




VIROO

# Boosting the Health Metaverse with VIROO®.

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VR in  
Healthcare

2023

VIRTUALWARE 

VIRTUALWARE

WHO WE ARE

# THE VIRTUAL REALITY COMPANY

## Two decades creating VR Solutions for the Industry

Virtualware is a pioneer European VR corporation based in Bilbao, in the industrial heart of Northern Spain. Founded in 2004, before there was even a VR industry - and much less an idea of the metaverse - **we have been using virtual reality solutions for two decades and changing the way many companies tackle extremely difficult industrial challenges.**

**Virtualware focuses on developing VR solutions that can help complex industries solve real problems**, such as training strategic workers in nuclear plants or construction operations and maintenance of railway infrastructures, to solving medical issues on the battlefield.

The content of this presentation is confidential and proprietary information of Virtualware.

4M€

2022 sales

WINNER

VR AWARDS

INNOVATIVE  
VR COMPANY  
OF THE YEAR

2021

500

Projects in over  
33 countries





# Relevant media coverage.



**Business**

## Virtualware acknowledged as the world's Innovative VR company in the 2021 VR Awards

November 22, 2021, 9:01 PM

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Virtualware  
the 2021 VR

PR Newswire

BILBAO, Spain

BILBAO, Spain, November 22, 2021 /PRNewswire/ -- Virtualware, the leading VR company in the world, has been acknowledged as the most innovative VR company in the world for its latest VR solutions in San Francisco and London.

Virtualware's cutting-edge VR solutions are used by GE Hitachi, Bayer, and

Global power Repsol, and Patras provider.

The jury of

**Business**

## The United States Patent and Trademark Office has awarded a new patent to Virtualware, for its VR tracking technology

March 21, 2022, 7:01 AM GMT+2

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The United States Patent and Trademark Office

PR Newswire

BILBAO, Spain

BILBAO, Spain, March 21, 2022 /PRNewswire/ -- The United States Patent and Trademark Office has awarded a new patent to Virtualware, for its VR tracking technology.

The system allows for several standing physical

The invention

**Business**

## Virtualware launches version 2.0 of its VIROO® platform

May 4, 2022, 7:01 AM GMT+2

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Virtualware launches version 2.0 of its VIROO® platform

PR Newswire

BILBAO, Spain, May 4, 2022

BILBAO, Spain, May 4, 2022 /PRNewswire/ -- Virtualware, one of the pioneers in the Virtual Reality industry worldwide, today announced the launch of version 2.0 of its VIROO® platform.



EXPERTISE

# VIRTUALWARE IN HEALTHCARE

Creating medical value since 2006

Ranging from **medical education and training solutions** to the most stunning and spectacular **promotional showrooms**, passing through the creation of **certified medical device software applications** to help improve people's quality of life. In 2014 we obtained the Medical Device Manufacturers' certification, allowing us to CE mark and certify Class 1 Software Medical Applications according to the EU regulations.

**We have designed, developed and commercialized several products and created Evolv**, a Digital Health and medical device manufacturer that specializes in developing rehabilitation solutions based on immersive and interactive technologies.



## Extended Reality (XR)

Umbrella term for any technology that alters reality by adding digital elements to the real-world environment to any extent.

### Lower Immersion

Physical or real-world environment.

### Higher Immersion

Virtual environment.



### Augmented Reality (AR)

View of the physical or real-world with an overlay of digital elements.



### Mixed Reality (MR)

Blend of the physical or real-world with digital or virtual elements where physical and digital elements can interact.



### Virtual Reality (VR)

View of a fully-immersive digital environment.



OUR EXPERIENCE IN

# Healthcare.

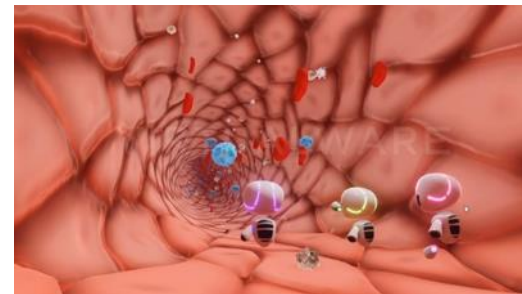
Our 18 years experience in VR and healthcare.



VR IN HEALTHCARE

# Training and education.

Medical training, surgical simulation, other specific trainings on technical procedures, digital twins.





## **We are certified experts in healthcare.**

Since 2014, we are a certified Medical Device Manufacturer, which enables us to certify, and CE mark, Class 1 Software Medical Applications, according to the EU regulations.



## VR IN HEALTHCARE

# Treatment and rehabilitation.

Cognitive rehabilitation, hemianopsia, spatial neglect, psychiatric disorders.



**KING'S**  
*College*  
**LONDON**

Dr Lucia Valmaggia PhD  
Head of Virtual reality Lab

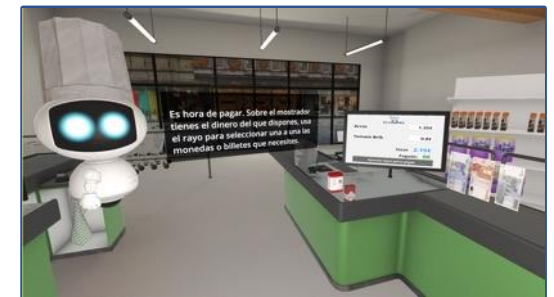


**KESSLER**  
FOUNDATION

Peii (Peggy) Chen, PhD  
Head of Spatial Attention, Awareness,  
and Ability Laboratory



**+** Spanish Red Cross



**teva** | **em** | ESCLEROSIS MÚLTIPLE  
EUSKADI



## VR IN HEALTHCARE

# Marketing and promotion.

Pharmaceutical industry promotional materials, large scale VR experiences, MS symptom simulator, demo medical devices.





