

The background features a vibrant, abstract design. It consists of several layers of concentric, curved lines in shades of yellow, orange, and red, resembling sound waves or energy fields. In the foreground, there's a stylized representation of a piano keyboard, with blue and white keys. The overall aesthetic is futuristic and dynamic.

Sound

Geschichte der Computermusik

<http://macgateway.com/featured-articles/sound-card-history/>



1982 SID (C-64)



1985 Paula (Amiga)



1987 AdLib



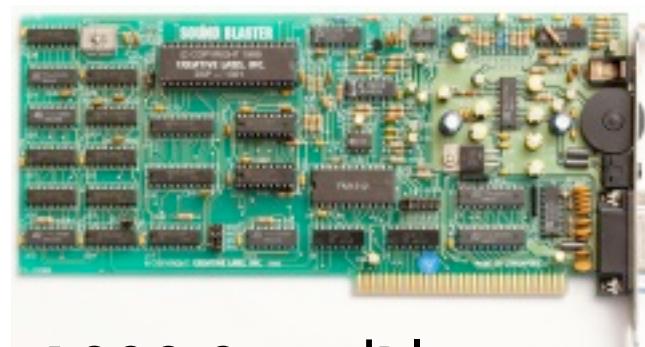
1981 PC-Lautsprecher



1987 MT-32



1988 GameBlaster



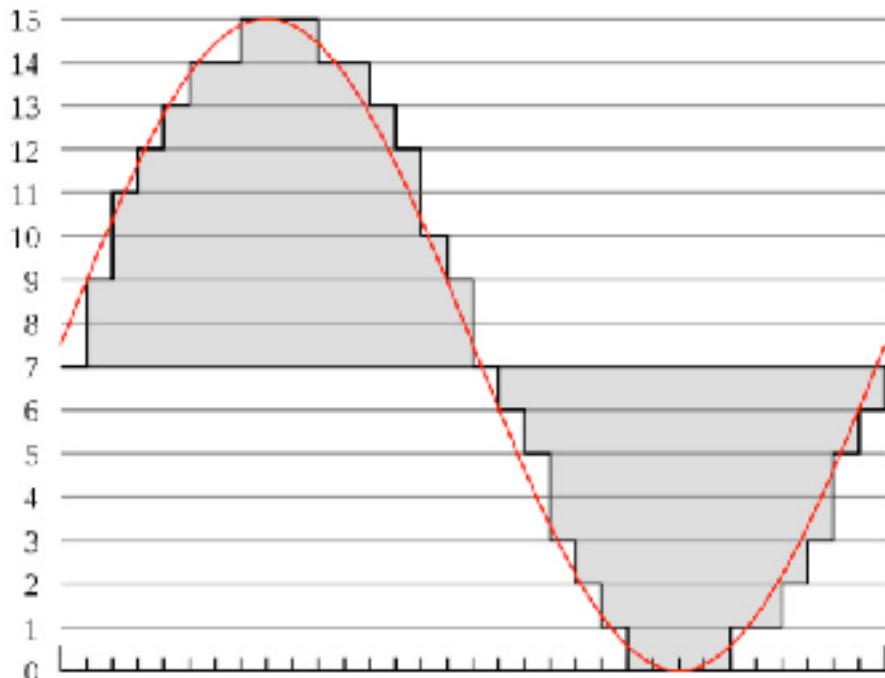
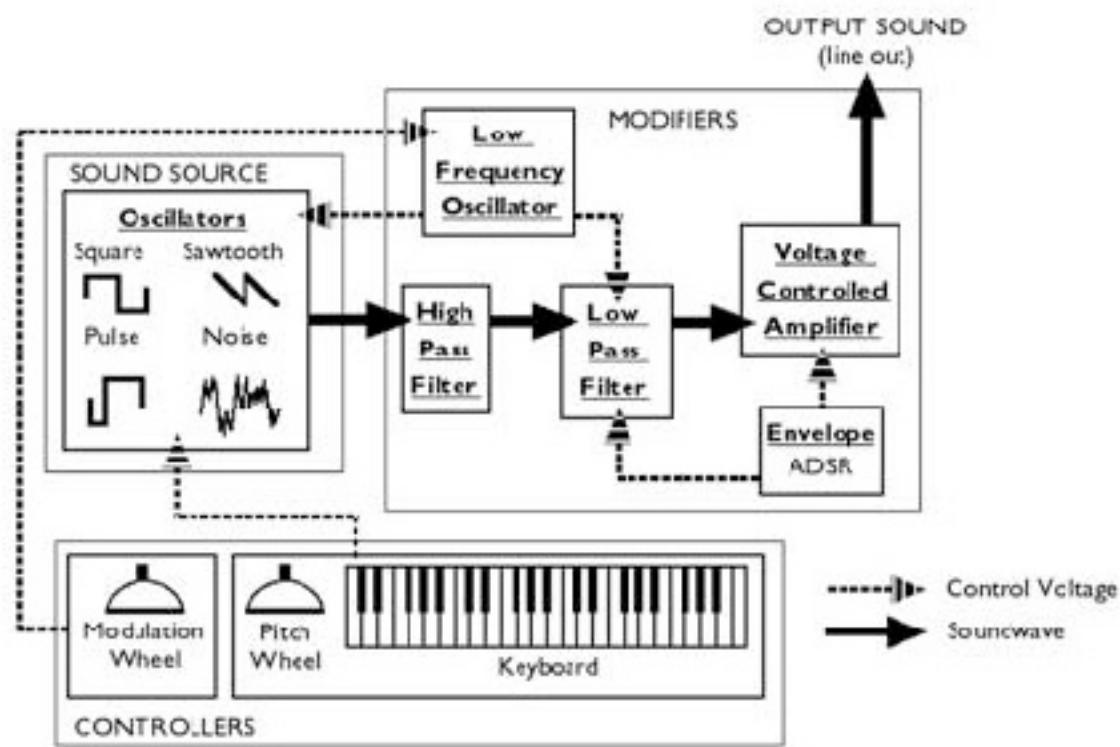
1989 SoundBlaster



