DSI UNDERGROUND
A SANDVIK COMPANY

VR Training Solutions

EDVIRT®

Contents

About us

Edvirt® is a Swedish simulation and training company consisting of experienced mining and tunneling engineers and trainers together with software developers, all dedicated to improve training standards. The company has increased its service and product portfolio to cover several areas within underground operations and operates globally.

The company is since the spring of 2021 owned by DSI Underground SMART, a wholly owned subsidiary of DSI Underground.

Our team consists of experienced mining and tunneling engineers and trainers, as well as software developers, all dedicated to improving training standards. We have expanded our service and product portfolio step by step to cover several areas in underground operations and we operate worldwide on all continents.

Our VR solutions enable cost reduction, quality improvement and safety enhancement in mining and tunneling. The goal is to radically improve operator training in mining and tunneling and make virtual training a required industry standard – worldwide.

Mining and tunneling require efficient and intelligent digital solutions. Today, simulator-based remote training and certification programs are increasingly part of daily business.

Today, we offer our global customers an unmatched virtual training offering that supports safety and productivity throughout the underground development cycle.

With the broad product portfolio of SMART solutions, we reinforce mines, tunnels and underground structures, helping our customers to advance underground and achieve their goals – safer, faster and more efficiently than ever before.

Virtual Reality (VR)

Training Simulator

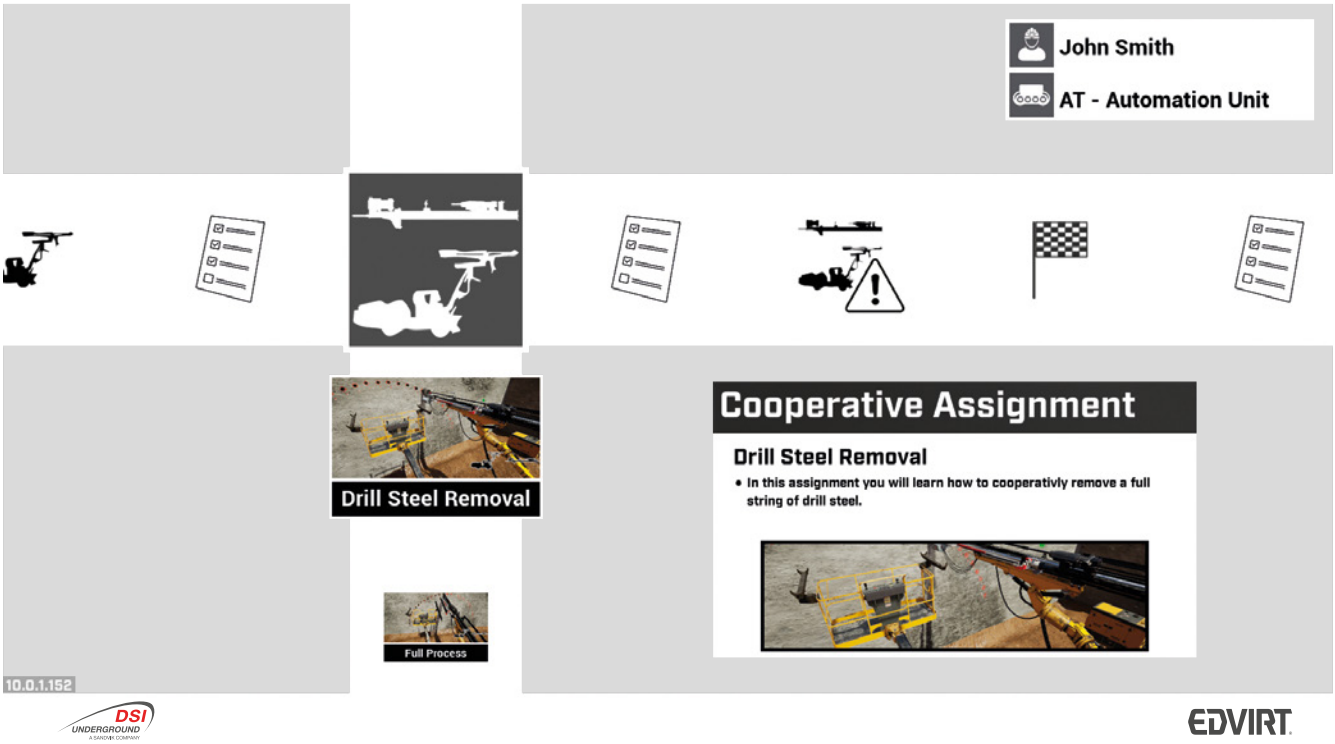
Investment in innovation to drive efficiency and safety across mining and tunneling operations forward

