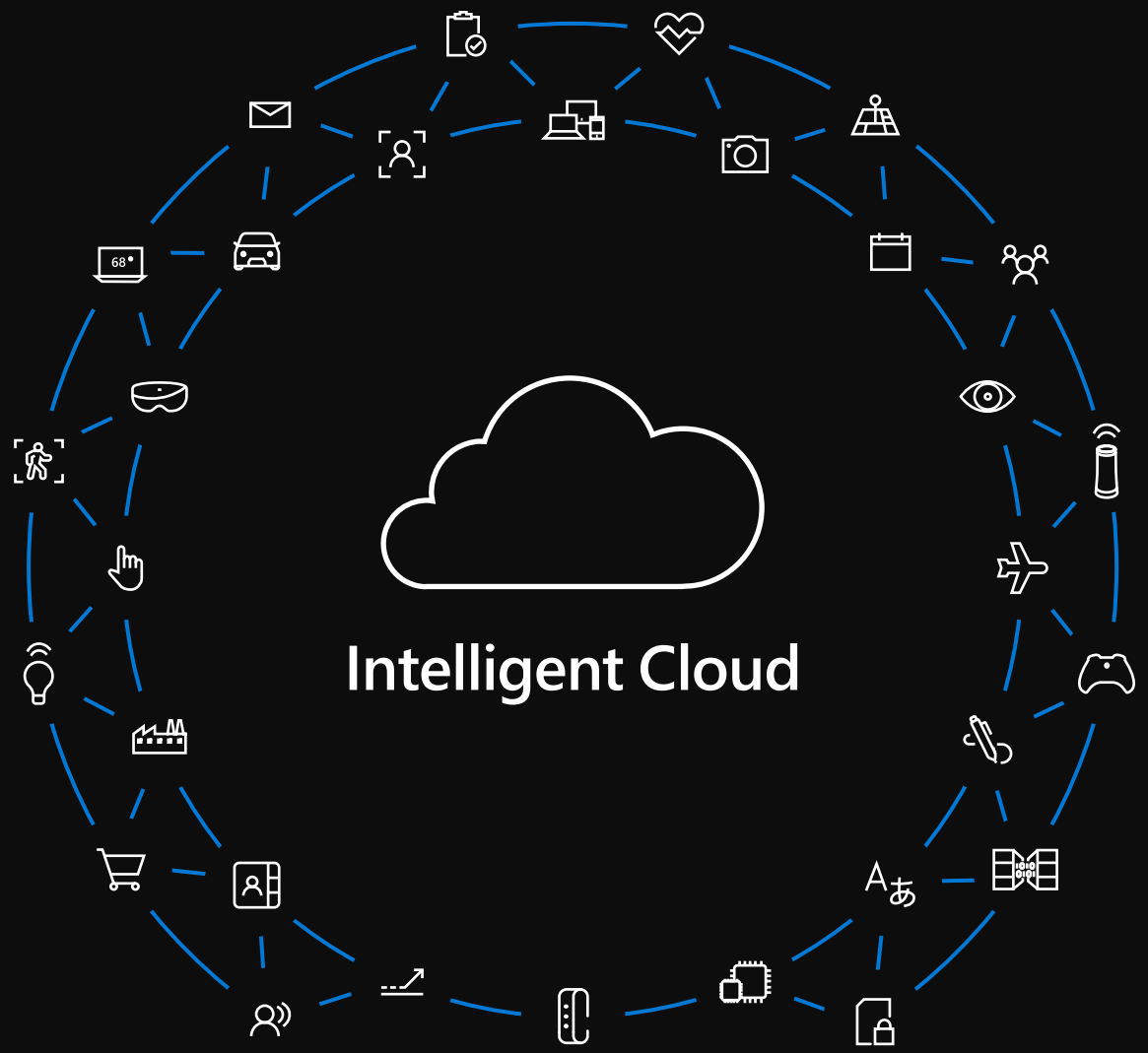
# Harnessing the Power Of Augmented Reality

