European Commission, Horizon 2020

D1.6 Project Progress Report

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Deliverable Lead	USECON
Related work package	WP1
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Versions

Vers.	Date	Author	Description
V0.1	17.09.2020	Valerie Schlagenhaufen (USE)	First Draft
V0.2	05.10.2020	Gerhard Helletzgruber (USE)	Additions Reporting
V0.3	18.10.2020	Lisanne Kleygrewe (VUA)	Revision
V0.4	20.10.2020	Laura Giessing (UHEI)	Revision
V0.5	24.10.2020	Gerhard Helletzgruber (USE)	Integration partner inputs
V0.6	27.10.2020	Valerie Schlagenhaufen & Gerhard Helletzgruber (USE)	Additions and adaptations
V1.0	30.10.2020	Valerie Schlagenhaufen & Gerhard Helletzgruber (USE)	Finalization

List of Acronyms and Abbreviations

Acronym / Abbrevation	
VR	Virtual Reality
LEA	Law Enforcement Agency
DMA-SR	Decision-making and acting in stressful and high-risk situations
HF	Human factors
SME	Small and Medium Enterprise
WPL	Work Package Lead
IPR	Intellectual Property Rights
PC	Project Coordinator
SC	Steering Committee

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Executive Summary

This deliverable D1.6 is the first project progress report and covers the following aspects of SHOTPROS within the reporting period from M1-M18:

- **Chapter 1: Project Overview**: brief summary of the project and responsibilities
- **Chapter 2: Project Management**: describes how the project was managed and which measures were taken by the coordinator to ensure successful completion of SHOTPROS
- **Chapter 3: Project Progress Report**: briefly summarizes which steps were taken by the consortium of SHOTPROS to achieve the desired goals of the project based on the technical reports from the WP Leaders
- **Chapter 4: Societal Impact Report**: introduction of the assessment of the (expected) societal impacts of the project
- **Chapter 5: First Strategies and Toolkit for Policy-maker**: basic strategy and first materials that are relevant to policy- and decision-makers

The Progress Report shows the main efforts and achievements of the Consortium towards the objectives set forth in the DoA and outlines the different tasks executed in the workpackages in the first half of the project.

The following exemplary progress highlights are indicated here at a glance:

- ✓ CoCreation workshops with all 6 Leas to identify their end user requirements
- ✓ Planning, Conducting and Analyzing Human Factor Studies (3 large studies with over 850 participants)
- ✓ Fundament for a long term and sustainable network: next to the core partners since the project started we have a network with several key LEAs in Europa as Swiss Police, Belgium Police, etc.
- ✓ Technical development of VR system based on the requirements
- ✓ More than 15 strategical presentations of SHOTPROS, such as OSCE, Berlin Police President, etc
- ✓ Several press releases delivered resulting in 23 references in media

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1 Project Overview

The SHOTPROS project aims to investigate the influence of psychological and contextual human factors (HFs) on the behaviour of decision-making and acting (DMA) of police officers under stress and in high-risk operational situations in order to design better training for police officers to improve DMA Performance. SHOTPROS will develop a Virtual Reality (VR) solution to experimentally assess the degree to which these factors influence DMA behaviour.

Subsequently the project will develop a HF-rooted training curriculum and a corresponding VR training solution to provide a comprehensive framework for practical training for decision-making and acting under stress and in high-risk (DMA-SR) situations in order to improve performance. The training will increase DMA-SR performance which will lead to better and more correct decisions (from several perspectives, e.g. law, ethic, etc.), to keep the guidance in threatened situations, to minimise use of force occurrences, and accordingly, to maximise the avoidance of casualties and collateral damage, such as panic and cascading or escalating effects. The partners complement each other in the focus of their research, domain knowledge and technologies, as is reflected by the specific tasks in the roles they have taken upon themselves to lead.

1.1 WPs and Leader

WP	WP Title	Lead
WP1	Project Management	USE
WP2	Requirements Analysis and User Research	KUL
WP3	Training Concepts & New Innovation Approach	VUA
WP4	Training Experience Assessment, Modelling and Scenario Development	AIT
WP5	Contextual VR Simulator-Toolkit	RL
WP6	Human Factor Studies & Experiments	AIT
WP7	Evaluation Phase with Field-Trials and Generation of Final Results & Impacts	VESTA
WP8	Dissemination, Exploitation & Communication	USE
WP9	Ethics requirements	USE

Table 1: Work packages and WP-Leader

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- **Markus Murtinger (USECON):** Markus Murtinger is the Director of Marketing and Sales at USECON. As project coordinator he is responsible for WP1 – Project Management and WP9 – Ethic requirements.
- **Valerie Schlagenhaufen (USECON):** As Marketing and Business Development Manager at USECON, Valerie Schlagenhaufen leads the WP8 – Dissemination, Exploitation & Communication.
- **Sebastian Egger-Lampl (AIT):** As a researcher at the Austrian Institute of Technology-Center for Technology Experience, Sebastian Egger-Lampl takes the Technology and User Experience view in the Executive Board.
- **Raoul Oudejans (VUA):** Raoul Oudejans is (Associate) Professor for Learning and Performing in Sports at the Department of Human Movement Sciences, Vrije Universiteit Amsterdam and expert for training methods as well as perceiving and acting in high-pressure contexts.
- **Emma Jaspaert (KUL):** As a criminologist in the juridical department of the KU Leuven, Emma Jaspaert is responsible for Ethics and Legal aspects in SHOTPROS.
- **Floor Lams (VESTA):** Floor Lams from Campus Vesta, the Trainings Facility for Emergency Management Training & Education, is the perfect representative of End-User Management in SHOTPROS
- **Christian Haarmeijer (RL):** Christian Haarmeijer as Managing Director from RE-liON is in close contact with the end users to advise on and define solutions tailored to their VR-training needs and will be involved in all technical SHOTPROS decisions.

1.2 Interrelation of WPs

The defined structure of the work packages follows a human-centred research (HCR) approach. HCR is an iterative process focusing on the end users (LEAs) and their needs in each phase of the project process. HCR calls for involving users throughout the process via a variety of research and design techniques to create highly usable and accessible products and services for them and to fulfil the defined objectives.

