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1. Summary

Cutting Crime Impact (CCI) is a research and innovation action to develop new tools and methods to prevent, investigate and mitigate high-impact petty crime tailored to the needs of practitioners. Innovation management is central to CCI and is embedded within the project work program (Work packages 1 – 12). Led by USAL and drawing on its design and innovation expertise, it involves:

- Environment scanning of current practice

- Development of support for end user requirements capture

- Iterative design and prototype testing, based on an understanding of needs and context, and final production

- Demonstration of resulting tools in their operational setting.

Opportunities exist for LEAs involved in CCI to sell the outcomes of the project, and to use any income generated to support delivery of LEA services and make further investment over the longer term (incl. in technologies).

Innovation management is assigned to the CCI Coordinator (USAL), who is supported by two SMEs— LOBA and DSP. USAL plans to review innovation outputs with the Head of Commercial Services (USAL) and discuss the outcome of this consultation with the CCI consortium via the CCI Steering Committee meeting.

USAL will discuss any commercial opportunities regarding potential exploitation of tools / solutions arising from the project with CCI partners after DesignLab completion and as an agenda item in meetings during toolkit development, training development and tool demonstration.

Opportunities for exploitation and plan actions to exploit opportunities will be logged. Potential opportunities for innovation exploitation during the CCI project include: consultancy; training courses; exploitation of tools; and commercial opportunities linked to standards and accreditation schemes.

2. Research and innovation action

CCI is a research and innovation action to develop new tools and methods to prevent, investigate and mitigate high-impact petty crime tailored to the needs of practitioners—sub-topic 4. CCI will support LEAs and policymakers in addressing a number of high impact petty crimes including: physical and sexual assault; robbery; burglary; and vandalism. Additionally, CCI will help them understand and mitigate citizens' feelings of insecurity. Practitioners and end users are central to CCI. The CCI consortium comprises 6 LEAs from across Europe—UK, Netherlands, Germany, Portugal, Estonia and Spain.

CCI addresses the specific challenge of how to prevent high impact petty crime and, where necessary, investigate and mitigate the impact of criminal acts, without undermining fundamental human rights. Ethics, legal and social factors are addressed in the research and development for all Toolkits, with the support of ethics expertise (RUG). This research and innovation project will develop toolkits primarily for LEAs, but also relevant to security policymakers and key stakeholders—Prevention, Investigation, Mitigation (PIM) Toolkits. PIM Toolkits will be practically demonstrated by practitioners and end users in an operational setting.

LEA project partners employ in-house design and technology staff to support innovation activities. Additional support will be provided by CCI research and consultancy partners specialising in human factors, and design and innovation (LOBA, USAL, DSP).

To be implemented, PIM Toolkits must be tailored to an LEA's needs and context. Naturally, PIM Toolkits tailored to a specific LEA cannot be simply applied to other contexts. CCI recognises that while a toolkit cannot simply be applied to different contexts than the organisation that developed and implemented it, a PIM Toolkit will act as model of good practice for other organisations. Demonstrations and other activities can inspire practitioners to explore and implement new methods and promote a culture of openness to innovation. LEA partners are part of a wider network of organisations necessary for the exploitation of CCI outputs, including security companies, technology companies, LEA representatives, service providers and training providers.

3. Innovation capability and work plan

CCI adopts an interdisciplinary approach to understanding needs and delivering innovation. CCI brings together participants from different disciplines: design, psychology, human factors, social science methods, ethics, security, policing and public policy. Through a structured research process, CCI will enable practitioners and end users to understand their requirements and develop new methods / tools in partnership with research and innovation institutions and key stakeholders. This involves following a structured research and innovation process, as follows:

WP1: Consortium integration and innovation management

Research and innovation to develop Toolkits and an extended European Security Model require CCI consortium partners to develop a shared understanding of key concepts—including those from outside of their own discipline. Innovative content for Toolkits will be developed by engaging in a creative idea development process within a DesignLab, designed by USAL specifically for this purpose. DesignLabs will facilitate discussion of key issue related to impact including: societal impact of toolkits and commercial exploitation. In WP1, CCI members will learn about 'DesignLabs'.

