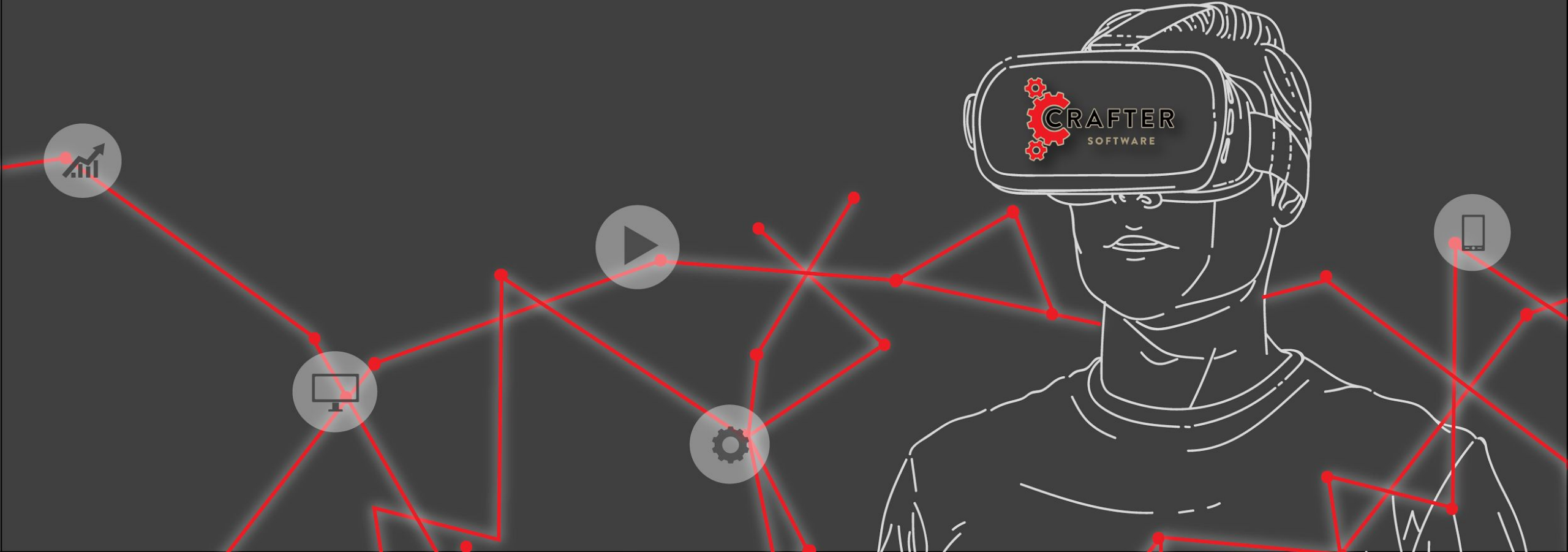


# DIGITAL EXPERIENCE TRENDS: VIRTUAL REALITY AND AUGMENTED REALITY



# Virtual and Augmented Reality - It's the next big thing, and it has already arrived.

Once a fringe technology, virtual reality (VR) and augmented (AR) are now mainstream. For those paying close attention to developments in the technology sector, it is plain to see that these two important and highly immersive channels have arrived and will ultimately have a profound impact on the ways that we communicate, learn, work and play.

As a result, companies of all sizes and in every industry vertical are beginning to leverage these new technologies in a variety of ways. As many of the technical challenges have been overcome, marketing and other types of content practitioners have begun to investigate these channels closely to understand how to operationalize them and fit them into the larger picture within the enterprise.

**In this e-book, we will explore these emerging technologies and shed light on how they fit into the larger landscape of content strategy and the user journey.**



# OVERVIEW OF **VR AND AR**

Virtual and augmented reality are similar but different types of customer channels that leverage technology to provide the user with “immersive” user experiences.

Because the technology is so similar, the distinction between the two channels is sometimes confused.

Let’s dive in and take a closer look.







## Virtual Reality

Virtual reality (VR) is an immersive sensory experience in which a user, through the assistance of technology, experiences an alternate reality.

The ultimate goal of VR is to completely immerse the user in a computer-generated world.



# VR Technology

This is done through “wearable” peripherals and rigs which attempt to override the user’s five senses such as sight, hearing, and touch and replace them with sensation relevant to a wholly computer generated, virtual world.