# Opportunities and Challenges

## Virtual Reality in Healthcare

# XR applications in Healthcare.

European Commission report on the use of XR in healthcare and education.



## Applications to be used by medical professionals and students

### Surgery

- Preoperative planning (creating an optimal surgery design in 3D)
- Intraoperative navigation (visualizing patient's anatomy in real time)
- Telepresence (remote guidance for medical staff).

### Analysis and diagnosis

- Detection of diseases via 3D images.
- Detection of disorders by observing patients in VR environments.

### Learning in healthcare

- Training for medical staff and students (e.g., emergency situations, surgery simulations, human anatomy in 3D).

# XR applications in Healthcare.

European Commission report on the use of XR in healthcare and education.



## Applications to be used by patients or the general population

### Patients and caregiver education

- Visualization of medical procedures
- Simulating the experience of having a certain health condition

### Pain management

- Distraction and entertainment via immersive experiences
- Focus shifting by engaging patients in special tasks
- Skill building by helping patients regulate their response to pain

### Treatment & therapies for patients with mental health problems or disorders

- Cognitive behavioral therapy (mostly exposure therapy, but also psychoeducation problem solving)
- Virtual self-counselling
- Embodiment (e.g. to treat eating disorders)

### Rehabilitation and cognitive enhancement

- Cognitive rehabilitation to improve memory (e.g. for dementia patients)
- Neurological and functional recovery (e.g. improving motor and language skills after a stroke)
- Sustaining attention of persons with learning difficulties.

### Assistance for people with physical disabilities

- Aid for visually impaired people
- Aid for hearing impaired people
- Aid for people with mobility challenges

### Improving well-being and promoting healthy lifestyles

- Improving psychological and emotional well-being
- Encouraging physical activity



# VR IN HEALTHCARE

# Treatment & Diagnostic.

## List of FDA-approved medical devices incorporating AR and VR.

Date of Final Decision	Submission Number	Device	Company	Panel (Lead)	Primary Product Code
09/29/2022	<a href="#">K213034</a>	SpineAR SNAP	Surgical Theater, Inc.	Orthopedic	OLO
09/29/2022	<a href="#">K221375</a>	CureSight-CS100	NovaSight Ltd.	Ophthalmic	QQU
09/01/2022	<a href="#">K220104</a>	Knee+	Pixee Medical	Orthopedic	OLO
07/29/2022	<a href="#">K220733</a>	OptiVu ROSA MxR	Orthosoft, Inc. (d/b/a Zimmer CAS)	Orthopedic	OLO
06/15/2022	<a href="#">K213684</a>	SurgiCase Viewer	Materialise NV	Radiology	LLZ
05/27/2022	<a href="#">K220146</a>	VisAR	Novarad Corporation	Orthopedic	OLO
03/10/2022	<a href="#">K213751</a>	NextAR TKA Platform My Knee PPS	Medacta International S.A.	Orthopedic	OLO
01/14/2022	<a href="#">K211254</a>	ARAI Surgical Navigation System	Surgalign Spine Technologies	Orthopedic	OLO
11/16/2021	<a href="#">DEN210014</a>	EaseVRx	AppliedVR, Inc.	Physical Medicine	QRA
11/10/2021	<a href="#">K210344</a>	inVisionOS	PrecisionOS Technology Inc.	Radiology	LLZ
11/05/2021	<a href="#">K210859</a>	NextAR Spine Platform	Medacta International, SA	Orthopedic	OLO
10/20/2021	<a href="#">DEN210005</a>	Luminopia One	Luminopia, Inc.	Ophthalmic	QQU
10/02/2021	<a href="#">K202927</a>	EYE-SYNC	SyncThink, Inc.	Neurology	QEA
09/29/2021	<a href="#">K210726</a>	ImmersiveTouch	ImmersiveTouch, Inc.	Radiology	LLZ
07/19/2021	<a href="#">K211188</a>	xvision Spine system (XVS)	Augmedics Ltd	Orthopedic	OLO
07/14/2021	<a href="#">K203115</a>	ARVIS Surgical Navigation System	Insight Medical Systems Inc.	Orthopedic	OLO
05/14/2021	<a href="#">K210072</a>	HOLOSCOPE-i	Real View Imaging Ltd.	Radiology	LLZ
05/12/2021	<a href="#">K210153</a>	NextAR RSA Platform	Medacta International SA	Orthopedic	OLO
04/21/2021	<a href="#">K202750</a>	Knee+	Pixee Medical	Orthopedic	OLO
01/28/2021	<a href="#">K200384</a>	HipXpert 3D Display and Anchoring Application	Surgical Planning Associates, Inc	Orthopedic	OSF
10/27/2020	<a href="#">K202152</a>	NextAR TKA Platform	Medacta International SA	Orthopedic	OLO

