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Review of social innovation undertaken in Focus Area 1

Deliverable D2.1

Consortium   LOBA   Bezalel Academy of Arts and Design Jerusalem   LANDESKRIMINALAMT NIEDERSACHSEN   DPT-i Institut für angewandte Präventionsforschung   GREATER MANCHESTER POLICE   solution Centre DESIGN AGAINST CRIME

Review of social innovation in Focus Area 1 – Security and security behaviour in public places, public transport or mobility

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Table of Abbreviations and Acronyms

Abbreviation	Meaning
E2i	Engage2Innovate
GMP	Greater Manchester Police
LKA	Landeskriminalamt or State Office for Criminal Investigation in the German federal state of Lower Saxony
RRI	Responsible Research and Innovation
SI	Social Innovation
USAL	University of Salford

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1. Introduction

Engage2innovate (E2i) critically examines the prevailing technology-centric view of innovation and advocates for a broader understanding that encompasses social, process, and organisational innovations, among others.

E2i represents a broader movement that seeks to redefine innovation in a way that fully captures the complexity of human and societal needs. We advocate for an approach to innovation that is inclusive of, but not limited to, technological solutions, emphasising the importance of understanding and addressing the root causes of societal challenges. This perspective encourages a more holistic and interdisciplinary approach to innovation, recognising the value of contributions from fields outside of the traditional tech sector. One such field is Social Innovation.

1.1 The role of Social Innovation

Social Innovation is a human-centred approach to developing meaningful solutions rooted in a rich understanding of end-user contexts, such that novel ideas (inventions) are carried into practice — and implemented.

Through effective engagement with security practitioners, researchers, and policymakers across the quadruple helix, E2i champions good practice in Social Innovation and human-centred design. Researchers will demonstrate and deliver the E2i Security R&I Toolbox:

1. Enabling adoption of Social Innovation and human-centred design approaches to engage citizens and end users in security R&I

2. Supporting security R&I actions in framing and designing security solutions and outputs and optimising their acceptance and adoption

3. Providing benchmarks, standards, and quality criteria for security solutions through Responsible Research and Innovation; and thereby

4. Strengthening EU security research and innovation.

To promote the engagement of end-users and citizens, E2i will develop a Societal Development Plan describing the current landscape of Social Innovation. This toolbox will guide how the approach can strengthen EU security research and innovation and include an explanatory conceptual model and practical exemplars to inspire and motivate. Finally, E2i will build

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on the enthusiasm and inspiration of the next generation of researchers and design thinkers through two international Student Design Challenges, showcasing new innovative thinking and solution concepts while fostering the adoption of E2i outputs (E2i Delivery Plan).

1.2 Investigation of Social Innovation in two Focus Areas

Research conducted in WP1 and presented in D1.2 suggests that the term *"Social Innovation"* can be broad and sometimes vague. It is often used as an umbrella concept to describe a wide range of initiatives, projects, and activities aimed at addressing social challenges and creating positive social impact. The vagueness of the term can sometimes make it challenging to identify specific Social Innovation projects or initiatives.

Understanding Social Innovation policy, practice and theory within a specific context can provide deeper understanding and insight into an approach. Work package 2 (WP2) investigates Social Innovation in two Focus Areas:

- Security and security behaviour in public places, public transport or mobility
- Radicalisation, dis-integration in local communities and social media

This report presents findings from Task 2.1.1: *Review social innovation practice in Focus Area 1 – Security and security behaviour in public places, public transport or mobility*. Prior to Task 2.1.1, E2i project partners had to critically address the concept of Social Innovation discussed in *D1.2 State of the art in Social Innovation, RR1 and stakeholder engagement*. Furthermore, significant effort needed to be invested reframing and operationalising the concept for application in Tasks 2.1–2.2.

1.3 Structure of deliverable D2.1

This report is structured as follows:

- It begins with a critical analysis of the concept of Social Innovation, before presenting a clearer definition of the concept and a list of criteria for identifying relevant research and innovation projects
- It goes on to define *Focus Area 1: Security and security behaviour in public places, public transport or mobility*
- The report concludes with an analysis or map of the relevant Social Innovation projects around Focus Area 1 and discussion of the findings.

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2. Criteria for the investigation of Social Innovation in practice

2.1   Critical review of Social Innovation

The review of the wider literature on Social Innovation, Responsible Research and Innovation (RRI) and citizen and end-user engagement revealed significant issues with the term Social Innovation (D1.2). Distinguishing Social Innovation as a *process* within a given project is rather a challenge.

E2i adopts a nuanced and critical perspective on Social Innovation that challenges a number of misconceptions relating to the 'process style' of innovation to be adopted when addressing societal issues. One of these relates to an evident tension in the literature between social innovation as a community-driven versus an expert-driven process — between, one might say, a citizen-led or an expert-led approach. E2i dismisses this as a false dichotomy, emphasising that an effective social innovation approach, if one can be said to exist, is not an either/or scenario but rather a collaborative and inclusive process — that requires knowledge and expertise from multiple levels and perspectives.

> **Interpreting the "Social" in Social Innovation**
>
> The distinction between the target of innovation (societal issues) versus the methodology (how innovation is approached) is an important clarification. "Social" refers to the focus on societal challenges and goals rather than prescribing a specific method. Consequently, Social Innovation can encompass a wide range of innovation approaches — not just community-led or citizen-driven initiatives — and result in new processes, products, services and technologies.

Social Innovation focuses on leveraging innovation for societal betterment, aiming to address complex societal issues through collaborative, inclusive, and interdisciplinary approaches. It is not merely a shift away from expert-driven solutions but an expansion of the innovation ecosystem to

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include diverse perspectives and expertise, including those of the end-users and communities affected by these issues.

The emphasis on process and engagement over the source of innovation aligns with broader discussions in the field of innovation studies. Joseph Schumpeter (1934) underscored the importance of new combinations of existing resources and capabilities to drive economic and societal progress. In the context of Social Innovation, this involves not just new products or technologies but new ways of organising, new strategies, and new solutions to social problems that are created in collaboration with those they will impact.

Skewing Social Innovation towards a purely political or citizen-led initiative, to the exclusion of practitioner (often the end-user) scientific or technological contributions, is a mistake. An effective Social Innovation process must integrate knowledge and insights from all relevant stakeholders, including practitioners, policymakers, scientists, technologists and citizens. This inclusive approach ensures that designed solutions are not only functionally sound and scientifically informed but also socially acceptable, sustainable, and responsive to the actual needs and contexts of the people they aim to serve (for example, from the digital transformation field, see Zhu *et al.*, 2006; and from the urban development field, see Moulaert *et al.*, 2007).

In addressing complex societal challenges, such as those in the security domain, it is crucial to engage end-users and stakeholders throughout the innovation process — from problem definition to prototyping and implementation. This aligns with the principles of human-centred design and participatory approaches to innovation, where the focus is on creating solutions that are not only effective but also adopted and embraced by those they are designed to help.

Framing Social Innovation as a *process* that meaningfully engages a wide range of stakeholders reflects a more sophisticated understanding of innovation as a multifaceted and systemic endeavour. The challenge is not about choosing between expert-led or citizen-led innovation but about creating synergies between diverse forms of knowledge, expertise, and experience to design solutions that are socially robust and widely beneficial.

This perspective encourages a reevaluation of how innovation processes are designed and implemented, advocating for a model of Social Innovation that

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is truly inclusive, interdisciplinary, and collaborative. Such an approach not only enhances the potential for innovative solutions to societal challenges but also strengthens the democratic and participatory dimensions of the innovation process itself.

This tension between engaging citizens and communities and recognising the role of expertise and end-user needs reflects broader debates in public policy and innovation management about the best approaches to address complex societal issues.

2.1.1   End-user engagement

The example of security domain innovations points to a common challenge in Social Innovation efforts — the engagement of *actual* end-users, such as frontline officers and NGO representatives, who are critical to the implementation and success of innovations. Their insights and experiences are invaluable for ensuring that innovations are practical, relevant, feasible and effective in real-world settings. The gap between those designing innovations and those using them can lead to solutions that are out of touch with current needs and practices.

2.1.2   Political interpretations and expectations

The political framing of Social Innovation as primarily a tool for community engagement and empowerment, while valuable in certain contexts, can oversimplify and misrepresent the breadth and complexity of what social innovation aims to achieve. While citizen engagement and empowerment are important aspects of many Social Innovations, they are not the sole or always the primary mechanism through which societal challenges are addressed. This misunderstanding can lead to unrealistic expectations about what Social Innovation can achieve and how it operates.