- **Increased Safety**
  Operators training in a safe environment without risks regarding accidents or machine damage
- **Enhanced Quality**
  Increased confidence in the system enables a proper first-time underground application
- **Leveraged Costs**
  Reduction of total hours spend on training
- **State-of-the-Art Training**
  Help operators boost their skills

AT – Pipe Umbrella VR Simulator

Introduction

- The first virtual reality (VR) training simulator for pipe umbrella installation
- State-of-the-art training for both drill jumbo and basket operators
- Highly realistic and authentic simulation process
- Scenario-based simulator practice in VR combined with extensive theory modules
- Training of operators in a safe environment without risking accidents or machine damage
- Remote support during mounting, commissioning, maintenance, and operation



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EDVIRT

Increased Safety

– Industry-leading virtual training before commencement in construction

Enhanced Quality

– Virtual reality based simulators increase the performance of both novice and experienced operators powered by EDVIRT.

Leveraged Costs

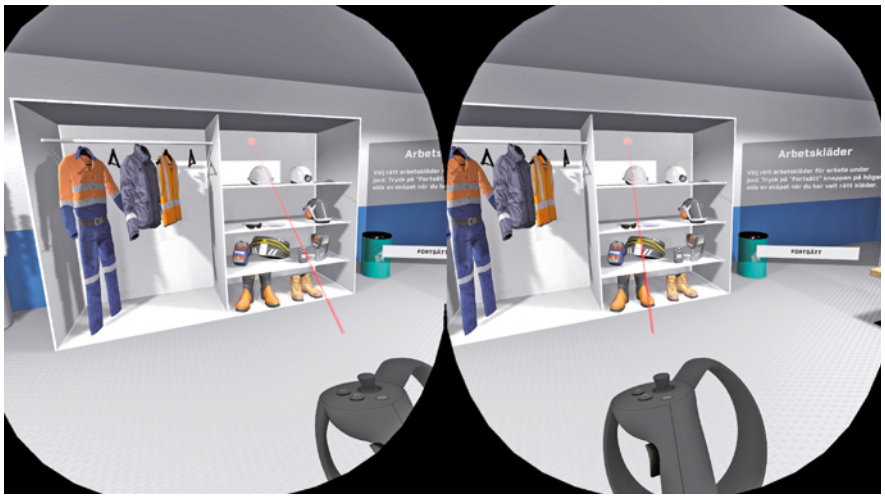
– Simulators and training courses are designed to reduce costs and improve machine utilization

EDVIRT SSI™

Mining and tunneling sites offer safety and introductory course, so called induction courses, for employees and visitors who enter their sites. This is often mandatory due to work environment and safety requirements. Usually participants go through material consisting of a simple binder (e.g. printed .ppt), receive an in-person presentation from a supervisor or in some cases, flick through a presentation online on their smart phone.

Edvirt has developed a virtual tool, the Edvirt Site Safety Induction (SSI), which can replace or complement current induction courses allowing for significant benefits. Instead of just reading a text, participant are now able to first, go through site-specific theory followed by a test and then experience and interact in different scenarios in a virtual world – demonstrating that they have understood all vital information.

The Edvirt SSI™ secures safety by assessing participants on multiple levels and tracking results, making it easy to overview who have done and passed the induction training needed at site.

