



Virtual Reality

Overview

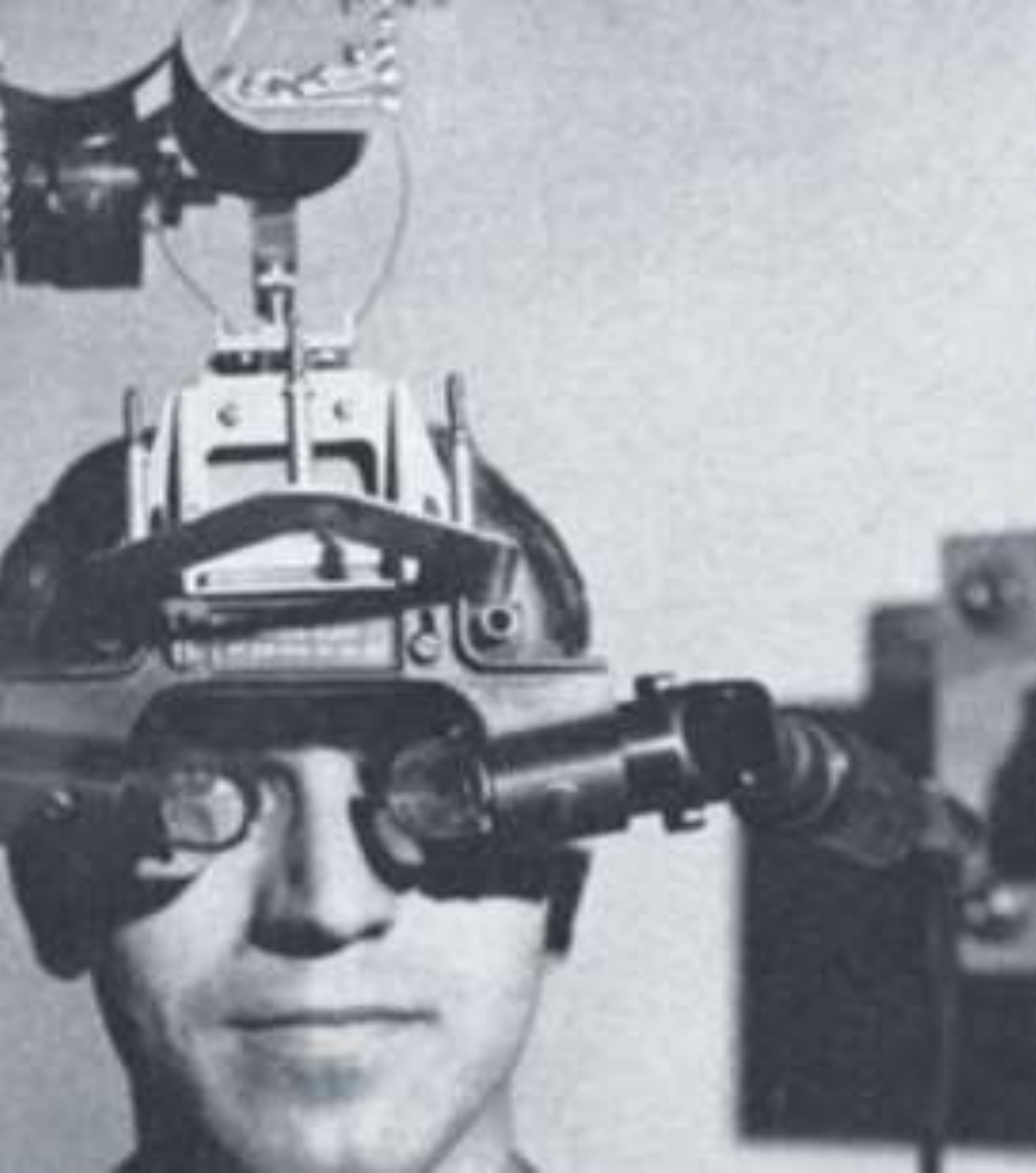
- **Virtual Reality: Past, Present and Future**
- Games and gaming:
- Landscapes:
- Modelling:
- Interpretation:
- Game engines:
- Virtual Reality: exhibits and exhibitions
- Case Studies



Learn through Experience

- Higher level of learning
- What we can experience is limited
- The digital can extend



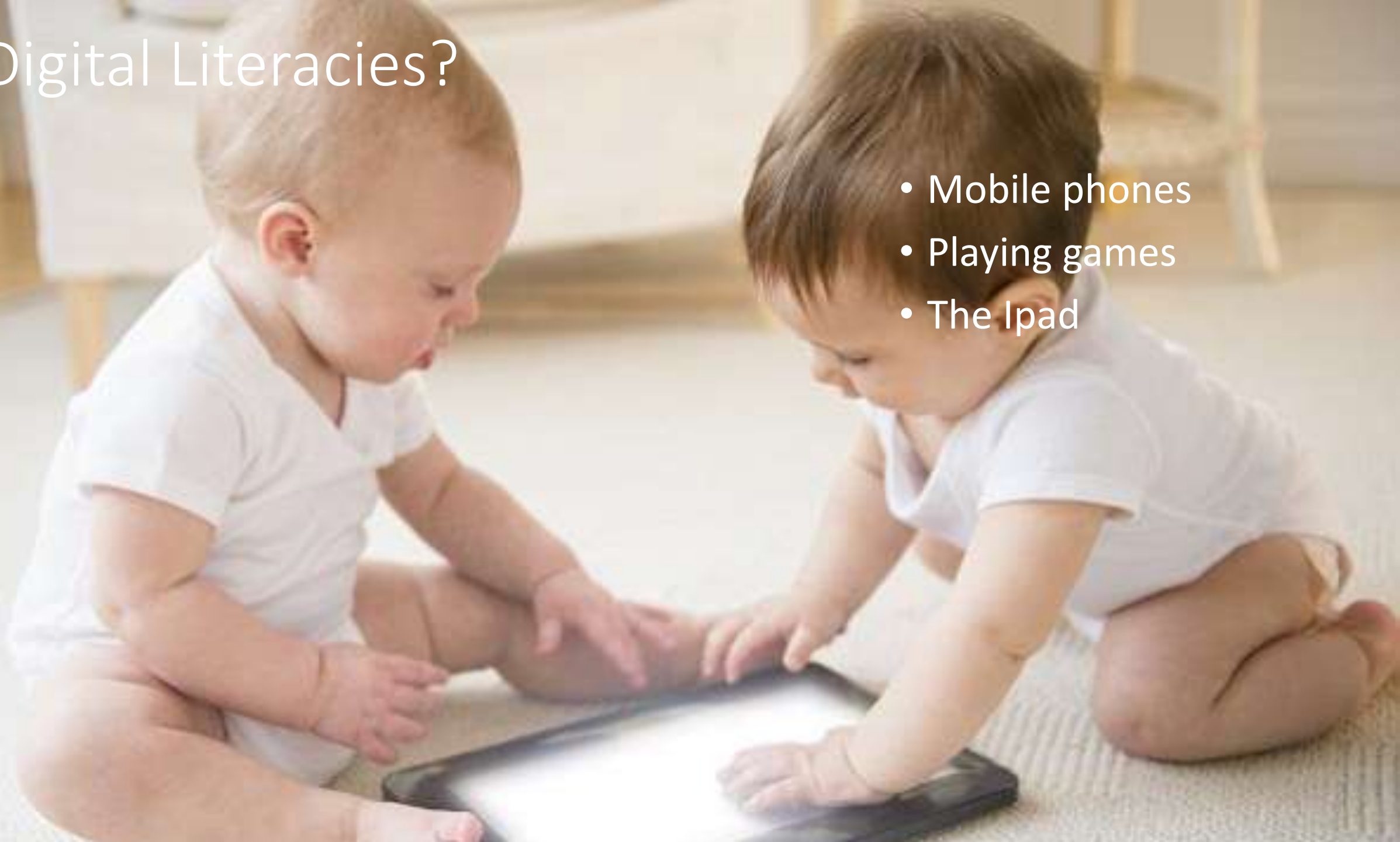






Digital Literacies?