WP2: Review of relevant tools in current practice and 'what works'

More traditional Toolkit content can be developed by tailoring existing guidance and research to the needs of the LEA, as identified in the process of requirements capture. There is a wealth of guidance relevant to the four areas. CCI partners will review relevant materials produced from range of sources, both international and local.

WP3: Enabling requirements capture for partner LEA context

Understanding end user needs and context is the foundation of successful new product development. WP3 is devoted to understanding the needs and context of the six LEA partners and relevant stakeholders (incl. security policymakers, local authorities, planners, architects and community representatives). This will involve developing a process of 'requirements capture' used by designers involved in new product development (NPD).

WP4–WP7: Development of PIM Toolkit 1–4

Each of the four toolkits will be developed within a WP. This involves a process of research, innovation, design and prototyping specific to each of the Toolkits outlined in section 1.3. Tools will be

developed using an agile development process. Specific research and innovation methods include: requirements capture, DesignLabs and 'use scenarios'.

WP8: Practical demonstrations of PIM Toolkits, and development of implementation support

PIM Toolkits will be demonstrated in-situ where possible, with end user feedback collected to qualify performance. To further support Toolkit implementation, LEAs partners have advised on the importance of training in PIM Toolkit use, and development of strategies for integrating the four CCI approaches within Continuing Professional Development (CPD) programmes. Demonstrations will also be attended by practitioners and end-users from LEAs and security policymakers across Europe, and will thereby support transfer to different contexts.

WP9: Expanding the European Security Model to include high-impact petty crime

To successfully extend the European Security Model, CCI needs to fully understand the thinking behind the model's current structure and content. Without this, amendments proposed will come from a place of ignorance. Consequently, this WP will undertake desk research, interviews and analysis of results. A process of innovation will be undertaken to develop, validate and finalise an extended European Security Model.

WP10: Dissemination, communication and exploitation

This WP will develop plans for communication and exploitation of results (covering IPR). It will develop CCI's visual identity, website and communication materials. CCI project findings will be disseminated through participation in international conferences and events for practitioners.

4. Innovation management approach

Definition of innovation

Innovation is a messy process that creates novel solutions to important problems. Innovation is about discovery, and we may not know exactly where we're going until we get there. Innovation is often conflated with strategy. Strategy is a coherent and substantiated process for making choices, aimed at achieving clearly defined objective.

(Satell, accessed 2018).

According to the European Commission (Sweeney, 2014), "innovation management" refers to:

> *"Overall management of all activities related to understanding needs, with the objective of successfully identifying new ideas, and managing them, in order to develop new products and services which satisfy these needs. Innovation management starts at the point of capturing the creative works and finishes when it a product or service is deployed".*

Innovation management is central to CCI and is embedded within the project work program. Led by USAL and drawing on its design and innovation expertise, it involves:

- Environment scanning of current practice (WP2)

- Development of support for end user requirements capture (WP3)

- Iterative design and prototype testing, based on an understanding of needs and context, and final production (WP4–7)

- Demonstration of resulting tools in their operational setting (WP8)

4.1 Environment scanning of current practice

More traditional content for Toolkits—and any other solution—can be adapted from existing good practice. In WP2, the CCI consortium will review guidance, tools and practice developed in the course of EU-funded projects, or in use by LEAs and security policymakers. This review will focus on the assessment of guidance and tools relevant to the four PIM Toolkits.

4.2 Development of support for end user requirements capture

Toolkit content and format must be suited to user needs and contexts. 'Requirements capture' is a process of research for understanding user needs, the context, priorities and potential areas of conflict. The foundation of the design process, requirements capture is a key factor in determining the success of new products. LEAs partners will undertake requirements capture, supported by CCI partners. Led by USAL, training in requirements capture will be developed to ensure LEA partners focus on end-user needs and requirements, maximize potential insights and make visible market opportunities.