1992 UltraSound



1994 SoundBlaster AWE32



Each digitized sample of audio is assigned a value that corresponds to the amplitude of the analog wave.

Ton-Techniken

Erzeugung

Beeper (PC)

Synthese

Sample (Wavetable)

Red Book (CD)

Speicherung

Synthese-Parameter

MIDI

Prozeduren

Samples (.wav, .aiff)

CD

MP3, WMA , M4A

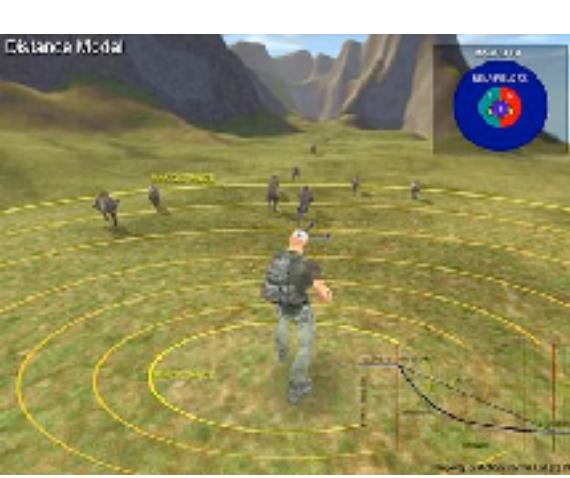
Raumklang

Mono

Stereo

3D (Audio Point-of-View)

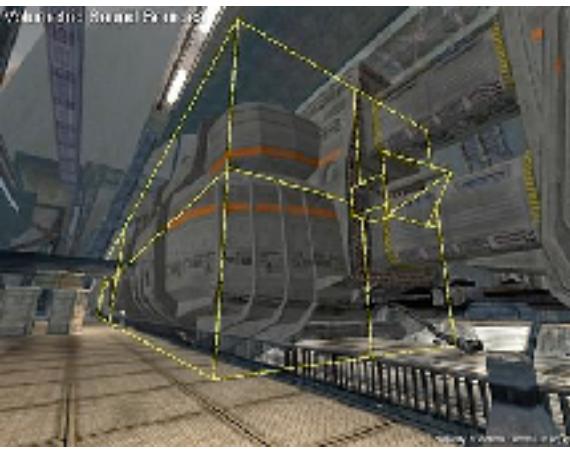
Multichannel



1

Audio Point-of-View

<http://ixbtlabs.com/articles2/sound-technology/index.html>



2

Entfernung: Lautstärke (1)

Position: Stereo, 3D, Multichannel, Surround



3

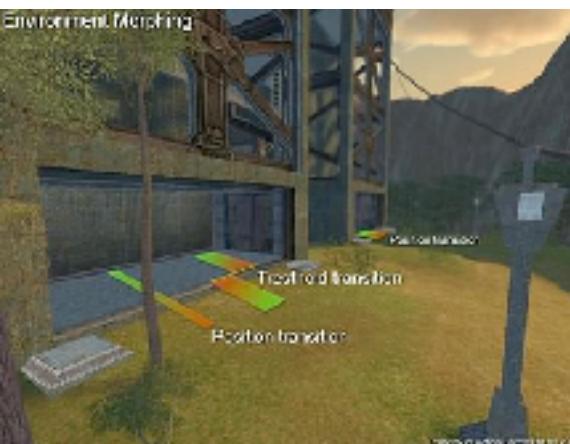
Körper: Volumetrischer Sound (2)

Bewegung: Dopplereffekte (3)

