

Winter 1999

The 3D Positional Audio Standard from Aureal
The 3D Positional Audio Standard from Aureal



We Got Games!

In fact, we've got more 3D audio titles than anyone else on the planet

Believe Your Ears Believe Your Ears Believe Your Ears



A U R E A L

The 3D Positional Audio Standard from Aural
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Hear the Future

Hear the Future

Hear the Future

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Heart-racing, adrenaline-pumping action. It doesn't come from graphics alone - it comes from a totally realistic, mind-blowing experience. High-quality, immersive audio is a key part of that experience. It can't be faked because your brain knows the difference.

That's why A3D has been designed to deliver the most realistic aural experience available on the PC today. Based on more than a decade of psychoacoustic research, A3D closely simulates the way sounds are generated in the real world - enhancing the realism of interactive entertainment

by recreating the multitude of auditory cues that shape the way humans perceive their environment in everyday life.

Of course, gamers don't need to know all of those details. What a gamer *does* need to know is that one of the autonomous machine guns mounted high in the wall in the stairwell behind her has just come to life. It's spinning up its barrels and taking aim to blast her into oblivion (good thing she heard it). A quick sidestep and she's out of danger. But, then again, there's the spooky screeching of a pack of those green shambling things coming from the next doorway - maybe a short volley of 30 caliber slugs would have been more pleasant than those guys.

Now you know why gamers around the world have been raving about hot A3D-enabled titles like Half-Life and Thief. Now you know why we've shipped more than five million A3D-enabled hardware and software products to computer manufacturers like Compaq and Dell and to retail product sellers like Diamond and Turtle Beach. Now you know why the top game developers are using our tools and technologies to power their next generation of killer titles.

It's supply feeding demand feeding supply - and the circle's only getting bigger. Join the club.

Dozens of the game industry's hottest developers have jumped onboard the A3D bandwagon. More than 100 titles now boast support for A3D or are in the works. A sampling of top titles are listed on the pages that follow and a complete listing is located at the back of this booklet.

Check out our Web site at www.a3d.com for new A3D-enabled title listings.



Crusaders of Might & Magic character
courtesy of 3DO

Software Titles

The 3D Positional Audio Standard from Aureal



Publisher:

Mindscape
www.mindscape.com

Developer:

Reb Orb Entertainment

Release Date:

Available Now



Prince of Persia 3D

Remaining faithful to its time-honored legacy, Prince of Persia 3D elevates one of gaming's greatest heroes to new heights with the fast-paced combat of a fighting game and the depth and challenge of a classic Arabian Nights adventure. Stunning 3D graphics. Advanced 3D audio. Countless traps, ruthless enemies and devious enchantments await you. So sharpen your sword, ready your bow, and embark on a journey that will forever transform you into the Prince of Persia.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Interplay
www.interplay.com

Developer:

Shiny

Release Date:

Late 1999



Messiah

Bob is a cherub who's been summoned to clean up the Earth and set it back on its course for salvation. But, in the 150 years from now in which the game takes place, it has turned into a foul, smelly, violent world due to Satan's influence over the technology and culture. Armed with nothing but his tiny little wings, Bob only has the gift of possession to help him on his quest. Now, Bob is on his way to "clean up" Earth of its vile sinners by using their own bodies as weapons and hide-outs! Of course, when the time comes, there is no way he'll be able to hide from Satan himself!

Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Interplay
www.interplay.com

Developer:

Volition

Release Date:

Available Now



FreeSpace2

The drama of the award-winning space combat simulation of '98 continues in FreeSpace 2, delivering more white-knuckle dogfights, new formidable warships, the most spectacular visual effects and the deadliest adversary humanity has ever faced.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

GT Interactive
www.gtinteractive.com

Developer:

Epic Games

Release Date:

Available Now



Unreal Tournament

Unreal Tournament pits players against the hardest criminals in the galaxy in multiple new kinds of contests and settings. The goal is to become the Unreal Grand Master, testing your skills against, or fighting alongside, teams of the best simulated human opponents ('bots') ever seen in a 3D action game. Players can also take the challenge online, playing with combinations of 'bots' and human opponents. Designed for players from novice to expert, Unreal Tournament features training, novice, normal, hardcore and turbo modes. The favorite Unreal weapons have been brought back and improved, while several new weapons make their debut, including the 'Redeemer' - a weapon so lethal you can actually control the projectile through the eyes of it's built-in camera. An advanced, state-of-the-art, user interface makes it simple to play Unreal Tournament, easy to get online and easy to adjust the game to specific preferences.