Date of Final Decision	Submission Number	Device	Company	Panel (Lead)	Primary Product Code
09/18/2020	<a href="#">K192890</a>	SentiEP	SentiAR, Inc	Cardiovascular	LLZ
07/17/2020	<a href="#">K201465</a>	SuRgical Planner (SRP) BrainStorm	Surgical Theater, Inc.	Radiology	LLZ
07/10/2020	<a href="#">K193559</a>	NextAR TKA Platform	Medacta International SA	Orthopedic	OLO
01/23/2020	<a href="#">K191014</a>	Elements Viewer	Brainlab AG	Radiology	LLZ
12/20/2019	<a href="#">K190929</a>	xvision Spine system (XVS)	Augmedics Ltd.	Orthopedic	OLO
11/29/2019	<a href="#">K192186</a>	I-Portal Neuro Otologic Test Center, I-Portal Video Nystagmography System, I-Portal Portable Assessment System - Nysragmograph	Neurologn USA, LLC	Ear, Nose, & Throat	GWN
08/29/2019	<a href="#">K183489</a>	D2P	3D Systems, Inc.	Radiology	LLZ
05/13/2019	<a href="#">K190764</a>	SurgicalAR	MEDIVIS, Inc.	Radiology	LLZ
03/18/2019	<a href="#">K183296</a>	REAL Immersive System	Penumbra, Inc.	Physical Medicine	ISD
02/22/2019	<a href="#">K182643</a>	IRIS 1.0 System	Intuitive Surgical	Radiology	LLZ
09/21/2018	<a href="#">K172418</a>	OpenSight	Novarad Corporation	Radiology	LLZ
02/12/2018	<a href="#">K170793</a>	SuRgical Planner (SRP)	Surgical Theater, LLC	Radiology	LLZ
04/24/2017	<a href="#">K162748</a>	MindMotionPRO	MindMaze SA	Physical Medicine	LXJ
06/28/2016	<a href="#">K160584</a>	Surgical Navigation Advanced Platform (SNAP)	SURGICAL THEATER, LLC	Radiology	LLZ
02/12/2016	<a href="#">K153004</a>	Clear Guide SCENERGY	CLEAR GUIDE MEDICAL	Radiology	JAK
02/05/2016	<a href="#">K151955</a>	YuGo System	BIOGAMING LTD.	Physical Medicine	LXJ
01/29/2016	<a href="#">K152915</a>	EYE-SYNC	SyncThink, Inc.	Neurology	GWN
01/21/2015	<a href="#">K142107</a>	ECHO TRUE 3D VIEWER	ECHO PIXEL INC.	Radiology	LLZ

# BARRIERS ASSOCIATED WITH A WIDER ADOPTION OF VR IN HEALTHCARE.

And the platform to overcome them all

**VIRŌŌ**

## **Custom developments are expensive.**

We associate the development of customized VR experiences with high costs.

## **I need multi-user capabilities and remote collaboration.**

More and more applications require the use of technologies which enable participation of several people at the same time, even from different locations.

## **Data registration**

It is becoming increasingly common to have to record metrics securely in the cloud so that they can be analyzed later.

## **VR hardware equipment is very expensive.**

The fast evolution of VR devices on the market has brought convenient, lighter, powerful and cheaper VR devices to the field.

## **It seems that VR projects are not scalable.**

So far, VR developments had limited scalability due to their complexity and dependence on hardware.

## **Developments are not compatible with other VR devices.**

VR headsets are produced by different manufacturers, with their own operating systems and features. Moreover, as they evolve so fast, we don't have time to get the most out of them.



# VIROO

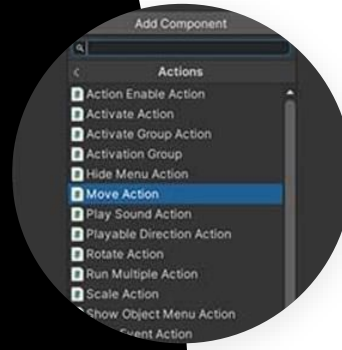
## The Virtual Reality Platform.


Create, manage and deploy

CORE BUSINESS

# VIROO CAPABILITIES

VIROO is a set of tools and services that make it easy to create low-code VR content, deploy it quickly and flexibly in multi-user or remote sessions and scale it in your organization.



Create content easier with built-in tools for  Unity

Build your own content using no-code And pro-code templates for Unity.



Deploy in remote and multi-user environments

Connect and Collaborate in real time in-person or remotely from anywhere.



Scale fast and securely according to your needs

Designed to grow with your demands, driving VR company-wide.

CORE BUSINESS

# VIROO KEY FEATURES.

The latest in VR with the  
best of *as-a-service*

## Multi-user and Remote collaboration ready

Capabilities incorporated. No need to develop concurrency management and cloud functionalities.

## Multi device

Deploy in multiple devices from desktop PC or laptop to the latest VR headsets.

## Large-scale VR Rooms deployment

Experience high-fidelity VR in large physical spaces with absolute precision and freedom of movement.

## Flexible and scalable

Customized subscription models, security, storage or performance for easy adoption and rapid scalability.

## No maintenance and management needed

Save time and money on maintaining hardware, applications or data. Only focus on keeping a high-speed internet connection.

## Always updated to the latest

Keep up to date with current and future VR devices and tools with constant release of upgraded versions.