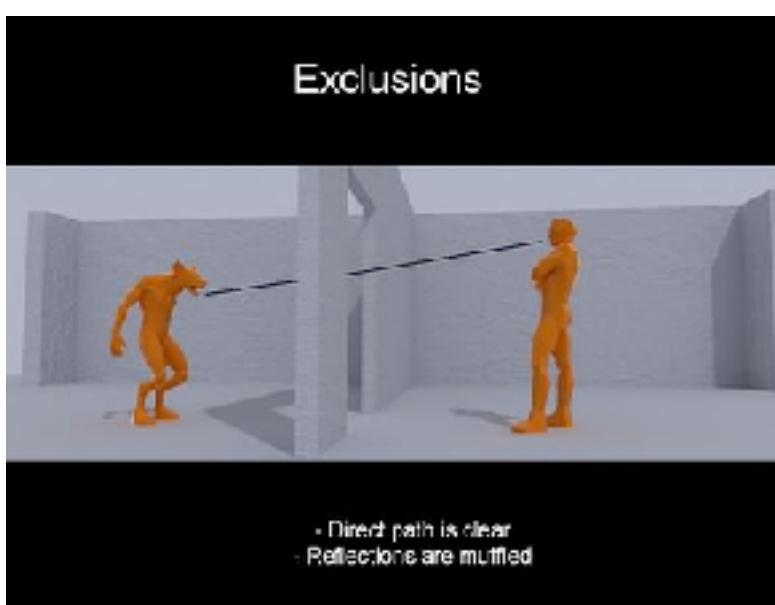
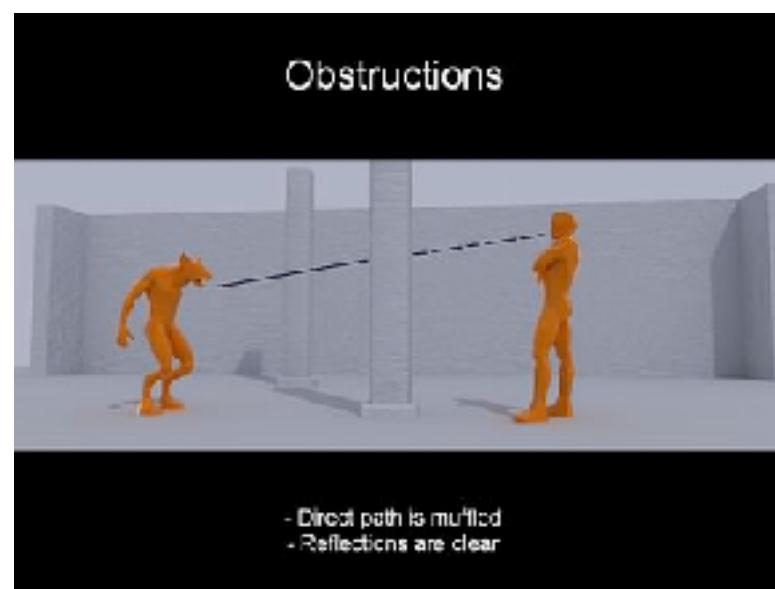
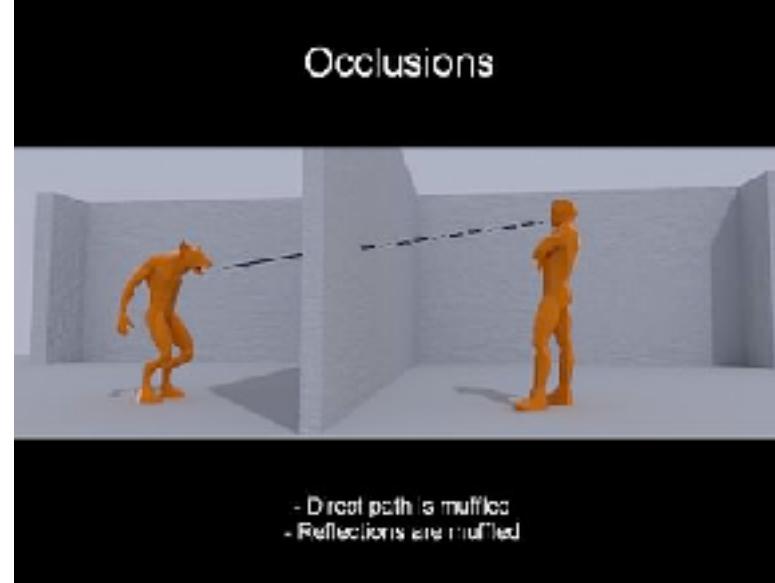
Verdeckung: Filter

Effekte

Umgebung: Environment Morphing (4)



4



Effekte

Nicht zu verwechseln mit diegetischer Reaktion auf Spielerhandlungen (s.u.)