2.1.3 Navigating diverse perspectives

In collaborative projects, navigating the diverse perspectives and expectations of project partners and stakeholders is challenging — but also an opportunity for enriching the discourse on social innovation. It allows for a more nuanced exploration of how different approaches and methodologies can be integrated and how various actors, including end-users, experts, and citizens, can be engaged and contribute to the innovation process.

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2.2   Defining Social Innovation

It is clear that a precise and comprehensive definition of Social Innovation is needed to navigate the complexities and nuances of applying this concept, especially in areas like security where the distinction between societal benefits (ends) and participatory methodologies (means) becomes blurred. Given the context of the European Commission's Security Research Programme and its expansion to include projects specifically titled "Social Innovation," it's evident that there's a need to articulate a definition that clarifies these aspects.

A proposed definition of social innovation might be:

> **Social Innovation** refers to the development and implementation of new ideas, strategies, and solutions that effectively address societal challenges. It aims to improve human well-being, enhance societal resilience, and create more inclusive, equitable communities. Social innovation encompasses a wide range of activities, including but not limited to, technological advancements, organisational changes, policy reforms, and service delivery models. It is characterised by its goal to meet social needs and achieve social impacts, rather than its reliance on specific processes or methodologies for ideation and execution.

This definition intentionally:

1. **Separates ends from means:** It clarifies that social innovation is defined by its objectives (addressing societal challenges, improving well-being, etc.) rather than the specific methods used to achieve those objectives (community involvement, technology use, etc.).
2. **Emphasises inclusivity and impact:** It underscores the importance of inclusivity and equity as core values of Social Innovation, aiming to create benefits for society at large rather than for commercial gain.

By adopting such a definition, organisations like the European Commission can more clearly communicate the scope and intentions of their funded projects, whether they are focused on security, health, education, or any other societal challenge. This clarity can help to alleviate confusion about the role of community and citizen involvement in the innovation process, highlighting that while participatory methods are valuable and often essential, they are one of many tools in the social innovator's toolkit, not an end in themselves.

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Regarding the European Commission's Security Research Programme and its approach to social innovation, it is crucial for funding bodies and policymakers to articulate the relationship between the thematic focus of projects (e.g., security) and the broader goals of social innovation. This involves ensuring that projects funded under the banner of social innovation genuinely aim to deliver societal benefits and involve appropriate stakeholder engagement strategies that are suited to their specific contexts and objectives.

To address the concern about perpetuating confusion, it would be beneficial for the European Commission and similar organisations to provide clear guidelines and frameworks for what constitutes social innovation within their funding programs. This could include outlining expected outcomes, stakeholder engagement strategies, and criteria for evaluating the societal impact of funded projects. Such guidelines can help ensure that the term "social innovation" is used consistently and meaningfully across different domains and initiatives, reinforcing its role as a mechanism for societal improvement rather than a buzzword or a one-size-fits-all approach.

2.3 Social Innovation project indicators

To aid in identifying, understanding and applying a Social Innovation approach, a list of descriptors / indicators has been created, providing a clear distinction between:

- Project aims or goals
- Project methodology or process elements

Goals like being 'impact-focused' and 'equity-driven' describe what the process aims to achieve, while methodologies like co-creation, participatory design, and systems thinking describe how those goals might be accomplished. Separating these aspects provides increased clarity on both the objectives of Social Innovation and the strategies for achieving those objectives.

A *"social innovation approach"* emphasises processes that are collaborative, inclusive, and aimed at addressing societal needs. From this, we can deduce that indicators for such an approach might include:

The project's aims or goals are:

1. *Innovative:* Seeking out novel methods and solutions

2. *Impact-focused:* Prioritising social and environmental outcomes that, in principle, might be measured

3. *Sustainable:* Considering long-term viability, such as effects on future generations

4. *Equity-driven:* Aiming to reduce disparities and promote fairness

The project's methodology or delivery process involves:

5. *Insight-enabling partnership:* Partnering with relevant stakeholders in the research, design and implementation of solutions

   5.1 *Cross-sector collaboration:* Involving partnerships beyond traditional boundaries to leverage various strengths and perspectives

6. *Participatory:* Ensuring all voices, especially those of affected communities, are heard and valued

   6.1 *Empowerment:* Focusing on strengthening the agency of individuals and communities to take action and make decisions affecting their lives.

7. *Iterative development:* Emphasising the importance of cyclical testing, learning, and refining solutions

8. *Dynamic adaptability:* Emphasising the project's capacity to adapt and evolve in response to new information, changing conditions, and stakeholder feedback throughout its duration

9. *Systems thinking:* Addressing root causes and interconnectedness of social issues.

While not exhaustive, the list captures essential aspects of the Social Innovation process. The eight descriptors fittingly highlight the multifaceted and dynamic nature of Social Innovation project processes, focusing on transformative change in society.

2.4   Defining usable terminology and positive indicators

Social Innovation is normally the label applied to an innovation action providing social or societal benefit — as opposed to only commercial benefit. Consequently, using this definition would allow the potential for all projects undertaken within the EU Security Research Programme to be classed as Social Innovations — security being a societal benefit. In the context of Focus Area 1, improving safety of public space is clearly a societal benefit.

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For the purposes of this E2i review, therefore, a list of practical indicators has been developed based on the generic *Social Innovation project indicators* identified in Section 2.3.

Social Innovation is being defined in terms of attributes of a project's (i) structure; (ii) delivery process; and (iii) practical output. By 'practical output' we would include any output designed for practical use by security practitioners, policymakers, CSOs or citizens. We specifically exclude outputs of solely academic value. To this end, we have **descriptors** (in pink) and **indicators** (in purple) that allow a project to be classified as being a Social Innovation (or not). Such descriptors and indicators include:

Project aims or goals
1. *Innovative:* Seeking out novel methods and solutions
1a **Reference to innovation in project title, summary or objectives** – The project title / summary / objectives may refer to a specific deliverable (e.g. a new practical tool, product, process, system or service)
2. *Impact-focused:* Prioritising social and environmental outcomes that, in principle, might be measured
2a **Stated objective to produce practical output of value to security end-users / citizens / policymakers** – The project includes one or more objectives to produce practical outputs. This might be in the form of a product, service, process, guidelines, technology — or a combination of these outputs.
3. *Sustainable:* Considering long-term viability, such as effects on future generations
* *No descriptor(s) included at this stage. Descriptors will be developed for consideration through survey / interview / focus group research*
4. *Equity-driven:* Aiming to reduce disparities and promote fairness
* *No descriptor(s) included at this stage. Descriptors will be developed for consideration through survey / interview / focus group research*
Project structure and methodology / delivery process
5. *Insight-enabling partnership:* Partnering with relevant stakeholders in the research, design and implementation of solutions

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5a **End-user organisation is consortium partner** – The project consortium includes one or more organisations that can enable project end-user engagement (e.g. an LEA)

5b **Consortium includes capability for social research** – The project consortium includes one or more partners that provide intellectual insight on human behaviours, motivations and structures. These partners adopt social science methods that provide meaningful insight into such behaviours, motivations and structures

5c **Citizen / CSO organisation is consortium partner** – The project consortium includes one or more organisations that can enable project citizen / CSO engagement

5.1 *Cross-sector Collaboration:* Involving partnerships beyond traditional boundaries to leverage various strengths and perspectives

* *No descriptor(s) included at this stage. Descriptors will be developed for consideration through survey / interview / focus group research*

6. *Participatory:* Ensuring all voices, especially those of affected communities, are heard and valued

6a **End-user engagement** – The project engages end-users of any proposed solutions or those operating in the problem domain (i.e. those *"on the ground"*, delivering services — not merely managers / directors). In the strongest case, the purpose of such engagement will be to better define problems and identify design requirements and constraints for proposed project outputs (solutions). Ideally, such engagement should include practical prototyping of outputs / solution options.

6b **Citizen engagement** – The project engages citizens and/or relevant community representatives (e.g. CSOs) in the definition and development of project outputs. This is particularly necessary when citizens are the primary users or recipients of project outputs.

6.1. *Empowerment:* Focusing on strengthening the agency of individuals and communities to take action and make decisions affecting their lives.

* *No descriptor(s) included at this stage. Descriptors will be developed for consideration through survey / interview / focus group research*

7. *Iterative Development:* Emphasising the importance of cyclical testing, learning, and refining solutions

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7a Prototyping of practical outputs – The project methodology includes mention of prototype testing of outputs / solutions with end-users, stakeholders and/or citizens.

