



**UNREAL ENGINE**

# Unreal Engine: it's not just for games!

FunGIS 2019

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# What is a game engine?



Suite of reusable software components:

- Rendering 2D & 3D Graphics
- Simulating Physics
- Artificial Intelligence
- User Input



Fully integrated editor:

- More intuitive interface than raw coding
- Facilitates rapid development



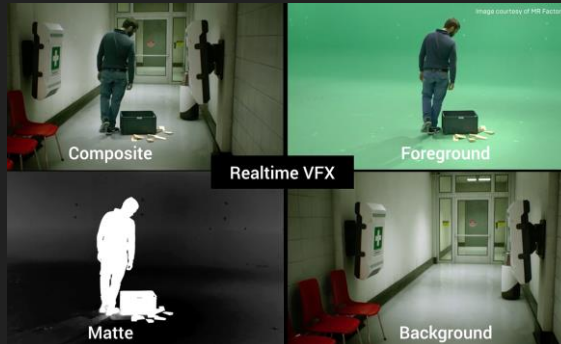
# What the Unreal Engine is known for:



Hundreds of games  
and growing rapidly!

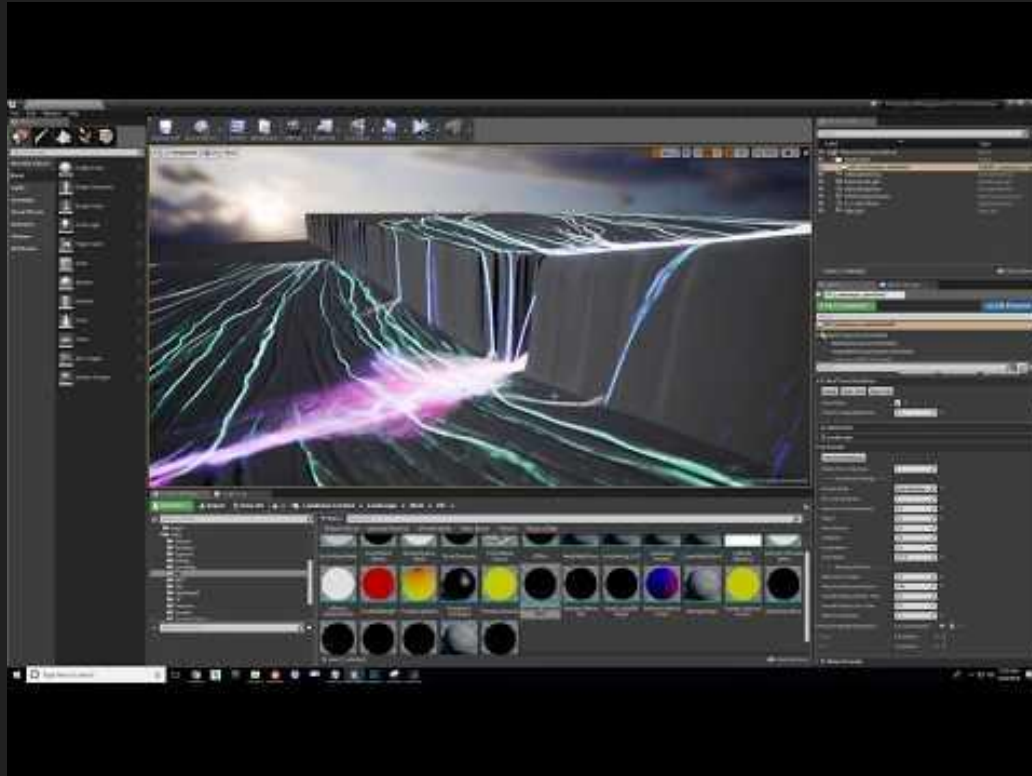


# Emerging Uses



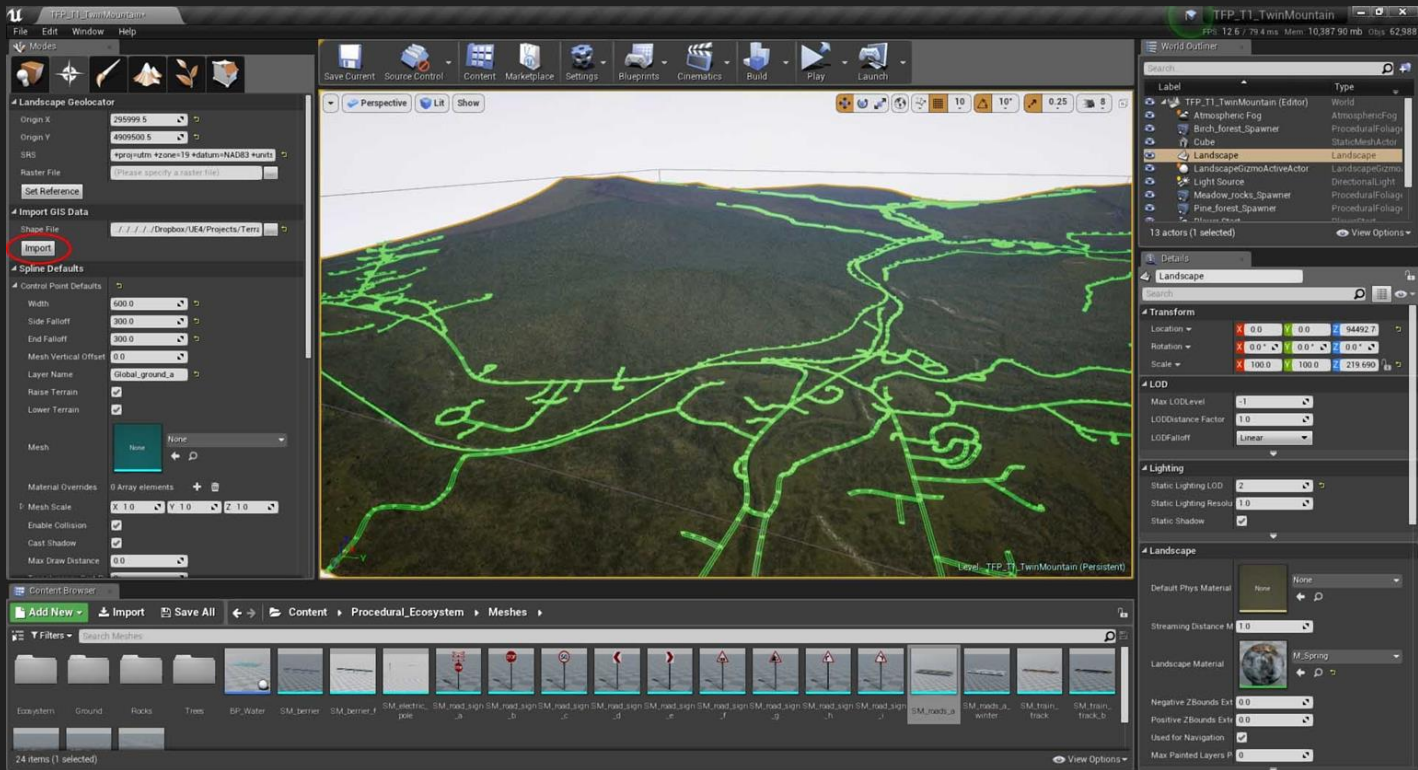
