



LEVERAGING VIRTUAL REALITY

Visualizing Risk & Opportunity

Mike Prefling & Greg Martin



“To over use the not used often enough baseball analogy, we don’t even think we are in the first inning yet. For VR/AR, we have just pulled into the parking lot and tailgating is about to begin. Samsung just arrived with a six-pack of Bud Light, Facebook called and is bringing a new microbrew, and Sony might bring more mass-market palatable ale. By the end of 2016, we’ll have a better sense of what’s been brewing at Google, Microsoft, and perhaps Apple might even stop by just to see where this is all going. Only after 2016 will the VR/AR game begin.”

- Ben Schachter



WHO WE ARE



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With a mission to build lasting relationships, Ryan delivers full-service tailored solutions based on industry expertise and collaboration — pairing customers' expectations with a specialized teams.

OUR SERVICES



DEVELOPMENT



ARCHITECTURE + ENGINEERING



CONSTRUCTION



CAPITAL MARKETS



REAL ESTATE MANAGEMENT

FOUNDED IN
1938



12
OFFICE
LOCATIONS

1,200
EMPLOYEES



WEITZ

/// BUILD A BETTER WAY.™

1855

DES MOINES
IOWA

161

YEARS

OF

SUCCESS



FOCUS MARKETS



COMMERCIAL

65th -ENR 2016 Top 400



INDUSTRIAL

6th -ENR 2016 Top 400 - Industrial Sector



HEAVY INDUSTRIAL

ANNUAL

CONSTRUCTION
REVENUE

\$1B+



SAFETY

EMR .58

10

OFFICE

LOCATIONS

Founded in Des Moines, Iowa in 1855, The Weitz Company is a full-service general contractor, design-builder and construction manager with office locations throughout the United States. Weitz is one of the oldest commercial general contractors in the United States.



AUTODESK UNIVERSITY 2016



AUTODESK®

VIRTUAL REALITY EVOLUTION

-  VR Industry Growth
-  VR Today in Construction
-  Virtual Reality + BIM
-  Virtual Reality + AR
-  VR In Construction Look ahead
-  Industry Advancement





VR INDUSTRY GROWTH



VR LEADING INDUSTRIES



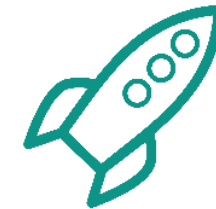
Healthcare



Tourism



Military &
Law Enforcement



AeroSpace



Gaming &
Entertainment



Real Estate



Education



Automotive &
Manufacturing



Skilled
Trades



Sports

A large crowd of people is shown from behind, all wearing VR headsets. They are gathered in a dimly lit room, likely at a tech conference or VR expo. The image is dark, with the primary light source being the ambient light of the event, creating a sense of immersion and scale.

A RECENT GOLDMAN SACHS
REPORT PREDICTS AN

**\$80 BILLION VR MARKET BY
2025, THE SIZE OF TODAY'S
DESKTOP PC MARKET**

A person is shown in profile, wearing a VR headset and holding a controller. They are sitting on a couch in a dimly lit room. The background wall is covered with various technical diagrams, including cross-sections of mechanical parts, flowcharts, and circular patterns. The overall tone is dark and futuristic.

