such as the EU-wide Forum to share best practices and will disseminate scientific and academic publications.

To reach national/international audiences, we organise seminars about PULSE-TWIN solution, leverage online platforms incl. the EUI one, and participate in EU events and networks such as Living-in.EU on smart communities, ensuring interest alignment with cities across Europe.

Activities and Deliverables

A 4.1 - Kick off communication activities

Title	Start date	End date
Kick off communication activities	01/10/2025	31/05/2027
Description To ensure the effective implementation of communication activities, we will develop a comprehensive Communication and Capitalisation Plan that outlines the project's identity and branding, serving as guidance for all partners involved. Each project partner will appoint a responsible for their respective contributions, forming a Communication Work Group (CWG). The project will kick off with a Launch Event designed as a street festival, aiming to engage stakeholders and encourage them to take an active role in the project's implementation. This event will serve as a platform for sharing the project's objectives and the importance of community involvement in enhancing urban safety through tech solutions. Resp: MUA Part: All partners		

D 4.1.1 - Communication and Capitalisation Strategy

Deliverable title	Target value	Delivery date
Communication and Capitalisation Strategy	1	30/11/2025
Description The Communication and Capitalisation Strategy will serve as a comprehensive guide for disseminating PULSE-TWIN's key messages, enhancing transparency, and mobilising diverse audiences ranging from European stakeholders. The strategy will outline tailored communication plans, including social media outreach, traditional media engagement, and the use of interactive platforms and formats to foster trust and active participation. Key elements include monitoring and evaluation processes to ensure the strategy's effectiveness and adaptability throughout the project's lifecycle. In addition, human rights and transparency organisations will be targeted, with messaging rooted in our Transparency Statement. Resp: MUA Part: All partners		

D 4.1.2 - Setting up communication channels

Deliverable title	Target value	Delivery date
Setting up communication channels	4	31/12/2025
Description This deliverable focuses on establishing the necessary communication channels for the PULSE-TWIN project. A dedicated EUI micro-site will be created to centralise information and updates about the project. Based on the Communication and Capitalisation Strategy, we will develop profiles on three major social media platforms—Facebook, LinkedIn, and Instagram—to enhance outreach to local communities. Additionally, we will utilise video streaming channels like TikTok and YouTube to engage a younger audience in consultation with JENS.		

Resp: MUA
Part: All partners

D 4.1.3 - Project introduction event

Deliverable title

Project introduction event

Target value

1

Delivery date

31/05/2027

Description

This deliverable involves organising a project introduction event to engage the community and raise awareness of the PULSE-TWIN initiative. We will host street events by M2S in key areas of the pilot neighbourhood, aiming to connect with citizens and present the project's main features. The event will include interactive activities and information booths, allowing residents to learn about the benefits of urban safety innovations. The introduction of the Urban Safety Twin mascot will serve as a fun and relatable symbol, enhancing community engagement. This initiative will prepare citizens for upcoming project activities, fostering a sense of ownership and participation in shaping their urban environment.

Resp: MUA
Part: All partners

A 4.2 - Promotional and informational activities

Title

Promotional and informational activities

Start date

01/10/2025

End date

30/09/2028

Description

To effectively promote PULSE-TWIN and align with its objectives, we will implement a comprehensive strategy developed in A4.1. Our promotional materials will include engaging infographics and videos, illustrating how the project leverages data-driven solutions for urban safety. We will utilise digital communication channels, including social media campaigns and newsletters, to reach approximately 500 local residents and community leaders, as well as over 30 stakeholder organisations. Additionally, a series of promo events in the city is planned to boost local engagement and raise interest in the project from citizens and local businesses.

Resp: MUA
Part: All partners

D 4.2.1 - Promo materials development

Deliverable title

Promo materials development

Target value

12

Delivery date

31/03/2028

Description

Communication WG will develop a suite of online and offline promotional materials. The online strategy will include quarterly newsletters (9 total) to inform Heerlen residents about project developments and activities, aligning with WPS and our commitment to transparency. These newsletters will target both local citizens and stakeholders, using Heerlen App functionalities wherever possible. The first wave of online and offline promotional materials will be in place by Q1 2026 to support initial citizen engagement efforts.

For offline outreach, we will create visually impactful materials such as posters, billboards, and roll-ups (each 1 design at least, 3 total), placed at strategic locations throughout Heerlen to maximise visibility. All materials will adhere to EUI and EU branding guidelines, featuring the programme logo and project acronym. The delivery date reflects the release of the final newsletter in Q1 2028.

Resp: MUA
Part: All partners

D 4.2.2 - Social media and traditional media activities

Deliverable title	Target value	Delivery date
Social media and traditional media activities	50	30/09/2028

Description

In alignment with D.4.1.2, establishing effective communication channels, PULSE-TWIN will employ a comprehensive local media strategy to maximise community engagement. Through social media platforms such as FB, LI, IG, we will disseminate project updates, share success stories, and promote events (40 posts), targeting approximately 12000 residents and stakeholders.

Traditional media outreach will include targeted press releases and interviews with local newspapers/radio stations (10 times, reach 3000+ ppl) to highlight milestones and encourage community involvement. Collaborating with community leaders will enhance our outreach, ensuring increased trust and broader connection with citizens.

Resp: MUA
Part: All partners

D 4.2.3 - Series of promo events in the city

Deliverable title	Target value	Delivery date
Series of promo events in the city	4	30/11/2027

Description

This deliverable involves organising a series of engaging promotional events in M19-M32 in targeted neighbourhoods to prepare & engage citizens for the PULSE-TWIN project. A "Safety on Tour" bus initiative will be organised in as a travelling event through the community, showcasing the project's features (1). Also, small promo events will accompany the Interactive mobile Demo Corner in the Together in the Neighborhood chambers (see A.5.3.3.) established to provide hands-on experiences, allowing residents to engage with the technology directly (3).

Resp: MUA
Part: JENS, Induzio, NPOL

A 4.3 - Capitalisation and dissemination activities

Title	Start date	End date
Capitalisation and dissemination activities	01/10/2025	30/09/2028

Description

PULSE-TWIN will implement a dynamic capitalisation and dissemination strategy. This includes thematic online seminars (D4.3.1) led by SVOB, featuring experts sharing best practices and engaging participants from Dutch cities and beyond in discussions on the solutions developed. This is closely linked with A.4.5 on EU-wide dissemination, see D.4.5.3.

Additionally, PULSE Café sessions (D4.3.2) involve strategic-level decision-makers, such as city officials and police leaders, in dialogue about the PULSE-TWIN local adoption. These sessions aim to build understanding of PULSE-TWIN solutions potential.

Scientific publications (D4.3.3) will be developed to disseminate research findings and address ethical concerns.

Resp: SVOB
Part: All partners

D 4.3.1 - Online Seminars for other Dutch cities and beyond (3)**Deliverable title**

Online Seminars for other Dutch cities and beyond (3)

Target value

3

Delivery date

30/09/2028

Description

This deliverable entails organising 3 thematic online seminars aimed at disseminating knowledge and best practices related to urban safety and crime prevention to other Dutch cities (2) and EU/international (1). Led by SVOB, which brings extensive expertise in dissemination and connections to Dutch cities and international networks, the seminars will serve as platforms for sharing project insights. Participants will include representatives from local governments, NGOs, and community organisations interested in improving their crime prevention strategies. The seminars will feature expert speakers, interactive discussions, and case studies, encouraging uptake of PULSE-TWIN beyond the transfer partners.

Resp: SVOB

Par: MUA, BSSC

D 4.3.2 - PULSE Café Morning Sessions**Deliverable title**

PULSE Café Morning Sessions

Target value

4

Delivery date

30/09/2028

Description

The PULSE Café morning sessions (4) will focus on the adoption of the PULSE-TWIN Social Digital Twin (SDT) and will target secondary beneficiaries at the strategic level, including members of the city board, mayor, aldermen, the chief of police, district attorney, CEOs of housing companies, JENS, and Buurteams Heerlen (15 participants per session). Facilitated by BSSC at their premises and coordinated by SVOB, these sessions will provide an interactive environment for exploring the SDT's capabilities, gathering feedback, and fostering strategic buy-in. Finalising sessions in Q3 2028 ensures all stakeholders benefit from final project outcomes and support long-term adoption planning.

Resp: SVOB

Part: BSSC, MUA, JENS, Includio, NPOL

D 4.3.3 - Scientific and professional publications**Deliverable title**

Scientific and professional publications

Target value

3

Delivery date

30/09/2028

Description

This deliverable focuses on the development of scientific and professional publications on the Social Digital Twin concept, its related applications and their impact on urban safety. Led by SVOB, these publications will encompass research findings, case studies and insights gained within the project, aiming to inform stakeholders and contribute to the body of knowledge in the field. UM contributes by incorporating ELSA insights, ensuring that the publications address potential ethical concerns related to data usage and community trust. By disseminating these publications through relevant journals and conferences, we engage academic audiences and promote best practices in urban safety innovation across European cities.

Resp: SVOB

Par: UM

A 4.4 - Final closing and dissemination activity

Title	Start date	End date
Final closing and dissemination activity	01/12/2028	31/03/2029

Description

The Final closing and dissemination activity will involve planning a major event, such as the Heerlen Urban Safety Festival, to showcase the PULSE-TWIN project's key results and lessons learned. This festival will engage local residents, stakeholders, and urban safety practitioners through interactive demonstrations and discussions, highlighting innovative urban safety solutions. Additionally, a Mid-term and Final Communication Evaluation Reports will assess the effectiveness of communication efforts throughout the project, analysing strategies and audience engagement. Monitoring WP assists this Evaluation Reports activity.

Resp: MUA

Part: NPOL, BSSC, JENS, Inclusio

D 4.4.1 - Heerlen Urban Safety Festival

Deliverable title	Target value	Delivery date
Heerlen Urban Safety Festival	1	28/02/2029

Description

The Heerlen Urban Safety Festival serves as the project's closing event in M47, aligning with an annual Heerlen event to maximise community engagement and visibility. Organised by the Municipality of Heerlen's Social Safety and Neighborhood management team, this festival will showcase the innovative urban safety solutions developed through the PULSE-TWIN project. Contributions from all local partners engaged with neighbourhoods are expected (mobilising target groups, organisation support). The festival will feature interactive demonstrations, discussions, and presentations, allowing citizens to experience the benefits of the Social Digital Twin firsthand.

Resp: MUA

Part: NPOL, BSSC, JENS, Inclusio

D 4.4.2 - Mid-term and Final Communication Evaluation Report

Deliverable title	Target value	Delivery date
Mid-term and Final Communication Evaluation Report	2	31/03/2029

Description

Two comprehensive reports, prepared by the MUA, assess the effectiveness and impact of the communication efforts during the lifetime of the PULSE-TWIN. The mid-term evaluation will be delivered by 31/03/2027, with the final report scheduled for 31/03/2029. They provide a detailed analysis of the communication strategies, channels, activities, and messages utilised throughout the project lifecycle and for various audiences (incl. in A5.3). The report evaluates factors such as the clarity of information conveyed, engagement with stakeholders, reach, and overall alignment with the MUA's objectives, collaborating with Monitoring WG (WP3). It also highlights successes in communication approaches and identifies opportunities for improvement after the project's completion.

Coord: MUA

Part: NPOL, BSSC, JENS, Inclusio

A 4.5 - EU Advocacy and Wider Policy Influence

Title	Start date	End date
EU Advocacy and Wider Policy Influence	01/10/2026	31/03/2029

Description

This activity aims to elevate the PULSE-TWIN project's impact through strategic engagement at the EU level. This includes organising the PULSE-TWIN Forum on Future Scenarios (D4.5.1), which will showcase our urban safety solution and address ethical, legal, and societal (ELSA) considerations. Key stakeholders, including policymakers, city officials, urban technology experts and academics are invited. Conclusion Paper (D4.5.2) will summarise insights and recommendations from the Forum feeding also D8.5.1 (Rollout vision). Additionally, partners will participate in knowledge and capacity-building events (D4.5.3) to disseminate best practices at EU-wide level: to city officials, NGOs, and academic institutions.

Resp:MUA

Part: BSSC, NPOL, UM

D 4.5.1 - Forum on Future Scenarios: EU-level Conference on AI-based & Data-Driven Solutions in Urban Safety

Deliverable title

Forum on Future Scenarios: EU-level Conference on AI-based & Data-Driven Solutions in Urban Safety

Target value

1

Delivery date

28/02/2029

Description

The PULSE-TWIN Forum on Future Scenarios is a professional hybrid event in M47 that explores future AI-based and data-driven solutions for urban safety. It includes a forward-looking discussion on rollout visions, aiming to shape the future of city safety strategies. Side events will delve into ELSA (Ethical, Legal, and Societal Aspects) methods, providing insights into policy and ethical frameworks. A seminar for EU cities will highlight solution transferability, fostering collaboration. The forum will conclude with a discussion paper (D4.5.2) summarising future scenarios and key recommendations for city governance.

Resp:MUA

Part: NPOL, UM, BSSC, SVOB

D 4.5.2 - Conclusion Paper on the Forum on future scenarios

Deliverable title

Conclusion Paper on the Forum on future scenarios

Target value

1

Delivery date

31/03/2029

Description

The Conclusion Paper will synthesise insights and discussions from the PULSE-TWIN Forum on Future Scenarios. It will highlight key themes and recommendations emerging from the forum, focusing on the implications of AI-based and data-driven solutions for urban safety. This document will serve as a strategic guide for policymakers, outlining ethical, legal, and societal considerations in implementing these technologies. It will include perspectives from various stakeholders, including city officials, academics, and community representatives, ensuring a comprehensive view of the future landscape in urban safety.

Resp:MUA

Part: SVOB, BSSC, NPOL

D 4.5.3 - Participation in knowledge / capacity-building events and EU networking on social digital twins

Deliverable title

Participation in knowledge / capacity-building events and EU networking on social digital twins

Target value

10

Delivery date

31/03/2029

Description

This deliverable focuses on active participation in knowledge and capacity-building events centred around the topic Technology in Cities, and especially on (social) digital twins and urban safety. Project partners will participate in various activities made available by EUJ and other EU programmes/initiatives (e.g. Living-in.EU, Digital Europe, FIWARE, EFUS, etc), including workshops, policy labs, and peer-learning sessions, designed to foster collaboration and share best practices.

Resp: MUA
Part: SVOB, BSSC, NPOL

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	Communication officer to be engaged for communication activities and organising community events (total 0,6 FTE)	N/A	N/A	Design of basic promotional materials & printing costs; designing online information materials (infographics); inviting speakers, costs related to hosting physical events.		
Amount (€)						
PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	41 staff days for communication activities support (0.05 FTE)	N/A	N/A			
Amount (€)						
PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	45 staff days: contributions to communication and dissemination tasks with approx. 0.06 FTE	N/A	N/A			
Amount (€)						

PP 4 - Inluzio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	35 staff days: contributions to communication and dissemination tasks with approx. 0.05 FTE	N/A	N/A			
Amount (€)						

PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	36 contracted youth worker days x daily rate:		
Amount (€)						

PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A			
Amount (€)						

PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	65 staff days: Contributions to communication and dissemination tasks+events organisation with approx. 0.1 FTE	N/A	N/A			
Amount (€)						
Total (€)						

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Work Plan Per Work Packages - Work Package 5 Thematic

Title	Ensuring inclusive community engagement in improving public safety and liveability
Start Date	01/10/2025
End Date	30/09/2028
Budget	

Partners Involvement

Responsible Partner	PP 1 - Municipality of Heerlen
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Involved Partners

PP 1 - Municipality of Heerlen ⓘ PP 2 - Dutch National Police (NPOL) ⓘ PP 3 - Maastricht University (UM) ⓘ PP 4 - Inluzio ⓘ
 PP 5 - JENS ⓘ PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB) ⓘ
 PP 7 - Brightlands Smart Services Campus (BSSC) ⓘ

Summary

WP5 is dedicated to securing active community involvement and building public trust to enhance project's impact on safety and liveability. It establishes mechanisms for inclusive community engagement for tech developments in WP6-8, ensures compliance with ethical standards and bridges the gap between complex technologies and everyday users to support sustainable, community-driven outcomes.

