

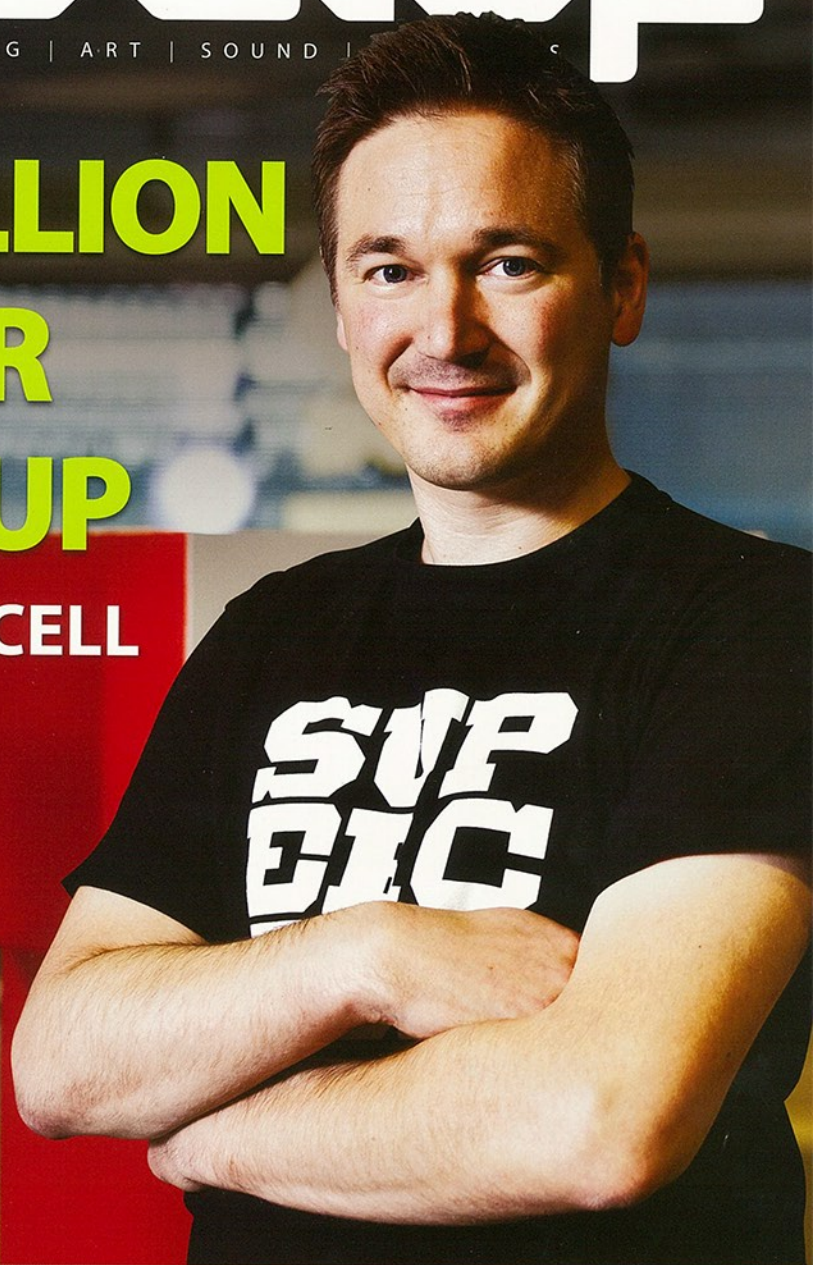
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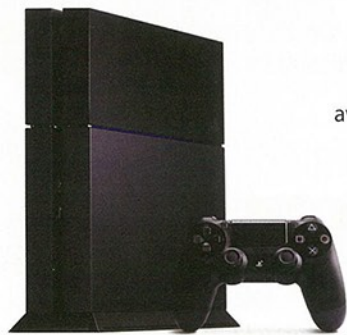
INSIDE ▶ THE BATTLE FOR INDIES • YOUR NEXT-GEN ARSENAL • VIOLENCE IN GAMES • 30 UNDER 30

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Your next-gen arsenal



With the PS4 and Xbox One now available, **Craig Chapple** helps you gear up with a selection of the tools to support your development needs



ENGINES



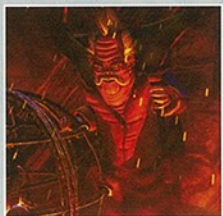
Tech: Unreal Engine 4
Company: Epic Games
www.unrealengine.com

UE4 supports advanced directX 11 high-end rendering features and includes the Blueprint visual scripting tool, enabling devs to build content without writing a line of code. New animation system Persona is also built on top, helping devs refine a character's motion.