7b Demonstration of practical outputs – The project methodology includes mention of demonstration of outputs / solutions with end-users, stakeholders and/or citizens.

8. *Dynamic adaptability:* Emphasising the project's capacity to adapt and evolve in response to new information, changing conditions, and stakeholder feedback throughout its duration

8a Enabling feedback integration – The project has formal mechanisms in place to collect and integrate feedback from stakeholders throughout the project lifecycle.

Example: Regular review meetings with stakeholders to discuss project progress and make adjustments as necessary. (e.g. holding bi-annual stakeholder forums to discuss project progress and potential pivots).

8b Scalability and modularity of solutions – The project outputs are designed to be scalable and modular, allowing for adaptation to different scales or contexts without extensive redesign.

Example: Use of modular design principles in technology development or scalable service frameworks that can be expanded or reduced.

8c Building stakeholder adaptive capacity – Training and resources are provided to empower stakeholders to adapt practices based on project findings and external changes.

Example: Workshops or online resources to help local implementers adjust tactics based on new evidence or conditions.

9. *Systems thinking:* Addressing root causes and interconnectedness of social issues

*   *No descriptor(s) included at this stage. Descriptors will be developed for consideration through survey / interview / focus group research*

2.4.1 Negative indicators

In addition, to the positive indicators of Social Innovation, there may be indicators that suggest that a project should not be considered a Social Innovation in relation to its project methodology or delivery process—so called 'negative indicators'. For example:

Negative indicators

1. **Project objectives predefine solution** (precluding end-user definition) – The project objectives overly define the solution — potentially precluding engaging of end-users in problem definition

2. **Project objectives identify solutions that are problematic from an ELSA perspective** – The project objectives define solutions that raise issues from an ELSA perspective — without clearly identifying how these will be addressed.

2.5   Reviewing EU-funded project to support indicator development

The review of security research projects conducted in 2012 by the European Commission classified thirty projects from around 170 as being about "security and society" — see link.

A number of these were related to E2i Focus Area 1: *Security and security behaviour in public places, public transport, or mobility*. The projects were used to help develop and test positive criteria / descriptors, as illustrated below:

Project name: **BESECU**		Human behaviour in crisis situations: *a cross cultural investigation in order to tailor security-related communication* [COMPLETED]	
Descriptor / Indicator		Score	Notes
1.	**Innovative**		
1a	**Reference to innovation in project title, abstract or objectives**	YES	• Developed validated instruments (BeSeCu-S) to assess human behaviour in security-relevant crisis situations across cultures of survivors of disasters
2.	**Impact-focused**		
2a	**Stated objective to produce practical output of value to security end-users / citizens / policymakers**	YES	• Objective to develop a better understanding of cultural responses to help define better emergency communication and evaluation procedures in crisis situations
3.	**Sustainable**		
4.	**Equity-driven**		
5.	**Insight-enabling partnership**		

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5a	End-user organisation is consortium partner	YES	•	Partner – Hamburg Fire and Emergency Service Academy (Germany)
			•	Partner – Association of Emergency Ambulance Physicians (Turkey)
5b	Consortium includes capability for social research	YES	•	Prague Psychiatric Centre University of Prague was a project partner
			•	Man-Technology-Organisation (MTO)-psychology was a project partner
			•	Engagement with fire-fighters included extracting original data from 300 fire-fighters — providing insight into non-verbal and verbal behaviour
5c	Citizen / CSO organisation is consortium partner	*UNCLEAR*	•	May include CSO partner organisations (Association of Emergency Medical Services – EMS), but probably not representing citizens
5.1	***Cross-sector Collaboration***			
6.	***Participatory***			
6a	End-user engagement	YES	•	Engagement with fire-fighters included extracting original data from 300 fire-fighters
6b	Citizen engagement	*UNCLEAR*	•	Unclear — although project did work with "survivors" of crisis situations
7.	***Iterative development***			
7a	Prototyping of practical outputs	YES	•	Simulation of real-time evacuation scenarios
7b	Demonstration of practical outputs	*UNCLEAR*		
8.	***Dynamic adaptability***			
8a	Enabling feedback integration	*UNCLEAR*		
8b	Scalability and modularity of solutions	*UNCLEAR*		
8c	Building stakeholder adaptive capacity	*UNCLEAR*		
8.	***Systems thinking***			
	Relevance to E2i	YES	•	Relevant to addressing emergencies in public space — but completed in 2012.

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		• Coordinator Ernst-Moritz-Arndt-Universitat Greifswald — potential interviewee

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3. Defining Focus Area 1

This research is about Focus Area 1: *"Security and security behaviour in public places, public transport, or mobility."* This was one of the areas listed in the 2022 Horizon Europe funding call on security research and innovation. The Focus Area was selected due to its relevance to E2i law enforcement agency (LEAs) partners — Greater Manchester Police (GMP) in the UK and Landeskriminalamt (LKA) in the German federal state of Lower Saxony.

3.1 Areas within the Focus Area 1 domain

Focus Area 1 examines research and innovation projects to address security challenges and behaviours within public spaces, including urban environments, transportation systems, and mobility services. It encompasses a broad range of issues related to ensuring safety and security for individuals, communities, and infrastructure in public settings, including:

- *Security Threats* – Identification and analysis of security threats and risks in public places and transportation systems, including crime, terrorism, vandalism, and antisocial behaviour

- *Security Measures* – Evaluation of security measures, strategies, and technologies deployed to mitigate risks and enhance safety in public spaces, such as surveillance systems, access control, and emergency response protocols

- *Human Behaviour* – Understanding human behaviour patterns, attitudes, and perceptions related to security in public settings, including factors influencing compliance with security measures and responses to crowded environments and security incidents

- *Urban Design* – Examination of the role of urban design, architecture, spatial planning and urban management in promoting security and crime prevention in public spaces, including strategies for creating safer environments and reducing opportunities for criminal activity.

- *Public Transport* – Analysis of security challenges and solutions specific to public transportation systems, including buses, trains, subways, and stations, with a focus on passenger safety, crime prevention, and emergency preparedness

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- *Mobility Services* – Exploration of security implications and considerations associated with emerging mobility services, such as ride-sharing, bike-sharing, and autonomous vehicles, including privacy concerns, cybersecurity risks, and infrastructure resilience.

> **What does "Mobility" mean?**
>
> In the context of urban planning, transportation, and infrastructure, *"mobility"* refers to the ability of individuals and goods to move efficiently and conveniently within and between different locations. Mobility encompasses various modes of transportation, including walking, cycling, public transit, private vehicles, and emerging mobility services (such as eScooters). Mobility emphasises the importance of ensuring the safety and security of travellers, pedestrians, cyclists, and motorists, as well as other key aspects:
>
> - *Accessibility* – ensuring that people have access to essential destinations
> - *Equity* – considers the needs of diverse population groups, including individuals with disabilities, seniors, low-income communities, and marginalised populations.
> - *Efficiency* – optimising the movement of people and goods by minimising travel times and reducing congestion.
> - *Connectivity* – creating seamless connections between different modes of transportation and facilitating smooth transitions between modes
> - *Sustainability* – promoting environmentally friendly modes of transportation.
>
> Mobility emphasises the importance of ensuring the safety and security of travellers, pedestrians, cyclists, and motorists.

3.2   Literature on designing and managing secure public spaces

The state of the art review of research and innovation in the field of urban security over the last 30 years in Europe conducted as part of the IcARUS project reveals significant progress with regard to the design and management of safe public spaces. The results are published in IcARUS deliverable D2.1 *Report Describing the State of the Art and Cross Analysis of*

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the Focus Areas / The Changing Face of Urban Security Research[1] authored
by Professor Adam Crawford, Susan Donkin and Christine Weirich (University
of Leeds, 2022). The University of Salford, as members of the IcARUS
consortium, and the authors of *this* report reviewed IcARUS D2.1, and
relevant elements are included in the below E2i review.