To promote community participation, two consultation panels will be established: a Multistakeholder Panel of professionals from social and safety sectors, and a Citizens' Think Along Group involving residents from pilot neighbourhoods (Hoensbroek, Vrieheide). Their involvement in developing and testing solutions in WP6-8 will ensure local needs are reflected, promoting societal consensus and long-term sustainability.

An ELSA validation framework will also be created to align all technology solutions with ethical, legal, and societal standards. It will be applied throughout the development, testing phases, addressing e.g. data security, privacy, AI transparency, essential for building public trust and long-term acceptance.

To foster technology acceptance in non-technical audiences, targeted workshops, communication guidelines, and interactive Demo Corners will be set up to build familiarity with new technologies in the community, demystifying and making high-level technology accessible and relatable, fostering engagement, smoother adoption.

The WP is led by MUA in cooperation with all Partners.

Activities and Deliverables

A 5.1 - Setting up multistakeholder and citizen consultation frameworks to be used during tech product development

Title	Start date	End date
Setting up multistakeholder and citizen consultation frameworks to be used during tech product development	01/10/2025	30/09/2028

Description

To ensure societal consensus and long-term sustainability of project results, diverse groups of the local community will be involved throughout the project activities and especially the developments of the technology solutions. MUA, as lead of the Community Engagement WG, will set up and operate two consultation panels, the Multistakeholder Panel including professionals from the social and safety sectors, leveraging MUA's multistakeholder Liveability Meetings, and the Citizens' Think Along Group involving citizens from target area Heerlen Noord and the pilot neighbourhoods, Hoensbroek and Vrieheide.

Resp: MUA

Part: Inluzio, JENS, NPOL, UM

D 5.1.1 - Set up and operation of the Multistakeholder Panel (MP)

Deliverable title

Set up and operation of the Multistakeholder Panel (MP)

Target value

1

Delivery date

30/09/2028

Description

MUA will set up and operate a Multistakeholder Panel (MP) composed of frontline professionals already involved in the Liveability Meetings operated by MUA. The panel will be established within the first three months of the project to ensure early participation in the design and testing processes. MP will include members from JENS, Inluzio, housing corporations, neighbourhood organisations, community police officers, municipal enforcers, and youth BOAs. It will meet regularly to provide valuable input to the development and testing of the PULSE-DE, PULSE-SDT, and SDT data-driven applications of WP8. MP will offer ongoing feedback, test and evaluate solutions, and contribute to upscaling scenarios. Beside WP5, members are specifically involved in D6.1.2, D6.5.3, D7.1.2, D7.1.3, D7.2.3, A7.3, A8.2, A8.3, D8.4.1, D8.4.3, D8.5.1.

Resp: MUA

Part: JENS, Inluzio, NPOL, UM

D 5.1.2 - Set up and coordination of the Citizen Think Along Group (CTAG)**Deliverable title**

Set up and coordination of the Citizen Think Along Group (CTAG)

Target value

1

Delivery date

30/09/2028

Description

MUA will establish and coordinate the Citizen Think Along Group (CTAG), formed by recruiting diverse groups of citizens - varied in socio-economic status, gender, sexuality, ethnic background, and age - via the Heerlen App and MUA's 'Together in the Neighbourhood' network. The group will be set up within the first six months of the project, allowing citizens to engage meaningfully once the first tangible results of the solution development are available. The group will meet regularly to provide input to the technology development and testing process of the PULSE-DE, PULSE-SDT, and SDT data-driven solutions under WP8. Their ongoing feedback will be crucial in evaluating the solutions during testing and ensuring that citizen perspectives are integrated into the project. Apart from WP5, members will be specifically involved in D6.1.2, D7.1.2, D7.1.3, D7.2.3, D7.3.2, D8.2.1, A8.3, D8.4.1, D8.4.3.

Resp: MUA

Par: JENS, Inluzio, UM

A 5.2 - Establishing an ELSA (Ethical, Legal, Societal Aspects) validation framework**Title**

Establishing an ELSA (Ethical, Legal, Societal Aspects) validation framework

Start date

01/01/2026

End date

30/09/2028

Description

When dealing with personal data, data security and AI, adhering to ethical, legal and societal standards is crucial, it is also essential for building trust and achieving societal acceptance. UM, as a pioneer in applying these aspects to AI technology based developments in the Netherlands and owner of the ELSA method will oversee this activity, creating a framework for ethical validation of the solutions developed in the project, monitoring its application during technology development and testing and compiling ethical considerations for future upscaling. The activity will inform the ELSA compliance WG.

Resp: UM

Part: MUA, Inluzio, JENS, NPOL

D 5.2.1 - Co-created ELSA (Ethical, Legal, and Societal Aspects) Validation Framework**Deliverable title**

Co-created ELSA (Ethical, Legal, and Societal Aspects) Validation Framework

Target value

1

Delivery date

31/03/2026

Description

UM will lead the development of the ELSA Validation Framework, co-created with the ELSA WG, MP, and CTAG, to ensure all solutions meet key ethical, legal, and societal standards. The ELSA method, partially developed by UM, will be adapted for the project's AI developments. It will include an initial ELSA analysis and compliance guidelines covering data privacy, protection, security, transparency, filtering out data bias using fairness monitoring, social impact, legal and human rights compliance, ethical risks, and inclusivity, along with periodic monitoring to assess compliance and address emerging concerns during development and testing of solutions.

Resp: UM

Part: MUA, JENS, Inluzio, NPOL

D 5.2.2 - Monitoring reports on ELSA validation during development and testing phases

Deliverable title

Monitoring reports on ELSA validation during development and testing phases

Target value

5

Delivery date

30/09/2028

Description

ELSA WG, led by UM will prepare 5 monitoring reports on the ELSA validation results of the tech solutions throughout the technology development and testing phases. These 6 monthly reports will include the results of the ELSA impacts monitoring and social acceptance evaluation (see D7.3.2, D8.2.3, D8.3.3) of the solutions and suggested alignments, informing the Steering Committee to support risk management (D2.2.2, D3.1.2), feed into the final assessment of the innovative solution components (D3.4.1), ensuring that all technological developments align with the project's ethical, legal, and societal standards.

Resp: UM

Part: MUA, JENS, Inluzio, NPOL

D 5.2.3 - ELSA considerations in future upscaling scenarios

Deliverable title

ELSA considerations in future upscaling scenarios

Target value

1

Delivery date

31/07/2028

Description

This deliverable involves two dedicated internal discussions of ELSA WG to assess and address the ethical implications of expanding the technological solutions developed in the project to a larger scale. The insights will inform the preparation of the Upscaling and Rollout Vision (D8.5.1), ensuring that ethical considerations are integrated into future upscaling scenarios and will be further discussed during the Forum on Future Scenarios' side event on ELSA considerations from a policy-level perspective (D4.5.1, D4.5.2).

Resp: UM

Part: MUA, Inluzio, JENS, NPOL

A 5.3 - Strengthening technology acceptance and uptake among non-technical audiences

Title

Strengthening technology acceptance and uptake among non-technical audiences

Start date

01/11/2025

End date

30/09/2028

Description

This activity, led by BSSC, a key actor in Heerlen's technology ecosystem, focuses on building trust and familiarity with new technologies among non-technical stakeholder community members, including citizens and frontline professionals. Through targeted workshops, communication guidelines and Demo Corners showcasing the developed technologies to the community, it aims to bridge the gap between complex technological solutions and everyday users, ensuring higher engagement, smoother adoption, and active participation in co-creating safer, more liveable communities. The activity will inform the Community Engagement WG.

Resp: BSSC

Part: MUA, Inluzio, JENS, NPOL, UM, SVOB

D 5.3.1 - Workshops to break through organisation resistance towards new technology

Deliverable title

Workshops to break through organisation resistance towards new technology

Target value

5

Delivery date

30/09/2028

Description

A series of workshops organised by BSSC aimed at overcoming organisational resistance to new technology among Multistakeholder Panel member organisations. It begins with an initial session for MP members (20 people), followed by four additional sessions for an extended circle of participants after each technological solution developments (PULSE-SDT users - 10 people, AI Copilot users - 10 people, Heerlen App safety module users - 10 people, Community challenge solutions potential users - 10 people), promoting better understanding, acceptance, and adoption of the new solutions.

Resp: BSSC

Part: MUA, Inluzio, JENS, NPOL, UM

D 5.3.2 - Co-developed Guideline on communicating high-level technology to non-technical audiences

Deliverable title

Co-developed Guideline on communicating high-level technology to non-technical audiences

Target value

1

Delivery date

31/07/2026

Description

A comprehensive Guideline, delivered by BSSC, for effectively communicating complex technological concepts to non-technical audiences. The Guideline will be co-developed with both technical experts and non-technical stakeholders from the MP and CTAG to ensure that the guidelines meet the needs of the intended audiences. The Guideline covers key concepts to be simplified, audience profiling, use of accessible language, and visual aids for digestible presentation (e.g. mascot or symbols). The communication solutions will be tested in focus groups to ensure clarity and relevance for the target audiences.

Resp: BSSC

Part: MUA, Inluzio, JENS, NPOL, UM

D 5.3.3 - Co-design and Implementation of the Demo Corners in the Together in the Neighborhood chambers

Deliverable title

Co-design and Implementation of the Demo Corners in the Together in the Neighborhood chambers

Target value

3

Delivery date

30/09/2028

Description

This deliverable covers both the co-creation and implementation of the Demo Corners, taking place between M31 and M42. In the first phase (M31-M36), the Demo Corners will be co-designed in collaboration with the Multistakeholder Panel (MP) and Citizen Think Along Group (CTAG), using the Guideline on communicating high-level technology to non-technical audiences (D5.3.2) as a foundation. In the second phase (M37-M42), the physical setup and rollout will occur in three fixed locations within MUA's "Together in the Neighborhood" chambers across Heerlen-Noord, as well as a mobile format used during "Safety on Tour" bus campaigns. The Demo Corners will feature interactive prototypes of the Social Digital Twin (WP7), AI Copilot (A8.2), Heerlen App Safety Module (A8.3), and community-developed solutions from the PULSE Challenge (A8.4). Their purpose is to make complex urban safety technologies tangible and engaging for a broad public audience, especially non-technical users.

Resp: MUA

Part: Inluzio, JENS, NPOL, UM

O.5.1 - Stakeholders engaged in improving public safety and liveability

Title	Target value	Delivery date
Stakeholders engaged in improving public safety and liveability	20	23/09/2028
Output indicator	Unit	
Stakeholders involved in the preparation and co-implementation of the project	participations of stakeholders	
Description		
Number of stakeholders involved in developing, testing and evaluating the innovative solution via the Multistakeholder Panel (MP) set up in M9, consisting mainly of frontline professionals from MUA's Liveability Meetings. MP includes 2 people from the following organisations: JENS, Includio, housing corporations, neighbourhood organisations, community police officers, municipal enforcers, and youth BOAs (14 people). Additionally, 6 people are involved from Project Partners' departments that are not directly involved in project implementation. MP will also contribute to upscaling scenarios. The output is part of the innovative solution's Community Engagement component. Resp: MUA		

O.5.2 - Citizens engaged in improving public safety and liveability

Title	Target value	Delivery date
Citizens engaged in improving public safety and liveability	155	23/09/2028
Output indicator	Unit	
Citizens involved in the preparation and co-implementation of the project	persons	
Description		
Number of citizens involved in the development, testing and evaluation of the innovative solution and its components through the Citizen Think Along Group (CTAG) - formed in M9 by recruiting citizens through the Heerlen App and MUA's 'Together in the Neighbourhood' network (10 people from 3 pilot neighbourhoods = 30) and additional online surveys using MUA's already existing citizen participatory channels (estimated around 125 filled questionnaires, leading to 155 total). Their ongoing input and feedback will be crucial in ensuring that citizen perspectives are integrated into the project. The output is part of the innovative solution's Community Engagement component. Resp: MUA		

O.5.3 - Stakeholders supported to increase their technology acceptance

Title	Target value	Delivery date
Stakeholders supported to increase their technology acceptance	60	23/09/2028
Output indicator	Unit	
People supported (trained, upskilled, accompanied or assisted)	persons	
Description		
Number of stakeholders from the MP member organisations supported through a series of workshops to overcome organisational resistance to new technology. After an initial session for MP members (20 people), four additional sessions are organised for an extended circle of participants after each technological solution developments (PULSE-SDT users - 10 people, AI Copilot users - 10 people, Heerlen App safety module users - 10 people, Community challenge solutions potential users - 10 people), promoting better understanding, acceptance, and adoption of the new solutions. Resp: BSSC		

O.5.4 - Demo Corners created

Title	Target value	Delivery date
Demo Corners created	3	23/09/2028
Output indicator	Unit	
New products and services created	new products/services	
Description	Number of Demo Corners in MUA's "Together in the Neighborhood" Chambers in Heerlen Noord, co-designed with MP and CTAG members. The Demo Corners will feature interactive prototypes of the Social Digital Twin (PULSE-SDT, WP7), AI Copilot (AB.2), Heerlen App Safety Module (AB.3), and solutions of the PULSE Community Challenge (AB.4) in an engaging and user-friendly format, making complex technologies accessible and compelling for community members. Resp: MUA	

Investments

I.5.1 - Equipment for Demo Corners

Title	Budget	Delivery date
Equipment for Demo Corners	80,000.00	30/09/2028
Description	The Demo Corners in Heerlen's "Together in the Neighborhood" chambers will provide residents with hands-on access to PULSE-TWIN urban safety technologies through interactive AR/VR tools. These setups will showcase the Social Digital Twin and its applications in an engaging and user-friendly way, making complex systems more accessible to residents. This investment aims to improve community awareness, address urban safety concerns, and foster stronger engagement between residents and local authorities. Main cost items include: - VR Glasses (3 sets per Demo Corner): [REDACTED] - Laptops/PCs for VR setup (1 per Demo Corner): [REDACTED] - Interactive touchscreens (1 per Demo Corner): [REDACTED] - Augmented Reality (AR) projectors (1 per Demo Corner): [REDACTED] - AI hardware for simulations (1 set per Demo Corner): [REDACTED] - Miscellaneous tech setup (cabling, peripherals): [REDACTED]	

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	Coordinating Multistakeholder panel and Citizen think along group and Demo-corners creation (approx 0.15 FTE)	N/A	N/A	Design costs	See Investment sheet		
Amount (€)							

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	71 staff days for all activities support (0.1 FTE)	N/A	N/A				
Amount (€)							

PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	80 staff days: Experts leading the framework for ethical validation activity with 0.11 FTE	N/A	N/A				
Amount (€)							

PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	46 staff days: Social workers participation with 0.06 FTE	N/A	N/A				

PP 4 - Inluzio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Amount (€)							
PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	46 contracted youth worker days x EUR daily rate			
Amount (€)							
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	In-house experts participation in the A5.3 (10 expert days x			
Amount (€)							
PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	20 staff days: A5.3 support with meetings organisation and knowledge on resistance to technology in public sector - PSLab staff - 0.03 FTE	N/A	N/A	D5.3.1 Cash small scale meetings (15 ppl x 3) half a day on BSSC premises (3 x			

PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Amount (€)							
Total (€)							

Investment share of the WP budget (in €)

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Indicative budget breakdown per activities and investments

Activity	Amount (%)	Budget (€)
A.5.1	38,56%	
A.5.2	19%	
A.5.3	15%	
I.5.1	27,44%	
Total	100 %	

Investment 1

Title	Equipment for Demo Corners
Investment Description (including indicative budget of the main cost items)	The Demo Corners in Heerlen's "Together in the Neighborhood" chambers will provide residents with hands-on access to PULSE-TWIN urban safety technologies through interactive AR/VR tools. These setups will showcase the Social Digital Twin and its applications in an engaging and user-friendly way, making complex systems more accessible to residents. This investment aims to improve community awareness, address urban safety concerns, and foster stronger engagement between residents and local authorities. Main cost items include: ● VR Glasses (3 sets per Demo Corner): ● Laptops/PCs for VR setup (1 per Demo Corner):

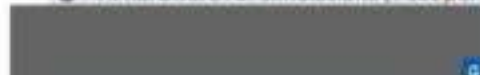
● Interactive touchscreens (1 per Demo Corner):



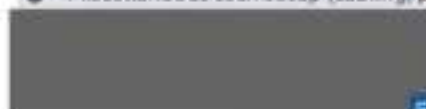
● Augmented reality (AR) projectors (1 per Demo Corner):



● AI hardware for simulations (1 set per Demo Corner):



● Miscellaneous tech setup (cabling, peripherals):



Delivery date

30/09/2028

Budget



Investment aspects	Questions	Project answers
Justification of the investment	Explain why this investment is needed.	The Demo Corners will allow residents to experience urban safety solutions through interactive AR/VR technologies, enabling them to explore the Social Digital Twin and other AI-assisted safety features.
	Clearly describe the thematic relevance of the investment.	The thematic relevance lies in enhancing urban safety and community engagement through innovative technology. By establishing Demo Corners equipped with advanced interactive tools, we aim to address the knowledge gap surrounding complex safety solutions, making them more comprehensible, transparent and appealing to the local community. Demonstrating advanced technologies in an appealing way is especially relevant in gaining the attention of young residents, a high priority target group.
	Describe who is benefiting (e.g., Partners, city, region, target groups, etc.) from this investment, and in what way.	The primary beneficiaries include local residents, community leaders, and frontliners, who will gain hands-on experience with the Social Digital Twin.
	Please clarify which problem it tackles, which findings you expect from it, how it can be replicated, and how the experience coming from it will be used for the benefit of the programme area.	This investment tackles the problem of community disengagement and lack of awareness regarding urban safety technologies. We expect to gather valuable insights into residents' preferences and concerns, allowing for tailored solutions that meet their needs.
Location of the investment	Describe the location of the physical investment; if possible, a specific address where the investment will be located.	The first Together in the Neighbourhood chamber was opened in October 2024 at the address: Hoofdstraat 110, Hoensbroek (6432 GH) Two other chambers in the preparation for launch: Acasiestraat 2, Heerlerheide and Sittarderweg 36, Heerlen.
	Country Netherlands	NUTS 2 level Limburg (NL) NUTS 3 level Zuid-Limburg
Investment documentation	Please list all technical requirements and permissions (e.g., building permits) required for the investment	N/A

	according to the respective national legislation.	
Ownership	Who owns the site where the investment is located?	MUA
	Who will retain ownership of the investment at the end of the project?	MUA
	Who will take care of the maintenance of the investment? How will this be done?	The Municipality of Heerlen will take responsibility for the maintenance of the Demo Corners. This will be done by training a team from the Social Safety and Neighborhood management departments that work within Together in the Neighborhood chambers. They will ensure that all equipment, including VR glasses, interactive screens, and AI-enabled tools, are regularly inspected, updated, and repaired as needed. The team will also coordinate with the technology providers to ensure software updates and system optimization, guaranteeing that the Demo Corners remain functional and accessible for ongoing community engagement.

Work Plan Per Work Packages - Work Package 6 Thematic

Title	Creating the data foundation of Heerlen's Social Digital Twin: PULSE Data Warehouse and AI-powered PULSE Data Engine
Start Date	01/10/2025
End Date	30/09/2028
Budget	

Partners Involvement

Responsible Partner	PP 1 - Municipality of Heerlen
Involved Partners	PP 1 - Municipality of Heerlen PP 2 - Dutch National Police (NPOL) PP 3 - Maastricht University (UM) PP 4 - Inclusio PP 5 - JENS PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB) PP 7 - Brightlands Smart Services Campus (BSSC)

Summary

WP6 aims to lay the data foundation for the heart of the innovative solution - the PULSE Social Digital Twin (SDT), created in WP7 - and develop the PULSE Data Warehouse (PULSE-DW), PULSE Data Engine (PULSE-DE), informing the SDT WG. A multi-organisational development tech team will be formed. To ensure a co-creation and user-centred approach, it will formulate joint ambitions with the Multistakeholder Panel and the Citizens' Think Along Group using the ELSA Validation Framework.

The integration of diverse data sources into the Data Warehouse, ensuring data quality consistency and compatibility will be implemented to create a solid foundation for the Data Engine. The AI-powered Data Engine will compose of features such as predictive analytics, scripting abilities, citizens' real-time reporting, neighbourhood watch integration, liveability monitoring for data analysts' and data-based applications' use. Wider circle of users will access its functions via the SDT (WP7), the AI Copilot and the Heerlen App's Safety Module (WP8). The PULSE-DE will be tested by data analyst users, who will be supported via an Onboarding process, including in-person training sessions.

Finally, the solutions will be integrated into the workflows of Data Depts of MUA and NPOL-iLab, allowing for deeper insights, trend analyses to inform evidence-based decision-making. Ongoing monitoring will refine the solutions based on user feedback and ELSA principles.

MUA leads the WP, supported by all partners.

Activities and Deliverables

A 6.1 - Establishing co-development frameworks for core innovation solutions (PULSE-DW, PULSE-DE, PULSE-SDT)

Title	Start date	End date
Establishing co-development frameworks for core innovation solutions (PULSE-DW, PULSE-DE, PULSE-SDT)	01/10/2025	31/12/2025
Description		
As a first step to developing the core technology components - PULSE-DW, PULSE-DE, and PULSE-SDT - of the innovative solution, co-development frameworks will be established to ensure that solutions will be created on aligned goals, processes, ethical considerations and built on a societal consensus. It begins by forming a tech development team, including MUA, NPOL-iLab, BSSC, and UM, and holding a kickoff meeting to set roles and responsibilities. Using the ELSA Validation Framework, joint ambitions will be set in collaboration with the Multistakeholder Panel and Citizens Think Along Group to align technical and societal priorities, ensuring solutions meet community needs and values. Resp: MUA		

D 6.1.1 - Formation and kickoff of tech development team for PULSE-DW, PULSE-DE and PULSE-SDT

Deliverable title

Formation and kickoff of tech development team for PULSE-DW, PULSE-DE and PULSE-SDT

Target value

1

Delivery date

30/11/2025

Description

The tech development team responsible for the creation of the PULSE-Data Warehouse, PULSE-Data Engine, and PULSE-Social Digital Twin will be formed in the M7-8, with a kickoff meeting in M9. The core team members include NPOL-iLab, MUA-Information Management Dept, MUA Data Center, BSSC, and UM, with occasional input from data providers like JENS, Includio, and NPOL-HP when needed. BSSC will channel in knowledge on national Digital Twin developments, while UM will oversee ELSA compliance. During the kickoff, the team will establish a detailed work plan and define roles and responsibilities to guide the development process.

Resp: NPOL

Part: MUA, BSSC, UM

D 6.1.2 - Joint ambitions set for technological solutions development**Deliverable title**

Joint ambitions set for technological solutions development

Target value

1

Delivery date

31/12/2025

Description

The joint ambitions establish shared goals for the development of the project's all technological solutions through collaborative sessions involving the tech development team, the Multistakeholder Panel, and the Citizens Think Along Group. Using the ELSA Validation Framework as a guide, the joint ambitions will align technical, ethical, and societal priorities to ensure the solutions meet professionals' and community needs, and incorporate their perspectives and values from the outset.

Resp: MUA

Part: UM, JENS, Includio, NPOL, BSSC, SVOB

A 6.2 - Building the PULSE Data Warehouse and Data Integration**Title**

Building the PULSE Data Warehouse and Data Integration

Start date

01/12/2025

End date

31/03/2028

Description

The PULSE Data Warehouse will be built by integrating diverse data sources, establishing a foundation for the PULSE Data Engine. A Technical Manual will guide current and future data providers in preparing, structuring, and validating their data for seamless integration, ensuring consistent quality and compatibility as the system grows. Initially, data from MUA's Data Center, including demographics, police statistics, and liveability indicators, will be migrated to create a foundational dataset for the PULSE-DE. The data pool will be continuously expanded with new sources, such as social welfare, housing, and education data, all undergoing data quality and ELSA validation before migration.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Includio

D 6.2.1 - Technical Manual on Data Quality for Data Integration into PULSE Data Warehouse**Deliverable title**

Technical Manual on Data Quality for Data Integration into PULSE Data Warehouse

Target value

1

Delivery date

28/02/2026

Description

A comprehensive Technical Manual will be developed for data providers to guide them on how to prepare, structure, and categorise data for seamless integration into the PULSE Data Warehouse. It covers data quality requirements including data bias detection, validation steps, classification standards, and a detailed data catalogue outlining source, type, format, quality, and access protocols.

The Manual serves as a go-to reference for both current and future partners, ensuring consistent data quality and compatibility as the system grows.

Resp: MUA

Part: UM, NPOL, BSSC

D 6.2.2 - Initial set of data migrated to PULSE Data Warehouse

Deliverable title

Initial set of data migrated to PULSE Data Warehouse

Target value

1

Delivery date

31/05/2026

Description

An initial dataset from MUA's existing Safety and Liveability Data Center will be first validated for data quality and ELSA compliance, using the guidelines established in D6.2.1 and D5.2.1, and then migrated into the newly established PULSE Data Warehouse. The data migrated cover e.g. demographic data from the Dutch Statistical Office, police statistics, municipality permits, administrative sanctions, buildings, commerce register, Cadastre data, Parkstad Monitor and Leefbaarometer liveability statistics, citizens reports, restraining orders. The initial migration sets the stage for future data expansions and lays the groundwork for developing of the PULSE Data Engine.

Resp: MUA

Part: NPOL

D 6.2.3 - Data pool expansion of PULSE Data Warehouse

Deliverable title

Data pool expansion of PULSE Data Warehouse

Target value

1

Delivery date

31/03/2028

Description

The data pool expansion involves identifying new data sources to be added to the PULSE-DW and validating them for data quality and ELSA compliance, using the guidelines established in D6.2.1 and D5.2.1. New data sources already identified include e.g. Social Safe frontliners registrations, social welfare, sources of income, housing data, weather data, fire department data, schools data (early school leaving, incidents around schools). Once approved, the new data will be structured and prepared for migration into the PULSE-DW. This ongoing process will progressively expand the data pool to enrich the PULSE-DE analytical and predictive capabilities and support more comprehensive insights.

Resp: MUA

Part: NPOL, UM, BSSC, JENS, Includio

A 6.3 - Technical development and testing of AI-powered PULSE Data Engine

Title

Technical development and testing of AI-powered PULSE Data Engine

Start date

01/04/2026

End date

30/09/2028

Description

The activity aims to create an AI-powered Data Engine aligned with stakeholders' ambitions and ELSA standards, as the engine behind the PULSE Social Digital Twin. Features of the PULSE Data Engine will include predictive analytics that identify crime and citizen behaviour patterns, a scripting tool to assist frontline professionals by supplying them with data during interventions, real-time citizen crime reporting via the PULSE-SDT and Heerlen App, and Neighbourhood Watch integration to enhance police-community communication (see Annex 7 for Use Cases). User testing will ensure real-world applicability, providing valuable feedback for refining the system before wider deployment through the PULSE-SDT in WP7.

Resp: MUA

Part: NPOL, BSSC, UM

D 6.3.1 - PULSE Data Engine architecture and user interface design**Deliverable title**

PULSE Data Engine architecture and user interface design

Target value

1

Delivery date

30/06/2026

Description

The deliverable focuses on creating an IT system that meets the project stakeholders' joint ambitions (D6.1.2), utilising the ELSA validation as a guiding framework. The tech development team will develop a comprehensive requirements specification and system architecture for the AI-powered PULSE Data Engine, which will empower user data analysts to efficiently fetch data and analytics. The design will prioritise a user-friendly interface that facilitates intuitive interaction, ensuring accessibility and usability for all stakeholders while adhering to the joint ambitions set and ELSA standards.

Resp: MUA

Part: UM, BSSC

D 6.3.2 - AI-powered PULSE Data Engine Features**Deliverable title**

AI-powered PULSE Data Engine features

Target value

5

Delivery date

31/12/2026

Description

Features for PULSE-DE:

Predictive analytics: uses machine learning to analyse crime patterns, identify hotspots for proactive policing, incorporating a risk analysis based on historical data.

Scripting: helps frontline professionals to drive conversations by filling data gaps and retrieving data from client interactions.

Real-time crime reporting: allows residents to report issues via the PULSE-SDT and Heerlen App, integrating data from various sources to validate reports.

Neighbourhood Watch integration: improves communication between police and community with real-time alerts, feedback mechanisms.

Livability monitoring: visualises neighbourhood liveability and carrying capacity to inform community development.

Res: MUA

Part: UM, BSSC

D 6.3.3 - PULSE Data Engine testing**Deliverable title**

PULSE Data Engine testing

Target value

1

Delivery date

30/09/2028

Description**D6.3.3. Real-World Testing of the PULSE Data Engine**

After the development of the PULSE Data Warehouse and Data Engine, a phased user testing process will begin around January 2027 (M22). The initial phase will involve a small group of testers from MUA and NPOL-iLab (approx. 5 data analysts and developers), focusing on functionality and usability in a real-world setting.

As the project progresses, testing will continue and expand throughout the remainder of the implementation phase. This long-term testing reflects the ongoing enrichment of datasets and iterative training of the AI components, ensuring adaptability and robustness. Once the front-end (monitoring interface) is finalised, other partners will test specific sub-areas relevant to their roles and use cases.

To sum up, first tests by iLab and MUA will start in the beginning of 2027 (D.6.3.3) and will continue until the end of the project with 5 testers. End-user testing will start from 07-2027 (D.7.1.3). At that time the front-end of the digital twin (and other dashboards) will be ready. After training (D.7.2.2) the end-users can start testing.