BY THE END OF 2016,
THERE COULD BE

**12.2 MILLION
VR HEADSETS
IN HOMES**

Travis Jakel | Piper Jaffray Analyst



THE RISE OF VR STARTUPS

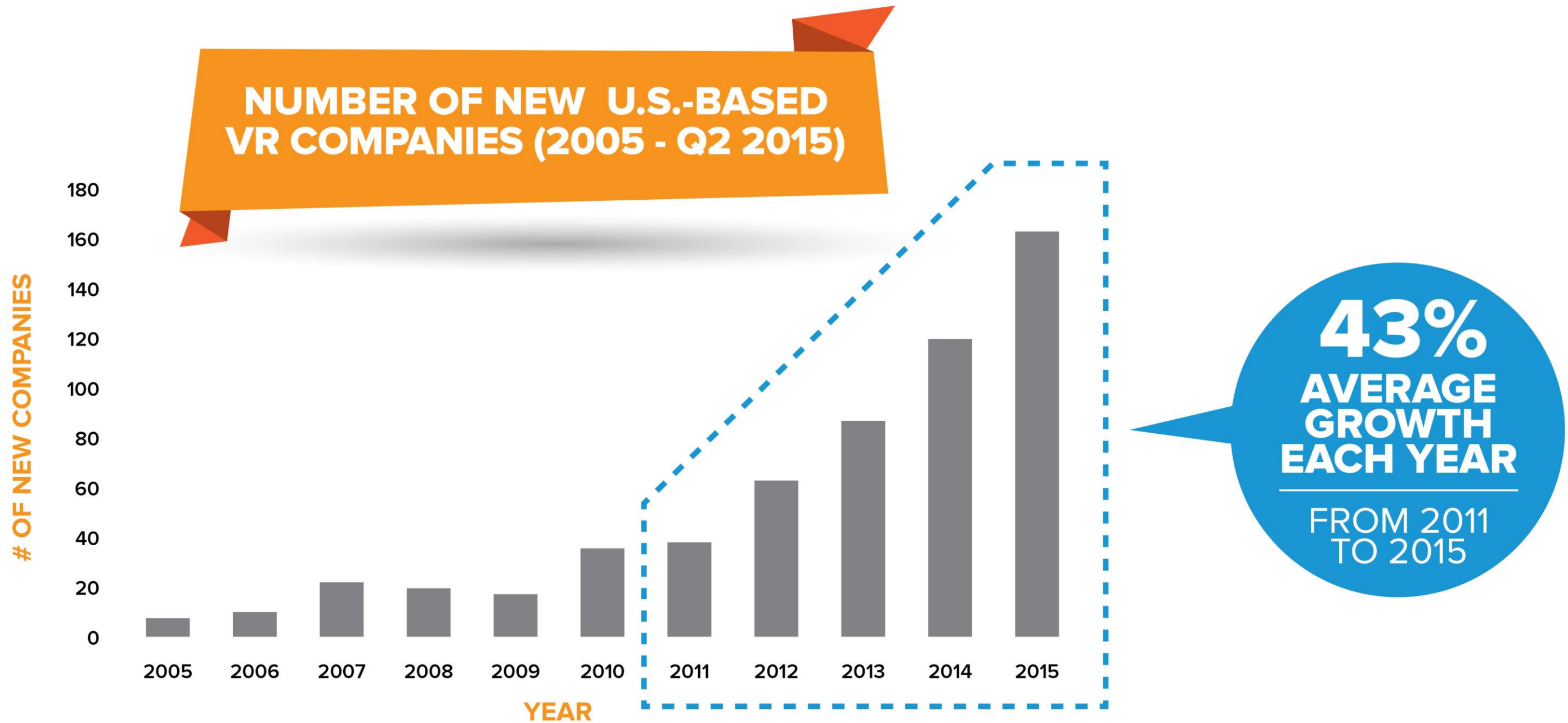


Image Source: 2015 VR Consumer Report from Greenlight VR





VR TODAY IN CONSTRUCTION



WHY IS VR BEING LEVERAGED TODAY?





VR SALES EXPERIENCE





VR IN ACTION TODAY



WEITZ

SERVITAS



- One of the largest P3 Student Housing projects in the country
- 3,400+ bed mixed use luxury student housing community.
- 50+ Acre Community (63 football fields)
- Very competitive student housing market

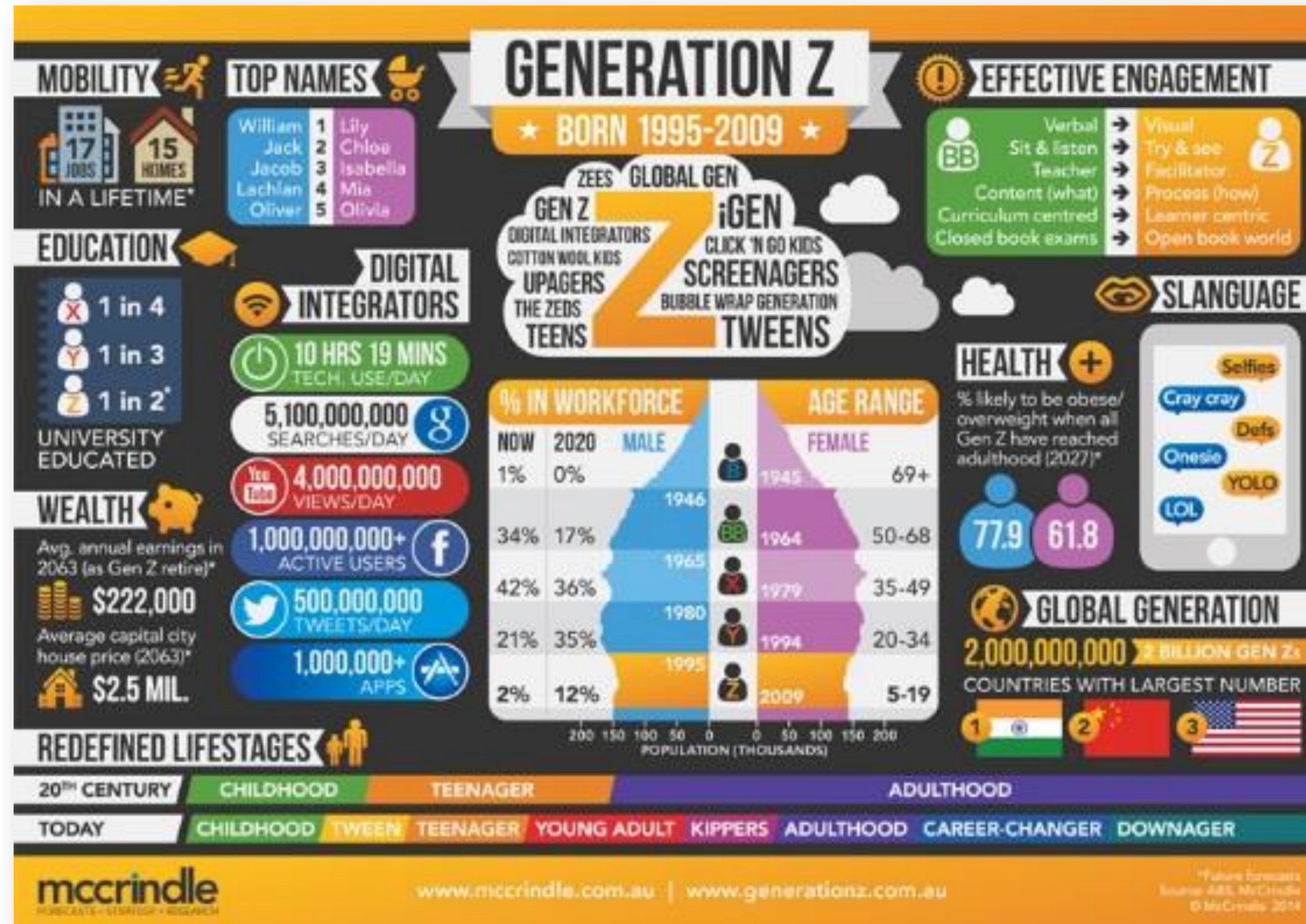
What?

