



Title: Virtual & Mixed Reality Training in Damage Prevention

- Introduction
- Short History of VR
- VR & Training
- VR & Damage Prevention
- Summary & Questions

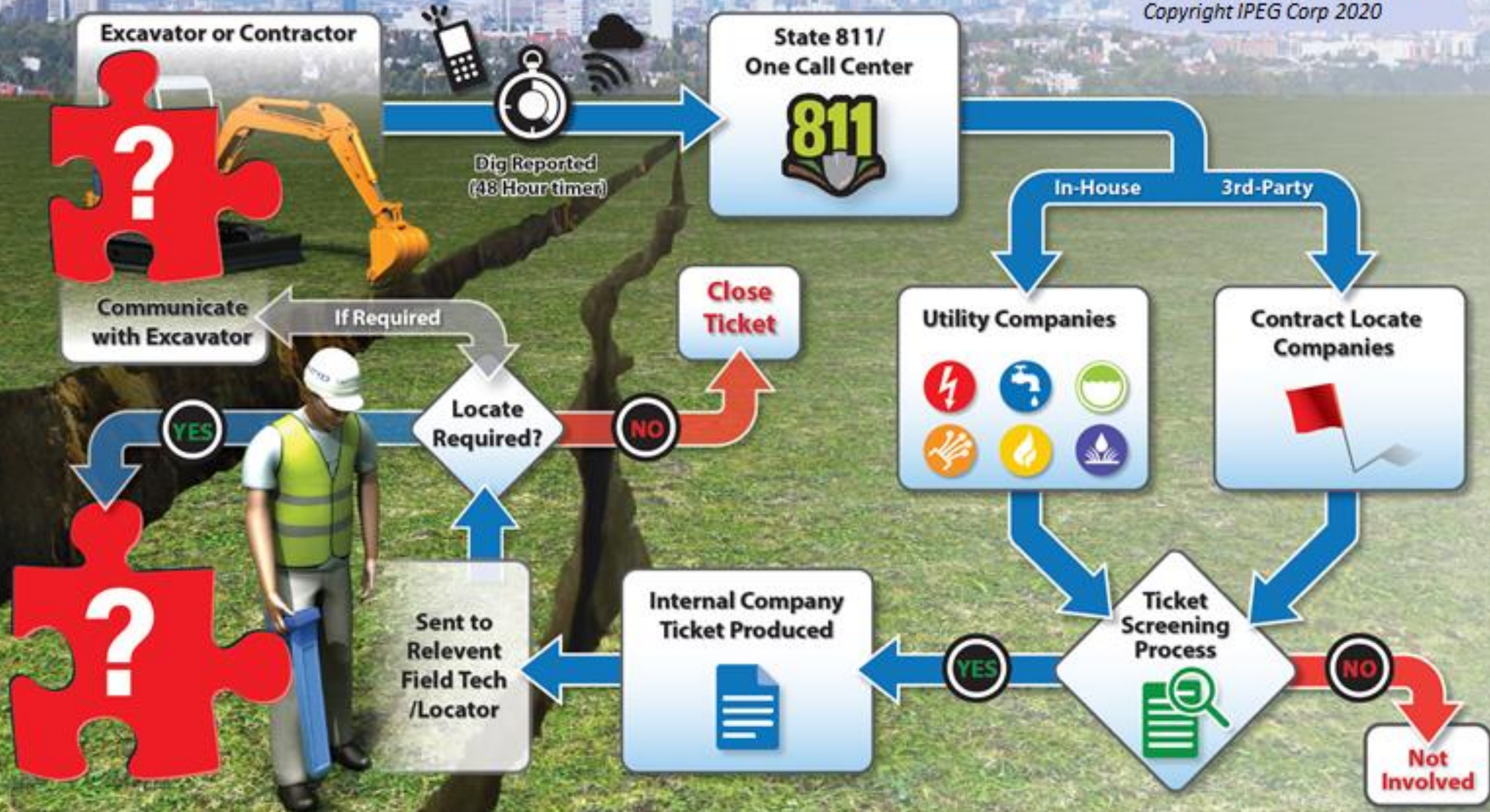
INTRODUCTION

Above



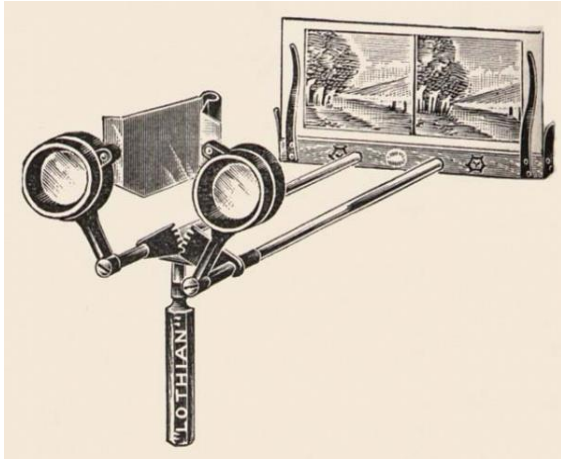
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HISTORY

Short History of VR



1838

The Stereoscope
Sir Charles Wheatstone

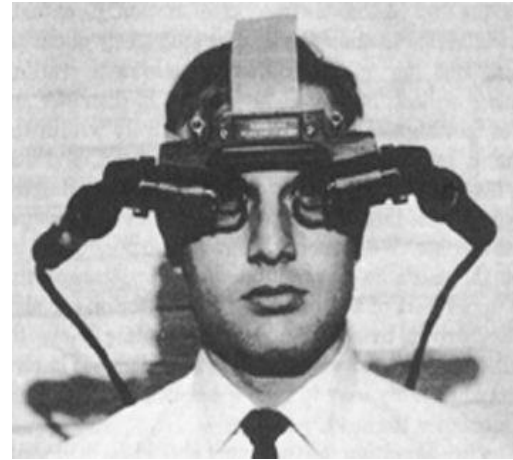
CLASSIC SCIENCE FICTION