Res: MUA
Part: NPOL**A 6.4 - PULSE Data Engine User Onboarding**

Title	Start date	End date
PULSE Data Engine User Onboarding	01/10/2026	30/06/2028
Description		
The User Onboarding aims to equip data analysts (users) with the tools and knowledge necessary to effectively utilise the PULSE Data Engine. A Users' Manual will provide information on the system's features, operational guidelines, and troubleshooting tips. Training materials will support both in-person and self-study learning, ensuring users can navigate the system and apply its features effectively. Two sets of training sessions will be conducted: one for tester users and another for a broader group from the Multistakeholder Panel. This approach fosters a deeper understanding of the PULSE Data Engine, enabling participants to use the system for data analysis and informed decision-making.		
Res: MUA Part: NPOL		

D 6.4.1 - PULSE Data Engine Users' Manual

Deliverable title	Target value	Delivery date
PULSE Data Engine Users' Manual	1	31/10/2027
Description		
A comprehensive users' manual designed to assist users in navigating and maximising the functionalities of the PULSE Data Engine will be created in M19-20 by MUA with the support of NPOL-iLab. The Users' Manual will provide a simplified and accessible overview of the PULSE Data Engine's features. It will cover essential features, operational guidelines, and troubleshooting tips to ensure users can effectively utilise the system. It will be initially developed during the early phases of the project and will undergo updates midway through the testing phase, incorporating feedback from users to enhance clarity and usability. The aim is to provide a valuable resource that empowers users and facilitates a smooth transition to the PULSE Data Engine's implementation. Comparable to a "quick-start guide," the manual helps users become familiar with the interface and main features of the tool.		
Res: MUA Part: NPOL		

D 6.4.2 - PULSE Data Engine Training material

Deliverable title	Target value	Delivery date
PULSE Data Engine Training material	1	29/02/2028
Description		
A comprehensive training material will be designed by MUA to facilitate both in-person and self-study learning for users of the PULSE Data Engine. Developed by MUA by M22, this Training Material goes beyond the manual by offering deeper knowledge transfer for future users. The training material will include detailed instructional content, and practical exercises to help users understand the system's functionalities and applications effectively. Designed to equip users not only with operational know-how but also practical application skills, it functions like a "training course." The self-study version will be integrated into the Data Engine to provide seamless access to training materials. The training material will be revised halfway through the testing phase in M3-35, incorporating user feedback and insights to ensure its relevance and effectiveness.		
Res: MUA Part: NPOL		

D 6.4.3 - Training of PULSE Data Engine users

Deliverable title

Training of PULSE Data Engine users

Target value

2

Delivery date

30/06/2028

Description

This step involves two distinct in-person training sessions for a total of 10 professionals. The first session, in M23, targets tester users: 5 data analysts from MUA and NPOL-Lab, who will receive hands-on training to familiarise themselves with the PULSE Data Engine. The second session, conducted between M36–39, is intended for 5 final data analyst users from social and safety partners such as NPOL Heerlen Police, JENS, and Includio, utilising the revised training materials (D6.4.2). This phased approach ensures knowledge transfer is adapted to user roles and informed by real-time testing feedback, enhancing uptake and long-term system use. This deliverable is linked to the output O6.4.

Res: MUA

Part: NPOL

A 6.5 - Transfer into Practice: Integration and Monitoring of the PULSE Data Warehouse and Data Engine

Title

Transfer into Practice: Integration and Monitoring of the PULSE Data Warehouse and Data Engine

Start date

01/02/2027

End date

30/09/2028

Description

The activity aims to facilitate the integration of the PULSE Data Warehouse's and PULSE Data Engine's use into practice. To achieve this, workflows of MUA and NPOL, as first adopters, will be revised to incorporate the use of these solutions. Besides that, continuous monitoring, including ELSA impact assessment will be established to evaluate and adapt the solutions based on regular user feedback, fostering a user-centric experience and ensuring ongoing alignment with ELSA principles. This activity ultimately aims to facilitate a seamless integration of new technology in practice, enhancing decision-making and operational efficiency.

Resp: MUA

Part: NPOL, BSSC, UM

D 6.5.1 - Updated workflows for the use of PULSE Data Warehouse and Data Engine

Deliverable title

Updated workflows for the use of PULSE Data Warehouse and Data Engine

Target value

2

Delivery date

29/02/2028

Description

Between M23-25 MUA and NPOL-Lab will revise their data departments' workflows to integrate the use of the PULSE Data Warehouse and PULSE Data Engine. It introduces if/then scenarios to guide users in efficiently using these systems for data handling and analysis. The workflows will be reviewed and adjusted mid-testing to ensure alignment with user feedback and system refinements, enabling smoother integration and optimised use of the new technologies.

Res: MUA

Part: NPOL

D 6.5.2 - PULSE Data Warehouse and Data Engine Ongoing monitoring and model alignment framework

Deliverable title

PULSE Data Warehouse and Data Engine Ongoing monitoring and model alignment framework

Target value

1

Delivery date

30/09/2028

Description

MUA will establish a framework for continuous monitoring, evaluation and adjustment of the PULSE Data Warehouse and Data Engine based on regular user feedback to ensure that the developed solutions evolve to meet user needs. Ethical, legal, and societal (ELSA) impacts will also be assessed regularly, with adjustments made as necessary, enhancing the user experience and ensuring the solutions remain effective and aligned. ELSA assessments will feed into the ELSA monitoring reports (D5.2.2).

Resp: MUA

Part: NPOL, UM

Outputs

O.6.1 - Stakeholders engaged in the development of joint ambitions for technology development

Title	Target value	Delivery date
Stakeholders engaged in the development of joint ambitions for technology development	45	30/12/2025
Output Indicator	Unit	
Stakeholders involved in the preparation and co-implementation of the project	participations of stakeholders	
Description		
Number of professional stakeholders involved in the development of the Pulse-DW and PULSE-DE by setting joint ambitions, i.e. aligning goals, needs with the tech development team, key to reaching societal consensus and increasing social acceptance of AI-based technology solutions. Stakeholders will be reached through the Multistakeholder Panel (MP) and an online survey among MP members' organisations' staff channeling in different expertise of further departments. Min. 2 sessions will take place. The output is part of the innovative solution's Community Engagement component.		
Resp: MUA		

O.6.2 - PULSE Data Warehouse (PULSE-DW)

Title	Target value	Delivery date
PULSE Data Warehouse (PULSE-DW)	1	28/03/2028
Output indicator	Unit	
New products and services created	new products/services	
Description		
The PULSE Data Warehouse is a new product, one component of the innovative solution. Its function is to store and supply the PULSE Data Engine with data. It will contain a dataset from MUA's existing Safety and Liveability Data Center (D6.2.2) and further datasets (D6.2.3) progressively added. All data added will be validated for data quality and ELSA compliance, using the guidelines established in D6.2.1 and D5.2.1. Resp MUA		

O.6.3 - PULSE Data Engine (PULSE-DE)

Title	Target value	Delivery date
PULSE Data Engine (PULSE-DE)	1	27/09/2026
Output indicator	Unit	
New products and services created	new products/services	
Description	The PULSE Data Engine is a new product, one component of the innovative solution. Its function is to process and analyse all available data leveraging the power of AI Features of PULSE-DE: - Predictive analytics - Scripting - Real-time crime reporting - Neighbourhood Watch integration - Livability and carrying capacity monitoring Its development and testing process will follow the joint ambitions set (D6.1.2) and ELSA compliance (D5.2.1). Resp: MUA	

O.6.4 - Trained professionals on the use of the PULSE Data Warehouse and Engine

Title	Target value	Delivery date
Trained professionals on the use of the PULSE Data Warehouse and Engine	10	27/06/2026
Output indicator	Unit	
People supported (trained, upskilled, accompanied or assisted)	persons	
Description	Number of professionals trained to use the PULSE-DW and DE in two sets of in-person training sessions. The first set is aimed at tester users: data analysts from MUA and NPOL-iLab as key users. The second training is for final data analyst users from safety and social partners (NPOL Heerlen Police, JENS, Incluzio). The training ensures that users are well-equipped to effectively use the PULSE Data Engine for enhanced data analysis and informed decision-making in their roles. Resp: MUA	

Investments

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	IM department participation in Data Warehouse and Engine development and testing with the Data	N/A	N/A	Microsoft Azure costs estimation for the project duration (makes part of the I.7.1)			

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
	Center (116 staffdays, approx. 0.15 FTE);						
Amount (€)							

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	3070 days for tech development co-ordination - PSSC - cca. 5,3 FTE (makes part of the 1.7.1)	N/A	N/A				
Amount (€)							

PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	24 staff days: Experts supporting the co-development of Data Engine from ELSA point of view with approx 0.05 FTE	N/A	N/A				
Amount (€)							

PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	5 staff days: Social workers supporting	N/A	N/A				

PP 4 - Inizio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
	the co-development and data provision for Data Engine						
Amount (€)							
PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	10 contracted youth worker days x EUR daily rate			
Amount (€)							
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	In-house experts contributing to the joint ambition setting (8 expert days x			
Amount (€)							
PP 7 - Brightlands Smart Services Campus (BS5C)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	21 staff days: Participation in co-	N/A	N/A				

PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
	development of the Data Engine - PSLab staff - 0.03 FTE						
Amount (€)							
Total (€)							

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Indicative budget breakdown per activities and investments

Activity	Amount (%)	Budget (€)
A.6.1		
A.6.2		
A.6.3		
A.6.4		
A.6.5		
Total		

Work Plan Per Work Packages - Work Package 7 Thematic

Title	Development of Heerlen's Social Digital Twin for urban safety and livability
Start Date	01/07/2026
End Date	30/09/2028
Budget	

Partners Involvement

Responsible Partner	PP 1 - Municipality of Heerlen
Involved Partners	PP 1 - Municipality of Heerlen PP 2 - Dutch National Police (NPOL) PP 3 - Maastricht University (UM) PP 4 - Includio PP 5 - JENS PP 7 - Brightlands Smart Services Campus (BSSC)

Summary

WP7 has the objective to co-develop, test, and transfer into practice the PULSE Social Digital Twin (SDT), the heart of the innovative solution, which builds upon WP6 PULSE DW and DE and provides access to their data for diverse user groups and data-driven applications (WP8). Through a co-design process, involving the Multistakeholder Panel and the Citizens Think Along Group, the project will create and test Heerlen's SDT that visualises the city's social dynamics, the predicted and simulated crime and intervention scenarios, and monitors liveability in the neighbourhoods. The SDT will be designed for a broad circle of users, including operational, tactical, and strategic level professionals, citizens and community organisations and assessed for ELSA compliance.

To facilitate its adoption, a comprehensive onboarding strategy will be implemented, including a Users' Guide, tailored video tutorials, training materials and sessions and an interactive Online Helpdesk. This will ensure that users can effectively engage with and leverage the SDT. Integrating the SDT into the workflows of Partners will ensure its practical application, enabling data-driven decision-making and enhancing the effectiveness of urban safety and liveability interventions. Finally, the collection of Use Cases, co-developed with the Multistakeholder Panel, will support the scalability and future rollout of the solution.

WP7 informs the SDT WG and will be led by MUA, supported by all partners.

Activities and Deliverables

A 7.1 - Co-Development and testing of the Prototype of the Social Digital Twin

Title	Start date	End date
Co-Development and testing of the Prototype of the Social Digital Twin	01/07/2026	30/09/2028
Description The activity aims at co-creating the PULSE-SDT to enhance urban safety and liveability in Heerlen. By integrating a social and urban safety layer into the existing Digital Twin, and fed by PULSE-DE, A7.1 will leverage advanced technologies and community insights to model the city and its social dynamics, simulate crime and intervention scenarios, monitor liveability. Engaging diverse stakeholders in the design, ensures the development of the SDT meets the specific needs of its users. By testing in both controlled and real-world environments the project aims to validate the effectiveness of the SDT. Continuous feedback from user evaluations & ELSA assessments will drive iterative improvements. Resp: MUA Part: NPOL, BSSC, UM, JENS, Includio		

D 7.1.1 - PULSE Social Digital Twin design and specifications

Deliverable title	Target value	Delivery date
PULSE Social Digital Twin design and specifications	1	30/04/2027

Description

The tech team formed in D6.1.1 will design the foundational architecture and features of the PULSE SDT, i.e. the social and urban safety layer to be integrated into Heerlen's existing Digital Twin based on the joint ambitions set in D6.1.2. It will include detailed wireframes and comprehensive technical specifications that define the SDT's capabilities for modelling social dynamics, urban safety and liveability aspects. Key functionalities include the visual representation of the city and PULSE Data Engine data and features, crime and intervention scenario simulation, liveability and carrying capacity monitoring, and CPTED-based urban planning support. The development process will include an ELSA validation.

Resp: MUA

Part: NPOL, BSSC, UM

D 7.1.2 - Co-developed PULSE Social Digital Twin User Interface and User Access rights**Deliverable title**

Co-developed PULSE Social Digital Twin User Interface and User Access rights

Target value

1

Delivery date

31/03/2027

Description

The deliverable defines a user interface and a tailored access control model for the PULSE Social Digital Twin (SDT). User roles, access rights and permissions are established by the SDT WG, with AI incorporated to dynamically adjust data visibility based on user roles. The interface is co-designed with input from the Multistakeholder Panel and Citizen Think Along Group, ensuring it is both inclusive and user-friendly. The solution accommodates diverse user groups - ranging from data analysts and frontline professionals to strategic-level stakeholders and citizens, community organisations (AF C2.3) - providing each with relevant insights while maintaining data security and compliance.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Includio

D 7.1.3 - PULSE Social Digital Twin testing**Deliverable title**

PULSE Social Digital Twin testing

Target value

1

Delivery date

30/09/2028

Description

D7.1.3. The PULSE SDT will undergo a structured testing and optimisation process from M28 to M42, beginning with controlled environment testing (M28-M30) at NPOL-ILab, followed by real-world deployment (M31-M34) in pilot neighbourhoods. Subsequently, a user evaluation and access rights validation phase (M35-M37) will engage the Multistakeholder Panel (MP) and Citizen Think Along Group (CTAG), assessing usability, inclusivity, and appropriateness of data access levels for different user groups identified in D7.1.2.

From M38-M39, ELSA (ethical, legal, societal, and acceptability) aspects of the SDT will be assessed, with findings feeding into the ELSA monitoring report (D5.2.2). This includes regular audits of the dynamic access control model to ensure sensitive data is protected from unauthorised access.

Finally, from M40-M42, insights from all testing phases will guide the refinement and optimisation of the SDT prototype, preparing it for sustainable real-world application beyond the project period. Total users: 130 - linked to the updated D7.2 Trained professionals on the use of the PULSE Social Digital Twin.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Includio

A 7.2 - Social Digital Twin User Onboarding**Title**

Social Digital Twin User Onboarding

Start date

01/04/2027

End date

30/09/2028

Description

The activity aims to ensure that all user groups can effectively adopt and utilise the SDT in their roles. It provides a tailored Users' Guide, video tutorials, and a training framework to support diverse users - data analysts, frontline professionals, tactical and strategic level professionals, and community members (see AF C2.3) - by addressing their specific needs. Additionally, an integrated Online Helpdesk will be created, including a Frequently Asked Questions section, offering interactive support, troubleshooting, and a feedback mechanism, to enhance user experience, ensuring that all stakeholders can navigate the SDT effectively and efficiently.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Inclusio

D 7.2.1 - PULSE Social Digital Twin Online Users' Guide and video tutorials tailored to user groups**Deliverable title**

PULSE Social Digital Twin Online Users' Guide and video tutorials tailored to user groups

Target value

1

Delivery date

31/03/2028

Description

MUA will develop an SDT Online Users' Guide and accompanying video tutorials tailored to different user groups, ensuring that each category of users - data analysts, frontline professionals, policymakers, and community members (see AF C2.3) - receives targeted instructions relevant to their roles. These guides will demonstrate platform features, use cases, best practices and troubleshooting tips to facilitate effective use of the SDT. The resources will be updated mid-testing based on user feedback, ensuring alignment with evolving user needs and improving accessibility and usability for all stakeholders.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Inclusio

D 7.2.2 - PULSE Social Digital Twin Integrated Online Helpdesk**Deliverable title**

PULSE Social Digital Twin Integrated Online Helpdesk

Target value

1

Delivery date

30/09/2028

Description

MUA will establish and operate the PULSE SDT Integrated Online Helpdesk, designed to support users of the Social Digital Twin (SDT). The Helpdesk will include a Frequently Asked Questions (FAQ) section, the Online Users' Guide and video tutorials developed in D7.2.1 to provide assistance to users. Additionally, it will offer interactive user support and troubleshooting resources to address common issues, alongside a feedback mechanism to collect user insights and improve the SDT and the user support resources continuously. The Helpdesk aims to enhance user experience, ensuring that all stakeholders can navigate the SDT effectively and efficiently.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Inclusio

D 7.2.3 - PULSE Social Digital Twin User trainings**Deliverable title**

PULSE Social Digital Twin User trainings

Target value

6

Delivery date

30/06/2028

Description

The SDT User Training is designed to equip professionals with the necessary skills and knowledge to effectively utilise the Social Digital Twin in their work. The framework includes tailored training materials to each user group (data analysts, data providers and data viewers) both for in-person and online self-study training, ensuring that future users can train independently and effectively adapt to the evolving platform.