Zeit

Echo

Hall

Chorus

Frequenz

EQ

Hochpass

Tiefpass

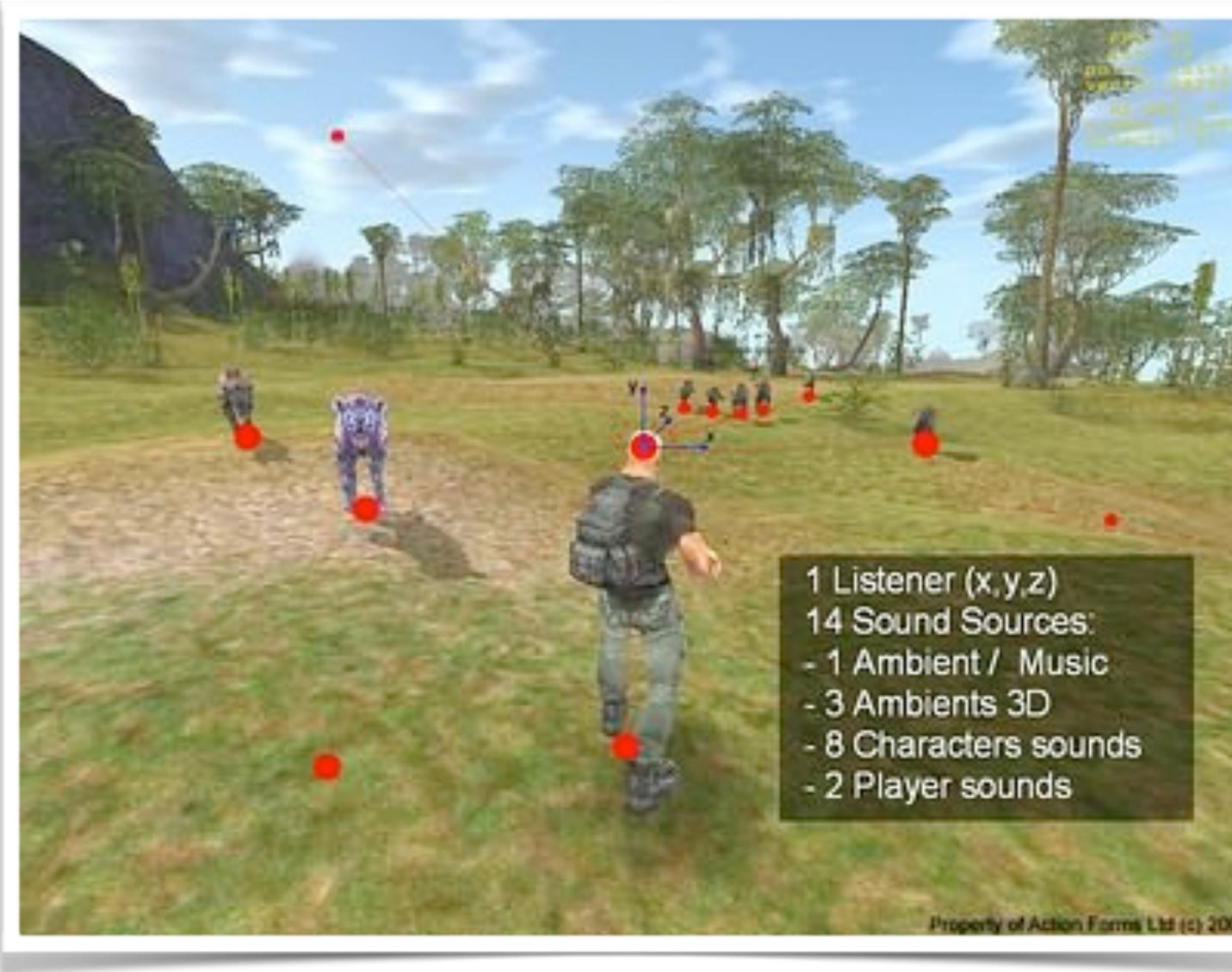
Bandpass

Lautstärke

Verzerrung

Compressor

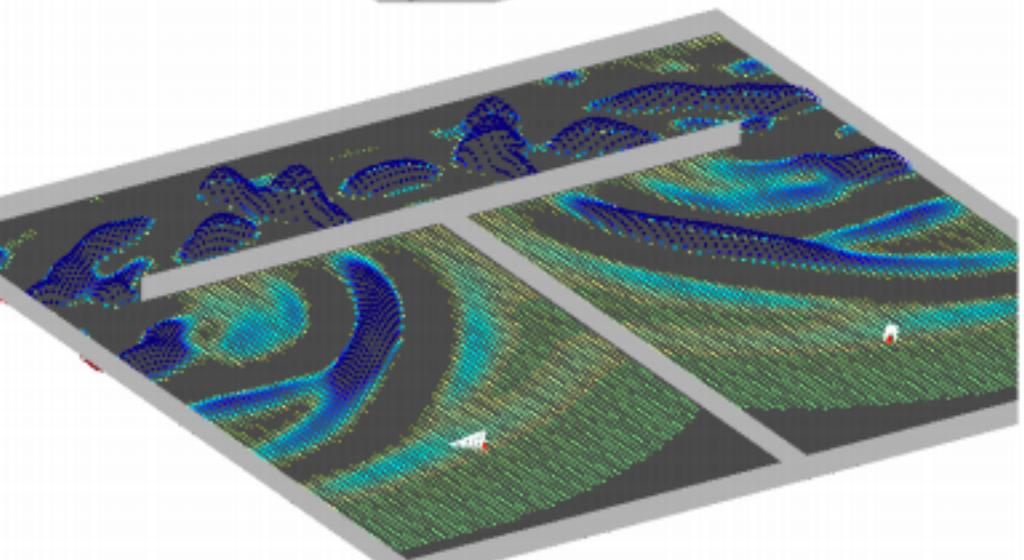
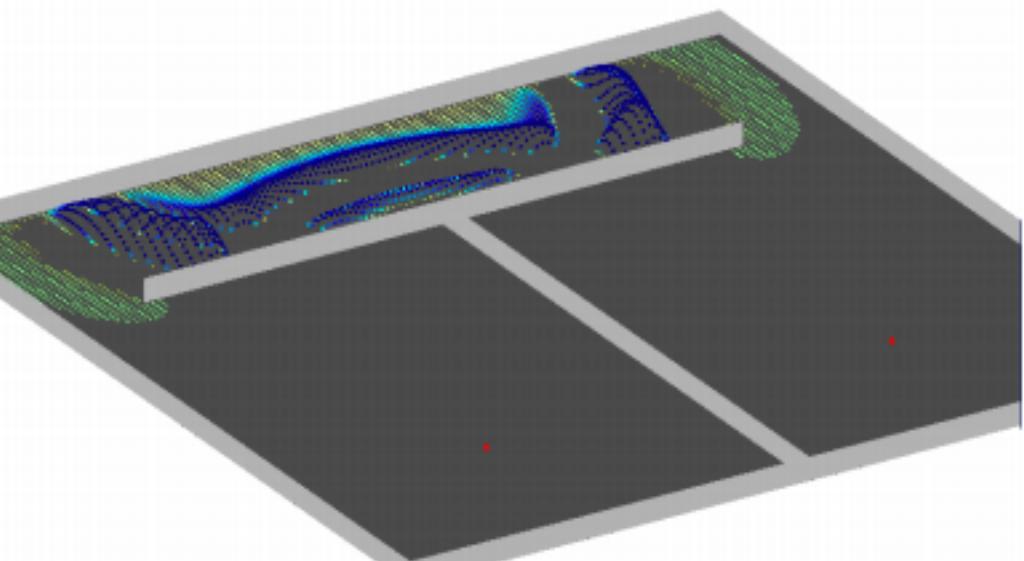
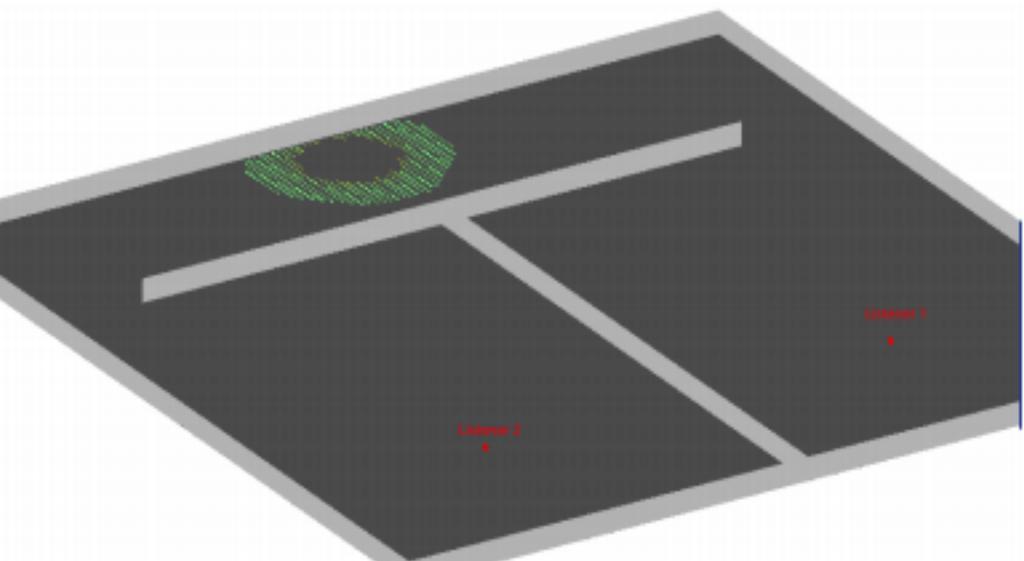
3D-Sound-Mixing



Here is a typical view in a 3D shooter by the example of Vivisector: Beast Inside (from Action Forms). There is the Listener and Sound Sources. Some of the sources are stereo (such as background music; in this particular game wind and jungle sounds are the main ambient sounds), 8 sources are produced by monsters, 1 source is dedicated for a player - shots, steps, and 3 ambient sounds (in this case they are sounds of insects, birds etc.).