Marco António Silva | May 24, 2022

Ubiquitous computing

Artificial Intelligence

Multi-sense, multi-device experiences



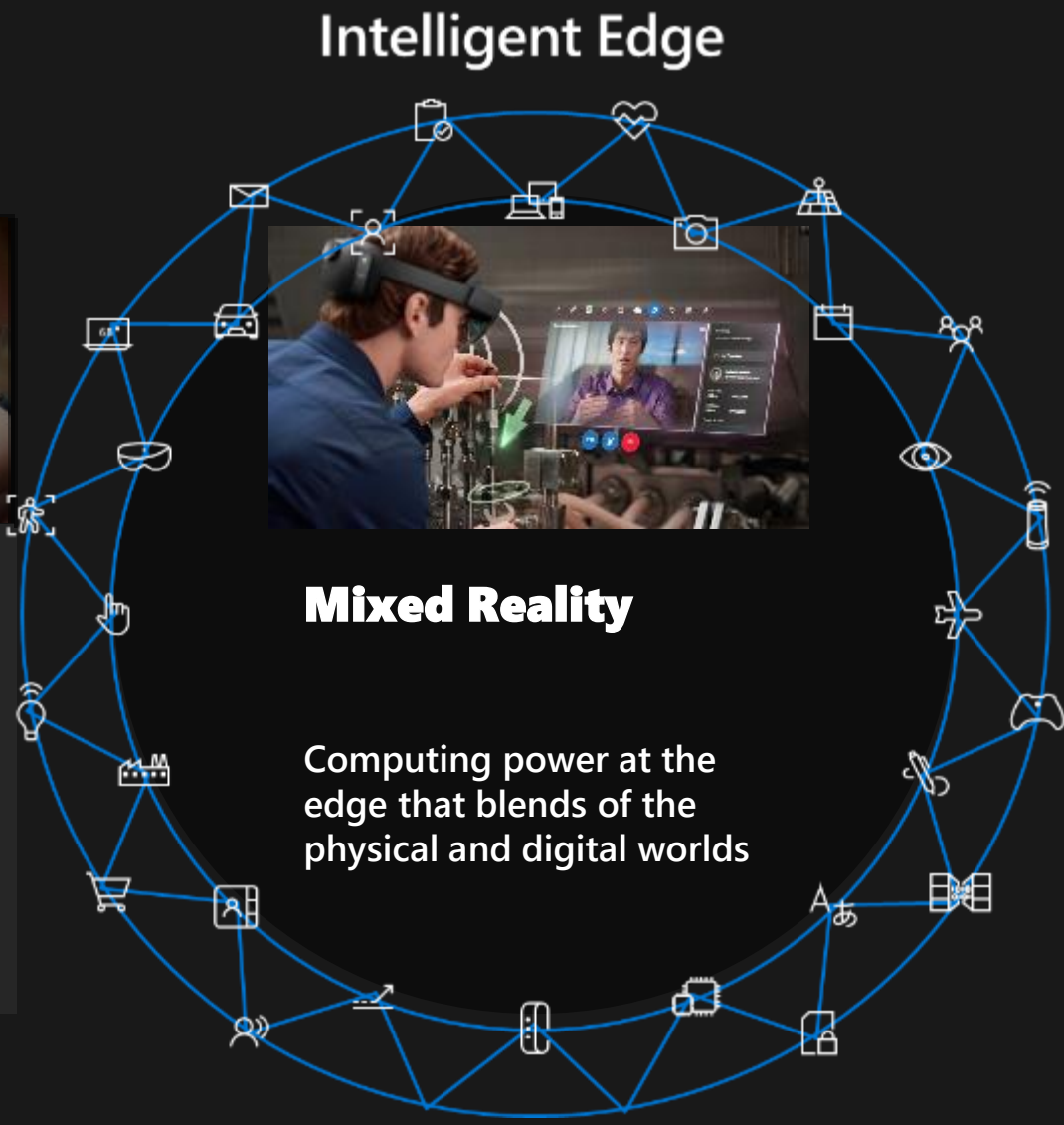
# THIRD WAVE OF COMPUTING

## Personal Computers

Computing power for many but immobile and no contextual awareness

## Smartphones

Computing power for all with on-the-go access and some contextual awareness




## Mixed Reality

Computing power at the edge that blends of the physical and digital worlds

*“If you change the way you see the world, you can change the world you see”*

Satya Nadella

# MIXED REALITY HELPS SOLVE FOUNDATIONAL BUSINESS PROBLEMS

## Remote assistance

Empower employees to work together, even when they're worlds apart.

## Training & task guidance

Enhance learning with step-by-step instructions that help employees learn new skills faster.

## Collaborative visualization

Visualize room layouts and product designs before building out physical models.

## Contextual data access

Gain real-time insight from the working environment to improve operational efficiency.

# MIXED REALITY VALUE PROPOSITION

## Improved skilling

4x improvement to service time among employees receiving who receive mixed reality training. 80% of companies improve collaboration across cross-functional teams using mixed reality.

## Efficiency and quality gains

25% boost in productivity, plus errors reduced to effectively zero, with directions and data given in mixed reality.

## Empower First-line Workers

Bring innovative technology and drive digital transformation across your first-line workers, an audience traditionally underserved by tech.