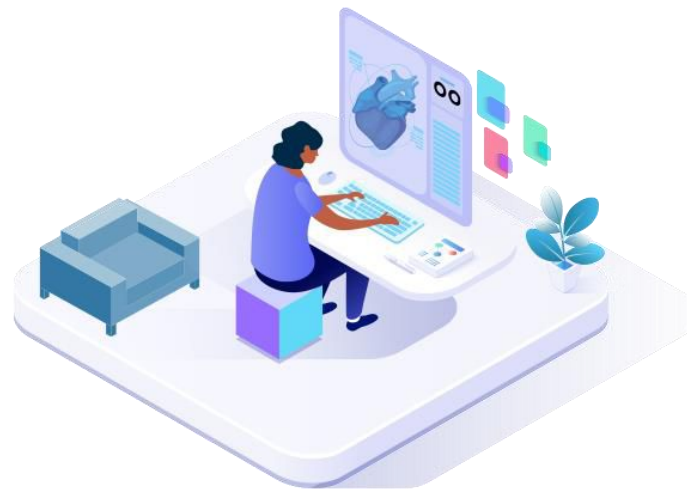
# Roles



DEPLOYMENT

# VIROO<sup>®</sup> Single Player.

Crea o únete a tus sesiones VIROO<sup>®</sup>  
desde tu escritorio con o sin casco de VR.



DEPLOYMENT

# VIROO<sup>®</sup> Room Player.

Crea o únete a tus sesiones VIROO<sup>®</sup> desde VIROO<sup>®</sup> Room.



VIRTUALWARE<sub>®</sub>

# VIROO<sup>®</sup>

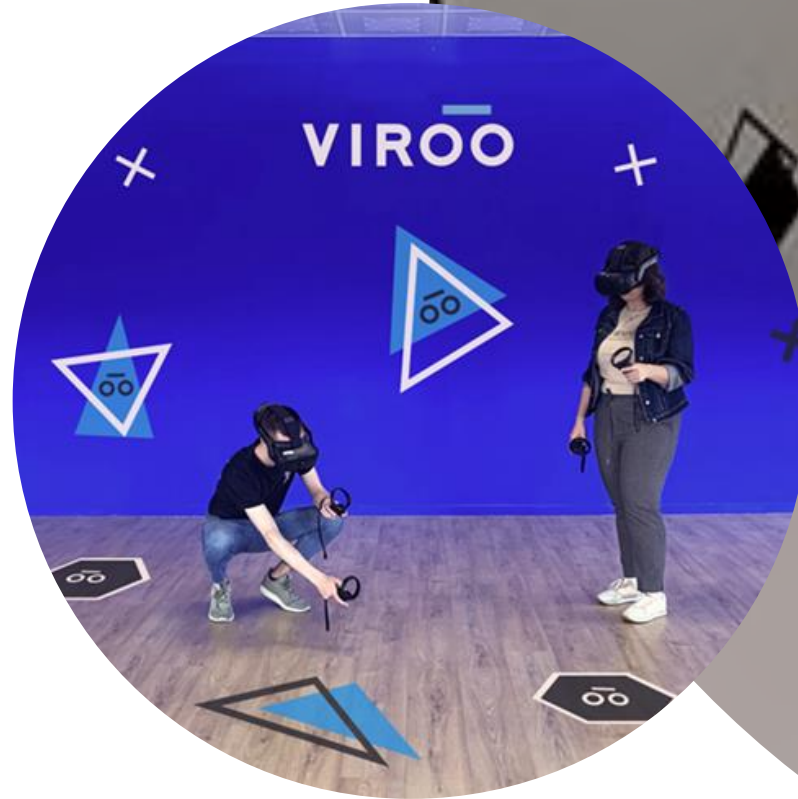
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## FREE-ROAM



### VIVE FOCUS 3

- LBE mode with wi-fi map sharing
- Available for up to 8 room users (for now...)
- Streaming fidelity dependable on 5G capacity and coverage