Initially, three rounds of in-person training will be conducted for tester user data analysts, frontline professionals, and tactical professionals. Following a mid-testing update of the training materials, an additional three rounds of training will be held for additional users from these same groups. Finally, an online training format will be organized for a wider circle of data viewer users from these same professional groups.

The D7.2.3 training sets will be carried out as follows:

1st training: 10 (testers - in-person training)

2nd training: 20 (data providers - in-person training)

3rd training: 100 (data viewers - online training)

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Includio

A 7.3 - Transfer into Practice: Integration, Monitoring, and Use Cases of the PULSE Social Digital Twin

Title	Start date	End date
Transfer into Practice: Integration, Monitoring, and Use Cases of the PULSE Social Digital Twin	01/07/2027	30/09/2028

Description

The activity facilitates the use of the PULSE-SDT in practice. By integrating it into the practices of MUA, NPOL, JENS, and Includio, it ensures access to real-time data, informed decision-making, and improves the effectiveness of urban safety and liveability interventions. A framework for ongoing monitoring and model alignment will evaluate and refine the SDT based on user feedback, while conducting regular assessments of ELSA impacts to enhance social acceptance. The collection of practical Use Cases, co-developed with the Multistakeholder Panel, will showcase real-world applications for various professional sectors, laying the groundwork for future scalability and wider adoption.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Includio

D 7.3.1 - Update of workflows to incorporate the use of the PULSE Social Digital Twin

Deliverable title	Target value	Delivery date
Update of workflows to incorporate the use of the PULSE Social Digital Twin	4	31/10/2027

Description

Between M28-31, MUA, NPOL, JENS and Includio, as frontline professional user groups, will revise their workflows to integrate the use of the PULSE Social Digital Twin. The integration ensures that professionals have seamless access to real-time data and insights, facilitating data-driven decision-making, enhancing collaboration across departments, and improving the effectiveness of interventions aimed at addressing urban safety and liveability. The workflows will be reviewed and adjusted mid-testing phase to ensure alignment with user feedback and system refinements, enabling smoother integration and optimised use of this new technology.

Resp: MUA

Part: NPOL, UM, JENS, Includio

D 7.3.2 - PULSE Social Digital Twin Ongoing monitoring and model alignment framework

Deliverable title	Target value	Delivery date
PULSE Social Digital Twin Ongoing monitoring and model alignment framework	1	30/09/2028

Description

MUA will establish a framework for continuous monitoring, evaluation and adjustment of the PULSE Social Digital Twin based on regular user feedback to ensure that the developed solution evolves to meet user needs. It will include regular audits of the dynamic access control model to ensure that sensitive data is not exposed to unauthorised users, as well as ELSA impacts assessments, with adjustments made as necessary, ensuring the solutions remain aligned. Social acceptance evaluations will be included through methods determined in the MEF (D3.2.2), helping to gauge stakeholder and citizen perceptions, test acceptance of the AI-based solution, and gather insights for potential improvements.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Inclusio

D 7.3.3 - Collection of Use Cases for the PULSE Social Digital Twin

Deliverable title

Collection of Use Cases for the PULSE Social Digital Twin

Target value

1

Delivery date

30/06/2028

Description

MUA will compile practical use cases for the PULSE-SDT with the collaboration of the Multistakeholder Panel. An initial set of Use Cases has already been identified during the project's design (see Annex x). It will be further developed and tailored for professionals across sectors, showcasing how the SDT can be applied in real-world scenarios. The developed Use Cases will be integrated into the Final Assessment of innovative solution components (D3.4.1) and attached to the Summary of the Transferable Solution (D8.5.2). It will serve the future upscale and roll-out of the innovative solution.

Resp: MUA

Part: NPOL, BSSC, UM, JENS, Inclusio

Outputs

O.7.1 - PULSE Social Digital Twin (PULSE-SDT)

Title

PULSE Social Digital Twin (PULSE-SDT)

Target value

1

Delivery date

26/09/2028

Output indicator

New products and services created

Unit

new products/services

Description

The PULSE Social Digital Twin is the key component of the innovative solution, designed to model social dynamics, urban safety and liveability aspects. Its key functions are the visualisation of PULSE-DE data and features, crime and intervention scenario simulations, liveability monitoring, and CPTED-based urban planning support. Its development, testing will align with the joint ambitions set (D6.1.2), adhere to ELSA compliance (D5.2.1), and actively involve citizens and stakeholders.

Resp: MUA

O.7.2 - Trained professionals on the use of the PULSE Social Digital Twin

Title	Target value	Delivery date
Trained professionals on the use of the PULSE Social Digital Twin	130	26/06/2028
Output indicator	Unit	
People supported (trained, upskilled, accompanied or assisted)	persons	
Description	Number of professionals trained to use the PULSE-SDT in two sets of in-person training sessions. The first set is aimed at tester users, specifically data analysts, frontline professionals, tactical-level professionals in M26-29. The second training is for additional users from these same groups in M36-39. The training ensures that professionals are well-equipped to effectively utilise the PULSE-SDT for enhanced data visualisation and informed decision-making in their work. Resp: MUA	

Investments

I.7.1 - PULSE-SDT (Social Digital Twin)

Title	Budget	Delivery date
PULSE-SDT (Social Digital Twin)		30/09/2028
Description	SDT consists of a Data Warehouse, Data Engine and the Digital Twin visualisation facility. The investment in a data warehouse and data engine is thematically relevant because it directly supports the core goals of the Social Digital Twin: to understand, simulate, and improve complex social systems. While all the elements are strongly interrelated, the main cost items can be separated as follows:	

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	IM department participation in SDT development and testing, other departments integration activity	N/A	N/A				

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
	(approx. 0,1 FTE);						
Amount (€)							

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	1551 staff days for tech development co-ordination - PSSC - proportionate part of cca. 5,3 FTE	N/A	N/A				
Amount (€)							

PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	60 staff days: Experts supporting the co-development of SDT from ELSA point of view with approx 0,1 FTE	N/A	N/A				
Amount (€)							

PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	63 days: Social workers supporting the co-development of SDT and	N/A	N/A				

PP 4 - Inclusio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
	onboarding of users with approx 0.1 FTE						
Amount (€)							

PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	68 contracted youth worker days x 480 EUR daily rate			
Amount (€)							

PP 7 - Brightlands Smart Services Campus (B55C)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	28 staff days: Participation in SDT co-development and testing - PSLab staff (0.04 FTE)	N/A	N/A				
Amount (€)							
Total (€)							

Investment share of the WP budget (in €)

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Indicative budget breakdown per activities and investments

Activity	Amount (%)	Budget (€)
A.7.1		
A.7.2		
A.7.3		
I.7.1		
Total		

Investment 1

Title	PULSE-SDT (Social Digital Twin)
Investment Description (including indicative budget of the main cost items)	SDT consists of a Data Warehouse, Data Engine and the Digital Twin visualisation Facility. The investment in a data warehouse and data engine is thematically relevant because it directly supports the core goals of the Social Digital Twin: to understand, simulate, and improve complex social systems. While all the elements are strongly interrelated, the main cost items can be separated as follows:
Delivery date	30/09/2028
Budget	

Investment aspects	Questions	Project answers
	Explain why this investment is needed.	The social digital twin consists of: A centralized and scalable Data Management (Data Warehouse): A data warehouse provides a central repository to store structured data from multiple sources (e.g. social services, demographic data, healthcare, education). This ensures data is standardized, clean, and accessible, which is essential for building a reliable digital twin. It supports historical data analysis, enabling trend identification and predictive modeling based on past patterns. High-Performance Processing and Real-Time Analytics (Data Engine): A data engine enables efficient querying, transformation, and real-time processing of data. Social systems are dynamic—decisions often depend on up-to-date insights. The engine could support real-time simulations and adaptive models. It allows for complex analytical computations, such as behavior modeling, intervention simulations, or "what-if" scenarios. 2D or 3D visualisation: Data warehouses and engines support integration with AI models, dashboards, and policy tools, making the digital twin actionable and interactive. Importantly, they enable 2D and 3D visualizations of social dynamics (e.g., neighborhood-level simulations, scenario comparisons), which are essential for

Justification of the
investment

Clearly describe the thematic
relevance of the investment.

communicating insights to policymakers, social workers, and citizens.
This infrastructure ensures smooth data flow between raw sources, analytics, and visual representation layers, making abstract data more tangible and understandable.

Data-Driven Social Innovation

Society faces challenges that require evidence-based policy making, such as inequality, aging populations, urbanization, and social cohesion.
By enabling comprehensive, integrated data use, the infrastructure makes it possible to design and test interventions in a virtual environment before applying them in the real world.

Digitalization and Public Value

The Social Digital Twin aligns with broader trends in digital transformation in the public sector.
The data infrastructure strengthens the capacity of the municipality to act proactively rather than reactively.

Transparency and Participation

With well-managed data, the digital twin can support participatory modeling, where stakeholders (citizens, policy makers, social workers) interact with simulations.
This promotes trust and inclusiveness.

Describe who is benefiting (e.g.,
Partners, city, region, target groups,
etc.) from this investment, and in what
way.

The Municipality of Heerlen by:

Smarter policy making: data driven simulation and forecasting helps design effective interventions for challenges such as poverty, unemployment and criminality.

Efficient use of resources: with more accurate targeting of services, funds and people can be used more efficiently and with greater impact.

Real-time monitoring: the city can continuously monitor the effects of its policies and adjust them when needed.

Social workers and frontline professionals

Better insights in complex cases: the digital twin enables social workers to view data patterns that support their professional judgement.

More time for people: with more data access social workers can focus more on personal contact instead of administration.

Residents of Heerlen-Noord

Improved services: interventions can be more tailored to their needs based on data insights.

Earlier help and prevention: By detecting risks earlier (e.g. poverty, school dropout) the city can intervene before problems escalate.

Better policy: data sharing and visualizations improve coordination among professionals from different sectors.

Please clarify which problem it tackles,
which findings you expect from it, how
it can be replicated, and how the
experience coming from it will be used

The social digital twin tackles social challenges, such as:

High crime rates (incl. undermining)

Social isolation and limited trust in institution

Long term poverty and unemployment

Educational disadvantage and youth disengagement

Expected findings:

Predictive insights: development

Policy and intervention simulation

Real-time feedback loops

	for the benefit of the programme area.	Systemic patterns and root causes Replicability: The project will be designed to be modular and transferable. The use of known standards and tooling for the data warehouse and engine allows other cities to plug in their own data. Also the digital twin model can be scaled to other neighbourhoods or cities with similar challenges. Also we will focus on ethics and privacy which are universally applicable.		
Location of the investment	Describe the location of the physical investment; if possible, a specific address where the investment will be located.	The data warehouse is at MUA. But the needed infrastructure is located in "the cloud", managed by Microsoft.		
	Country Netherlands	NUTS 2 level Limburg (NL)	NUTS 3 level Zuid-Limburg	
Investment documentation	Please list all technical requirements and permissions (e.g., building permits) required for the investment according to the respective national legislation.	Data is always stored in Europe. Most of the data will be stored in Amsterdam. For the use of AI we now only can use the servers which are located in Sweden.		
Ownership	Who owns the site where the investment is located?	MUA owns the innovation solution in the form of SDT, which is legally binding by the Partnership Agreement. When PSSC is established, the form of future ownership will be designed including PSSC (and MUA as part of PSSC).		
	Who will retain ownership of the investment at the end of the project?	As stated in the AF: "MUA, as promoter of the PULSE-TWIN Solution, will assume ownership and ensure the sustainability of developed technologies, combining its regular revenues with calculable external resources, potential funding opportunities (e.g. Digital Europe), explored in the Upscaling and Rollout Vision. Nevertheless, the Public Smart Safety Center (PSSC), to be established [in late 2024] by MUA and key DPs, will join the project in the Initiation Phase, serving as a logical successor of sustainability responsibilities, as it will be sealing the long term cooperation and pooling the complementary expertise and resources of its founders to help sustain key components of the Innovative Solution. With a sustainable business model backed by an initial five-year financial commitment from its founders, the PSSC is positioned to drive the long-term success of PULSE-TWIN."		
	Who will take care of the maintenance of the investment? How will this be done?	As stated in the AF: "While MUA - as project promoter and owner of existing technologies - will assume ownership and ensure the sustainability of developed technologies, the Public Smart Safety Center - to be founded by key local stakeholders, most of them involved as Project Partners, - aims to take over long-term responsibilities." So MUA will assume the maintenance at early stages, with PSSC later taking over.		

Work Plan Per Work Packages - Work Package 8 Thematic

Title	Development and testing of SDT data background-driven applications to enhance urban safety and liveability
Start Date	01/10/2025
End Date	30/09/2028
Budget	

Partners Involvement

Responsible Partner	PP 1 - Municipality of Heerlen
Involved Partners	PP 1 - Municipality of Heerlen  PP 2 - Dutch National Police (NPOL)  PP 3 - Maastricht University (UM)  PP 4 - Induzio  PP 5 - JENS   PP 7 - Brightlands Smart Services Campus (BSSC) 

Summary

WP8 aims to co-develop and test innovative technology solutions utilising PULSE-SDT and its data background - developed in WP6 and WP7 - to further enhance safety and livability in Heerlen North and to ensure the sustainability of the innovative solution and its components, also preparing for broader adoption. To achieve this, the work package establishes collaborative development structures, co-designs and tests key practical applications, as well as lays the groundwork for future scalability and transferability.

The AI Copilot, will be co-developed with professional user groups to support frontline workers by providing real-time data and advisory functions during interventions. The Safety Module of the Heerlen App will empower residents to report issues, receive alerts, and engage in local safety projects, prevention-focused learning capsules, enhancing social cohesion. The PULSE Community Challenge encourages citizen-driven solutions through a grant scheme that funds innovative, community-focused applications using SDT data. Selected projects will be developed and tested in the Spatial Lab, supporting real-world implementation. All applications will undergo testing to ensure user alignment and ELSA compliance. Finally, the project will ensure long-term sustainability and impact expansion by outlining the features of the innovative solution and lessons learned to support local and EU-level transfer and maximise long-term impact.

MUA leads WP8, supported by all partners.