3.2.1 Public space as a 'social good'

Unlike E2i Focus Area 2, which is problem-oriented, this Focus Area adopts a
place-based and spatial perspective — within which a host of different social
problems may occur (Crawford *et al,* p. 99). Crime and insecurities tend to be
concentrated in particular locations at specific times. This is in part due to the
fact that locations may attract and/or actively generate offending
behaviour—becoming high-crime 'hot spots'. Other spaces may be fear
inducing but suffer little actual crime. Furthermore, there are clear societal
benefits associated with efforts to tackle crime and insecurity in public space
that can be considered, as Crawford *et al* (2022) point out:

> *"Urban public spaces are important for cities as they represent places
> in which people come together, encounter differences and experience
> often fleeting social interactions (Barker, 2017). They are also the places
> where people experience and make sense of urban security. The quality
> of public spaces is central to their vitality and people's use of them, as
> they represent key attractions for visitors, residents and other users of
> all ages and backgrounds. The importance of urban public spaces, not
> only for the prosperity of cities but also for both the health and
> wellbeing of individuals, groups and communities has been reinforced
> by the Covid-19 pandemic."*

Crawford *et al* (2022) p.99.

3.2.2 Timeline – key developments in designing and managing public space

The design and management of public space to reduce crime and improve
safety has a long history. In terms of its more recent history, the last 30 years
has seen significant progress with regard to the design and management of
safe public spaces.

- *Shift towards a wider community focused approach:*

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[1] D2.1 The Changing Face of Urban Security Research is available on the IcARUS website..

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"For many decades, crime prevention fell solely under the responsibility of the police and resulted in police-specific responses, such as 'hot-spot' policing. In the later part of the twentieth Century, there was a shift from a purely police-focused approach to crime prevention to a wider community focused approach."

(Crawford *et al*, 2022, p. 100)

- CPTED and Situational Crime Crime Prevention approaches:

  "By the 1990s, this trend had gained traction and approaches such as Crime Prevention through Environmental Design (CPTED) and Situational Crime Prevention became popular frameworks for municipalities and governments across the world."

(Crawford et al, 2022, p. 100)

- *Framing the problem as being about "feelings of insecurity"* – Feelings of insecurity and unsafety, and the negative issues associated with these, became significant issues during the latter half of the 20th century, impacting those responsible for the design, management, planning, governance and policing of public spaces. Research shows that so-called, "fear of crime" is a common cause of insecurity in public spaces. Instances of harassment, intimidation, or aggressive behaviour by other individuals can make people feel insecure in public spaces. This can include verbal harassment, catcalling, or aggressive panhandling. Even if crime rates are low, perceptions of crime can still affect how safe people feel when they are out in public. Concern and worry may be associated with public spaces that are poorly lit, poorly maintained, or lack surveillance. Public spaces that appear disorderly, with litter, graffiti, or other signs of neglect, can lead to perceptions of insecurity. Some public spaces may not be inclusive or welcoming to all members of society, and can contribute to feelings of insecurity—such are LGBTQ+ individuals, racial or ethnic minorities, or people with disabilities. In communities where there's a lack of social cohesion or trust among residents, feelings of insecurity in public spaces may be more pronounced. When people don't feel connected to their neighbours or community, they may be more wary of public interactions.

- *Shifts in how public spaces are secured and how risks and threats to public safety are conceived post 9/11* — The design and management of

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public spaces changed significantly in the two decades since the start of the new millennium — primarily due to the 9/11 attacks in the US and attacks across European cities:

> *"European cities face significant challenges including terrorism and organised crime, but also incivilities, petty crime and most recently, public health risks, which all affect citizens' feeling of safety. These challenges undermine the vibrancy and security of urban public spaces and threaten the well-being of European urban populations"*
>
> (Crawford et al, 2022, p. 100)

3.2.3 Ethical, legal and social aspects (ELSA)

Societal benefits associated with public space raise questions about how best to plan, design, manage and regulate urban spaces in the public interest. This means: *"striking a balance between managing public spaces as secure but also open to accommodate diverse use — including for example political protest and public expression — is a major task confronting municipal authorities"* (ibid; p. 99).

The shift experienced Post 9/11 has generated issues for citizens — often revealed in relation to the public domain:

> *"In the context of increased hyper-diversity, fears of immigration, growing economic and social polarisation, questions about how to ensure safety and simultaneously render public spaces welcoming to diverse users has become a major preoccupation of municipal authorities"*
>
> (Crawford et al, 2022, p. 100)

Increasingly, it is recognised that public spaces are:

> *"...contested places where different and competing interests coexist and where security is but one imperative that sometimes collides with other public goods or private pursuits. The challenge is how public spaces, as places that accommodate and welcome a diversity of use, can remain liberating yet safe, welcoming and lightly regulated. Public spaces, after all, are crucial arenas in which encounters with difference are hosted and loosely connected strangers meet in mutual recognition within the cosmopolitan city"*
>
> (Crawford et al, 2022, p. 100).

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The challenge for local authorities is how to address and manage this issue.

3.2.4   Underpinning theories and related concepts

E2i is researching social innovation approaches to Focus Area 1. The review conducted by Crawford et al (2022) identifies the main approaches to the design and management of public space, including social community approaches. While a wide range of social and community initiatives and projects have been used to improve the design, planning and management of public spaces, the majority of measures have no explicit crime prevention or security rationale. Crawford *et al.* (2022) *"did not encounter any social or community measure specifically targeting safety in public spaces"* (p. 101). Approaches with a clear security rationale include:

- *Opportunity Reducing Measures* – The majority of the crime prevention literature relating to public spaces falls within the category of opportunity reduction measures (Crawford *et al.,* 2022). Crime Prevention Through Environmental Design (CPTED) was originally developed by Jeffery in the 1970s and combined with elements from the work of Jane Jacobs (1961) and Oscar Newman (1972) (Davey and Wootton 2016). The current CPTED framework comprises five elements, incorporating: physical security, surveillance, movement control, management and maintenance and defensible space. The use of CPTED became widespread by the mid-2000s, being used in numerous counties, and endorsed by the European Union through its European Committee for Standardisation, which sought to provide a standardised handbook for EU members of CPTED (Davey and Wootton, 2016).

- *Situational Crime Prevention* (Theunissen *et al.,* 2014) – originally developed by Ronald Clarke in the 1980s while Head of the British Home Office Research and Planning Unit, became increasingly influential. The approach seeks to identify the proximate situational properties or attributes that allow crime to occur. It posits measures directed at highly specific forms of crime that involve the management, design or manipulation of the immediate environment so as to reduce the opportunities for these crimes to occur (Clarke, 2009). The current model of 25 techniques organised under five categories of: increasing the effort, increasing the risk, reducing the reward, reducing provocation and removing excuses is widely used by law enforcement (Clarke, 2009; Freilich and Newman, 2017).

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- Insights from *'routine activity theory'* (Cohen and Felson, 1979) highlight:

  > *"...Temporal and spatial conjunction of a suitable target, a likely offender and the absence of capable guardians — came to influence the growing focus on the spatial attributes, architectural features and geographical distribution of crime, all with significant implications for the design and management of public spaces"*

  (Cohen and Felson, 1979, p. 102).

3.2.5   Types of interventions

According to Crawford *et al.,* 2022, p. 102, interventions most commonly used to improve the design and management of public space includes: (1) physical changes to the environment; (2) surveillance or monitoring strategies; and (3) managerial and design strategies.

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4. Researching Focus Area 1

4.1 Review of Social Innovation practice in Focus Area 1 – Security and security behaviour in public places, public transport or mobility

The objective of Task 2.1.1 was:

- To review social innovation practice in Focus Area 1: Security and security behaviour in public places, public transport or mobility

Desk research was undertaken to source and review examples of social innovation practice within E2i Focus Area 1 — i.e. research and innovation projects. The research is presented in this deliverable (D2.1), and the results will be used to identify criteria for selection of an exemplar Social Innovation to be investigated in more depth in subtask 2.1.2.

Led by the University of Salford (USAL), and supported by LKA, DPT, and BEZ, Task 2.1.2 identified research and innovation projects on Focus Area 1 from:

- A review of the CORDIS database of EU-funded projects
- A review of national funding programmes
    - Germany
    - Israel
    - UK

Having identified security research and innovation projects relevant to E2i Focus Area 1, these will be explored in more detail and mapped against the indicators and descriptors for Social Innovation outlined in **section 2.3**.

4.2 Review of Social Innovation practice – CORDIS database

CORDIS includes a database of: Horizon Europe projects; Horizon2020; Framework 7; and all projects. All projects go back — in theory — to Framework 1 can be found here.