Requirements capture involves a range of social science research methods, including: observation, interviews and focus groups. It involves bringing together data from multiple sources, analysing the data in order to generate insights, ideas and priorities. For further information, see: http://www.apostolicparadigms.com/generic-guide-to- requirements-capture.pdf

Requirements capture will be undertaken in LEA partner contexts in relation to the four PIM Toolkit focus areas.

4.3 Iterative design and prototyping

Tool concept design, prototyping and development will follow an agile methodology, with iterative cycles of design and prototype testing. LEAs will be supported in this by USAL, DSP and LOBA. Agile development is a process of innovation based on the concept of agile product development. Most agile development methods break product development work into small increments that minimize the amount of up-front planning and design. Iterations are short time frames (typically one to four weeks). Each iteration involves a cross-functional working in all functions: planning, analysis, design, testing and refining. At the end of the iterative process, a working product is demonstrated to stakeholders / users. This minimises overall risk and allows the product to adapt to changes quickly. Multiple iterations may be required to ensure a product or service is ready to release on the market.

4.4 DesignLabs to support innovation

Toolkit concepts and innovative tools will be developed by engaging in a creative idea development process within a DesignLab, designed by USAL. DesignLabs will facilitate discussion of key issue related to impact including: societal impact of toolkits and commercial exploitation. DesignLabs will be structured around the latest Human-Centred Design and Design Thinking practice in the product, service and experience design sector. Wootton (USAL) has expertise in the area of product innovation, New Product Development and systems design. DesignLab sessions will guide participants in both problem framing (solving the right problem) and solution generation (solving the problem right), and

will adopt a systems thinking approach that supports synergies with non-LEA stakeholders and networks.

4.5   Innovative design approach relevant to EU-funded security projects

The value of design in enabling innovation and improvement within public services is recognised at a European level—see the European-wide 'Design for Europe' initiative. DesignLabs will explore the value of a human-centred approach to solution development within CCI. A DesignLab is creative approach to problem-solving and solution design. It draws on work in the area of design innovation, new product development (NPD) and Human-Centred Design (HCD) (Giacomin, (2014); Steen (2011); Maguire (2001)), where researchers and designers collaborate with and learn from potential end users of the solutions that they are developing. The goal is to develop products or services that match end users' practices, requirements and preferences.

Prior to a DesignLab, the USAL design team will analyse the requirement of LEAs, to identify insights and use creative processes to generate a number of potential options for solutions—the aim being to generate a diverse range of solutions, including some that are not confined to existing approaches. Where appropriate, further research and development work will be undertaken to work up the idea for presentation and discussion at the DesignLab session.

The value of the DesignLab will be to reframe identified problems, creatively challenge assumptions and generate new insight and ideas. The value of the 'fuzzy front-end' in new product development has been clearly identified (Cooper et al, 1987; Wootton et al, 1998b). Traditional innovation efforts in engineering and new product development involve analysing an existing product, system or problem (P1) in order to then create an improved version (P2). This can be conceptualised as the 'Analyse–create dimension' (see Figure 1.3.1 of Part B, Grant Agreement) and while useful, this approach is not great at generating new thinking.

The design approach to innovation introduces a second dimension. Under the design approach, analysis is used to abstract the existing product, system or problem (see Figure 1.3.2 of Part B, Grant Agreement). This abstraction fosters new perspectives and thinking about the original problem (P1). The process generates new insight, concepts and, importantly, options. The task is then to select from among the generated options to move back from the abstract to the real and create a product solution (P2). The design approach thus introduces a second 'Real–abstract' dimension. The end point of this design innovation process can be very different to the original product, system or problem. DesignLab sessions will facilitate this process of creative analysis and solution generation.