Activities and Deliverables

A 8.1 - Establishing co-development structures for PULSE SDT data-driven tech solutions

Title	Start date	End date
Establishing co-development structures for PULSE SDT data-driven tech solutions	01/10/2025	31/03/2026
Description The activity creates a collaborative framework for developing innovative applications that leverage Social Digital Twin (SDT) data background. It involves forming multi-organizational teams for three key applications: the AI Copilot, the Safety Module of the Heerlen App, and community-driven solutions via the Community Challenge grant scheme. In parallel, a Spatial Lab will be set up in BSSC to support the development and testing of the PULSE Community Challenge solutions, providing essential resources for working with SDT's AI technology. The Spatial Lab will ensure a hands-on environment for collaboration and innovation, enhancing the overall effectiveness and sustainability of the developed tech solutions. Res: MUA Part: NPOL, BSSC, UM		

D 8.1.1 - Formation and kickoff of development teams for the PULSE-SDT data-driven applications

Deliverable title	Target value	Delivery date
	3	31/12/2025

Formation and kickoff of development teams for the PULSE-SDT data-driven applications

Description

The tech development teams responsible for the creation of the PULSE-SDT data-driven applications will be formed in M8-9, with a kickoff meeting in M9. Three teams will be formed: 1) AI Copilot: MUA, NPOL, UM 2) Safety Module of Heerlen App: MUA, UM 3) Community Challenge solutions: MUA, NPOL, BSSC, UM, with UM overseeing ELSA compliance in all teams. During the kickoff, the teams will establish detailed work plans and define roles and responsibilities to guide the development processes.

Resp: MUA

Part: NPOL, BSSC, UM

D 8.1.2 - Spatial Lab for development and testing set up in BSSC

Deliverable title

Spatial Lab for development and testing set up in BSSC

Target value

1

Delivery date

31/03/2026

Description

While the AI Copilot will be developed and tested in the NPOL-Lab and the Safety Module of the Heerlen App by an external tech provider, the PULSE Community Challenge, taking place in and involving the tech ecosystem of BSSC, needs a development and testing lab with access and capabilities of working with the PULSE-SDT's AI technology. For this reason, a physical lab (the Spatial Lab) will be set up in BSSC, used and sustained in the future for boosting digital twin technology developments, especially in the field of safety and liveability. The equipment investment for the Spatial Lab is detailed in the investment sheet.

Resp: BSSC

A 8.2 - Co-Development and testing of the PULSE-SDT data-driven AI Copilot

Title

Co-Development and testing of the PULSE-SDT data-driven AI Copilot

Start date

01/04/2027

End date

30/09/2028

Description

The activity co-develops an AI Copilot using PULSE-SDT data background for frontline professionals (police, BOAs, social, and youth workers), consulted with the MP and the CTAG. The AI Copilot will serve as an advisory tool, providing contextual data, assisting with scripting, and enabling recording via voice recognition, integrated into mobile devices for easy access during interventions. Focus group testing in pilot areas will refine the solution based on user feedback. Finally, user workflows will be adapted to integrate the AI Copilot into daily operations, with ongoing monitoring to ensure scalability, adaptability, and ELSA compliance.

It informs AI Copilot WG.

Res: NPOL

Par: MUA, BSSC, UM, Inklusio, JENS

D 8.2.1 - Co-Development of PULSE-SDT data-driven AI Copilot prototype

Deliverable title

Co-Development of PULSE-SDT data-driven AI Copilot prototype

Target value

4

Delivery date

30/09/2027

Description

The AI Copilot tech team (D8.1.1) will develop an AI-powered, SDT data-driven support tool for frontline professionals, such as police officers, BOAs, social and youth workers. Co-developed with the Multistakeholder Panel and consulting the Citizens Think Along Group, it will be integrated into mobile devices, allowing users to access real-time SDT data during their offline or online interactions with the community and to monitor and address neighbourhood issues. The AI Copilot will act as an advisor, providing relevant data, assisting in scenario scripting, and utilising voice recognition to record interviews. Its continuous learning capabilities ensure its scalability and long-term sustainability.

The prototype will be co-developed and tested with 4 professional target groups: police officers, BOAs, social workers, and youth

workers.
Resp: MUA
Part: NPOL, UM, JENS, Inclusio

D 8.2.2 - AI Copilot testing and user onboarding

Deliverable title

AI Copilot testing and user onboarding

Target value

1

Delivery date

30/09/2028

Description

The AI Copilot will be tested in focus groups with 3 representatives from each user group (police officers, BOAs, social and youth workers) from the Multistakeholder Panel in the Heerlen Noord neighbourhoods of Hoensbroek (Maria Gewanden & Terschuren), Vrieheide and Schandelen-Grasbroek, starting in M31. Prior to testing, orientation sessions will be conducted to familiarise tester-users with the tool. Feedback gathered during testing will guide the refinement of the solution to ensure it meets user needs and effectively supports their operations.

After testing and refinement, a second round of orientation will be carried out as user onboarding for final users in the 3 pilot neighbourhoods (10 professionals from each pilot neighbourhood).

Resp: MUA

Part: NPOL, UM, JENS, Inclusio

D 8.2.3 - Transfer into Practice: Integration and Monitoring and Model Alignment Framework of the AI Copilot

Deliverable title

Transfer into Practice: Integration and Monitoring and Model Alignment Framework of the AI Copilot

Target value

1

Delivery date

30/09/2028

Description

In M33-42, MUA, NPOL, JENS and Inclusio, as user groups, will revise their workflows to integrate the AI Copilot. This mid-testing adjustment, based on user feedback, will ensure alignment, smoother integration and optimised use of this new technology.

MUA will establish a framework for continuous monitoring, evaluation and adjustment of the AI Copilot based on regular user feedback to ensure that the developed solution evolves to meet user needs. ELSA impacts (D5.2.1) and social acceptance (D3.2.2) will also be assessed regularly, with adjustments made as necessary, ensuring the solutions remain aligned to ELSA principles and stakeholder and citizen perceptions.

Resp: MUA

Part: NPOL, JENS, Inclusio, UM

A 8.3 - Co-development and testing of the Safety Module of the Heerlen Heijte App

Title

Co-development and testing of the Safety Module of the Heerlen Heijte App

Start date

01/07/2026

End date

30/09/2028

Description

A8.3 co-develops and tests the Safety Module of the Heerlen Heijte App (upgrade of WESH App) with CTAG and MP. The Safety Module does not exist in WESH/Heerlen Heijte App, but will build on its concept and architecture. The Module serves as a handy platform for citizens to report crime and nuisances anonymously, sign up to Neighbourhood Watches, receive alerts, join safety projects, tasks, get safety tips and learn about undermining crime and crime patterns. The Module will leverage SDT data background to suggest safety tasks and learning topics, 2 learning capsules to be developed in the project. Ongoing monitoring ensures model alignment to user needs and ELSA compliance. It informs the Safety Module WG.

Res: MUA

Par: UM, Inclusio, JENS, NPOL

D 8.3.1 - Co-design and development of the Safety Module of the Heerlen Heitje App**Deliverable title**

Co-design and development of the Safety Module of the Heerlen Heitje App

Target value

1

Delivery date

31/03/2027

Description

The Safety Module is co-designed with CTAG and MP to enhance urban safety and community cohesion using data from the PULSE Social Digital Twin (SDT). Citizens can report crime, nuisance through it, with the data feeding into the SDT to intervention planning. Key features include integration with neighbourhood watches, allowing citizens to sign up, join safety tasks in exchange for a reward (similar to WESH), and receive alerts. Based on SDT insights, AI will suggest tasks for citizens and learning topics for MUA, 2 learning capsules to be developed during testing. Also, gamified tasks engage youth on safety topics. Video tutorials will guide users, making the module accessible and effective for all.

Res: MUA

Par: UM, JENS, Includio, NPOL

D 8.3.2 - Testing the Safety Module of the Heerlen Heitje App**Deliverable title**

Testing the Safety Module of the Heerlen Heitje App

Target value

1

Delivery date

30/09/2028

Description

The testing phase for the Safety Module of the Heerlen Heitje App will take place in the Heerlen Noord neighbourhoods of Hoensbroek and Vrieheide, involving a select group of early adopters from the WESH App current user accounts and from the Citizens' Think Along Group, as well as frontline professionals from the Multistakeholder Panel.

Beginning in M23, the testing will focus on gathering user feedback to refine the module based on their experiences. To support users, tailored video tutorials will be developed, showcasing the module's features and providing guidance on its usage. This testing aims to ensure that the Safety Module effectively meets the needs of the community.

Res: MUA

Part: UM, JENS, Includio, NPOL

D 8.3.3 - Monitoring and Model Alignment Framework of the Safety Module of the Heerlen Heitje App**Deliverable title**

Monitoring and Model Alignment Framework of the Safety Module of the Heerlen Heitje App

Target value

1

Delivery date

30/09/2028

Description

MUA will establish a framework for continuous monitoring, evaluation and adjustment of the Safety Module based on regular user feedback to ensure that the developed solution evolves to meet user needs.

ELSA impacts (D5.2.1) and social acceptance MEF (D3.2.2) will also be assessed regularly, with adjustments made as necessary, ensuring the solutions remain aligned to ELSA principles and stakeholder and citizen perceptions.

Res: MUA

Part: NPOL, JENS, Includio, UM

A 8.4 - PULSE Community Challenge for PULSE-SDT data-driven community-led solutions**Title****Start date**

01/04/2027

End date

30/09/2028

PULSE Community Challenge
for PULSE-SDT data-driven community-led solutions

Description

The Challenge co-creates community-driven solutions that leverage PULSE-SDT data background to enhance safety and livability in Heerlen. The activity begins with ideation sessions involving citizens, stakeholder professionals, and the tech ecosystem to generate concepts, particularly those that engage youth or use VR technology focusing on the context of crime-prevention.

Following ideation, MUA will launch a grant scheme to fund selected solutions, with up to [REDACTED] available. Successful applicants will develop and test their prototypes in the Spatial Lab at BSSC, ensuring end user and ELSA validation to support real-world deployment and sustainability.

Resp: MUA

Part: BSSC, UM, JENS, Includio, NPOL

D 8.4.1 - Ideation with citizens and stakeholders for the PULSE Community Challenge

Deliverable title

Ideation with citizens and stakeholders for the PULSE Community Challenge

Target value

1

Delivery date

31/07/2027

Description

MUA will organise a set of ideation-brainstorming sessions with delegates from the Citizens' Think Along Group and the Multistakeholder Panel between M25-28. Additionally, BSSC will engage the broader technology developer ecosystem to join the sessions and explore creative solutions. The activity aims to generate innovative ideas for community-focused, safety and livability applications of the PULSE Social Digital Twin (SDT) data, including applications engaging the youth or using VR technology for the PULSE Community Challenge (D8.4.2). Ideation will focus on both predefined topics and open discussions to maximise diverse input and foster creative community-driven technology solution concepts.

Res: MUA

Par: BSSC, JENS, Includio, NPOL, UM

D 8.4.2 - PULSE Community Challenge - Grant scheme

Deliverable title

PULSE Community Challenge - Grant scheme

Target value

1

Delivery date

31/01/2028

Description

MUA will launch a grant scheme to fund community-led SDT data-driven applications that enhance safety and liveability in Heerlen, giving preference to youth engagement and use of VR technology. Targeted at citizen-professional-tech developer consortia, the scheme offers individual awards of up to [REDACTED]. Selection criteria include eligibility, methodology, and value for money. The selection process includes shortlisting and negotiating with candidates, and inviting and selecting final proposals. Approved grants will be provided as a lump sum, subject to proper implementation. Detailed procedures will be outlined in the PM Handbook and Grant Call documentation.

Resp: MUA

Part: BSSC, JENS, Includio, NPOL, UM

D 8.4.3 - Developed and tested prototypes of the granted solutions

Deliverable title

Developed and tested prototypes of the granted solutions

Target value

3

Delivery date

30/09/2028

Description

D 8.4.3 description: The deliverable involves the development and testing of prototypes for 3 solutions funded through the PULSE Community Challenge (D8.4.2) grant scheme. Prototypes will be developed and tested in the Spatial Lab (D8.1.2) at BSSC, where end user and ELSA validation will be conducted with input from citizens and professionals to ensure alignment with user needs. Additionally, an ELSA-based ethical validation will be performed to assess compliance with ethical, legal, and societal standards. The

outcomes will guide further refinement and ensure that the solutions are suitable for real-world implementation. The grant scheme will support 3 solutions. It will be launched between M29 and M34, remain open for approx. 7 months, and the selected solutions will be implemented and tested from M35 to M42. Solutions will receive up to [REDACTED] total funding available.

Resp: BSSC

Part: MUA, JENS, Inluzio, UM

A 8.5 - Looking ahead to the Future

Title	Start date	End date
Looking ahead to the Future	01/07/2028	30/09/2028

Description

The activity has the objective to ensure long-term sustainability, adaptability, and expanded impact of the innovative solution both locally and at the EU level. This includes the Upscaling and Rollout Vision that will serve as a discussion paper for the Forum on Future Scenarios (D4.5.1). It covers upscaling scenarios for the components of the innovative solution, all aligned with ELSA principles to ensure social acceptance.

Additionally, the Summary of the Transferable Innovative Solution aims to facilitate replication by detailing each component's functionalities and how they interconnect, supporting the transfer of these solutions to other cities, thus maximising the project's long-term impact and scalability.

Res: MUA

Par: All partners

D 8.5.1 - Upscaling and Rollout Vision of the innovative solution

Deliverable title	Target value	Delivery date
Upscaling and Rollout Vision of the innovative solution	1	31/08/2028

Description

The Vision outlines plans to monitor, sustain project results, manage associated risks, secure financial resources and expand the innovative solution's impact locally and at EU level. It will serve as a discussion paper for the Forum on Future Scenarios (D4.5.1) including upscaling scenarios of components, i.e. expanding the PULSE-DW with additional data providers, the PULSE-DE with new user groups, enhancing the PULSE-SDT by adding new data layers and functionalities, extending the AI Copilot to other professional groups and rolling out the Safety Module to non-pilot neighbourhoods. The Vision will align with ELSA considerations in future upscaling scenarios (D5.2.3) to ensure social acceptance.

R: MUA

P: UM, JENS, Inluzio, NPOL, BSSC, SVOB

D 8.5.2 - Summary of the transferable Innovative Solution

Deliverable title	Target value	Delivery date
Summary of the transferable Innovative Solution	1	30/09/2028

Description

The Summary, developed by thematic WGs, provides an overview of the components of the proposed innovative solution and their interconnections. The components are: 1) PULSE-SDT backed up by PULSE DW and DE, as the core innovation 2) AI Copilot 3) Safety Module of the Heerlen App 4) Community engagement including the Community Challenge 5) ELSA in AI developments. It also elaborates on replicability and transferability, detailing how the components can be adapted for different contexts and communities, incorporating the Upscaling and Rollout Vision (D8.5.1). By outlining lessons learned, the Summary aims to facilitate the transfer and adoption of the innovative solution in Transfer Cities.