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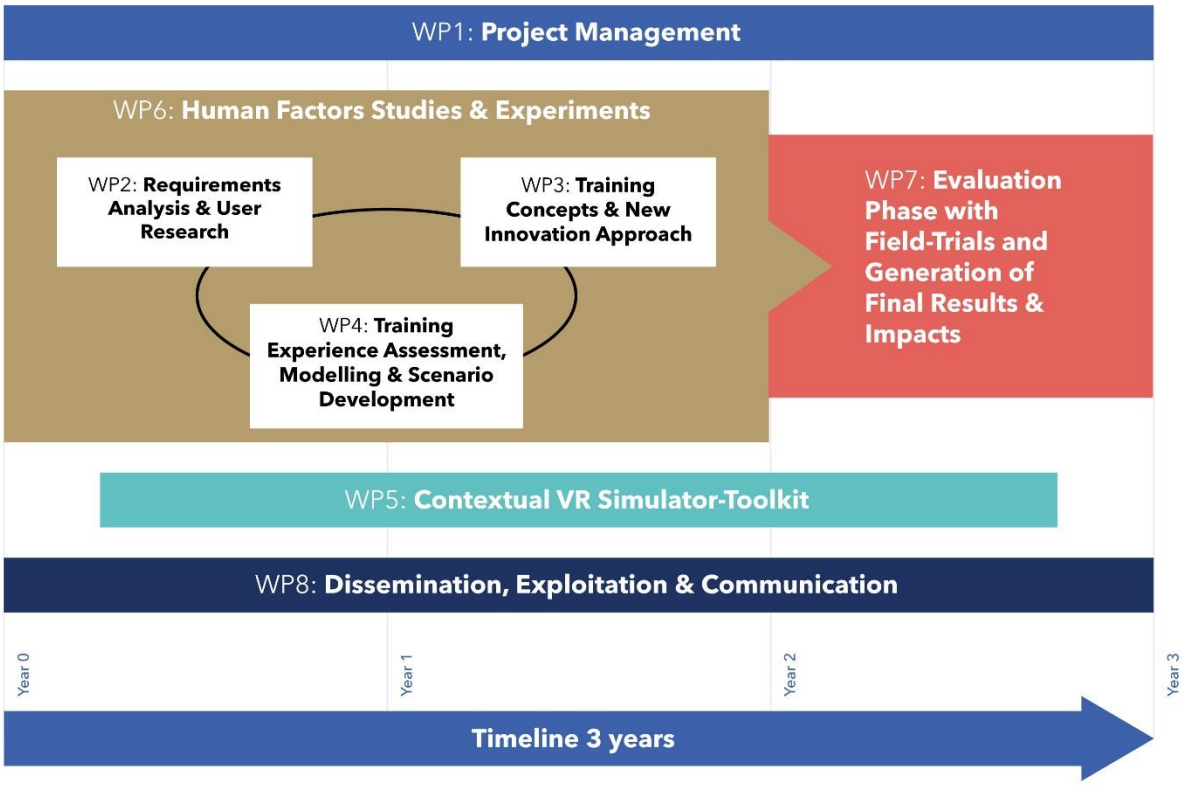

Figure 1: PERT chart shows interrelation of SHOTPROS WPs

2 Project Management (M1-M18)

2.1 Consortium Meetings and SC Meetings

USE has organised 6-monthly consortium meetings jointly with the pre-defined host partner. All partners attended with at least one representative of their organisation.

The table provides an overview of the planned and conducted Consortium meetings of the project. The meetings in M13 and M19 in grey have been affected by the COVID-19 pandemic and cannot be conducted as planned. The meeting in M13 had to be changed to an online meeting and in the course of the writing of this deliverable it became clear that the CM planned in M19 in Selm also cannot be conducted in real-life. Due to the aggravating Covid situation in October we had to give up the plan of a hybrid-meeting with a combination of a physical and virtual participation and changed it to an online-meeting.

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	M1	M7	M13	M19	M24	M30	M36
Location	**Vienna**	**Leuven**	**Vienna***	**Selm***	**Amsterdam**	**Vienna**	**Ranst / Antwerp**
Partner	AIT/USE	KUL	AIT/USE	LAFP NRW	VUA	AIT/USE	VESTA
Date	May 19	Nov 19	May 20	Nov 20	Spring 21	Tbd	Tbd

Table 2: Consortium Meeting overview

*CM in M13 and M19 conducted online due to COVID

As part of the bi-annual Consortium Meetings USE organized and convened the meetings of the Steering Committee. All partners nominated a representative and a proxy for their organizations and confirmed the appointed members to the Coordinator. All partners took part in the meetings and provided feedback to the project management processes.

2.2 Online Conferences

USE has arranged regular online conferences and provided meeting minutes which were sent to the partners and made available in the SHOTPROS sharepoint. A brief overview of the online conferences and the discussed topics is provided below.

- **Online Conference M9,** 20th of January 2020
  - General Updates and planning of CM in May
  - Dutch Police study @ RL
  - WP8 – VR Police Network
  - WP3 – Site Visits @ LEAs
  - WP2 – Requirement report: overview of outcomes
  - WP4 – General updates and planned actions
  - WP8 - Dissemination – Updates and reminders

- **Online Conference M11, "Corona Call"**, 25th of March 2020
  - Welcome
  - Status update from all partners regarding the COVID-situation in their country and organisation with respect to the planned
    - consortium meeting in May 2020
    - planned project tasks that might be affected

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- **Online Conference M18**, 6th of October 2020
  - Welcome
  - Consortium and Review Meeting
  - Status Update from each WP
  - Preparation & planning of half-time review

2.3 Technical & Financial Management

Internal monitoring of the project progress is a continuous effort that has been focused during the entire duration of the reporting period and will be continued in the next.

For this purpose, the Coordinator set up monitoring and internal technical and financial reporting structures which include

- the project mailing lists administered by AIT and USECON with contact persons for general project(-content) relevant matters including all participants that are actively involved in SHOTPROS and the contact persons for administrative and financial project matters. These are used for the purpose of general updates, coordination issues and feedback requests.
- an internal newsletter with regular updates about every work package in order to keep the consortium informed about the progress
- the collection of 6-monthly internal technical and financial progress reports after each internal reporting period (M6, M12 and in due course for M18).
  USE sent out a word template for the technical reporting which were properly filled out by the WP Leaders with the achieved progress and the tasks carried and a brief explanation in case of any deviations in the respective workpackage.
  For the financial reporting USE provided an excel template for each partner to report their use of resources in terms of personmonths per WP, the actual cost incurred and an explanation on the financial expenses for each reporting period.
  The consolidated reportings have been made available to all partners on the AIT sharepoint.

For the preparation of the submission of the deliverables the Coordinator determined the following procedure: each work package leader has been responsible for collecting all relevant materials from all involved partners for the deliverable document. The draft document is sent to the consortium three weeks before the deadline for feedback to the Consortium. One week before the submission deadline the final document is sent to the Coordinator for final check, quality assurance, formatting and upload in the portal. The monitoring of the adherence to this process has been a crucial factor for the timely submission of the due deliverables for the first reporting period.