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Software Titles

The 3D Positional Audio Standard from Aureal

ACTIVISION.

Publisher:

Activision
www.activision.com

Developer:

Id Software

Release Date:

Late 1999



Quake 3

Whether you're a newbie or a seasoned, rocket-jumping veteran, Quake III Arena™ is going to push your skills to the limit. Q3A is powered by the most advanced 3D engine ever, and it features 30 challenging maps that show off the intensely realistic, organic look of the Arena. But don't get caught staring at the scenery, or you'll end up as part of it.

Quake is known for the intensity of the Fragmatch, and this time not even the single-player gamers are safe. Q3A's single player game IS a Fragmatch. The computer opponents are armed with highly advanced artificial intelligence and whatever they steal from your fragged remains. These aren't the predictable, learn-how-to-kill-them-once and move on bots you remember. They learn from their mistakes and get better as the game goes on. Let's hope you can say the same.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

EuroPress
www.europress.co.uk

Developer:

Actualize

Release Date:

Late 1999

ACTUALIZE



Rally Championship 2000

A true simulation of the Mobil 1 British Rally Championship with 36 classic stages totalling over 450 miles of track and 23 licenced cars with advanced physics. Rally Championship has the most advanced photo realistic-graphics and gameplay ever.

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Software Titles

The 3D Positional Audio Standard from Aureal



Publisher:

The 3DO Company
www.3do.com

Developer:

New World Computing

Release Date:

Late 1999



Crusaders of Might and Magic

Might and Magic VII is a computer role-playing game set in Erathia, a mystical land of magic and adventure. You will guide the actions of a group of four heroes - armored swordsmen, daring thieves, gifted archers and wielders of arcane sorcery - as they explore the land, sea and subterranean passages in search of treasure and glory. Your characters will begin their journey possessing only the most basic skills and equipment, and are barely deserving of the title "adventurer." As they continue, however, they will acquire personal abilities, enchanted artifacts, deadly weapons, and powerful knowledge, all of which they will need to face the greater challenges ahead...to one day epitomize a true adventurer.

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Software Titles

The 3D Positional Audio Standard from Aureal



Publisher:

Sierra Studios
www.sierrastudios.com

Developer:

Papyrus Software

Release Date:

Available Now



NASCAR Racing 3

Nascar Racing 3 is the latest addition to the highly successful NASCAR line of PC racing simulations by Sierra Sports, developed by the award winning team at Papyrus. Nascar Racing 3 features the 1999 cars and tracks from the Busch Grand National series.

The 3D Positional Audio Standard from Aureal

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What Is Positional Audio?

It's a simple question with a not-so-simple answer. Positional audio places sounds in three dimensions around the listener. While this is fairly easy to do with four or more speakers, the process is quite a bit more complicated with just two speakers or headphones - the typical consumer PC audio setup.

Aureal's A3D accomplishes this by making use of the physiology of the human head and the way in which humans perceive their aural environment. The details are complex, but the premise is quite elementary.

Simply put, you must provide the listener's ears with the exact audio signals that would be present if he were actually within the virtual environment you are trying to simulate - and that's how you create audio reality.

Those of you who are acronymically challenged may wish to avoid the following paragraphs and look at the pictures instead.



Bob character courtesy of
Shiny Entertainment & Interplay

The 3D Positional Audio Standard from Aureal

How Does It Work?

People (most of them anyway) have two ears located on either side of their heads. Using this knowledge, we can provide the listener with a number of clues to help them position sounds in space.

If a sound is to the right of a person's head, that sound will seem louder to the right ear and softer to the left ear. This phenomenon is called the Interaural Intensity Difference or IID. Similarly, if a sound is to the right of a person's head, that sound will arrive at the right ear a split second sooner than it arrives at the left

ear. This phenomenon is called the Interaural Time Difference or ITD. Together, the IID and ITD provide a means for the brain to figure out roughly where in space a sound is located.

