XVR

APPLYING
VR SIMULATION TRAINING

LearnPro GROUP

TRAINING WITH
VIRTUAL REALITY

Step into the world of virtual reality simulation training and discover all the different ways it can benefit your organisation!

VIRTUAL REALITY
SIMULATION

Dear reader,

Virtual reality simulation has long been used to educate and train students and staff in the emergency and safety sectors, and it is quickly gaining in popularity globally. In this brochure, we will give you an insight into how these sectors have successfully implemented virtual reality into different parts of their curriculum, in different ways. They are all effective and can be applied regardless of scale and budget. Over 300 educational and training centres worldwide use XVR Simulation software to train over 150,000 emergency responders each year, and we will give you insight into the different ways it has helped them.

For more than 20 years, we have developed and improved our virtual reality training software for and with emergency and safety organisations. Together with our users, we continuously explore the applications and implementations of virtual reality training to deliver a product that meets their needs – today and in the future. The result is flexible, tried-and-tested software that offers a solution for every training need, as well as the tools to support the full continuous learning cycle.

We look forward to sharing our vision with you on how to use virtual reality simulation in your curriculum on the following pages.

XVR Simulation

XVR VIRTUAL LEARNING CYCLE

04 REFRESH & EVALUATE

Following each training or assessment, participants can complete scenario-based refresher courses in a time and place of their choosing. This optimises learning retention and is ideal to prevent knowledge loss and skill gaps over time.

01 PREPARATION & REACH

Let participants prepare for upcoming training and assessments in an engaging way with scenario-based learning. This can easily be done from home and does not require an instructor, allowing you to prepare participants more efficiently.

03 TRAIN & ASSESS

The participant is now ready for an immersive training or assessment in a safe, repeatable, and controlled environment. Each participant will have a unique, but comparable, training experience using computer-simulated scenarios while receiving direct feedback from the instructor.

02 TEACH & LEARN

Proper preparation has made the participant more receptive towards new learning experiences. The instructor can now provide a solid theoretical background for the upcoming training, supported by a visual and interactive representation of the learning materials.

TRAIN VIRTUALLY ANYWHERE, ANYTIME

PREPARATION
WITH EXPO

XVR On Scene Expo

The optimal learning output of any given teaching moment, whether it is a typical classroom session or a 1-on-1 training, is significantly increased when the participants have adequately prepared themselves in advance. Preparation "sets the scene" – both in terms of what the participant can expect from the experience, and what kind of performance and input will be expected of them in return. However, the classic method of preparing by studying a text is not always the most effective, especially for complex subject matter that needs to be applied practically. This is why we have created XVR On Scene Expo – it provides a visual addition to traditional text books to improve learning retention and knowledge application.

With XVR Expo, you can offer your students and staff a visual, engaging, and interactive method of preparation. You can create scenes to practice and rehearse standard operating procedures and protocols, or even to familiarise with an incident site or type, before attending a lesson or training. This makes XVR Expo ideal as both an introduction and a refresher tool. Using multiple-choice questions, information hotspots, triage cards, and animated surroundings to deliver the lesson, participants can complete their assigned XVR Expo scenes independently and at their leisure, ensuring that they have the means to turn up well-prepared for the lessons ahead. This also increases your training efficiency immensely, as participants can utilise downtime between shifts or (home) office days to prepare for a training. As long as they have XVR Expo, no instructor is necessary to go through the material, and all exercises can be completed anytime and anywhere.

IN PRACTICE AT:
THE UNIVERSITY OF POLICE RHINELAND-PALATINATE

The University of Police of Rhineland-Palatinate in Germany (Hochschule der Polizei Rheinland-Pfalz, HPRP) has implemented both XVR On Scene and XVR Expo in their digital training curriculum. As part of the SAFER initiative (Simulation Training for Emergency Services of Rhineland-Palatinate), they are collaborating closely with their firefighter colleagues from the Fire and Emergency Academy (Feuerwehr- und Katastrophenschutzakademie Rheinland-Pfalz, LFKA) to develop a holistic approach to the education and training of emergency services. Part of that approach was including XVR Simulation software into their digital training curriculum. Particularly HPRP was faced with the challenge to educate a lot of new cadets in a short period of time, and XVR Expo is helping them do so efficiently and with positive results.