# THE MIXED REALITY JOURNEY

2010

Kinect for Xbox

2016

HoloLens
Development Edition

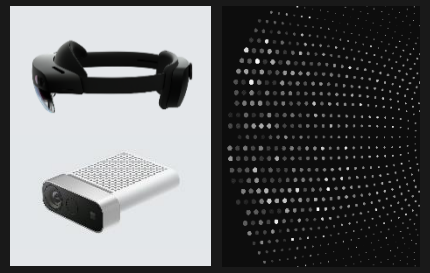
2017

HoloLens
Commercial Suite

2018

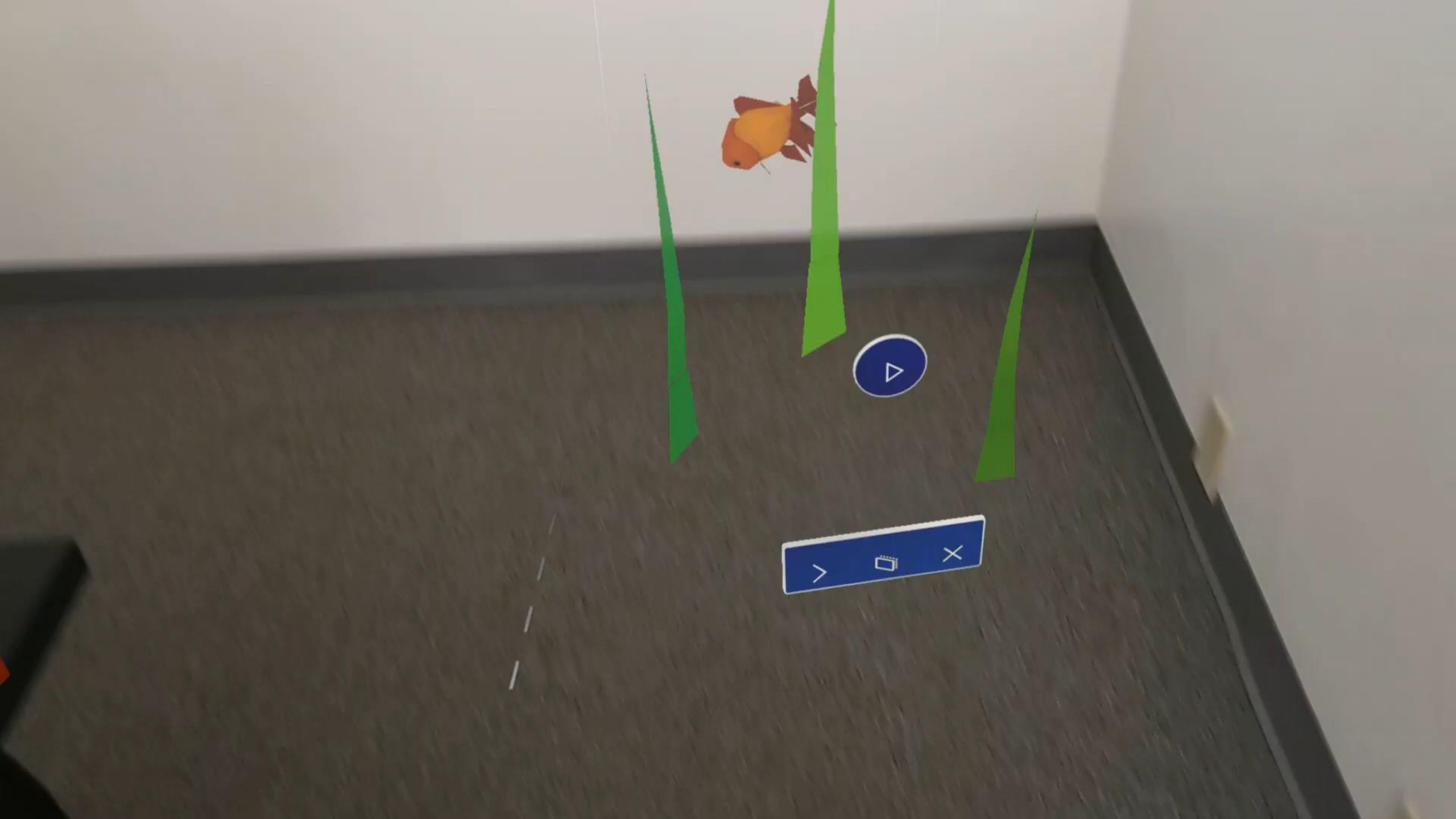
Dynamics 365
Applications

2019



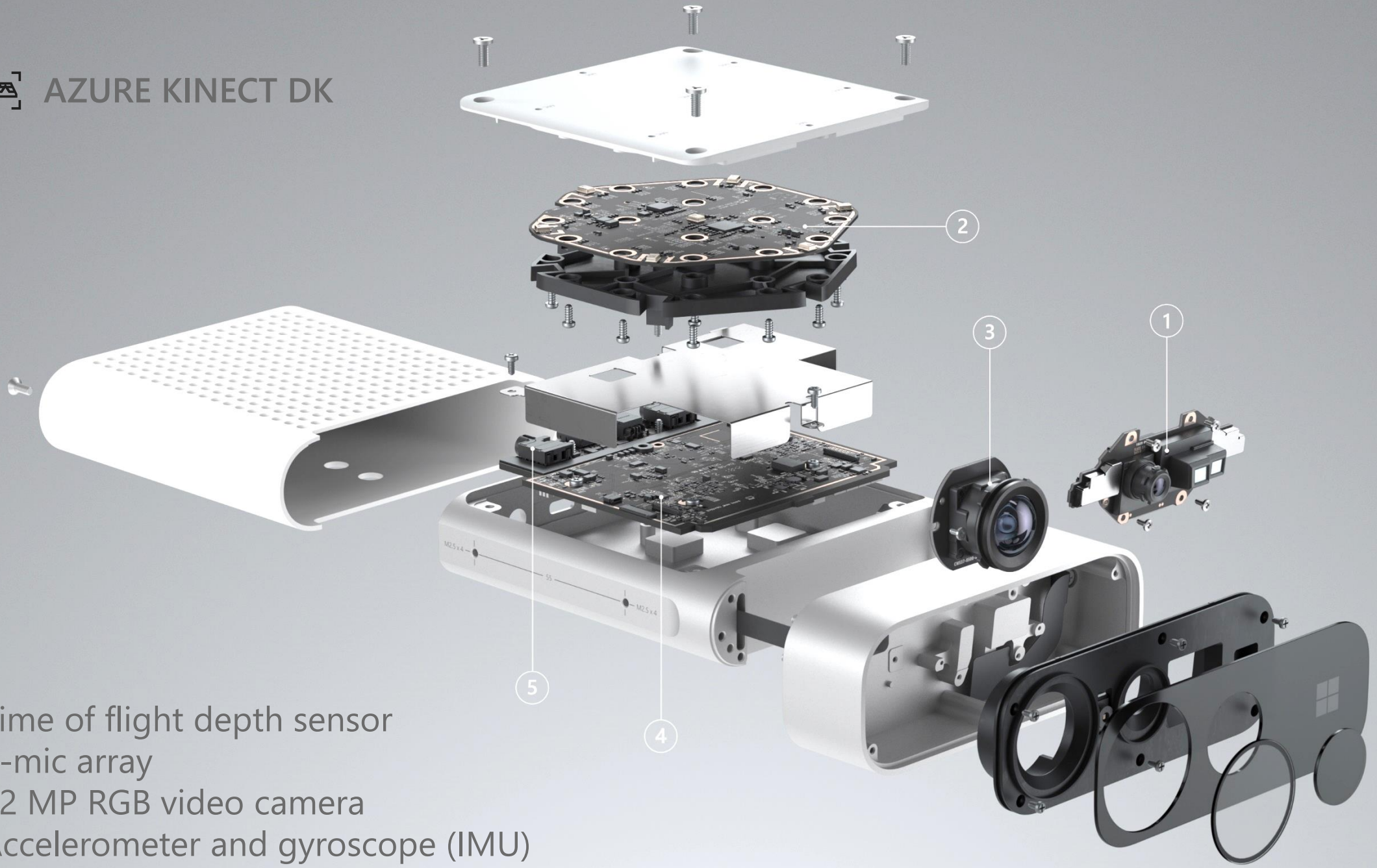
Mixed Reality
Portfolio

# HoloLens 2



Kinnect DK

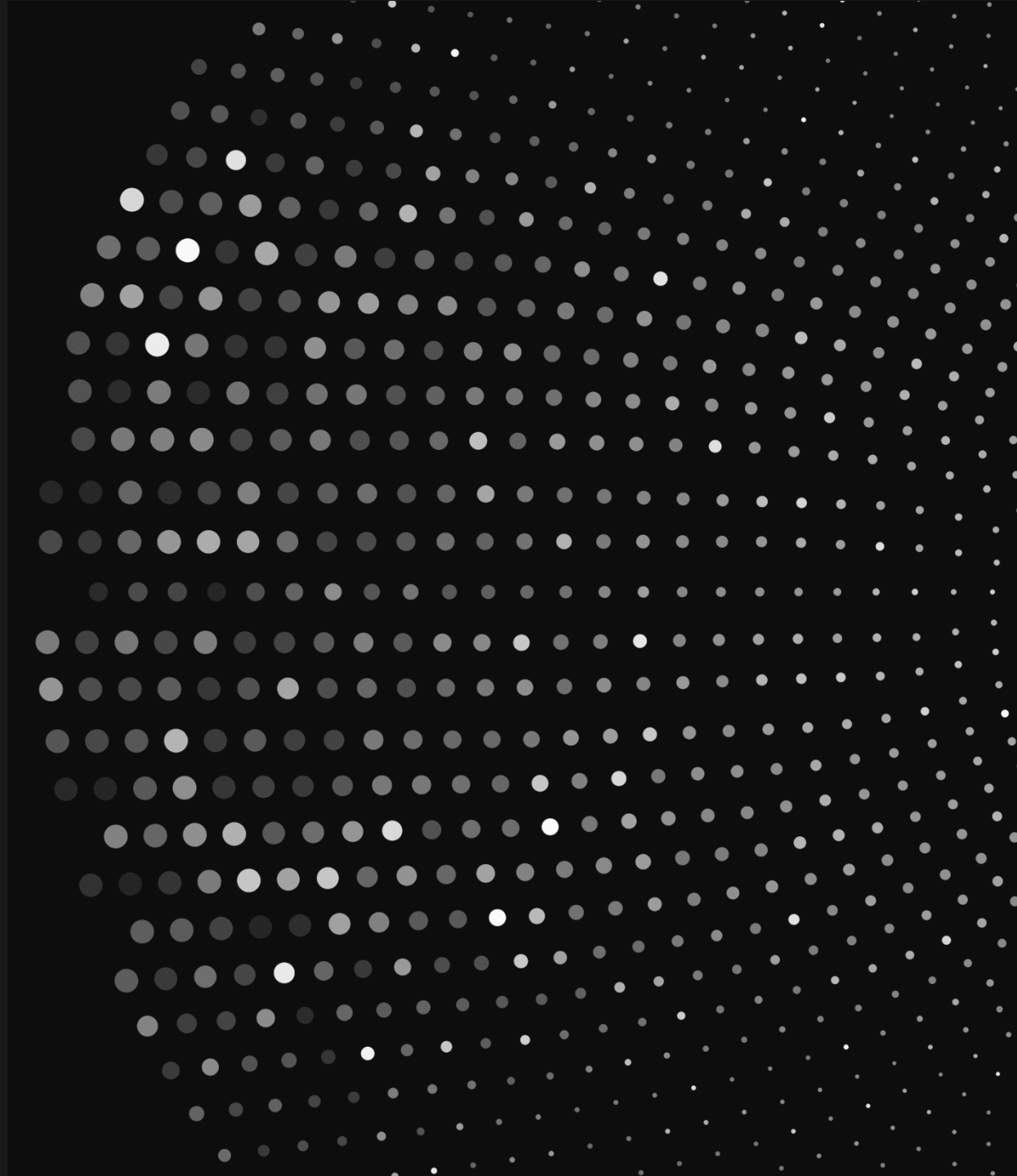
# AZURE KINECT DK




(1) Time of flight depth sensor
(2) 7-mic array
(3) 12 MP RGB video camera
(4) Accelerometer and gyroscope (IMU)
(5) External sync pins

Microsoft Azure

# Mixed Reality Services



MICROSOFT COGNITIVE SERVICES

Infuse your mixed reality apps with human-like intelligence

Vision

Speech

Language

Knowledge

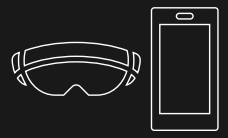
Search

# MICROSOFT AZURE MIXED REALITY SERVICES

Enabling every business and every developer
to build solutions that are...

**Contextual**

The world is your app canvas



**Collaborative**

Multi-user and cross-platform

