Connected Culture and Natural Heritage in the Northern Environment

Game Engines

Northern Periphery and Arctic Programme
2014–2020

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Learning, Games and Heritage

Games and Virtual Worlds

Digital Reconstruction

Game Engines and Unreal 4

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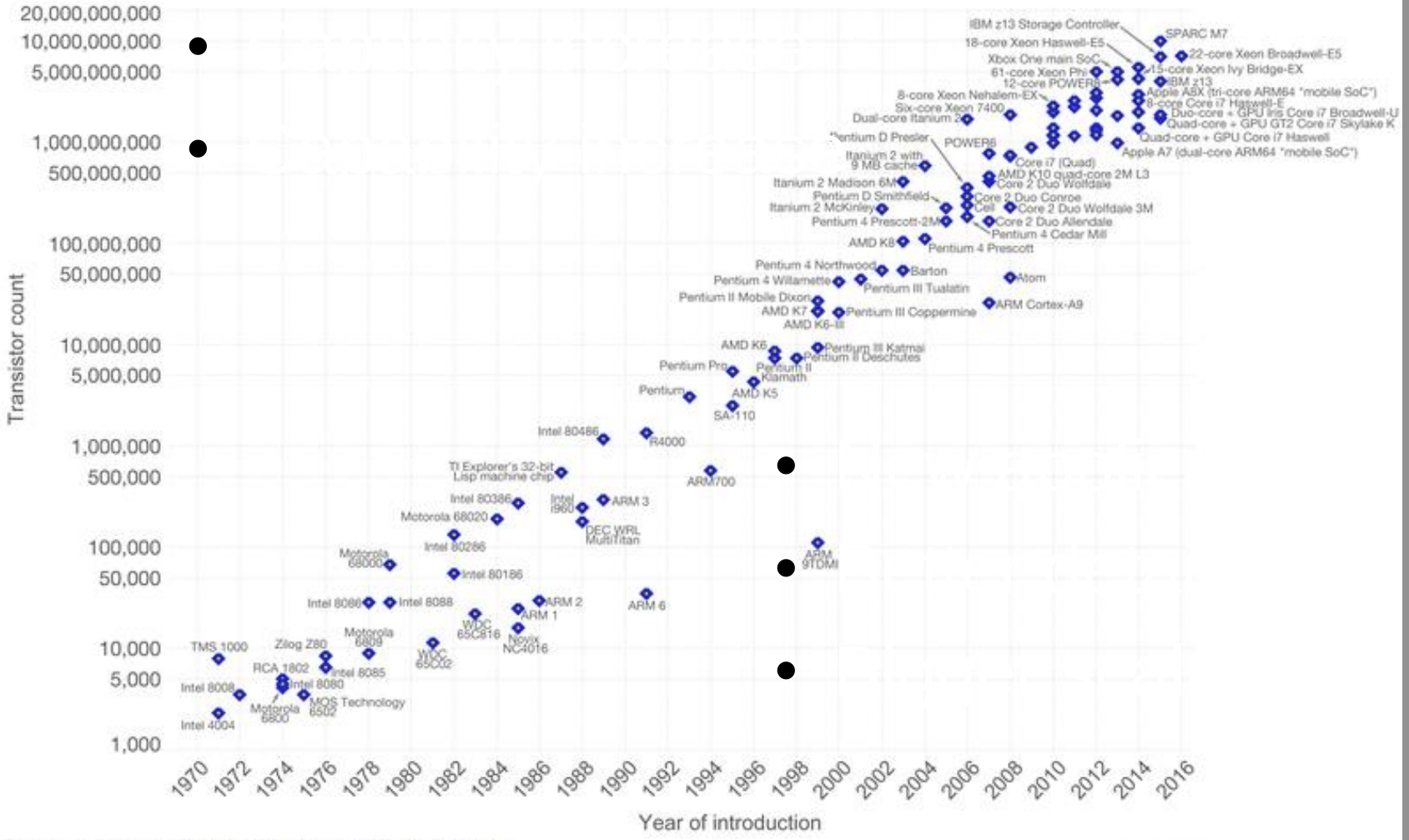
Learn through Experience

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



Data source: Wikipedia (https://en.wikipedia.org/wiki/Transistor_count)
The data visualization is available at OurWorldinData.org. There you find more visualizations and research on this topic.

