DELIVERABLE 8.7

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D8.7 Demonstration Tool

Deliverable	D8.7
Deliverable Lead	RL
Related work package	WP8
Author(s)	Chris Haarmeijer (RL) Niek Oude Essink Nijhuis (RL) Birgit Harthum (USE) Olivia Zechner (AIT)
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Due submission date	30.04.2022
Actual submission	29.04.2022
Project number	833672
Instrument	RIA
Start date of project	01.05.2019
Duration	42 months
Version log	V1.0

SHOTPROS

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HORIZON 2020

About this slide deck…

- Deliverable 8.7, of the HORIZON 2020 project SHOTPROS (No. 833672)

This slide deck delivers a demonstration tool including a project presentation for showcasing the project and its developments regarding VR police training to potential end users throughout the project. This slide deck or a selection of slides (depending on the target group) was already used at many events (see some highlights on next slide).

Together with the demonstration tool-video, this covers a full demonstration of the SHOTPROS project to interested potential demonstration video: https://www.re-lion.com/movies/2022-shotpros---d87DemonstrationTool-.mp4

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SHOTPROS – showcasing events – focus last 20 months

08/2021 – VR&Police Get Together seminar at SIAK, Vienna, Austria

09/2021 – Transtun Final Conference, Tunel de Bielsa-Aragnouet, France

11/2021 - Conference for New Technology for Law Enforcement, Würzburg, Germany

11/2021 - CUTTING CRIME IMPACT (CCI) Conference, Brussels, Belgium

03/2022 - VR&Police Network Event, Gimborn, Germany

02/2022 – Showcasing at Field Trials, Seibersdorf, Austria

03/2022 – Showcasing at Field Trials, Bucharest, Romania

04/2022 - Showcasing at Field Trials, Amsterdam, The Netherlands

04/2022 – Showcasing at Field Trials, Selm, Germany

05/2022 - Showcasing at Field Trials, Berlin, Germany

06/2022 – Specialist Conference DHPOL, Frankfurt, Germany

09/2022 – Final Conference SHOTPROS project, Ranst, Belgium

Etc.

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Train.Decide.Act

Showcasing SHOTPROS

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SHOTPROS in a nutshell

- **SHOTPROS develops for…**
  - TRAINERs — Scientifically validate training framework for decision making and acting (DMA) under high stress
  - TRAINEES — (Validated) VR-training environment
  - DECISION MAKERS — Guidelines for VR usage in organisations

- Enhance performance of European police force
  - Keep the guidance in threatening situations
  - Avoid collateral damage
  - Avoid cascading effects

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About the project

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Facts & figures SHOTPROS

- A human factors based (VR) Training framework for decion making and acting (DMA) capabilities under stress and in high risk situations for European law-enforcement agencies (LEAs).
- **Funding**: 5,1 Mio. Euro / 100% funded
- **Duration**: May 2019 to October 2022
- **Type**: RIA, GA No. 833672, HORIZON 2020 EU research and innovation funding programme

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13 partner

An international & multidisciplinary consortium:

- Renowned European research institutions
- International companies
- End user focus:
  6 European law enforcement agencies (LEAs)

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Background

- **Patrol officers** → increasingly involved in **threatening situations** (e.g. AMOK, terror, organised crime, etc.) as first responders
- Extreme **stress** and **performance** situations arise
- Make the right **decisions under stress**