Markus Oppenhäuser (HPRP) says: "XVR Expo is being used by our students for training during downtime or from home. By integrating XVR into our digital curriculum, we have found a way for students to practice and train themselves at home in a police-relevant, practice-oriented manner. This not only follows a professional didactical concept, but is also practice-oriented and fun for the students. Fun and practical orientation, and thus an intensive identification with their future profession, are excellent prerequisites for effective and goal-oriented learning."

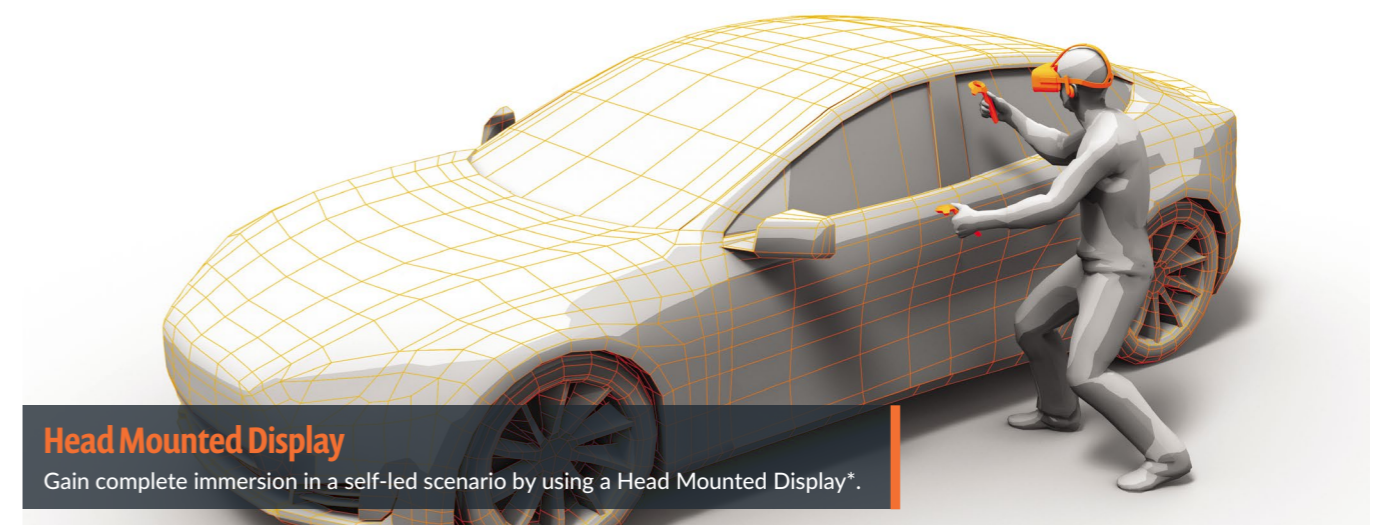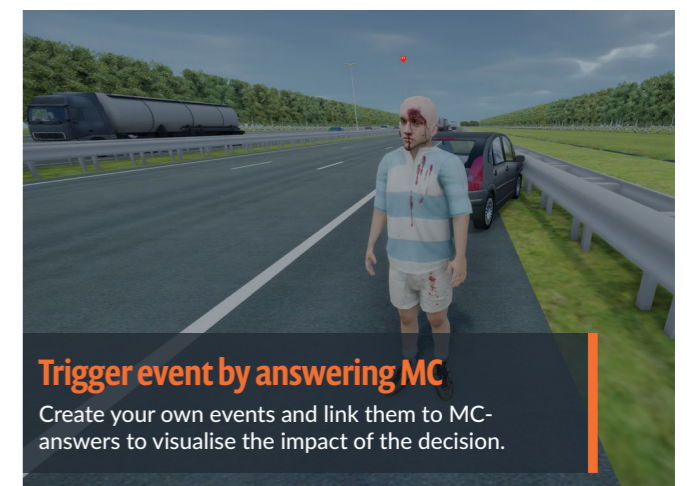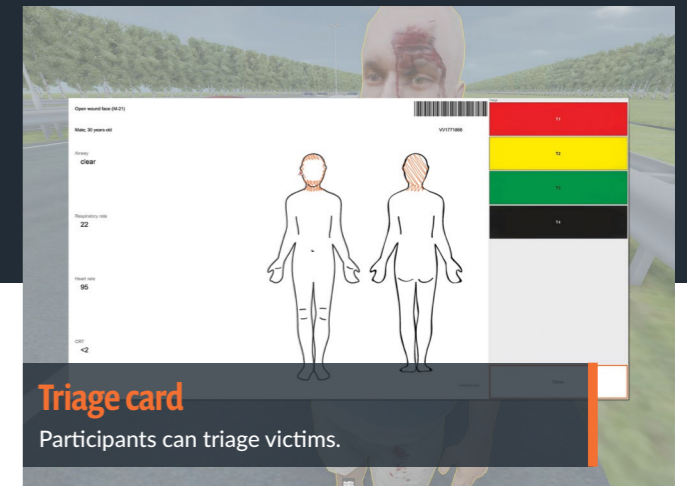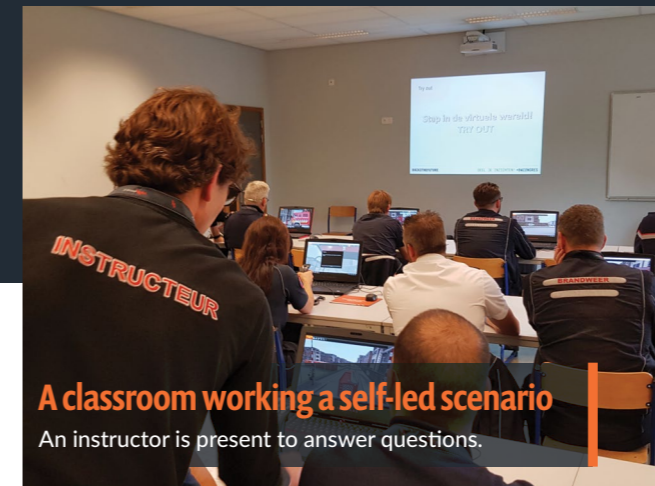©2021 Hochschule der Polizei Rheinland-Pfalz, HPRP