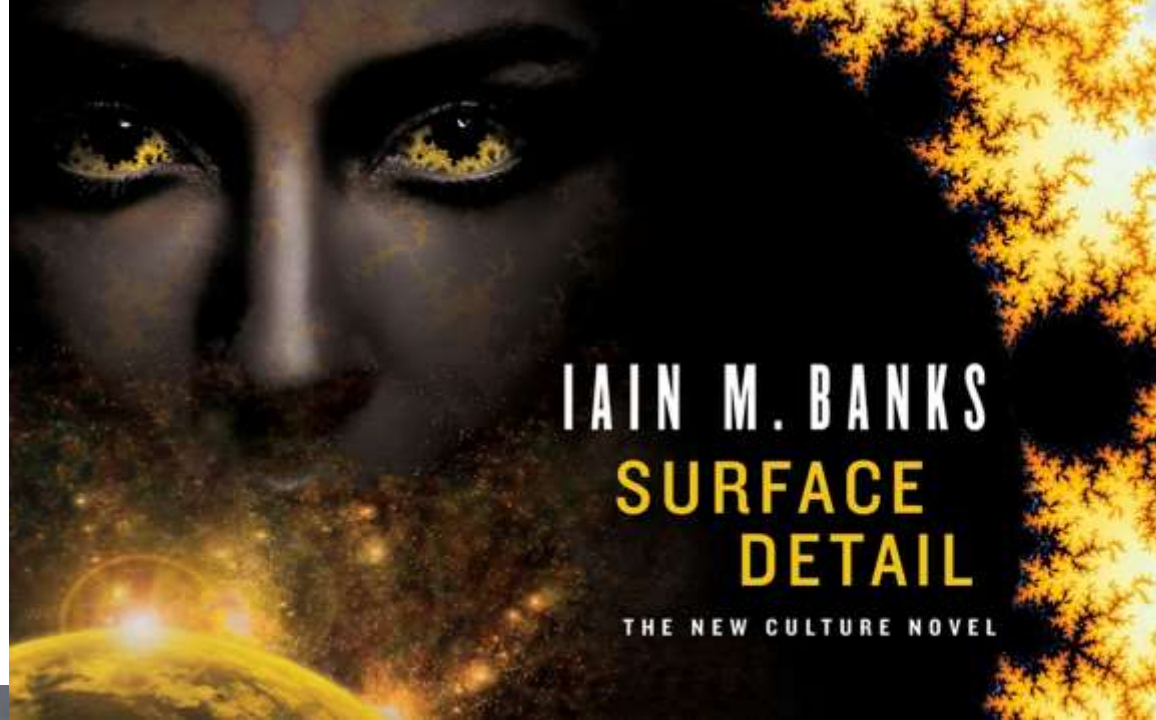
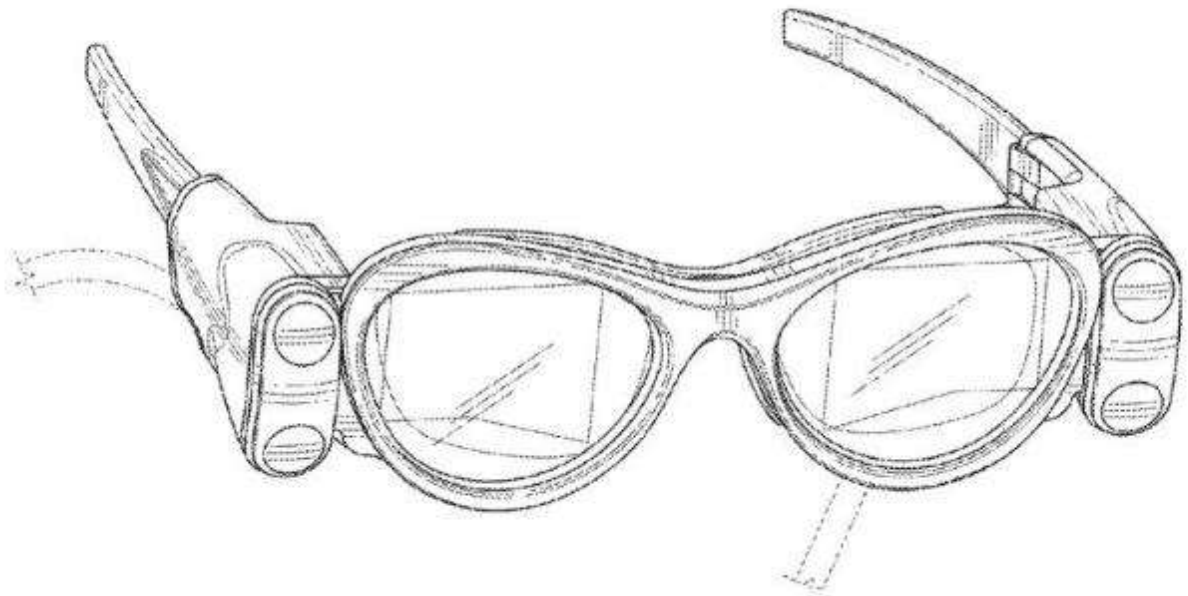
- Mobile phones
- Playing games
- The Ipad



- New applications
- Better detail
- Bigger scale









Press Esc to exit full screen

*DEPENDING ON EYESIGHT

What can we do now

- Mores law
 - Computers
 - Mobile phones
 - Digital 3D – photogrammetry
- Game Engines – Scale and detail
- Phones – Immersion on the move



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Games and Heritage

- Total war series
- Assassins Creed Series
- Minecraft

PRE-ORDER NOW

Total War Saga: Thrones of Britannia

Available 3rd May

Pre-Order

Watch The Full Trailer

HUGE FREE EXPANSION OUT NOW!

CLAIM YOUR MORTAL EMPIRES



WE USE COOKIES ON THIS SITE TO ENHANCE YOUR USER EXPERIENCE
By clicking any link on this page you are giving your consent for us to set cookies.

[Ok, I agree](#)

[Read more](#)

Battle of Bannockburn

- The **Battle of Bannockburn** ([Scottish Gaelic](#): *Blàr Allt nam Bànaig* or [Scottish Gaelic](#): *Blàr Allt a' Bhonnaich*) on 23 and 24 June 1314 was a [Scottish](#) victory by King of Scots [Robert the Bruce](#) against the army of King [Edward II of England](#) in the [First War of Scottish Independence](#). Though it did not bring overall victory in the war, which would go on for 14 more years, it was a landmark in Scottish history
- [https://en.wikipedia.org/wiki/First War of Scottish Independence](https://en.wikipedia.org/wiki/First_War_of_Scottish_Independence)

1364, 17392

PAUSED



Robert the Bruce



Edward 2

Battle of Zana

- The **Battle of Zama**—fought in 202 BC near [Zama \(Tunisia\)](#)—marked the end of the [Second Punic War](#). A [Roman](#) army led by [Publius Cornelius Scipio Africanus](#) (Scipio), with crucial support from Numidian leader [Masinissa](#), defeated the [Carthaginian](#) army led by [Hannibal](#).
- https://en.wikipedia.org/wiki/Battle_of_Zama

FOUR

Time Commanders

Press **F11** to exit full screen

Home Episodes Clips



The Battle of Zama: Finally the Romans launch their attack

A team of wrestlers try to rewrite history by keeping Scipio from taking Carthage.