Leasing experience designed around the virtual reality experience.





WHY IS VR WORKING AT PARK WEST?





VR AT PARK WEST



Multi User Collaborative Experiences.



VR AT PARK WEST



Enabling Informed Decisions Early

Eliminating Waste

Increasing Certainty of Design & Finish





ENABLING INFORMED DESIGN-DECISIONS

**VIDEO GAME
ACTS AS A CANVAS
TO DISCUSS INTERIOR
DESIGN DECISIONS**



VIDEO GAME ACTS AS A CANVAS TO DISCUSS INTERIOR DESIGN DECISIONS





VISUALIZING THE WORK INCREASES CERTAINTY

- 01 Design
- 02 Scope
- 03 Finishes
- 04 Layout
- 05 Access / Maintenance
- 06 Visual Lines

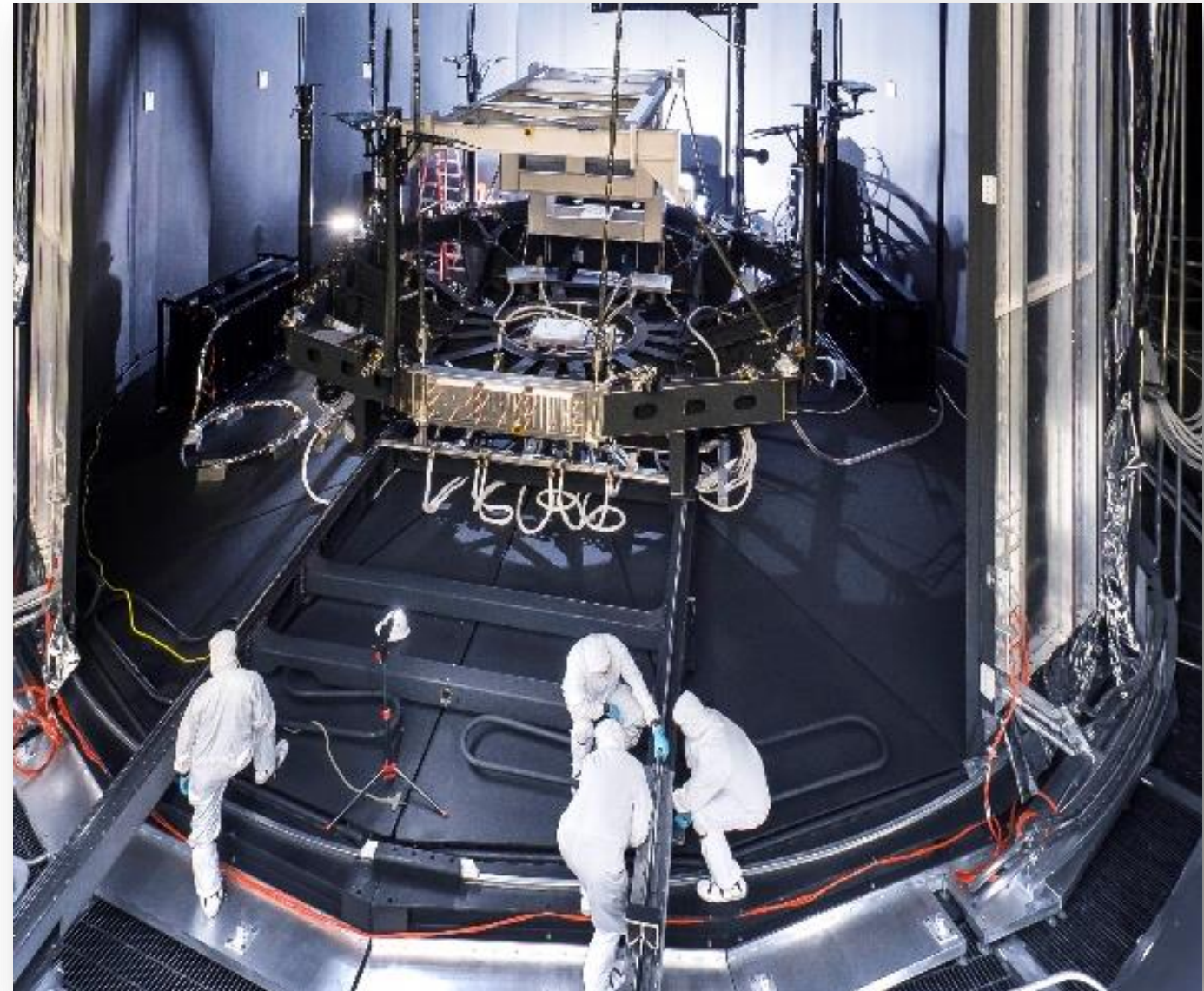




VIRTUAL REALITY + BIM



VIRTUAL REALITY EVOLUTION







MULTI-PLAYER COLLABORATIVE PLANNING (MMOG)