At the DesignLab, participants will be invited and supported to creatively explore, analyse and critique ideas and potential solutions arising from the requirements capture research. A structured process for the co-creation of solution concepts will be developed—drawing on existing resources such as the Crime Life Cycle for idea generation (Wootton & Davey, 2003). DesignLab participants will include: consortium partners, Advisory Board members, practitioners and security policy makers.

4.6   'Use scenarios' for developing practical tools to mitigate insecurity

CCI will also utilise 'use scenarios' to support the development of innovation, and practical tools. A 'use scenario' describes a real-world example of how one or more people or organizations interact with a system. It describes the steps, events, and/or actions that occur during the interaction. A good use scenario also describes the user's goals and motivations, as well the specific task or tasks that need to be accomplished. Use scenarios will be utilised in the development of tools to measure and mitigate citizens' feelings of insecurity for PIM Toolkit 4. The CCI consortium will identify use scenarios for information on insecurity, and the activities of LEAs and policymakers that might be informed by such insight on citizens' feelings of insecurity (WP7).

4.7   Workshop to generate a concept for an extended European Security Model

The CCI project will explore how a coherent, EU-level conceptualisation of security — an expanded European Security Model — might include practical consideration of high impact petty crime issues. This will involve development of a prototype conceptual framework for expanded EU Security Model and its validation at a DesignLab. Any proposals for change must be based on understanding the background to the existing European Security. Research will therefore be conducted with EU policymakers, before running a workshop to generate and test ideas for a new conceptual framework for extending the European Security Model. CCI's Advisory Board members (incl. Alexander Siedschlag) will have a key role to play in supporting research and innovation for a revised European Security Model. Issues to consider include:

- The types of petty crime that should be considered within the European Security Model and the extent to which the focus should be on those with a cross-border component

- The extent to which the emphasis should be on prevention, investigation or mitigation (including relation to feelings of insecurity).

5. Expected impact on LEAs and security policy makers

CCI will result in four toolkits for LEAs — PIM Toolkits — based on and validated against the needs and requirements expressed by practitioners (LEA partner staff). PIM Toolkits will help LEAs achieve tangible outcomes, and be integrated within their way of working. The more technology-focused, or advanced toolkits (e.g, on early consideration of crime impact) are likely to be of interest to LEAs with greater expertise and capacity. However, the Toolkits on community policing, CP-UDP and mitigating feelings of insecurity will support LEAs with different levels of experience. Tailored to end- user needs, PIM Toolkits will continue to be used beyond the life of the CCI project, being updated by LEA partners, as appropriate.

LEA innovation capacity will be enhanced through participation in the DesignLab workshops. Using insights gained via requirements capture research with end-users, DesignLabs will upskill partners in problem framing, structured concept generation and solution selection techniques. Support in agile product development provided by USAL, DSP and LOBA during PIM Toolkit development will provide partners with experience of translating ideas into solutions, improving their capacity to innovate. Knowledge and skills developed in these sessions will be transferable to other problem domains faced by partner LEAs.

Through the use of creative thinking and engagement tools, CCI will support structured, but focused discussions around security policy issues. Importantly, CCI will help security policymakers advance towards a European Security Model that considers the human factor and the needs of different stakeholders—including citizens, LEA practitioners, security policy makers.

6. Exploitation of results

Opportunities exist for LEAs involved in CCI to sell the outcomes of the project, and to use any income generated to support delivery of LEA services and make further investment over the longer term (incl. in technologies). The context in which LEAs operate impacts, however, on the ways in which project results may be commercially exploited. Operating in an entrepreneurial context, GMP established a Design for Security consultancy service, paid for by the architects and developers receiving crime prevention advice. GMP will be able to improve the quality, efficiency and outreach of its consultancy service. CCI tools for assessing crime risk and impact are likely to be of interest across in Europe, and also further afield (including Australia, US, South Korea and the Arab Emirates).