Sound Wave Propagation

<http://www.sbgames.org/papers/sbgames10/computing/full/full25.pdf>



Sound Wave Propagation Applied in Games

Diegese

Bezogen auf die Erzählhandlung

Intradiegetisch



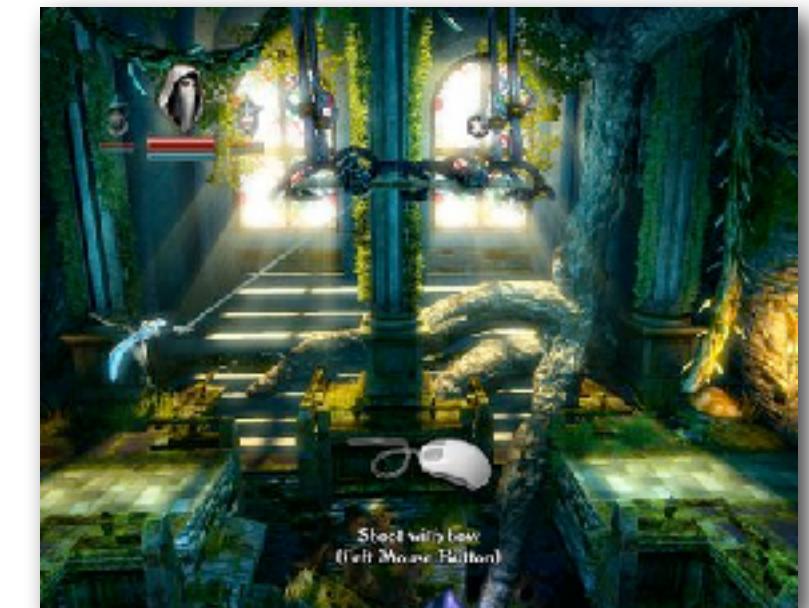
Outrun

Extradiegetisch



Star Wars

Metadiegetisch



Trine

Dynamische Musik



Kameleon, 2012

<http://www.youtube.com/watch?v=IXt9mXDjHa0>

<http://www.kejero.com/>

Adaptiv: Passt sich der Spielumgebung an

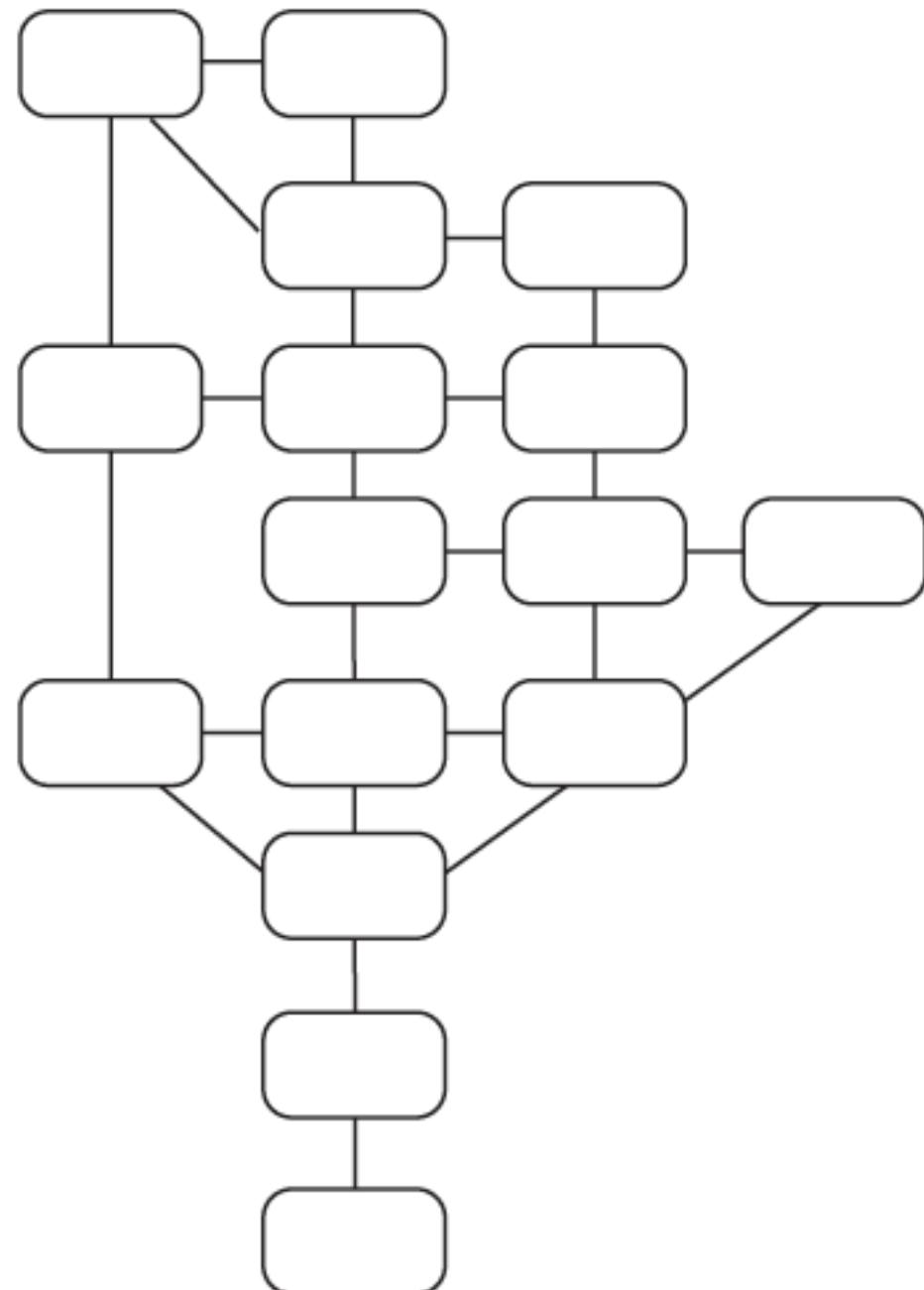
Interaktiv: Reagiert auf die Spielerhandlungen