4.2.1 SEARCH 1 — Whole dataset

Searching archived CORDIS material

When searching CORDIS, remember to tick the box to *"include archived material"* — this refers to projects older than 5 years. According to CORDIS:

> *The CORDIS archive system stores and preserves events older than 5 years and content related to programmes that have been closed for more than 10 years. Editorial and research considerations can delay the archiving, which is a work in progress. Programmes listed in the "Programme" search filter are not (yet) archived.*

- In "Content Collection" filter, select "Projects" (147,451 results / projects)
- The "Domain of application" filter does not work (see box)

> **Issues with the CORDIS database**
> - *Domain of Application filter* – When set to "Security", the results suggest only 611 projects have ever received EU funding! It seems only a small, random selection of projects are flagged as being the Security *"Domain of Application"*

- Because the *"Domain of Application"* filter does not function as expected (i.e. it does not accurately identify security projects when "Security" is selected) it was decided to include all projects within the security research programmes contained within the respective Framework programmes. Under the *"programme"* filter, select:
  - Horizon Europe – *"Civil Security for Society"* (within *"Global Challenges and European Industrial Competitiveness"*)
  - Horizon 2020 – "*Secure societies – Protecting freedom and security of Europe and its citizens"* (within *"Societal Challenges"*)
  - Framework 7 – *"FP7 – Security"*
- Using the CORDIS "Programme" search filter with the above the parameters resulted (April 2024) in the following:
  - Horizon Europe: **218 projects** within *"Civil Security for Society"*
  - Horizon 2020: **438 projects** within "*Secure societies – Protecting freedom and security of Europe and its citizens"*
  - Framework 7: **321 projects** within "FP7 – Security"

This provides a total dataset for E2i of **977 projects**

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- Using the CORDIS "R&I" search filter resulted in **977 projects,** as this filter did not operate correctly**.**
- To check the relevance of the above results were checked again the following text search query (including the boolean search operator OR):
  - security OR crime OR terrorism OR "disaster resilience" OR "border management" OR "critical infrastructure" OR cybersecurity OR cybercrime OR police OR policing OR "law enforcement" NOT "food security" NOT "energy security" NOT "social security".

> **Emergence of a 'security research programme'**
> - The Seventh Framework Programme ran from 2007 to 2013, and included the programme "FP7 – Security" (see [here](#))
> - Within Framework 6, security projects were delivered within the programme *"Information Society Technologies" (IST)*. However, as its title suggests, the IST programme included a wide range of projects and did not focus on security. Using the IST programme as a search criteria for security projects is therefore problematic.

- In the toolbar, select "save search" and download the database.

4.2.2 SEARCH 1 — Subsets of main dataset

The whole dataset of security research projects should be searched to reveal projects related to Focus Area 1: *Security and security behaviour in public places, public transport or mobility*. The main dataset comprises projects on security — so there is no need to use "security" and "security behaviour" as search terms. The list of search terms is as follows:

Public places
- "public places" OR "public spaces" **(28 projects)**

Public transport
- "public transport" OR "public transit" OR "railway" OR "buses" or "tram" **(44 projects)**

Mobility
- "cycling" OR "private vehicles" OR "eScooters" OR "cyclists" OR "motorists" OR "passengers" **(125 projects)**

4.2.3 SEARCH 1 — Reviewing the subsets of main dataset

The projects on CORDIS were reviewed to focus on "Horizon Innovation Action" and "Main Programme" "Civil Security for Society", as well as exclude others such as CSA.

Issues with the CORDIS database

- *Project funding programme* – When reviewing the CORDIS "project summary", it seems that multiple funding programmes are listed under "programme". Indeed, 5–6 programmes are sometimes listed. It should be noted that research projects are funded under a specific programme—and therefore only one funding programme should be identified. By listing multiple programmes, it is difficult for CORDIS database users to sort out projects funded under the security research programme.

4.3 Results of search 1

The review of the CORDIS database conducted by USAL on 13 May 2024 found that many projects were not relevant, in that:

- The projects did not address security, rather other topics such as: climate change and sustainability: infrastructure; or general border management
- They were not R&I projects consortium projects, but networks focused on organising events
- They were not consortium projects, rather small development projects led by a single SME).

The number of projects that were reviewed against the Social Innovation criteria were as follows:

- From the transport sub-dataset (n=44) **11 R&I security R&I projects on public transport** remained
- From the public space sub-dataset (n=28), **10 R&I security projects on public space**
- From the mobility sub-dataset (n=28), **12 R&I security projects on mobility** remained.

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4.4 Interesting projects on Focus Area 1

The review of the CORDIS database identified five interesting projects to follow up with interviews, focus groups as part of WP1 or a case study as part of WP2:

- SAFECITIES – https://safe-cities.eu/project/
- CREST project includes Victim Support Europe – a non-profit organisation representing victims of crime across Europe, https://project-crest.eu/
- FLYSEC – https://www.fly-sec.eu/
- BODEGA project – human factors and engagement activities – https://bodega-project.eu
- CCI – Practice-based innovation in preventing, investigating & mitigating high-impact crime, https://www.cuttingcrimeimpact.eu/

Where enough information was available, the above projects were also mapped against the Social Innovation criteria (see **tables 1–3**. below).

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Table 1. *Social Innovation – CORDIS "public transport" OR "public transit" OR "railway" OR "buses" or "tram"*

Project short name	1. Innovative	2. Impact-focused	5. Insight-enabling partnership			6. Participatory		7. Iterative development		8. Dynamic adaptability		
	1a Reference to innovation in project title, abstract or objectives	**2a** Stated objective to produce practical output of value to security end-users / citizens / policymakers	**5a** End-user organisation is consortium partner	**5b** Consortium includes capability for social research	**5c** Citizen / CSO organisation is consortium partner	**6a** End-user engagement	**6b** Citizen engagement	**7a** Prototyping of practical outputs	**7b** Demonstration of practical outputs	**8a** Enabling feedback integration	**8b** Scalability & modularity of solutions	**8c** Building stakeholder adaptive capacity
BESECU	YES	YES	YES	YES	UNCLEAR	YES	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
IMPACT	YES	YES	UNCLEAR	YES	NO	YES	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
SECUR-ED	NO	YES	YES	YES	UNCLEAR	YES	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
GRAFFOLUTION	YES	YES	YES	YES	NO	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR	NO	UNCLEAR
IMPETUS	NO	YES	YES	YES	NO	YES	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
DOGANA	NO	YES	UNCLEAR	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
PREVENT	YES	YES	YES	UNCLEAR	NO	YES	NO	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
SECRET	NO	YES	YES	YES	NO	UNCLEAR	NO	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR
SAFETY4RAILS	NO	YES	YES	YES	NO	UNCLEAR	NO	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
IMPETUS	NO	YES	YES	YES	NO	UNCLEAR	NO	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR
ISTIMES	NO	YES	YES	YES	NO	NO	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR

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Table 2. Social Innovation – CORDIS "public places" OR "public spaces"

Project short name	1. Innovative	2. Impact-focused	5. Insight-enabling partnership			6. Participatory		7. Iterative development		8. Dynamic adaptability		
	1a Reference to innovation in project title, abstract or objectives	**2a** Stated objective to produce practical output of value to security end-users / citizens / policymakers	**5a** End-user organisation is consortium partner	**5b** Consortium includes capability for social research	**5c** Citizen / CSO organisation is consortium partner	**6a** End-user engagement	**6b** Citizen engagement	**7a** Prototyping of practical outputs	**7b** Demonstration of practical outputs	**8a** Enabling feedback integration	**8b** Scalability & modularity of solutions	**8c** Building stakeholder adaptive capacity
S4AllCities	YES	UNCLEAR	YES	YES	NO	UNCLEAR	NO	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
SAFE-CITIES**	NO	YES	YES	YES	NO	YES	YES	YES	YES	UNCLEAR	UNCLEAR	YES
APPRAISE	NO	YES	YES	YES	YES	YES	UNCLEAR	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
IMPETUS*	NO	YES	YES	YES	NO	YES	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR
CO-SECUR	YES	YES	YES	YES	NO	UNCLEAR	NO	NO	NO	UNCLEAR	UNCLEAR	UNCLEAR
eVACUATE	NO	YES	YES	YES	NO	UNCLEAR	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
Gatherings	NO	YES	YES	YES	NO	NO	NO	NO	NO	UNCLEAR	UNCLEAR	UNCLEAR
AIDA	YES	YES	YES	YES	NO	NO	NO	UNCLEAR	NO	UNCLEAR	UNCLEAR	UNCLEAR
CREST*	YES	YES	YES	YES	YES	UNCLEAR	NO	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
SAWSOC	NO	YES	UNCLEAR	YES	NO	UNCLEAR	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
BESECURE	NO	YES	NO	YES	YES	YES	YES	UNCLEAR	YES	NO	UNCLEAR	UNCLEAR
CCI	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	UNCLEAR	YES
IcARUS	YES	YES	YES	YES	YES	YES	YES	YES	YES	UNCLEAR	UNCLEAR	YES
DESURBS	YES	YES	NO	YES	NO	YES	UNCLEAR	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR

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Table 3. *Social Innovation – CORDIS "cycling" OR "private vehicles" OR "eScooters" OR "cyclists" OR "motorists" OR "passengers"*

Project short name	1. Innovative	2. Impact-focused	5. Insight-enabling partnership			6. Participatory		7. Iterative development		8. Dynamic adaptability		
	1a Reference to innovation in project title, abstract or objectives	**2a** Stated objective to produce practical output of value to security end-users / citizens / policymakers	**5a** End-user organisation is consortium partner	**5b** Consortium includes capability for social research	**5c** Citizen / CSO organisation is consortium partner	**6a** End-user engagement	**6b** Citizen engagement	**7a** Prototyping of practical outputs	**7b** Demonstration of practical outputs	**8a** Enabling feedback integration	**8b** Scalability & modularity of solutions	**8c** Building stakeholder adaptive capacity
FLYSEC*	YES	YES	YES	YES	NO	YES	NO	YES	YES	UNCLEAR	YES	YES
TRESPASS	YES	YES	YES	YES	NO	UNCLEAR	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
CITYSCAPE	YES	YES	YES	YES	YES	UNCLEAR	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
XP-DITE*	YES	YES	YES	YES	NO	YES	UNCLEAR	YES	YES	UNCLEAR	UNCLEAR	UNCLEAR
FLEXI-cross	YES	YES	YES	UNCLEAR	NO	YES	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
PROTECTRAIL	YES	YES	YES	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
SATIE	YES	YES	YES	YES	NO	UNCLEAR	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
TASS	UNCLEAR	YES	YES	YES	NO	UNCLEAR	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
SAFERtec	YES	YES	YES	YES	NO	NO	NO	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR
BAG-INTEL	YES	YES	YES	YES	NO	NO	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
TENACITy	YES	YES	YES	YES	NO	YES	NO	UNCLEAR	YES	UNCLEAR	UNCLEAR	UNCLEAR
BODEGA*	YES	YES	YES	YES	NO	YES	NO	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR	UNCLEAR

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5. Mapping

5.1   Mapping projects

Various efforts have been made to classify and map projects funded by specific funding programmes against specific themes, to make their results more accessible.

In July, 2012 a report was published on security research projects under the 7th Framework Programme *"EU Research for a Secure Society"*[2] (European Union, 2012). This publication provides an overview of projects undertaken and their relevant contact details. Projects are categorised under the following themes: (i) security of citizens; (ii) security of infrastructure and utilities; (iii) intelligent surveillance and border security; (iv) restoring security and safety in case of crisis; (v) security systems integration, interconnectivity and interoperability; (vi) security and society; and (vii) security research coordination and structuring.

Projects relevant to E2i Focus Area 1 that were not identified from the searches of the CORDIS database include:

- CPSI – this project developed a methodology to measure citizens' perceptions of security
- PACT – this project developed a methodology to assess citizens' perceptions of surveillance technologies

Non-research and innovation (R&I) security projects of relevance to E2i in general include:

- ARCHIMEDES – Development of an innovative management methodology to provide end-users with tools, procedures and best practice on how to efficiently benefit from R&T results
- European Security Challenge (ESC) – One year project to scope how a design prize competition might work in Europe, involving Global Security Challenge, 3D Communications and Institute Jozef Stefan
- INNOSEC – Innovation management models for security
- INSEC – increase innovation and research within security organisations.

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[2] See here.

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In 2016, a report was published: *"A Community of Users on Secure, Safe and Resilient Societies (CoU)*, see [here](#):

Projects relevant to Focus Area 1 that were not identified from the searches of the CORDIS database include:

- BESECURE – developed tools to alert policy makers to problems in urban regions
- DESURBS – Designing safer urban spaces (included BEZ as a partner).

Analysis of these projects was added to **table 1**.

6. Conclusion and discussion

This report provides a critical analysis of the concept of Social Innovation, before presenting an improved, operationalised definition of the concept and a list of criteria for identifying relevant research and innovation projects. These criteria were used to analyse and map relevant projects around Focus Area 1: *Security and security behaviour in public places, public transport or mobility.*

The R&I security research projects on Focus Area 1 were identified from the European Commission's CORDIS database.

6.1   Reviewing Social Innovation practice in Focus Area 1

Reviewing security R&I projects undertaken on the theme of Focus Area 1 highlighted a number of limitations in the data required to achieve this — most notably, the scarcity of information available on completed projects and the take up (or not) of their practical outputs.

Due to the brevity of the project descriptions on the European Commission's CORDIS database, certain aspects of the analysis remain unexplored due to lack of data. The assessment was made based on the available information in the CORDIS database (for example, project summary, project objectives, factsheets). Consequently, some aspects of innovation practice were not able to be fully investigated, and mapping projects against different indicators proved challenging.

Given these constraints, projects were categorised as *"Yes"* when sufficient information was available to confirm this, while others were labelled as *"Unclear"* when there was insufficient data available to make an assessment, but a *"Yes"* appeared a possibility. USAL researchers categorised indicators for a project as *"No"* if no information was available, rather than giving projects *"the benefit of the doubt"*. This contrasted with the approach adopted by LKA researchers when reviewing research and innovation projects on Focus Area 2.[3]

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[3] LKA researchers preferred to categorise projects as *"Unclear"* rather than *"No"* — giving projects the benefit of the doubt when they did not have all the information available to make a definitive *"Yes"* judgement.

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6.2   Labelling security as 'research and innovation'

While some national and European funding programmes enable 'basic research' (sometimes called fundamental research) to be conducted, the European Commission's security research programme supports 'applied research', which it categorises as 'Research and Innovation'.

Basic research focuses on improving the understanding of a particular phenomenon, study or law of nature. This type of research examines data to find the unknown and fulfil a sense of curiosity.

In contrast, applied research is a type of examination looking to find practical solutions for existing problems. Findings are expected to be applicable to the problem context and, ideally, to be implemented upon completion of the project. Applied research includes:

(i) Research and development projects focussed on creating new products or services to meet a defined need

(ii) Action research to help organisations find practical solutions to problems by guiding them

(iii) Evaluation research to help clients make an informed decision.

Labelling EU-funded security projects *"research and innovation"* sets an expectation that such projects will not only generate new knowledge but also lead to practical applications and changes in practice. Indeed, a number of implications flow from including "Innovation" in the designation of a project:

- **That project outputs will be implemented** – The term "innovation" implies a transition from novel idea (invention) to practical application, suggesting such projects will result in solutions, methods, technologies or practices that can be directly applied or commercialised. This goes beyond the basic advancement of knowledge that is the foundation of 'basic research', to include the adaptation and implementation of research outcomes in real-world settings

- **That an appropriate project delivery process will be followed** – By including *"innovation"* in the project designation, there is an inherent requirement that its delivery is structured so as to facilitate not just the creation of new knowledge but also the take up and practical application of project outputs (solutions). According to the New Product

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Development (NPD) and human-centred design literature, such an delivery structure should include:

- **End-user engagement** – Effective, meaningful engagement with potential end-users from the outset to ensure that the project outcomes meet practical needs

- **Requirements capture** – Conducting thorough research to capture and understand the requirements and constraints of the end-users to ensure that the project is addressing the right problems

- **Problem framing and definition** – Carefully defining and framing the problem to be solved, ensuring that the project is targeted and its objectives are clear and achievable

- **Resource allocation** – Projects labelled as *"innovation"* must allocate sufficient resources not only for the research component but also for activities that facilitate implementation — such as prototyping, pilot testing, market analysis, and scalability assessments. This holistic approach ensures that the project can move smoothly from concept to practical use

- **Accountability and metrics** – There is also an increased need for clear metrics and accountability mechanisms to assess the impact of these projects and their success in achieving innovation goals. These metrics should evaluate not only the scientific and technical outcomes but also the extent to which project outputs are adopted and used by their target end-users or industries. Research undertaken by RAND has highlighted the current lack of such metrics:

  > *"...Assessment of the available data for H2020 and FP7 projects indicated that there is currently no centralised data source on monitoring the market uptake for security-specific project outcomes."*
  >
  > RAND Corporation (2022) Final Report, p.10.