SELF-LED PREPARATION WITH ON SCENE

The advantage of self-led and self-paced preparation is that your staff or students can complete this preparatory material independently – that is to say, without the need for an instructor to be present.

However, self-led exercises can also be completed in a classroom setting, in which the participants can complete meaningful learning experiences at their own pace, with an instructor at hand to answer questions or provide examples or in-depth explanations. Using an interactive method of preparation gives training participants the opportunity to apply knowledge already learned from textbooks or previous lessons in a practical way, further increasing the likeliness of a higher engagement with the material as well as increased learning retention.

XVR On Scene and XVR Expo provide instructors with the ideal tools to create engaging materials to prepare for upcoming learning sessions.

While XVR On Scene is used mainly in sessions actively led by an instructor, in which the participants are guided through the scenario, it can also be used for self-led exercises. To do this, instructors prepare automated scenarios in a way that participants can navigate through an entire scenario by themselves. Just as with XVR Expo, it is possible to add multiple-choice questions and dialogue boxes to stimulate the participant's cognitive skill-building and get them actively involved with the learning material. Self-led exercises presented in On Scene, provide builders with more automation functions and interactions, more elaborate storytelling and better graphics, providing the student with an immersive and interactive learning environment which they can explore by themselves.

WHY SELF-LED?

A self-led exercise can be completed by a student without the need for an instructor to be present. This means an academy or school can significantly increase the amount of people being put through a learning experience at any time. It also allows them to prepare students before they attend an exercise, having already experienced an immersive and interactive scenario, thus increasing the efficiency of the actual training or lesson.