SIMULATION & OPTIMIZATION

Simulation video game rehearsals enables
optimization & risk mitigation

- 1 BIM + VR Technology Analyze Best Approach
- 2 Video Game Allows for Rehearsal and Review
- 3 Lessons Learned and Execution

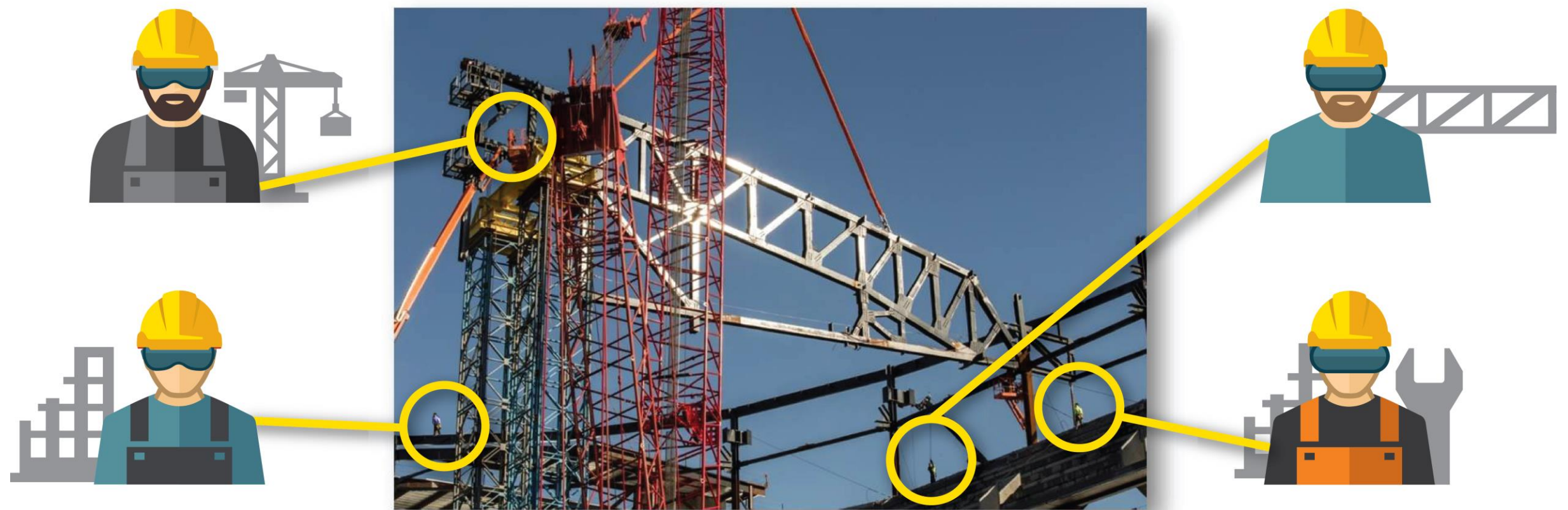




VISUALIZING RISK

BIM+VR Enabled High Risk Activity Simulations

All parties that would be involved in the field can jump into a Virtual Reality environment and simulate this high-risk activity.



Visualize & Recognize complex workplace situations,
build up knowledge of procedures & skills



VIRTUAL REALITY + AUGMENTED REALITY



Augment the Pitch



ONE SCOTTSDALE

It only takes

One thought becomes the next big idea.
One workplace built to honor workability and sustainability.
One office is designed for the way companies work today, and ready for the way they'll work tomorrow.

One Scottsdale. Delivery Expected: 2017.

For more information on the opportunities available at One Scottsdale, please contact:

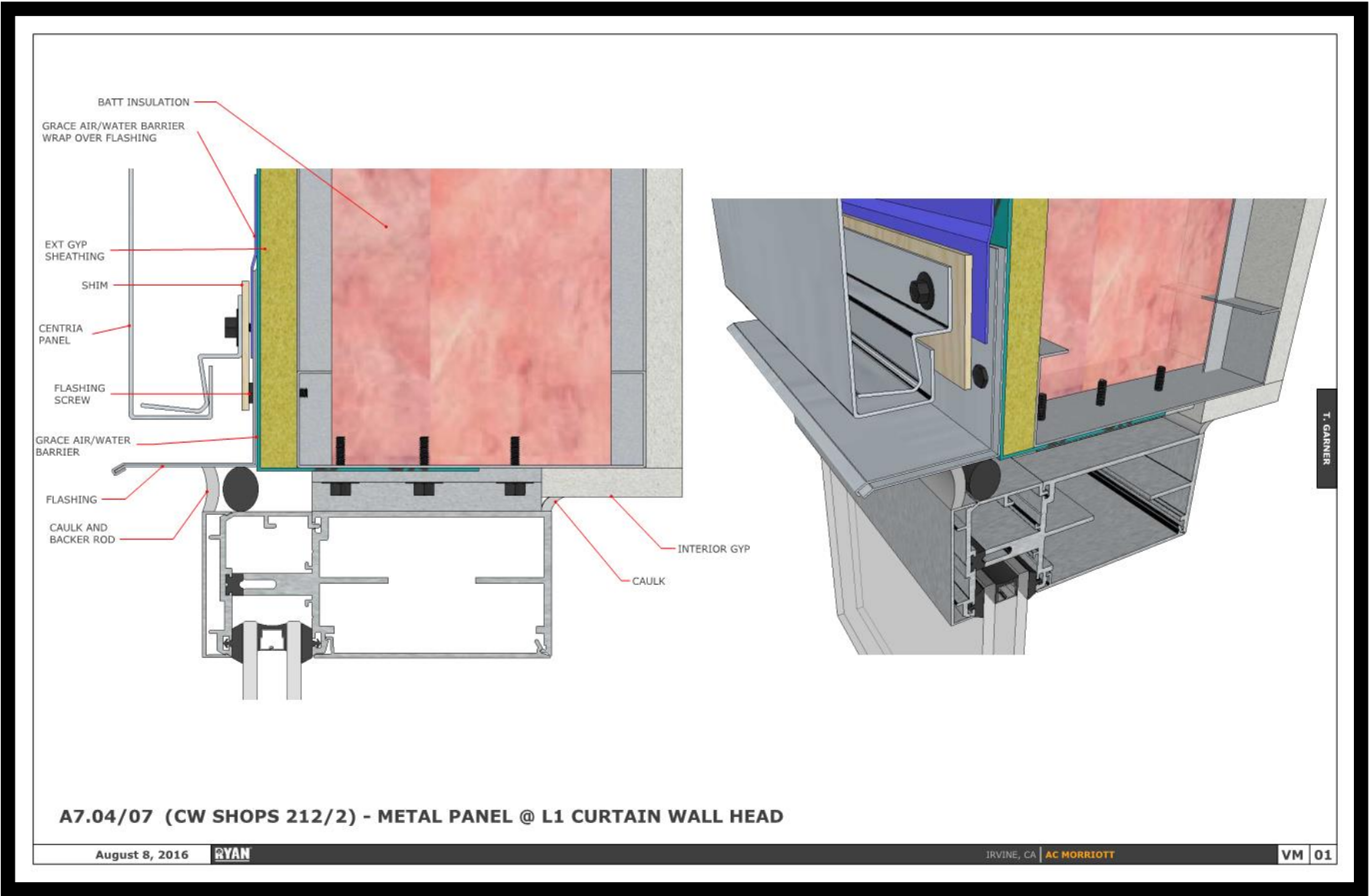
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Download the AUGMENT App, SCAN this page and view One Scottsdale in Augmented Reality