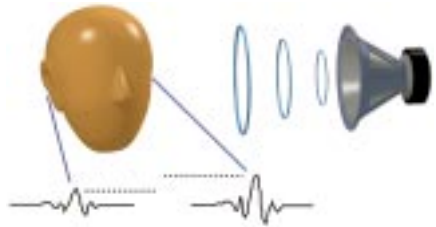


Illustration of IID

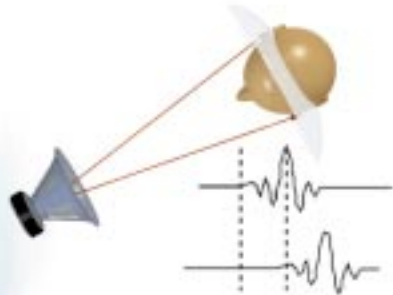


Illustration of ITD

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The 3D Positional Audio Standard from Aureal

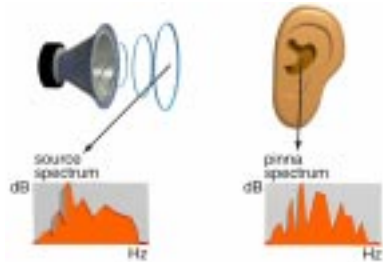
The 3D Positional Audio Standard from Aureal

How Does It Work?

More exact positioning relies upon the structural details of the outer ear itself, called the pinna. When a sound enters the ear, the shape of the pinna modifies or 'filters' that sound in a way that allows the brain to figure out exactly where in space a sound is located.

Taken together, all of these phenomenon allow us to create what are known as Head-Related Transfer Functions (HRTFs). Put as simply as possible, an HRTF is a kind of filter that, when applied to an audio source, will modify the sound to virtually position it in 3D space

around the listener. A3D uses a large array of HRTFs, gathered from actual laboratory measurements, to give the listener a taste of audio reality.



Spectrum differences between original sound source and pinna reception

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The 3D Positional Audio Standard from Aureal

Software Titles

The 3D Positional Audio Standard from Aureal

ACTIVISION.

Publisher:

Activision
www.activision.com

Developer:

Pandemic Studios

Release Date:

Available Now



Battlezone II

Battlezone II is the spectacular sequel to the award winning Battlezone, a game hailed by the press as "history in the making" and listed by PC Gamer Magazine as one of the top 20 computer games of all time. Now the Battlezone team returns to provide the first true real-time action-strategy war experience in Battlezone II . You command your troops from the battlefield rather than above it. By combining the depth of a real-time strategy game with the excitement of first person action, Battlezone II provides the ultimate expression of action-oriented strategic gameplay. Drive a variety of futuristic combat vehicles including a lumbering walker, a mammoth assault tank or a speedy mortar bike. Or get out of your craft to act as a stealthy commando on foot. You'll command a range of vehicles, buildings, and units while blasting enemies, organizing troops and managing resources...all within a first-person view that puts the warfare in your face!

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Software Titles

The 3D Positional Audio Standard from Aureal



Publisher/Developer:

Blizzard
www.blizzard.com

Release Date:

Late 1999



Diablo II

Blizzard Entertainment presents the highly anticipated sequel to Diablo, the game that set fire to the mortal realm. After possessing the body of the hero who defeated him, Diablo resumes his nefarious scheme to shackle humanity into unholy slavery – this time by setting out to free the other Prime Evils, Mephisto and Baal. As Amazon, Sorceress, Necromancer, Paladin or Barbarian, you must put a final end to Diablo and his evil brethren – even if you must follow them into the burning hells themselves.

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Software Titles

The 3D Positional Audio Standard from Aureal

ACTIVISION.

Publisher:

Activision
www.activision.com

Developer:

Raven Software

Release Date:

Late 1999



Soldier of Fortune

Pack your bags, your country is calling. Four nukes have been stolen from a Russian stockpile and it's up to you to do the U.S. government's dirty work. Your mission: travel to the world's most dangerous political hotspots tracking down the warheads as they exchange hands with terrorists, skinheads, and countless militants. With sniper rifle in hand and white phosphorous grenades at your side, you realize that good aim and ammo will only get you so far. This is a battle of intelligence where strategy is the only plan of attack and the hunt is just as tricky as the kill. Tearing past enemy lines, you zero in only to find one nuke. Something is amiss. Someone has escaped you. So much for an open and shut case.

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Software Titles

The 3D Positional Audio Standard from Aureal

ACTIVISION.