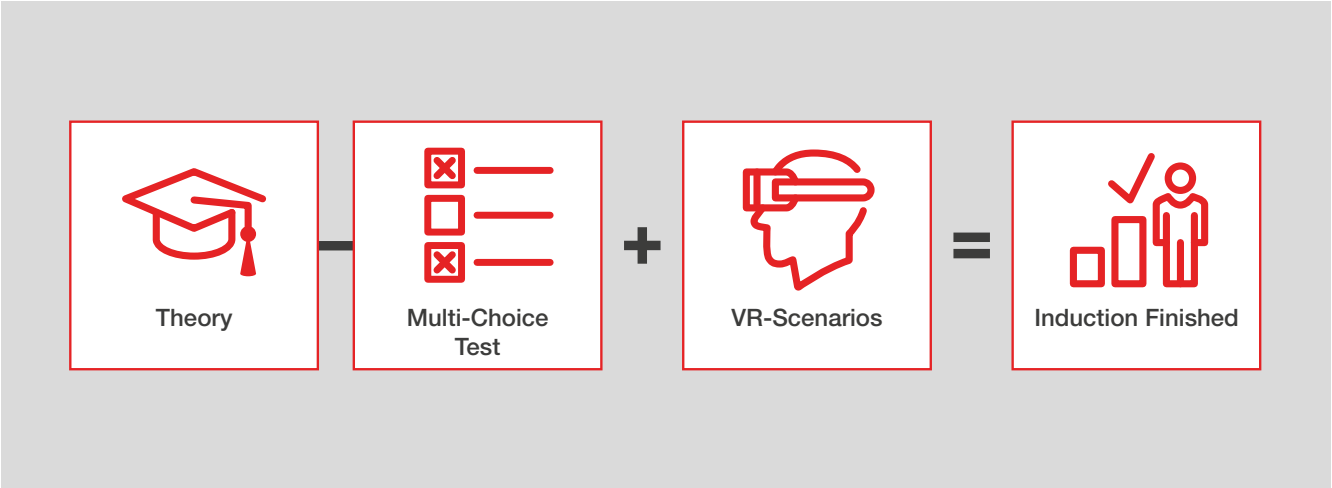


The Training Process

The Edvirt SSI™ training equipment (laptop, VR-kit, keyboard, etc.) is set up in a room at site. Visitors, contractors, suppliers or new employees go through the induction training, which takes 1-3 hours. On the laptop, participants go through a site-specific theory part, which is concluded with a multiple-choice test.

When the theory is finalized and the test is passed with a satisfactory result, the participants continues to the VR-scenarios. The purpose with the VR-scenarios is to test participants' knowledge in critical situations which can arise when working underground. Examples are – what clothes are needed when working underground?

What is the proper routine when you encounter undetonated explosives? What is the escape routine in case of fire? When all the VR-scenarios are finalized, the participants are finished with the induction training. The results get sent to e.g. the manager or the HSE responsible person at site.



Training Program

- Modular trainings and assessments with user-based performance analysis
- Integrated video case studies illustrate best underground practices
- Bolstered by contributions from global industry experts
- Comprehensive personalized and certified training courses
- Multi-user simulator training where two operators and a trainer can jointly conduct scenario-based VR training
- Training can be delivered in person or remotely
- Customized project-based consulting

Key Benefits

One-stop-shop – The Edvirt SSI™ includes both theory and VR-scenarios. It is one complete service to do the required induction when arriving to a site. No prior preparations needed.

Increased safety – People who interact in a virtual environment understand and remember information better.

Reduced risk of liability for management – All employees and visitors can, prior to entering the site, go through the induction training and the performance of each participant is tracked and stored online. If an accident occurs it's easy to track each participant and show that proper training has been undertaken.

Reduced costs – The client only pays for the induction courses for their own employees. Suppliers and contractors can pay for their own courses by e.g. credit card or invoice. Payment is dealt with directly in the software.

Increased flexibility – Current work procedures often include a person at site holding in-person induction courses alternatively the visitor is handed a presentation, which they need to go through. The Edvirt SSI™ allows visitors to perform the induction training on their own.