5 December 2016

⌚ 3 minutes

This clip is from



Time Commanders
Episode 1

<http://www.bbc.co.uk/programmes/p04jrryf>

Assassins Creed





Games and Exhibits

- Learning curve
- Budget
- Quantity vs Quality
- Goals: learning, engagement, victory?
- Authenticity
- Locality

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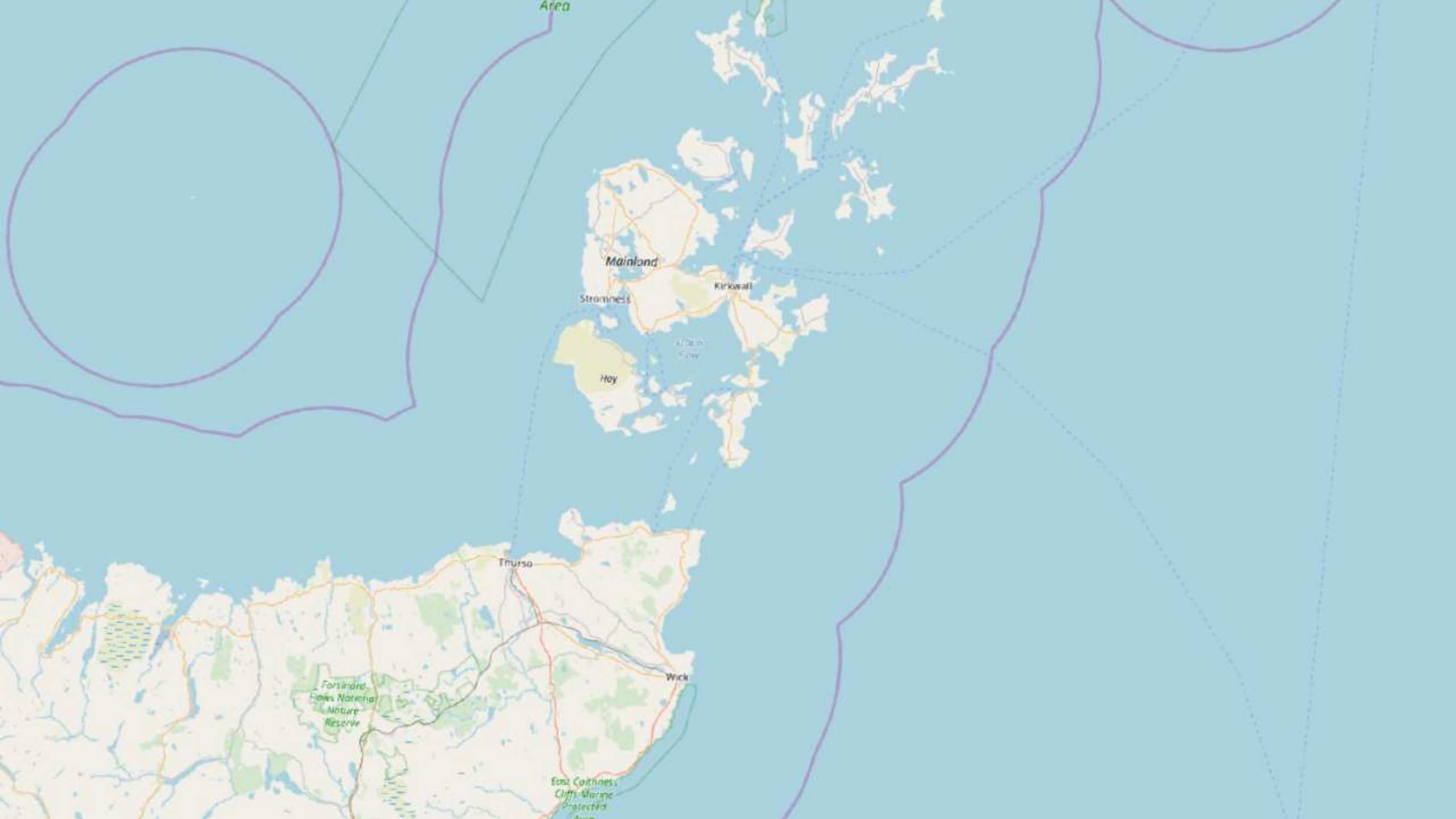
In the Landscape