IN PRACTICE: ON SCENE SELF-LED

A classroom working a self-led scenario
An instructor is present to answer questions.

Triage card
Participants can triage victims.

Multiple choice (MC)
MC questions will pop-up to challenge the participant.

Trigger event by answering MC
Create your own events and link them to MC-answers to visualise the impact of the decision.

Head Mounted Display
Gain complete immersion in a self-led scenario by using a Head Mounted Display*.

*Some features for OS Self-Led in combination with the Head Mounted Display are still under development.

CLASSROOM TEACHING

XVR Simulation software offers a wide range of uses for classroom teaching. It is easy to apply to your current curriculum, and it lets you visualise your teaching materials to help you get your message across, thus better meeting your desired learning objectives.

With XVR On Scene, you are able to recreate any (local) scenario you like. It enables you to visualise an incident or situation in a virtual environment to a large group of people. With complete freedom to position the camera to get a bird's-eye view or close-up angle, or to simulate walking around the incident. The instructor can run through an incident step-by-step and in great detail from every possible angle. XVR On Scene gives you all the tools you need to recreate real incidents, thus serving as a great tool for debriefing of a lessons learned session. When using text-based slides, to deliver lessons on procedures and protocols, it can be challenging to find accurate visual materials that support the learning goals. With XVR On Scene, instructors can create the scenario that best supports the lesson they want to deliver and use this to generate screenshots and videos from various angles, at different escalation points, etc. to support their overall message. Using an interactive visual representation of an incident also helps creating the same mental image for all students, which could prove more difficult with text or even static images.

Likewise, XVR Expo scenes can be used to illustrate procedures or protocols in a more attractive and engaging way. Course content developers can create 360-degree images and videos of an incident. By implementing pre-set viewpoints and pop-ups containing additional information, XVR Expo scenes become an interactive tool to go through case studies and stimulate group discussions. Using XVR Expo is also an easy way of allowing each student to explore an incident scene independently and at their own pace.

Altogether, these functionalities allow instructors to assemble engaging and dynamic lesson material that can be used both for relaying information as well as for use in group assignments during class.

Behind the scenes
UK User Group Meeting (2020)

VIRTUAL CLASSROOM

Another way virtual reality can benefit classroom teaching, is through the virtual classroom. We envision a classroom where both students and teacher are fully immersed in the same virtual environment, A learning scenario develops all around the participants, reacting to choices being made. The virtual classroom is still some years away, but XVR is keeping a close eye on technological innovation that support a virtual classroom, as we recognise the potential and are working towards that end.

REMOTE TEACHING

Remote training and education is becoming an increasingly popular addition to most curriculums. The XVR Simulation software has proven in recent years to be an efficient and easy-to-use tool to support all types of remote training, assessment, and education for emergency services. Broadcasting via webinars has firmly established itself as an effective way of educating large groups of students remotely, as you can reach an almost unlimited amount of people simultaneously. Screenshots and videos are becoming an essential part of webinars to provide not just visual interest but important context to the lesson being given. Using virtual incident scenarios as supportive visual materials can greatly improve the appeal of webinar-based teaching, while also making the learning experience more fun and meaningful for those watching. In this way, instructors can play out entire incident scenarios for their students or staff, escalating or mitigating the incident according to the learning objectives.

XVR On Scene can be used to create both image and video materials for online and remote education. Thanks to the flexibility of the software, instructors can create custom visuals that relate to the exact topic they are teaching. Incident scenarios can be created to match local or national situations, and can be easily adapted to give follow-up lessons, or to adjust to the audiences' different skill/knowledge levels. The XVR Simulation software is a highly suitable tool for the digital curriculums of the future.

TRAINING
1-ON-1

XVR On Scene allows you to set up an extensive and elaborate 1-on-1 training session for incident commanders and other emergency responders. Virtual reality simulation training is an effective way to train many of the skills required to manage an incident, such as reconnaissance, decision-making and communication. Virtual scenarios allow you to (re)create incidents that may not be possible to train at a live training site. The instructor is in full control of the challenges, from defining the learning objectives to the interventions during a session. The flexibility of XVR On Scene helps the instructor achieve the best outcome.