Less time and better fit – The Edvirt SSI™ is easy to adapt to different sites. The theory will be site-specific and the scenarios can be altered according to need.

VR Hand Spraying Simulator™

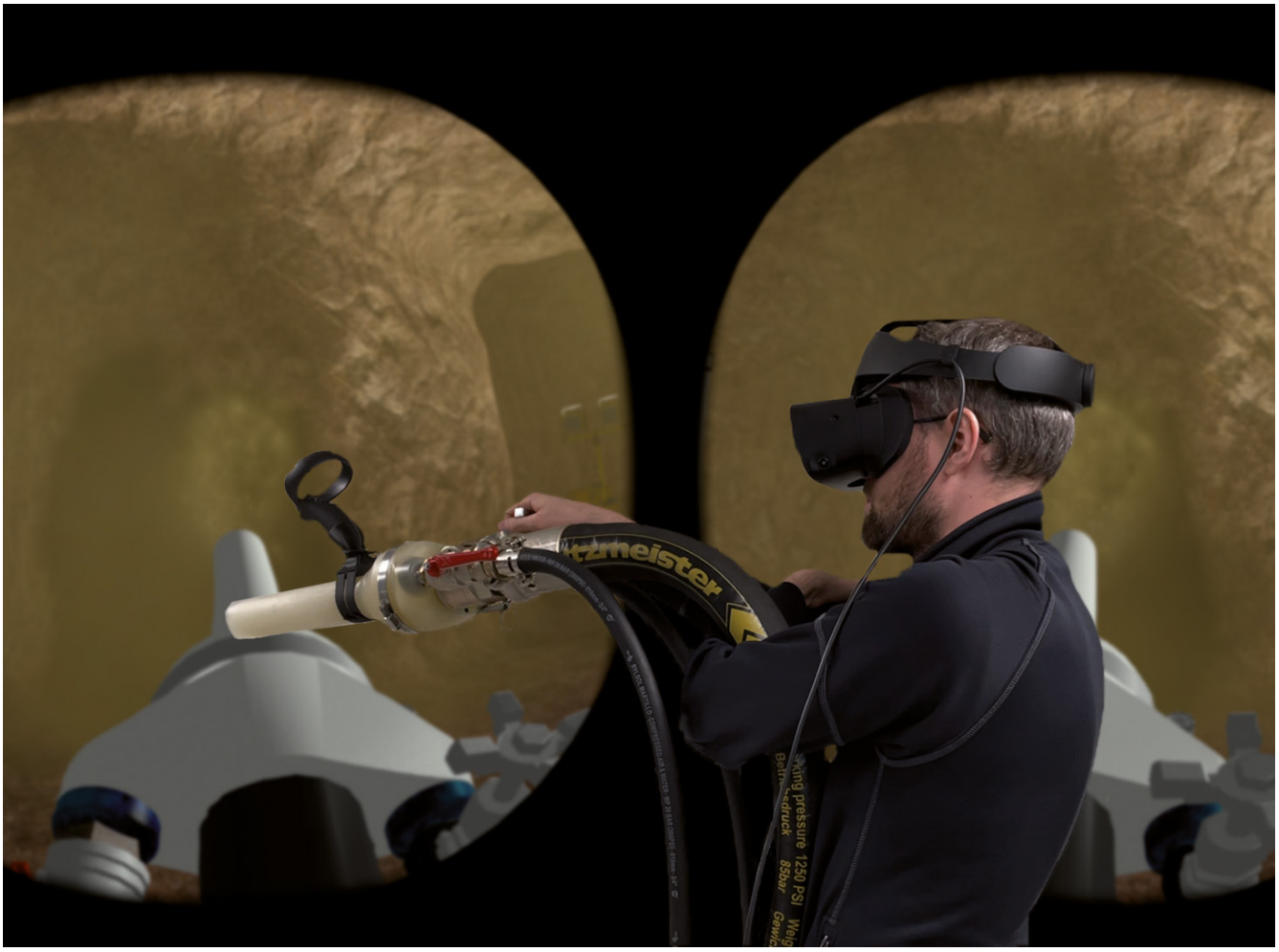
Simulator Used for Training and Assessment of Nozzlemen

The VR Hand Spraying Simulator™ is used to train shotcrete operators in a safe environment without wasting concrete or jeopardizing quality. The simulator was released in 2021 and has been developed out of Edvirt's VR Shotcrete Simulator and been adapted to the hand-spraying application.