VIRTUALWARE

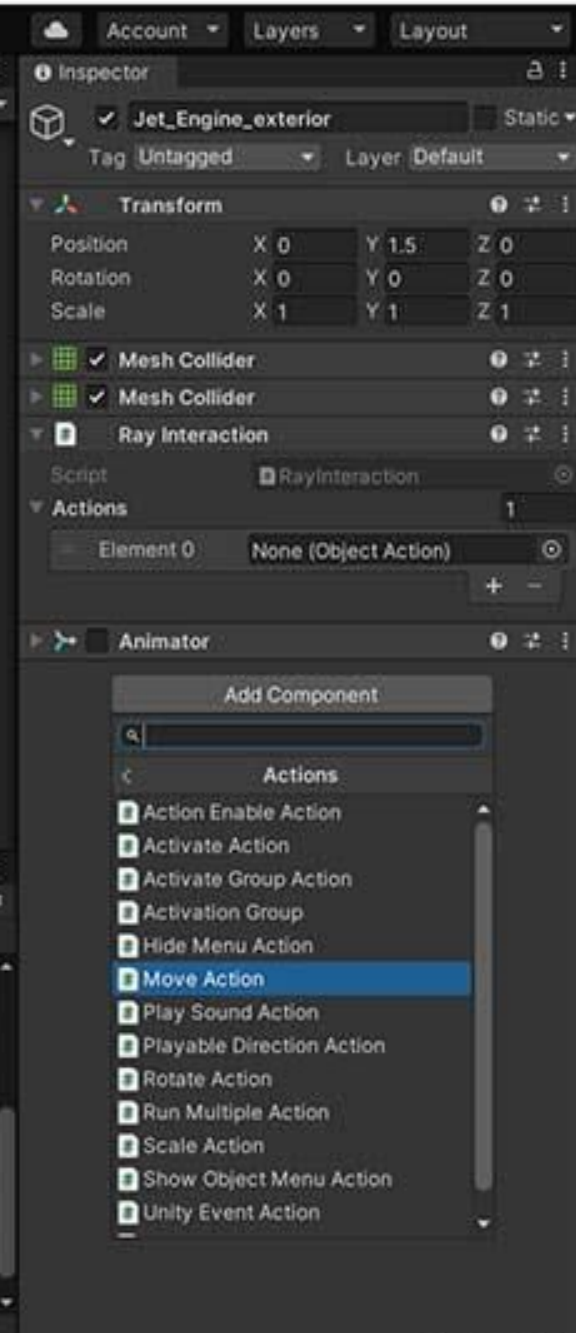
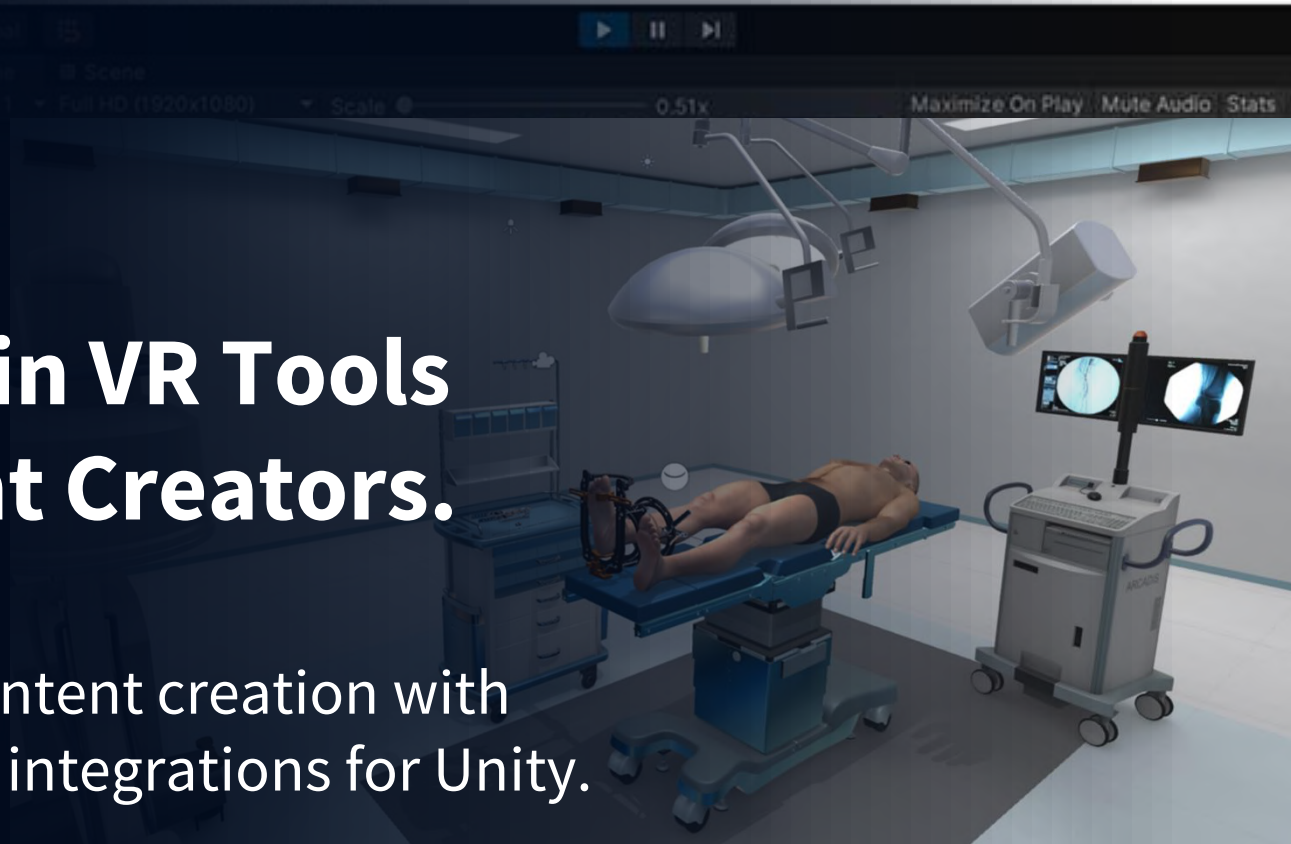
VIROO

# With built-in VR Tools For Content Creators.

## Streamline VR content creation with VIROO® essential integrations for Unity.

Generate your own content in-house without the need for highly skilled professionals. Increase your process velocity and exploit the full potential of Unity® with VIROO® built-in tools.

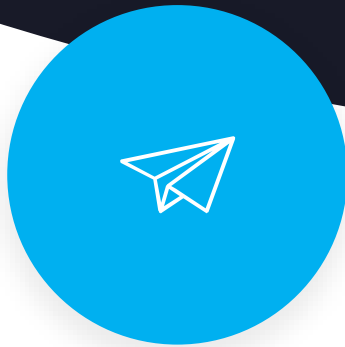
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CORE BUSINESS

# VIROO VR-*as-a-Service* PLATFORM

The all-in-one solution that makes VR adoption  
Simple, Nimble and Scalable



## Low initial costs for easy onboarding

Start small in VR with VIROO subscription plans adapted for companies of all sizes and growth stages.