Stanley G. Weinbaum

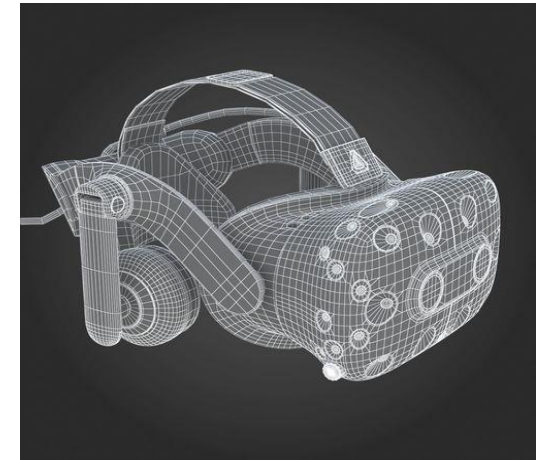
1935

Pygmalion's Spectacles
virtual reality short story



1968

"Sword of Damocles"
1st computer-driven
stereoscopic (3D)
HMD with 360° tracking

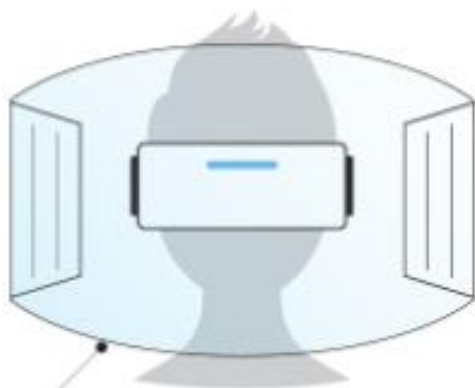
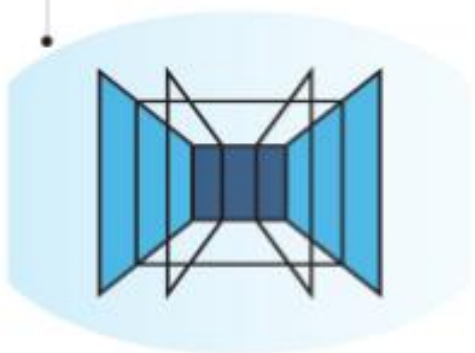


2018

HTC Vive Pro
Teleport around
boundless virtual
worlds

VIRTUAL REALITY (VR)

Completely digital environment



Fully enclosed, synthetic experience with no sense of the real world.