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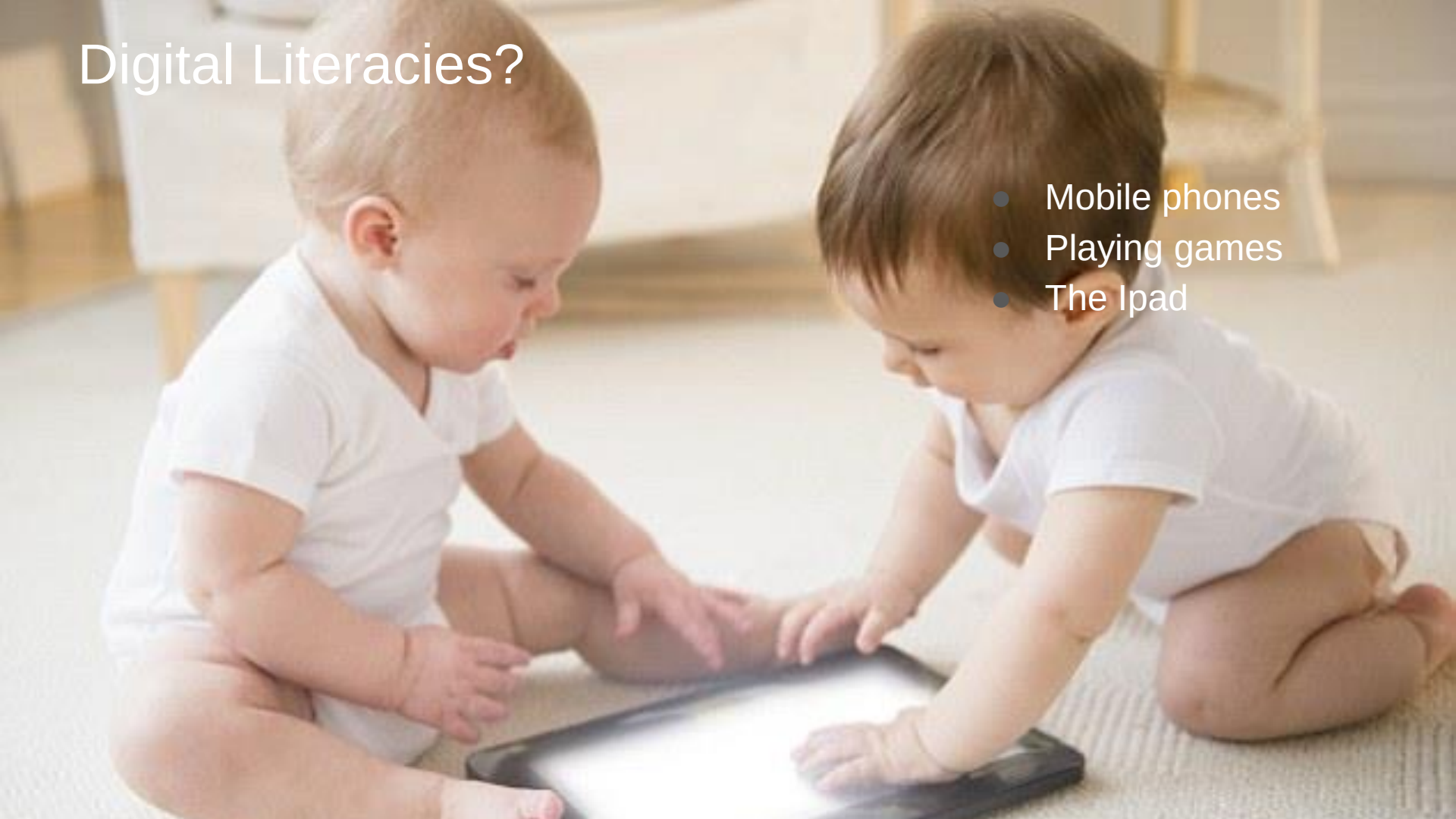
What can we do now?

