



WHITE PAPER

Virtual Reality: The keys to turning this new technology into an asset for your business

SOLID  **PERTS**
by solidxperience



Virtual Reality: Benchmarks & Solutions

Introduction

VR, AR, MR, XR. How do you navigate all these terms?

What technologies are available today and how can they be useful for your company's growth in this Industry 4.0?

Virtual reality technologies are at your fingertips. How do you navigate, identify and understand the utility of these new tools?

Solutions are now being developed and are more affordable than ever as they become powerful tools for addressing various aspects of the production process. Ideation, design, technical development, simulation and marketing are just a few possible uses within a company.

The benefits are real for companies that intelligently integrate virtual reality technologies.

In this white paper we will learn to understand virtual reality, and how to apply it in your company today.

TABLE OF CONTENTS

Part 1 : How to understand virtual reality.....	3
<i>Issues.....</i>	3
<i>Solutions.....</i>	4
<i>Technological Monitoring.....</i>	5
Part 2 : Virtual Reality and 3D Design, which solutions fit your needs?.....	6
<i>Selection criteria.....</i>	6
<i>Means.....</i>	7
<i>In conclusion.....</i>	9

Part 1: From Issues to Technological Monitoring: How to understand virtual reality



Issues

VR vs commercial use

VR has now become more affordable to the public over the years, and it is essential to differentiate between industrial solutions and more whimsical solutions or even experimentation.

Critical Business Issues (CBI)

Defining challenges and issues for different departments of your company or technology may be applicable.

Budget

Defining a budget envelope is important. Plan to have adequate software and hardware solutions for the task at hand.

Solutions

XR = VR + AR + MR: Understanding the different types of virtual reality

XR = Extended Reality

Extended reality is simply a generic term for augmented reality, virtual reality, and mixed reality.

VR = Virtual Reality

Virtual reality places the user in a totally virtual environment. VR obscures the user's environment and replaces it with a completely virtual environment. Virtual reality is very immersive and deceives the brain into thinking that it is experiencing another reality. This is currently the most popular technology.

It can be presented in different versions:

1. Following the user's head: An image, a video or a 3D scene scrolls 360 degrees in front of the eyes of the observer according to the movements of his head. He feels like looking around, above and below him. We are talking about 3 degrees of freedom (3DoF)
 - a. Useful for visually evaluating a good proportions design.
 - b. Better adapted to visualize interior designs, like a room for example.
 - c. A variant also makes it possible to rotate an object to appreciate its appearance.

2. Next to the body in motion: In addition to the 3 degrees of observation of the head, three other degrees are added to allow the user to move (in the room or virtually in the environment), which gives 6 degrees of freedom (6DoF)

AR = Augmented Reality

Augmented reality is a technology that places virtual objects, text or interfaces in the field of view of the user who then feels that their environment is enriched.

More and more applications are using mobile platforms such as smartphones and tablets via their integrated cameras.

MR = Mixed Reality

Mixed reality makes it possible to interact with the elements of the scene, such as dismantling an assembly.

It offers maximum interaction and feedback between the user and a design.



Technological Monitoring

Stay informed about the best available solutions for your immediate and future needs. This technology is constantly evolving.

Watch for SolidXperts' periodic publications and do not hesitate to contact our specialists on the subject.



Part 2: Virtual Reality and 3D Design, which solutions fit your needs?

Selection criteria

Focus on sustainable solutions that are well supported and in line with your objectives.

What are the needs in your company? Marketing, technical validation, development? What degree of realism? Is there an interaction needed or a simple visualization?

SolidXperts can help you in these choices and explain the challenges and solutions available to meet your needs.

Means



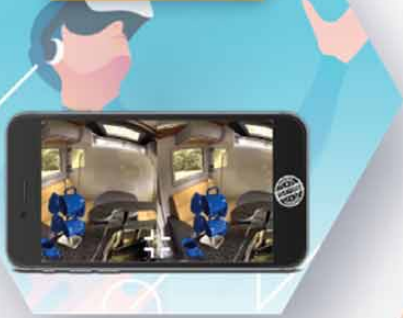
Minimum budget, software, user interface equipment, computer system.

The investment in acquiring an XR solution can be as simple as an **eDrawings Pro** app installed on your smartphone and a "**Google Cardboard**" type box.

Of note, Windows 10, in its latest versions (Creator update) natively supports VR viewing. It is therefore possible to directly display 360-degree images for example. Even the display of regular applications in VR will be possible very soon as everything falls in place for the use of virtual reality.

For wider possibilities, **SOLIDWORKS** 2019 offers backup in standard GLTF or GLB format, which can be used directly by multiple VR / AR applications. Data from 3D geometry, scene hierarchy, appearances and decals, lights and camera, animation, configurations, metadata, etc. can be saved in this type of file and is transferable to compatible partner applications or platforms like Unity or Unreal, which opens the entire virtual world to **SOLIDWORKS** designers.

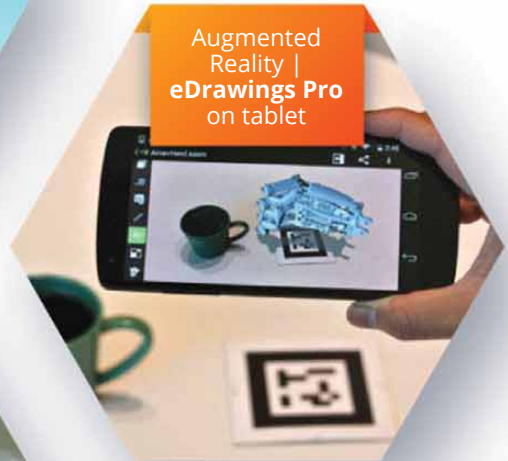
Stereoscopic
view |
SOLIDWORKS
Visualize Pro



AR |
Augmented
reality
headset



Augmented
Reality |
eDrawings Pro
on tablet



Windows 10
Creator Update
| **VR 360**



AR | User
interface
example - Meta



VR / MR |
eDrawings Pro
+ HTC Vive



VR | eDrawings
Pro on smart
phone + case



This means that you can replay animations created in **SOLIDWORKS**, switch between view states, or trigger an exploded animation, all in augmented / virtual reality or Web experiences. You will be able to:

- Improve collaborative editing internally and externally of designs;
- Sell your designs more effectively using immersive experiences;
- Train users on how to assemble and / or interact with your immersive products;
- Increase confidence in your designs from one end of the product development process to the other.

For an even more realistic VR, the possibilities of **SOLIDWORKS Visualize** can be extremely convincing. It is possible to display the calculated results in real time (with the consequent equipment) or to prepare 360-degree presentations that can be displayed in the equipment or on smartphones.

There are existing partner solutions that cover a wide range of possibilities and are specific to your needs. Contact SolidXperts about this.

Conclusion

Return on investment (ROI)

The advantages are tangible for companies that intelligently integrate virtual reality technologies. Many reports state the benefits of VR. Its use is growing dramatically and is here to stay.

An easy parallel can be made with the adoption of 3D printing technologies. Curiosity, limited / complicated use and additive manufacturing solutions are essential in many sectors and now come with greater simplicity.

You are not alone! Call **SolidXperts** to discuss your needs and let us advise you on the best solutions for your own "reality".



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