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2.4 End-user Management

The task T1.4 End user (LEAs) management is led by VESTA. The initially planned approach as described in D1.4 has been slightly adapted in terms of the contact modalities and the end user database. Due to the high commitment of the LEAs and the stable flow of communication with the other project partner, the necessity of a recruitment process for the research activities was not given. All research partners who conducted studies involving end user informed the LEAs SPOCs (single points of contacts) in a timely manner and provided a detailed description of the needed study participants. Therefore, the initially planned end user database is a list with the SPOCs of the project LEAs and their proxies.

Nevertheless, VESTA still carries out the task of end user management but with focus on quality monitoring. To do so, a quality monitoring questionnaire for the LEAs as well as for the research partners was prepared and VESTA had calls with all of them in order to find out if LEAs feel involved enough and what can be done to make increase the involvement. Also, vice versa, if research partners feel that the LEAs are contributing adequately and if they are giving them the input they need for the deliverables. The questionnaire served as guide during the calls and the feedback was collected and transcribed as a report.

QM questionnaire LEA partner	QM questionnaire research partner
• In how many SHOTPROS activities did you participate so far? Which activities? • Did you manage to identify and gather participants matching the requirements for activities you were involved in as a LEA? • Did you get a criteria list from the research partners to determine which participants they needed for specific activities? • Are you satisfied with the information you received from the task owners/research partners concerning the activities you were involved in as a LEA? • In your opinion, are LEAs sufficiently involved in this project?	• Which (research) activities did you organize so far? • Were you satisfied with the organization of the activity/the activities? • Are you satisfied with the results of your activity/activities? • Did the profiles of participants suggested to you by the LEAs match your requirements? • Were you satisfied with the involvement of the end users during your activity/activities? • Do you have any suggestions to involve LEAs (or end users) more in future SHOTPROS activities? • In your opinion, are LEAs sufficiently involved in this project?

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• Are the project partners implementing your suggestions? • Do you have any suggestions to involve LEAs more in the project (activities)? • Are there lessons to be learnt to ensure or improve the involvement of end users in future SHOTPROS activities? • Do you often communicate with the project partners? How often (once a month – one a week - …?) • Are you satisfied with the results of the project so far?	• Do you have suggestions to improve future SHOTPROS activities? Lessons learnt from your activity to pass on to the project partners.

Table 3: End user management - questionnaires

The quality monitoring for Y1 has been conducted in M12-M14 and the report with the feedback was written and forwarded to the coordinator USE. All in all, the LEAs and the research partners were highly satisfied with the collaboration in the first year of the project and there were no major issues that need to be tackled. The next quality monitoring calls are planned for the end of Y2 and Y3. However, all partners and especially the LEAs are informed that they can contact VESTA whenever there are any difficulties or issues in terms of the involvement or the communication.

3 Project Progress Report (M1-M18)

The project progress of the first 18 months of SHOTPROS is presented in this chapter from two different perspectives with a special theme as annex: the first sub-chapter outlines the progress towards the objectives as identified and described in the DoA and the second sub-chapter 4.2 indicates the progress per WP and tasks.

3.1 Progress towards Objectives

The following chapters aim to provide an overview of the collaborative efforts towards achieving the defined objectives of the project.

3.1.1 Objective 1: Evaluated and validate Human Factors Model for DMA under Stress and in High-Risk situations (DMA-SR Model)

As part of Task 3.2, VUA developed a conceptual model of decision-making and acting in stressful, high-risk situations. The conceptual model posits that personal, contextual,

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organizational, and societal human factors influence the perception of the demands of a situation, the perception of capacities to deal with the demands, and the appraisal of any discrepancies between demands and capacities, collectively determining the level of stress of police officers. Importantly, it is the combination of stress and mental effort that determines attentional consequences of stress. Attentional consequences of stress and mental effort invested may be an alteration from goal-directed attentional processes to stimulus-driven processes. A final core tenet of the conceptual model is that decision-making and acting, as the endpoint of attentional processes, should be viewed as actions resulting from motor heuristics and embodied choices. In addition, VUA proposed a concise research agenda in D3.2. The core questions to be answered within the frame of the research agenda are:

- How can the human factors proposed in the model be used to create realistic training, in which proper levels of stress and adequate mental effort strategies are provoked, that help police officers develop goal-directed attentional strategies, and effective motor heuristics and embodied choices?
- Which features of VR training are particularly helpful in the training process for decision- making and acting of police officers?
- How can VR training best be implemented?

A full description of the conceptual Human-Factors DMA-SR Model can be found in D.3.2.

Furthermore, the Belgian National Crisiscenter (ADCC-IBZ) and KU Leuven are currently developing an evidence-based risk assessment tool, which will serve as a medium to convert the gathered data into practical applications, such as a (VR) training program for law enforcement agencies. More specifically, the risk assessment tool will allow police instructors to control the difficulty of a law enforcement (VR) training by taking into account all factors that can influence the decision making process of trainees. Depending on the specific training goals and the experience of individual trainees, more stress factors can be added to the training to increase difficulty or some can be taken away for an opposite effect. The basis for the tool is an international LEA study, starting in October 2020 that investigate stress factors during police interventions. The status of the study and the risk assessment tool is reported in D4.7 in M18.

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3.1.2 Objective 2: VR Environment that allows to manipulate HF in the Context of DMA-SR and observe related Behaviour

In the first 18 months RL worked on the development of a system design document which is based on the identified LEA requirements that were gathered in the requirements analysis evolving from WP2. The collected VR system requirements were analysed and compared with the current system which allowed an estimate of the required efforts for implementation of police scenarios and stressors.

For the development analysis the scenario involving domestic disturbance was chosen. The reason being is that this scenario is first of all common within all LEAs. Secondly it is very suitable for creating a wide range of scenarios which vary in low and high amounts of stressors. A lot of Human Factor Stress Cues can be applied here and it can relatively quickly be developed compared to, for example, scenarios with large crowds in iconic real-life locations.

Within these scenarios all possible police tools can be used. Requirements development and feedback sessions on development plans with SHOTPROS partners were carried out for this purpose. A tactical belt with new police gear (baton, pepper spray, taser, handcuffs) providing new (non-lethal) tactical decision options during any police scenario was developed. Furthermore, scenario components, including a new environment suitable for domestic disturbance scenarios, new non-player character behaviors, appearances and interactions with the new police gear were produced.

The lessons taken will be applied to the next set of scenarios.

Additionally, AIT has derived a set of stress inducing and immersion creating cues and a study agenda for validation (see D4.1) based on former research activities in SHOTPROS (requirement analysis reported in D2.2, analysis of existing training curricula and practices D3.1 and the draft of the human factor decision making and acting model). Most of the relevant cues are included in the aforementioned domestic disturbance scenario to create a meaningful interactions and sequences of acting. The studies for validating the ability of the selected cues to induce stress and create respective immersion were postponed due to COVID.