Res: MUA

Par: UM, JENS, Includio, NPOL, BSSC, SVOB

Outputs

O.8.1 - AI Copilot with prototypes for 4 user groups

Title	Target value	Delivery date
AI Copilot with prototypes for 4 user groups	4	25/09/2028
Output indicator	Unit	
New products and services created	new products/services	
Description	The AI Copilot is a new product, one component of the innovative solution. Its function is to provide PULSE-SDT data-driven support to frontline professionals during interventions, integrated into mobile devices. The output includes four tailored prototypes as per user groups: police officers, BOAs, social and youth workers. Its development, testing will align with the joint ambitions set (D6.1.2), adhere to ELSA compliance (D5.2.1), and actively involve citizens and stakeholders. Res: MUA	

O.8.2 - The Safety Module of the Heerlen Heitje App

Title	Target value	Delivery date
The Safety Module of the Heerlen Heitje App	1	25/09/2028
Output indicator	Unit	
New products and services created	new products/services	
Description	The Safety Module of the Heerlen Heitje App is a new product, one component of the innovative solution. It is a handy platform for citizens to report crime and nuisances or access PULSE-SDT-based safety and liveability insights, community projects, learning capsules that consequently fosters trust and enhances social cohesion. Its development, testing will align with the joint ambitions set (D6.1.2), adhere to ELSA compliance (D5.2.1), and actively involve citizens and stakeholders. Res: MUA	

O.8.3 - PULSE-SDT data-driven Community Challenge solutions

Title	Target value	Delivery date
PULSE-SDT data-driven Community Challenge solutions	3	25/09/2028
Output indicator	Unit	
New products and services created	new products/services	
Description The PULSE Community Challenge will result in 3 new data-driven community solutions, co-developed with citizens, professionals and tech developers. These solutions will demonstrate the community engagement potential of the PULSE Social Digital Twin by addressing safety and liveability challenges through innovative, SDT-powered applications. All prototypes will be tested in the BSSC Spatial Lab and adhere to ELSA compliance (D5.2.1). Resp: MUA		

O.8.4 - Trained professionals on the use of the AI Copilot

Title	Target value	Delivery date
Trained professionals on the use of the AI Copilot	42	26/10/2027
Output indicator	Unit	
People supported (trained, upskilled, accompanied or assisted)	persons	
Description Number of professionals, as testers, trained through orientation sessions to use the AI Copilot. Testers involve police officers, BOAs, social and youth workers, 3 persons from each profession. The training ensures that professionals are well-equipped to effectively utilise the AI Copilot for gaining contextual data, scripting conversations, and recording data through voice recognition in their work. The target values will be the following: 1st orientation - 12 testers 2nd orientation - 30 final users (10 professionals/pilot neighbourhood) Resp: NPOL		

O.8.5 - Spatial Lab

Title	Target value	Delivery date
Spatial Lab	1	29/03/2026
Output indicator	Unit	
New products and services created	new products/services	
Description The 'Spatial Lab' facility is a new product to support the development and testing of the PULSE-SDT data-based applications. It will combine the latest immersive technologies such as augmented reality (AR) and virtual reality (VR) to create interactive simulations for urban safety solutions. The Lab will be used and sustained in the future for boosting digital twin technology developments, especially in the field of safety and liveability. Resp: BSSC		

Investments

I.B.1 - Spatial Lab' facility to support the development and testing of the PULSE Social Digital Twin data-based applications of the Community Challenge (A8.5).

Title	Budget	Delivery date
Spatial Lab' facility to support the development and testing of the PULSE Social Digital Twin data-based applications of the Community Challenge (A8.5).		31/03/2026

Description

This lab will combine the latest immersive technologies such as augmented reality (AR) and virtual reality (VR) to create interactive simulations for urban safety solutions. Spatial technology will enhance these immersive experiences by producing 3D visualisations that can be managed via gesture recognition, allowing users to interact with the SDT without the need for headsets or glasses.

The budget includes:

Screens & Cameras: For real-time 3D visualisations and high-definition video capture.

Sensors & Motion Detection Equipment: Tools to track user movement and capture real-time interactions within the SDT environment.

High-Performance Laptops & Computing Power: Essential for processing large datasets and running complex 3D models.

XR/VR/AR Tools: For creating virtual environments and providing users with immersive urban safety simulations.

Hologram Projection Equipment: Allows for engaging 3D holographic displays to enhance user experience.

This facility will be a central hub for partners and developers to refine urban safety solutions, creating an engaging and interactive experience for local stakeholders and wider audiences.

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	405 staff days for Safety Module of Heerlen App; for coordination of FSTP; for supporting the integration of new applications;	N/A	N/A	Development of the Safety module + expertise on learning module. Maintenance of the module 1.5 years. Awards for winners of the Challenge to develop product design / prototypes			
Amount (€)							

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	283 staff days: for all activities support - PSSC - proportionate part of cca 5,3 FTE (makes part of the 17,1)	N/A	N/A				
Amount (€)							

PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	48 staff days: Experts supporting the co-development of SDT applications from ELSA point of view with approx 0.06 FTE	N/A	N/A				
Amount (€)							

PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	20 staff days: Social workers supporting the co-development of SDT and onboarding of users with approx 0,1 FTE	N/A	N/A				
Amount (€)							

PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description		N/A	N/A	20 contracted youth worker days x  EUR daily rate			
Amount (€)							

PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
Description	123 staff days: Setting up the physical lab and supporting PULSE community challenge - project manager and PSLab staff with 0.16 FTE total	N/A	N/A	Software needed for Spatial Lab  D8.4.2 Contribution in cash for small meet-up event accompanying the Open Call (20 ppl, half day (venue & catering); demo on current status of dev., touring the lab 	See investment sheet (Spatial Lab)		
Amount (€)							
Total (€)							

Investment share of the WP budget (in €)

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Indicative budget breakdown per activities and investments

Activity	Amount (%)	Budget (€)
A.8.1		
A.8.2		
A.8.3		
A.8.4		
A.8.5		
I.8.1		
Total		

Investment 1

Title	Spatial Lab ⁷ facility to support the development and testing of the PULSE Social Digital Twin data-based applications of the Community Challenge (A8.5).
Investment Description (including indicative budget of the main cost items)	This lab will combine the latest immersive technologies such as augmented reality (AR) and virtual reality (VR) to create interactive simulations for urban safety solutions. Spatial technology will enhance these immersive experiences by producing 3D visualisations that can be managed via gesture recognition, allowing users to interact with the SDT without the need for headsets or glasses. The budget includes: Screens & Cameras For real-time 3D visualisations and high-definition video capture. Sensors & Motion Detection Equipment Tools to track user movement and capture real-time interactions within the SDT environment. High-Performance Laptops & Computing Power Essential for processing large datasets and running complex 3D models. XR/VR/AR Tools For creating virtual environments and providing users with immersive urban safety simulations. Hologram Projection Equipment Allows for engaging 3D holographic displays to enhance user experience. This facility will be a central hub for partners and developers to refine urban safety solutions, creating an engaging and interactive experience for local stakeholders and wider audiences.
Delivery date	31/03/2026
Budget	

Investment aspects	Questions	Project answers
	Explain why this investment is needed.	This investment is essential for creating a robust development and testing environment for the PULSE-SDT data-based applications of the Community Challenge. The immersive technology will allow project partners and developers teams selected via the challenges to simulate urban safety scenarios, ensuring that solutions are tested and optimised before deployment. The Spatial Lab will also serve as a space for collaboration between stakeholders, enhancing co-creation with local communities, particularly in areas of safety and livability. The lab's cutting-edge equipment provides the necessary technological infrastructure to explore complex solutions while ensuring they remain user-friendly and accessible. By offering

Justification of the investment		hands-on, real-world testing conditions, it reduces risks associated with large-scale urban deployments.		
	Clearly describe the thematic relevance of the investment.	The investment directly supports the development of our central innovative solution - the Social Digital Twin - and the safety solutions built around it. By using immersive technology, the Spatial Lab enhances the thematic focus on co-creation, livability improvement, and public engagement. It aligns with the project's core themes of providing data-driven, real-time safety solutions. The facility will provide a platform to model, visualise, and test urban these solutions in a dynamic environment, making the project's goals more tangible. Additionally, it advances technology uptake in safety strategies and contributes to the digital transition within urban management, reflecting the broader EU goals of fostering smart cities and resilient urban systems.		
	Describe who is benefiting (e.g., Partners, city, region, target groups, etc.) from this investment, and in what way.	Multiple stakeholders benefit from this investment, including project partners, the Municipality of Heerlen, and local innovation community. Partners, such as developers and technology experts, gain access to advanced tools for developing the SDT and other safety solutions based on it. The city and region benefit from improved urban safety and governance, as the lab helps in the refinement of solutions that can be deployed city-wide, ultimately enhancing citizen well-being. Through this facility, Heerlen can position itself as a leader in smart urban safety, influencing both local and international urban development practices.		
	Please clarify which problem it tackles, which findings you expect from it, how it can be replicated, and how the experience coming from it will be used for the benefit of the programme area.	The Spatial Lab tackles the challenge of safely testing urban safety tools and solutions before real-world deployment. It addresses the complexity of engaging non-technical stakeholders by making immersive technology accessible and intuitive. By simulating various urban safety scenarios, we expect findings related to the effectiveness of the SDT, community engagement, and technological scalability. The experiences from this investment will inform broader policy recommendations and contribute to a blueprint for integrating smart technologies into urban safety strategies across Europe, thereby benefiting the wider programme area.		
Location of the investment	Describe the location of the physical investment; if possible, a specific address where the investment will be located.	The Lab facility will be located at the Brightlands Smart Services Campus, Smedestraat 2, 6411 CR, in Heerlen, the Netherlands.		
	Country Netherlands	NUTS 2 level Limburg (NL)	NUTS 3 level Zuid-Limburg	
Investment documentation	Please list all technical requirements and permissions (e.g., building permits) required for the investment according to the respective national legislation.	n/a		
	Who owns the site where the investment is located?	The location is owned by the Brightlands Smart Services Campus, to be more specific, its real-estate organisation named / Campus HuisVesting B.V. (CHV)		
	Who will retain ownership of the investment at the end of the project?	The Brightlands Smart Services Campus will retain ownership of the Lab facility, to be more specific, the Campus Heerlen Management & Development B.V. (CMD)		

Ownership

Who will take care of the maintenance of the investment? How will this be done?

The Brightlands Smart Services Campus will take care of the maintenance of the Lab facility, to be more specific, the Campus Heerlen Management & Development B.V. (CMD).

This will be done by their Community Development team in combination with its Facility department.

Facilities will potentially be merged into CHILL Heerlen, which is an institute in the making where students and professionals work on real-life challenges supported by the newest digital technologies.

Work Plan Per Work Packages - Work Package 9 Transfer

Title Transfer

Start Date 01/03/2026

End Date 31/03/2029

Budget

Partners Involvement

Responsible Partner PP 1 - Municipality of Heerlen

Involved Partners

PP 1 - Municipality of Heerlen PP 2 - Dutch National Police (NPOL) PP 8 - Municipality of Piraeus
PP 9 - SANT BOI DE LLOBREGAT CITY COUNCIL PP 10 - City of Genk PP 3 - Maastricht University (UM) PP 4 - Includio
PP 5 - JENS PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)
PP 7 - Brightlands Smart Services Campus (BSSC)

Summary

WP9 is led by MUA. The exchange with Transfer Partners is carried through the whole implementation phase: they learn from the stakeholder engagement activities in WPs 5 and from piloting tech solutions in WPs 6-8. To ensure the transfer of the PULSE-TWIN solution, a structured cooperation plan with transfer cities - Sant Boi de Llobregat, Piraeus, and Genk - will be established.

A9.1: A detailed cooperation work plan will be developed with the transfer cities under MUA guidance. It will include timelines, defined roles, and communication channels for coordination. An initial online meeting will bring together the cities to align on goals and identify how the PULSE-TWIN solutions can meet their urban safety challenges. An ambition-setting document will outline each city's specific needs. In addition to these transfer cities, collaboration will expand to initiatives like CITICESS, broadening the project's reach. Deliverables include ambition-setting document and final cooperation work plan.

A9.2: A WG is established, comprising representatives from the transfer cities and on occasion, inviting also experts from best-practice cities identified during benchmarking. This group will be a platform for peer review and exchange, helping to create and refine PULSE-TWIN methodologies and pilot evaluations. Through regular online workshops, the transfer cities will provide input on adaptation to their contexts. Workshops will cover key topics like methodological frameworks and evaluation milestones, and two on-site visits will be organised at the mid-term and final pilot stages. These visits will allow transfer cities to see the SDT in action (e.g. in the Spatial Lab), facilitating deeper understanding of its applications.

A9.3: After the pilot phase, each transfer city will work on a detailed study to outline how the PULSE-TWIN solutions can be adapted to their environments. The consortium will offer consultation and peer-review support during this process to ensure tailored solutions. This step ensures that transfer cities can modify the technology to fit their legal, infrastructural, and governance structures. At the project's conclusion, the results from pilots and transfer city adaptations will be compiled into a Final Case Study Document. This document will consolidate lessons learned, offering a resource for cities across Europe interested in replicating PULSE-TWIN. It will be shared through the Transfer WG and EU dissemination channels as set in A4.5.

Activities and Deliverables

A 9.1 - Coordination of the transfer cooperation

Title	Start date	End date
Coordination of the transfer cooperation	01/03/2026	31/03/2029

Description

A 9.2 - Knowledge exchange and peer to peer learning

Title	Start date	End date
Knowledge exchange and peer to peer learning	01/03/2026	31/03/2029
Description		

A 9.3 - Formulation of the frameworks for the transfer of innovative solution

Title	Start date	End date
Formulation of the frameworks for the transfer of innovative solution	01/03/2026	31/03/2029
Description		

Outputs

O.9.1 - EUI - Innovative Solution Model

Title	Target value	Delivery date
EUI - Innovative Solution Model	1	31/03/2029
Output indicator	Unit	
Other	Quantity	
Number of EUI – Innovative Solution Model delivered		
Description		
The EUI - Innovative Solution Model – is a Final document focused on the transferability and scaling up of the tested innovative solution in order to allow others to learn about the findings of the experimentation and receive some guidance on how to approach replication. The EUI - Innovative Solution Model will be publicly available on the EU Knowledge Exchange Sharing Platform and EUI webpage.		

O.9.2 - Replication Feasibility and Opportunity Study

Title	Target value	Delivery date
Replication Feasibility and Opportunity Study	3	31/03/2029
Output indicator	Unit	
Other	Quantity	
Number of Replication Feasibility and Opportunity Study delivered		
Description		
The Replication Feasibility and Opportunity study summarizes what is the local challenge, how transferred innovative solutions can be adapted to the local context, what are the necessary steps to implement it, what are the identified funding sources, how management structure and key management processes can be shaped, etc. (investment output).		

Work Package Budget

PP 1 - Municipality of Heerlen	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	90 staff days: SSL department support to Transfer partners (0.1 FTE)	N/A	N/A			
Amount (€)						

PP 2 - Dutch National Police (NPOL)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	10 staff days	N/A	N/A			
Amount (€)						

PP 3 - Maastricht University (UM)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	5 staff days: Project manager/experts to support Transfer Partners with ELSA method application	N/A	N/A			
Amount (€)						

PP 4 - Includio	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	2 staff days	N/A	N/A			
Amount (€)						

PP 5 - JENS	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	2 contracted youth worker days x		
Amount (€)						
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description		N/A	N/A	In-house CPTED experts support in organising transfer (10 days)		
Amount (€)						
PP 7 - Brightlands Smart Services Campus (BSSC)	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	Project manager to support to Transfer partners site visits (2 days)	N/A	N/A			
Amount (€)						
PP 8 - Municipality of Piraeus	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	N/A	N/A	N/A	Budget for the activities of Transfer Cities (to be defined later)	N/A	
Amount (€)						

PP 9 - SANT BOI DE LLOBREGAT CITY COUNCIL	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	N/A	N/A	N/A	Budget for the activities of Transfer Cities (to be defined later)	N/A	
Amount (€)						

PP 10 - City of Genk	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Total
Description	N/A	N/A	N/A	Budget for the activities of Transfer Cities (to be defined later)	N/A	
Amount (€)						
Total (€)						

Indicative budget breakdown per year

Year	2025	2026	2027	2028	2029	Total
Amount (%)						
Budget (€)						

Work Plan Per Work Packages - Work Package 10 Closure

Start Date 01/04/2029

End Date 30/06/2029

Budget

Partners Involvement

Responsible Partner PP-1 - Municipality of Heerlen

Summary

As explained in the EUI-IA Guidance, Chapter 1.7, Administrative Closure phase (lasting 3 months), is related to all administrative activities taking place after the implementation phase in order to close the project and obtain validation of the narrative and Financial reporting documents. It is also expected that during this phase, EUI-IA project representative(s) are still available to take part in the knowledge capitalisation and dissemination activities initiated by the Permanent Secretariat (see EUI-IA Guidance, Chapter 8 for details). Lump sum of [REDACTED] will be paid when all compulsory deliverables are provided and validated.