AUGMENTED REALITY (AR)

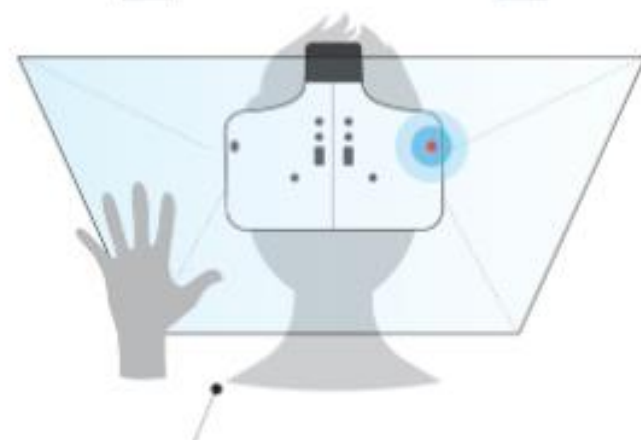
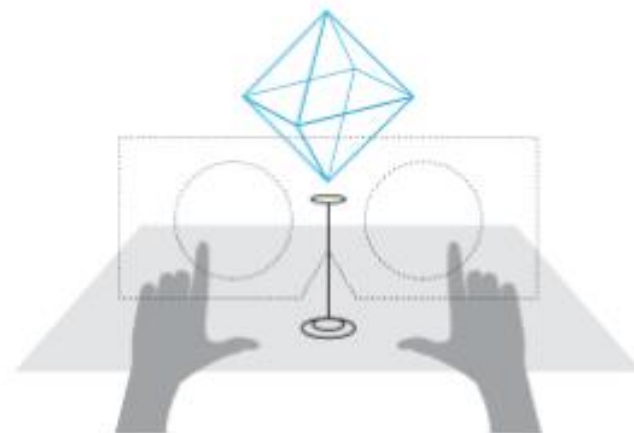
Real world with digital information overlay



Real world remains central to the experience, enhanced by virtual details.

MERGED REALITY (MR)

Real and the virtual are intertwined



Interaction with and manipulation of both the physical and virtual environment.

VR & MIXED REALITY

WHY USEFUL IN DAMAGE PREVENTION?



Need for TRAINING & LOCATE ASSURANCE®

Training – Why VR is Useful

VR was once the domain of gaming enthusiasts is now increasingly available for industrial and enterprise training applications

Why Damage Prevention? Because it involves many precise and complicated human processes