**Enterprise ready**

Intelligent and secure

AZURE SPATIAL ANCHORS

# Share and collaborate with cross-platform mixed reality

AZURE REMOTE RENDERING

# Experience 3D without compromise

AZURE DIGITAL TWINS

# Model the physical world and relationship between people, places and devices

# THE MICROSOFT MIXED REALITY STACK

**Mixed Reality Applications**

Microsoft Dynamics 365

Microsoft Partner | Mixed Reality

**Azure Cognitive Services**

Vision

Speech

Language

Knowledge

Search

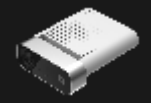
**Azure Mixed Reality Services**

Azure Digital Twins

Azure Spatial Anchors

Azure Remote Rendering

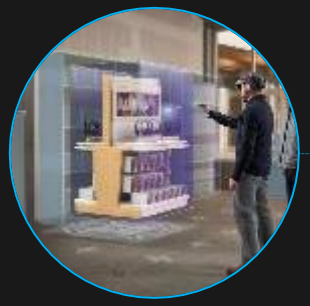
**Intelligent Edge Devices**



# TOGETHER WE CAN BUILD THE 3RD WAVE OF COMPUTING

**Design & Prototyping**

**Training & Development**



**Geospatial Planning**

**Sales Assistance**

**Field Service**

**Productivity & Collaboration**

Mixed Reality

# Enabling new Reality for Education

# Learning through experience makes a difference

**75%**

Information retention rates when using enhanced reality experiences for learning

*Digital reality headsets in enterprise and education 2020*

**275%**

Higher confidence levels in students to act upon enhanced learning experiences

*The Effectiveness of Virtual Reality Soft Skills Training in the Enterprise 2020*

**3.75x**

Greater emotional connections to information being presented through experiences

*The Effectiveness of Virtual Reality Soft Skills Training in the Enterprise 2020*

# Mixed reality for teaching & learning means

*Empowerment*

## Augmented Teaching

*Convey complex topics with interactive 3D models*

*Inclusivity*

## Experiential Learning

*Support visualized-aided learning experiences from anywhere*

*Personalization*

## Holo Assessments

*Conduct remote evaluations and appraisals*

# Use cases for higher education

*Augmented Teaching*

Case Western Reserve University EST. 1826

50% higher retention
rates in 40% less class time.