3.1.3 Objective 3: (European Police) Training Framework and Curriculum for DMA-SR

In the first period analytics of current training methods and examples of good training practices of European law enforcement agencies (LEAs) were compiled and presented in D3.1. The findings of the desk research described in D3.1 were enriched and cross-checked with site-visits at the location of the six LEAs, with the aim to observe training and assessment

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methods, as well as to conduct interviews with police instructors. The results from the site-visits will be shown and reported in D3.3 “European Framework for Training and Assessment”.

As part of Task 3.3, VUA conducted several field experiments to provide the empirical groundwork for a European Police (VR) training framework for DMA-SR.

Research Study	Involved LEA	Research Aim	Achieved Progress
Twente Study with RE-liON VR System	Dutch National Police	Investigating whether VR training can elicit similar stress responses as regular scenario-based police training	Obtained questionnaire responses of 281 participants and heart rate and accelerometry data of 81 participants.
Rotterdam Study with DangerZone VR System	Dutch National Police (Police Academy)	Investigating whether previous professional experience and type of training instruction impact the learning experience of police students	Obtained questionnaire responses and training logs of 45 police students.
Zurich Study with Refense AG VR System	Stadtpolizei Zürich	Investigating whether didactical features (VR feedback and presence of pain stimulus) impact the learning experience of police officers	Obtained questionnaire responses of 665 participants and heart rate and accelerometry data of 114 participants.

Currently, the results from the obtained data are being analyzed. Once analyzed, the results will provide insights on important training concepts, training methods, and training didactics, that taken together, will be the basis of the (VR) training framework for DMA-SR.

3.1.4 Objective 4 Guidelines for VR Training

Based on information from the End User Workshops with all six LEA partners, the work by VUA on the DMA-SR model, scientific literature and expert knowledge, KUL has created Guidelines and Inputs for the future Training Scenarios, that were described and presented in D2.3. In this deliverable, two main components were discussed.

The aim of the document is, to present the reader with a description of the first phases in the development process of a VR scenario for training DMA-SR within the context of SHOTPROS. In agreement with the LEA partners, it was decided at the Consortium Meeting in November 2019 that an intervention in the context of domestic disturbance is developed as a first

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scenario for training. To achieve this, a 'decision-tree' document (with instructions) for LEA's to describe a domestic scenario with different DMA moments as well as more information of characters, location, stressors, etc. was sent out. The LEA's have all filled out the decision-tree document and sent them back for an in-depth analysis carried out by KUL.

While this part of the work has focused mainly on describing information for the specific development of the DMA-SR training scenario within SHOTPROS, the other part of D2.3 was dedicated to describing some preliminary first guidelines for future VR training scenario development within the broader context of police training. These guidelines were developed based on elements learned throughout the first phase of scenario-building within SHOTPROS as well as discussions with the different partners from the SHOTPROS consortium to share their expertise and experiences in order to integrate it in the final version of D2.3.

3.1.5 Objective 5: pan-European VR Police Network

The VR Police Network is established to provide a forum/platform for knowledge exchange and collaborative initiatives on future strategies and mission statements. The primary focus will be on the topics of SHOTPROS "Training of Decision Making and Acting in VR", in a second stage, exchanges and collaboration can be enlarged to all other global and relevant topics and issues in VR and Police.

In the first 18 months of SHOTPROS, the network was methodologically developed based on a KPI-framework as described in D8.10 to ensure that it is self-sustainable by the end of the project. The forthcoming of the development was led by VESTA and supported by all partners as reported in D8.8 (chapter 3). At the current stage of the project, all partners have gathered a lot of contacts / potential members (from LEAs, companies, research institutions, other projects) and we keep them informed about SHOTPROS and the development of the network by the dissemination and communication activities. Once the VR Police Network is finally elaborated, those contacts will be invited to join the network.

3.2 Progress per WP

This chapter provides a brief overview of the project progress of the first 18 months of SHOTPROS per work package. Each table indicates the submitted deliverables, a summary of work performed per task and (if applicable) the deviations from work plan. It must be noted that this report is complemented by the periodic technical and financial report that include a detailed description of the work performed, the involved partners and persons and the resources spent (person months, costs incurred, explanation on resources).

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3.2.1 WP1

WP-Nr.	WP1	**Lead**	USE
WP Title	Project Management, M1-M36		
Submitted Del.	D1.1 Project Manual including Quality Assurance Guidelines (M4) D1.2 Ethical Guidelines & Procedures (M4) D1.3 Data Management Plan (M6) D1.4 End User (LEAs) Management (M4) D1.5 Meeting Minutes Report		
Overview of work performed (per task)	T1.1: Project Coordination and Management (M1-36) • Organization and conduction of 3 Consortium Meetings, 3 online conferences • Internal communication, reporting and progress monitoring • Communication with and project updates to EC project officer, scheduling and coordination of review meeting dates • Handling of administrative and financial issues • Supporting partners and giving advice with regard to financial matters T1.2: Internal legal and ethical compliance check (M1-36) • Provision of Ethical Guidelines and Procedures • Appointment of Ethical Advisor • Elaboration of Data Privacy Information and Declaration of Consent • Monitoring project activities for compliance with ethical guidelines T1.3: Data Management Plan (M1-6) • Definition of Data Types and References • Gathering information to Data Set Descriptions generated in SHOTPROS • Definition of Data Management procedures T1.4: End user (LEAs) management (M1-36) • Definition of Goals and Scope • Methodological Approach • Description of EUM data management instruments • Set up databases		

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	• Plan of Action for all partners to collect End User data in a focused and effective manner • Preparation of quality monitoring questionnaire • Evaluation and reporting of QM questionnaire T1.5: Assessment and Reporting of Societal Impact (M1-36) • Reporting on first results
Deviations from work plan	Cancellation of planned on-site Consortium Meeting in Vienna in May and conduction of online CM instead due to COVID. Planning of "Hybrid CM" (virtual and on-site) in November in Selm, but change to online meeting due aggravating COVID situation throughout Europe.