Tech: BitSquid
Company: BitSquid
www.bitsquid.se

Development on the BitSquid Engine only began in 2009, but the development platform is already being used to port the likes of Mojang's *Cobalt* to Xbox One and to develop Arrowhead's *Helldivers* for the PlayStation 4.

One of the engine's main features is its fast workflows designed to enable short iteration times. The tech enables multi-core scaling and includes a built-in profiler and performance HUDs. It also features a scalable rendering pipe with multiple backends, and includes guides to implementing deferred shading, physical lighting, subsurface scattering and hardware tessellation.



Tech: Unity
Company: Unity Technologies
www.unity3d.com

Primed for next-gen with Unity 4.3, the tech includes character animation suite Mecanim, as well as extensive audio, lighting, rendering, physics, AI and terrain tools. Indies who part of Microsoft's ID@Xbox program will have free access to the Xbox One add-on for Unity.

Tech: Havok Vision Engine
Company: Havok
www.havok.com

Havok has optimised its Vision Engine for Xbox One and PS4 development, as well as its suite of Physics, Animation Studio, Destruction, Cloth, AI and Script tools.

The cross-platform Vision engine, coded in C++, features particle and post-processing tools, and the full engine licence also includes Physics and AI, as well as UI tool Autodesk Scaleform and lighting system Autodesk Beast. The tech also includes 3ds Max/Maya Exporters to export animated characters and static geometry, a Remote Script Debugger to analyse the performance of LUA script code and a runtime profiling framework for resource management.



Tech: CryEngine
Company: Crytek
www.crytek.com/cryengine

Used by Crytek in its graphics-intensive *Crysis 2* and *Crysis 3* titles, CryEngine features real-time editing of multi-platform game environments, whether in 2D or stereoscopic 3D, and will take advantage of the multi-core nature of PS4 and Xbox One architecture.

PHYSICS/AI/ANIMATION

Tech: Morpheme 4 & Euphoria
Company: NaturalMotion
www.naturalmotion.com/middleware

NaturalMotion's animation tool Morpheme 4 offers new advanced prediction modelling capabilities to enable developers to create complex integrations between animation and AI systems.

The tech includes a new ScatterBlend parametric blend node to help streamline animator workflow. The new feature also allows character motion to be controlled with real-world inputs.

The newly produced Euphoria supports next-gen, working with Morpheme to make believable character animation by simulating the motor nervous system to create more realistic movements.



Tech: Gameware
Company: Autodesk
gameware.autodesk.com

Autodesk is supporting next-gen with its entire suite of Gameware tools, which includes user interface solution Scaleform, lighting tech Beast, character animation middleware HumanIK, AI and pathfinding tool Navigation and 3D data transfer kit FBX.

Tech: XaitControl
Company: Xaitment
www.xaitment.com

Xaitment specialises in providing artificial intelligence tools. The firm's tech, xaitControl, is designed for helping developers with game logic and character behavioural modelling.

This means in-game characters can move more intelligently and make more logical decisions to help ensure that players don't get frustrated with their AI counterparts and foes.

Combined with the PS4's eight x84-64 cores and 8GB of unified GDDR3 Ram, xaitment hopes its AI tool will help usher in a new wave of smarter opponents and improved friendly AI to the next generation of games.



Tech: PhysX & Apex
Company: Nvidia
www.developer.nvidia.com

PhysX performs complex physics calculations, aiding with collision detection, the simulation of rigid bodies and particle systems. Apex builds on this by enabling artists to expand the quantity and quality of destructible objects and more life-like clothing.

Tech: Ikinema RunTime
Company: Ikinema
www.ikinema.com

Ikinema's RunTime technology is a real-time full body animation solution that can procedurally generate poses and animation during gameplay on human and fictional creatures.

The firm's tech also allows the manipulation of bones at every frame and provides a solver designed to produce life-like motion distributed automatically over a full body.

Through animating characters procedurally in the game, the tool can reduce the animation load on blend trees. The same code can also be used on next generation consoles, such as the PlayStation 4 and Xbox One, and mobile devices.

VISUALS/GRAPHICS



Tech: Enlighten
Company: Geomerics
www.geomerics.com/enlighten

Geomerics' Develop Award-winning Lighting technology Enlighten has been used in numerous titles such as *Battlefield 3*, *Battlefield 4*, *Eve Online* and the upcoming *Dragon Age: Inquisition*.