→ **SHOTPROS supports European police forces in current challenges**

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Project objectives

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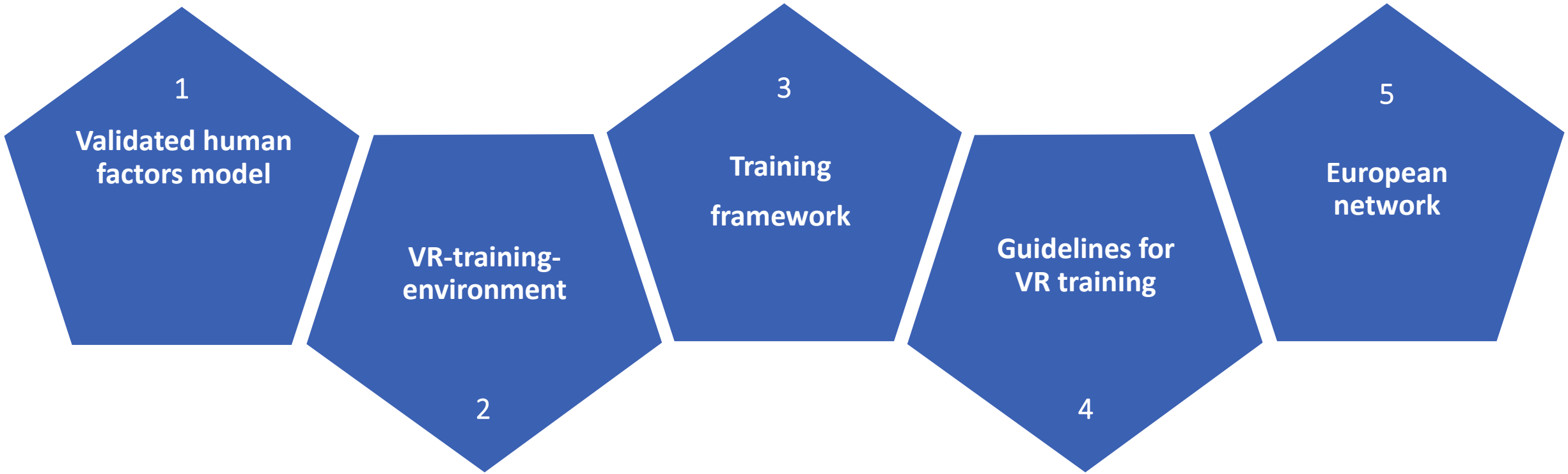
Overview – project objectives



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Scientific Basis

Stress is the individual emotional response to a situation that is perceived as threatening.

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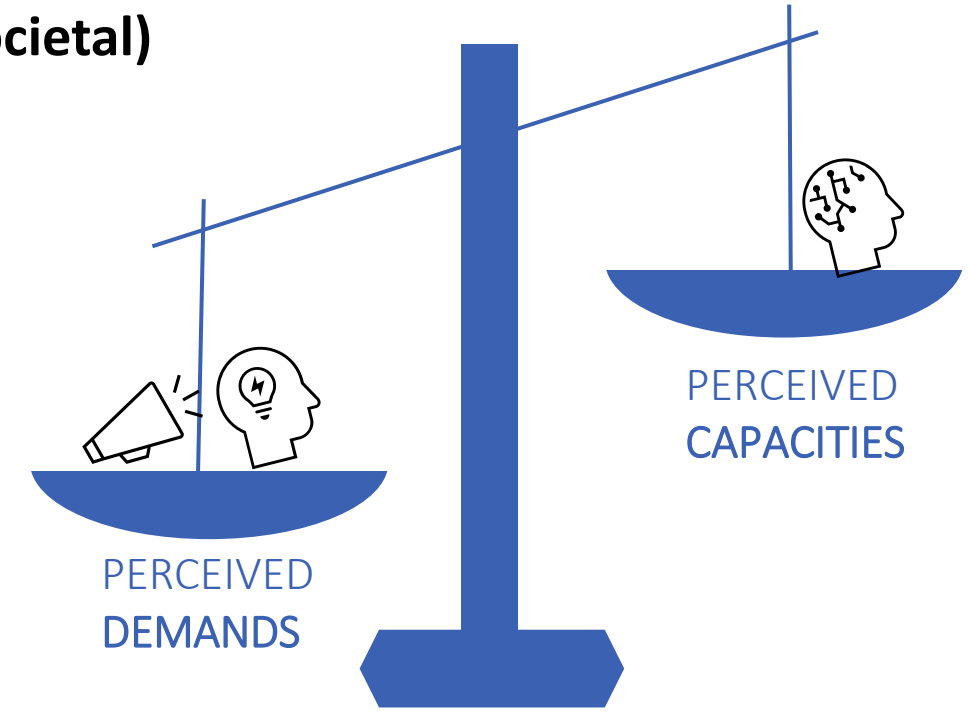
Conceptual Human Factors model