## Frictionless upgrades and updates

Receive new versions - with more features, fewer bugs, and enhanced security - frequently and fast.



## Rapid deployment for widespread adoption

Reach across more users and more departments with practically no installation and minimal configuration.

SUCCESSCASES

# VIROO FOR HEALTHCARE

Accelerating global sales with VIROO's rapid scaling.

The **Training and Education department** of Janssen Spain, a multinational pharmaceutical company subsidiary of Johnson & Johnson, is setting up an ambitious initiative to **centralize their sales force education** through a VR platform that will allow them to **train technical and non-technical skills**, easily deploy them and distribute among other affiliates thanks to the ease of escalation.

In addition, the platform will provide objective **training evaluation** thanks to the analytics and tools that are being implemented.



SUCCESSCASES

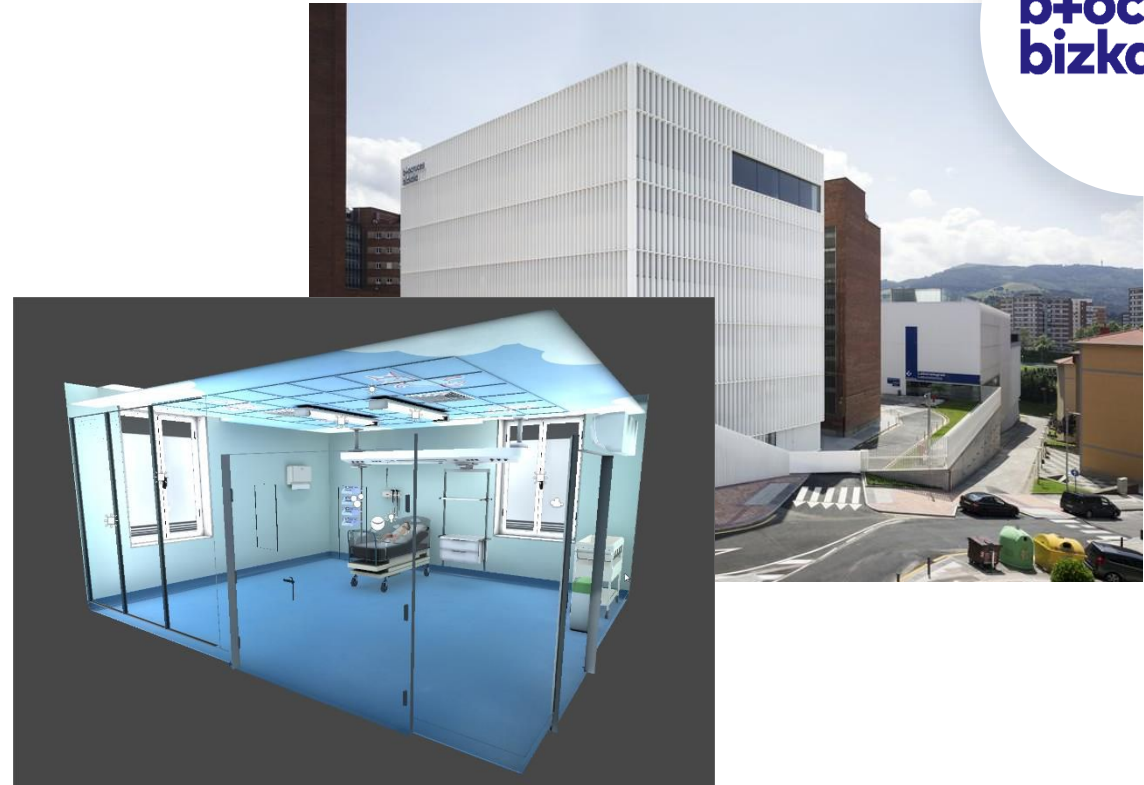
# VIROO FOR HEALTHCARE

Conducting clinical validation with VIROO.

BioCruces Bizkaia is the **Health Research Institute** of Cruces University Hospital, the largest hospital in the Basque Country. Its mission is to promote, coordinate and support the Institute's research groups to **develop cutting-edge translational research and promote effective innovation and collaboration with other entities.**

SIMUTEME is an **advanced medical simulation** project using VIROO, in collaboration with the healthcare professionals from the hospital and the academic experience of the university.

The SIMUTEME project objectives are research-oriented, where tools, clinical methodologies and procedures will be evaluated, analyzed and validated through clinical trials.