The simulator includes several scenarios from basic to advanced level which generally takes 2-5 days to pass dependent on experience.

The training is combined with theory online through Edvirt Online Academy™ and statistics gathered at Shotcreteportal™ where managers can keep track of training progress.

- **Offering**
  1, 3 and 12 months rental
- **Courses where the Product is used**
  - ESCOT™ – a 3-day shotcrete course to obtain Edvirt's certificate
- **Reference Customers**
  Master Builders Solutions, DSI Underground



Inlabb™

Grouting Simulator Used for Training and Engineering Work

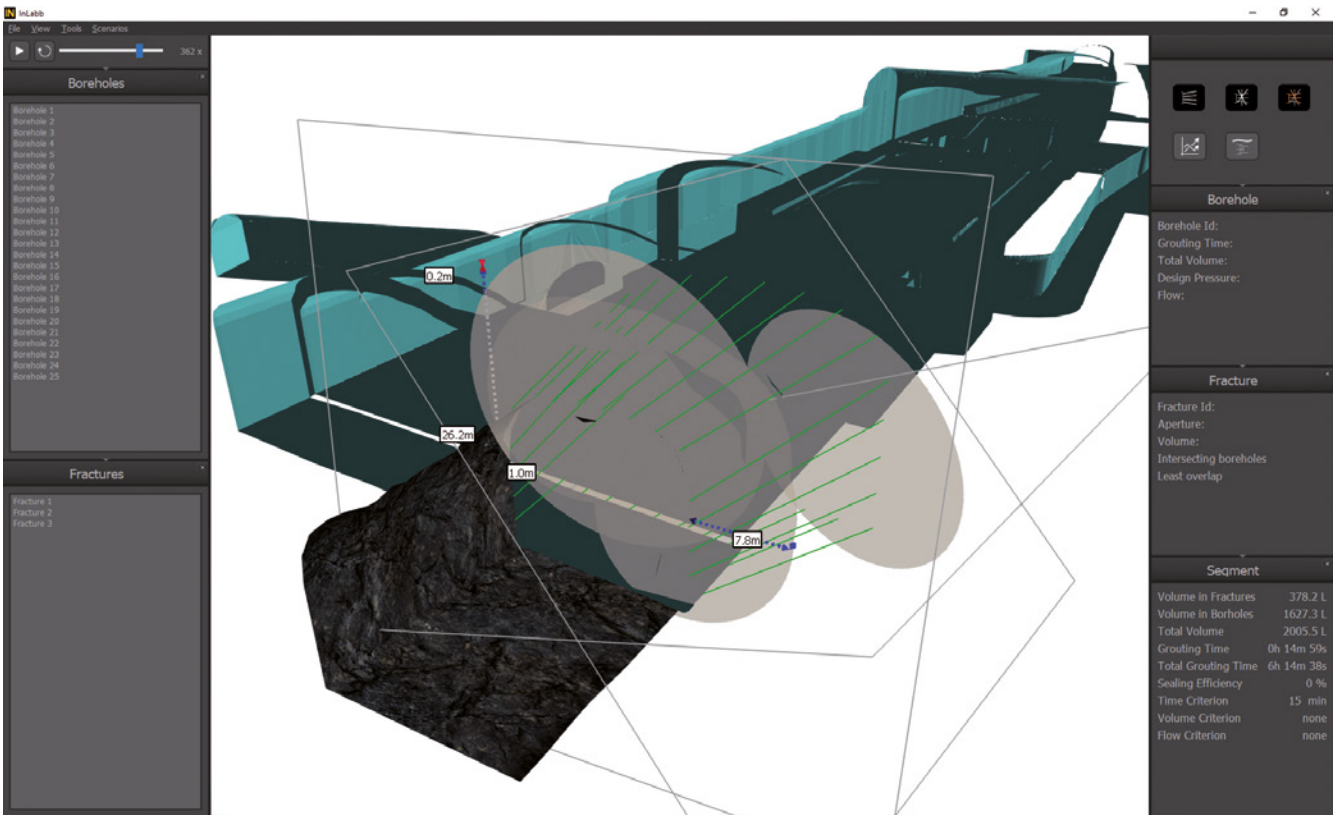
Inlabb™ is a simulator developed out of +20 years of research on hard rock grouting conducted in Sweden. It's a software is used for both grouting training and engineering.