XVR On Scene scenarios allow participants to train in a repeatable, controllable, measurable, and safe environment. Here, they face similar incidents as they would in the real world. It is also possible for the participant to take on many different roles that they are expected to fulfil at a real-life incident. 1-on-1 training with XVR On Scene is also ideal for conducting assessments. As the scenarios are repeatable, all participants will have the same starting points and conditions, which better allows for an unbiased assessment.

It is possible to conduct 1-on-1 training with just the participant, instructor, and operator/technician present, but can also be conducted with a group of participants that can observe and give feedback afterwards. In this way, all group members get a chance to learn by watching others and enables the group to have in-depth discussions about certain decisions made and the consequences thereof.

Training and exercising in a virtual environment allows the instructor to control most of the stress-related factors. Depending on the student, the instructor can create a situation in which the participant can ease into the learning process, or increase the stress factors to see how a student performs under pressure. This way, the instructor can personalise the learning experience by escalating the scenario or triggering other events based on the participant's decisions, thereby gaining a fuller picture of each individual's personal competencies – or where extra attention and work is needed. Likewise, the participant can receive immediate feedback on their performance and any areas that need improvement.

IN PRACTICE AT:
LEICESTERSHIRE
FIRE & RESCUE SERVICE

1-on-1 training and assessment is a tried-and-tested method of incident command training in the UK. Leicestershire Fire and Rescue Service (LFRS) is one of many emergency services that practices this day in, day out. During the Covid-19 pandemic they were faced with the challenge to continue their educational efforts while still adhering to the restrictions at that time. The solution: Train and assess remotely. Anthony Wildgoose, station manager at LFRS explains how it works: "Remote training helps us save time that benefits both the individual as well as the organisation. Individuals can access training easier without travel times and interruptions. They can undertake the training from whatever venue they choose."

"Remote assessments can be conducted on those who are unable to attend the training centre" Wildgoose continues. "Remote training can provide the organisation financial saving, for example on travelling expenses."

With remote training, the participant accesses a computer or laptop that runs XVR Simulation software via an internet connection. Via third-party software, participants are then able to take over control of the computer, and go through a virtual reality training simulation as they normally would, controlling their avatar remotely. Communication is being done through a conference call. This innovative way of conducting training and assessments has proven its value over the course of the pandemic, and is sure to serve training centres in the future.

SINGLE AGENCY
TEAM TRAINING

The XVR Simulation software is a useful tool for conducting both simple and complex team training – on-site or remotely, mono- or multi-disciplinary, and for different levels of command.

Team training using XVR On Scene can take many forms and with varying levels of immersion. For example, an instructor or team leader might use XVR On Scene to simulate an incident on a large TV screen to set the overall context. Here, the team's learning objectives could be the correct gathering and sharing of information, a clear and disciplined form of communication with team members, or the forming of a clear image of the incident at hand and setting the right priorities. The virtual incident thus serves as a realistic framework, and the instructor has the flexibility to escalate or resolve the incident based on the team's

decisions. Team members actively participate in the incident management through their own role and dedicated On Scene set-up.

On the other end of the spectrum, teams can train in pairs or small groups in a highly immersive setting using head-mounted displays (HMDs) to navigate the virtual environment together. With HMDs, participants can move around freely and see each other in the virtual space. Here, they can practice conducting reconnaissance and assessing potential dangers together in a variety of settings, test out different approaches, and train their decision-making skills, as the instructor guides them through the scenario. The higher level of immersion positively contributes to the learning experience.

WILDFIRE TRAINING

Wildfires can have devastating effects and it is paramount that emergency responders know how to manage and suppress them effectively when they arise. Using XVR Simulation software to train and exercise how to effectively manage a wildfire allows teams to train the communication within their command structure, and allows participants to experience fighting a virtual wildfire and learning the respective pitfalls and challenges.

IN PRACTICE AT:
SAFETY REGION DRENTHE

Safety Region Drenthe are among those pioneering team training using head-mounted displays (HMDs). They participated in an XVR pilot programme to explore the added value of using HMDs in a team training setting in which the participants are fully immersed in the virtual environment.