Augment the Field



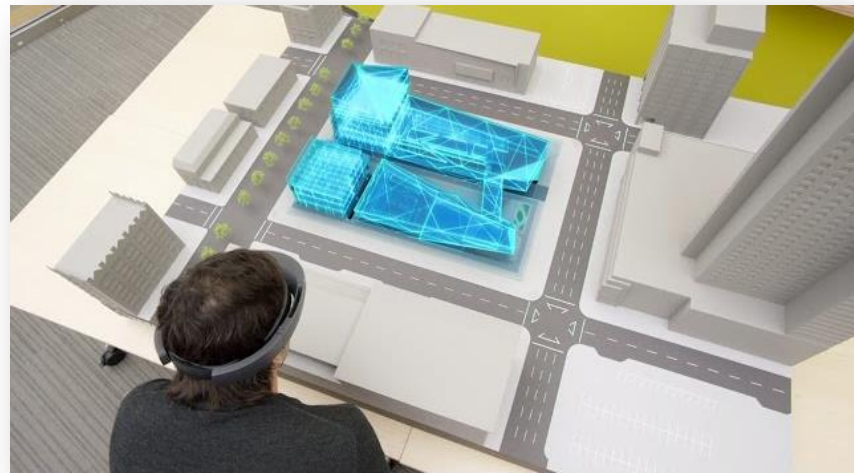


FROM VIRTUAL INFORMATION TO VIRTUAL INTELLIGENCE

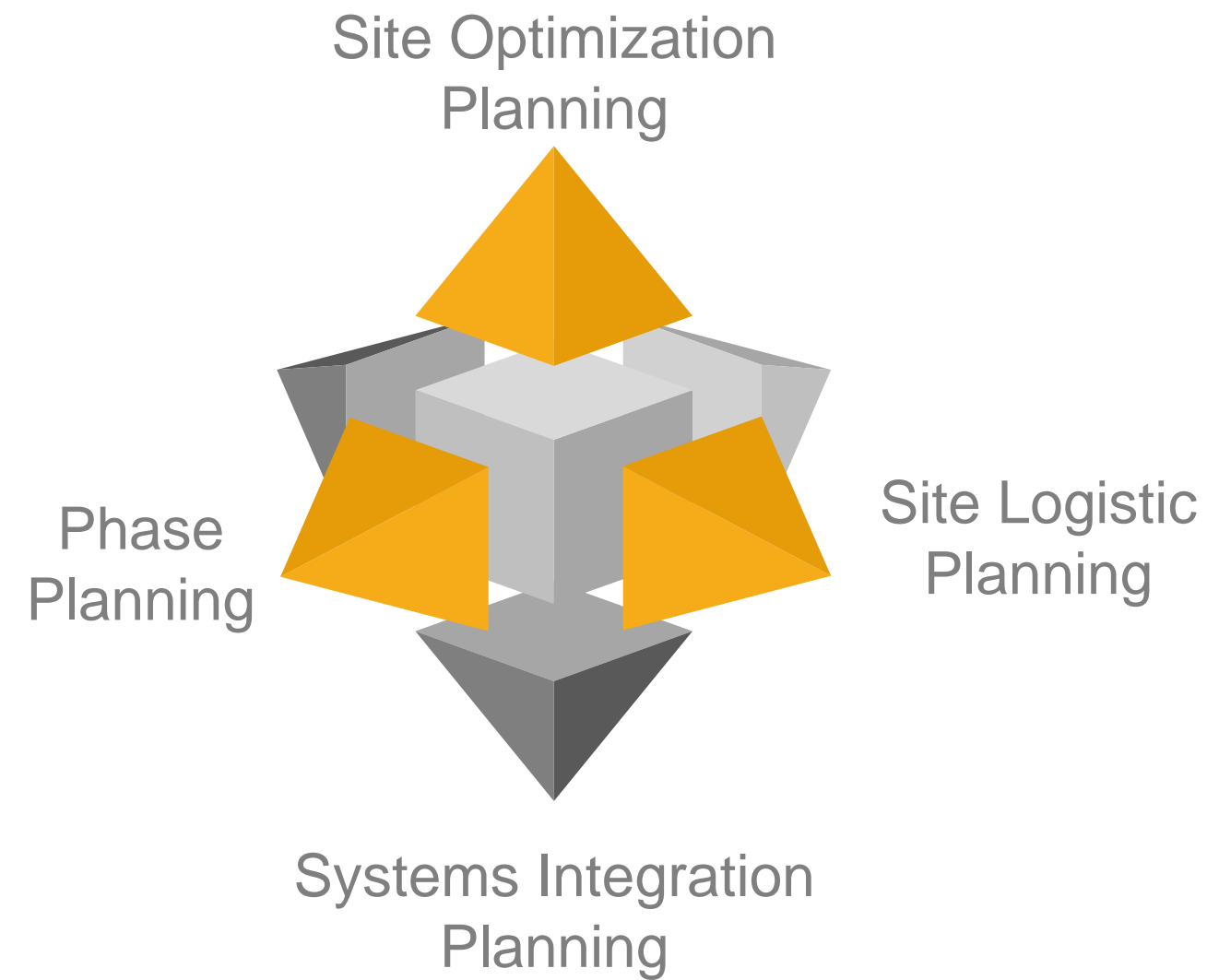




VISUALIZING PLANNING

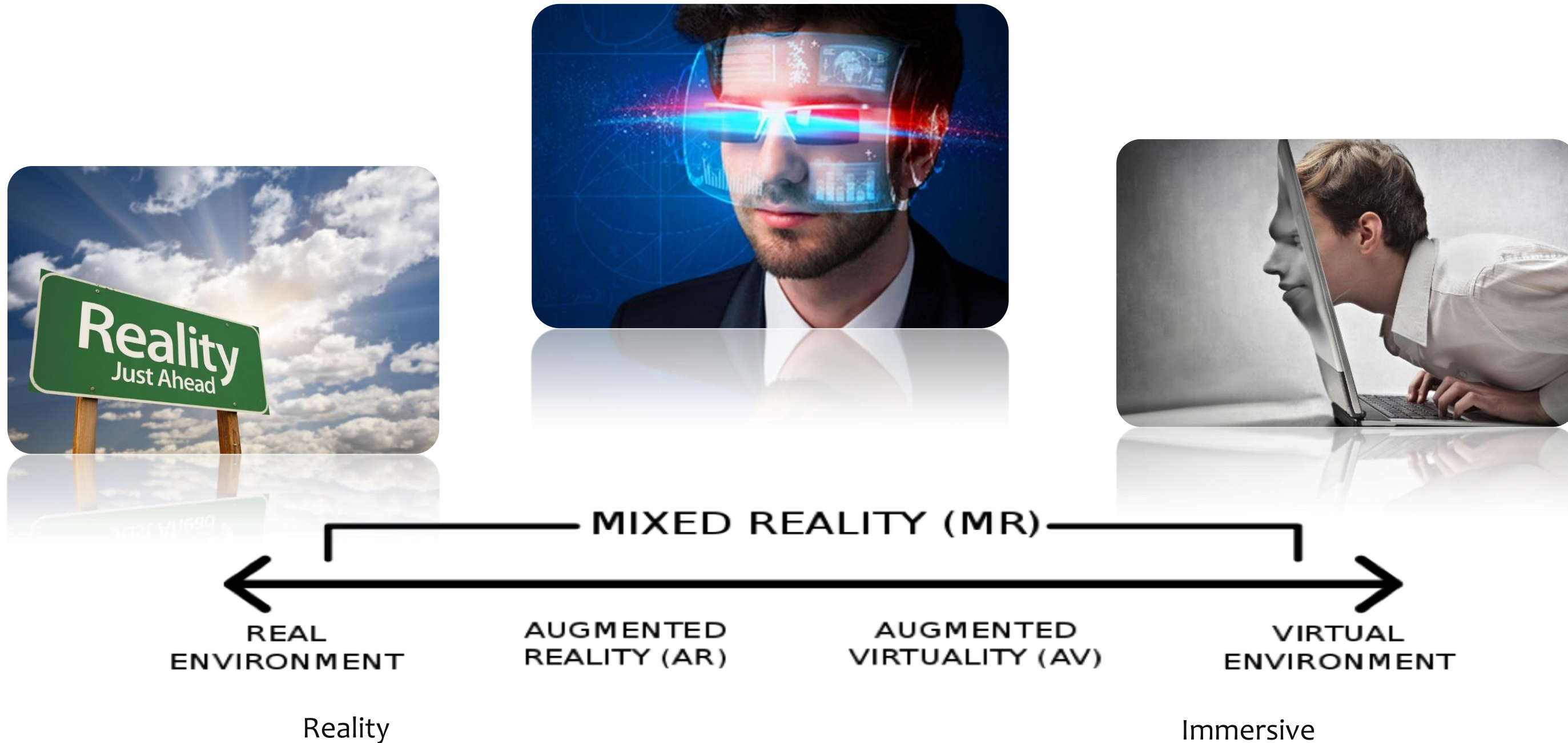


Images: Microsoft HoloLens: Partner Spotlight With Trimble





VR & AR – A MIXED REALITY





VR TECHNOLOGY INTEGRATION

Electroencephalographic (EEG) signals – most common approach for a Brain Computer Interface (Liao, et al., 2012)

Brain activities observed, recorded and measured.





VR AND COGNITIVE AGENT TECHNOLOGY

IBM Watson