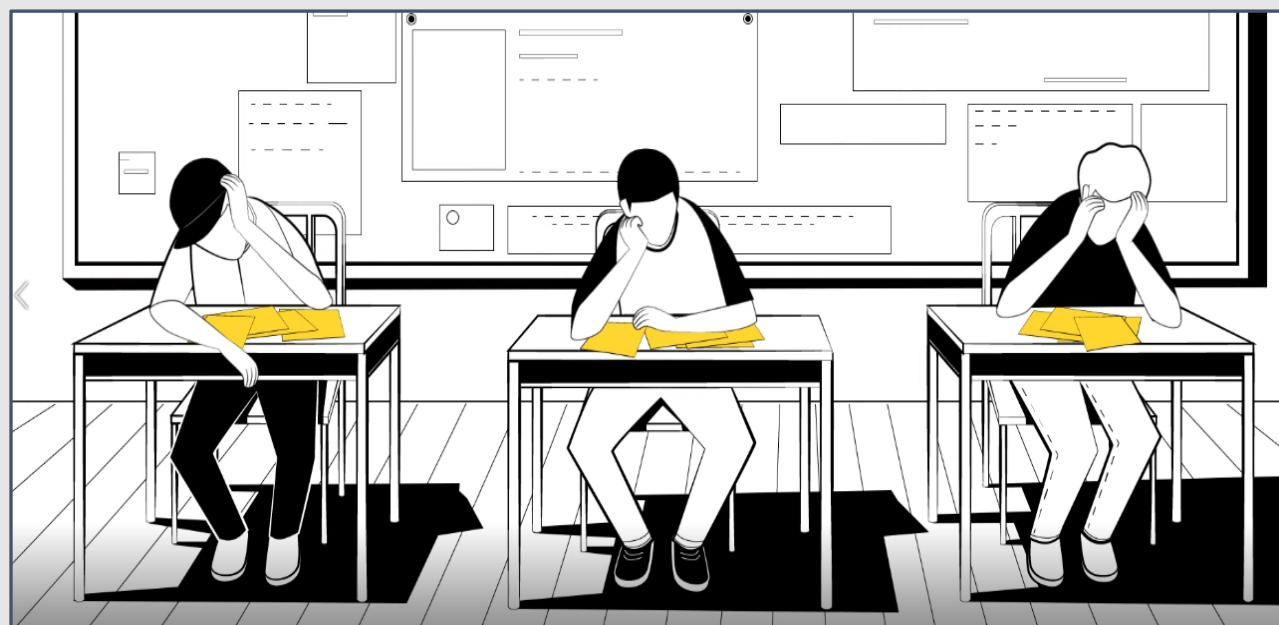
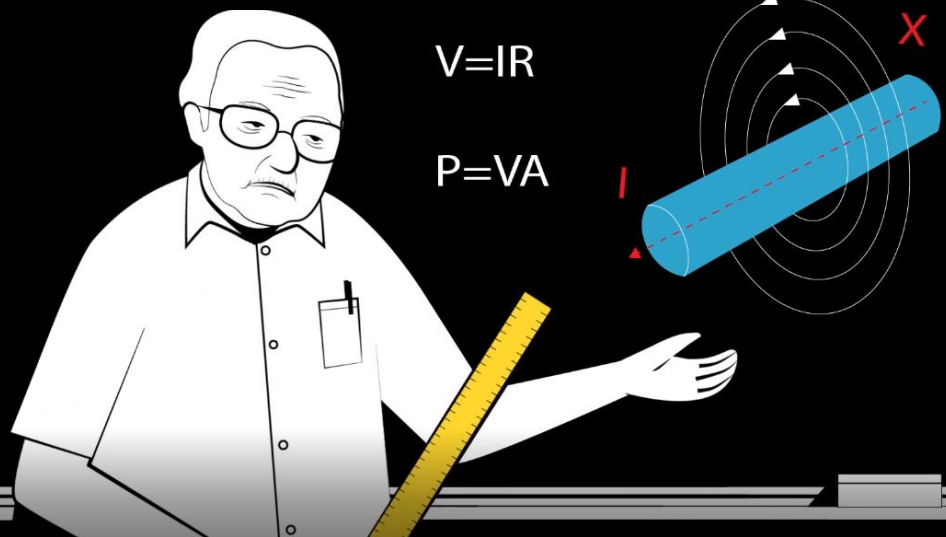
Trainers can expose students to varied & realistic scenarios

VR enables high quality and risk-free training for students in a ***SAFE to FAIL*** environment with instant scoring and feedback.

VR & Damage Prevention:

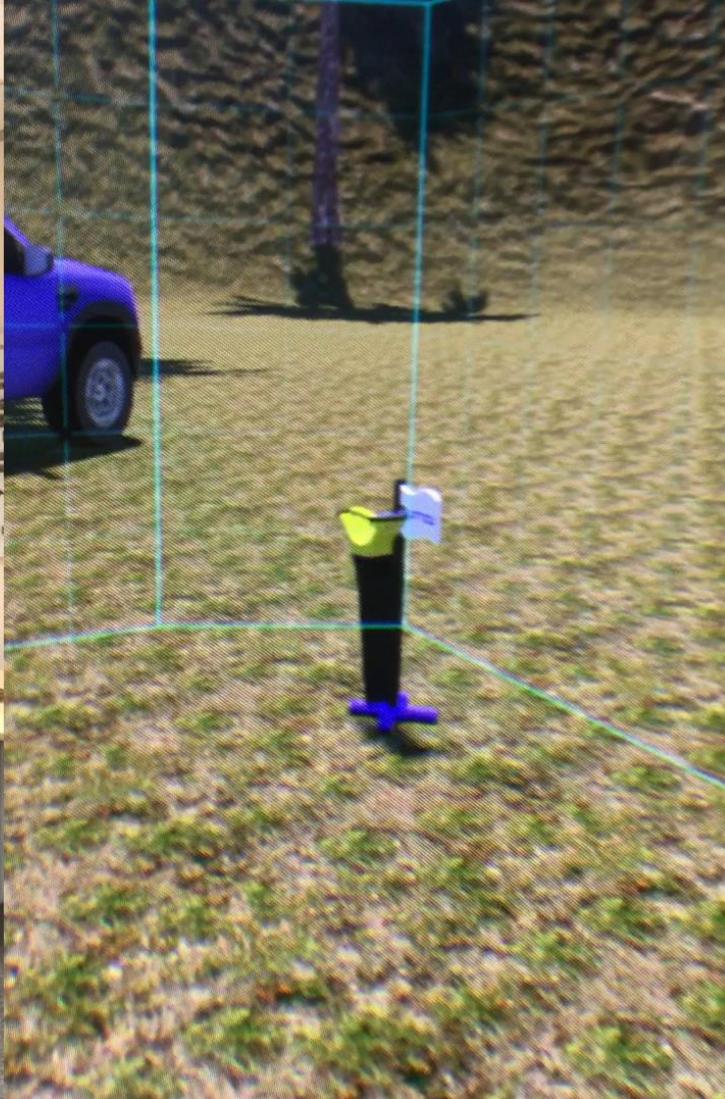
UTTO Locate Simulator and
Excavator Sim Products