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

Digital Literacies?



- Mobile phones
- Playing games
- The Ipad

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Games for Heritage

- Total War series
- Assassins Creed Series
- Minecraft

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PAUSED

Robert the Bruce

Edward 2

FOUR Time Commanders

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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

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Game components

- Landscapes
- Digital Modelling
- Digitisation
- Animation

Open Source 3D creation. Free to use for any purpose, forever.

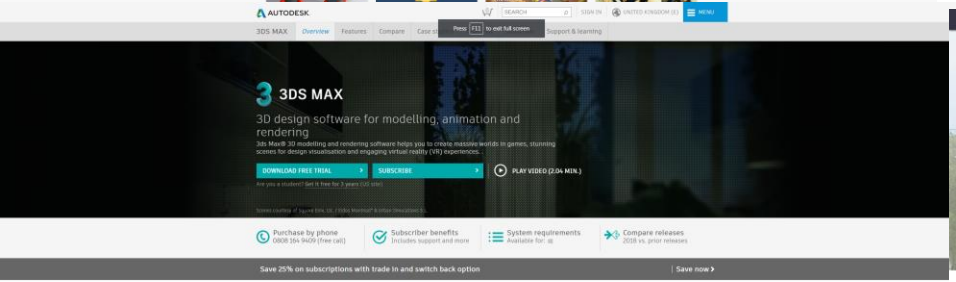
About

Blender is the free and open source 3D creation suite. It supports the entirety of the 3D pipeline—modeling, rigging, animation, simulation, rendering, compositing and motion tracking, even video editing and game creation.

Get Involved

Blender is a public project, made by hundreds of people from around the world; by studios and individual artists, professionals and hobbyists, scientists, students, VFX experts, animators, game artists, modders, and the list goes on.

Blender.org News



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, Iray 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: 1:00 min.)
See all UI, workflow and pipeline features

What's new

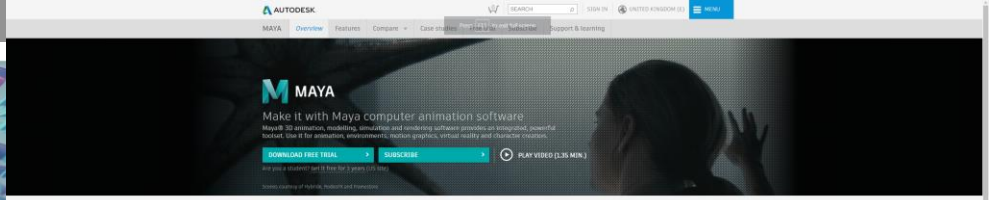
3ds Max Interactive
Build immersive architectural visualisations with the combined power of 3ds Max and a virtual reality engine in one place.

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.

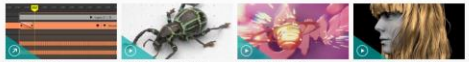
Spline workflows
Create and animate geometry in several intuitive ways with new and enhanced spline tools.

See 3ds Max in action



Maya features

View all features



Animation workflow
Animating in Maya is easier and faster with new features such as Time Editor.

Arnold integrated with Maya
Use Arnold RenderView to view scene changes in real time, including lighting, materials and camera. (video: 1:37 min.)

Motion Graphics toolset
Quickly create complex procedural effects and animations with instanced objects. (video: 1:31 min.)

Interactive grooming workflow (XGen)
Intuitive brush-based grooming tools give you greater control and accuracy for styling and posing hair and fur. (video: 1:33 min.)