- Perceived demands and perceived capabilities are **not** balanced
  → this represents a **change in attention** and leads to **suboptimal** decision making and acting.
- **VR training enables officers to focus on task-relevant input in stressful situations**
- Human factors (**personal**, **contextual**, **organisational** or **societal)** help to create variable and **realistic** VR-training.
- The model was enhanced with stress inducing factors and bio-signal measurement throughout the project
- Validation in field trials all over Europe in spring 2022
- Results will be applied to the training framework & curriculum and the VR solution



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4 innovation areas

Technology

- Free movement
- Smart vests
- Tactical belt
- Outdoor

Framework

- Model
- Curriculum
- Guidelines
- Scenarios

In-action monitoring

- Stress measurement
- Steering
- Role player/ NPC behaviour
- Realism

After-action review

- Re-play
- Change perspectives
- Evidence-based feedback
- Performance indicators

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SHOTPROS
VR product vision

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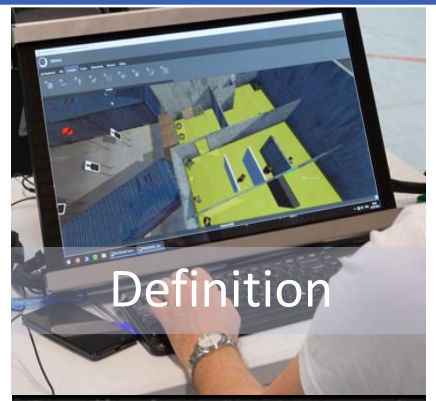
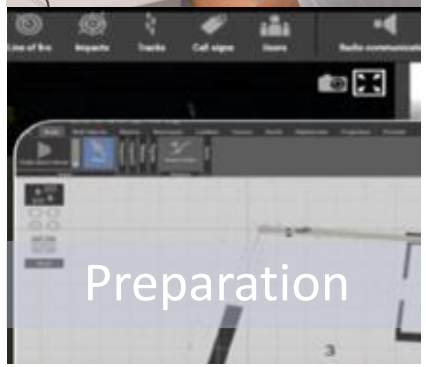
VR solution – all in 1