Traditional Training





UTTO[®] Virtual Locate Training Simulator



Student experiences locate problems & can then visualize & understand causes

Learn by feel and visualization

Quantify tech performance

Create an interactive certification program

Install Simulator in your facility

Dial up your own simple to complex scenarios

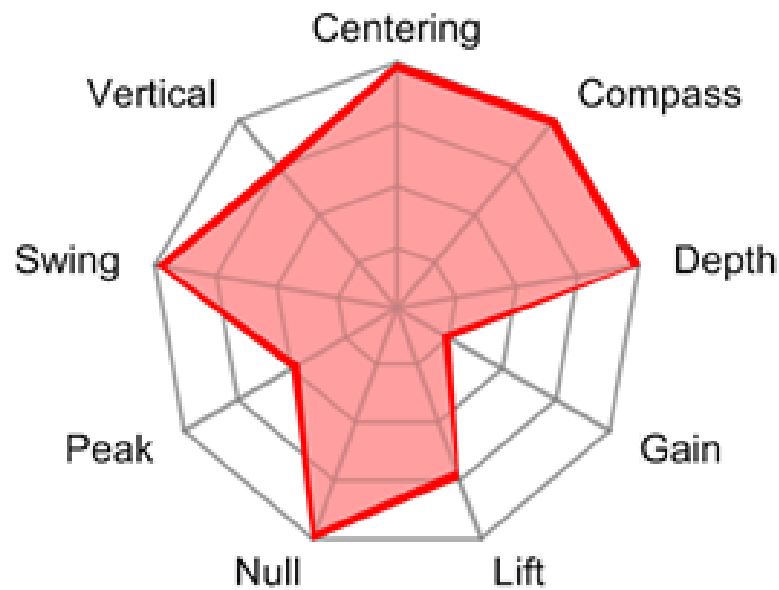
Reduce Training Time

Retrain and upskill on a regular basis

**At Fault Locate Damages
caused by distorted EM fields
and bad locate habits**



Performance Score: 78%



Session Breakdown	Flag 1	Flag 2	Flag 3
Centering	Yes	Yes	Yes
Compass	Yes	Yes	Yes
Depth	Yes	Yes	Yes
Gain	No	No	No
Lift	No	Yes	Yes
Null	Yes	Yes	Yes
Peak	Yes	No	No
Swing	Yes	Yes	Yes
Vertical	No	Yes	Yes
Timeline	0:27	0:44	1:04

Technique **3.7**
motion & control out of 5


Accuracy **5.0**
to simulator target out of 5

Time **2.9**
Session time out of 5

Coverage **5.0**
did you sweep area out of 5

NY811 Excavator Training Simulator





New York 811

IN
PARTNERSHIP
WITH

 IPEG

 UTTO

IS PROUD TO ANNOUNCE

NY811 VR-X Excavator Simulator

Background:

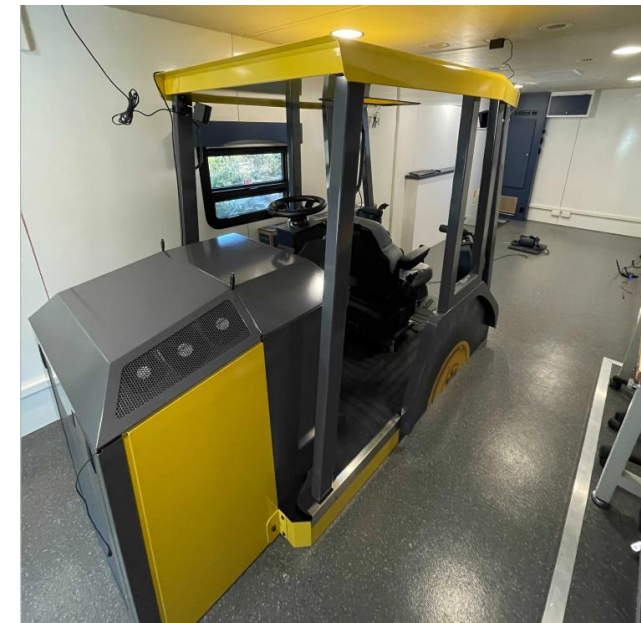
Excavating is a two person job, the Operator and the Spotter.

Both have to work as a team performing best practice and managing the workflow and safety process.

Objectives:

Not to train how to use an excavator but to UNDERSTAND the root causes of why damages occur

Then train and focus on the best practices to avoid those accidents.