What's new

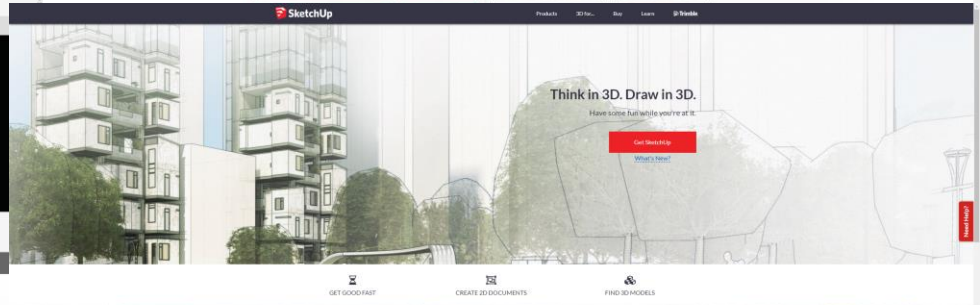
UV editor workflow, look and feel
The UV Editor interface has been overhauled and includes a new UV Toolkit with better tools and functionality.

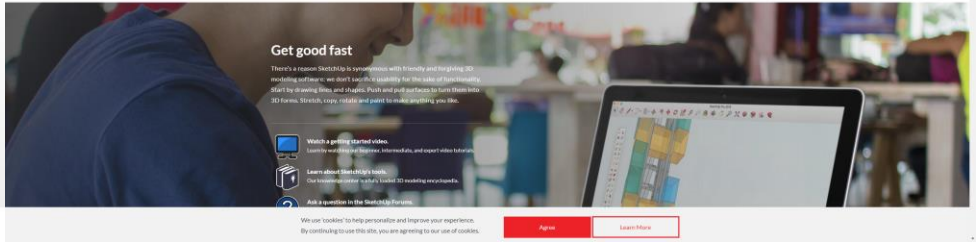
Clump modifier for interactive grooming
Generate realistic clumping effects in hair and fur for more natural-looking hair.

After Effects live link
Create a live link between Maya and Adobe® After Effects® to make real-time changes and view scenes simultaneously.

Additional MASH nodes
The MASH toolset gives you new nodes (curve, signal, world, placer and more), as well as updates to existing nodes.

See what Maya users are saying





Digital Artefacts

In the Landscape

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Game Engines

- Lots of them
- Virtual Worlds
- UNITY
- UNREAL 4
- Minecraft

List of game engines

From Wikipedia, the free encyclopedia

Game engines are tools available for game designers to code and plan out a game quickly and easily without building one from the ground up. Whether they are 2D or 3D based, they offer tools to aid in asset creation and placement.

Engines [edit]

Note: The following list is not exhaustive. Also, it mixes **game engines** with **rendering engines** as well as **API bindings** without any distinctions.

