How GPUs, Real-Time and Virtual Reality Enriched the Building Design Process at Perkins+Will
Bio

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PERKINS+WILL

• Digital Practice Manager
• Digital Strategist
• Former Business Owner
PERKINS+WILL

10,000+ VR APP LAUNCHES

10 DIFFERENT XR APPS USED

25 Offices

0 HOSPITAL VISITS

2,600 Employees

20 TRAVEL KITS

1000+ BRANDED GOGGLES PASSED TO CLIENTS

1,246 VR Presentation

355 VR Laptops

ALL PROJECTS USE XR TECHNOLOGY
XR – A Collective Term

VR

AR

MR
Class Survey – Hands Up If..

Ever tried XR (VR/AR/MR)?
Used XR for your job?
Use XR as a typical project workflow?

Told your Mum (Mom) you used XR!

“I’ve gotta tell my Mum”
Objectives

1. XR is more than visualization.

2. Learn how XR fits into the design workflow.

3. See the positive change XR brings to the design process.
Are You Pumped?!? 
AGENDA

1. Before XR
2. XR Access
3. XR Evolution
4. + Change
5. Old vs New
6. Let’s Reflect
Push light-weight models and panoramas to the cloud.
“Is there something MORE ?!”

“Something like this!”
INACCESSIBLE

Back in Time
AGENDA

1. Before XR
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NEW TECHNOLOGY BREAKTHROUGH MARCH 2016

Step into Rift
Now available for pre-order.
Includes EVE: Valkyrie + Lucky's Tale.

Pre-order Now

oculus $599
COMING SOON

10:35:25

HOURS MINUTES SECONDS

Get Vive Updates
Numerous Applications Follow…

...throughout 2016 and beyond
2 The Kit of Parts

Less Time and Money

**HARDWARE $$$$$**

- oculus
- VIVE
- MSI VR Ready Laptops
- NVIDIA GeForce GTX 1070
- NVIDIA GeForce GTX 1080

**SOFTWARE**

- Enscape
  - Convenient Real-time
  - Directly from Revit
- IrisVR
  - Super User Friendly, Markup
  - Measure and other Tools
- InsiteVR
  - Cloud-based multi-user
  - From Mobile devices
- Revitzo
  - Cloud-based multi-user
  - Review, track and audit
AGENDA

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XR Evolution
Our Journey
XR Evolution

What Can We Do with This New Technology?

EXPLORE

• Limitations
• Possibilities
• Compatibility
How Does It Work with Teams on a Real Project?

PILOTS

• Architectural Projects
• Design Teams
• Support
PLAN ‘A’

• Deploy
• Promote
• Support
3 Deploy
The Kit of Parts

TRANSPORT & SETUP

INSTALL & LICENSE

Enscape
IrisVR
InsiteVR
Revitzo
PROMOTIONAL CAMPAIGN FIRM-WIDE

- Identify local VR Champion
- Provide access to VR hardware (loaner)
- Hold local VR show and tell events
INSTRUCTIONS EASY TO GRASP

Tip: Please create an outlook meeting invitation similar to the one below; change it as appropriate for your project.

Tip: Please check in with your office for the correct resource name for portable VR equipment. The Atlanta office creates a VR Resource for project check-out, "ATL_HTC_VIVE_VR_KIT".

microKnowledge
- Quick How-To
- Easily Grasped
- Favors Graphics

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EXPECTED ADOPTION NAIVE

- Automatic
- Rapid
- Difficult to Supply

3 ANTICIPATED

Time

Immersion
ACTUAL ADOPTION

- Excitement
- Initial Growth
- Stall
GARTNER’S HYPE CYCLE

- Peak of Inflated Expectation
- Plateau of Productivity
- Trough of Disillusionment
- Slope of Enlightenment

Technology Trigger

Time

Expectation
PLAN ‘B’

• Practical People’s Concerns
• Looking Stupid
• More A-Ha
Local Implementation Challenges

Actual Reality – Practical People Problems

Project Leaders, “This is all great BUT…“

“How much time does it take?”

“No budget to learn new tools”

“How much does it cost?”
BEING PRACTICAL

Answering PRACTICAL questions in PRACTICAL terms by giving SIMPLE CHOICES

SIMPLE CHOICES
• Early design with VR
• “The model isn’t finished!”
• Doesn’t matter use it to help design

• In house materialisation, communicating detail
• materials sign off

• Fully rendered environments CGI
• Pres, Marketing,
• High cost Lobster Lunches?!
MORE A-HA!