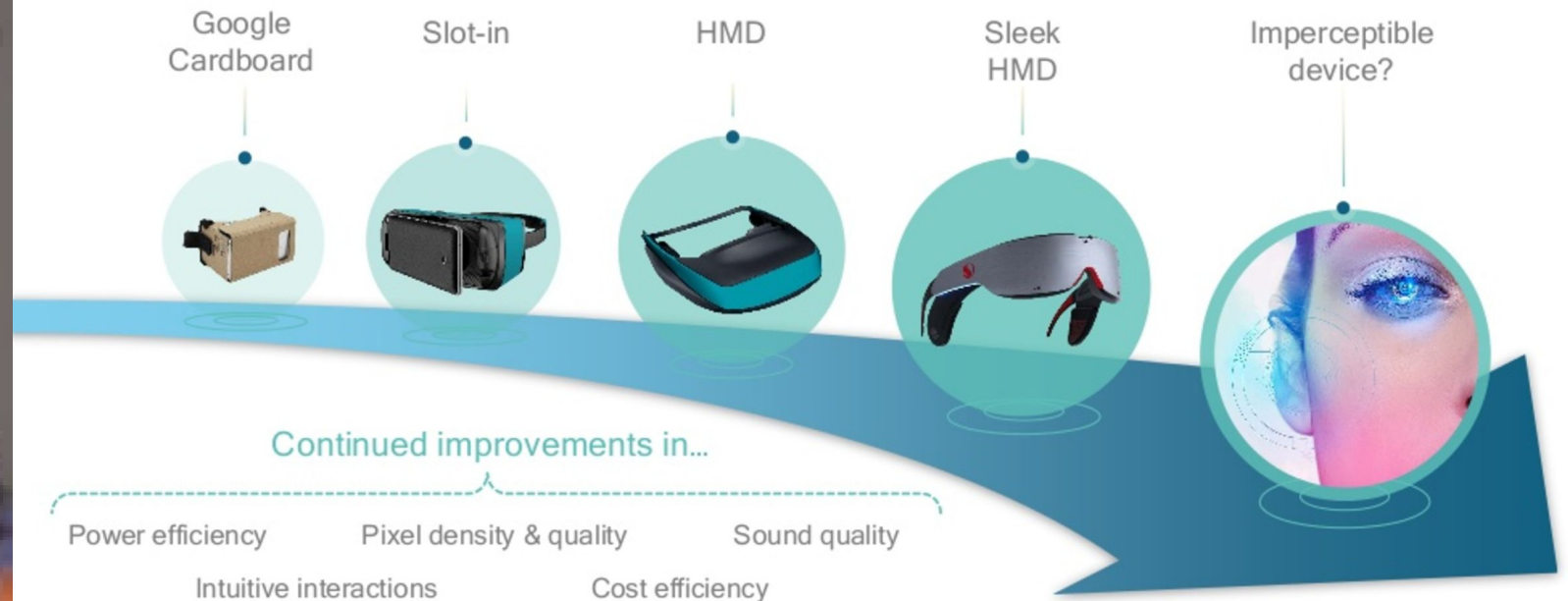


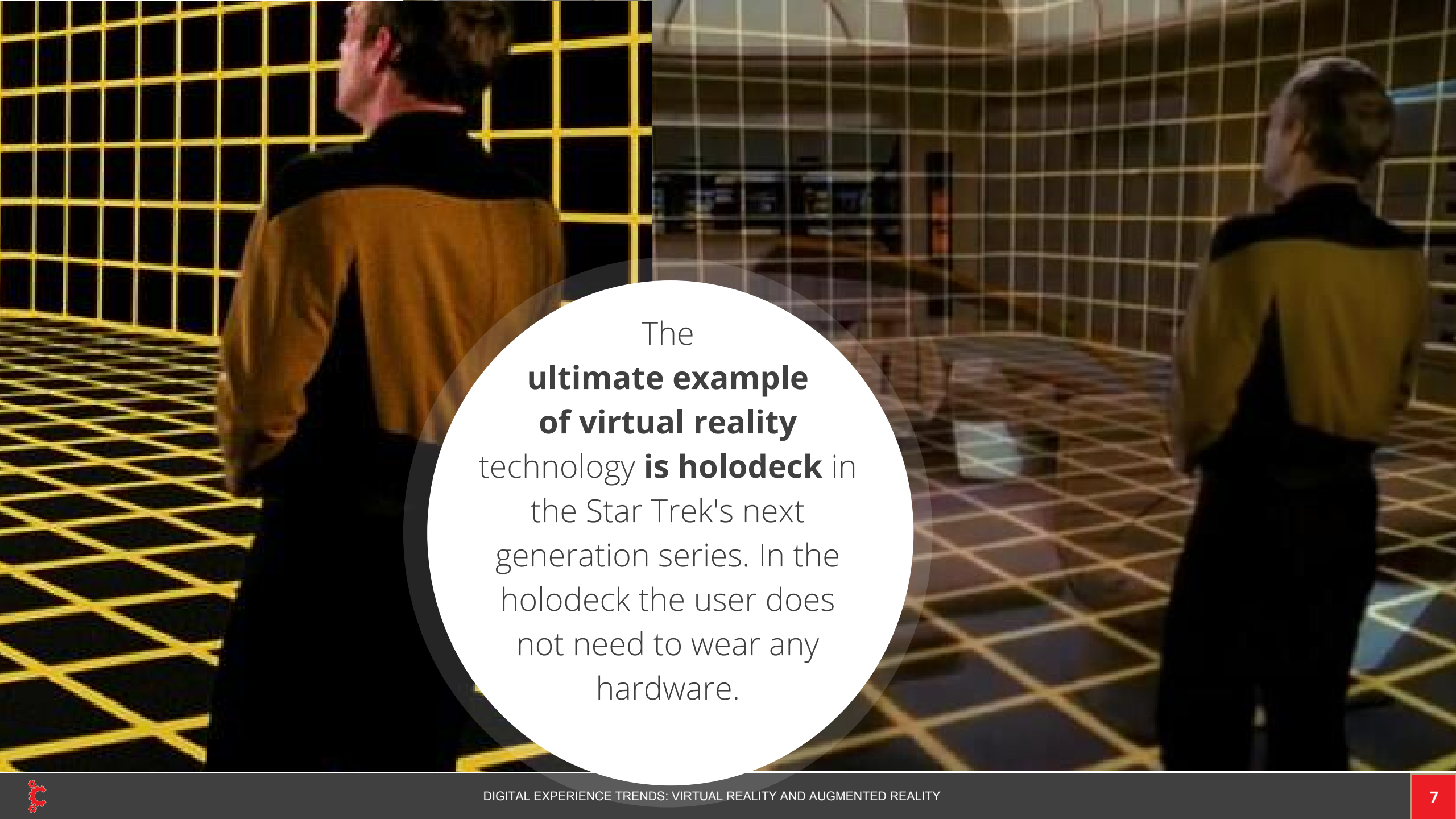
# The Technology is Evolving

In the short span of a decade, VR has gone from a technology that only universities and major enterprises could afford to a capability that is accessible to anyone with a smartphone.

More importantly, the rate of innovation, the miniaturization and the reduction of cost are accelerating rapidly.

Devices will become sleeker, lighter, and more fashionable






The  
**ultimate example  
of virtual reality**  
technology **is holodeck** in  
the Star Trek's next  
generation series. In the  
holodeck the user does  
not need to wear any  
hardware.



# Augmented Reality

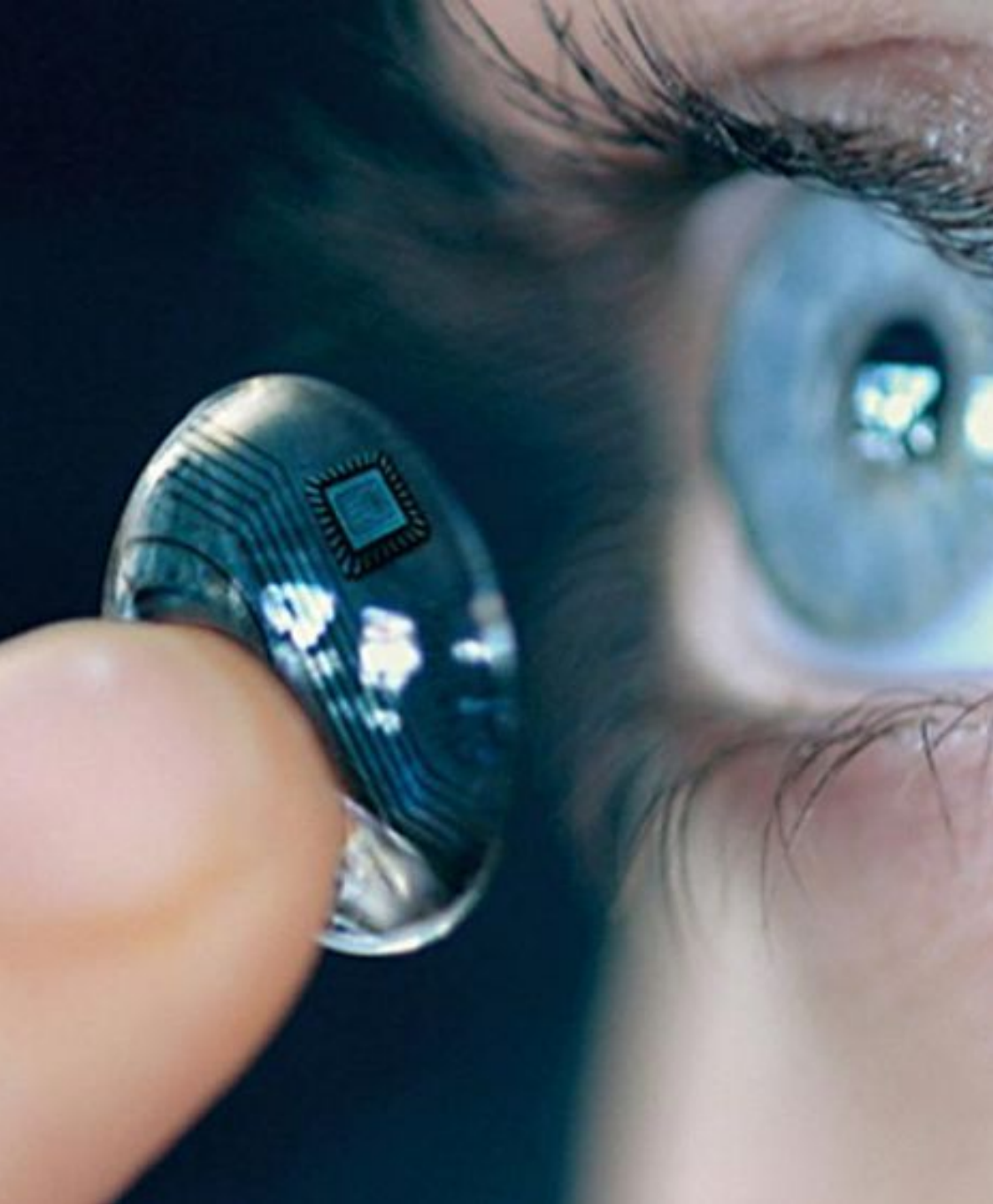
Augmented reality (AR) leverages similar technology to add a realtime layer of data and functionality on top of our everyday experiences to enrich and provide new ways to interact with them.



A man with a beard and blue eyes is wearing a Microsoft HoloLens AR headset. He is looking towards a hand gesture on the left side of the frame. The background is a plain, light-colored wall. A red geometric shape is overlaid on the left side of the image, containing text.

Because AR experiences tend to focus on altering rather than replacing our so-called “real world” experiences, the technology must “pass through” real world visual and audio input. And at the same time, overlay data, behavior, and interactions in such a way that we perceive them as a combined or “augmented” experience.





## AR Technology

Today augmented reality experiences rely on somewhat “clunky” technologies like headgear, second screens and the like.

Because augmented reality has a stronger relationship with our “real world” experience than VR, there is a greater barrier to entry for AR than there is for VR.

That said, as we’ve seen within the virtual reality space, advances in technology and innovation in this area are occurring at a staggering rate.

At the present rate, it’s entirely realistic to expect augmented reality to become a seamless part of our everyday experience through microscopic technologies you will barely notice within the next decade or two.





# Significant Trends in AR and VR





## Rapid Growth in Innovation:

---

We live in an age of major breakthroughs in the understanding and application of nanotechnology, biotechnology, and artificial intelligence. VR and AR technologies are the direct beneficiary of these advances. You can expect the technology to become more seamless and higher fidelity at an incredible rate.





## Investment in Modern Technology:

---

Many enterprises recognize the promise of this technology and the opportunity that it creates. As a result, they are putting vast sums of money into its development application.

The combined AR and VR market will be worth \$121 billion by 2021, according to Digi-Capital.





## Content Creation:

---

Creating virtual and augmented reality content is becoming easy and mainstream. The most obvious example of this is the cost and availability of 360 degree cameras. The selfie is old school. The cool kids take 360 shots to share their experience.



## Peripherals:

---

With VR it's all about peripherals -- because it's about overriding sensory input to create a more immersive, interactive experience that feels real to the user. Expect VR peripheral vendors to produce devices that map to all five senses. This technology will provide you with as many degrees of motion as your body and wallet can handle, along with as many scenarios as your imagination can dream up.



## **Miniaturization:**

---

When it comes to VR and AR gear, smaller and seamless is the key. No one wants to wear bulky equipment or to be tethered to a computer. With major R&D investments, wearables and the related fundamental science, you can expect the next five years to show marked improvements in the convenience and usability of VR and AR related technologies.