Name	Primary programming language	Scripting	Cross-platform	2D/3D oriented	Target platform	Notable games	License	Notes and references
4A Engine			Yes	3D	Windows, OS X, Linux, PlayStation 3, PlayStation 4, Xbox 360, Xbox One	*Metro 2033*, *Metro: Last Light*	Proprietary	
A-Frame (VR)	HTML, JavaScript	JavaScript	Yes	3D	Cross-platform	A-Painter[1]	MIT	Open source Entity component system WebVR framework
Adventure Game Interpreter		C style	Yes	2D	DOS, Apple SOS, ProDOS, Classic Mac OS, Atari TOS	List	Proprietary	
Adventure Game Studio	C++	AGSScript	Yes	2D	Windows, Linux	Chzo Mythos, The Blackwell Series	Artistic 2.0	Mostly used to develop third-person pre-rendered graphic adventure games, one of the most popular for developing amateur adventure games
Alamo			Yes	3D	Windows, OS X, Xbox 360	*Star Wars: Empire at War*, *Star Wars: Empire at War: Forces of Corruption*, *Universe at War: Earth Assault*	Proprietary	
Aleph One	C++	Lua, Marathon markup language	Yes	2.5D	Windows, Linux, OS X	Aleph One (*Marathon* remake)	GPL	FPS engine
Allegro	C	Ada, C++, C#, D, Lisp, Lua, Mercury, Pascal, Perl, Python, Scheme	Yes	2D	Windows, Linux, OS X, iOS, Android, Raspberry Pi, DOS	Factorio[2]	zlib	Graphics, audio, input
Antiryad Gx		C, C++, Gel	Yes	3D	Windows, Mac OS, Linux, iOS, Android, AmigaOS, AROS, MorphOS, NACL		Proprietary	
Anura	C++, FFL[3]	FFL[3]	Yes	2D	Windows, Linux, OS X, iOS, Android, BlackBerry 10	Frogatto & Friends, Argentum Age[4], Cube Trains[5]	zlib	[citation needed]
Anvil	C++, C#		Yes	3D	Windows, PlayStation 3, PlayStation 4, PlayStation Vita, Wii U, Xbox 360, Xbox One	List	Proprietary	
AppGameKit	C++, BASIC	C++, AGK BASIC	Yes	2D, 3D	Windows, Mac, iOS, Android, HTML5, Raspberry Pi	Echoes, Driving Test Success Apps, Squashies	Proprietary	
Ardor3D	Java		Yes	3D	Cross-platform		zlib	Fork of jMonkeyEngine 2.0
Aurora toolset	C++	NWScript	Yes	3D	Windows, Linux, OS X	*Neverwinter Nights*	Proprietary	
BigWorld		Python	Yes	3D	Windows, Linux, Xbox 360, PlayStation 3	List	Proprietary	
Blend4Web	JavaScript, Python, C, C++	JavaScript	Yes	3D	WebGL, Windows, Linux, OS X, iOS, Android	*Experience Curiosity*, *Petigor's Tale*, *Back to the Middle Ages*	GPLv3 or commercial	Game content, including graphics, animation, sound, and physics, is authored in the 3D modeling and animation suite Blender[6]
Blender	C, C++	Python	Yes	2D, 3D	Windows, Linux, OS X, Solaris	*Yo Frankie!*, *Sintel The Game*, *ColorCube*	GPL	2D/3D game engine packaged in a 3D modeler with integrated Bullet physics library[7][8]
Bork3D Game Engine	C++		Yes	3D	IOS, OS X, Windows	List	BSD	
BRender			Yes	3D	Windows, DOS, PlayStation	*Carmageddon*, *FX Fighter*, *I-War (Independence War)*.	Proprietary	
Build engine	C		Yes	2.5D	Windows, Linux, OS X, DOS	*Duke Nukem 3D*, *Shadow Warrior*, *Blood*, *Redneck Rampage*	Custom, free non-commercial use	FPS engine; 2.5D, 2D grid base geometry	
Buildbox	C++		Yes	2D	Windows, OS X, iOS, Android	*Ball Jump*, *Sky*, *The Line Zen*, *Phases*	Proprietary	Drag and drop game builder without scripting
C4 Engine			Yes	3D	PlayStation 4, PlayStation 3, Windows, OS X, Linux, iOS	List	Proprietary	Retired, no longer available for licensing[9]
Cafu Engine	C++	Lua	Yes	3D	Windows, Linux, OS X		GPL or Proprietary	Includes map editor and networking[10]
Chrome Engine	C++		Yes	3D	Windows, Linux, PlayStation 4, Xbox One	List	Proprietary	
ClanLib	C++		Yes	2.5D	Windows, Linux, OS X		zlib	
Clausewitz	C++		Yes	3D	Windows, OS X, Linux	All Paradox Development Studio games since 2007	Proprietary	
Clickteam Fusion			Yes	2D	Windows, iOS, Android, HTML5, Adobe Flash	Five Nights at Freddy's	Proprietary	
Cocos2d, Cocos2d-x, Cocos2d-html5	C++, Python, Objective-C, JavaScript	JavaScript, Java, Lua	Yes	2D, 2.5D, 3D	Windows, Linux, OS X, iOS, Android, BlackBerry, Tizen	Hardest Game Ever 2, DQMSL, Tiny Village, Badland, Small Street, Tiny Tower, Pocket Planes, Hill Climb, Star Thief, Geometry Dash	MIT	Android target binds to Java; iOS target uses Objective-C
Codea	Lua		No	2D	iOS	Cargo-Bot	Apache 2.0	
Coldstone			Yes	2D	Mac OS 9, OS X, Windows	Pillars of Garendall	Proprietary	
Construct	C++	JavaScript, Event System	Yes	2D	Windows, OS X, Wii U, HTML5 capable internet browsers		Proprietary, GPL Classic version	
CopperCube			Yes	3D	Windows, OS X, Android, WebGL, Adobe Flash		Proprietary	
Core3D	Objective-C		Yes	3D	Windows, Linux, OS X, iOS	CoreBreach	3D Engine MIT, Source Code	[11]