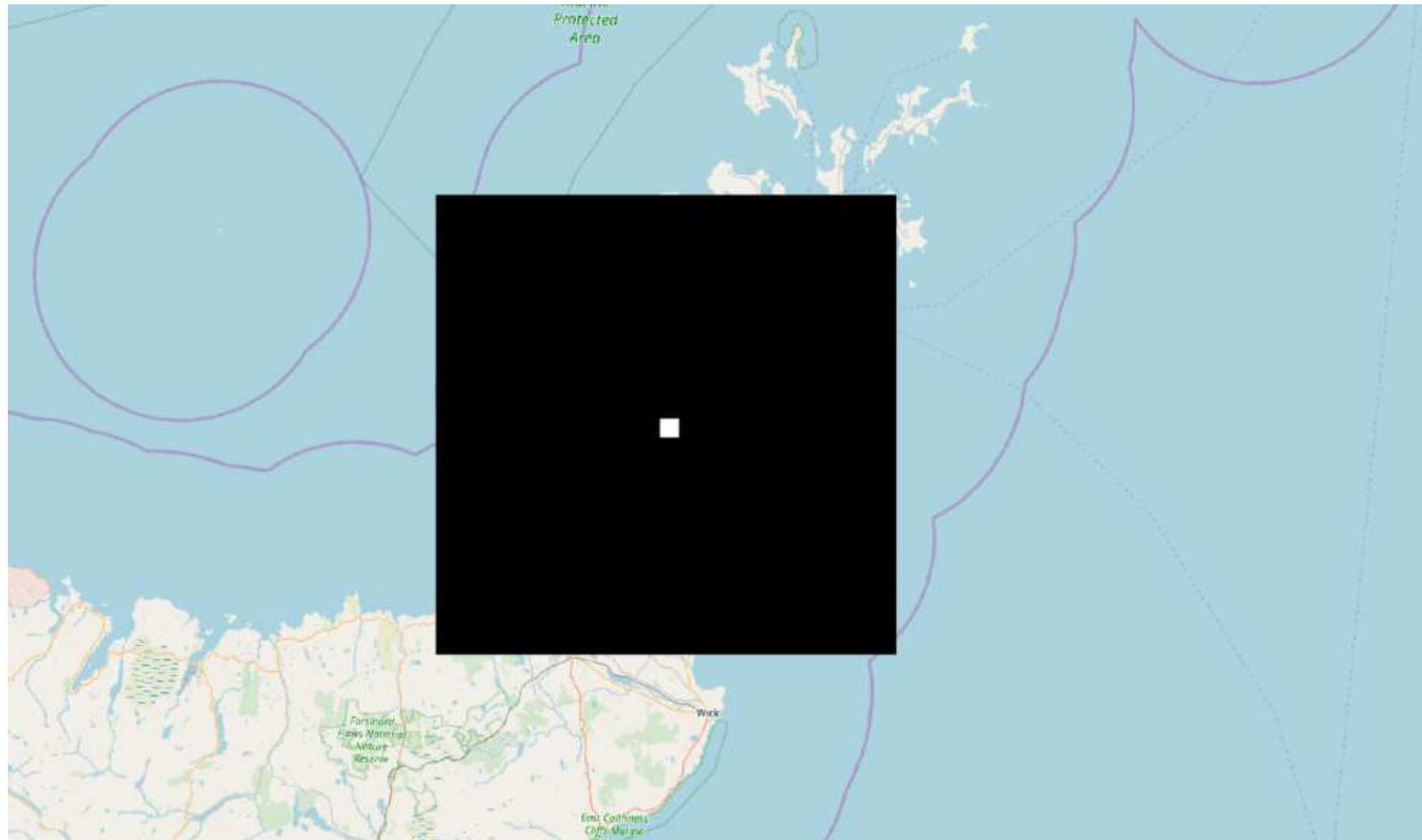


UNREAL 4 Kite Demo

- The kite cinematic created in Unreal Engine 4 in 2015 features a diverse and beautifully realized 100 square mile landscape.
- Generated in real-time by Unreal Engine 4 at 30fps and includes:
 - fully dynamic lighting,
 - cinematic post effects
 - procedurally placed trees and foliage.
- Running on Nvidia's GTX Titan X, which has a12GB framebuff"

<https://www.youtube.com/watch?v=BI-dzAdHHAA>





Parameters

Log

Input layers

0 elements selected



- ☐ Grab pseudocolor table from first layer
- ☐ Place each input file into a separate band

Output data type

Float32



► Advanced parameters

Merged

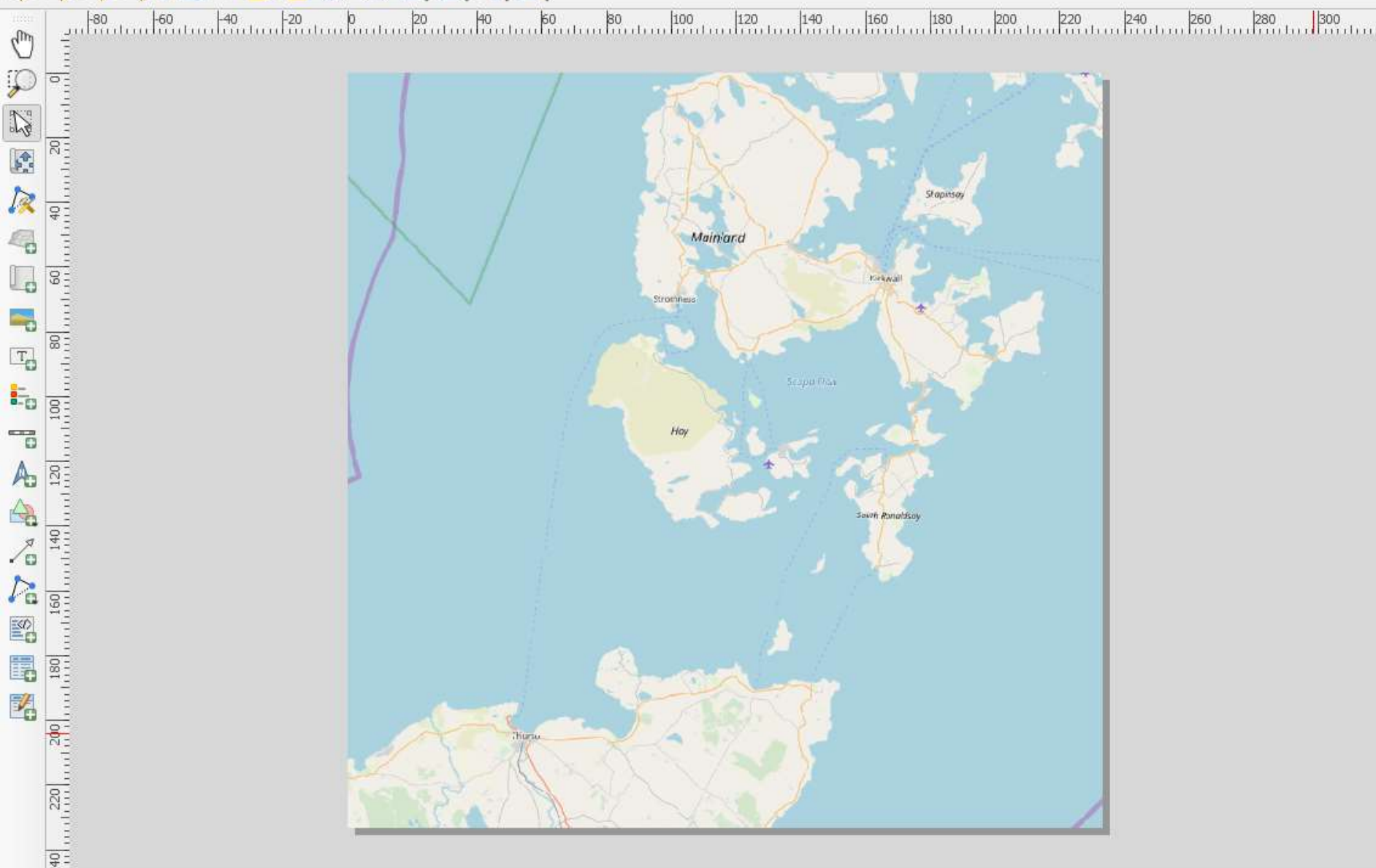
[Save to temporary file]



- ☒ Open output file after running algorithm

GDAL/OGR console call

```
python3 -m gdal_merge -ot Float32 -of GTiff -o C:/Users/admin/AppData/Local/Temp/processing_PlsUCF/33194cd4137844a5b30fb0574003d78f/OUTPUT.tif --optfile C:/Users/admin/AppData/Local/Temp/processing_PlsUCF/41dad7531d1845938532b8945ca0228f/mergeInputFiles.txt
```



Items

Undo History

Items

Item

☒

☐

☐

Map 1

Layout

Item Properties

Guides

Layout

▼ General Settings

Reference map

Map 1

▼ Guides and Grid

Grid spacing

10.00

mm

Grid offset

x: 0.00

y: 0.00

mm

Snap tolerance

5 px

▼ Export Settings

Export resolution

300 dpi


☐ Print as raster


☐ Always export as vectors

☐ Save world file

x: 298.199 mm y: 203.932 mm page: 1 70.4%

Terrain Creation
You might choose to put your generators here.