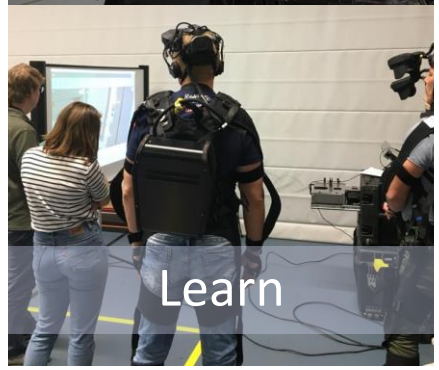
PREPARATION
training scenario





EXECUTION
In-action monitoring

REVIEW
After-action replay



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VR solution components

Ad-hoc wireless stand-alone network

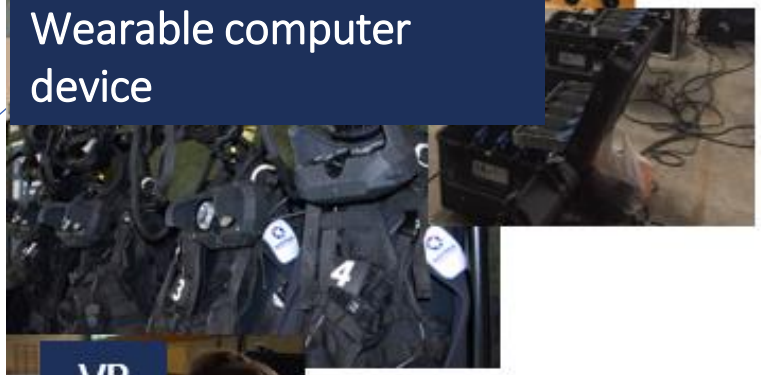
Training field max. 100x70m

Trainer Station for:
In-Action Monitoring and After-Action Review

Rack for **smart vests** & **tactical belt & battery charger**

Operator station

Wearable computer device



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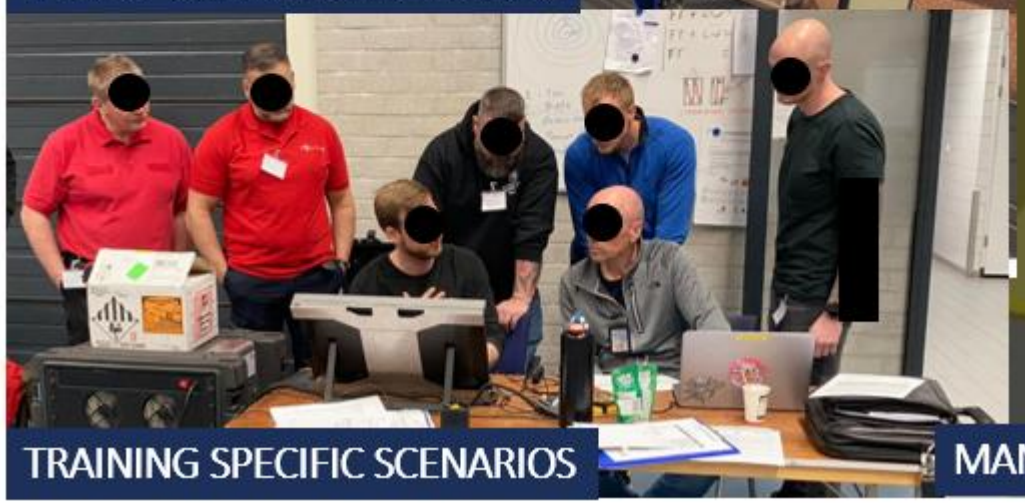
Easy & efficient scenario preparation (scenario editor)