A-HA MOMENTS

• Pilot Projects
• PM Sees Value
• Sr. Leadership Believes
GETTING IT ON HEADS

- Looking Silly
- Visible Setups
- Relaxed Office Events
PLANNED OUTCOME

- Off the Chart
- Successful Implementation
  - Not Automatic
  - Practical People
  - Self Conscious
Replacement for traditional visualisation

Unrealised need for clear, accurate communication

Why this Rapid Adoption? – Key Driver
AGENDA

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4 SUCCESSES - EXPECTED

+Change

• Design Communication

• Help Win Work

• Help us Design

• Enable Client Sign Off
“I can absolutely confirm that it was a positive experience and we will be looking to make greater use of it in future. The use of VR helped raise the internal profile of a project that was focused on Innovation.” - Client
Successes - Reality or Virtual Reality?
4 SUCCESES - UNEXPECTED

+Change

EXTERNAL USE
- RECRUITMENT TOOL
- CLIENT MARKETING
- CHANGE MANAGEMENT
- CLIENT ENGAGEMENT
- CLIENT SIGN OFF
- NETWORKING EVENTS
- CLIENT INTERVIEWS
- CLIENT OFFICE TOURS

VR USE THRU THE DESIGN STAGES
- BID
- CONCEPT
- DESIGN DEVELOPMENT
- TECHNICAL
- HANDOVER

INTERNAL USE
- PLANNING PRINCIPLES
- SPATIAL AWARENESS
- INTERNAL REVIEW
- DESIGN VALIDATION
- OPTIONERERING
- EMBEDDED QR's
- VISUAL COORDINATION
- MATERIALISATION
- SOCIAL VR
- CLASH REVIEW
- CLASH MARK UP
- EXPORTED REPORTS

PERKINS+WILL
Erik’s Road Trip

• 2 Week Road Trip, 3 Office Locations
• 18x1 Hour Dept. Head Sessions
• Static drawings deemed “too tight”

“Without VR we would probably have had more push back on the layout and design.”

Erik Says, “Don’t Do It.”
4 QR Codes on Drawings
UNEXPECTED SUCCESS

Bring Drawings to Life
4 Panorama for Construction Documents

UNEXPECTED SUCCESS
Virtual mockup can save time and money, and can offer reviews of spaces that are impossible to mock up.
Interact with furniture and equipment, open cabinets or adjust the height of exam tables.
Use drones to show developers the real views from different levels of a building design before construction.
4 What about the other R’s? (AR/MR)

AR & MR fills the need to bridge between the Virtual & Physical
CG elements are visibly obscured (occlusion) by the physical environment.
Near Here Future

Hololens One Click Future
“To V or not to V….”
AUGMENTED REALITY
Perkins+Will AX Application
Augmented Reality

STEP 1

STEP 2

STEP 3

DIY

Available on the App Store

Get it on Google play

ENTITI

PERKINS+WILL
CLIENT ENGAGEMENT – POCKET VR

Perkins+Will VX Application

Scan QR or Search “Perkins Will VX”
AGENDA

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PERKINS+WILL
OLD WAY | DESIGN REVIEW / MATERIAL SIGN OFF

TIME | EFFORT | TURNAROUND
NEW WAY | DESIGN REVIEW / MATERIAL SIGN OFF

TIME | EFFORT | TURNAROUND
EXAMPLE | DESIGN REVIEW
NEW WAY | EARLY STAGE DESIGN COORDINATION

TIME | EFFORT | TURNAROUND

- ANGEL
- BOB
- DAVE

NEW WAY
EARLY STAGE DESIGN COORDINATION

TIME
EFFORT
TURNAROUND
AGENDA

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Hype Cycle

- Peak of Inflated Expectation
- Plateau of Productivity
- Slope of Enlightenment
- Trough of Disillusionment

Technology Trigger:
- AR
- MR
- VR

The state of XR technologies today
• Engaged Feedback
• Clear Understanding of Space and Function
• Rectify Design Issues Before Construction
XR ReCap

• More than Visualization
• Successful Communication
• Integrated throughout Design Process

“It’s for EVERYBODY”