Publisher:

Activision
www.activision.com

Developer:

Nihilistic Software

Release Date:

Late 1999



Vampire: The Masquerade

Inspired by the well-known Vampire series of games from White Wolf Publishing, the game will tell an epic story of one vampire's (un) life throughout an eight hundred year time span. Revolutionary technology, visually stunning graphics and a compelling story will draw players into the World of Darkness, where they will find intriguing characters, challenging puzzles, and intense adventure. Vampire: The Masquerade is the first title from Nihilistic Software, a development company headed by game industry veterans Ray Gresko, Robert Huebner and Steve Tietze. The team's combined credits include Dark Forces, Dark Forces II: Jedi Knight, Descent, Descent II and the Quake Mission Pack #2.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Edios Interactive
www.ediosinteractive.com

Developer:

Mucky Foot

Release Date:

Late 1999

EIDOS



Urban Chaos

The new millennium approaches. Turmoil, crime, and famine rule. Gangs, terrorists and violent cults lurk around every corner. As one of two cops, you must try and bring order to the city. D'arci is a young and cunning super-slueth with unsurpassed reconnaissance and infiltration skills. A Special Forces veteran, Roper, is known for his expertise in weapons and explosives. His skills are never questioned but his mental stability is.

Either one could be the hero this city is waiting for. But time is running out...

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The 3D Positional Audio Standard from Aureal

Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Interplay
www.interplay.com

Developer:

Planet Moon Studios

Release Date:

Late 1999

Interplay



Giants

From the team that created MDK, *Giants* will take you to bizarre new worlds combining 3D arcade action, incredible graphics, strategic thinking, and a back-squeak of twisted humor. Eat, burn, drown, kidnap, and bury your victims! Play as three different species, each with unique strengths, weaknesses, and weapons. Use the island natives to create weapons, vehicles, and traps, or just use them as an energy source (you know, a snack). Manipulate the landscape to create obstacles that the enemy cannot pass. Destroy the ground under your enemies' feet. Take your creations and experiences from level to level to aid in future battles. Continue the battle through 30 original worlds to prove your dominance. Multiplayer mayhem ensues when you and your friends select your favorite species and fight to determine who is superior!

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What Is Aural Wavetracing?

There's more to creating a convincing virtual audio environment than just hanging some sounds in three-dimensional space. The next step is to simulate the world itself. Look around you: there's probably a desk, walls, some chairs, a bookcase, and maybe even a window or two (if you're lucky). Now listen, and you'll likely hear a sound source or two: your radio, the air conditioning vent, your computer's fan, the ticking clock, and maybe even the person next door (if you have thin walls). All of these objects and all of these sounds interact in complex, but predictable, ways.

In the real world, sounds bounce off of and are absorbed by the objects they hit. The degree of reflection or absorption depends on a great degree on whether an object is made of carpet, wood, metal, or some other material. Sounds are also blocked completely or partially by objects they hit. The neighbor's TV may sound muffled through a thin wood wall and is likely inaudible through a thick concrete partition. You probably don't even notice all of these interactions between sounds and objects - but they're there and all work together to make up your aural environment.

Aural Wavetracing is the technology used by A3D to simulate this phenomenon. Working in conjunction with A3D positional audio, Aural Wavetracing tracks the reflections and occlusions (the blocking of a sound) that occur as sounds bounce around a room. This process enables A3D to provide the brain with a much clearer picture of the listener's aural environment than with positional audio alone.

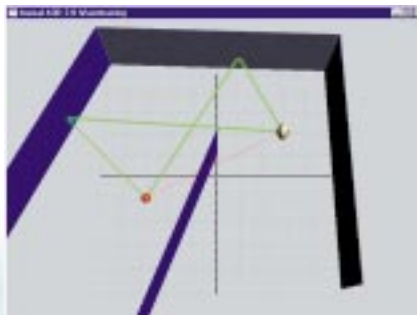
The 3D Positional Audio Standard from Aureal

How Does It Work?

Aureal Wavetracing examines the 3D geometry of a virtual space in order to trace sound waves as they are reflected or occluded by objects within that environment. This means that sounds can reflect off of walls, leak through doors from the next room, become occluded as they disappear around a corner, or even appear suddenly overhead as the listener moves from a closed room into the open. The reflective and absorptive properties of object materials are taken into account in this process, enhancing the audio realism.