First open cognitive computing platform
Systems understand the world through senses,
learning and experiences.



Amelia by IPsoft

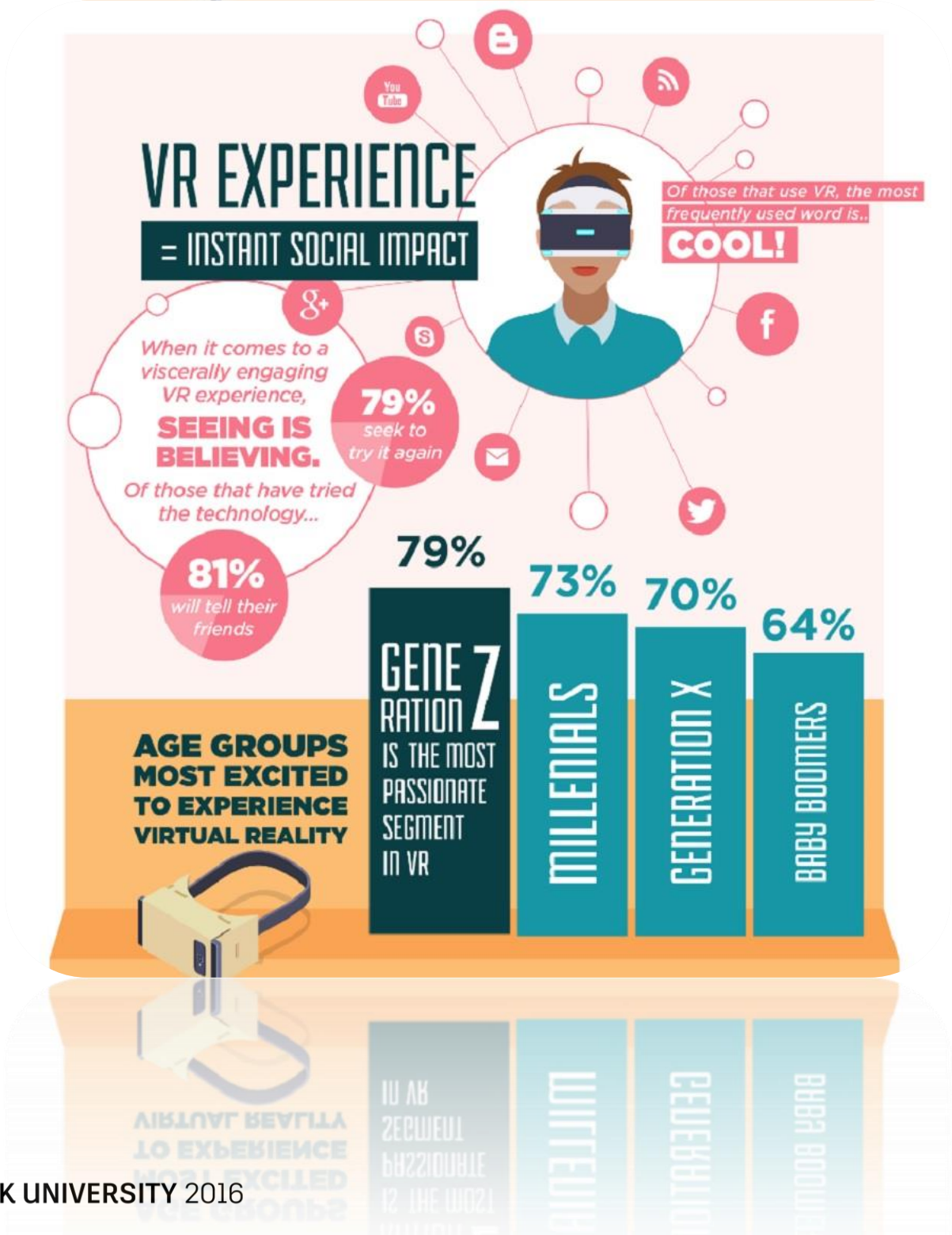
Cognitive agent allowing for service-rich experiences
Helps recognize safety concerns and mitigate risk
Interactive – Learns from experience



CONSTRUCTION INDUSTRY PREDICTIONS



THE WORKFORCE IS CHANGING





VIRTUAL REALITY: BUILT FOR CONSTRUCTION

Virtual Reality is on track to transform the way we manage risk on construction projects, delivering value by Visualizing The Work.