■ File Input


■ File Input


■ Constant


■ File Input


■ Combiner


■ Select Height


■ Select Slope


■ Select Height


■ Select Slope


■ Select Height


■ Router


■ Combiner


■ Router


■ Router


■ Height Output


■ Height Output


■ Height 2km


■ Height 32km


■ Height 80km



■ Cliff 2km

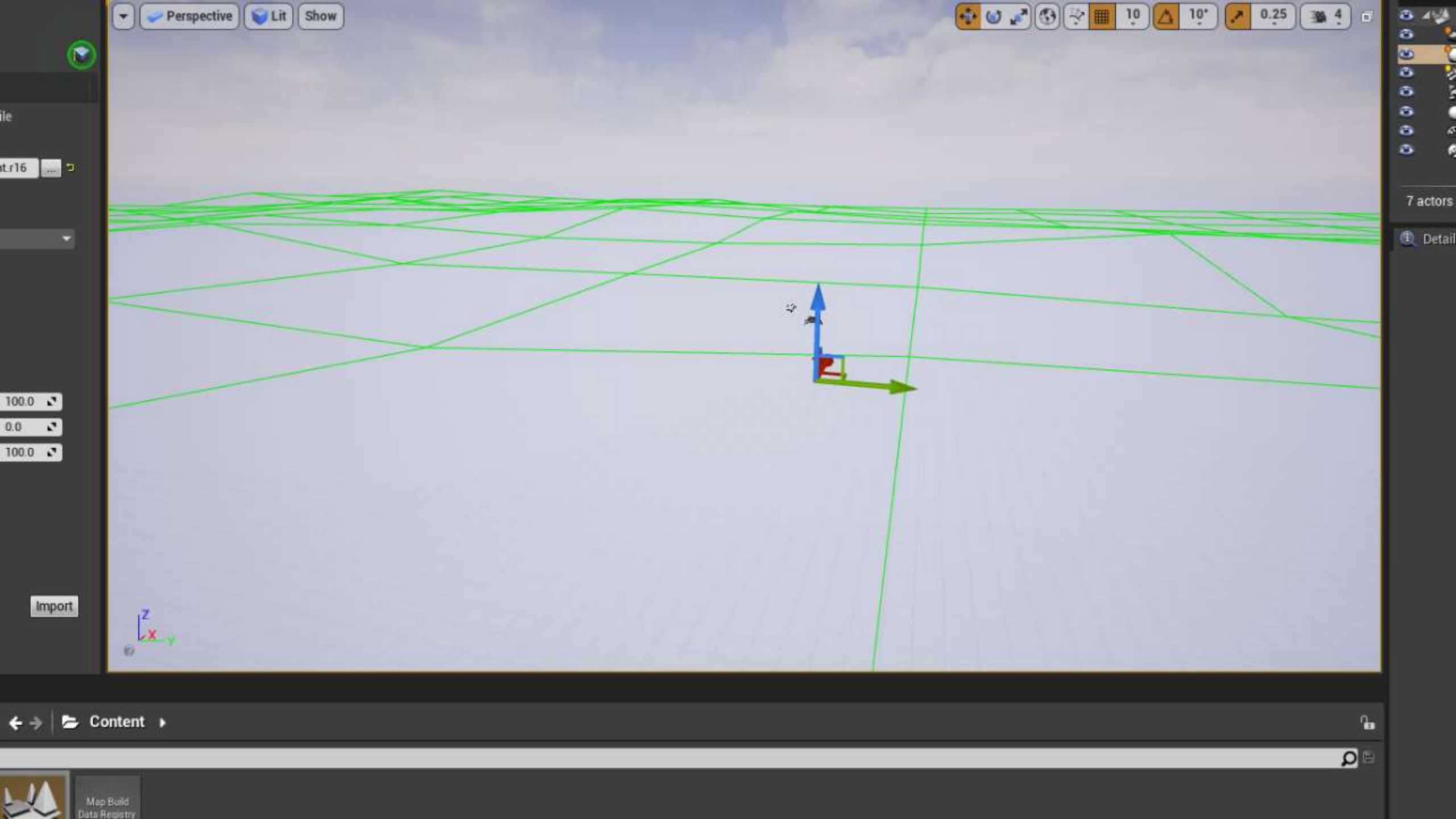

■ Cliff 32km


■ Cliff 80km


■ Woods 2km


■ Woods 32km


■ Woods 80km





Save Current



Source Control



Content



Marketplace



Settings



Blueprints



Cinematics



Build



Compile



Play



Launch



Perspective



Lit

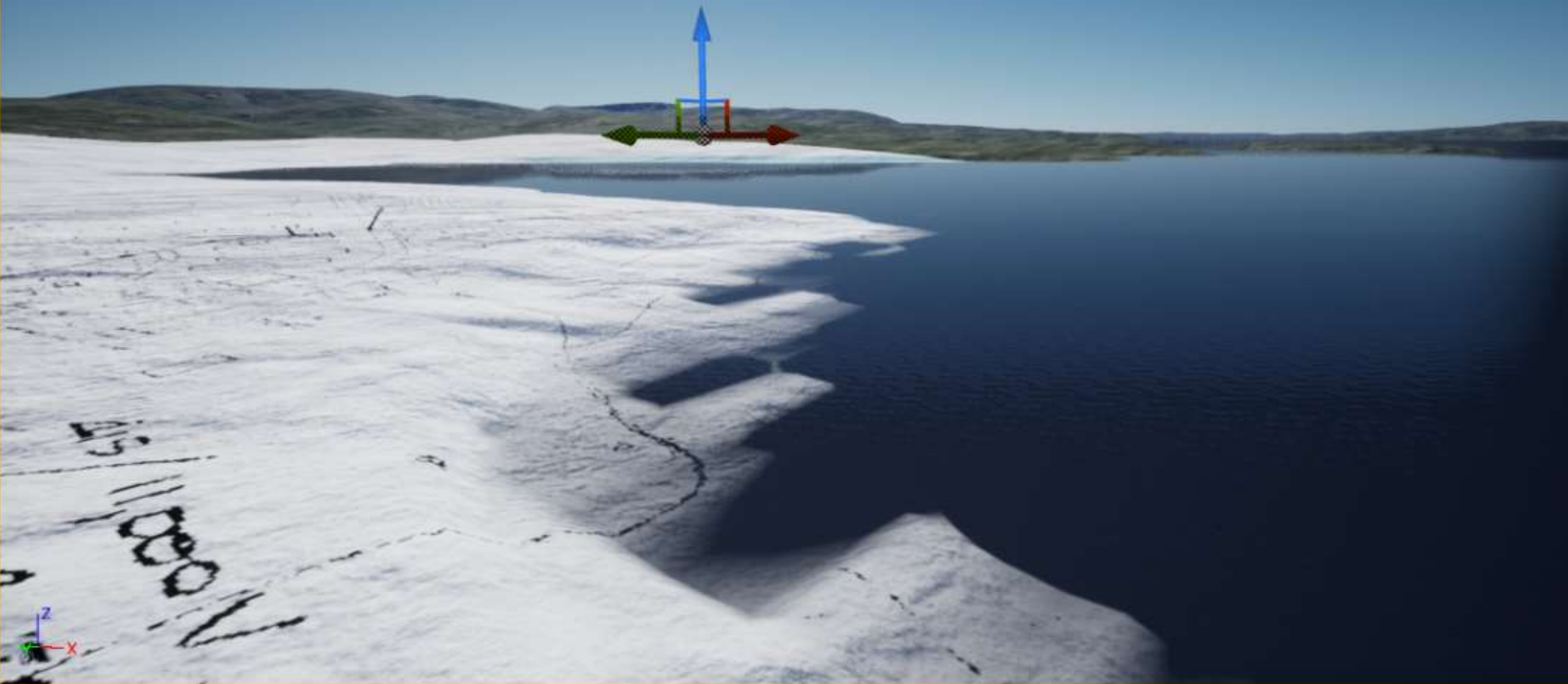


Show



LIGHTING NEEDS TO BE REBUILT (84 unbuilt objects)

'DisableAllScreenMessages' to suppress



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Models

- Make them through modelling
- Make them through digitisation
- Library
- Buy them from a market
- Library



Rendering

Create jaw-dropping renders thanks to Blender's powerful high-end production path tracer.