3.2.2 WP2

WP-Nr.	WP2	**Lead**	KUL
WP Title	Requirements Analysis and User Research, M1-22		
Submitted Del.	D2.1 Planning, Setup and Methodology for Collection of User Requirements, Needs and Expertise (M4) D2.2 LEAs Point of View: Requirement Report, Stakeholder Map and Expectation Summary for DMA-SR Model and Training Framework and Curriculum (M8) D2.3 Guidelines and Inputs for the future Training Scenarios (M14)		
Overview of work performed (per task)	*T2.1: Collect LEAs needs, requirements & opinions and create insights for future training developments (M1-14)* • Preparation, organisation and conduction of six End User workshops with the six LEA partners of SHOTPROS • Conduction of 10 in-depth interviews *T2.1.1 Planning and Setup of the User Requirements Phase* • A study execution plan was developed and written down in D2.1 This plan formed the basis of the activities in the subtasks T2.1.2, T2.1.3 and T2.1.4. *T2.1.2. Conduct co-creation workshops to create future (VR) training scenarios, collect VR requirements and design a stakeholder map with LEAs* • The co-creation workshop, the VR requirements collection and the stakeholder mapping were all part of the six 1.5-day End		

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User workshops that were organized with the six SHOTPROS' LEA partners during mid-August and Mid-October.

- The data of the workshops were analyzed and the results were presented in D2.2

T2.1.3. Conduct focus groups to discuss the future DMA-SR Model, actual training experiences and future expectations on DMA training within the LEAs

- The focus groups on the future DMA-SR model, actual training experiences and future expectations on DMA training were also part of the End User workshops organized during mid-August and mid-October.
- The data of the focus groups were analyzed and the results were presented in D2.2

T2.1.4 Conduct in depth interviews with several identified stakeholders

- After each End User Workshop (except Romania), a few in-depth interviews were held with high-ranking officials (e.g. policy-makers, heads of police or police training facilities, legal and ethical experts). It was the responsibility of the representatives of the LEA partners to arrange these interviews to take place.
- The data of the interviews were analyzed and the results were presented in D2.2

T2.1.5 Creating Guidelines and Inputs for the future Training Scenarios

- KUL and USE conducted a workshop during the second Consortium Meeting (Nov 2019). Based on this discussions KUL developed a decision-tree template with instructions and sent this out to the LEA partners.
- The LEA partners filled out the decision tree and the results from the decision-trees were analysed and reported in D2.3

T2.2: Conduct a large-scale study on the perceived behaviour of police officers of EU citizens (M12-22)

- Development of the survey: KUL has been reviewing existing literature and survey methods and collecting ideas about the content of the survey
- Consideration of socio-demographics factors of participants, attitude towards police and own experiences with police
- Shaping and enhancing of the survey with the production of short videoclips of a police intervention, in which the behavior of the police is varied

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Deviations from work plan	As the initial intention for the EU citizen survey design became problematic due to COVID-19 and the black lives matters movement the survey concept had to be redesigned. Due to the subsequent delay in the development it is now expected that the survey will be active mid-November.

3.2.3 WP3

WP-Nr.	WP3	**Lead**	VUA
WP Title	Training Concepts & New Innovation Approach		
Submitted Del.	D3.1 Overview of Current Training and Best Practices of Training Curricula in European LEAs and Impacts on the DMA-SR Modell and Training (M8) D3.2 Conceptual Model of DMA-SR Behaviour and a Research Agenda to validate the Conceptual Model (M12)		
Overview of work performed (per task)	*T3.1 Comparison and Analytics of Existing training curricula (M1-8)* • VUA assembled a list of documents to request from the LEAs regarding current training practices and made a compilation of relevant training and an assessment of related materials in order to conduct a comparison • Requesting training curricula material from LEAs and Advisory Board: LEAs were informed of materials required for a comparison of training and assessment methods and retrieval of the requested documents • Conducting literature review on current training practices of European LEAs • Organizing and sorting through the received training and assessment materials and creating a spreadsheet containing all relevant training and assessment related information from all six LEAs • Compiling of training and assessment methods that are implemented across all six LEAs and establishing criteria by which best training practices can be measured • Evaluation of these training practices according to evidence-based criteria promoting training effectiveness. • Integration of the findings in the Deliverable 3.1: Comparison and Analytics of Existing Training Curricula • Compilation of a catalogue of current training practices of Shotpros LEAs. The catalogue is an attachment to D3.1 and		

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describes domain-specific trainings as they are being implemented in the existing training curricula of the LEAs
- Findings of the desk research described in D3.1 were enriched and cross-checked with site-visits at the location of all 6 SHOTPROS LEAs which were conducted in the timeframe from December 2019 to March 2020.
- Achievement of the site visits were observed shooting training, tactical training, skill training and scenario-based training to validate and enrich the insight into the training practices from D3.1 with interviews of instructor/coordinator who have an overview of training curriculum
- Analysis Site Visits: transcription and translation of the conducted interviews and coding and analysing interview material, as well as training observations.

T3.2 Multi-Dimensional DMA-SR Model (M5-12)

- Development of a conceptual model of DMA-SR behaviour Outlined a research agenda to validate (parts of) the conceptual model.

T3.3 Development of Training Concepts, Toolkits & Didactics and VR Training curricula (M12-24)

The following studies were planned and carried out in the context of WP3:

- Planning of Twente Study with Dutch Protection Detail and RE-liON: a research agenda and protocol was setup by VUA to investigate the experience of stress in VR and reality-based training scenarios. Research efforts were coordinated with responsible entity for the training days of the Dutch protection detail officers.
- Conduction of a large-scale experiment with 16 measurement days testing over 315 police officers: comparing VR training to real-life scenario training, VUA investigated the officers' experience of stress, anxiety, and intensity. To assess the VR system specifically, the sense of presence of officers in the virtual environment was explored.
- Analysing physiological data from heart rate and movement measurements, data of perceived anxiety and mental effort, data regarding the experience and reception of the VR system
- Ongoing planning of the analysis of the obtained physiological and movement-related data
- Planning of VR System Danger Zone Rotterdam study: Connecting with Ronald Tieman of the Rotterdam police force

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	to advance the development and conduct research on the police-specific Danger Zone VR system, a research study assessing (learning) experience of police academy students training in VR. • Conduction of a research experiment with police instructors and students of the Dutch police academy. Participants received VR glasses for at-home training with the VR DangerZone software. 64 participants were assessed on the basis of learning experience, subjective experience of stress, and engagement with the VR training tool. Ongoing analysis of the dataset and planning to conduct follow-up interviews with the police instructors. • Planning of Research Study VR System Refense AG & Zurich City Police: Connecting with the Zurich City Police and their efforts to develop police-specific VR training. Developing a research agenda to investigate the effectiveness of particular systems, as well as the overall learning experience officers may have with VR. • Conduction research study with the Zurich City Police and the Refense A.G. VR system investigating the effect of VR feedback options and the addition of a pain stimulus. 665 police officers were tested. We obtained physiological data and various experience-related questionnaires to compare the VR training tool to the VirTra shooting simulator (i.e. an established technology-enhanced training tool). • Currently planning of the analysis of the obtained physiological data. • Preparation of an outline of D3.3 “European Framework for Training and Assessment (using VR) of DMA-SR Behaviour of LEAs Professionals”: Extrapolating training concepts, training methods and training didactics from above mentioned research studies and formulating an outline for the (VR) training framework
Deviations from work plan	