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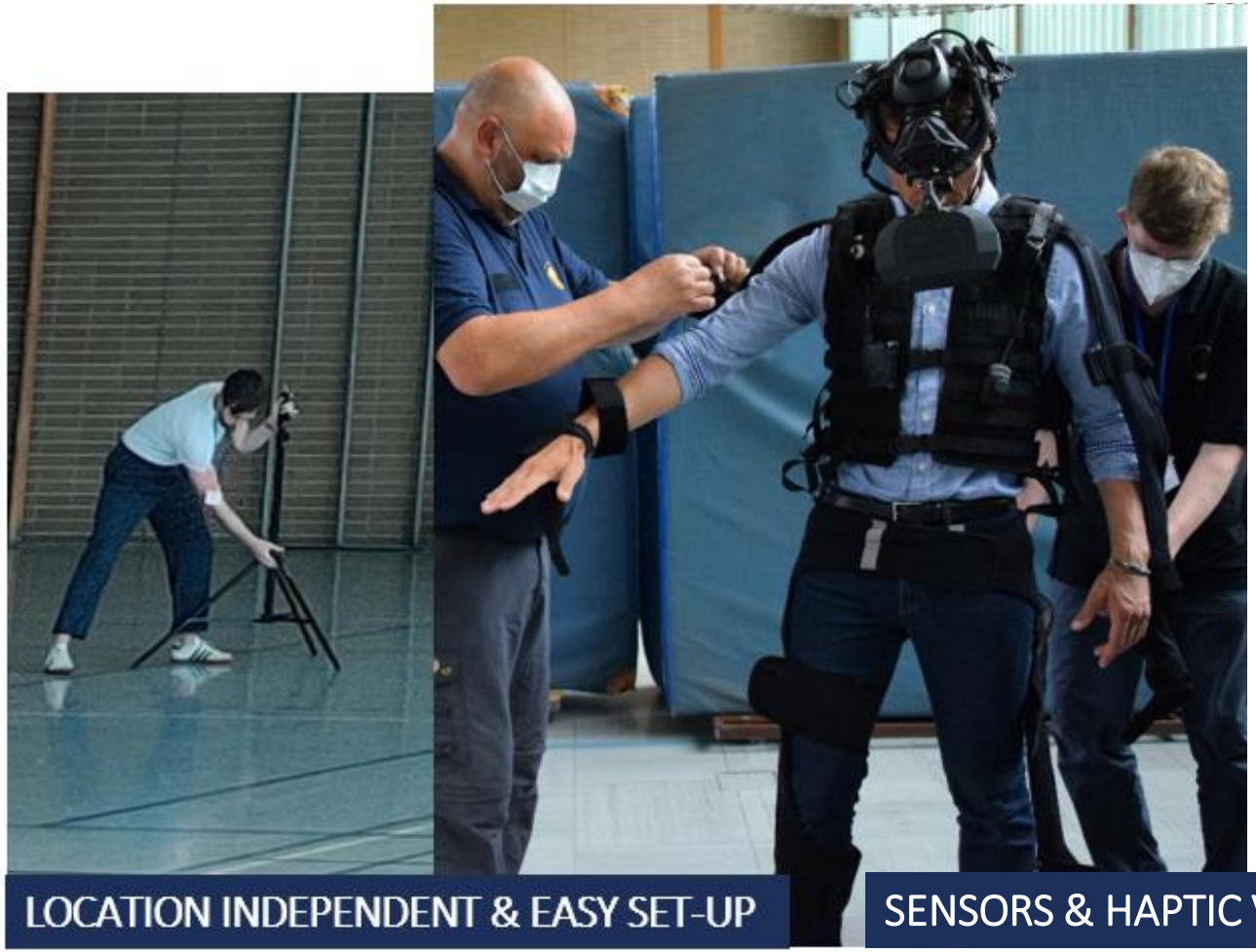
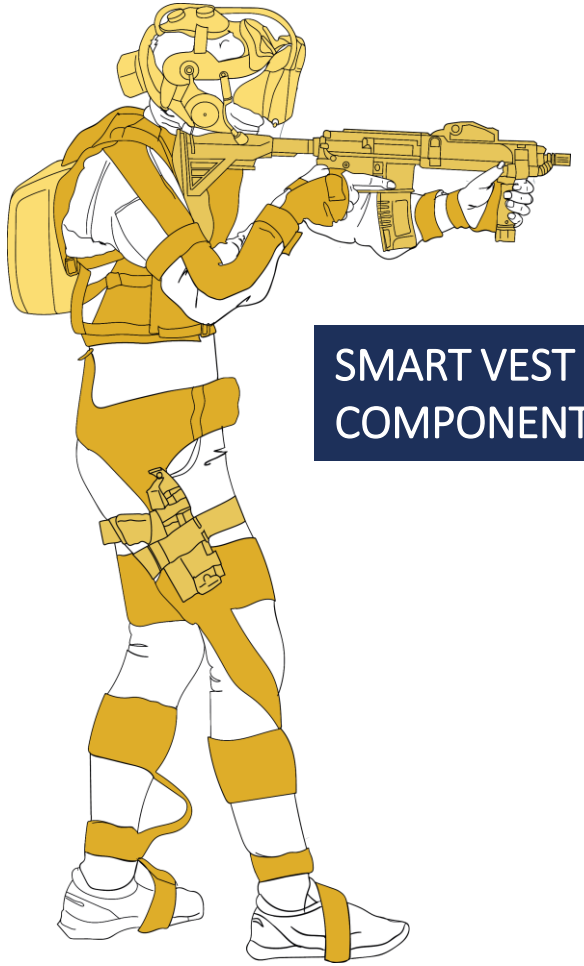
Training preparation



LOCATION INDEPENDENT & EASY SET-UP

SENSORS & HAPTIC VIBRATION



SMART VEST COMPONENTS

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Training – scenario & reality