*Experiential Learning*

Northeastern University

Decreased upskilling
time by 83%

*Holo Assessments*

OTAGO POLYTECHNIC
Te Kura Matatini ki Otago

100% favorability rating
from all student trials

# Market adoption of mixed reality is surging

# Most mature MR portfolio in the industry

**Unmatched application ecosystem**

Microsoft Dynamics 365

Microsoft Mesh App

AltspaceVR

200+ Partner Solutions

**Most comprehensive platform**

Microsoft Mesh

Powered by Azure

**Best-in-class devices**

HoloLens 2

Virtual Reality

PCs and Mobile

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Microsoft Dynamics 365

# Remote Assist

*Real-time problem solving*

*Information in line of sight*

*Be present anywhere*

Dynamics 365
# Guides

*Accelerate processes*

*Reduce errors while ensuring safety*

*Maximize efficiencies with insights*

# Mesh App for HoloLens 2

Connect with colleagues and co-create in real time as you share and annotate content that persists between sessions

# AltspaceVR

Host meetings, town-halls, and work gatherings using AltspaceVR, the premier place for virtual meetups

# Solutions for educational institutions

INTERACTIVE COMMONS
CASE WESTERN RESERVE UNIVERSITY

CAE

MEDIVIS

## HOLOANATOMY®
SOFTWARE SUITE

A new virtual "Living Anatomy" curriculum without physical cadavers

## Vimedix

Accelerated learning platform for wide variety of ultrasound trainings

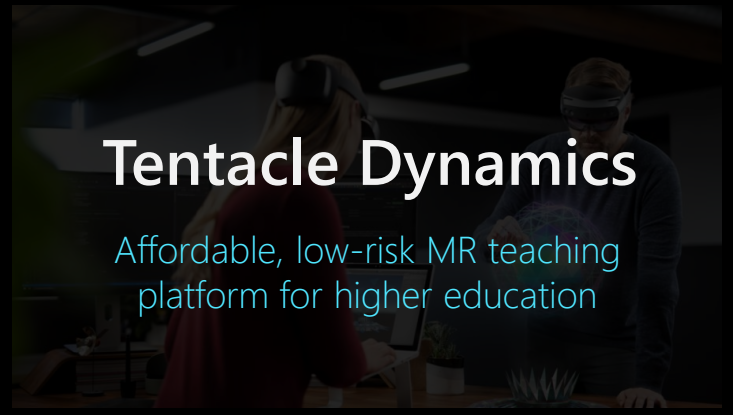
## SurgicalAR

Building a new breed of ultra-precise surgeons and better surgical outcomes

ChuJiao

gigXR

Enklu

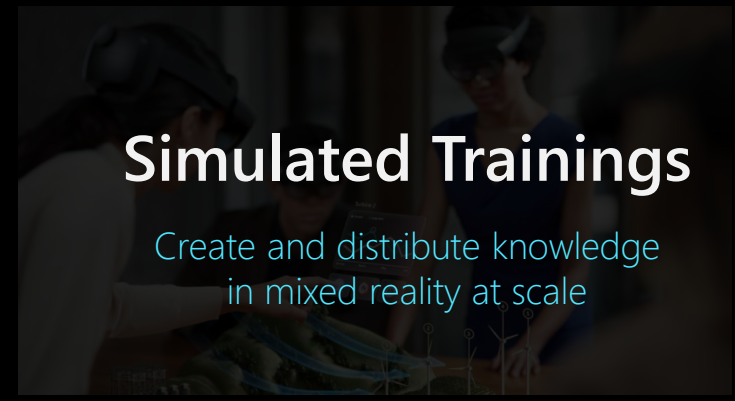


## Tentacle Dynamics

Affordable, low-risk MR teaching platform for higher education

## HoloPatient

Engaging medical students to better learning outcomes



## Simulated Trainings

Create and distribute knowledge in mixed reality at scale

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PCs and Mobile

# Microsoft Mesh

Enable presence and shared experiences from anywhere – on any device – through mixed reality apps