SUCCESSCASES

# VIROO FOR HEALTHCARE

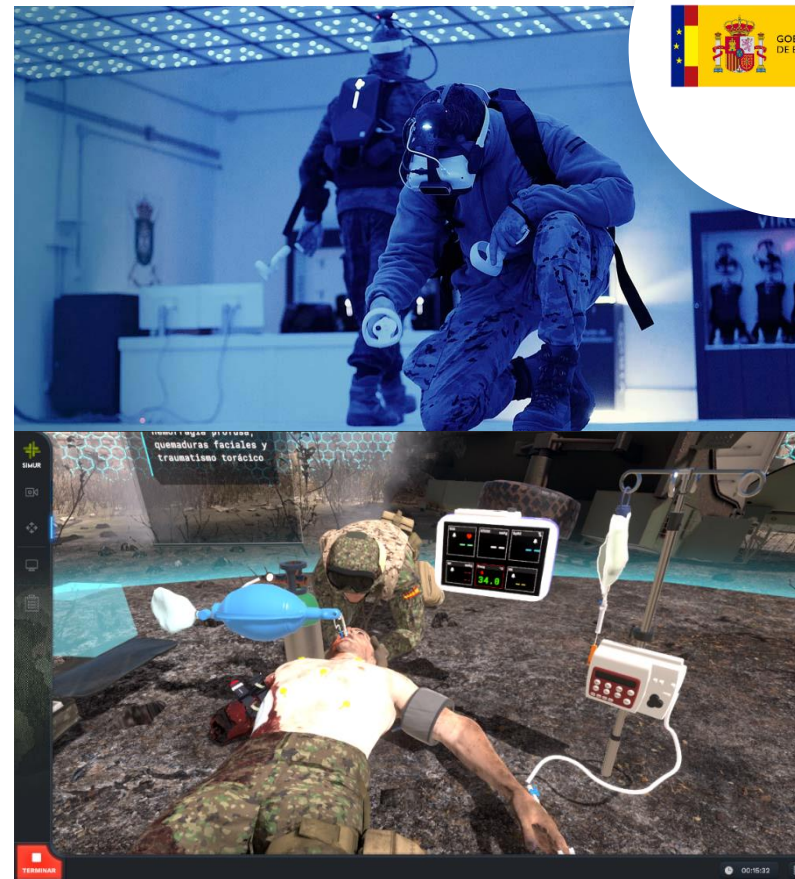
Elevating training to the next level with VIROO Room.

EMISAN is the Spanish Military Health School, part of the Central Academy of Defense.

We developed a high-fidelity life-like VR training experience to leverage simulation-based manikin training in complex scenarios and extreme stress situations with VIROO®.

SIMUR, the multi-user VR simulator powered by VIROO®, has been deployed in a 160-square-meters VIROO® Room at a tailor-designed warehouse of the Central Defense Academy, in Madrid, Spain.

The immersive training solution allows the Spanish Armed Forces to meet North Atlantic Treaty Organization's (NATO) standardization agreements, also known as STANAG.



SUCCESSCASES

# VIROO FOR HEALTHCARE

“Do it yourself” with VIROO content creation tools.

Hospital Virtual Valdecilla (HvV) is a Spanish based, public healthcare **center of innovation and high-performance training for health professionals**, depending on the Spanish Ministry of Health and an international reference innovation center in healthcare through the use of **clinical simulation**.

Virtualware and HvV have joined forces to build successful medical training programs, applying VR technologies with VIROO®.

The interesting thing about this partnership is that the **HvV has its own VIROO developer team** to design, develop and deploy proprietary medical simulation experiences while generating revenue through it.





VIRTUALWARE'S WORK IN

# Healthcare.

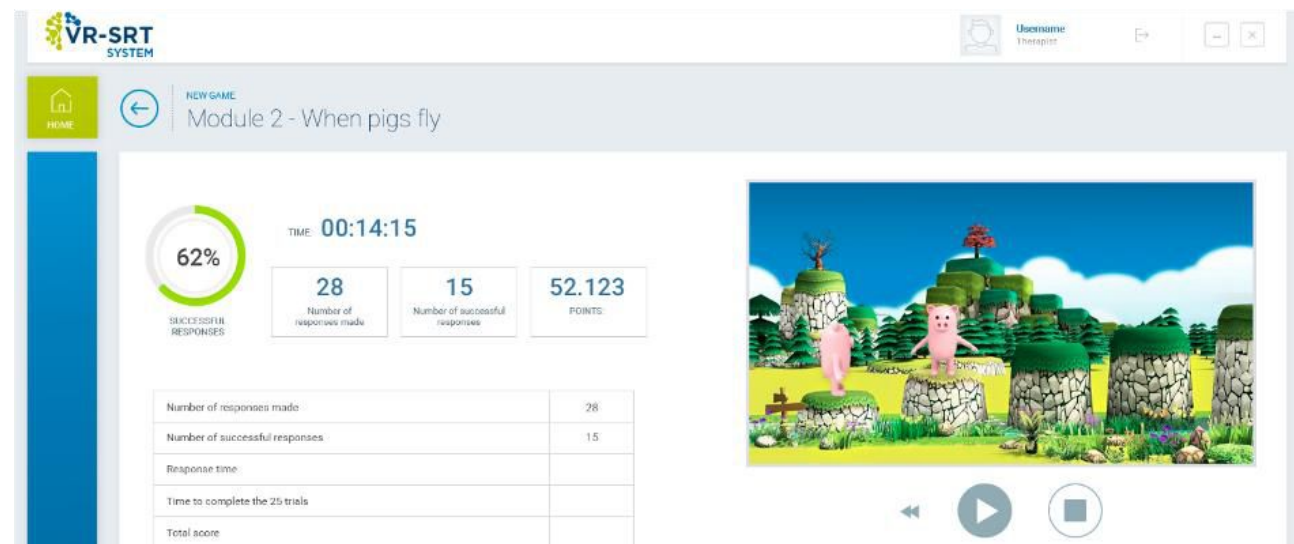
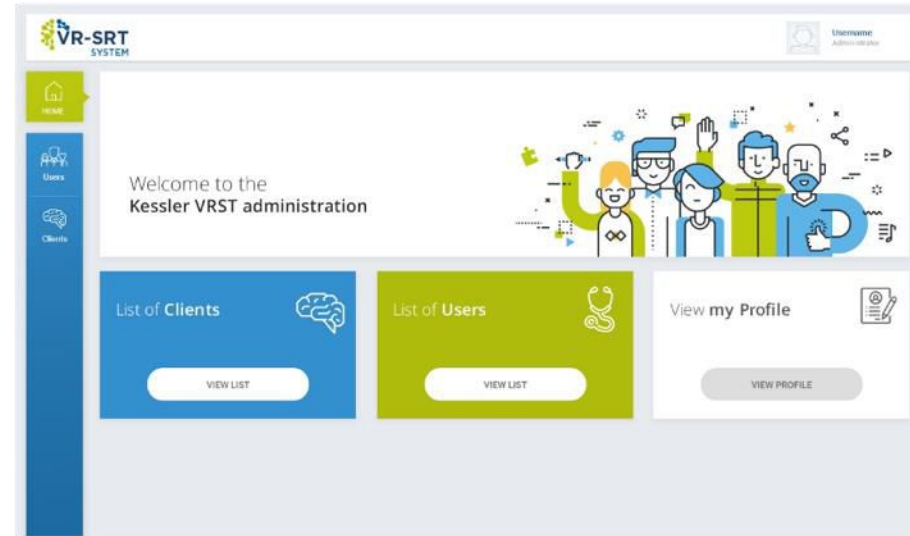
Other VR success cases developed by Virtualware.