Activities and Deliverables

A 10.1 - Closure

Title	Start date	End date
Closure	01/04/2029	30/06/2029
Description		
Closure		
D 10.1.1 - Drafting and submission of the final Annual Progress Report (APR4)		
Deliverable title	Target value	Delivery date
Drafting and submission of the final Annual Progress Report (APR4)	1	30/04/2029
D 10.1.2 - Preparation and submission of final Financial Claim (FC2)		
Deliverable title	Target value	Delivery date
Preparation and submission of final Financial Claim (FC2)	1	30/06/2029
D 10.1.3 - Preparation and submission of the Final Qualitative Report (FQR)		
Deliverable title	Target value	Delivery date
Preparation and submission of the Final Qualitative Report (FQR)	1	30/06/2029

Work Package Budget

Partner name	Staff cost (€)	Office and administration (€)	Travel and accommodation (€)	External expertise and services (€)	Equipment (€)	Total (€)
Municipality of Heerlen						

Part E - Project Budget**E.1 Project Budget Co-Financing Source (Fund) - Breakdown per Partner**

Partner		ERDF co-financing		Contribution		Total		
Partner	Country	EUR	ERDF rate	Public	Private	Total	Budget	% of project budget
PP 1 - Municipality of Heerlen	 NL							
PP 2 - Dutch National Police (NPOL)	 NL							
PP 3 - Maastricht University (UM)	 NL							
PP 4 - Inklusio	 NL							
PP 5 - JENS	 NL							
PP 6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	 NL							
PP 7 - Brightlands Smart Services Campus (BSSC)	 NL							
PP 8 - Municipality of Piraeus	 EL							
PP 9 - SANT BOI DE LLOBREGAT CITY COUNCIL	 ES							
PP 10 - City of Genk	 BE							
Total (€)								

E.2 Project Budget - Overview per Partner/ per Period

Partner	Preparation	Jan - Dec 2025	Jan - Dec 2026	Jan - Dec 2027	Jan - Dec 2028	Jan - Dec 2029	Closure	Total
PP 1								
PP 2								
PP 3								
Total (€)								
% of total budget								

Partner	Preparation	Jan - Dec 2025	Jan - Dec 2026	Jan - Dec 2027	Jan - Dec 2028	Jan - Dec 2029	Closure	Total
PP 4								
PP 5								
PP 6								
PP 7								
PP 8								
PP 9								
PP 10								
Total (€)								
% of total budget								

E.3 Project Budget - Overview per Partner/ per Work Package

Partner	Preparation (WP 1)	WP 2	WP 3	WP 4	WP 5	WP 6	WP 7	WP 8	WP 9	Closure (WP 10)	Total
PP 1											
PP 2											
PP 3											
PP 4											
PP 5											
PP 6											
PP 7											
PP 8											
PP 9											
PP 10											
Total (€)											
% of total budget											

E.4 Project Budget - Overview per Work Package/ per Period

Work Package	Preparation	Jan - Dec 2025	Jan - Dec 2026	Jan - Dec 2027	Jan - Dec 2028	Jan - Dec 2029	Closure	Total
WP 1								
Total (€)								
% of total budget								

Work Package	Preparation	Jan - Dec 2025	Jan - Dec 2026	Jan - Dec 2027	Jan - Dec 2028	Jan - Dec 2029	Closure	Total
WP 2								
WP 3								
WP 4								
WP 5								
WP 6								
WP 7								
WP 8								
WP 9								
WP 10								
Total (€)								
% of total budget								

E.5 Project Budget - Overview per Partner/ per Budget Line

Partner	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
PP 1							
PP 2							
PP 3							
PP 4							
PP 5							
PP 6							
PP 7							
PP 8							
PP 9							
PP 10							
Total (€)							
% of total budget							

E.6 Project Budget - Overview per Work Package/ per Budget Line

Work Package	Staff costs	Office and administration	Travel and accommodation	External expertise and services	Equipment	Infrastructure and works	Total
WP 1							
WP 2							
WP 3							
WP 4							
WP 5							
WP 6							
WP 7							
WP 8							
WP 9							
WP 10							
Total (€)							
% of total budget							

Part F - Partners contribution**Source(s) of Contribution**

Total Contribution

Total Contribution Target

PP1 - Municipality of Heerlen

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Municipality of Heerlen	Public				
Total (€)					

PP2 - Dutch National Police (NPOL)

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Dutch National Police	Public				
Total (€)					

PP3 - Maastricht University (UM)

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Brightlands Institute for Smart Society	Public				
Total (€)					

PP4 - Includio

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Incluzio	Private				
Total (€)					

PP5 - JENS

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Municipality of Heerlen	Public				
Total (€)					

PP6 - Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Dutch CPTED Chapter, Association for Safe and Secure Urban Design, Planning and Management (SVOB)	Private				
Total (€)					

PP7 - Brightlands Smart Services Campus (BSSC)

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Brightlands Smart Services Campus (BSSC)	Private				
Brightlands Smart Services Campus (BSSC)	Private				
Total (€)					

PP8 - Municipality of Piraeus

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Transfer Partner 1	Public				
Total (€)					

PP9 - SANT BOI DE LLOBREGAT CITY COUNCIL

Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Transfer Partner 2	Public				
Total (€)					

PP10 - City of Genk



Name of Organisation/ Source of Contribution	Legal Status	% of Total Partner Contribution	Amount (€)	Cash or In-kind Contribution	Comment
Transfer Partner 3	Public				
Total (€)					

Part G - Risk Management

G.1 Risks at project strategy level

Potential obstacles and resistance sources have been identified by partners:

- Citizens may be wary of contributing personal data, or not fully understand the benefits of the Social Digital Twin. Solution: Extensive sensitization and awareness campaigns will be conducted throughout the project, emphasising data privacy and transparency, as well as showcasing success stories of similar citizen-driven initiatives in other cities.
- Vulnerable communities may feel that data-driven safety measures unfairly target them. Solution: Continuous dialogue with these communities, including participatory co-creation processes, will be key to ensuring their voices are heard, and that solutions are inclusive and non-discriminatory.
- Some groups may fear that the project will lead to gentrification or undesirable urban changes. Solution: Direct and transparent communication with these groups, combined with inclusive planning sessions, will help ensure that urban interventions align with the needs and desires of the community, promoting fairness and equity.

Additionally, there is a risk of unintended outcomes, such as misallocated resources, if the Social Digital Twin's predictions are misapplied. To manage these challenges, the project will ensure legal compliance through expert guidance and actively involve citizens in the co-creation process to foster trust. Continuous monitoring and evaluation of urban impacts will ensure balanced interventions.

G.2 Risks at project implementation level

Project management capacity risks

Risk	Description	Properties	Actions to mitigate the risk
Structures and procedures	Insufficient human resource capacity within the MUA Project Management Team, potentially impacting the availability of staff across all phases of the project.	Likelihood Possible Impact Serious	Project will promote proactive resource planning (assigning PMG in the beginning and establishing all project bodies). Additional staffing will be secured in the initiation phase if needed and external support is planned. Throughout the project PMG will implement regular capacity reviews.
Project Partnership	Some smaller NGO partners do not have the capacity to implement the project at the time of its start.	Likelihood Possible Impact Serious	Specific support will be provided to partners identified as high-risk during the initiation phase risk assessment by MUA, through targeted bilateral coaching focused on financial management, thematic monitoring, and reporting templates.
Financial flows	Financial vulnerability of small/unexperienced partners, requiring alternative financial schemes by MUA to manage cash-flow problems.	Likelihood Remote Impact Serious	MUA establishes preliminary financial agreements with partners that clearly define the terms of financial support in case of cash-flow problems. This includes contingency plans for ad-hoc financial support. Additionally, financial mgt and procurement trainings are offered as a part of the kick-off.

Risk	Description	Properties	Actions to mitigate the risk
Political environment	The project is fully in line with the city's political priorities. The legacy of WESH App (Heerlen: Heitje App) is being actively maintained by the city and PULSE-TWIN will add a Safety Module to it.	Likelihood Remote Impact Major	To mitigate the risk, the Safety Module can also build on the existing infrastructure of the already operational WESH app. Also, procurement of external contractor for the Heerlen App development will be concluded by the start of PULSE-TWIN.
PSSC establishment is delayed	PSSC establishment is delayed, so the organisation cannot join eventually as a partner.	Likelihood Possible Impact Serious	PSSC's founding fathers (MUA, NPOL-iLab, BSSC, UM) are also partners in the project and still capable of performing tasks to be allocated to PSSC. Nevertheless, the risk is considered remote because founding entities have strong commitment and influence for the establishment to happen in time.

Workplan implementation risks

Risk	Description	Properties	Actions to mitigate the risk
Legal framework and regulations regarding innovation (local, national, EU level)	Legal and regulatory frameworks concerning the use of digital twins, AI, and sensitive data in public service innovation may be underdeveloped or unclear, leading to potential delays or rework. Additionally, public concerns around privacy, ethics, and algorithmic governance may undermine stakeholder acceptance if not properly addressed.	Likelihood Remote Impact Minor	To mitigate these risks, BSSC will leverage its national-level policy expertise to interpret legal frameworks and advocate for regulatory clarity. The project's dedicated ELSA Working Group, led by BISS (University of Maastricht), will ensure full compliance with EU GDPR and AI Act principles. It will also oversee ethical governance processes, support transparent design, and conduct participatory validation with stakeholders to secure public trust and social legitimacy throughout implementation.
Delays in the delivery of project activities	Developing a digital twin involves complex data integration, real-time analysis, and system modeling, which might take longer than expected.	Likelihood Possible Impact Major	Extended time for the development including iterations / model alignment in accordance with testing outcomes, as well as for data integration is planned for in the project timeline.
Participatory approach	Vulnerable or marginalised groups may distrust the project or be difficult to engage.	Likelihood Remote	MUA has strong relationships with local NGOs, social workers, and community organisations

Risk	Description	Properties	Actions to mitigate the risk
	impacting the quality and relevance of the social data collected.	Impact Major	with established trust in these communities to facilitate engagement. Includio and JENS included as partners to ensure direct link to socially vulnerable citizens and youth.
Social data privacy concerns	The project might face opposition from segments of the public (incl. international organisations) due to privacy concerns around the use of social data.	Likelihood Possible Impact Serious	PULSE-TWIN develops a transparent communication strategy to engage the public early on, focusing on the project's benefits and privacy safeguards. Transparency Statement D.2.5.3 is part of the WP2 activities. With ELSA Lab (BISS), the project will ensure compliance with all data privacy concerns.

Investments risks

Risk	Description	Properties	Actions to mitigate the risk
(Public) procurement procedure	Planned investments (2) are both relating to purchase of equipment. Ample time will be available for a successful procurement process, as setting up of Demo Corners and the Spatial Lab will occur in the second half of implementation.	Likelihood Remote Impact Incident	n/a
Ownership & location of the site	Risks related to ownership, permits, or political approval are not relevant in this case. Locations are in the ownership of partners, MUA and BSSC respectively, and no permits are needed. Political endorsements have been secured well in advance.	Likelihood Remote Impact Incident	n/a
Delivery of investments	Concerns about potential delays from environmental issues, supply chain disruptions, or budget overruns are not relevant for the type of equipment planned.	Likelihood Possible Impact Incident	n/a
Obsolescence of technical solutions	The rapid evolution of AI, sensor technology, and digital twin platforms could render some technical solutions implemented	Likelihood Probable Impact	Continuous monitoring of technological advancements, modular system design for easy upgrades, and proactive

Risk	Description	Properties	Actions to mitigate the risk
	in PULSE-TWIN obsolete by the end of the project. This poses a risk to the long-term relevance and effectiveness of the project's technological investments.	Serious	partnerships with technology providers will allow for adaptability. Regular reviews in SDT WG will ensure that innovations in AI and other key technologies are incorporated into the project.

Part H - Confirmation

(Main) Urban Authority confirmation and signature

(Main) Urban Authority Municipality of Heerlen

By signing the application form the (Main) Urban Authority hereby confirms that:

1. The information provided in the Application Form is accurate and true to the best knowledge of the Main Urban Authority.
2. The Urban Authorities involved in this project proposal are not involved in other proposals submitted to the European Urban Initiative – Innovative Actions as part of this current Call for Proposals.
3. The Main Urban Authority and Project Partners listed in the Application Form:
 - a. are committed to participate in the action,
 - b. have stable and sufficient sources of funding to maintain the activities throughout the action and to provide any counterpart funding necessary,
 - c. have or will have the necessary resources needed to implement the action.
4. The Main Urban Authority and the Project Partners commit to comply with the eligibility criteria and all other conditions set out in the Call for Proposals conditions for the entire duration of the project.
5. The Main Urban Authority and the Project Partners will act according to the provisions of the relevant national and EU legislation and policies (especially regarding structural funds, public procurement, state aid, environment and equal opportunities) as well as the specific provisions of the European Urban Initiative.
6. The Main Urban Authority and the Project Partners are NOT subject to an administrative sanction (i.e. exclusion or financial penalty decision).
7. The Main Urban Authority and the Project Partners (or persons with unlimited liability for debts) are NOT in one of the following exclusion situations:
 - a. bankrupt, being wound up, having the affairs administered by the courts, entered into an arrangement with creditors, suspended business activities or subject to any other similar proceedings or procedures
 - b. in breach of social security or tax obligations
8. The Main Urban Authority and the Project Partners (or persons having powers of representation, decision-making or control, beneficial owners or persons who are essential for the award/implementation of the action) are NOT in one of the following exclusion situations:
 - a. guilty of grave professional misconduct,
 - b. committed fraud, corruption, links to a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking,
 - c. shown significant deficiencies in complying with main obligations under an EU procurement contract, grant agreement, prize, expert contract, or similar,
 - d. guilty of irregularities within the meaning of Article 1(2) of Regulation No 2988/95,
 - e. created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (including creation of another entity with this purpose).
9. The Main Urban Authority and the Project Partners are NOT subject to a conflict of interest in connection with this grant and will notify — without delay — any situation which could give rise to a conflict of interests.
10. The Main Urban Authority and the Project Partners neither in whole nor in part have or will receive any other complementary EU funding (except for the funding indicated in this Application Form) during the whole duration of the project.
11. General information about this project can be used by the European Urban Initiative to liaise with national and regional authorities in charge of implementation of operational programmes funded by the European



Structural and Investment Funds:

Forename,
Surname

(geanonimiseerd)

Date

01/10/2024

Position

Mayor

Place

Heerlen, NL

Authorized
signature of
(Main) Urban
Authority

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.

G Art. 5.1 lid 2 sub b

Het belang van de openbaarmaking van deze informatie weegt niet op tegen het belang van de economische of financiële belangen van de Staat, andere publiekrechtelijke lichamen of bestuursorganen

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