### **Web browser solutions:**

---

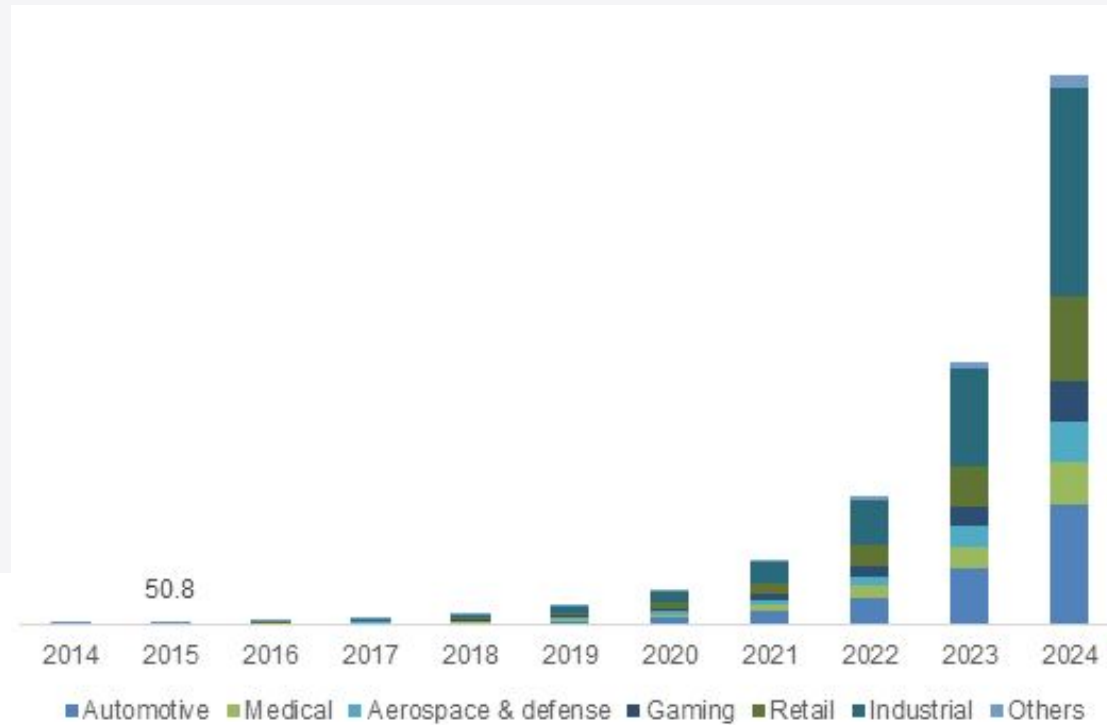
Are you in Hollywood building complex VR and AR experiences? If yes, you may need powerful engines like UNREAL. If not, these types of platforms are overkill. In recent years, web-based frameworks have emerged, making it possible with HTML5, a smartphone and, basic programming skills to put VR and AR in the hands of everyone. This is critical -- in the same way that Javascript and HTML revolutionized traditional client-server apps -- and this trend means similar advancements for AR and VR.



## **Explosion of 3D, virtual and augmented reality content**

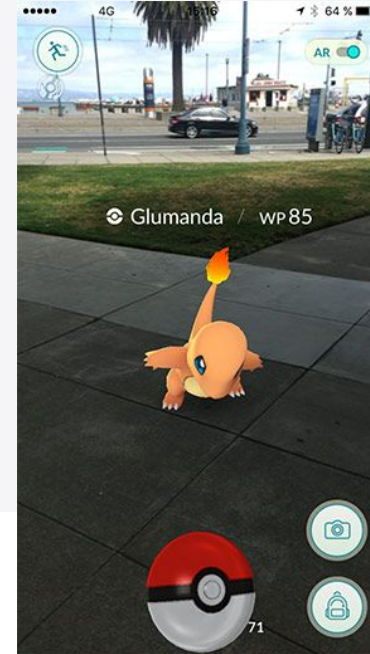
---

It's now affordable and simple for almost anyone to capture a 360 photo or video. And with easy web-based development frameworks for AR and VR, the availability of VR and AR content is accelerating. The technology will continue to explode like wildfire.



## Mass Adoption Across Industry Verticals:

Today VR and AR are used primarily in gaming and education. Gaming is the obvious use case. However, due to VR's and AR's ability to enable new ways to communicate, learn and work, (combined with the affordability and availability of the technology), we can expect to see all industries adopt VR and AR for a plethora of different use cases.



## VR and AR Natives

Kids ranging from 12 years old and younger are joining the previous generation of digital natives. A generation of people who have never known the world without continuous connectivity. This new group of youngsters has grown up with experiences like Minecraft, Pokemon Go, and Snapchat. For them, VR and AR technologies are not novel, they are natural.




# Virtual and Augmented Reality Use Cases

VR and AR might feel like it's too "out there" for you or your company, but **it's not!**

Thomas Watson of IBM remarked on the state of the market for computers back in 1943: **"I think there is a world market for maybe five computers."**

While some may view VR and AR as a technology with a limited reach, but they are mistaken. **The possible use cases are nearly limitless. In this section, we'll cover just a handful of use cases where VR and AR are game changing technologies.**



I think there is a world market for maybe five computers.

*Thomas J. Watson*  
IBM

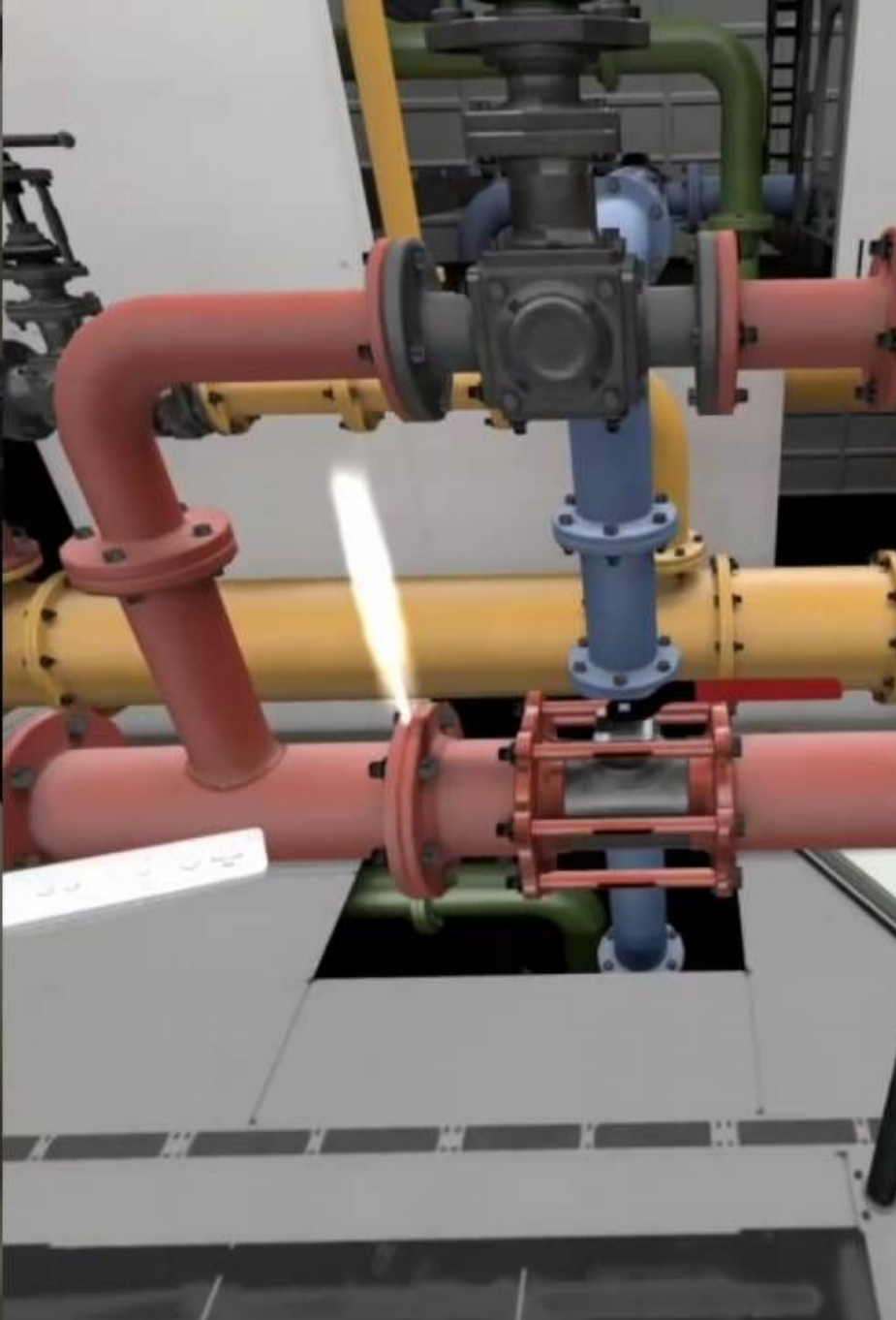


## Entertainment

---

The applicability of virtual and augmented reality to gaming is obvious. In fact, the entertainment industry as a whole is interested in leveraging the technology to create more immersive experiences for customers.