The software offers two modes – one with scenarios where the user get structured challenges to pass and another one where the user can make up scenes from real 3D models and thereby test different designs.

User of Inlabb™ can elaborate with pump pressure, fracture position, fracture aperture, grout materials and many more parameter and factors in order to understand the dynamic between them. Users can also simulate pre-injection in order to get the a best "guess" on how the injection will be and there by the come up with the most suitable grouting design.

Over 200 persons have gone through training courses using the Inlabb™ and the software has been used in several prestigious tunneling projects.

- **Offering**
  1 year license
- **Courses where the Product is used**
  - Swedish Rock Engineering Association's rock grouting course – a 3-day course to obtain the Swedish Rock Engineering Association's certificate
- **Reference Customers**
  Implenia, Subterra, Swedish Transport Administration (Trafikverket)



VR Shotcrete Simulator™

Simulator Used for Training and Assessment of Shotcrete Operators

The VR Shotcrete Simulator™ is used to train shotcrete operators in a safe environment without wasting concrete or jeopardizing quality. The simulator was first released in 2013 and has since then grown into a standard tool used in many prestigious tunneling projects and at mining companies for quality assurance.

The simulator includes several scenarios from basic to advanced level which generally takes 2-5 days to pass dependent on experience. The simulator includes different spraying machines with applicable remote controls such as Epiroc, Normet, AMV, JAMA, Jacon, Putzmeister, etc.

The training is combined with theory online through Edvirt Online Academy™ and statistics gathered at Shotcreteportal™ where managers can keep track of training progress.

The simulator is included as an element in several prestigious certification schemes and over 800 operators have gone through training with it.

- **Offering**
  1, 3 and 12 months rental
- **Courses where the Product is used**
  - EFNARC C2 – a 5-day shotcrete course to obtain EFNARC's certificate
  - Swedish Rock Engineering Association's shotcrete course – an 8-day course to obtain the Swedish Rock Engineering Association's certificate
  - ESCOT™ – a 3-day shotcrete course to obtain Edvirt's certificate
- **Reference Customers**
  Crossrail project, LKAB, Barrick Gold, WestConnex project

VR Scaling Simulator™

Simulator Used for Training and Assessment of Scaling Operators

Experience exceptional simulation realism of the machine scaling process with a robust system, original OEM machine integrations, and authentic sounds recorded from mine sites. The intuitive user interface and the pedagogical training approach makes the simulator an ideal training tool. Edvirt's VR Scaling Simulator™ was first released in 2014 after being developed together with the mining companies Boliden Mineral and LKAB.

The simulator is perfect for mines and tunneling contractors focused on improving productivity, reducing costs from unscheduled maintenance, and increasing operator safety.

The simulator enables measurable and systematic competence development, and is designed to make the operator reach an acceptable performance level after a week of simulator training. The training is structured into scenarios which are aimed towards both novice and experienced personnel.

- **Offering**
  1, 3 and 12 months rental
- **Courses where the Product is used**
  - EMSOT™ – a 3-day scaling course to obtain Edvirt's certificate
- **Reference Customers**
  Boliden Mineral, LKAB, Tapojärvi


Pumping Volume:
12.0 m³/h
Accelerator Dosage:
0 %
0 L/m
Concrete Statistics:
Used:
4.96 m³

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