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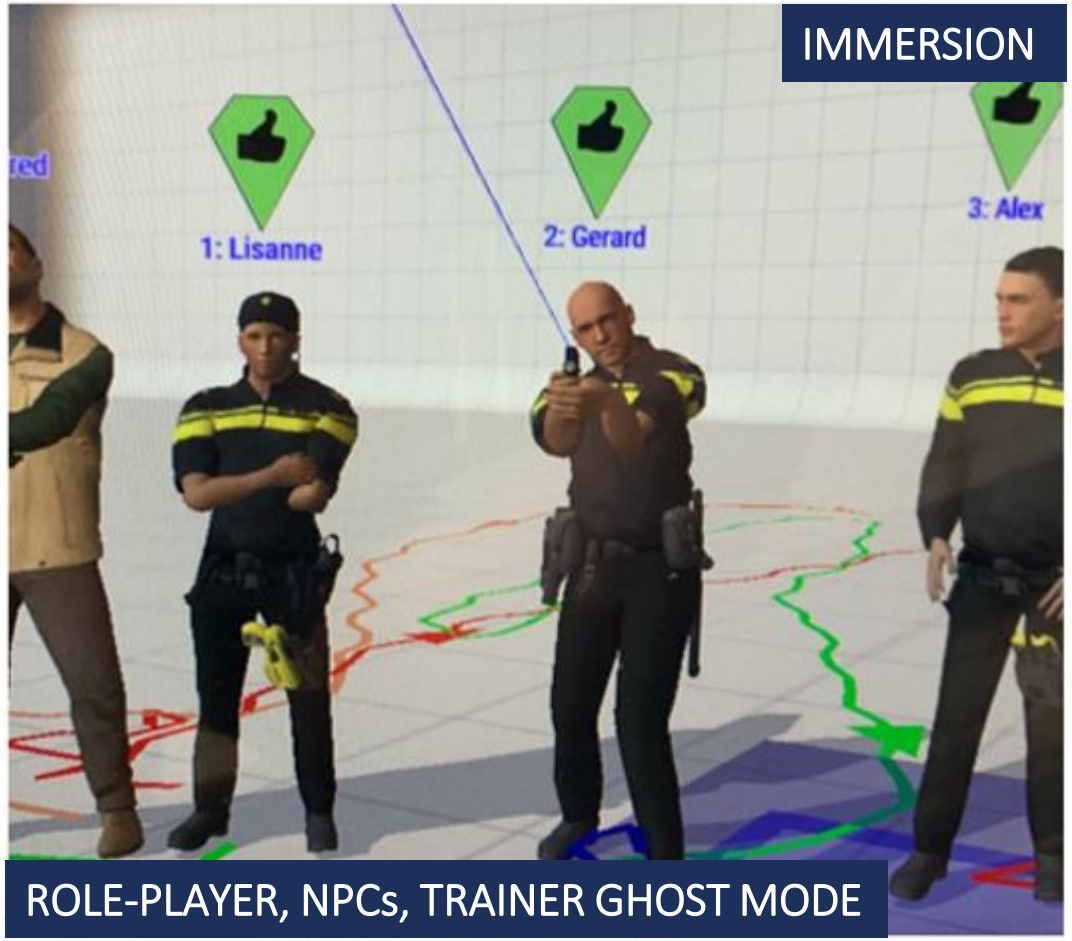
Graphical realism



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Usage of police equipment

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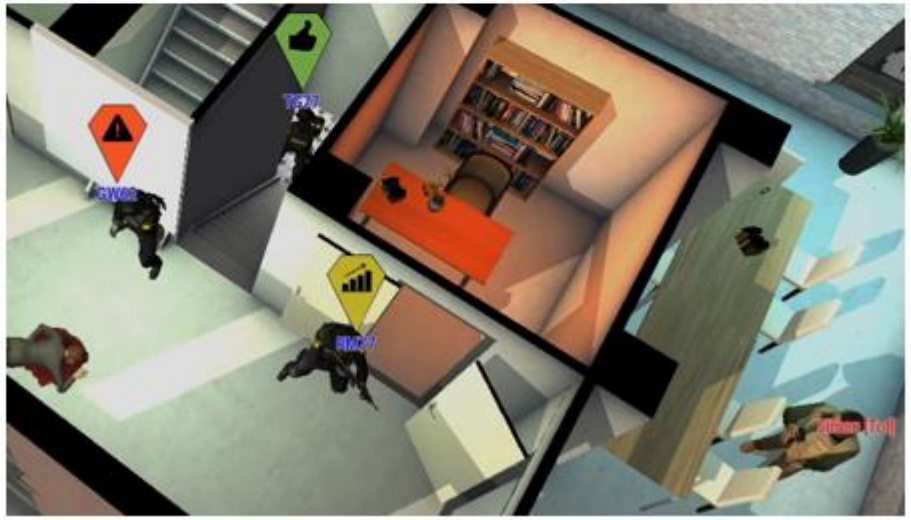
Stress assessment – trainer dashboard & manipulation



