

# How Augmented Reality and Virtual Reality are Creating Additional Value and Decreasing Costs in Medical Device Development, Manufacturing and Services

*In the past years, Augmented Reality (AR) and Virtual Reality (VR) have seen tremendous growth. The technical possibilities in different markets are increasing and the use of AR and VR goes far beyond the boundaries of the entertainment industry. AR and VR are making waves in other markets, such as In Vitro Diagnostics (IVD) and Life Sciences. This breakthrough technology has the potential to transform the medical device industry with enormous benefits to end users.*

## Breakthrough Technology - 3D Immersive Experiences

**Augmented Reality (AR)** is an interactive, reality-based display environment to enhance the user's real-world experience.<sup>1</sup> It combines reality with computer-based holographic 3D images to deliver an enhanced view of the world.

**Virtual Reality (VR)** refers to computer-generated environments which are designed to simulate a person's physical presence in a specific environment that is designed to feel real.<sup>2</sup> The purpose of VR is to manipulate the environment as if it were the real world. This feature gives the user the 3D immersive experience.

Even though AR and VR share common traits, they are two different technologies. AR

augments or adds 3D graphic renderings to reality, while it does not replace it. VR completely replaces the user's surroundings with a virtual environment. Therefore, the used hardware is different.

## Major Excitement at AACC 2018 BIT Booth

The idea to form an AR/VR team within BIT's innovative software group was started in early 2017 with a strong focus **to grow fast and to be ahead of the medical device market**. After early strategy development within the Group, the project was kicked-off in late 2017. The goal was to develop one AR and one VR application targeted for presentation at the 2018 American Association of Clinical Chemistry (AACC) show in Chicago, (IL) in July 2018.

The purpose of showcasing this application at AACC was to demonstrate the impressive range of precision engineered and manufactured technology solutions, and also to expose BIT's existing partners and potential clients to the **new technologies and services offered**.

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<sup>1</sup> Techopedia - Definition Augmented Reality (AR) [2018]

<sup>2</sup> Techopedia - Definition Virtual Reality (VR) [2018]



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BIT's Virtual Reality (VR) environment featuring the **SMARTFlex** clinical chemistry platform

The AR application used BIT's own IVD instrument known as the **SMARTFlex**<sup>3</sup> (a clinical chemistry platform). Clients were able to put on the headset and see a realistic holographic interactive 3D model of the IVD instrument projected in front of them. Prospective clients were able to open lids and doors and play a demo animation of the instrument running by using hands gestures. The users were also able to open hot spots displaying key points of the IVD instrument presented in front of them.

The VR application featured one of BIT's partner

instruments: a **highly-automated breakthrough technology used for routine allergy testing.**

Through the VR headset, the user is placed in a custom laboratory environment and is able to create a unique experience by interacting with the instrument.

While running the instrument in the application, the user is provided with **marketing messages** of the instrument use, as well as instrument specifications, such as sample capacity, run time, and other specifications.

<sup>3</sup> Regulatory Disclaimer: Not yet on the market

At the show BIT displayed its ability to use existing platform materials and patented technologies to create a fully capable instrument, filling the development and manufacturing needs of its clients.

Nonetheless the main focus was to present these exciting breakthrough AR and VR technologies, which offer **innovative, real-time, remote expertise for improved decision-making from design to system maintenance.**

## 3D Immersive Experiences Produced Enormous Positive Feedback from Partners

BIT is an industry leader and innovator with 3D immersive technology.

A survey of participants at the 2018 AACC demonstrates strong interest in this technology within Life Sciences and IVD markets

### *80% of Participants Determined 3D Immersive Applications Add Significant Value*

BIT's technology goal is to provide its research and development, operations, service, and commercial departments with modern digital tools that enhance its client's and engineer's experience throughout the product development life cycle. The goal is to **improve efficiency and effectiveness through the support of 3D Immersive Applications.**

BIT has started offering new services using its cutting-edge AR and VR technologies. These innovative applications for its partners are of BIT's highest interest and can see the industry incorporating more regularly in the near term.