3.2.4 WP4

WP-Nr.	WP4	**Lead**	AIT
WP Title	Training Experience Assessment, Modelling and Scenario Development		

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Submitted Del.	D4.1 Cue Repository for Personalization and Customization of VR Training Scenarios (M13) D4.2 Description of VR Training Scenarios (M18) D4.3 Concept for Physiological Measurement Suite for Stress Assessment (M18) D4.7 Development of a risk assessment toolkit to identify high-risk situations (M18)
Overview of work performed (per task)	*T4.1 Selection and validation of stress and immersion creating cues and creation of training scenarios (M8-18)* • Analysis of existing scenarios used by VUA and Dutch police and preparation of Unity implementation of the contained cues • Evaluation of the possibility to create specific elements and features in VR • Design and development of the scenarios in UnReal • Preparation and finalization of D4.1 • Berlin Stress: physiological measurement suite has been prepared (also see T4.2) *T4.2 Psychophysiological Measurement Suite (M8-18)* • Systematic Literature Review: Methodology and data collection plan has been set up • Case Study: Data collection, execution of laboratory analyses of saliva samples and statistical analyses, results are published • Paintball Study: preliminary statistical analyses finished, (presentation of results on conferences have been cancelled due to COVID19) • Physiological measurement suite has been prepared (see Deliverable 4.3) *T4.3 Training Experience Framework and Models (M8-18)* • Screening of study data from Rotterdam and Zurich • Descriptive and explorative statistical analysis of Zurich and Rotterdam data • Preparation of D4.4 Training Experience Framework and Structural Equation Model *T4.4 Real-time measurement of training progress and decision-making performance (M10-22)* • see deviations from work plan

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	T4.6 Development of a risk assessment toolkit to identify high-risk situations (M8-18) • Organising preparatory meetings on the creation of the risk assessment tool. • Identify and define objectives of the risk assessment tool. • Preparation of a survey, based on risk factors previously identified in the project. • Drawing up of Deliverable D4.7
Deviations from work plan	Field Exercise: has been cancelled due to COVID19, will be postponed to 2021 Berlin Stress: data collection will be postponed due to COVID19 D4.4. delayed due to postponement of the implementation of planned HF studies Risk assessment tool itself cannot be delivered at the initially planned submission date at the end of October 2020

3.2.5 WP5

WP-Nr.	WP5	**Lead**	RL
WP Title	Contextual VR Simulator-Toolkit		
Submitted Del.	none		
Overview of work performed (per task)	*T5.1 VR System Design for Human Factors Studies based on identified LEA Requirements and Research Needs and for the Field Tests (M8-25)* • Designing basic systems on the basis of user requirements: technical design of the SUIT Terrain Editor (STE), needed for the scenarios and part of the SUIT Scenario Development Station (SDS) • Develop technology based on the Unreal Engine platform • Design of BLACKSUIT based on Unreal Engine and build a component transition roadmap • Discuss and refine implementation plans with SHOTPROS WP5 partners • Feedback sessions with LEAs on development plans *T5.2 Development VR Test-Scenarios, VR Live Editor and Sensorics Integration for Human Factors Measurement (M8-24)*		

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	• Stabilization and bugfixing for the preparation of the scenario creation system for SHOTPROS scenarios • Working on technical design and prototyping of the new SUIT rendering engine. • Integrating latest developments of Urban Builder (building sketch tool) for environment editing • Phasing out old technology for environment editing, replacing with a new tool • Setup and testing of police scenarios used during the 4 weeks-trial in Q1/2020 (Twente study) • Create a set of scenarios for training movement in urban environments • Implement BLACKSUIT on top of new engine based on the System Design Document (D5.1) • Development of domestic disturbance scenario components • Development of tactical belt police gear *T5.5 Provide the necessary VR infrastructure and environment (M10-33)* • Upgraded computing box to provide an increase in rendering power and prepare the new computing box for use outdoor • Research and development into sim replica weapon aiming accuracy needed for the testing environment. • Research and development for wearable computing box, smartvest textiles and personal wearable equipment needed for testing environment • Design and development of base technology for wireless instrumentation of props required for VR Police Scenario Creation for Field Tests • Redesign packaging (textiles, etc) of electronic components of BLACKSUIT that will be exposed to weather and position tracking of trainees to facilitate outdoor training • Support Police NRW in making a promotion video for SHOTPROS using BLACKSUIT
Deviations from work plan	Based on early scenario requirements, ReLion decided to change the rendering engine of the VR system. This is an up-front investment which entails a higher resource usage in the first project year but which will free up a large quantity of resources in the project for the second half, which can be put towards more and better scenarios or other means.

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3.2.6 WP6

WP-Nr.	WP6	**Lead**	AIT
WP Title	Human Factor Studies & Experiments		
Submitted Del.			
Overview of work performed (per task)	*T6.1 Preparation and Development of measurement instruments and experimentation plan (M8-22)* • Preparation of questionnaires for Rotterdam police study • Participation in ongoing VR training studies • Preparation of D6.1 Human Factors study plan *T6.2 Experiments and Studies Execution (M10-24)* • Organization of all HF studies (contact with end-user, preparation, planning and set-up) • Contacting and acquistition of LEAs, elaboration and support of the fact sheet and study preparation, design of documents and visuals for the SHOT-COVID19 study: In this online survey, 2567 police officers from Austria, Germany, Switzerland, the Netherlands, and Spain participated at three measurement points per country in spring 2020. Three-level growth curve models assessed changes in strain and its relation to stressor appraisal, emotion regulation, and preparedness through training. To add context to the findings, free response answers about officers' main tasks, stressors, and crisis measures were coded inductively. • SHOTCOVID Online Survey: Statistical analyses had been conducted and implications for governmental, organizational, and individual coping strategies during pandemics were derived. Results were presented to Police Berlin and Polizeipräsidium Mannheim. • Preparation of Berlin Stress study with COVID-19 safety concept for study execution.		
Deviations from work plan	Berlin Stress study postponed due to the aggravating COVID-19 situation. In view of the obstractions in HF study executions due to COVID-19 regulations in the different partner countries the HF study plan has to be revised and aligned with the research partners and the implementation partner which takes some extra time and effort to finalize. Therefore we have to postpone the finalization of D6.1 by one month.		