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Multisensory experience – materialising stress

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After-action review

RE-PLAY – SELECT CERTAIN SITUATIONS

EVIDENCE BASED PERFORMANCE

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END USER FEEDBACK

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End user feedback – VR for training

Q: Could you imagine using VR training?	n
96 yes, 4 no	24

Values in %

„Train anything, anywhere, anytime“ Trainer Berlin

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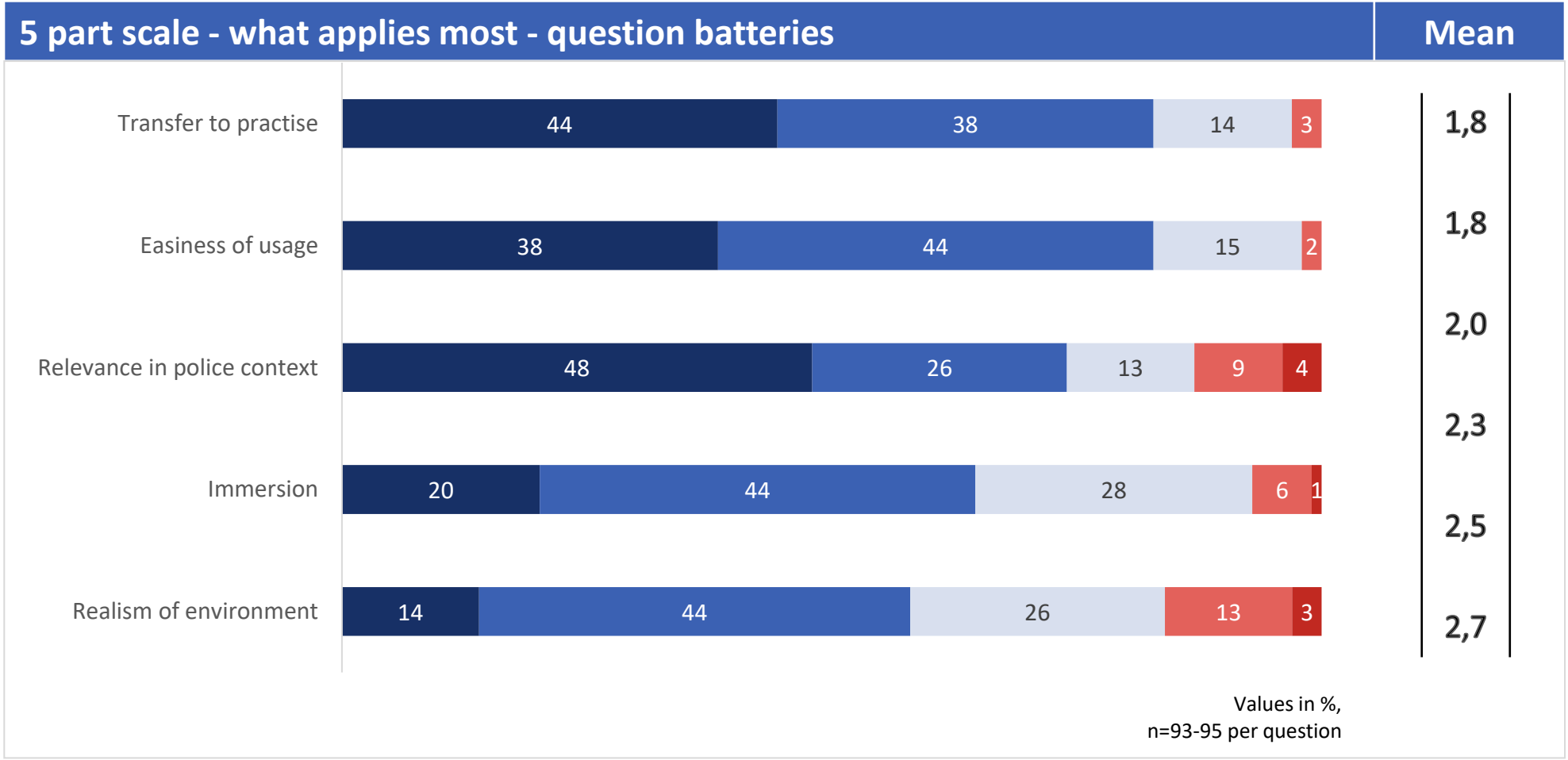
End user feedback – system evaluation