After the pilot programme ended, Safety Region Drenthe continued using HMDs as part of their team training sessions. Reconnaissance of an incident scene is one of the skills they train with HMDs – participants must perform a thorough inspection of the environment and report back to the incident commander. Jeroen Antoons, specialist competence management at Safety Region Drenthe, says: "Exercising with an HMD really adds to the effectiveness of the training. We can bring in an extra level of detail to e.g. smoke development, and participants can use a thermal imaging camera and flashlight to locate the fire and determine the potential risks of entering the building."

"The starting point is the same for every student, meaning they all get a similar learning experience.

Jeroen Antoons
Adviser/Specialist Professional competence at
Safety Region Drenthe

Also, you are in control of any noise in the software, so the instructor can focus on the story and the learning objectives, and create an engaging and immersive experience for the students."

MULTI AGENCY
TEAM TRAINING

The flexibility of XVR On Scene to create unique scenarios makes it the perfect tool for gold/strategic or silver/tactical level officers to train large-scale, multi-agency incidents which threaten the regional or (inter) national safety and security that might be difficult (or impossible) to simulate in real life, such as wildfires, riots, or terrorist attacks. Commanding officers from different disciplines can come together to train inter-agency communication and procedures, and identify potential bottlenecks or resource gaps, in order to be better prepared for future incidents.

Using a set-up with a large TV screen allows participants to monitor the incident from afar, instruct their staff,

and communicate with other participants face-to-face, walkie-talkie or phone, like they would during an actual crisis for increased realism. For a multi-faceted exercise, officers can send staff into "the field" to collect information or carry out orders, or combine virtual incident training with exercises on real-life training grounds to make optimum use of the training tools at their disposal. Another option is to give each officer the possibility to walk around in the virtual scenario to collect information and create their own impression of the incident.

TEAM TRAINING
WITHOUT BORDERS

Virtual exercises can even be conducted across borders – for example by using communication software to connect remotely – allowing for the training of international collaboration and resource management across the entire emergency services chain. See an example on the page to the right.

WORLD RESCUE
ORGANISATION

To illustrate what training with virtual reality simulation software can accomplish, we will take a look at the World Rescue Challenge, a challenge hosted by the World Rescue Organisation (WRO), in which members of the WRO compete against one another in solving a challenging road traffic accident. Multi-agency teams were to solve a virtual reality incident, and prove their abilities to communicate clearly, test their reconnaissance and decision-making skills, as well as their (virtual) triage skills.

The entire event took place online, with teams from all over the world joining the virtual XVR challenge to compete against one another. Teams were put to equal tasks by the facilitating XVR team, stationed in Luxembourg. Edwin van de Snepscheut (XVR Simulation) said about the event: "It was a great experience for us. To be able to meet and work with so many different agencies and colleagues from around the world, to have fun together, and to see that people are learning, that's really the best outcome we could've hoped for. It also just shows that virtual reality training and assessments really can be done remotely, even when people don't have any previous experience with training virtually."

TRAIN VIRTUALLY
ANYWHERE, ANYTIME

REFRESHERS

Using XVR On Scene Expo, your students can practice continuous learning in any setting of their choosing. As mentioned previously, XVR Expo is a helpful tool to create material for your students that they can use to acquaint themselves with an incident site, certain procedures, or the context of an upcoming training or exercise. In the same manner, XVR Expo scenes can be used as a learning refresher tool shortly after an ended training, and they also provide an excellent way of delivering reminders over time, to be completed by participants at their leisure. This helps to

prevent knowledge loss over time and increases the effectiveness of the learning experience. XVR Expo scenes can be set up to mimic certain aspects of an XVR On Scene scenario, thus allowing participants to go through the incident again or to answer multiple-choice questions to test whether the training session's learning objectives have been sufficiently understood and retained. XVR Expo scenes can also be used to refresh and/or test your staff's knowledge about recently-updated legislation in an interactive and engaging way.