All LEA partners are in a position to use CCI results to improve national and regional accreditation schemes for buildings and products, in their own countries and further afield (incl. France, Poland, Eastern Europe and Scandinavia). Development of standards, accreditation schemes and good practice will also foster commercial opportunities for companies involved in the design, planning and management of urban environments (including major ICT companies, insurance companies, security bodies, housing providers, developers).

All partners will also use the results to in the development of training courses and Continuing Professional Development (CPD). For example, EFUS will extend its professional training and Masters programme; DPTI will extend its webinar series. DSP will further market more widely training courses on topics such as crime prevention, safety and security and radicalisation.

CCI will actively consider commercial opportunities to better prevent, investigate or mitigate petty crime. Urban security is a field with potential to create new markets opportunities, strengthen competitiveness and growth of companies. Petty crime problems are fostered by the products and services that citizens use—including Smart phones, credit cards, ATMs, vehicle navigation systems. So called "hot products" frequently turn users in victims of crime. There are potential commercial benefits for companies able to reduce vulnerability to crime through careful design of products and services, and the development of security measures tailored to user / customer needs

7. Innovation Management Action Plan

7.1 'Use scenarios' for developing practical tools to mitigate insecurity

The EC recognises that someone must be responsible for managing all activities related to innovation, from market need through capturing the IP, to market deployment (Sweeney, 2014). In the case of CCI, this responsibility is taken on by Andrew Wootton (USAL), in partnership with Professor Caroline Davey (USAL). Davey and Wootton will be supported by the Head of Commercial Services (USAL).

USAL will be supported by LOBA and DSP regarding innovation Management. LOBA and DSP are both SMEs.

7.2 Training in IPR management

Wootton and Davey (USAL) will participate in training courses offered by USAL on commercial issues such as IPR in months January to April 2019. USAL will recommend training courses for CCI partners, as appropriate.

7.3 Review of innovation outputs and IPR impact

Intellectual property is addressed in the CCI Consortium Agreement, including consortium access, usage rights and policies around foreground and background IP, before and after the project. Wootton and Davey (USAL) will review innovation outputs with the Head of Commercial Services (USAL) (February – March 2019). The meeting will aim to clarify: a) potential IP arising from CCI outputs; b) IP allocation; c) any necessary IP protection measures required (e.g. non-disclosure agreements; trademark, patent or design registration, etc.). USAL will discuss the outcome of this consultation to the CCI consortium via the CCI Steering Committee meeting.

While consideration of IP will reflect the objectives of this EU-funded project, which aims to support LEAs and security policy makers in reducing crime impact for the benefit of European citizens, positive commercial impact (especially in regard to the SME members of the consortium) will be explored.

7.4   Review of tools / solutions arising from CCI

USAL will discuss any commercial opportunities regarding potential exploitation of tools / solutions arising from the project with CCI partners after DesignLab completion and as an agenda item in meetings during toolkit development, training development and tool demonstration.

7.5   Record of opportunities for exploitation

With support from the Project Manager, USAL will log of opportunities for exploitation and plan actions to exploit opportunities, where appropriate.

The below table provides and overview of a number of anticipated opportunities for innovation exploitation during the CCI project.

Table 1 – Overview of anticipated opportunities for innovation exploitation in CCI

Anticipated opportunity	Relevance to partners / others
Exploitation of tools for improving crime prevention service to architects and planners	GMP, PJP, as well as ALO services across Europe
Foster commercial opportunities through development and promotion of standards, accreditation schemes and good practice.	LEAs, as well as ICT companies, insurance companies, security bodies, housing providers, developers.
Development of training courses and Continuing Professional Development (CPD).	All partners (esp. DSP, EFUS, DPT), as well as CEPOL, national police colleges
Development of consultancy services, training provision, etc.	All partners (esp. DSP, EFUS, DPT)

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