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3.2.7 WP7

WP-Nr.	WP7	Lead	VESTA
WP Title	Evaluation Phase with Field-Trials and Generation of Final Results & Impacts (M25-36)		
Submitted Del.	-		
Overview of work performed (per task)	Not started yet		
Deviations from work plan	-		

3.2.8 WP8

WP-Nr.	WP8	Lead	USE
WP Title	Dissemination, Exploitation & Communication		
Submitted Del.	D8.1 Dissemination Plan and Communication Guideline (M4) D8.2 Project Website (M4) D8.3 Dissemination Material V1 (M4) D8.8 Reports on Dissemination Activities including 'VR Police Training Network' Report V1 (M17) D8.10 VR Police Training Network for LEAs: Mission Statement and Implementation Plan (M8)		
Overview of work performed (per task)	**Note**: A more detailed description of the progress of WP8 can be found in D8.8 – Dissemination Report V1 which was submitted in M17 *T8.1 Dissemination Plan and Communication Guideline (M1-M35)* • Target audiences identified, dissemination and communication strategies developed, communication guide was set up • Visual Identity & Style Guide (e.g. logo, colours, fonts, visuals) developed *T8.2 Media & Events (M1-M35)*		

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- Project website was set up and is maintained by USE; Inputs and feedback are provided by all partners, re-design in Y2
- Social Media Channels (Facebook, LinkedIn, Twitter, ResearchGate) were set up and are updated regularly
- 2 press releases (about the project kick-off and the SHOT-COVID study) were sent to the media and over 23 European Media published an article
- The project was presented at various events and high-level meetings
- A newsletter about the project progress was sent out
- A webinar series about 4 VR Police topics is hosted by SHOTPROS in M18-M20 to inform our contacts about the project topics

T8.3 Printed Materials for Policy-Makers and End Users (M10-M36)

- 2 sets of printed materials were developed and distributed
- New printed materials are currently developed

T8.4 Strategies and Toolkit for Policy-Makers (M15-M36)

- Draft toolkit and materials for policy-makers were developed and reported in this deliverable D1.6
- Several contacts and meetings with policy-maker carried out in the first 18 months

T8.5 Scientific Dissemination (M1-M36)

- publications in peer-reviewed books / journals and participation at scientific conferences carried out by the research partners
- Publication plan was developed for monitoring the progress of Scientific Dissemination

T8.6 Exploitation, Innovation Management and Business Outlook (M1-M36)

- An exploitation workshop was planned and conducted during the 3rd Consortium Meeting (online) to update the initially stated exploitation goals of the partners
- Key exploitable results were identified and discussed with the respective partners, Continuous monitoring of project outcomes and their exploitation potential will be carried out by all partners

T8.8 Establish a "VR Training Network" for LEAs and Synergies with related Projects (M1-M36)

- Contact and synergies with several European projects; further collaborations planned
- The network is continuously developed based on an kpi-framework

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	• Community management of the contacts gathered in the project to keep them informed and updated about SHOTPROS (e.g. by the newsletter and the VR Police Webinars) until the network is evaluated and official members can join
Deviations from work plan	The planned event at Campus VESTA in May 2020 (Joint Activity and VR Trial Day) was postponed due to COVID. Several events and conferences where SHOTPROS partners planned to attend representing the project were cancelled or postponed (amongst others: SRE 2020 Bonn, BDSA 2020, …)

3.2.9 WP9

WP-Nr.	WP9	**Lead**	USE
WP Title	Ethics requirements		
Submitted Del.	D9.1 – D9-10 (M1-6)		
Overview of work performed (per task)	All deliverables were written, revised by the consortium and submitted in time.		
Deviations from work plan	-		

4 Societal Impact Report

This section comprises the assessment of the societal impact of SHOTPROS in the first reporting period (M1-M18) as described in T1.5 – Assessment and Reporting of Societal Impact.

4.1 Expected Societal Impact

SHOTPROS will have an impact on several societal aspects. First, focusing on the development of an **evidence-based** training curriculum (supported by empirical findings and based on the most appropriate didactical theories), SHOTPROS aims to maximize training efficiency and as such, improve the overall capabilities of the law enforcement personnel, especially in terms of appropriate decision-making and acting during police interventions. This will in turn result in better, safer, sounder, proportionate and legitimate law enforcement operations. This can

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be expected to contribute to the level of safety security in Europe. Furthermore, well-trained police forces can contribute to strengthen the perception of citizens that the EU is an area of freedom, justice and security. Research shows that having negative personal experience with law enforcement decreases citizens' satisfaction with and trust in the police (Frank, Smith, & Novak, 2005). However, when citizens have the feeling that they were treated fairly and professionally in their contacts with police, this can lead to more trust (i.e., procedural justice; Huo & Tyler, 2002). Training police officers in better decision-making and acting appropriate to the specific situation, will improve citizens' trust in police and consequently their feelings of security. This has a positive impact on the quality of life and well-being for citizens, but also on other societal sectors that benefit from higher perceived security (economy, tourism, cultural events, urban communities, city planning, etc.). A more detailed description of the expected societal impacts is presented below:

- **A safer Europe through better training of police officers:** SHOTPROS aims to enable police officers to better train their decision-making and acting skills under stress and in high-risk situations and consequently prevent and fight crime and terrorism more effectively.
- **Stronger security structures:** A harmonized and standardized European police training framework and the establishment of a Police Training Network will enable better exchange, harmonization and cooperation in law enforcement on EU-level and therefore strengthen the security structures within the EU Security Union.
- **Higher trust in European police forces and a higher level of perceived security through better trained police:** Better police training will result in more appropriate handling of incidents (in terms of safety, legitimacy, proportionality and professionality) and safer public spaces, which will result in a better image of law enforcement agencies, a higher overall perception that the European Union is a place of freedom, justice and security and a better quality of life.
- **More cost-efficient training:** A direct economic benefit will result from the fact that VR training allows cost-efficient adaptation to different contexts, scenarios, new challenges and goals. The proposed training framework can be adapted to training for other professions that operate under stress and in high-risk situations (e.g. fire and rescue teams, disaster management and emergency services, the urgent medical intervention teams, specialised forces etc.) or other levels and roles within first responders' organizations (director of operations, crisis management, control room). The framework can further be used in future scientific work, as a basis for new forms of training for different kinds of applications.
- **More evidence-based training**: The training curriculum in SHOTPROS will be based on empirical evidence and sound theoretical underpinnings, making training more

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evidence-based and hence more effective in achieving maximal learning benefits. Furthermore, disseminating and promoting the practice of designing or choosing evidence-based trainings across law enforcement agencies across Europe, will further lead to more effective training of law enforcement officers.

- **Positive Economic impact:** Actual and perceived public security and safety, especially safer public spaces, cities and streets will have a positive economic impact by raising the value as a business location, as a location for international organizations and for various economic sectors (e.g. tourism).