# VR-SRT System for visual neglect rehabilitation.

Based on proven theories of neurorehabilitation, the virtual reality system leverages 3D virtual environments for immersive training scenarios to maximize improvement of health and function in stroke survivors with spatial neglect.

<https://rehabpub.com/conditions/neurological/stroke-neurological/vr-srt-system-uses-virtual-reality-help-treat-spatial-neglect/>





ESCLEROSIS MÚLTIPLE  
EUSKADI

## VR based cognitive rehab system for MS patients.

A virtual reality tool to assist patients improve cognitive and physical impairment with 5 levels of difficulty, specifically defined by experts. Results presented in 2014 in the World Congress of Neurorehabilitation.

<https://youtu.be/Y5a-8qLUI10> Spanish only





# KING'S *College* LONDON

## Virtual reality platform for the treatment of social phobia.

A VR based treatment tool to investigate the relationship between various components of social performance (cognitive, affective, and behavioral) and their increase in paranoid thinking.

[https://www.youtube.com/watch?v=1t4\\_uXr9YiY](https://www.youtube.com/watch?v=1t4_uXr9YiY)





# VR based rehab tool for patients with brain damage experiencing hemianopsia.

The VR system attempts to restore the visual field through continuous stimulation of the peripheral areas of visual field loss. It is based on the concept of neuroplasticity, the ability of the brain to adapt and modify itself in response to stimulation.

[http://www.cruzroja.es/principal/en\\_US/web/provincial-lugo/rehabilitacion-lesion-cerebral-usando-realidad-virtual-lugo](http://www.cruzroja.es/principal/en_US/web/provincial-lugo/rehabilitacion-lesion-cerebral-usando-realidad-virtual-lugo)



The dashboard shows three progress indicators for accuracy:

- TOTAL: 58%
- TOTAL IZQUIERDA: 10%
- TOTAL DERECHA: 48%

OBSTACULOS	TOTAL	ACIERTOS	FALLOS
NIÑOS	3	3	-
ADULTOS	5		
ARBOLES			
SEÑALES DE STOP			
SEMÁFOROS			
BALONES			

The game view shows a street scene with a timer at 00:14:15 and a score of 52.123.



## Multi-user VR experience to explain the MoA of a multiple sclerosis drug.

A large-scale collaborative VR experience for the 5th congress of the European Academy of Neurology in Oslo (Norway) where professionals could get a deeper understanding of two complex diseases: Spinal Muscular Atrophy (SMA) and Multiple Sclerosis (MS).

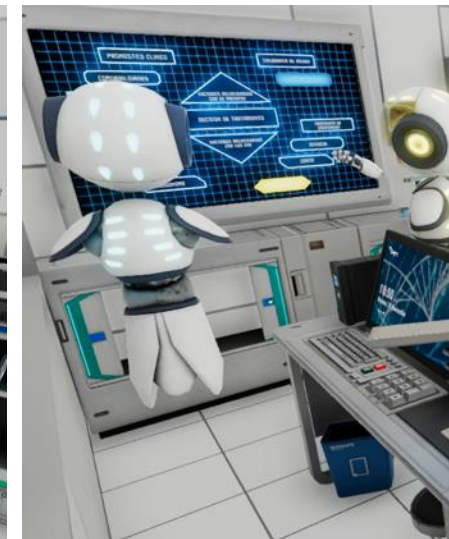
<https://youtu.be/U1a8pJ3hWbA>





## Virtual Reality escape room experience inspired in the field of neurosciences.

A collaborative VR escape room to connect customers, science and strategy at the Spanish Neurology Society annual meeting. Up to 4 participants can interact simultaneously to find some specific strategic messages related to Spinal Muscular Atrophy (SMA) and Multiple Sclerosis (MS) disease in order to get out of the lab.





VIRTUALWARE®