COMMUNITY

With hundreds of users from more than 50 countries around the world, XVR Simulation has a dedicated global community, spanning the full emergency services spectrum. To facilitate this community, we host several events throughout the year to update users about ongoing developments and improvements we make to our product range. We host annual User Group Meetings (in different languages and different time zones), in which we share all the updates of that year's software release, and where users get to share experiences, with the XVR staff and each other. Users can also regularly attend webinars in which certain topics are explored more in-depth, such as how to get the most out of new functionalities or how to set up remote training sessions.

At XVR Simulation, we value each and every one of our users, and maintaining good relations is at the very core of who we are. This is why we

continuously work to provide extra value to our community. The new XVR Community website was launched in 2020 to further encourage the sharing of knowledge and experiences between XVR and our users, but also between the user groups themselves. On this portal, users can find articles and news items related to the emergency services profession, articles on the theories of learning and teaching, as well papers on the use of virtual reality and simulation technology for these purposes. Furthermore, XVR regularly adds relevant video tutorials, how-to guides to help our users create the scenarios they envision, as well as 3D objects, sounds, avatars, templates, and even full scenarios that are fully customisable to the user's local conditions. Many of XVR's users also create their own localised objects, templates, and scenarios that are uploaded to the content part of the site, and can be freely used by all members of the XVR Community website.

ACADEMY

The XVR Academy provides a range of introductory and advanced courses for novice and experienced users of the XVR Simulation software. Introductory courses are available for all new users to get acquainted with the software and learn the basics, including how to facilitate a training session, and how to get started building and designing environments and scenarios to support the organisation's learning objectives. Advanced courses aim to give builders, operators, and instructors more in-depth knowledge of how to improve their role with building elaborate scenarios, facilitating and supporting learning experience of the training participant, and how to make optimal use of XVR's software in the organisation's training curriculum. All courses are provided either by the XVR Academy or by one of our certified partners around the world. Depending on the user's needs, courses can take place face-to-face or online. All courses consist of a mix of explanations and hands-on use, where the majority of the time is spent on actually using the XVR software.

Open enrolment refresher workshops are offered by the XVR Academy multiple times a year, for users interested in brushing up on certain skills or learning about the latest simulation training didactics, free of charge. They are hosted at the XVR HQ or at an XVR community member's organisation. Furthermore, it is possible to request webinars on specific topics – an efficient way of updating your staff on certain methods or skills within a short timeframe.

TRAINING SET-UP EXAMPLES

Practical applications of XVR simulation software around the world.

Mobile set-up:
CoNeT in Switzerland uses their mobile unit (a bus) to drive to the training centres around the country to provide on-site training.


Fixed set-up individual training:
Individual training and assessment is an important part of the training curriculum for incident commanders at the Estonian Academy of Security Sciences.