User: Demo User

Performance Score:60%

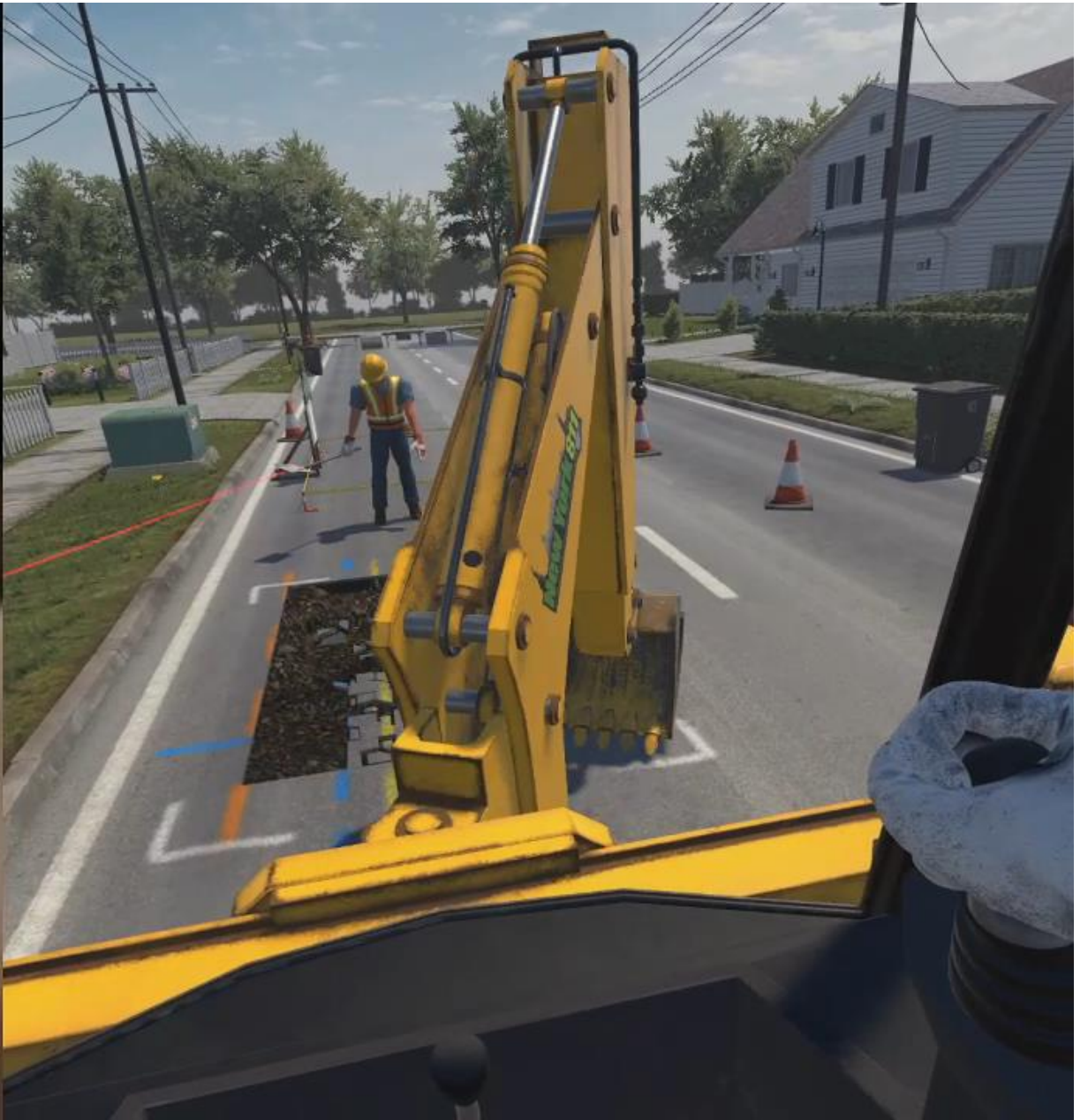
Task

Facility hit or endangered was avoided
 Paint Marks Examined In Scenario
 Aggressive of unsafe digging or movement
 Spotter Not Endangered by Backhoe
 APR Process Feedback