As also found by the LKA researchers on reviewing Focus Area 2, an important aspect often missing from the brief project descriptions on public databases is any detail regarding precisely *how* innovation was conceptualised or was intended to be delivered within a project.

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6.3 Labelling security projects as 'Social Innovation'

On reviewing the CORDIS database, it was found that 47 projects use the term – "Social Innovation", and three further projects were found with a separate search for the term "social innovations". The majority (40 projects) were from Horizon Europe, only 4 from Horizon 2020.

The term *"Social Innovation"* was identified in projects on the CORDIS database that were:

- Submitted under a funding call on "Social Innovation" (e.g. CO-SECUR)
- Inspired by more human-centred, collaborative or inclusive approaches, such as 'design thinking' (e.g. IcARUS).

It was not always simple to discern whether the output of a project — be it a technology or some other form — was of social benefit and therefore technically a Social Innovation. The CORDIS database provides only a brief summary of projects — and may not have been updated as a project progresses. Unfortunately, limited information is available about projects' practical outputs, their implementation and impact. In addition, project websites are rarely kept up to date — or may not even be available after the project has been completed.

6.4 Key descriptors of innovation in security research

E2i has developed descriptors and indicators that allow a project to be classified as being (or not being) Social Innovation — that is, adopting a delivery process that includes aspects that can be identified as inherent to Social Innovation.

6.4.1 Descriptor 1 – Innovative

Descriptor 1 is *"Innovative – Seeking out novel methods and solutions."*

E2i has opted for a simple method of identifying whether security R&I projects are innovative. The reviewer simply investigates whether there is any reference to innovation in the project title, summary or objectives. The reviewer also looks at whether any reference to innovation is made in the project title, summary or objectives to a specific deliverable (e.g. a *new* tool, process or other output). A surprisingly large proportion of security R&I projects in Focus Area 1 do not include the term "innovation" in either their project title, summary or objectives — nor do they clearly refer to producing a *"new"* or *"novel"* tool, process or other practical output.

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6.4.2 Descriptor 2 – Impact-focused

Descriptor 2 is "Impact-focused", in that the project prioritises social and environmental outcomes that, in principle, would be measurable.

When the USAL researchers investigated the information on CORDIS in relation to indicator 2a — *"Stated objective to produce practical output of value to security end-users / citizens / policymakers"* — it was often difficult to determine whether it was intended that a project would result in practical outputs. Where reference is made to one or more practical output, it is not clear what form such outputs might take (i.e. whether outputs might be a product, service, process, guidelines, technology — or a combination of these).

Worryingly, information on the practical outputs of a project (their form, target audience and/or practical application) is not information routinely included in CORDIS, even for completed projects. This lack of clarity is compounded by the overuse — and also misuse — within the security research programme of particular ill-defined terms, including "platform", "database", and "tool".

6.5   Key descriptors of end-user engagement in security research

As EU-funded security R&I projects move beyond basic research, the authors suggest that, in process terms, they are more akin to *design* — in that they aim to achieve practical implementation and real-world impact. Consequently, the activity of *"problem framing"* becomes a critical one. As Russel Lincoln Ackoff asserted some fifty years ago:

> *"We fail more often because we solve the wrong problem than because we get the wrong solution to the right problem."*

<div align="right">Russel Lincoln Ackoff (1974)</div>

For effective problem framing, a project must conduct an appropriate quality of research into and engagement with end-users and their operational contexts, such that sufficient insights might be generated to allow the effective framing of problems and definition of constraints. This demands effective, often ethnographic research in collaboration with end-users and relevant stakeholders, enabling problem framing and solution definition to be truly 'bottom-up' and so more likely to result in outputs that are taken up — and thus true innovations.

6.5.1 Descriptor 5 – Insight-enabling partnership

Indicator 5a states *"End-user organisation is consortium partner"*. Satisfying this indicator would require a project consortium to include one or more organisations that can enable end-user engagement. The hypothesis is that certain types of partner organisations are able facilitate access to end-users[4] and other stakeholders key to the research, design and development of practical outputs that, ultimately, will be taken up.

The USAL researchers found that access to end users might be provided by a range of partner organisations, including LEAs, emergency services, local authorities, rail operators, airport and border control agencies. Unfortunately, the end user is rarely identified in project summaries and project descriptions on the CORDIS database, even when a project has been completed.

Of course, it is not sufficient for an end-user organisation to be a consortium partner, the project must actively engage with end users and key stakeholders — as indicated in descriptor 6.

6.5.2 Descriptor 6 – Participatory

Descriptor 6 *is about "Ensuring all voices, especially those of affected communities, are heard and valued".* Key to successful innovation is end-user engagement. By this, we mean that the project:

> *"…Engages end-users of any proposed solutions or those operating in the problem domain (i.e. those "on the ground", delivering services — not merely managers / directors). In the strongest case, the purpose of such engagement will be to better define problems and identify design requirements and constraints for proposed project outputs (solutions). Ideally, such engagement should include practical prototyping of outputs / solution options".*

As noted by the LKA researchers when reviewing German-funded projects in Focus Area 2, the process of project delivery is often rather ambiguous. When mentioned by a project, it is frequently unclear from the project description whether a top-down or bottom-up approach is adopted.

In CORDIS, many Focus Area 1 projects reference the testing of practical outputs in their descriptions, indicating a practical orientation to some

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[4] End users might be frontline police officers, firefighters, security staff, etc.

extent. However, the use of iterative cycles of prototyping and development to maximise the uptake of practical outputs is not mentioned. The refinement and optimisation of a design solution requires investment of time and effort, but as has been pointed out:

> *"If you think good design is expensive, you should look at the cost of bad design."*
>
> Dr. Ralf Speth, CEO, Jaguar Land Rover.

The USAL researchers found little evidence of in-depth research being undertaken (for example, semi-structured interviews; focus groups; stakeholder observation; shadowing of operations; or ethnographic research) to understand end-user requirements, needs and operational contexts.

6.6   The value of a human-centred design approach

The authors suggest that EU security research and innovation projects would benefit from a human-centred design approach (Wootton *et al.,* 2023). By adopting a design approach to project delivery, and focusing particularly on the initial stages that involve understanding and defining problems from the (human) end-user perspective, EU-funded projects can be more effective in producing solutions that are ready for adoption and implementation (Signori *et al.,* 2023). The human-centred design approach not only increases the likelihood of achieving practical impact but also ensures that projects deliver true innovation — practical outputs that are both novel and adopted in practice (Davey and Wootton, 2017; Schumpeter, 1934).

Such a human-centred, bottom-up approach could dramatically improve the success metrics of EU-funded security research projects from simply producing outputs, to achieving meaningful outcomes. This reorientation towards design as a strategic process for innovation can foster more sustainable and impactful results, aligning technical capabilities with user needs and market demands.

6.7   Focus Area 1 projects in the EU context

In relation to Focus Area 1: *Security and security behaviour in public places, public transport or mobility,* it was observed that many projects on public space prioritise the development of surveillance or monitoring strategies (cameras; sensors; tracking apps; etc) and information sharing technologies (so-called platforms).

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The more innovative, human-centred projects tended to focus on passenger experience of mobility within an airport context. Such projects might provide a source of good practice to share across the EU's security research and innovation programme.

6.7.1 Focus Area 1 – identified gaps

While so-called 'petty' crime impacts the quality of the user experience in relation to public space, many EU-funded R&I projects focus on tackling the threat of terrorism. The authors suggest that security research should address issues that impact citizens' quality of life and that petty crime should therefore be a priority (Signori *et al,* 2023; Wootton *et al,* 2023).

The LKA recommends exploring potential connections between Focus Area 1 and 2, particularly with regard to the issue of *"community disintegration"* (see E2i deliverable D2.3).