Modeling

Sculpting, retopology, modeling, curves. Blender's modeling toolset is extensive.

[READ MORE >](#)



Animation

Designed for animation, Blender is being used for award-winning shorts and feature films.

[READ MORE >](#)



blender®

<https://www.blender.org/support/tutorials/>



Game Creation

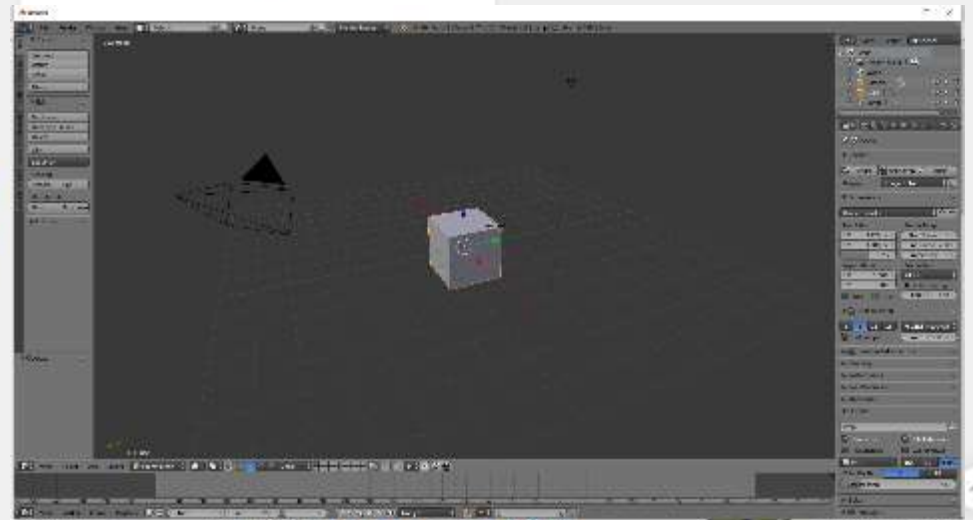
DEPRECATED

Blender logic enables quick game prototyping as well as interactive



Video Editing

The Video Editor offers a range of basic yet very efficient tools.



Think in 3D. Draw in 3D.

Have some fun while you're at it.

[Get SketchUp](#)
[What's New?](#)
[Need Help?](#)


GET GOOD FAST



CREATE 2D DOCUMENTS



FIND 3D MODELS

Get good fast

There's a reason SketchUp is synonymous with friendly and forgiving 3D modeling software: we don't sacrifice usability for the sake of functionality. Start by drawing lines and shapes. Push and pull surfaces to turn them into 3D forms. Stretch, copy, rotate and paint to make anything you like.



Watch a getting started video.

Learn by watching our beginner, intermediate, and expert video tutorials.



Learn about SketchUp's tools.

Our knowledge center is a fully loaded 3D modeling encyclopedia.



Ask a question in the SketchUp Forums.

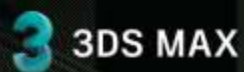
We use 'cookies' to help personalize and improve your experience.
By continuing to use this site, you are agreeing to our use of cookies.

[Agree](#)
[Learn More](#)

Open World Demo Collection

- For larger assets such as rocks, ground tiles, cliffs faces and tree trunks:
 - Reconstruction was performed directly from photographs using a process called photogrammetry.
 - These assets were then put through a 'de-lighting' process to make them suitable for use in any lighting scenario.
 - Specular and roughness maps were then created
 - Game-optimized assets were generated with
 - normal maps
 - LODs
 - collision meshes.

<https://www.unrealengine.com/marketplace/en-US/slug/open-world-demo-collection>



3D design software for modelling, animation and rendering

3ds Max® 3D modelling and rendering software helps you to create massive worlds in games, stunning scenes for design visualisation and engaging virtual reality (VR) experiences.

[DOWNLOAD FREE TRIAL](#)[SUBSCRIBE](#)[PLAY VIDEO \(2.04 MIN.\)](#)

Are you a student? [Get it free for 3 years \(US site\)](#)

Scenes courtesy of Square Enix, Inc. / Eidos Montreal® & Urban Simulation S.L.

Purchase by phone
0808 164 9409 (free call)

Subscriber benefits
Includes support and more

System requirements
Available for:

Compare releases
2018 vs. prior releases

Save 25% on subscriptions with trade in and switch back option

[Save now](#)

Why 3ds Max?

[View all features](#)



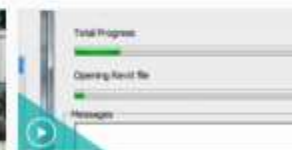
Easy, powerful modelling
Create, shape and define a range of environments and detailed characters.
[See all 3D modelling features](#)



High-end rendering
3ds Max works with most major renderers including Arnold, V-Ray, Ray and mental ray - to help create striking scenes and visuals.
[See all 3D rendering features](#)



Realistic 3D animation
Build imaginative characters and realistic scenes in games and architecture.
[See all 3D animation features](#)



Flexible interoperability
Revit, Inventor and Fusion 360, as well as SketchUp, Unity and Unreal all work with 3ds Max. (video: 3.05 min.)
[See all UI, workflow and pipeline features](#)

What's new

3ds Max Interactive
Build immersive architectural visualisations with the combined power of 3ds Max and a virtual reality engine in one place.

Arnold for 3ds Max
The MAXtoA plug-in is integrated into 3ds Max, giving you access to Arnold's latest features.

3ds Max Fluids
Create realistic liquid behaviours directly in 3ds Max.

Spline workflows
Create and animate geometry in several intuitive ways with new and enhanced spline tools.

[See 3ds Max in action](#)

Digitizing Artefacts





Overview

- Virtual Reality: Past, Present and Future
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This is a detail of the Collegiate Church of St Mary (also known as Kirk O' Field) as it appeared in the late 1560s. Like many other Catholic churches, Kirk O'Field was damaged during Scotland's Reformation crisis of 1559-1560.

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What is a game engine

A game engine is the software that provides game creators with the necessary set of features to build games quickly and efficiently.

- Graphics
- Audio
- Networking
- Physics
- Graphical User Interface
- Scripting

Game Engines

- Lots of them
- Virtual Worlds
- UNITY
- UNREAL ENGINE 4
 - Unreal Engine 5 out late 2021
- Minecraft





UPDATED TEXTURES

CHECK OUT OUR NEW PIXELS!
TELL US WHAT YOU THINK!



MARKETPLACE

AN EVER-GROWING LIBRARY
OF COMMUNITY CREATIONS!



MINECRAFT: STORY MODE

AN EPISODIC ADVENTURE
SERIES FROM TELLTALE
GAMES

[ALL](#)[CULTURE](#)[INSIDER](#)[MERCH](#)[NEWS](#)

Have an Adventure

Discover incredible experiences, fascinating people, and vibrant communities in this vast virtual world

[LEARN MORE](#)

[JOIN FREE](#)

Explore Second Life

Creativity

Entertainment

Social

Real Estate

Education

Business

Main Page



Language: [English](#) [Deutsch](#) [Español](#) [Français](#) [Italiano](#) [日本語](#) [한국어](#) [Nederlands](#) [Português](#) [Pycckий](#)

What is OpenSimulator?