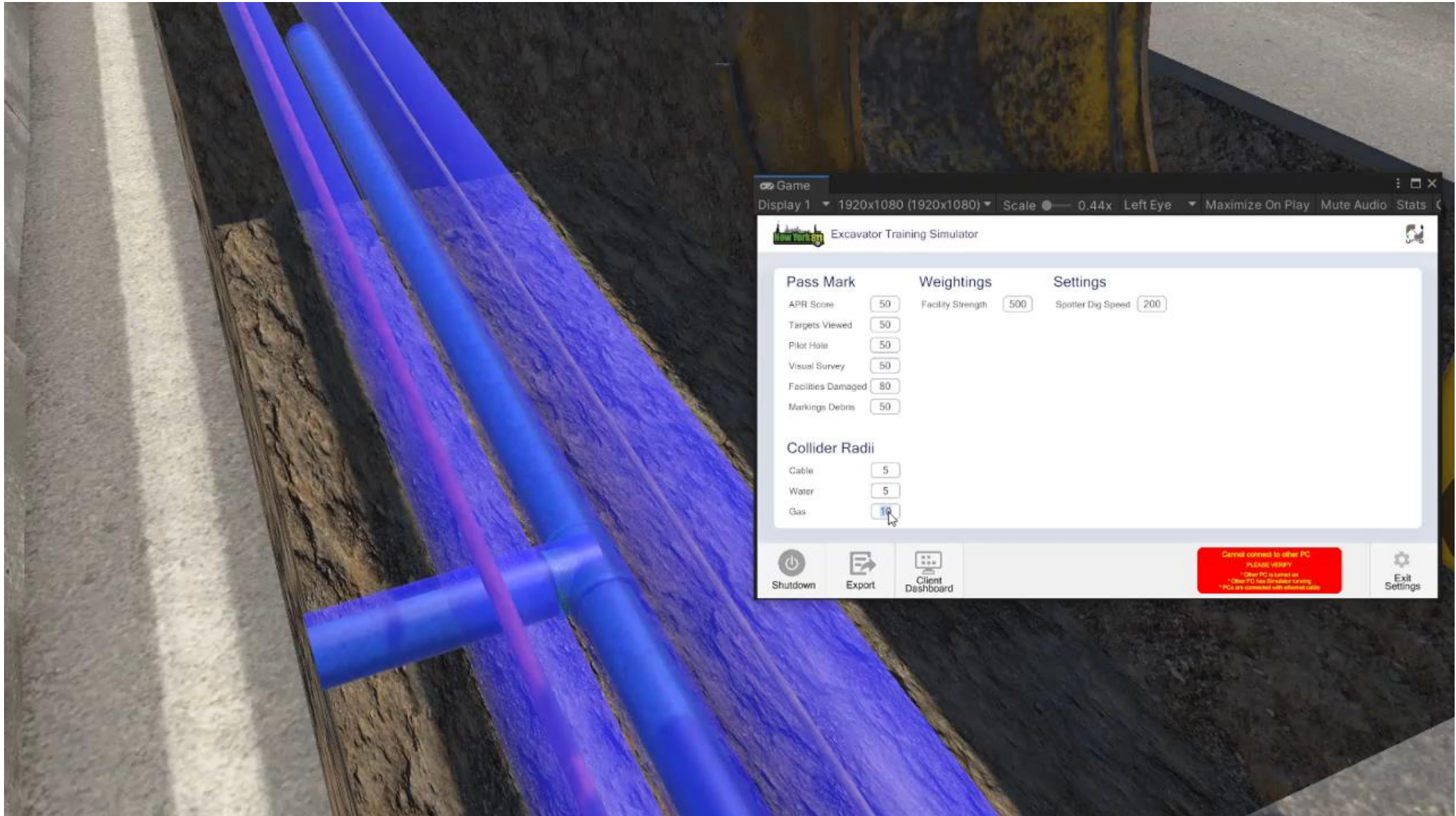
Result

No
 Yes
 Yes
 Yes
 No









Game

Display 1 1920x1080 (1920x1080) Scale 0.44x Left Eye Maximize On Play Mute Audio Stats

New York City Excavator Training Simulator

Pass Mark	Weightings	Settings
APR Score: 50	Facility Strength: 500	Spotter Dig Speed: 200
Targets Viewed: 50		
Pilot Hole: 50		
Visual Survey: 50		
Facilities Damaged: 80		
Markings Debris: 50		

Collider Radii

Cable: 5
Water: 5
Gas: 10

Shutdown Export Client Dashboard Exit Settings

Cannot connect to other PC. PLEASE VERIFY
* Other PC is turned on
* Other PC has Simulator running
* PCs are connected with ethernet cable

Modules

Module A

Scenario 1

Scenario 2

Scenario 3

Scenario 4

Module B

Scenario 5

Scenario 6

Scenario 7

Module C

Scenario 8

Scenario 9

Scenario 10

Scenario Detail

Module C Scenario 3



Expose Water (Bad Locate Paint)

Uncover water drop to house, do not trust the locate paint marks

Select This Scenario

Difficulty Scale



Uncover the water service but warning; the locator has had better days!

Lessons

Activities

Modules



Expos

Uncover

Score Breakdown

Task	Result
Facilities Avoided	Pass
Markings Seen	Pass
Safe Excavation	Pass
Spotter Safe	Pass
APR Score	Fail
Lines Respected	Pass
Excavation Complete	Pass

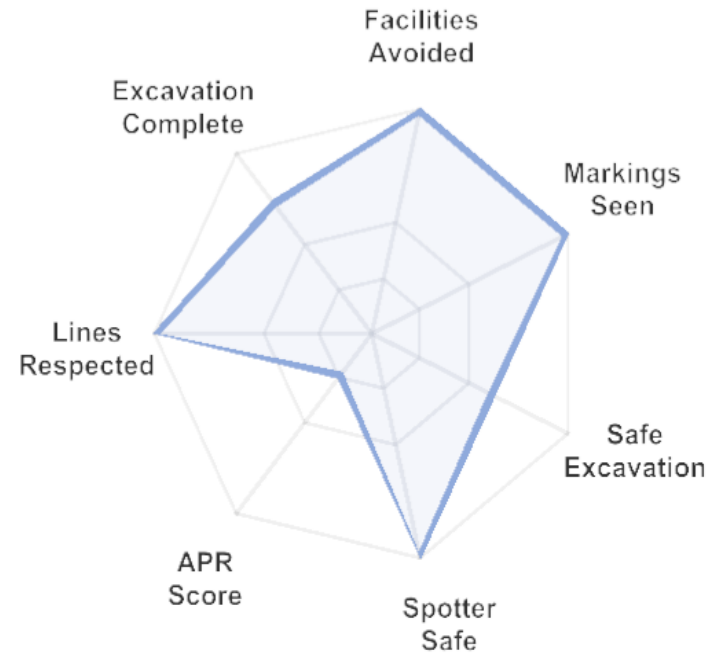
Save Report

Retake Session

Performance

Spotter test

driver test



Exit



UNDERGROUND CONSTRUCTION TECHNOLOGY

The Underground Utilities Event | July 13-15, 2021 | Music City Center | Nashville, TN

Q & A