6.8 CORDIS database – Future improvement

CORDIS is intended to be a central hub for disseminating information about EU-funded research projects. In doing this, it provides a number of functions:

- **Project information** – CORDIS provides information about EU-funded projects, including their objectives, participants, funding amounts, duration, and expected outcomes. This information helps stakeholders understand the scope and focus of each project

- **Knowledge sharing** – By sharing project results, publications, and other outputs, CORDIS facilitates knowledge sharing among researchers, policymakers, industry professionals, and the wider public. If information is useful and easily accessible, this fosters collaboration, encourages the exchange of ideas, and potentially accelerates innovation

- **Visibility** – CORDIS provides a means to increase the visibility of EU-funded research activities, both within Europe and globally. CORDIS highlights the continent's strengths in research and innovation, attracting attention from potential collaborators, investors, and stakeholders. However, it also reveals weaknesses, encouraging the European Commission to improve the EU security research programme

- **Access to resources** – CORDIS offers access to resources such as funding opportunities, research databases, policy documents, and best

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practices. This should help researchers and organisations navigate the EU's research landscape more effectively, enhancing their ability to participate in and benefit from EU-funded initiatives. However, the website can be difficult to navigate — even for experienced researchers.

- **Monitoring and evaluation** – CORDIS potentially supports the monitoring and evaluation of EU-funded projects by providing tools and indicators for assessing project performance, impact, and alignment with EU priorities. This may help policymakers to track progress, identify success stories, and make informed decisions about future funding allocations.

CORDIS serves as a vital platform for promoting transparency, collaboration, and excellence in EU-funded research and development, contributing to the advancement of science, technology, and innovation across Europe and beyond. While users certainly benefit from being able to gain an overview of projects, the review of CORDIS conducted by E2i reveals a number of issues:

- **Missing or unclear partner information** – Vital information about project partners is missing from project summaries:
  - End-user organisations are not clearly identified
  - CSOs and/or representatives of citizens are not identified
  - Names of project partner organisations does not always allow easy identification of their core activity or purpose

- **Poor search capability** – E2i identified a number of search functions that do not work. Improvements in search functionality and user interface design could enhance usability.

- **Incomplete project data** – Project information on CORDIS is typically provided by project coordinators, which may lead to reporting bias or incomplete data. Greater transparency and independent verification mechanisms could help mitigate this issue.

- **Lack of detail on research into problems / contexts** – Minimal information on research to understand needs, requirements and operational contexts:
  - Project summarises rarely explain how needs, requirements and operational contexts will be researched
  - Finding information about such research is also difficult even when project deliverables (reports) have been added to CORDIS

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- **Lack of detail on development of practical outputs** – Minimal information on how practical outputs were developed:
  - A variety of ill-defined terms are used without context, including: "prototyping"; "testing"; and "piloting"
  - Difficult to determine whether *"demonstrations"* of practical outputs are conducted in an operational (i.e. real world) context.
- **Lack of detail on practical outputs produced** – Minimal information on the form or nature of practical project outputs:
  - Project summaries lack clear descriptions of practical project outputs (product; process; service; technology; etc.) designed for security practitioners, policymakers and researchers. This detail is even missing from project deliverables / reports added to CORDIS later in a project or after the project is completed
  - End users of project outputs are not identified
  - Project summaries tend to use jargon (referring to "platforms", "tools" and "databases"), while failing to describe the context of use
  - Links to project websites often do not work, and it is rare to find a link to a web portal where practical outputs (solutions / technologies or policy briefings) can be viewed / downloaded after project completion.
- Information on the technology readiness level (TRL) of projects' practical outputs is not readily available
- Systematic tracking and assessment of project performance (e.g. the take up, adoption, implementation and impact of practical outputs) is not currently possible via the CORDIS database.

Overall, CORDIS would appear to be more of an afterthought than a strategic tool that might guide future R&I project delivery — and improve the impact and effectiveness of the Commission's investment in security research.

6.9 Final conclusions and next steps

The review of Social Innovation undertaken in Focus Area 1 — *Security and security behaviour in public places, public transport, or mobility* — has provided significant insights into the current state and effectiveness of Social Innovation practices in this domain. The key findings of this review include:

1. **Diverse approaches to Research & Innovation (R&I)**

The reviewed projects demonstrated a wide range of approaches to security R&I, emphasising the need for tailored solutions that address specific security challenges in public spaces and transportation systems.

2. **Importance of end-user engagement**

   Effective engagement with end-users, such as frontline officers and community members, was identified as a critical factor in the success of security R&I projects. Projects that actively involve end-users in the design and implementation phases are more likely to produce practical, accepted and sustainable solutions.

3. **Interdisciplinary and collaborative efforts**

   Successful R&I in the security domain often results from interdisciplinary and collaborative efforts, combining expertise from various fields, including technology, social sciences and CSOs / organisations representing the citizen perspective.

4. **Challenges in measurement and scalability**

   The review highlighted ongoing challenges in measuring and tracking the impact of security R&I projects and scaling successful initiatives. Consistent metrics and frameworks for evaluation are needed to better assess the effectiveness and replicability of these innovations.

6.9.1 Next Steps

To build on the findings of this review and enhance the impact of R&I projects in the security domain, the following steps are recommended:

1. **Enhancing end-user participation**

   Increase efforts to engage end-users throughout the project lifecycle. This includes involving them in problem identification, solution design, testing, and implementation to ensure that innovations meet their needs and contexts.

2. **Fostering interdisciplinary collaboration**

   Promote interdisciplinary collaboration by creating opportunities and networks for stakeholders from diverse fields to collaborate. This can enhance the development of comprehensive and innovative solutions to complex security challenges.

3. **Developing standardised metrics and evaluation frameworks**

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Establish standardised metrics and evaluation frameworks to assess the impact and scalability of security R&I projects. This will help in comparing outcomes across different projects and identifying best practices.

4. **Supporting knowledge sharing and dissemination**

Enhance mechanisms for knowledge sharing and dissemination of successful security R&I practices. This should include investing in improving CORDIS to make it a comprehensive repository of all R&I project outcomes / deliverables, best practices and lessons learned to inform future initiatives — and become a mechanism for tracking security innovation uptake and impact.

5. **Securing sustainable funding and support**

Advocate for sustained funding and institutional support for properly constituted and delivered security R&I projects. This includes engaging policymakers and funding bodies to recognise the importance and long-term benefits of investing in solutions resulting from effective innovation and human-centred design processes.

By implementing these steps, stakeholders can strengthen the foundation for effective R&I in the security domain, ultimately contributing to safer and more resilient public spaces and transportation systems.

6.9.2 Further E2i research

From the over 100 security R&I projects reviewed, one project will be selected to be investigated in more detail in Task 2.1.2. Using identified criteria, USAL and GMP will select an exemplar Social Innovation for investigation, mapping and analysis using a case study approach involving qualitative research methods. This will include in-depth interviews with participants and key informants, as well as observational visits to review Social Innovation output(s). Captured data will be analysed, and the results mapped, for publication in deliverable D2.2.

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Appendices

APPENDIX A: Overview of search within CORDIS security projects dataset

Social innovation

- **723** projects use the the term – "Innovation" or "innovations"
- **47** projects (40 Horizon Europe; 4 Horizon 2020; and none from FP7) use the term – "Social Innovation", and three further projects were found with a separate search for the term "social innovations".

Design thinking

- **5** projects (2 horizon Europe: 3 H2020) use the term "Design Thinking" – , including SPINE, CLIMAS (funded under "Climate, Energy and mobility", 3ants, DEFeND, Respondrone.

  NOTE: IcARUS does not appear in this list as it doesn't mention 'design thinking' in its short summary.

Human-centred

- **614** projects use the term – "Human-centred or Human-centered" –
- **3** projects (CCI, E2i and GHOST Safe-guarding home to IoT Environments...) use the term "Human-centred design" or "Human-centered design"

Technological innovation

- **889** projects use the term "Technology-centred". However, no evidence of this precise term could be found when manually reviewing the text.
- **29** projects use the term "Technological innovation".

End-user

- **598** projects use the term "End-user" or "End user"
- **4** projects only using the term "End-user engagement" or "End user engagement"
- **27** projects use the term "Engage stakeholders" or "stakeholder engagement".

Citizens and CSOs

- **598** projects use the term "Citizens"

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- **15** projects (9 Horizon Europe; 5 H2020; 1 FP7) use the term *"citizen-engagement"* or *"citizen engagement"*
- **7** projects, including SecurePART (1 FP7; H2020 4; Horizon Europe 2) use the term *"Civil Society organisation"* or *"CSO"*
- **29** projects use the term *"NGO"*

Human factors

- **78** projects use the term "human factor" or "human factors"

  NOTE: It should be possible to search CORDIS for "human factor" and the plural (which contains this phrase with the addition of an 's') be automatically included. This does not currently appear to be working in the CORDIS search, meaning, for example, a search for *"dog"* does not give results containing the word *"dogs"*.

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