VIRTUAL CITIES

TRAINING

AUTODESK REVIT TO UNREAL ENGINE 5 - HBIM DATA TRANSFER

Intermediate Workshop

Duration: 2 days (12-14 hours)
Audience: Architects, designers and visualisers working with Revit and Unreal Engine 5
Level: Intermediate

Training Focus

This intensive two-day course teaches participants how to efficiently transfer architectural projects from Autodesk Revit to Unreal Engine 5, with special focus on preserving Heritage Building Information Modelling (HBIM) data throughout the pipeline. Participants will learn industry-standard workflows, optimisation techniques, and data management strategies.

Learning Objectives

By the end of this course, participants will be able to:

- Prepare Revit models for optimal export to Unreal Engine 5
- Utilise Datasmith workflow for efficient data transfer
- Preserve and manage HBIM metadata throughout the pipeline
- Optimise geometry and materials for real-time visualisation
- Set up interactive architectural visualisations in UE5
- Troubleshoot common pipeline issues

DAY 1 Course Schedule

Session 1: Introduction & Foundations (10:00 AM - 11:30 AM)

10.00 – 10.30 Welcome & Workshop Introduction

- Course objectives and structure
- Introduction to participants and their project goals
- Overview of the Revit to UE5 pipeline
- Understanding HBIM data and its importance in architectural visualisation

10.30 – 11.30 Understanding the Technical Landscape

- Real-time rendering vs traditional rendering
- Game engine fundamentals for architects
- Unreal Engine 5 key features: Nanite, Lumen, and their relevance
- Data formats: FBX, Datasmith, and glTF comparison
- HBIM metadata structure and preservation requirements

11.30 – 12.30 Preparing Your Revit Model

- Model audit and cleanup best practices
- View templates for export optimisation
- Managing Revit families for UE5 compatibility
- Level of Detail (LOD) considerations for real-time rendering
- Organising HBIM parameters and metadata
- **Hands-on:** Audit provided sample heritage building model

LUNCH

Session 2: Export Workflows (1.30PM – 3.45PM)

1.30 – 2.45 Datasmith for Revit Deep Dive

- Installing and configuring Datasmith Exporter
- Export settings walkthrough and best practices
- Material translation principles
- Handling Revit families: System vs. Component families

- Managing project coordinates and levels
- HBIM data mapping through Datasmith
- **Hands-on:** Install Datasmith plugin and configure settings

2.45 – 3.45 Practical Export Exercise

- Exporting architectural geometry
- Exporting with HBIM parameters intact
- Managing large datasets and file optimisation
- Creating multiple export scenarios (interior, exterior, phased)
- Troubleshooting common export errors
- **Hands-on:** Export sample heritage project using Datasmith

Session 3: Unreal Engine 5 Import & Setup (3.45PM – 5.00PM)

3.45 – 4.45 Importing into Unreal Engine 5

- UE5 interface orientation for architects
- Project setup and folder structure best practices
- Importing Datasmith files into UE5
- Understanding the Datasmith Scene asset
- Managing actors, blueprints, and metadata
- Verifying HBIM data preservation after import
- **Hands-on:** Import morning's exported files into UE5

4.45 – 5.00 Wrap-Up & Q&A

- Open discussion and problem-solving
- Resources for continued learning
- Community and support channels
- Course evaluation and feedback

DAY 2 Course Schedule

Session 3: Materials/Lighting Fundamentals (10:00 AM - 12:30 AM)

10.00 – 12.30 Material and Lighting Fundamentals

- Material system basics in UE5
- Converting and enhancing Revit materials
- Physical-based rendering (PBR) principles
- Setting up Lumen global illumination
- Natural lighting with HDRI and Sun/Sky systems
- Interior lighting strategies
- **Hands-on:** Apply and adjust materials, set up basic lighting
- **Hands-on:** Audit provided sample heritage building model

LUNCH

Session 4: Materials/Lighting Fundamentals (1:30 PM - 4:00 PM)

1.30 – 2.30 Performance Optimisation

- Nanite geometry optimisation strategies
- LOD (Level of Detail) management
- Culling and occlusion techniques
- Texture optimisation and compression
- Blueprint optimisation basics
- Performance profiling tools in UE5
- **Hands-on:** Optimise imported model for real-time performance

2.30 – 4.00 HBIM Data Utilisation in UE5

- Accessing metadata through Blueprints
- Creating data-driven information displays
- Interactive element selection and data panels
- Linking HBIM parameters to UE5 UI widgets
- Phasing and temporal data visualisation
- Documentation and annotation systems
- **Hands-on:** Create simple interactive HBIM data display

Session 5: Advanced Topics & Project Work (4:00 PM - 5:00 PM)

4.00 – 4.45 Advanced Workflows & Best Practices

- Iterative workflow: Sync updates from Revit
- Version control considerations
- Team collaboration strategies
- VR and AR deployment options
- Integration with other software (Rhino, SketchUp)
- Future trends: USD pipeline, digital twins

4.00 – 4.45 Q&A and Course Wrap-up

- Open discussion and problem-solving
- Resources for continued learning
- Community and support channels
- Course evaluation and feedback
- Certificate distribution