OpenSimulator is an open source multi-platform, multi-user 3D application server. It can be used to create a virtual environment (or world) which can be accessed through a variety of clients, on multiple protocols. It also has an optional facility (the [Hypergrid](#)) to allow users to visit other OpenSimulator installations across the web from their 'home' OpenSimulator installation. In this way, it is the basis of a nascent distributed Metaverse.

OpenSimulator allows virtual world developers to customize their worlds using the technologies they feel work best - we've designed the framework to be easily extensible. OpenSimulator is written in [C#](#), running both on Windows over the [.NET Framework](#) and on Unix-like machines over the [Mono](#) framework. The source code is released under a [BSD License](#), a commercially friendly license to embed OpenSimulator in products. If you want to know about our development history, see [History](#).

Out of the box, OpenSimulator can be used to simulate virtual environments similar to [Second Life](#), given that it supports the core of SL's [messaging protocol](#). As such, these virtual worlds can be accessed with the regular SL [viewers](#). However, OpenSimulator does not aim to become a clone of the Second Life server platform. Rather, the project aims to enable innovative feature development for virtual environments and the Metaverse at large.

OpenSimulator is getting more stable over time but is still a high complex software system that can suffer various bugs and quirks, handle with care!

Features

- Supports online, multi-user 3D environments as small as 1 simulator or as large as thousands of simulators
- Supports 3D virtual spaces of variable size within one single instance
- Supports multiple clients and protocols - access the same world at the same time via multiple protocols
- Supports realtime Physics Simulation, with multiple engine options including Bullet and ODE
- Supports clients that create 3D content in real time
- Supports inworld scripting using including LSL/OSSL and C#
- Provides unlimited ability to customize virtual world applications through the use of [scene plugin modules](#).

For a more extensive list, see the [Feature Matrix](#).

Running an OpenSimulator-Based World

- [Downloading OpenSimulator](#)
- [Required Dependencies](#)
- [Building OpenSimulator](#)
- [Configuring and Running OpenSimulator](#)
- [Server Commands](#)
- [Frequently Asked Questions](#)

Participating in the OpenSimulator Community

OpenSimulator is an [open source](#) project, and is powered by the community members that devote time and energy to the effort. There are many ways to participate and contribute to the community:

- Participate via [IRC](#). There are channels for users and developers.
- Participate via the [Mailing Lists](#). There are mailing lists for OpenSimulator use and development, as well as broader topics such as education and the Hypergrid.
- [Contribute to this wiki](#), making the OpenSimulator documentation even better. Don't be afraid of making mistakes - they can be easily corrected.
- Report [bugs](#) or submit [patches](#) via our [mantis bug tracker](#). If you're submitting code, please read through the [Contributions Policy](#) before starting.
- Create an OpenSimulator related project hosted on the [Forge](#) or [elsewhere](#) on the web. In the forge there are over a dozen registered projects, and it's a great way to further extend the OpenSimulator community.
- Participate to open content creation for OpenSimulator. More details at [Artist Home](#).
- Participate in the weekly [Office Hours](#) for OpenSimulator development.

Pages by Category:

[Getting Started](#) , [Support](#) , [Technical Reference Pages](#) , [Help](#) , [Configuration Pages](#) , [User's Pages](#) , [Development Pages](#) , [Scripts](#) , [Recent Wiki Changes](#)

opensimulator.org website hosting kindly provided by



Downloads

- [Download](#) [Binaries Zip \(0.9.0.0\)](#)
- [Download](#) [Binaries Tarball \(0.9.0.0\)](#)
- [Download](#) [Source Zip \(0.9.0.0\)](#)
- [Download](#) [Source Tarball \(0.9.0.0\)](#)
- [Download](#) [Olive debiso \(0.9.0.0\) Binary, all OSs](#)

[email feedback](#)

Other downloads may be found at either the [Download page](#), or the [OpenSim Release Repository](#)

Digital reconstruction

- Landscapes
- Digital Models
- Digitisation
- Animation
- Characters
- Interpretation



Unity 2017: The world-leading creation engine

Unity 2017 introduces new features that help teams of artists and developers build experiences together. Powerful new tools, such as Timeline and Cinemachine, empower artists to create cinematic content and gameplay sequences without the need of an engineer. Creators can now spend more time doing, less time queueing.

Personal

Free

For beginners, students, and hobbyists

Plus

\$35/month

For serious creators

Pro

\$125/month

For professionals and studios

[Get Unity](#)

New tools. More creativity.

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Make Something Unreal

with the most powerful creation engine

GET STARTED NOW

EPIC GAMES
SIZZLES HIGGS 2007

PROVEN POWERFUL TECHNOLOGY

Uncompromised Quality, Proven Results

Unreal Engine is a complete suite of creation tools designed to meet ambitious artistic visions while being flexible enough to ensure success for teams of all sizes. As an established, industry-leading engine, Unreal delivers powerful, proven performance that you can trust.

Getting Started in Unreal 4

<https://docs.unrealengine.com/>

Operating System	Windows 7/8 64-bit
Processor	Quad-core Intel or AMD, 2.5 GHz or faster
Memory	8 GB RAM
Video Card/DirectX Version	DirectX 11 compatible graphics card

Operating System	Windows 7/8 64-bit
DirectX Runtime	<u>DirectX End-User Runtimes (June 2010)</u>