**Feel presence**

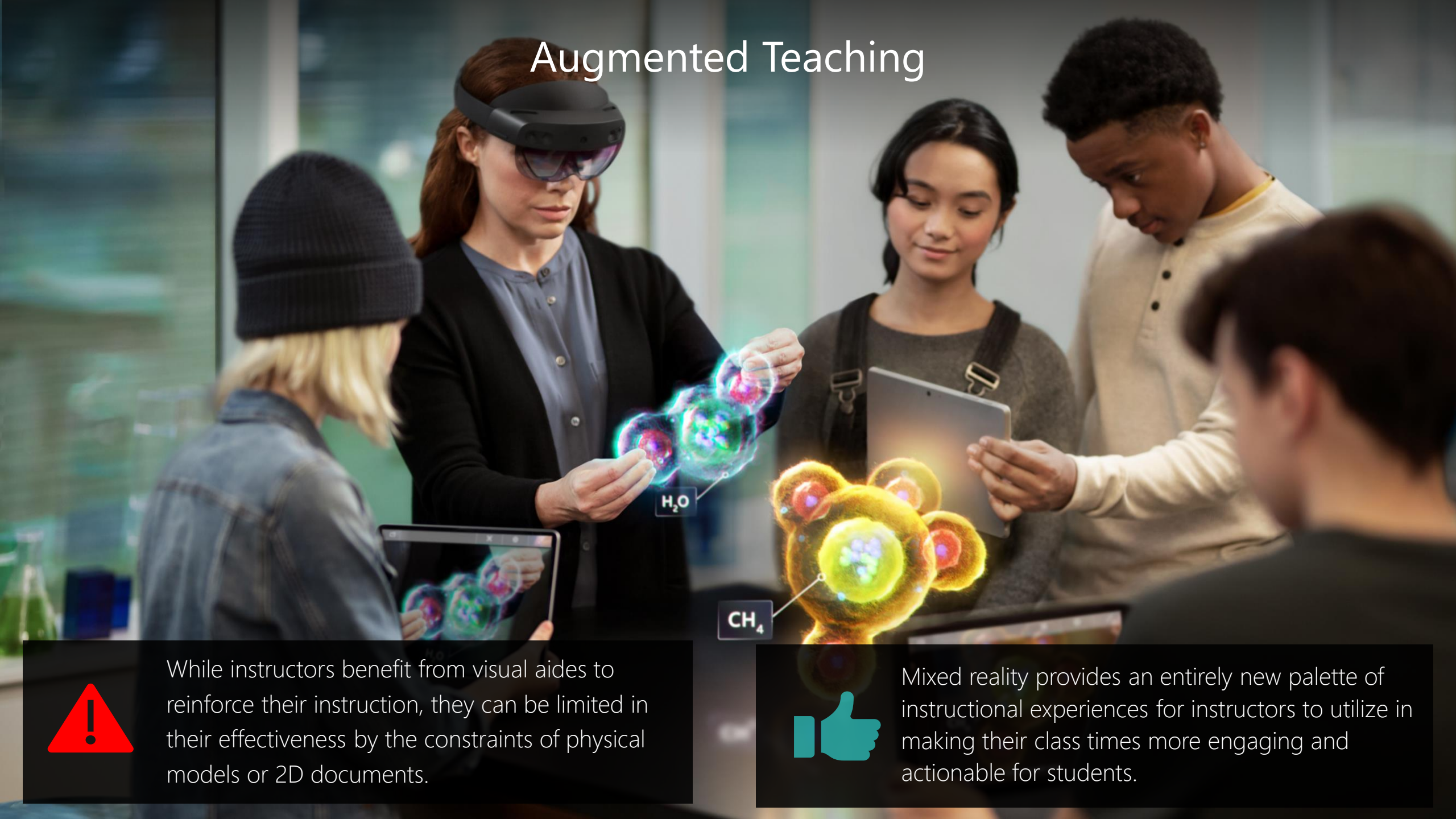
**Experience together**

**Connect from anywhere**

Mixed Reality

# Higher Education Use Cases

# Augmented Teaching




While instructors benefit from visual aides to reinforce their instruction, they can be limited in their effectiveness by the constraints of physical models or 2D documents.

Mixed reality provides an entirely new palette of instructional experiences for instructors to utilize in making their class times more engaging and actionable for students.

# Augmented Teaching

*A virtual collaboration and instructional experience* using HoloAnotomy for HoloLens 2 empowers teachers with impressionable, high-impact 3D visualization models to captivate students and bring education to life.

Microsoft
HoloLens 2

+

Interactive Commons
Case Western Reserve University
HoloAnatomy

Case Western Reserve University

Students using the HoloAnatomy solution with HoloLens 2 demonstrated

**50% higher retention rates with 40% less class time.**

Having just launched a new health education campus, Case Western sought to modernize student engagement in both physical forums and remote instruction scenarios.

Case Western used HoloLens 2 to develop the mixed reality anatomy application HoloAnatomy, which was then distributed to students with the HoloLens for virtual instruction experiences during COVID-19.

# Experiential Learning

From time to equipment, instructors have limited resources to support student lesson plans which can compromise a student's knowledge retention.

Mixed reality enables students to receive in-person-like experience while providing a consistent environment at the point of learning.

# Experiential Learning

*An experience-based lesson plan* using Dynamics 365 Guides for HoloLens 2, allows for students to integrate textbook concepts into their physical environment and take a learn by doing approach allowing for a hands-on, unmediated learning experience.