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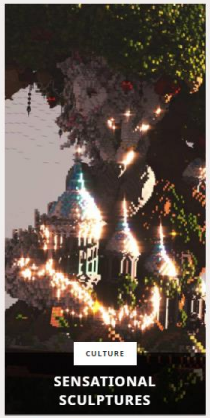

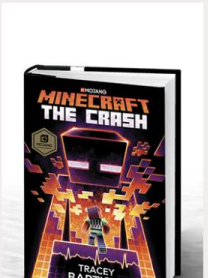

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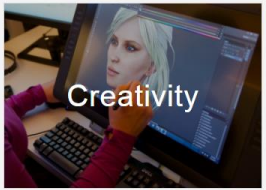

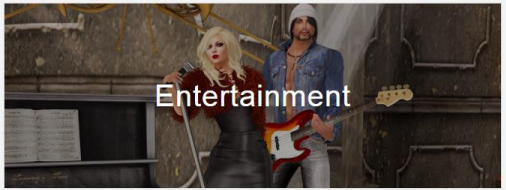

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What is OpenSimulator?

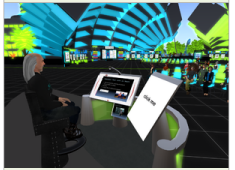
OpenSimulator is an open source multi-platform, multi-user 3D application server. It can be used to create a virtual environment (or world) which can be accessed through a variety of clients, on multiple protocols. It also has an optional facility (the Hypergrid) to allow users to visit other OpenSimulator 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!

Image of the Moment:



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sha1 hashes

Other downloads may be found at either the Download page, or the OpenSim Release Repository

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.

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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.

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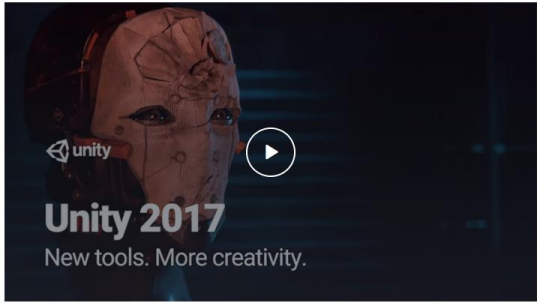
Free	$35/month	$125/month	Get Unity
For beginners, students, and hobbyists	For serious creators	For professionals and studios	

New tools. More creativity.

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.



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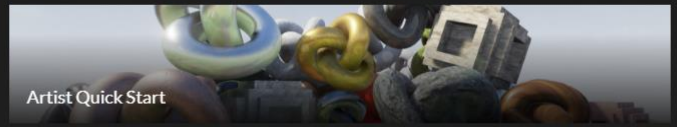

Engine Feature Samples

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Applications

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

Social Archive Virtual Tour

MOVE INTO VIRTUAL REALI
STEP 1
STEP 2

MOVE INTO VIRTUAL REALITY...
STEP 1
STEP 2
STEP 3
STEP 4

Resources

- Maya
- 3DS
- Blender
- Minecraft
- OpenSim
- Unreal 4
- SketchUp