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First results:

Training guidelines & changing role of a trainer

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VR technology - implementing in the organisation

- **Organisational, business, legal** and **technological factors** need to be considered
- **Procurement** and selection process needs to be a defined and **guided** process (**early involvement** of trainer to raise **acceptance**)
- **Embedding** in **existing** guidelines /adapting existing concepts: Expand existing education and training framework & consciously establish stress as a factor in training
- Focus = **training**, not technology
- Introduce "**Train-the-trainer**" courses (3-5 days)
- **Ongoing adaptation/revisions** of concepts will be necessary

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Technology selection:
types & scales of VR systems on the market

- **HMD + VR controllers/other tools**:
  entry level, "compact version", scenarios present a situation followed by DMA → possible use at police stations
- **Full-body (incl. tools), indoor small setup**:
  training of small unit tactical movement in small spaces → use at training centers
- **Full-body (incl. tools), indoor large setup**:
  training of small unit tactical movement in outdoor scenarios and larger buildings → use at training centers
- **Full-body (incl. tools), outdoor very large VR setup**:
  training of platoon-size tactical movement in outdoor scenarios and large buildings → use at training centers (indoor & outdoor)

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Re-think the trainer role

- Technology know-how
- Ethics and safety
- Additional education for VR training
  - Type of training
  - Tools
  - Raise acceptance
- Raised mental load (trainer)

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Training Framework

- More conscious choice in preparation
  - Training objectives, scenarios
  - Physical safety needs to be considered differently
  - Ethics & diversity considerations
- Monitoring & steering
  - Flexibility for the trainer - Live reaction / scenario adoption / (live) instruction of the role player
- Didactical base = provide successful training
- Evidence based feedback
  - Measurability is infinite → evaluation by the trainer
  - Trainers needs to be the expert
  - Model learning can be applied
  - Approaching trainees on their learning level
- Considering motion sickness and providing alternatives in case

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Outlook

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VR & Police Network

- Network also after end of project
- Online community with experts and European law enforcement agencies – independent of providers
- Real-life network meetings for better know-how exchange and networking

VR & Police
Network

https://www.vrandpolice.eu

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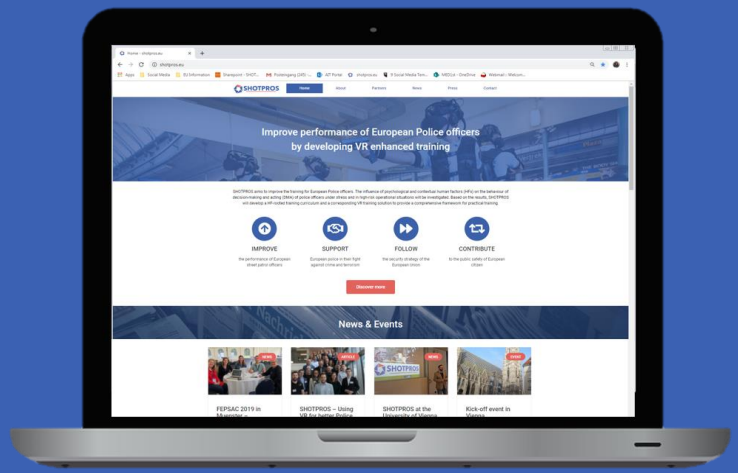

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THANK YOU

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