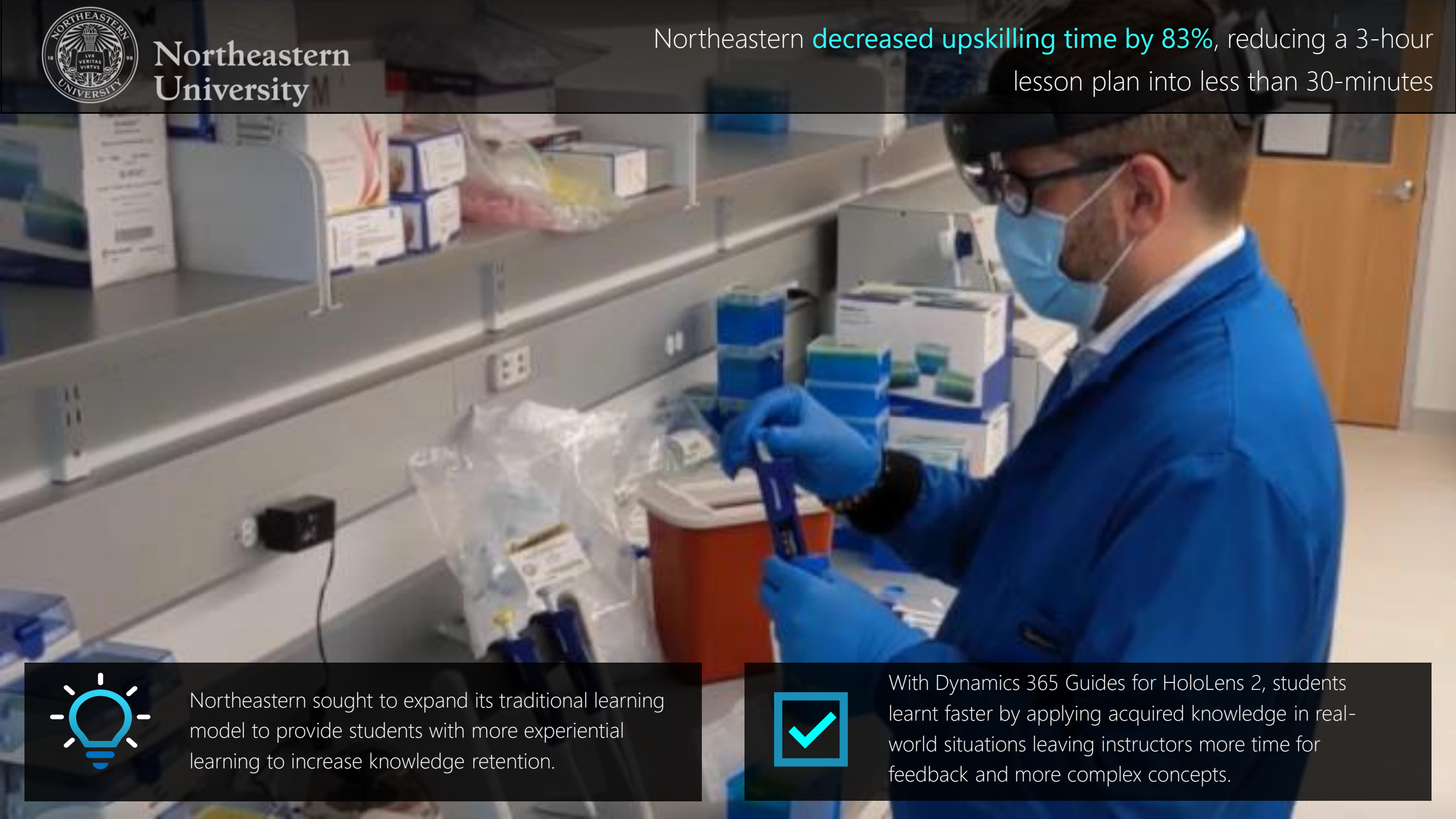
Microsoft
HoloLens 2

+

Microsoft Dynamics 365
Guides

Northeastern University

Northeastern **decreased upskilling time by 83%**, reducing a 3-hour lesson plan into less than 30-minutes



Northeastern sought to expand its traditional learning model to provide students with more experiential learning to increase knowledge retention.

With Dynamics 365 Guides for HoloLens 2, students learnt faster by applying acquired knowledge in real-world situations leaving instructors more time for feedback and more complex concepts.

# Holo Assessments

Even with the best textbooks and learning apps possible, students were not as well-prepared for practical situations when compared to learning through life-like interactions.

Mixed reality technologies enable students to see, hear, and assess holographic objects to better develop their practical learning and diagnostic skills.

# Holo Assessment

*A virtual patient engagement and diagnostic experience* using HoloPatient for HoloLens 2 combines patient visualization with data overlays to help medical students practice their assessment skills.

Microsoft HoloLens 2

+

gigXR HoloPatient

OTAGO POLYTECHNIC
Te Kura Matatini ki Otago

Reported feedback, across all student test audiences, was a 100% favorability rating for symptom identification and overall visibility perspective.

Otago Polytechnic School of Nursing sought new learning opportunities for students and new ways of engaging students throughout their learning.

With HoloPatient for HoloLens 2, Otago Polytechnic found that there is tremendous value in providing practical experience that enables students to see ailments and practice assessments before working in clinics.

# Next Steps

## Get started now

*Contact your local Microsoft representative to get started and...*

- Connect with a Mixed Reality specialist
- Contact mixed reality partners near you
- Explore common deployment scenarios

## Continued learnings

*Gain deeper understanding of mixed reality platforms, solutions, and use cases*

- Learn more about HoloLens 2
- Understand more about Dynamics 365 Remote Assist & Guides
- Learn about Microsoft Mesh

# Thank you!

Microsoft