UNREAL ENGINE

FORTNITE

PARAGON

UNREAL TOURNAMENT

SHADOW COMPLEX

MODDING

Alenhdn



Community

Learn

Marketplace

Library

Installing 46%
Unreal Engine 4.19.0



Documentation



Video Tutorials



Community Wiki



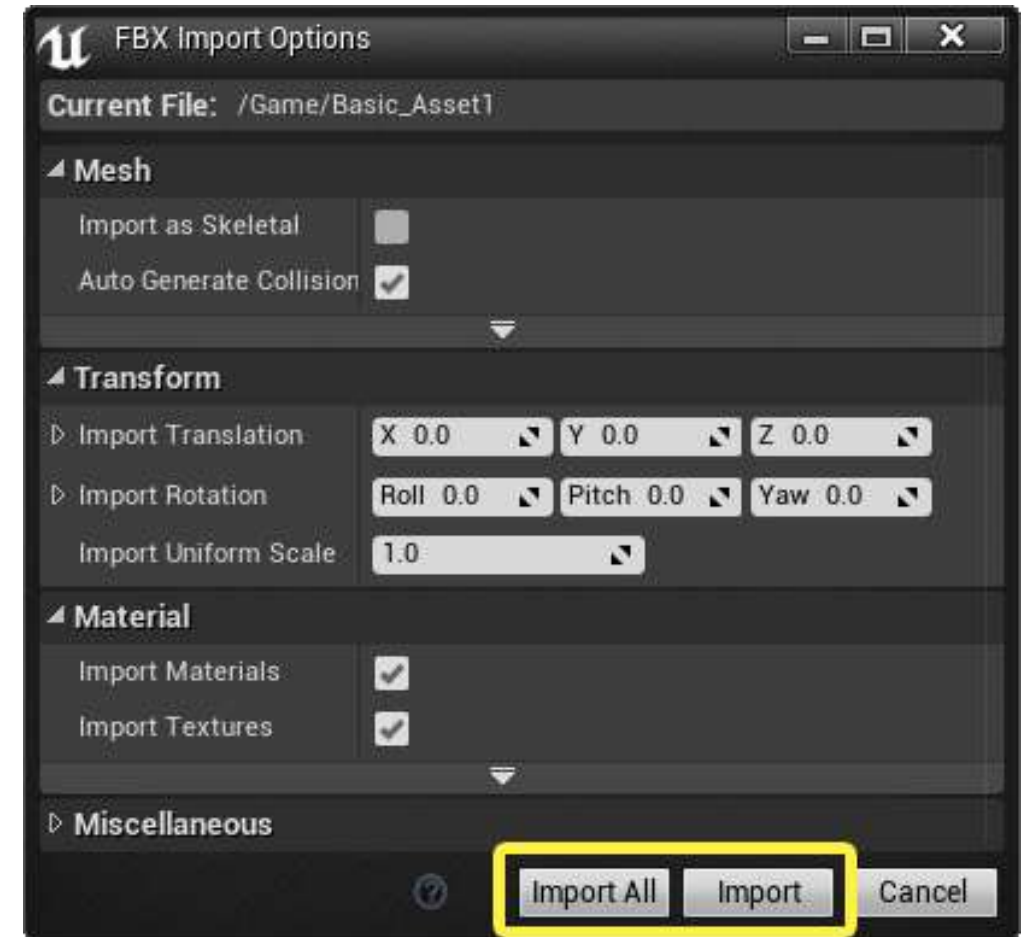
Engine Feature Samples



UNREAL Importing digital assets

- Import
 - Static meshes
 - Audio
 - Skeletal Meshes
 - Textures
 - Animations
 - Level of detail

<https://docs.unrealengine.com/en-us/Engine/Content/ImportingContent>



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The visitor journey

- Deciding to visit
- Enhancing the Experience
- Sharing and recommendations

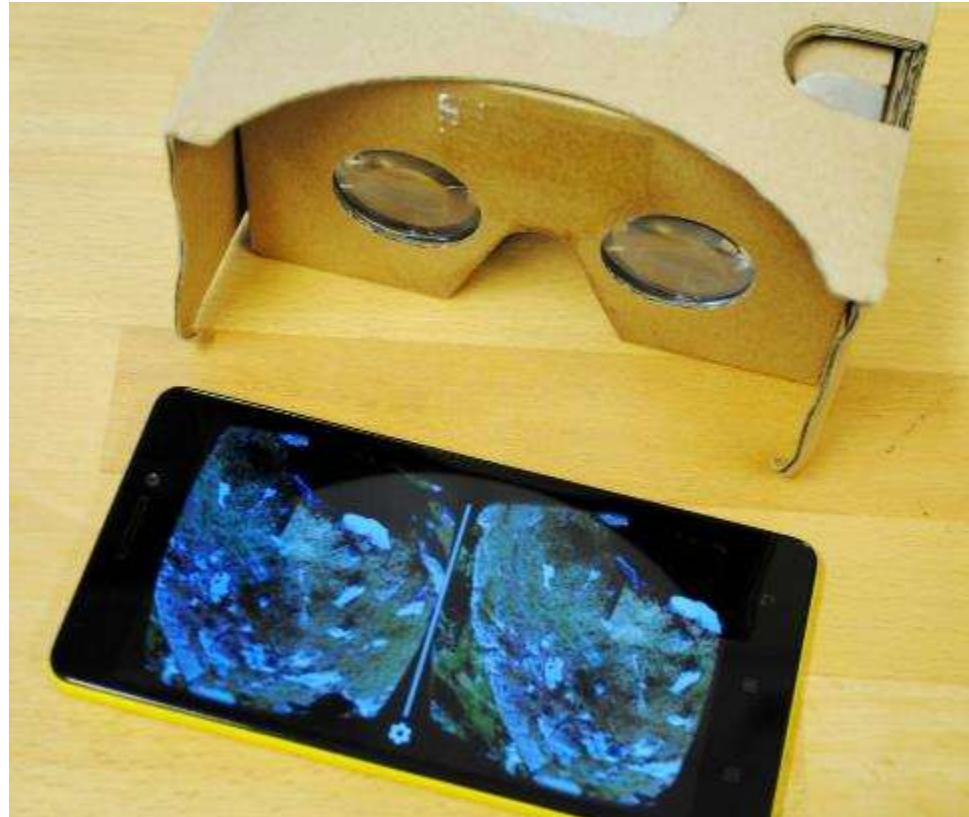
Virtual Reality Application Types

- 3D Models
- Virtual Time Travel
- Museum without Walls
- Virtual Visits

Applications

- Mobile Virtual Reality
- Social Archive Sites
- Virtual Reality Exhibits

Immersive 3D Apps





LORDS OF THE ISLES

15TH CENTURY FINLAGGAN



INTRODUCTION

MODELLING THE PAST

WATCH VIDEO

INSTRUCTIONS



Social Media - Social Archive



Sketchfab

Roundme Virtual Tours



Tour by Open Virtual

ST KILDA



Head Mounted Displays





MOVE INTO VIRTUAL REALITY...

The Virtual Reality experience has been created to help you explore hidden landscapes, immerse yourself in history, take a walk and travel back in time to see what life was like in the Tamar Valley and Cornwall.

Landscape and buildings have been recreated using both archaeological and survey data to help make this an immersive experience you will not forget!

STEP 1
Put on the Virtual Reality Headset to begin your experience

STEP 2
Fit the headset to your head with the adjustable strap at the top. The experience will begin once the headset is in place

Once you have experienced these virtual landscapes, why not go out to discover and explore the special landscapes of Tamar Valley? The Tamar Valley is a beautiful area with many hidden landscapes and buildings. We hope you will not forget!



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STEP 3
Remember the 3D 180 degree experience, look at around you

STEP 4
Use the Xbox controller for more detailed navigation and to look through the experience

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Case Studies

- **Moredun Hillfort**
 - **Multimodal interaction VR exhibition during *Picts & Pixels***
- The Illicit Still Experience
 - Installed VR exhibition
- Finlaggan
 - Installed VR exhibition
 - VR mobile app for remote access
- Skriðuklaustur
 - Installed VR exhibition
 - 3D objects placed within reconstruction – interactive Oculus Go



CONCIEFFE

[illegible]



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The Illicit Still *Experience*



The Illicit Whisky Experience: where virtual reality an' whisky gang thegither!

Context

- Managed by the TGDT on behalf of the Tomintoul and Glenlivet community.
- Complete refurbishment into Tomintoul & Glenlivet Discovery Centre
- Heritage Lottery Fund (through TGLP) and Leader funded
- Re-opened in April 2018
- First season 11,000 visitors



©Stewart Grant/TGLP



Exhibit Structure

- Interactive and immersive
- Recreation of a lost settlement, Ballanloan
- Celebrates the landscapes and the heritage



**The Illicit
Whisky
Story**



**Tomintoul
& Glenlivet
Today**



**The Illicit
Whisky
Tour**



**Tomintoul
& Glenlivet
Videos**





<https://roundme.com/tour/226570/view/716875/>



Tour by Smart History



Field



Inside the Malt Kiln



Cave - Illicit Still



Cottage - Outside



Cottage - Inside





Installation





Impact and results



Case Studies

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LORDS OF THE ISLES

THE HISTORY OF THE ISLES





LORDS OF THE ISLES

15TH CENTURY FINLAGGAN



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Northern Periphery and
Arctic Programme
2014-2020



EUROPEAN UNION
Investing in your future
European Regional Development Fund



University of
St Andrews