Individual/team VR:
In the Netherlands, Safety Region Drenthe uses head-mounted displays for both individual and team training to increase immersion and create a bigger training impact.
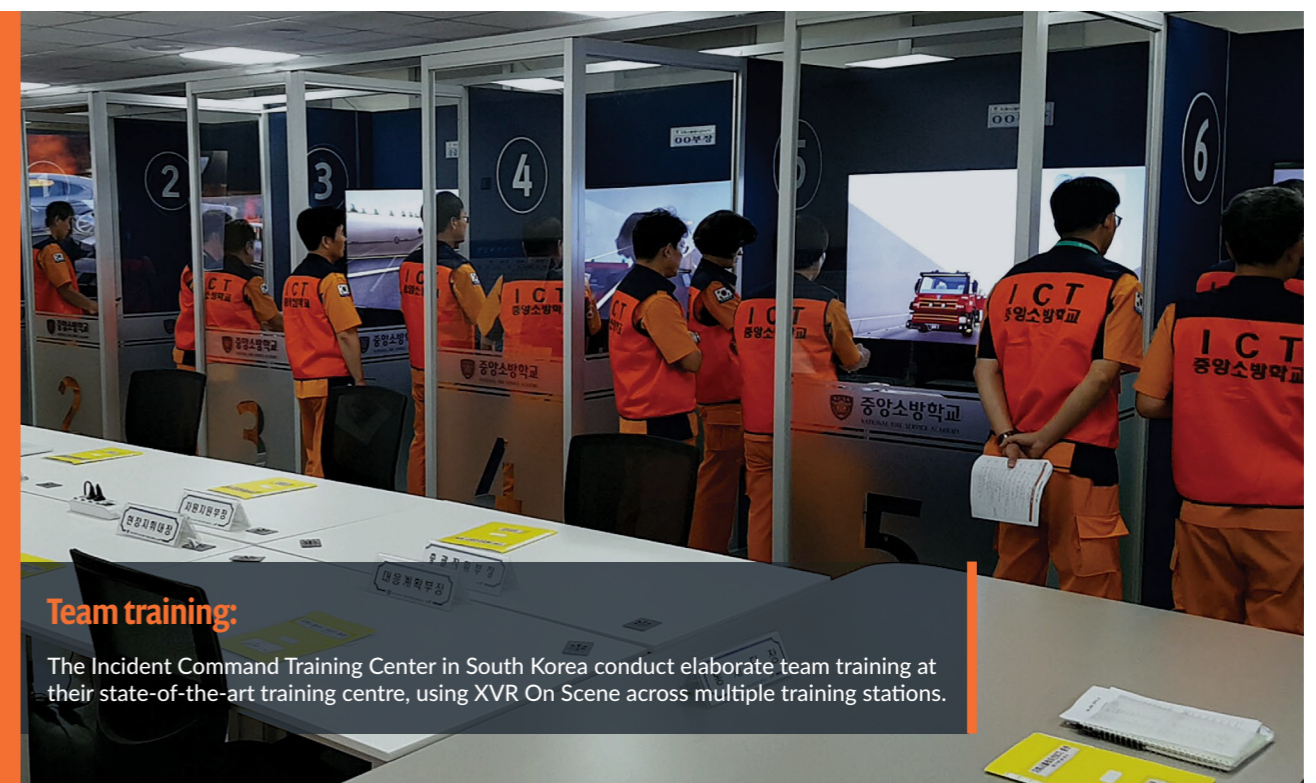
Team training:
The Incident Command Training Center in South Korea conduct elaborate team training at their state-of-the-art training centre, using XVR On Scene across multiple training stations.

COLOPHON

'Applying Virtual Reality Simulation training'
is a publication by XVR Simulation.
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SPECIAL THANKS TO

Markus Oppenhäuser
Anthony Wildgoose
Jeroen Antoons

SCAN ME

Do you want to know more
about the added value of VR
training? Scan the QR code.

XVR
simulation

ABOUT XVR SIMULATION

XVR Simulation was founded in 2000. We are
passionate about helping emergency services develop
the competencies needed to manage incidents in our
increasingly complex world. Over the years, our company
has grown from a small, but enthusiastic start-up focused
on emergency services to a mature company with a
proven product with diverse and dedicated users all over
the world.

In the summer of 2021, XVR Simulation and LearnPro
eFireService merged to form the LearnPro Group ltd. The
LearnPro Group is a global leader in virtual reality training
and e-learning for the health and emergency services. The
software suite of LearnPro Group provides emergency
services with a platform for learning management, an
authoring tool, competency management and virtual
reality training.

VISION

We believe in enhancing the competence and expertise
of safety, emergency, and incident response professionals
using virtual simulations. We do this by creating flexible,
immersive, and user-driven software where learning is
key and the instructor is in control. Our XVR Simulation
software offers an immersive learning environment for all
levels of incident command, to be used in both single and
multi-agency exercises.

WORLDWIDE

XVR is being used by over 300 customers in 50
countries worldwide, training more than 150,000
incident responders every year. XVR Simulation works in
partnerships with national and international government
agencies, private companies, research institutes, schools
and training centres in the fire & rescue services, police,
and ambulance services to keep innovating and improving.

THE APPLICATION OF VIRTUAL REALITY SIMULATION TRAINING

WANT TO
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