A3D 1.0 Direct Path Sound Waves (Red)



A3D 2.0 Direct Path Sound Waves Partially Occluded by Wall (Red) and Reflected by Walls (Green)

Software Titles

The 3D Positional Audio Standard from Aureal



Publisher:

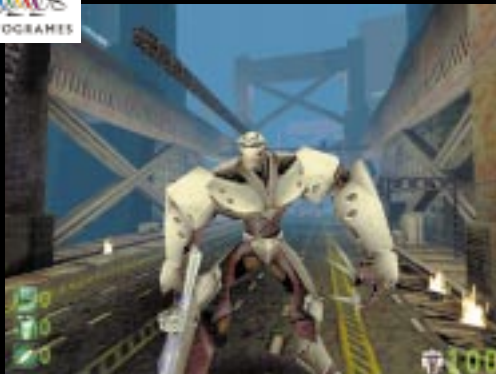
Infogrames
www.infogrames.com

Developer:

Accolade

Release Date:

Available Now



Slave Zero

Rampage through a bustling future metropolis in a stolen sixty-foot attack robot. Slave Zero takes place several centuries in the future in an enormous, 7 mile-high mega-city, bustling with millions of people, automobiles and aircraft. Engage in intense, action-filled combat against enemies of all sizes and shapes, ranging from human-sized troops and tanks to 200-foot tall behemoths.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Psygnosis
www.psygnosis.com

Developer:

Surreal Software

Release Date:

Available Now



Drakan

Drakan is an action-adventure that seamlessly blends aerial and ground-based gameplay in a beautiful 3D world. As the player, you are Rynn, a warrior-heroine with a savvy attitude and a quick sword arm who teams up with a powerful, fire-breathing dragon named Arokh. Leaving her small village behind, Rynn and Arokh embark on an epic journey across the massive and dangerous world of Drakan in a desperate quest to save Rynn's kidnapped younger brother - and quite possibly all of Drakan - from a fate worse than death.

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Software Titles

The 3D Positional Audio Standard from Aureal

Publisher:

Interplay
www.interplay.com

Developer:

Outrage Software

Release Date:

Available Now

Interplay



Descent 3

The highly anticipated sequel to Descent I and II takes the mind-bending, pulse-pounding experience to another level. New lethal weapons will be by your side as you obliterate the robot infestation in the winding mines AND the planetary surface. The gut-wrenching Descent saga continues with more action than ever before. Dive into massive subterranean strongholds and experience a whole new degree of freedom powered by the all-new Fusion engine. Test your piloting skills against an army of assault-bots using an extensive arsenal of firepower. Prepare yourself for an explosive new 3D action-experience that will turn your world INSIDE-OUT!

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Software Titles

The 3D Positional Audio Standard from Aureal



Publisher:

Sierra Studios
www.sierrastudios.com

Developer:

Valve Software

Release Date:

Available Now



Half-Life

Half-Life combines the visceral action of legendary action games like Doom with great storytelling in the tradition of Stephen King. Named "Best PC Game" in the Best of E3 Show Awards from Unified Gamers Online, Half-Life blends action, drama, and adventure with stunning technology to create a frighteningly realistic world where players need to think smart to survive. Throughout the game, both friends and foes behave in sophisticated and unpredictable ways, a result of Half-Life's powerful and innovative artificial intelligence. The intensity of the game also reflects the strong storyline, created by award-winning horror novelist Marc Laidlaw. Of course there's also a variety of exciting multiplayer scenarios, and an easy-to-use interface that will have you connected to the game of your choice in just seconds.

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Software Titles

The 3D Positional Audio Standard from Aureal

EIDOS

Publisher:

Eidos Interactive
www.eidosinteractive.com

Developer:

Looking Glass Studios

Release Date:

Available Now



Thief: The Dark Project

Thief: The Dark Project is a revolutionary first person action adventure that introduces stealth, subterfuge, and mystery to a tired genre of mindless shooting. As Garrett, a cynical and world-weary master thief, you must make use of stealth and intellect to complete your missions. You live in an ancient city of a fictional past where magic and primitive technology coexist uneasily. Your victims are the city's corrupt and privileged nobility, whose wealth is at your disposal as long as their guards don't see you, at least not until it is too late.

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Software Titles

3D Music Composition Studio
The 3D Positional Audio Standard from Aureal
3D Music Composition Studio

Publisher/Developer:

Techland Software
www.techlandsoft.com

Release Date:

Available Now



Future Beat 3D

3D audio acceleration has taken the computer world by storm in 1998. More and more desktop PCs are being fitted with some form of 3D audio acceleration as standard equipment. 3D audio support has become a must have feature for computer game developers world wide.

Future Beat 3D is the first music studio product that extensively features 3D audio composition for non-professional music makers. Its stylish interface provides simple controls for accessing a powerhouse of audio technology.