The tech delivers full dynamic lighting in-game, and the firm has said the powerful architecture behind the PS4 and Xbox One, such as the large increase in memory, will mean much better and more realistic dynamic lighting in next-gen releases.

As well as being available as a standalone SDK, Enlighten can also be integrated into Unreal Engine 3 and 4, and comes with plug-ins to integrate into the 3ds Max and Maya viewports.



Tech: Yebis 2
Company: Silicon Studio
www.siliconstudio.co.jp/en

Designed for small and large studios alike, middleware provider Silicon Studio's post-rendering tool Yebis 2 offers developers a way to deliver high-end visuals and effects.

Developers can use the post-processing tech to implement depth of field effects, motion blur, multi-colour customisable glare effects and bokeh. The tool also supports DirectX 11 to allow for real-time colour adjustments of rendering effects, and provides numerous high quality lens effects.

The tech was used in Square Enix's *Agni's Philosophy* tech demo, which showcased their next-gen development plans through the Luminous engine.



Tech: Umbra 3
Company: Umbra Software
www.umbra-software.com

Umbra 3, from Finnish technology firm Umbra Software, is the third iteration of the company's visibility solution.

The tech specialises in occlusion culling to help ensure rendered objects are not hidden behind others. The latest version, 3.3, includes new dynamic occluders, which enables devs to use dynamic elements as occluders. The update also made other optimisations for next-gen to reduce draw calls and run objects faster.

To date, Umbra 3 has been used in titles from studios such as CD Projekt, Bungie, Guerrilla Games, Microsoft Game Studios and SOE, and was recently used in *Call of Duty: Ghosts*.



Tech: Bink 2
Company: Rad Game Tools
www.radgametools.com

Since its first iteration Rad Game Tools' Bink video codec for games has been licensed for more than 6,200 games on 14 different platforms.

The latest Bink 2 Video is new high-end video codec that its creator says can be twice as fast as the previous version, thanks to being designed around SIMD, and is suitable for multi-core scaling. The codec can play 4K video frames in 11 ms on PS4 and Xbox One.

A number of the company's other tools have also been made available for next-gen development, including the Miles Sound System, Granny 3D, Iggy and Telemetry.



Tech: Simplygon
Company: Donya Labs
www.simplygon.com

Donya Labs' Simplygon tool is designed for the automatic optimisation of 3D game content and level of detail (LODs).

Now in its fifth iteration, the software helps artists save resources and recreating large amounts of content by automatically generating lower-polygon models required for different levels of detail at higher frame-rates, requiring less data.

The tech has recently been used in Quantic Dream's PS3 exclusive *Beyond: Two Souls*, and is also being used by Bungie for its hotly anticipated next-gen MMO *Destiny*.



Tech: Substance Designer 3
Company: Algorithmic
www.algorithmic.com

Substance Designer 3 from Algorithmic assists developers with run-time generation of parametric texture to reduce download size and improve performance.

The suite includes tools such as a node-based workflow, a batch system that lets devs process numerous meshes and textures simultaneously a live link with Adobe Photoshop.

Substance has been integrated with the likes of UDK and Unreal Engine, empowering next-gen developers. The firm is also gearing up for the release of its fourth major update.

AUDIO

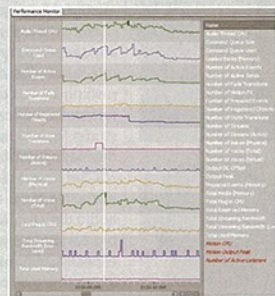


Tech: FMOD Studio
Company: Firelight Technologies
www.fmod.org

Firelight Technologies' audio middleware FMOD Studio has been optimised for PS4 and Xbox One development, providing extensive mixing capabilities and built-in DSP effects to help developers deliver audio in their games.

The company prides itself on providing a new interface designed to be more familiar to using professional digital audio workstations than traditional existing game audio tools.

The middleware is already being used on next-gen, debuting on Xbox one with launch game 8. For more information turn to page 36.



Tech: Wwise
Company: Audiokinetic
www.audiokinetic.com

Wwise is a complete audio pipeline solution developed by Audiokinetic, enabling sound engineers to mix, profile and modify sounds in real-time within the game.

The tool features an optimised sound engine for managing audio processing, including effect and source plugins including 5.1 channel reverb, parametric EQ and dynamic effect plugins including a compressor, expander, peak limiter, and sine and tone generation. It also includes an event-based authoring tool that can be used for creating audio asset structures and SoundBanks.