## Manufacturing

There are an abundance of manufacturing, industrial and mechanical use cases in which workers are either trained or assisted in actual work by the technology

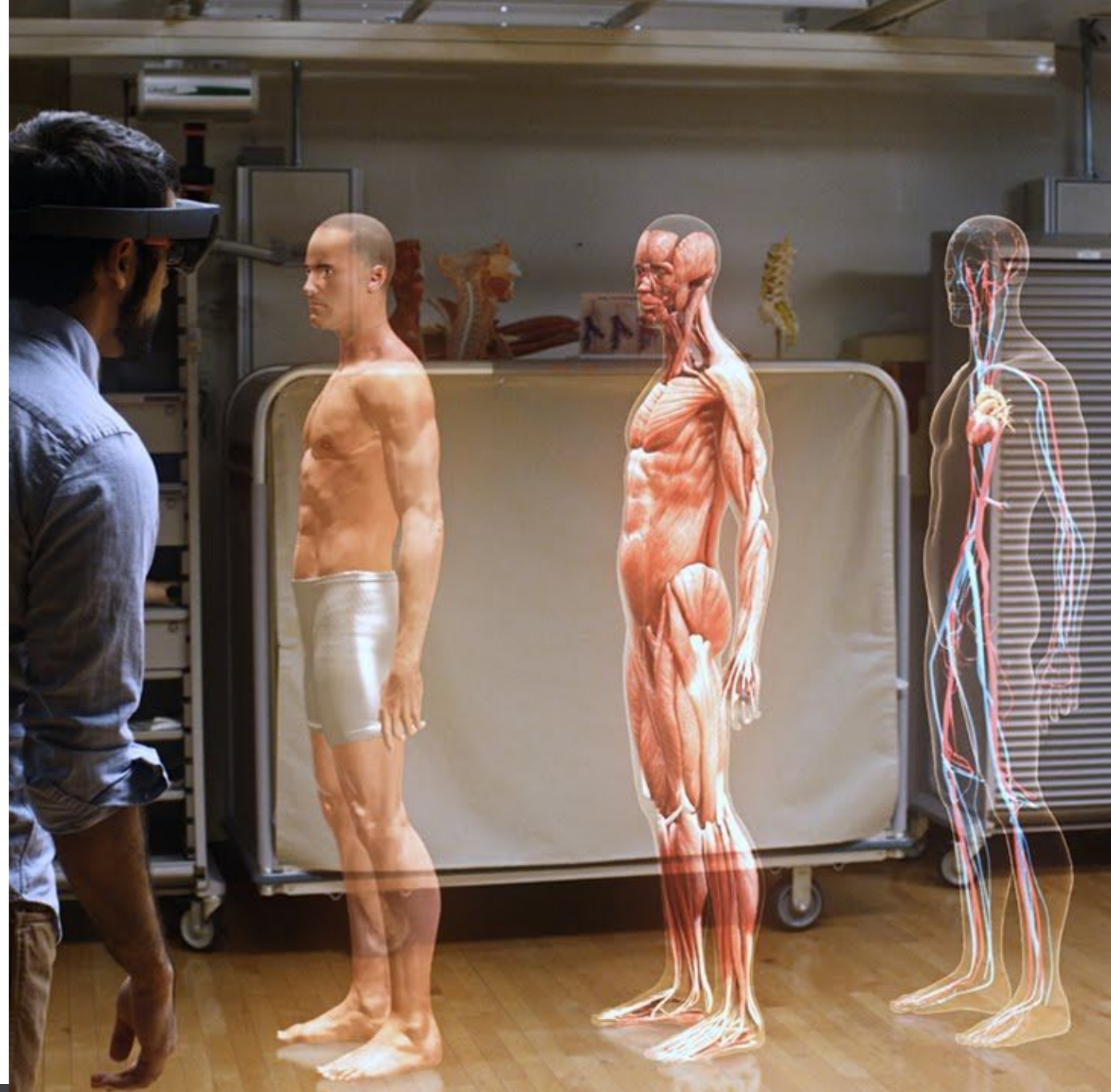




## Education & Training

---

Virtual and augmented reality offer education and training organizations what no previous medium could. Leveraging the technology students can observe and interact in wholly new and tangible ways that even “hands-on,” “real world” experience cannot deliver at scale.



## Retail & Sales

Seeing is believing. Virtual and augmented reality allows consumers (B2C) and retail “buyers” (B2B) to quickly and easily “experience” goods before making a purchase decision.

While final decisions may require “real world” interaction with the goods, sorting through the possible options can be made much more efficient through augmented and virtual experiences.





# Assisted and Virtual Tours

---

Another obvious use case is onboarding and guided tours.

Virtual reality offers users the ability to explore a new location in the comfort and safety of their home.

Augmented reality significantly “levels up” tours and curated displays with extra value for the participants.







## Medicine

---

From training and assisting physicians in the provision of care to actual therapies, VR and AR are taking hold in medicine.

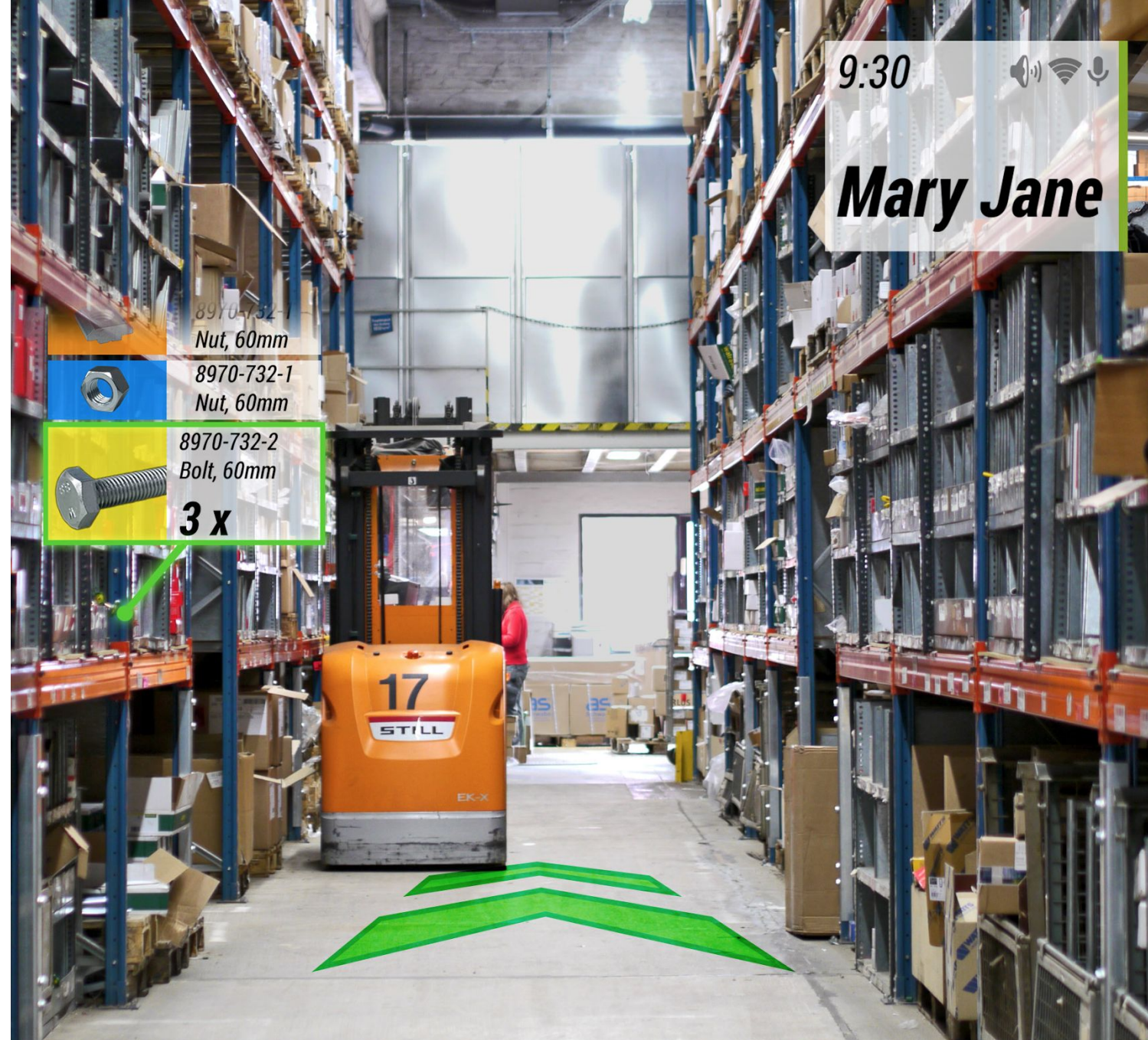
Virtual and augmented reality can be used to give “new eyes” to a surgeon, providing them heads up data and visualizations to assist their work.

Virtual reality is routinely used as a component of therapy for burn and PTSD injuries.



## Hands-free work assistance

From mechanics to individuals stocking shelves; workers of all types benefit greatly when they can consume information and interact with their work while having their hands free to focus on the physical task at hand.







## Marketing

---

VR and AR are being used in a number of ways by marketers to help communicate value. This includes advertising, illustrating product features and adding value through engaging training and tips.



# Building Virtual or Augmented Reality? You Need Content Management!

**One of the significant limitations of traditional virtual and augmented reality solutions is that they are static. Most VR and AR experiences have pre-programmed interactions and outcomes.**

This leads to three significant issues:

- Updating experiences requires software development, testing, and deployment by technical staff.
- Static experiences cannot be personalized for the user.
- Static experiences cannot be integrated with other systems, your content strategy, and the user journey.



# Content Management Capabilities are Key

Marketing departments, extranet managers and other digital content creators and curators have long used content management system (CMS) technologies to drive their digital experience.

## CMS platforms typically:

- Make it easy for nontechnical users to update content and behavior.
- Drive personalized content and interaction for users.
- Help connect touch points across a customer journey with the right content at the right time (content strategy.)
- Enable content managers to measure and optimize the experience based on metrics.