TECHNOLOGY WITH ENDLESS BENEFITS



- Ability to test a number of factors without the time and cost of building the structure
- Confirms environmental viability of architectural design
- Allows for virtual exploration
- Simulated construction for maximum efficiency



INDUSTRY ADVANCEMENT



INDUSTRY ANALYSIS





HOW DO WE GET THERE?



Attract talent & support/foster creativity



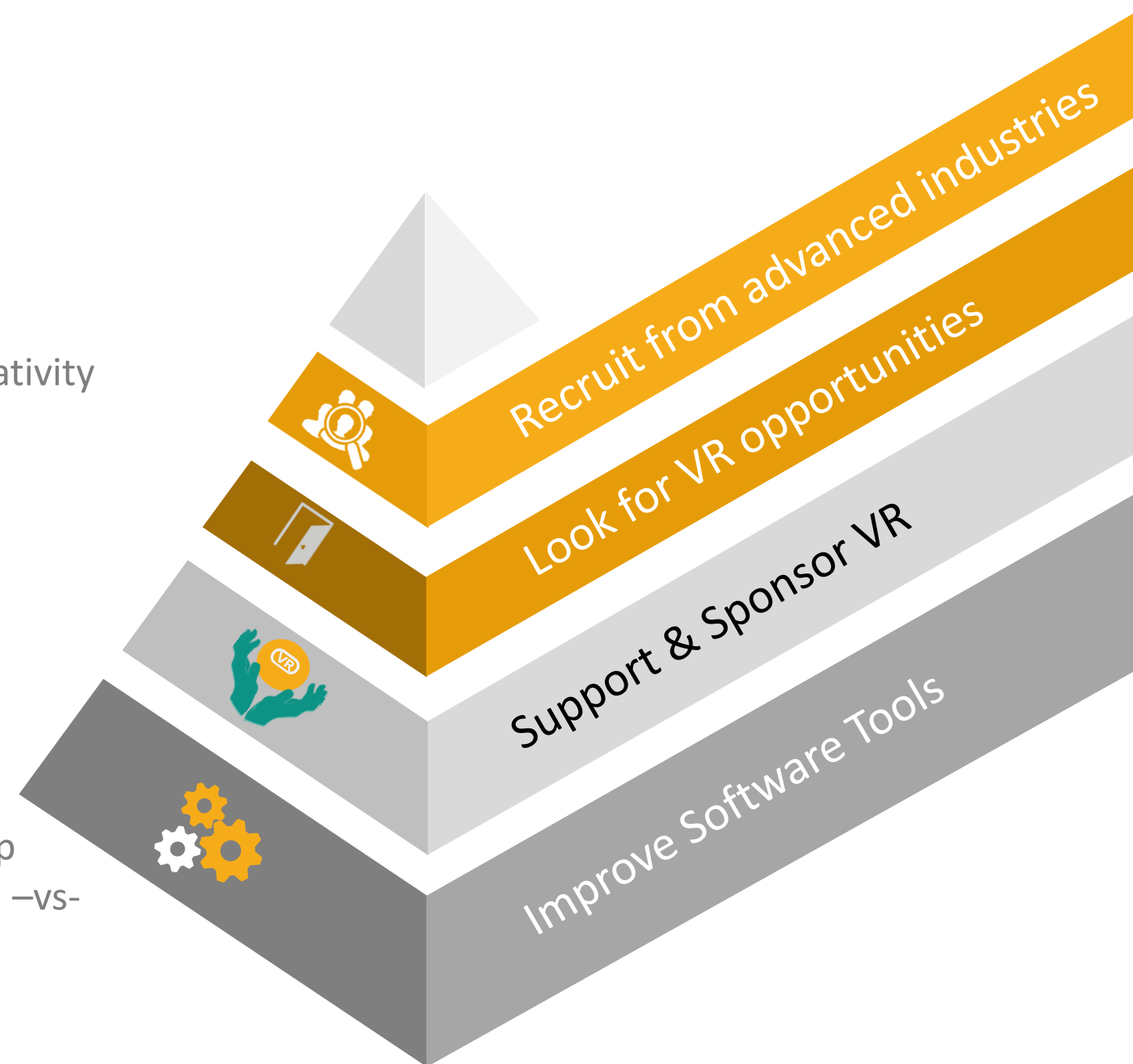
Partner with experts
Share value realized from VR



Engage / Educate / Include
How Will You Shape VR Use?



Team with software vendors to help
them develop / improve tools. Pull –vs–
push solutions.





THANK YOU

How did I do?

- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
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- AU speakers will get feedback in real-time.
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- Open daily from **8am-6pm Tuesday** and **Wednesday**; **8am-4:30pm Thursday**.
- Located outside **Hall C, Level 2**.
- Meet Autodesk developers, testers, & support engineers ready to help with your most challenging technical questions.