The 3D Positional Audio Standard from Aureal
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3D Web

3D Audio for the Web

The 3D Positional Audio Standard from Aureal

3D Audio for the Web

Developer/Publisher:

Flatland Online
www.flatland.com

Release Date:

Available Now



Rover/Spotnik

The Flatland Rover is free software for Netscape Communicator and Microsoft Internet Explorer that lets you explore 3D websites, called 'spots,' created in 3DML. 3DML is a Web publishing language based on HTML. Flatland designed 3DML to make publishing 3D content on the web just as easy as publishing 2D homepages! If you already know HTML, you already know the basics of 3DML.

Flatland's new 3DML site creation tool, Spotnik, makes authoring 3D Web sites even easier. Spotnik is a free Web-based application that uses a drag-and-drop interface to allow builders to easily create 3D worlds. Building blocks, textures and sounds can be grabbed from a palette, dropped into a map of the 3D site, and the resulting 3D world can be viewed and browsed instantly.

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Hear the Future

The popularity of A3D is growing as more and more game players hear the advantages of 3D audio. This means a diverse and expanding installed base of hardware. We at Aureal are working to expand this base of users with 3D applications for the gaming, consumer, and Internet markets. We're pushing the envelope and so should you.

So? What are you waiting for?

Get A3D

Hear the Future

The 3D Positional Audio Standard from Aureal
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A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

	Title	Publisher	Availability
1.	Aeon Flux	GT Interactive	Late 1999
2.	B17 Flying Fortress	Hasbro Interactive	Late 1999
3.	Babylon 5	Sierra	Late 1999
4.	Battlecruiser 3020AD	3000AD, Inc	Late 1999
5.	Battlecruiser: Strike Pack	3000AD, Inc	Late 1999
6.	Battlezone	Activision	Available Now
7.	Battlezone II	Activision	Available Now
8.	Battlezone: The Red Odyssey (MP)	Evolve	Available Now
9.	Beneath	Activision	Late 1999
10.	Big Air	Infogrames	Late 1999
11.	Blade	Infogrames	Late 1999
12.	Blood 2: The Chosen	Monolith	Available Now
13.	Blood 2: The Nightmare Levels	Monolith	Available Now
14.	Blood 2: Revelations (MP)	Tequila Software	Late 1999
15.	Bug Riders	GT Interactive	Available Now
16.	Carnivores II	Action Forms Ltd.	Available Now
17.	Carnivores: Ice Age	Action Forms	Late 1999
18.	Crime Cities	Techland Software	Late 1999
19.	Crusher	Techland Software	Late 1999
20.	Daikatana	Eidos Interactive	Late 1999
21.	Dark Reign 2	Activision	Late 1999
22.	Darkstar	TE Software	Late 1999
23.	Descent 3	Interplay	Available Now
24.	Descent: FreeSpace	Interplay	Available Now
25.	Descent: FreeSpace - Silent Threat	Interplay	Available Now

Information regarding software titles under development is subject to change without notice.

A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

Title	Publisher	Availability
26. Descent: FreeSpace 2	Interplay	Available Now
27. Desert Fighters	Sierra	Late 1999
28. Deus Ex	Eidos Interactive	Late 1999
29. Diablo II	Blizzard	Late 1999
30. Dirt Track Racing	Ratbag Games	Available Now
31. Drakan	Psygnosis	Available Now
32. Duke Nukem Forever	GT Interactive	When it's done!
33. Dungeon Keeper 2	Electronic Arts	Available Now
34. EverQuest	989 Studios	Available Now
35. Expendable	Rage Software	Available Now
36. Expert Pool	Psygnosis	Available Now
37. Formula 1	Psygnosis	Late 1999
38. Future Beat 3D	Techland Software	Available Now
39. G-Police	Psygnosis	Available Now
40. GP500	Hasbro Interactive	Late 1999
41. Giants: Citizen Kabuto	Interplay	Late 1999
42. Gulf War: Operation Desert Hammer	3D0	Available Now
43. HAB-12	Ratloop	Late 1999
44. Half-Life: Opposing Force	Sierra	Available Now
45. Half-Life	Sierra	Available Now
46. Heavy Gear	Activision	Available Now
47. Heavy Gear II	Activision	Available Now
48. Heretic II	Activision	Available Now
49. Hired Guns	Psygnosis	Late 1999
50. Hostile Waters	Rage Software	Late 1999

Information regarding software titles under development is subject to change without notice.