**You should have the same capabilities for your augmented and virtual experiences.**



## Getting There

To get CMS capabilities as part of your VR and AR workflow, the obvious solution is to **build your experience around or to integrate with an existing CMS technology.**

**Problem solved!**

**Maybe..**







## There's a Catch

The problem is most CMS technologies were built 20 years ago and are based on a 20-year-old paradigm.

Legacy CMS technologies have a number of significant issues when it comes to supporting AR and VR technologies.

Let's understand these:

# Most CMS's Were Built to Manage Pages

Nearly all CMS's available today are legacy systems regardless of when they were built. That's because they were built to manage web pages.

Virtual and Augmented reality does not map directly to the page concept. You need a CMS that is designed to handle any content for any experience. Trying to jam every experience into a page concept has too many limitations.







## Most CMS's Do Not Support Modern Development

Traditional CMS platforms are not development friendly. Even worse, most dictate the use of certain (outdated) front end technologies.

While most CMS platforms make updating content easy, fitting seamlessly into a modern DevOps process remains a major challenge.

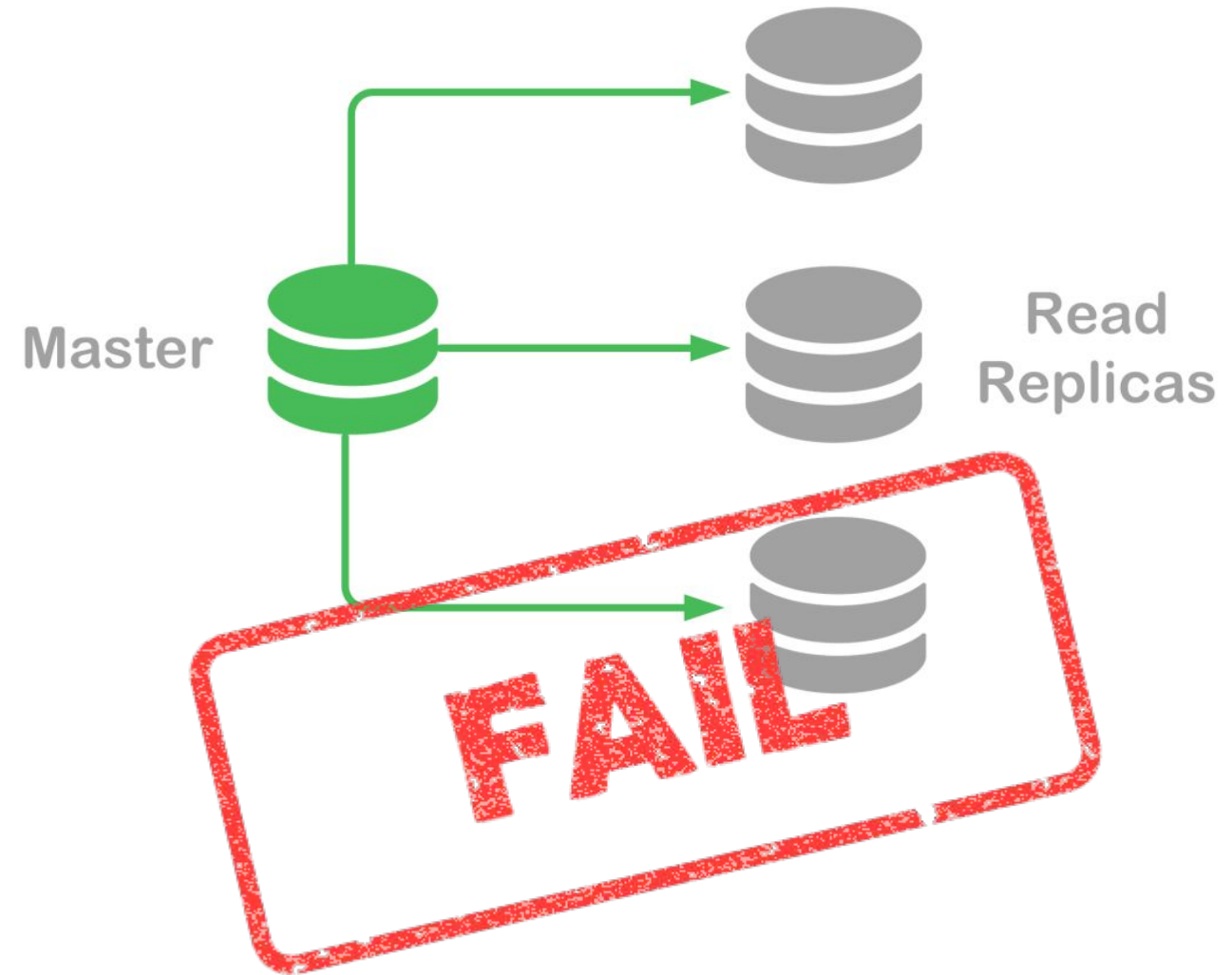
VR and AR experiences require more development than typical websites. Therefore it's important that any CMS used to support VR and AR experiences tightly integrate with your development tools and the development process.

# Most CMS Systems Can't Scale

They do not scale easily. Virtual and augmented reality experiences require extremely fast response times on dynamic requests to keep user experiences smooth.

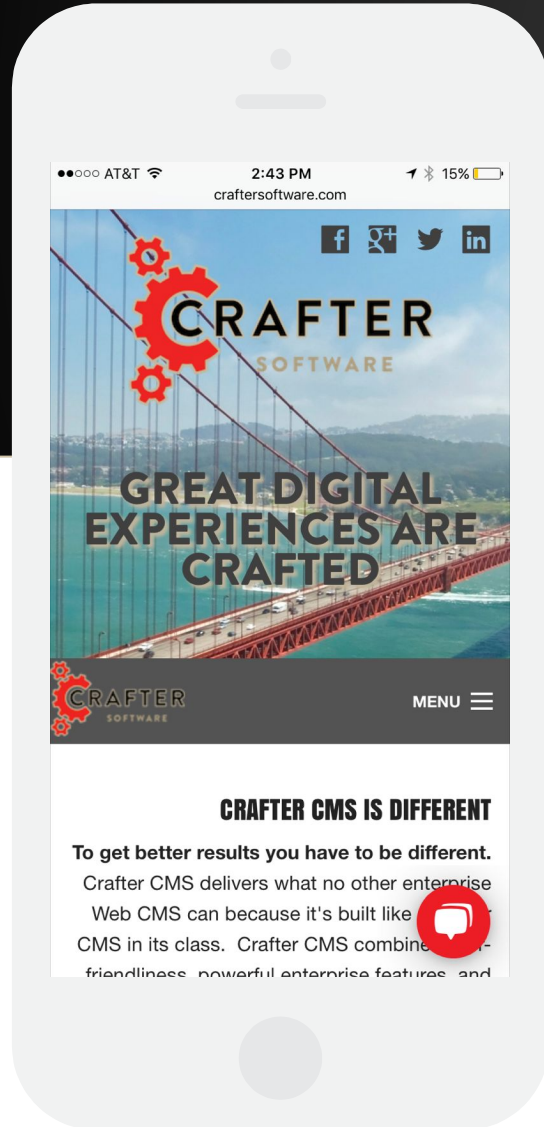
As user load increases or spreads globally, scaling is the solution.

Many CMS technologies leverage shared databases and replication. This approach is extremely difficult to scale out horizontally and globally.





# Crafter CMS as a Solution



At Crafter Software, we've been working hard for several years to completely re-invent and re-define the architecture of CMS for today's needs.



# Built for Innovation

We let go of industry dogma and the same old design patterns. We've stayed focused on the core rather than chasing the bright shiny objects, buzzwords, and tangential technologies.

We're committed to being great at what matters most to organizations that depend on next gen digital experiences: innovation. The speed of innovation and the ease of deploying it at scale.