New Opportunities

# Real-time Simulation

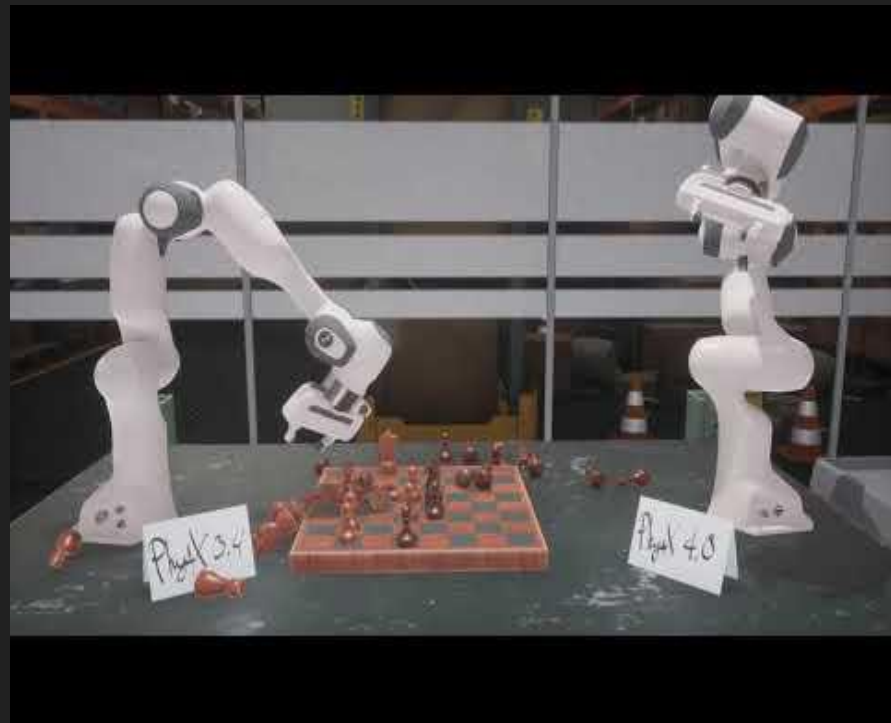




# Procedural Generation

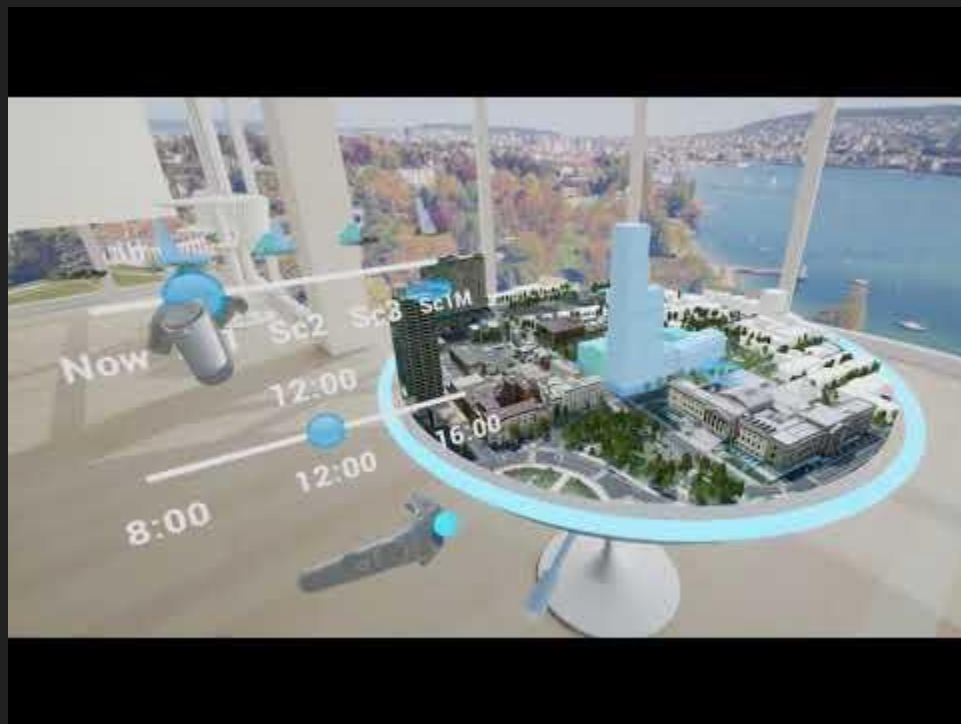


# Artificial Intelligence training





# XR



# Case Studies

# CRC Smart Catchments Project

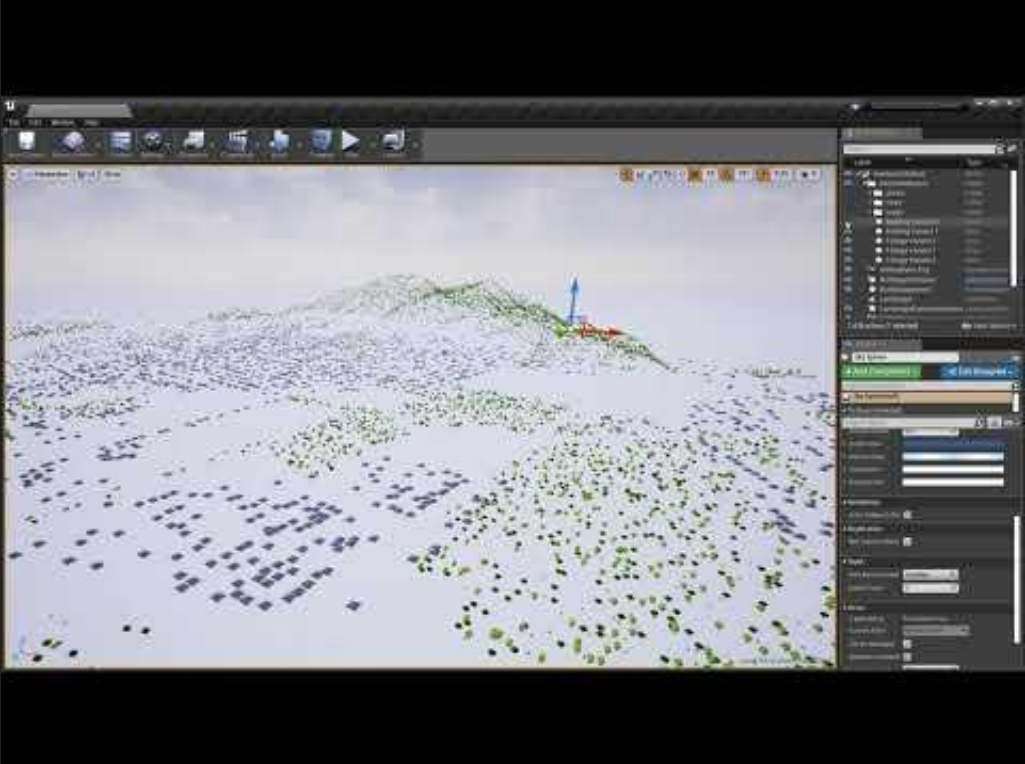
Project website:

<https://www.cairns.qld.gov.au/water-waste-roads/water/smartcatchments>

- Set of fun educational tools for Year 5-7 students learning about catchment health and water management
- Geographically accurate representation of the Saltwater Creek catchment
- Runs inside a web browser on hardware used in schools



# CRC Smart Catchments Project



# Consuming GIS data in the Unreal Engine

Developed a full GDAL integration that supports:

- Converting GeoTiff DEM to a 3D landscape
- Generating landscape masks and textures based on shapefiles
- Placing building and foliage assets based on shapefiles
- Generating roads and rivers based on polylines





# VR Tree Kangaroo Project

- Conservation project to help raise awareness of the Lumholtz Tree Kangaroo
- Partnership with the Tree Kangaroo & Mammal Group and James Cook University
- Brainchild of David Hudson



# VRTK - What is it?



# VRTK - Building Kimberly

- Modelled by hand from reference photos
- Animated by hand
- Physics simulated fur



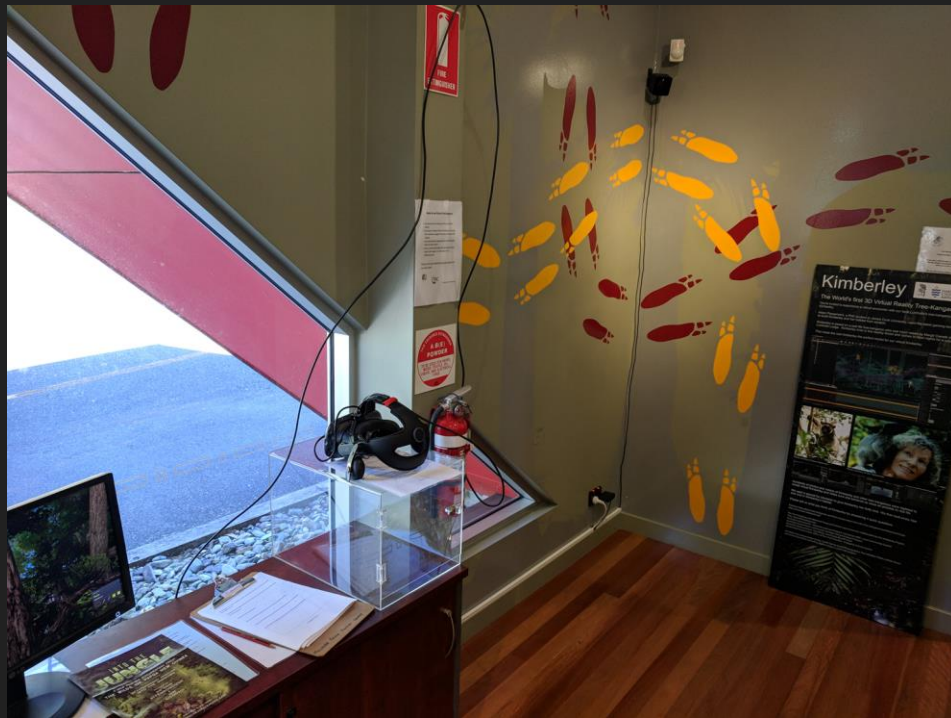
# VRTK - Building the Environment

- Appeal to tourists
- Inspired by native habitat
- Realistic experience
- Discourage negative behaviour



# VRTK - Rolling it Out

- Crash tolerant and auto-booting
- Quick setup
- Hands-off





# Give it a go!

Questions?