**BIT and its partners identified four primary areas where 3D Immersive Experiences will benefit its clients and their end-users:**

- Pre-Sales and Marketing
- Design and Development
- Manufacturing
- Service

## Strengthen Marketing and Commercial Introduction

Offering 3D Immersive Experiences will improve the functions of the commercial team of an organization. The realistic 3D models in AR and VR replace bulky instruments at tradeshow and client meetings. Instead of shipping instruments in heavy crates around the globe or being stuck explaining in customs, your sales rep only needs a laptop and the AR/VR headset. AR and VR **saves time and thousands in shipping costs.**

In addition to **creating more flexibility** for a sales team, implementing a virtual catalogue gives you the possibility to present many instruments at the same time in a unique and engaging way, **hastening the decision-making process.**

Cutting-edge software will additionally increase the cache of your brand and **strengthen the**

**emotional connection** to your product. Your brand looks innovative and effective.

## Enhancing Design & Development

Virtual prototyping allows design engineers to simultaneously create 3D CAD drawings with an interactive AR and VR application while displaying ideal attributes and functionalities for each specific unit, creating a scenario where the client has the ability to interactively choose physical characteristics such as overall size and color along with the design of touch points and control panels for their instrument.

Design engineers can construct holographic prototypes **of realistic 3D models without bending any metal or printing any 3D material.**

In addition, virtual prototyping allows greater insight from and collaboration with our clients, allowing BIT to build and prototype IVD instruments more **efficiently and effectively**, increasing productivity with faster iterations, **reduces the time to market and drives more profit for your organization.**

## Accelerate High Quality Manufacturing

Interactive AR and VR simulations specific to each instrument create an ideal environment for engineers to immerse themselves in the applications to discover and develop optimum manufacturing techniques.

This creates a more efficient and highly accelerated method to **train employees and service technicians.** Using AR software applications to train new employees can reduce the amount of time it takes to manufacture complex medical devices, **increasing internal efficiencies and again reducing the time to market.**

Guided animated assembly and disassembly instructions are far superior to reading a 700+ page manual and will additionally **strengthen the motivation** within your manufacturing group.

## New Gold Standard in Service

The innovative AR and VR application will assist technicians all around the world. Servicing complex medical devices globally can be challenging. The 3D Immersive Experience will create an **after-sales virtual service plan and drastically reduce the reliance on complex service manuals.**

You can rely on the headset with interactive captions and work instructions. Through the headset, you can **connect your field personnel 24/7/365 to higher level expertise for support.**

The ability to remotely train field personnel creates opportunities in markets previously difficult to reach and service. The outcome will be **an increased quality of service to the end-users combined with a decrease of associated costs.**

## BIT Company Profile



BIT is part of the Messer World, an owner-managed family company with a rich history and has been serving top OEM customers for more than 42 years IVD and

medical device markets. We partner with our clients to research, develop and manufacture innovative medical diagnostic devices to improve and save lives.

We have built long-term relationships with our OEM clients by being an innovative, effective and reliable partner. With our partners, we **BUILD INNOVATION TOGETHER.**

Our state-of-the-art R&D and manufacturing centers in Frankfurt (Germany), Montpellier (France), San Diego and Irvine (USA), and Kunshan (China) allow us the flexibility to serve our customers globally - where they need us.

## Project Inquiries

For all project inquiries regarding our **AR/ VR 3D Immersive Experiences**, reach out to our Innovation Group at [Innovation@BIT-Group.com](mailto:Innovation@BIT-Group.com)

For all project inquiries regarding **Instrumentation Solutions**, reach out to our Global Business Development Team at [Contact@BIT-Group.com](mailto:Contact@BIT-Group.com)

## Point of Contact

**Valentin Kaiser**

Global Marketing Manager at BIT Group

[V.Kaiser@BIT-Group.com](mailto:V.Kaiser@BIT-Group.com)

+1 858 886 8350

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[www.BIT-Group.com](http://www.BIT-Group.com)



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Years of experience  
and client work



> 35,000

Laboratories use BIT  
technology



> 170,000

Instruments  
manufactured



350

Global Employees