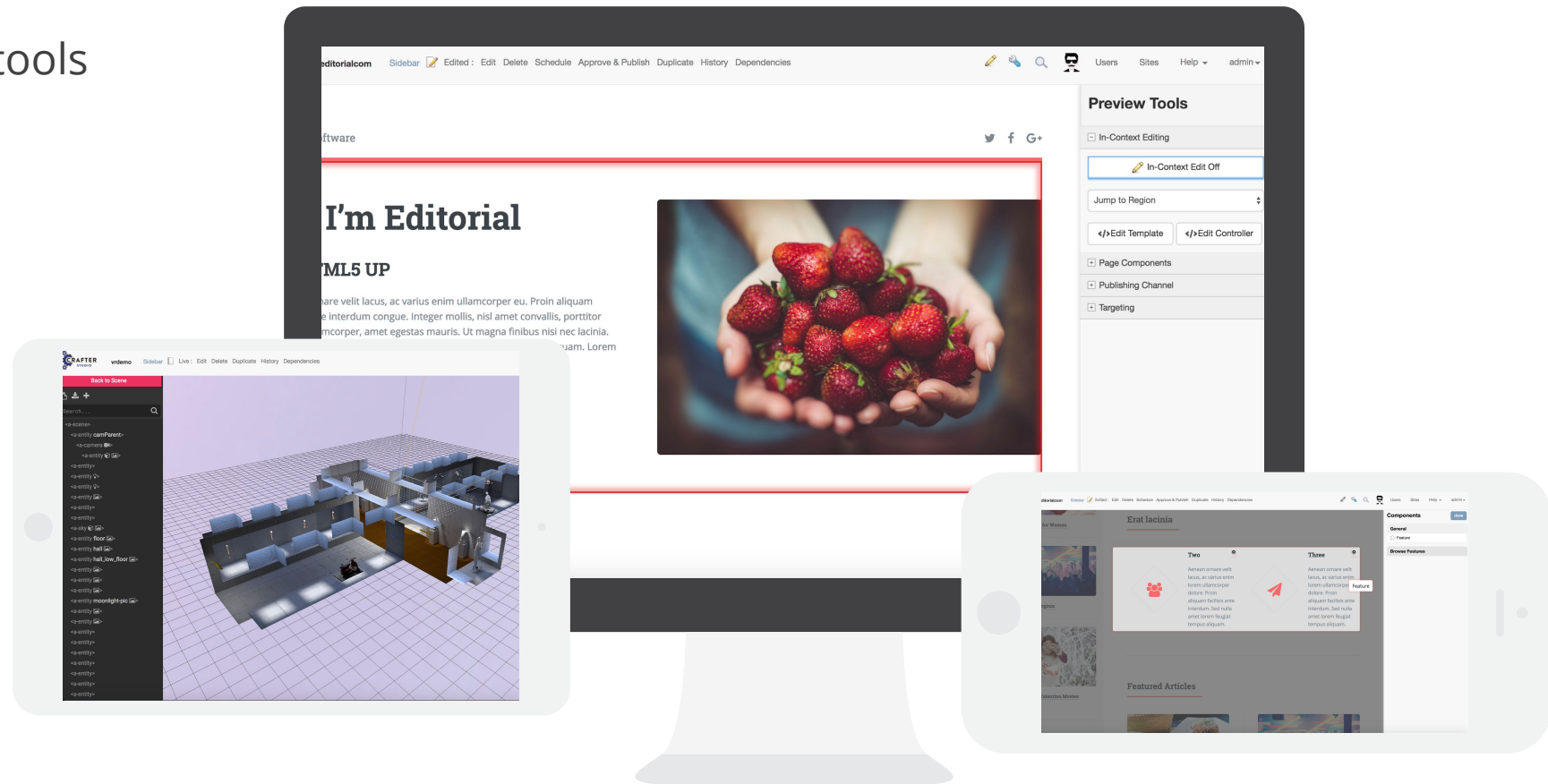
We've built a CMS with a new architecture designed to support today's demand for innovation. As a result, the now world has a completely new approach to CMS, built for "crafters" of next gen digital experiences like VR and AR, Crafter CMS.

**THINK....**



# Crafter Makes It Easy for Authors

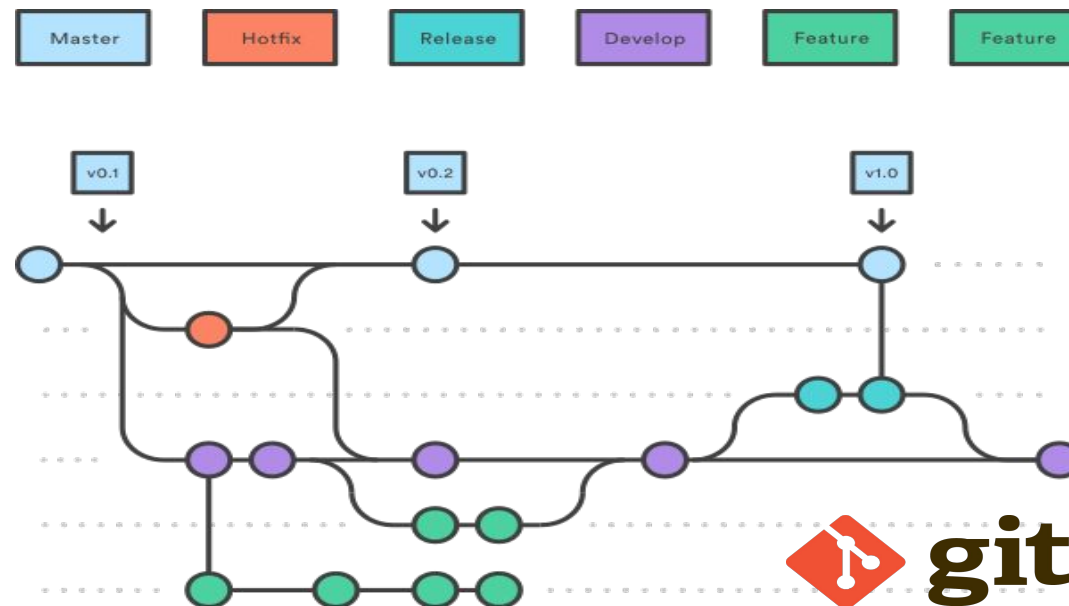
- Can manage any content and experience
- Supports any channel and can easily adapt to new ones as they emerge
- Easy for authors:
  - Web-based publishing tools
  - Safe editing sandbox
  - Desktop tool support
  - Completely in-context
  - Drag and drop
  - Workflow & versioning





# Crafter is Amazing for Developers

- Based on a modern, proven technology stack: Git, Java, Spring, Groovy and Solr
- Native support for Git
- Allows developers to work locally and in teams
- Supports multiple work streams
- Enables team to move code and content between environments easily
- Makes it possible to use desktop native development tools



# Crafter is Insanely Great for DevOps

---



Extremely high performance



Multi-tenant



Small server footprint



Horizontally scalable



Built to run in secure environments



Geo Distributable

# Building VR and AR Experiences with Crafter CMS





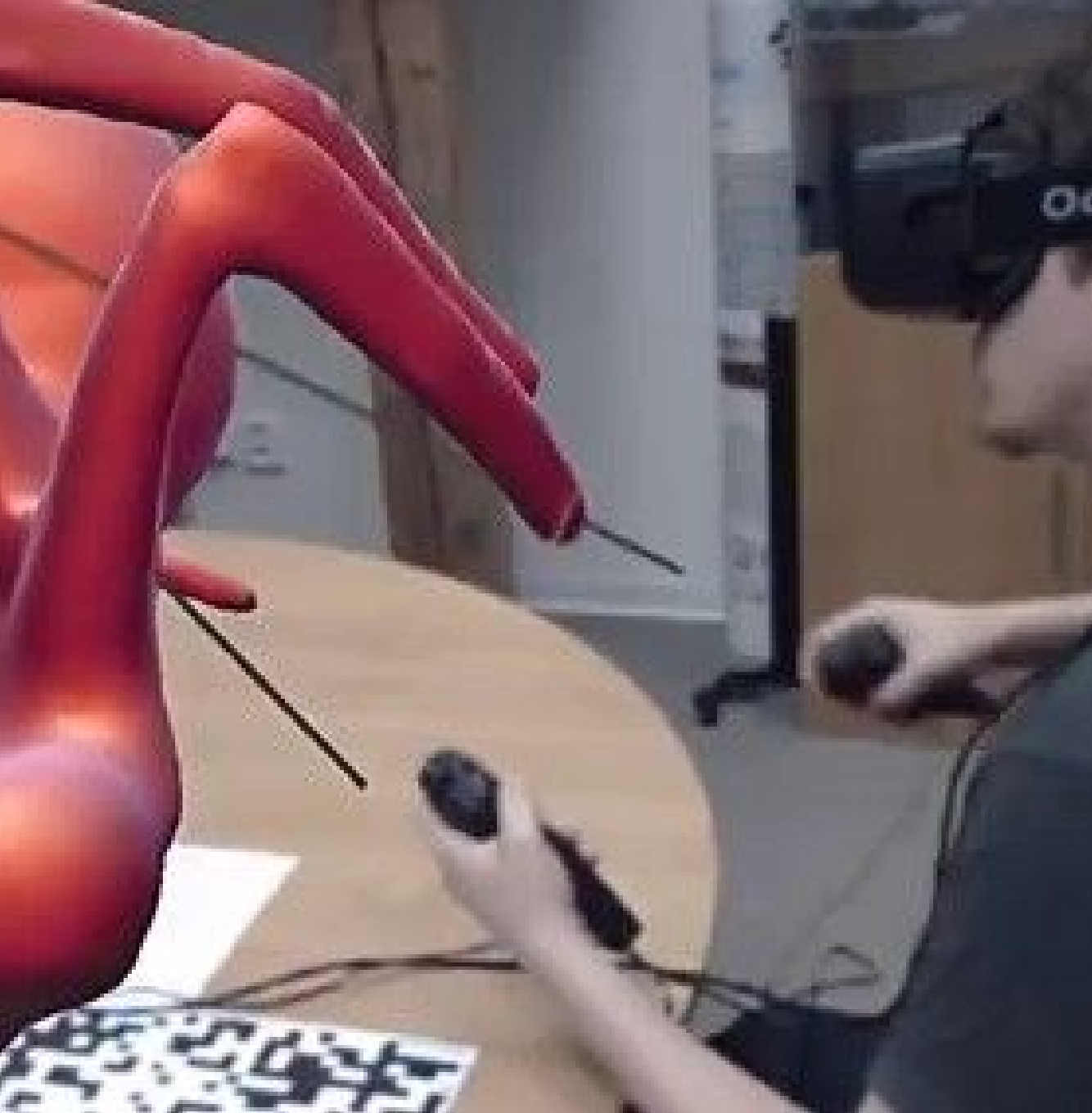
## Step 1: Get the Gear

To get started you'll need a minimal amount of gear. A smartphone and a simple Google cardboard will do.