A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

Title	Publisher	Availability
51. Incoming	Rage Software	Available Now
52. Interstate '76: Arsenal	Activision	Available Now
53. Interstate '82	Activision	Available Now
54. Lander	Psygnosis	Available Now
55. Legend of the Blademasters	Ripcord Games	Late 1999
56. Location Based Entertainment/Arcade	Xulu Entertainment	Late 1999
57. MDK	Interplay	Available Now
58. Machines	Acclaim	Available Now
59. Messiah	Interplay	Available Now
60. Might & Magic VII: For Blood and Honor	3DO	Available Now
61. Miles Sound System 5.0	Rad Game Tools	Available Now
62. Mortyr	Mirage	Late 1999
63. Motorhead	Infogrames	Available Now
64. Myth II	Bungie	Available Now
65. NASCAR Legends	Sierra	Available Now
66. NASCAR Racing 3	Sierra	Available Now
67. Navy Seals	Sierra	Early 2000
68. NetImmerse 2.3	Numerical Design, Ltd.	Available Now
69. Outlaws	LucasArts	Available Now
70. Panzer Elite	Psygnosis	Late 1999
71. Plane Crazy	SegaSoft	Available Now
72. Powerslide	GT Interactive	Available Now
73. Prince of Persia 3D	Mindscape	Available Now
74. Private Wars	TS Group	Late 1999
75. Quake II	Activision	Available Now

Information regarding software titles under development is subject to change without notice.

A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

Title	Publisher	Availability
76. Quake II: Ground Zero	Activision	Available Now
77. Quake II: The Reckoning	Activision	Available Now
78. Rally Championship 2000	EuroPress	Available Now
79. Recoil	Westwood Studios	Available Now
80. Redline Racer	Ubi Soft	Available Now
81. Requiem: Avenging Angel	3DO	Available Now
82. RoboRumble	TopWare	Available Now
83. Rover	Flatland	Available Now
84. Rune	Gathering of Developers	Mid 2000
85. The Russian Front	Borderline	Late 1999
86. Sanity	Monolith	Late 1999
87. Shipwreckers!	Psygnosis	Available Now
88. Shogō: Mobile Armor Division	Monolith	Available Now
89. SimCopter	Maxis	Available Now
90. SiN: Wages of Sin	Activision	Available Now
91. SiN	Activision	Available Now
92. Sinistar Unleashed	THQ	Available Now
93. Skout	Soft Enterprises	Late 1999
94. Slave Zero	Infogrames	Available Now
95. Soldier of Fortune	Activision	Late 1999
96. Sound ToolKit	DiamondWare	Available Now
97. SpecOps 2	Zombie Studios	Late 1999
98. SpecOps Ranger Team Bravo	Ripcord Games	Available Now
99. Speed Thrill	Techland Software	Late 1999
100. Speedway Manager 3D	Techland Software	Late 1999

Information regarding software titles under development is subject to change without notice.

A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

Title	Publisher	Availability
101. Star Trek Deep Space 9: The Fallen	GT Interactive	Late 1999
102. Star Trek: Klingon Honor Guard	Microprose	Available Now
103. Star Trek: Starfleet Academy	Interplay	Available Now
104. Star Trek: Starfleet Academy: Chekov's Lost Missions	Interplay	Available Now
105. Star Wars: Episode 1: Racer	LucasArts	Available Now
106. Star Wars: Episode 1: The Phantom Menace	LucasArts	Available Now
107. Star Wars: Force Commander	LucasArts	Late 1999
108. Star Wars: Jedi Knight: Mysteries of the Sith	LucasArts	Available Now
109. Star Wars: Jedi Knight	LucasArts	Available Now
110. Star Wars: X-Wing Alliance	LucasArts	Available Now
111. StarLancer	Digital Anvil	Late 1999
112. StarSiege: Tribes	Sierra	Available Now
113. StarSiege	Sierra	Available Now
114. Subversion: Incoming Expansion Pack	Instant Access	Available Now
115. Summoner	Interplay	Late 1999
116. System Shock 2	Electronic Arts	Available Now
117. Team Fortress 2	Sierra	Late 1999
118. Team Fortress Classic (for Half-Life)	Sierra	Available Now
119. Terminus	Vicarious Visions	Late 1999
120. Test Drive: Rally	Infogrames	Late 1999
121. The Axe	Harmonix Music	Available Now
122. Thief: The Dark Project	Eidos Interactive	Available Now
123. TigerShark	GT Interactive	Available Now
124. TNN Outdoors Pro Hunter	ASC Games	Available Now

A3D Enhanced Software Titles

The following is a full list of A3D titles that have either been released or are currently under development:

Title	Publisher	Availability
125. Tonic Trouble	Ubi Soft	Late 1999
126. Tread Marks	Longbow Digital Arts	Late 1999
127. Trespasser: Jurassic Park	DreamWorks Interactive	Available Now
128. Unreal Tournament	GT Interactive	Available Now
129. Unreal: The Return to Na Pali	GT Interactive	Available Now
130. Unreal	GT Interactive	Available Now
131. Uprising 2: Lead and Destroy	3DO	Available Now
132. Urban Chaos	Eidos Interactive	Late 1999
133. Vampire: The Masquerade	Activision	Late 1999
134. Venom	GSC Game World	Early 2000
135. Virtua Command	Techland Software	Late 1999
136. Wargasm	Infogrames	Available Now
137. Way Point Zeta	Elpin Systems	Available Now
138. Werewolf: The Apocalypse The Heart of Gaia	ASC Games	Late 1999
139. Wheel of Time	Legend Entertainment	Late 1999
140. Wild Metal Country	Infogrames	Available Now
141. WorldView 2.0	Intervista Software	Available Now
142. X-Com: Alliance	Microprose	Late 1999
143. X	THQ	Late 1999
144. Yager	Yager Development	Early 2000

To get the most up-to-date list of A3D-enabled titles, visit www.a3d.com

Information regarding software titles under development is subject to change without notice.

Hardware Products

Retail sound cards available direct from Aureal



Vortex2 SQ2500 Quad PCI Sound Card

Premier 3D Audio for PC Gaming and Music

- Powered by the revolutionary Aureal Vortex2 audio accelerator, named "Hardware of the Year" by Computer Gaming World.
- Realistic 3D audio via headphones, or two or four speaker systems.
- Support for hundreds of A3D-enabled games, applications, and Web sites.
- Includes automatically upgraded Aureal Vortex Player for CDs, MP3s, WAVs, MIDI, etc.
- S/PDIF coaxial output for connection to state-of-the-art consumer electronics devices.

Vortex SQ1500 Quad PCI Sound Card

High-Fidelity Digital Audio for Your PC

- Ideal audio card for music, games, and interactive entertainment.
- Realistic 3D audio via headphones, or two or four speaker systems.
- Support for hundreds of A3D-enabled games, applications, and Web sites.
- Includes automatically upgraded Aureal Vortex Player for CDs, MP3s, WAVs, MIDI, etc.
- S/PDIF coaxial output for connection to state-of-the-art consumer electronics devices.



The 3D Positional Audio Standard from Aureal

The 3D Positional Audio Standard from Aureal

The Next Generation

The 3D Positional Audio Standard from Aureal

Announcing A3D 3.0!!

Aureal's position as the leader in interactive digital audio has been strengthened by its ability to listen to customer and developer feedback and requests, and to drive innovation. A3D 3.0 is based 100% on the popular A3D 2.0 foundation and brings even more realism, speed, ease of use, and excitement to interactive entertainment. The new features in A3D 2.0 (including geometry-based wavetracing, acoustic materials, advanced resource management, and the scaleable architecture of the all-in-one API and engine) have all been improved and optimized for A3D 3.0 and the following new features have been added:



- Dolby Digital (AC-3) support
 - Dynamic Wavetracing-based reverb support
 - Static preset reverb (I3DL2 / EAX style)
 - License-free MP3 support
 - Volumetric sound sources
 - Manual reflection API
 - Downloadable HRTFs
 - Advanced streaming support

While the number of A3D 1.0 and A3D 2.0 titles grows, it's good to know that the state of interactive audio will continue to be enhanced by Aureal and their software development partners. Many of the games in this booklet already have support for A3D 3.0 in the works! A3D 3.0 will be available this Winter and works with all existing and planned A3D products.

The 3D Positional Audio Standard from Aureal
The 3D Positional Audio Standard from Aureal

The 3D Positional Audio Standard from Aural

www.a3d.com www.a3d.com www.a3d.com

Aural's award-winning A3D delivers richly immersive audio by surrounding the listener with sounds in all three dimensions - using ordinary headphones or two or more speakers.

A3D enhances the realism of interactive entertainment by recreating the multitude of auditory cues that allow humans to perceive their environment in everyday life.

The combination of A3D-enabled content and hardware powered by Aural's Vortex audio processors delivers the highest degree of aural reality available today.



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The 3D Positional Audio Standard from Aural

Vampire character courtesy of
Nihilistic Software and Activision