4.2 Societal Impact focus in SHOTPROS

4.2.1 EU citizen survey

In WP2, a large-scale study on the perceived behaviour of police officers by EU citizens is conducted (task 2.2: EU Citizens Survey). The study will assess the level of trust in police work, the perception citizens have about the police and certain police actions (and whether or not this is also dependent on citizens' personal characteristics), and subjective feelings of security. It will also assess the needs and expectations citizens hold concerning police work and treatment by police officers. It will thus investigate the societal impact of police DMA on citizens' perspectives on police legitimacy and trust and will help at incorporating the needs of EU citizens in the project.

The survey will consist, among others, of questionnaires that measure attitudes towards police, the importance of procedural justice in police contact, and own experiences with police. Participants will also view three videoclips of (re-enacted) police interventions (i.e., a domestic violence situation; a knife attack; a vehicle stop). Each scenario has three versions, the difference being the reaction of the police officers to the situation. All the actions of the police officers fall into the 'acceptable' range. Participants will be asked questions about the videoclips they saw: whether or not they found the action of the police officer proportionate to the situation, whether they consider the action to be legitimate, and whether they find the actions of the police officers to be evidence of professionality. We will also ask to assess whether witnessing such a reaction would have a positive or negative effect on their perception of the police. This will provide us with novel insights in the preferred DMA behaviour of police according to EU citizens. The survey will be administered to European citizens from various nationalities, cultural and ethnic background, gender, religion, age, and socio-economic status. Differences in perceptions, experiences, trust, expected behaviour between citizens with varying socio-demographic background will be analysed. The target number of survey participants in each consortium country is 200, which will result in a sample size, of about 1.200 respondents. The results of this survey (D2.4) will provide detailed insight

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in possibly differing levels of perceptions and feelings of safety, and whether the needs and expectations differ across European citizens. This will feed the work on policy-maker strategies (WP8) (e.g. addressing and resolving false beliefs about police work) and will provide arguments for the planned training concepts and the further design of the training curriculum.

At the moment of writing this deliverable, the study design and survey are developed. The course of the study as well as the results will be reported in the respective deliverable D2.4 and the second Societal Impact Report in D1.7.

4.2.2 Other research activities

SHOTPROS pays special attention on laying the basis for future evaluations of the effectiveness of its training framework. The method and results of the trials conducted in WP6 and WP7 will be documented in a way that they can be replicated. The system developed during the project will include tools to measure and track training progress and a results dashboard to evaluate the training success. This system will be based on solid theoretical insights and empirically validated training content. This will allow for further research on the developed training and verification of the positive societal impact resulting from more effective law enforcement training.

4.2.3 Dissemination, Exploitation and Communication

The societal impact plays an important role in several parts of WP8 – Dissemination, Exploitation & Communication. One the one hand, the communication activities targeting the general public of EU citizens is transferring the core message (as defined in D8.1), that the collaborative research and the outcomes of SHOTPROS result in direct benefits for the European society. On the other hand, the task T8.6 Exploitation, Innovation Management and Business Outlook aims to ensure the uptake of the project results to maximize the (amongst others) positive societal impacts. This goal is also targeted by the VR Police Network – T8.8 which is established through the course of the project. The long-term goal of the network initiatives and activities is to gain and transfer knowledge in the topic of "VR & Police Training" for a sustainable, efficient and effective fight against crime and terrorism and therefore raise its societal impact. The aim of these activities is to use the multiplier effect to maximise the societal impact of SHOTPROS, to promote the exchange of ideas and experiences, and to spread innovations, knowledge and developments in the context of training in DMA and behavioural aspects of police work against terrorism and crime.

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5 Policy-Maker Toolkit (Draft)

SHOTPROS will provide strategies, decision-making support and a toolkit for policy-makers (D8.5). The strategies are **derived from the project results** and take into consideration policy goals and identified policy questions and problem areas. The final toolkit includes and impact report that compiles project results that are relevant to policy strategies and decisions, help policy-makers understand **requirements of LEAs concerning training**, and the **pros and cons of (VR) training methods** and provide insights that can contribute to attain policy goals like improvement of security, perceived security, and image of the police. The toolkit is targeted at policy-makers on national and European level.

A basic strategy and toolkit will be delivered by SHOTPROS as a result of the project. The toolkit will be developed further by the VR Police network as a work in progress, reacting to current policy questions and issues and different situations in national or European contexts.

As already reported in D8.8 – Dissemination Report V1 (Chapter 2.3), several meetings and workshops with policy-maker have taken place through the course of the project. SHOTPROS utilizes a set of tools to provide them relevant information and enable decision-making support regarding topics of the project. The first set of tools comprises the project presentations, information on the SHOTPROS communication channels and the printed materials (described in D8.8). Additionally, the second set of printed materials (see figure 2) has been developed and contains information relevant for policy-makers. These two 2-pager will be extended content-wise to provide a solid decision-making support regarding novel technologies and VR training in the police. Furthermore, a booklet with an overview of “VR Training Provider Companies in Europe” and some general information about the project and the topic of VR training is currently finalized. This booklet can be seen as a “living tool” and will be extended by adding more companies and a competitive analysis of the presented companies.

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2-pager1: Digital transformation in the police

2-pager2: VR in police training

Figure 2: Printed materials (set 2)

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Summary & overview of the Policy-Maker toolkit

Tool(s)	Description	Status
• **General printed materials (e.g. flyer)** • **Comm. Channels (e.g. website, social media)**	Will be used as tool to inform policy-maker about the existence of the project and the overall objectives and activities.	Already distributed
• **PPT Presentations**	Have been prepared for several meetings and speeches and will be adapted and enhanced based on the specific aim / focus of upcoming policy–maker contacts	Already distributed
• **Printed materials (set 2)**	The two 2-pager (see figure 2) comprise information regarding "digital transformation in the police" and "VR in police training". It is planned to extend them content-wise to a folder or brochure.	Ready for distribution (+ extension planned)
• **Booklet "VR Training provider companies in Europe"**	The booklet is currently finalized and aims to support decision-maker selecting an appropriate provider company. Addition of more companies and a competitive analysis is planned.	Ready for distribution by the end of October (+extension planned)
• **Impact report & tools based on project results**	The impact report and the sum of tools derived from project results will be continuously developed and reported in D8.5 in M35. Still, the distribution of policy-maker documents from (the first) results will be started before to maximize the policy impact as soon as possible.	Under development

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References

- Frank, J., Smith, B.W., & Novak, K.J. (2005). Exploring the basis of citizens' attitudes toward the police. Police Quarterly, 2, 206-228.
- Huo, Y.J., & Tyler, T. (2002). Trust in the law: encouraging public cooperation with the police and courts. New York: Russell Sage Foundation.

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