Sign up for a Crafter CMS demo and receive a FREE VR headset

[REQUEST A DEMO](#)



## Step 2: Get the Content

The next thing you will need is content. VR and AR content typically leverages 3D models, videos, pictures and other media. There are many free sources of 3D content online.

Here are a few you can checkout:

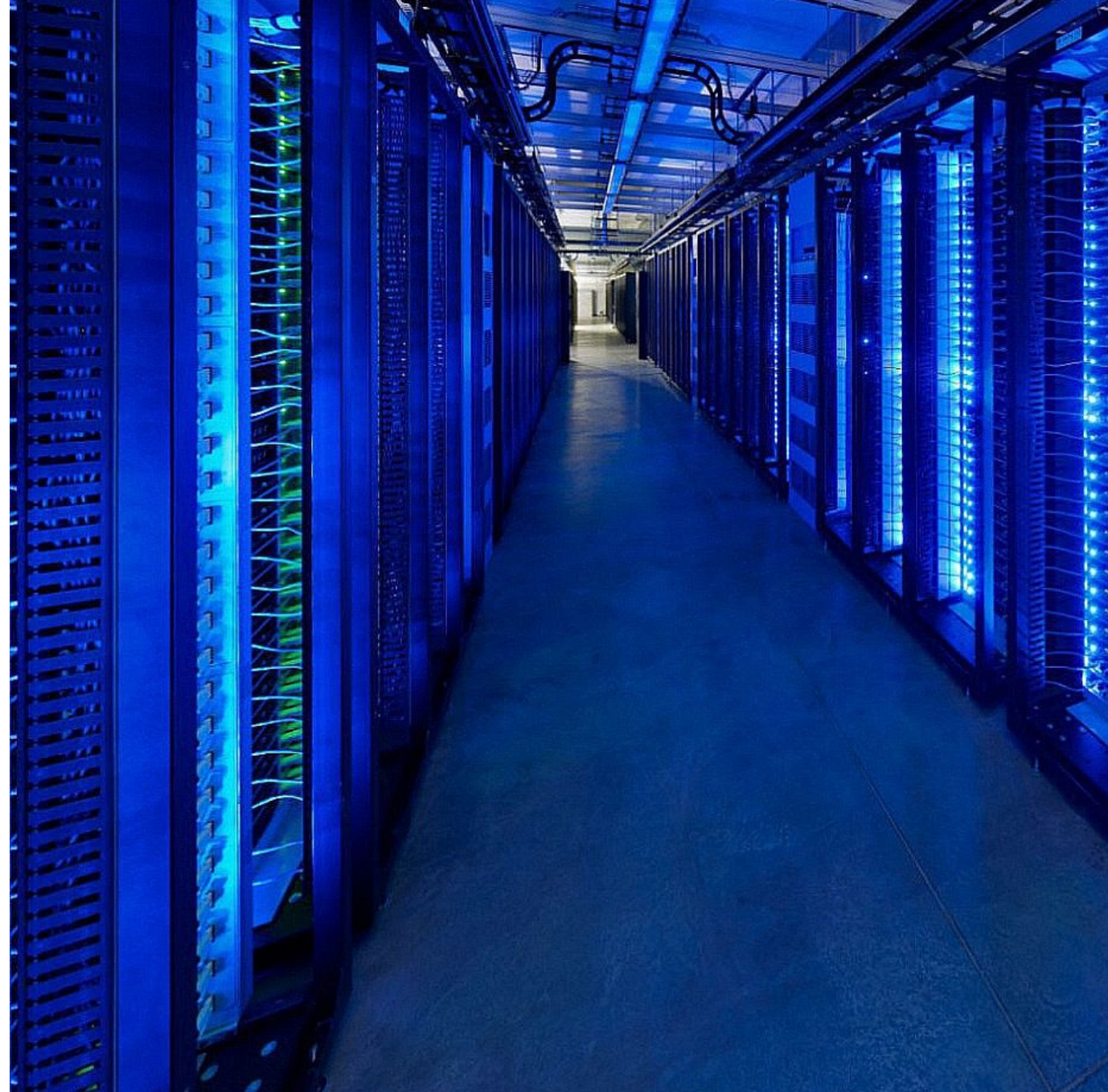
<http://clara.io>

<http://archive3d.net>

## Step 3: Get a “Server”

Once you have gear and content, you’ll need a place to host your virtual and augmented reality experiences. To start, your laptop and a simple web server will do.

As you progress, your infrastructure requirements will increase. Check out <http://craftercloud.io>, powered by Amazon Web Services.





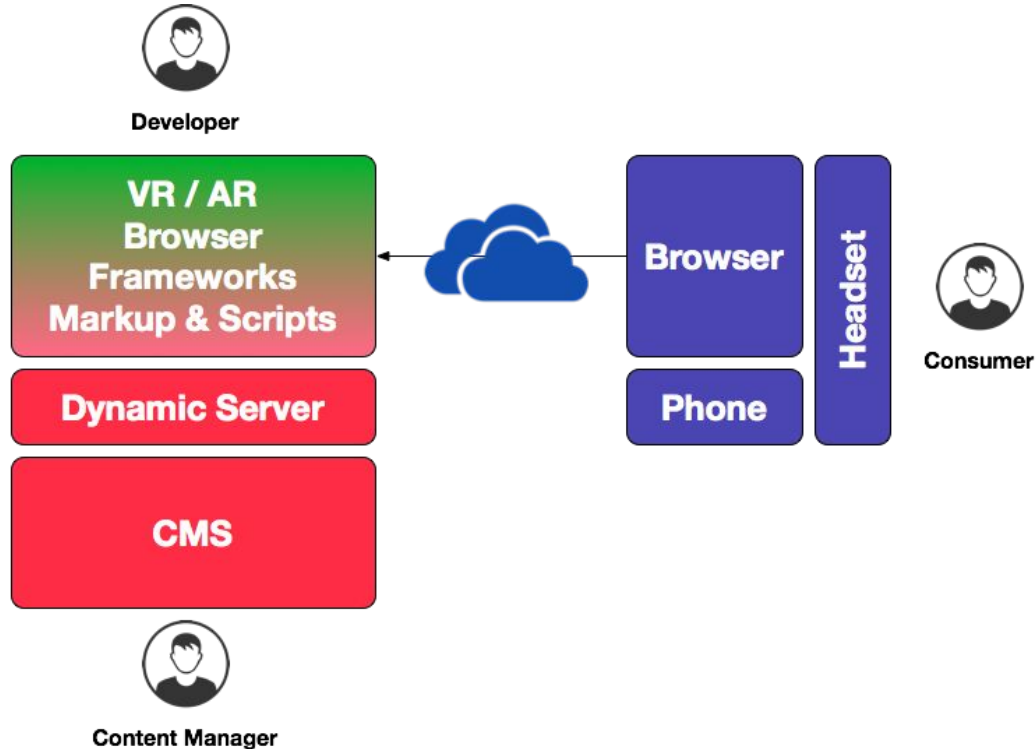
## Step 4: Put the Solution Architecture in Place

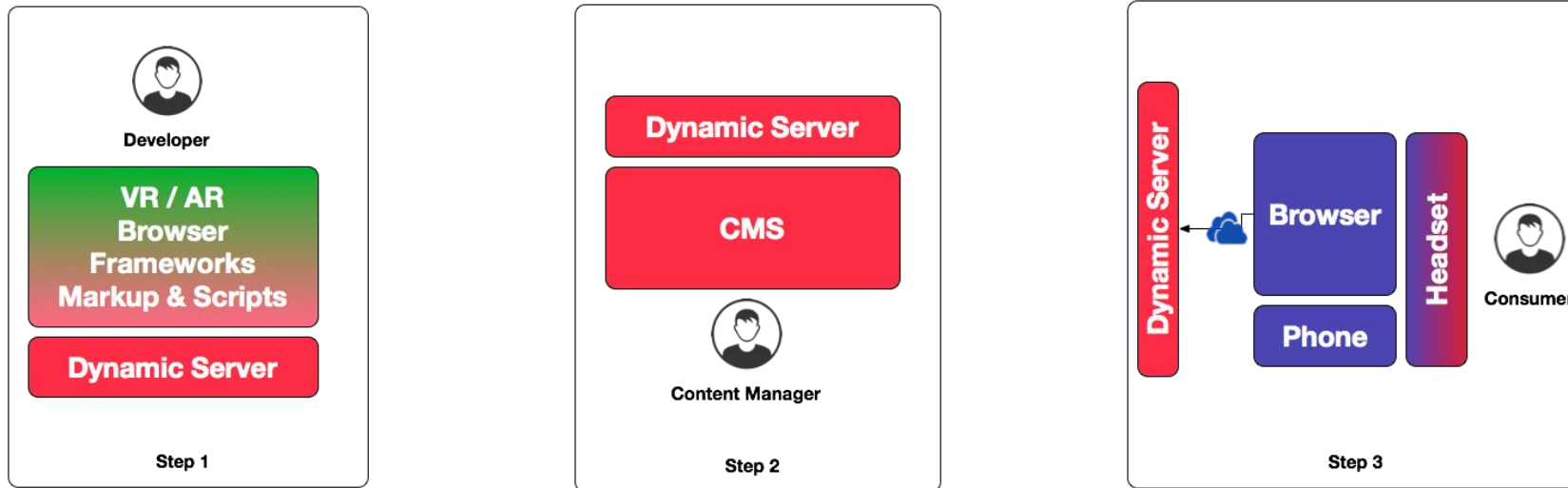
By leveraging Crafter CMS as part of your Virtual and Augmented Reality, you meet the needs of all of the system's constituents.