Nicht-Dynamisch: Passt sich weder der Spielumgebung noch dem Spieler an

Adaptive Soundtracks | Game Maker's Toolkit

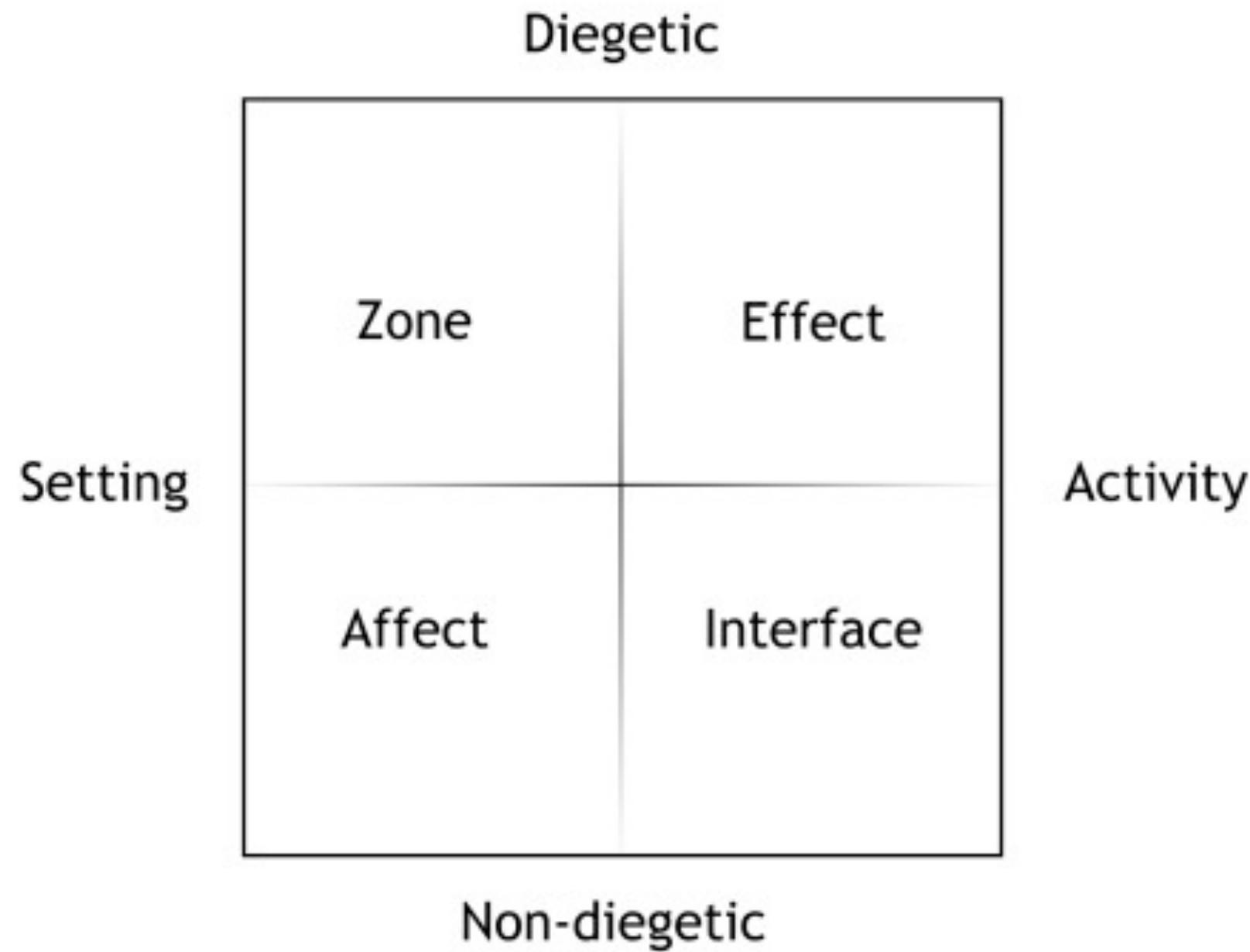
<https://www.youtube.com/watch?v=b0gvM4q2hdl>

Variationen nichtlinearer Musik



1. Variable tempo
 2. Variable pitch
 3. Variable rhythm/meter
 4. Variable volume/dynamics
 5. Variable DSP/timbres
 6. Variable melodies (algorithmic generation)
 7. Variable harmony (chordal arrangements, key or mode)
 8. Variable mixing
 9. Variable form (open form)
 10. Variable form (branching parameter-based music)