Users get high performance, dynamic and personalized virtual and augmented experiences.

Content authors have a modern web-based platform to create and manage immersive experiences.

Developers have a modern development platform that's not page-centric and fits into their development process perfectly.





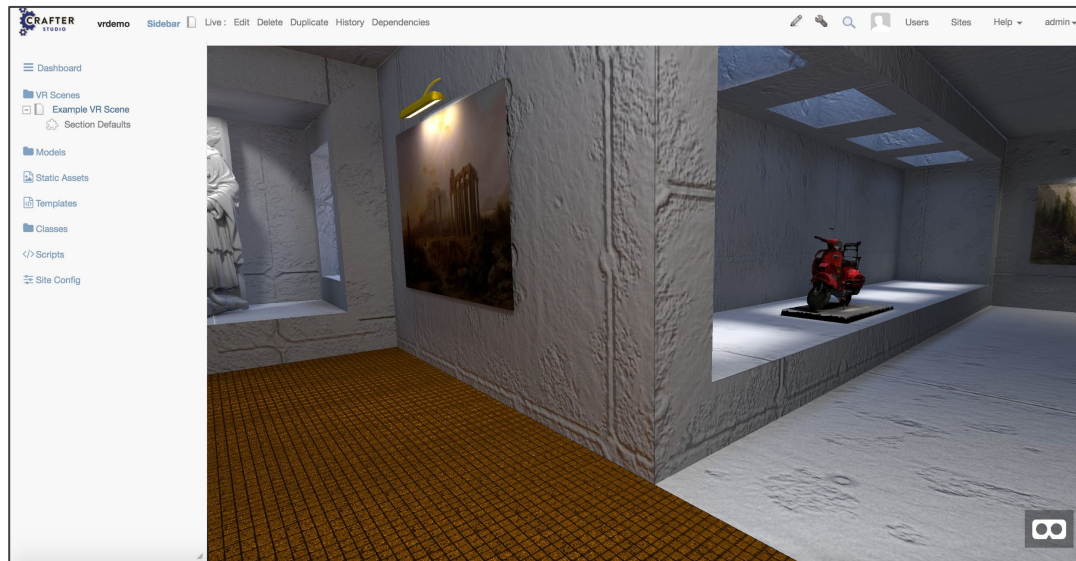
**[Step 1]** Developer creates the VR and AR through markup and scripts, which are templated. There can also be code behind it because they will run on dynamic Crafter server.

**[Step 2]** Once the developer has created the markup and scripts, any Content Manager (i.e., non-technical user) can make changes to the experiences and publish them at any time.

**[Step 3]** Once the experiences are published, then that dynamic server renders dynamic experiences to the Consumer (i.e., end user).

# Virtual Reality

With Crafter CMS

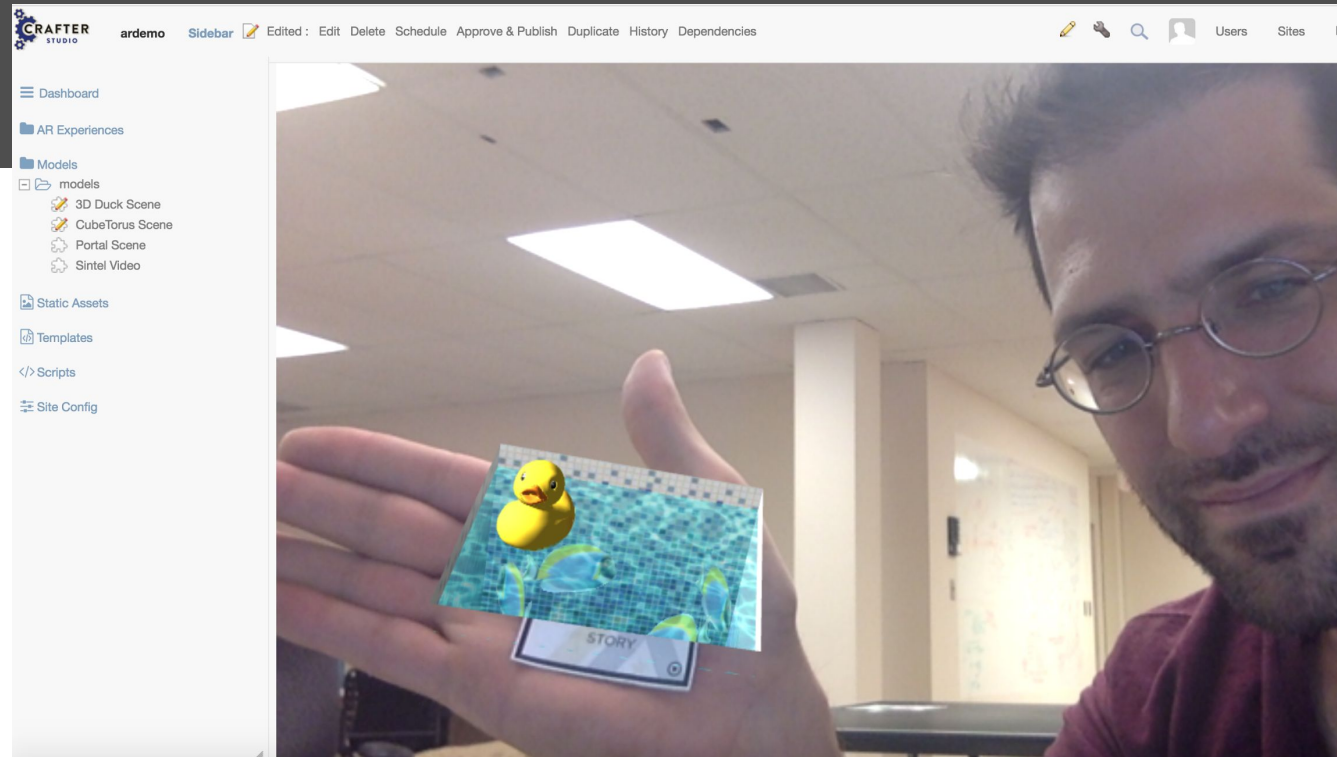


**Configure, test and publish personalized virtual experiences with the Crafter CMS platform.**

**Quickly and easily add, remove and change the objects in your virtual world.**

# Augmented Reality

With Crafter CMS



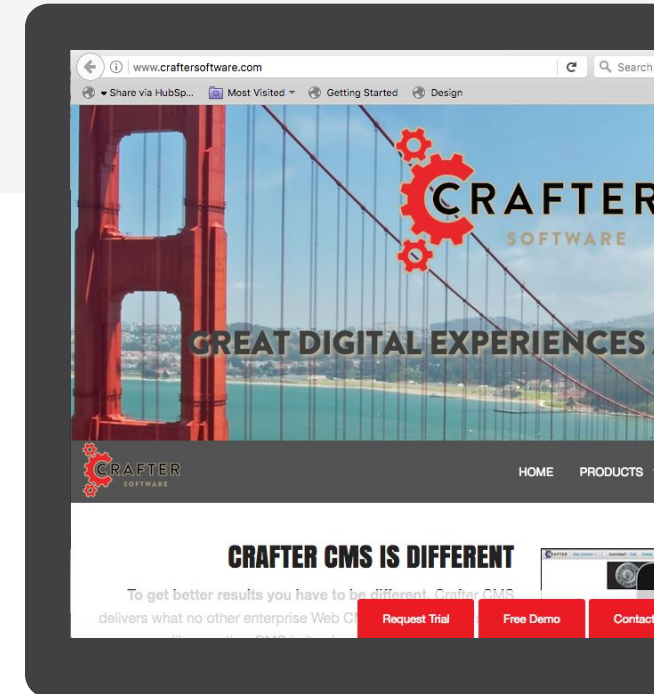
**Configure, test and publish personalized Augmented Reality experiences with the Crafter CMS solution.**



# WANT TO EASILY CREATE, PERSONALIZE, & OPTIMIZE INNOVATIVE DIGITAL EXPERIENCES? DOWNLOAD CRAFTER CMS SOFTWARE TODAY

Crafter CMS turns your vision into impact with the agility to create the world's best digital experiences. Free yourself from legacy and lock-in.

- ✓ Develop new experiences rapidly by leveraging modern technologies.
- ✓ Easy integration through modern architecture and technology
- ✓ User friendly tools allow authors to easily create and edit content
- ✓ Engage your target audience with personalization
- ✓ Responsive design enabling modern multi-channel experiences
- ✓ Scalable & high performance for blazing fast personalized experiences



[DOWNLOAD CRAFTER CMS](#)





Crafter Software enables the creation of rich and engaging websites, mobile applications, and multi-channel digital experiences. Available both in the cloud and on-premise, Crafter Software's solutions are based on the award-winning Crafter CMS open source project, which was built from the ground up as a modern platform for creating more relevant Web and mobile experiences through targeted delivery of personalized content. Serving as the lynchpin between enterprise systems and end users, Crafter's solutions enable marketing, sales and support teams to author and manage content while harvesting analytics and data-driven insights to deliver engaging experiences across all digital channels - the Web, mobile, social, and more. Learn more at <http://craftersoftware.com> and <http://craftercloud.io>.