Funktionen von Game Audio



IEZA-Framework

<http://creativehero.es/IEZA>

Effekte

z.B. Schritte, Atmen, Waffen, Fahrzeuge, Kollisionen

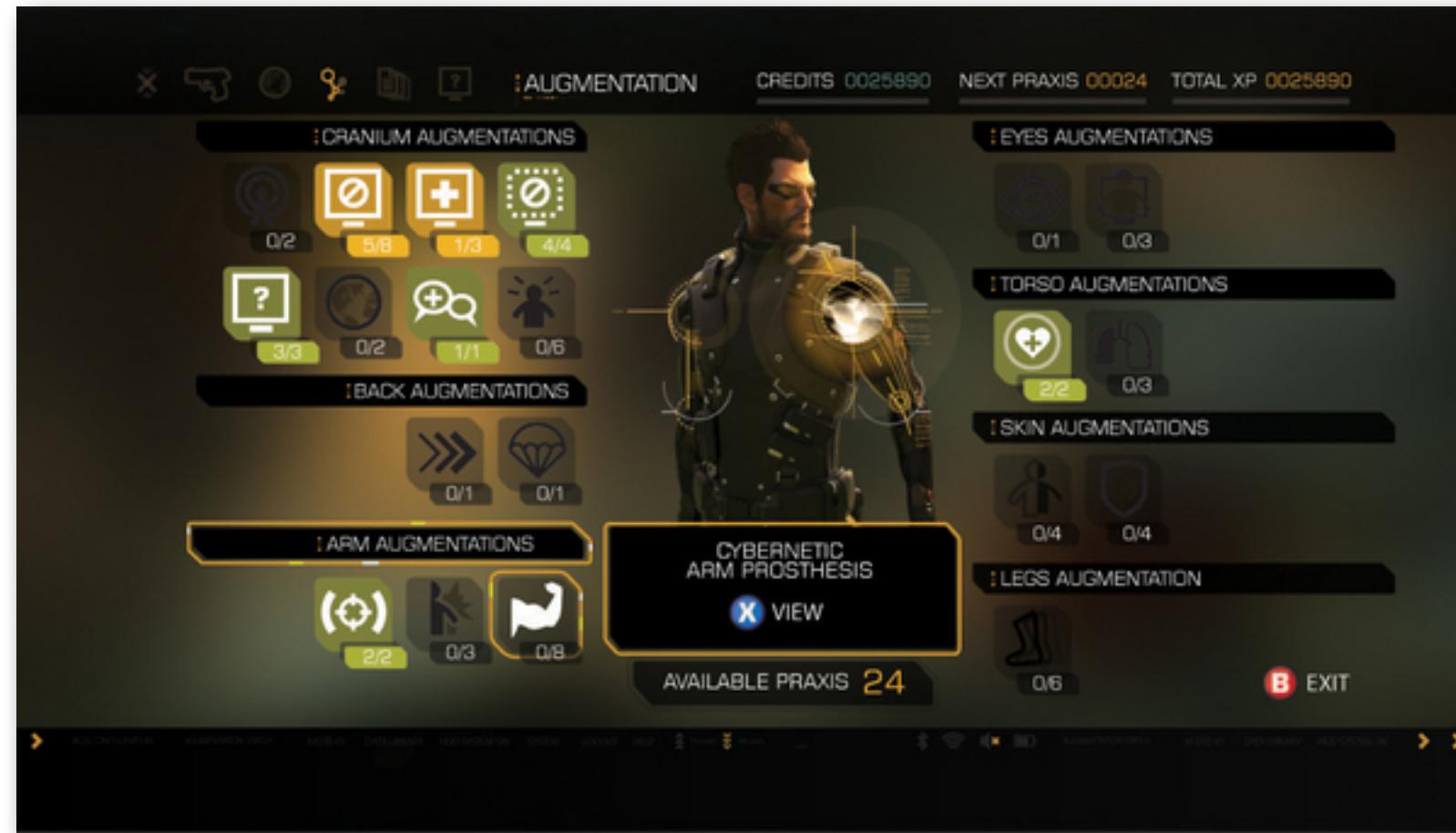


Half-Life 2

Handlungsbestätigung
Spieler
NPC

Interface

GUI (Graphical User Interface), HUD (Head Up Display), Statusleisten, Pop-Ups



Deus Ex: Human Revolution

Spielerstatus

Waffenstatus

NPC-Status

Belohnung / Bestrafung

Zone

z.B. Wind, Regen, Verkehr, Maschinen



Half-Life 2

Orientierung
Tracking
Anziehen
Abwehren

Affekte

Musik, Ambient Sound



The Secret of Monkey Island
Scumm Bar

Atmosphäre
Emotionen abbilden
Personen und Gegenstände charakterisieren (Leitmotiv)
Szenen zusammen halten

Dialoge (Speech Sound)



<https://www.youtube.com/watch?v=YG9otVyV6GI>

Instruktion



Little Big Planet 2

Erzählung



Metal Gear Solid 4



Bastion

Kommentar

Gespräche



Mass Effect 2



Audio-Games

Pitch Game

Karaoke Revolution, SingStar, Rocksmith,
Recorder Master, Songs2See

Rhythm Game (Action)

PaRappa the Rapper, Donkey Konga, Guitar Hero,
Rockband, Just Dance, Dance Central, Osu!

Generative Music (Shooter)

Rez, Child of Eden, FractOSC

Reactive Music (Action)

Vib Ribbon, Audiosurf, Symphony

Exergame (Action)

Dance Dance Revolution, Wii Fit, EyeToy: Kinetic, EA
Sports Active, Zumba Fitness

