

Sound



Geschichte der Computermusik

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



1982 SID (C-64)



1987 AdLib



1981 PC-Lautsprecher



1987 MT-32



1988 GameBlaster



1985 Paula (Amiga)



1989 SoundBlaster

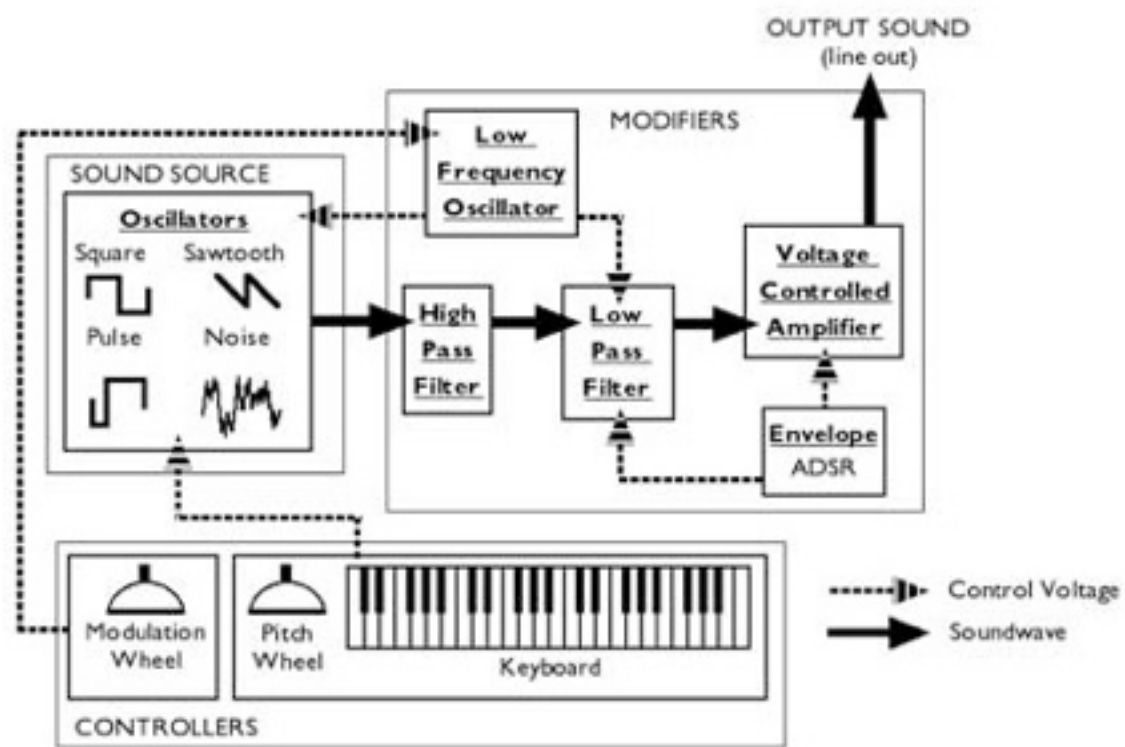


1992 UltraSound



1994 SoundBlaster AWE32

Ton-Techniken



Erzeugung

Beeper (PC)
Synthese
Sample (Wavetable)
Red Book (CD)

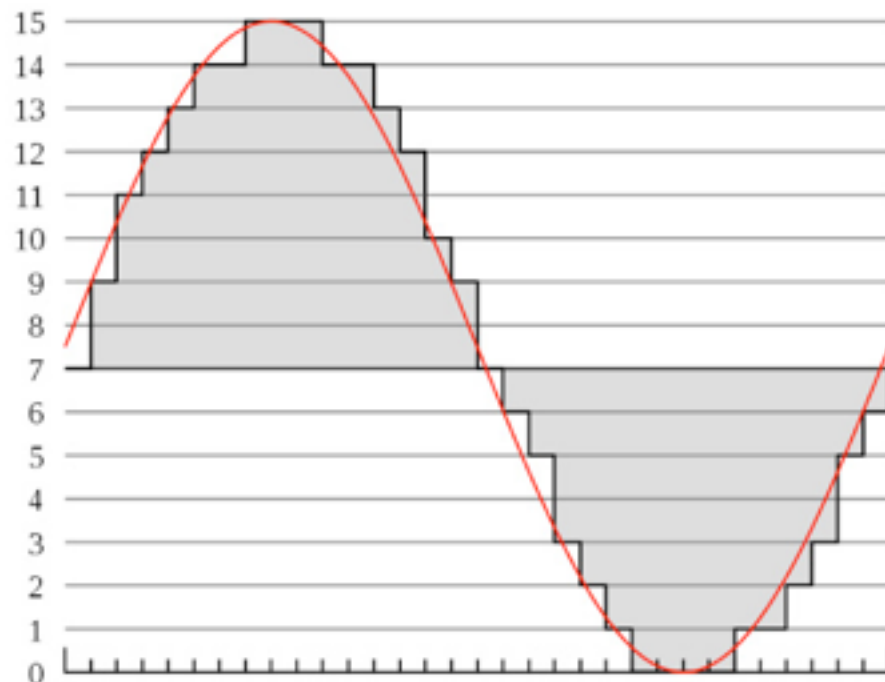
Speicherung

Synthese-Parameter
MIDI
Prozeduren

Samples (.wav, .aiff)
CD
MP3, WMA

Raumklang

Mono
Stereo
3D (Audio Point-of-View)
Multichannel

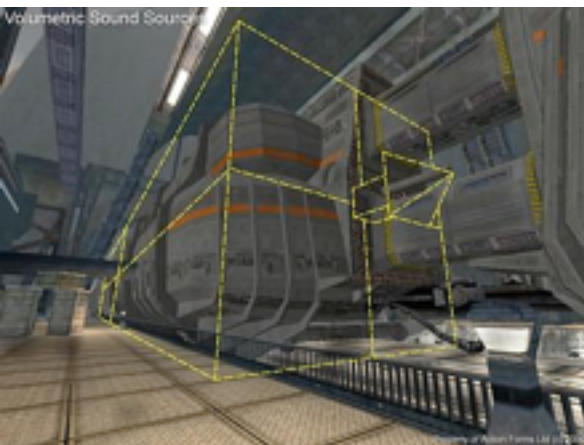


Each digitized sample of audio is assigned a value that corresponds to the amplitude of the analog wave.



1

Audio Point-of-View



2

Entfernung: Lautstärke (1)

Position: Stereo, 3D, Multichannel, Surround



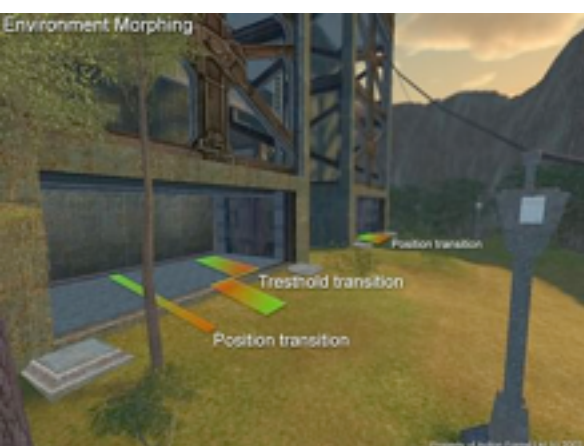
3

Körper: Volumetrischer Sound (2)

Bewegung: Dopplereffekte (3)

Verdeckung: Filter

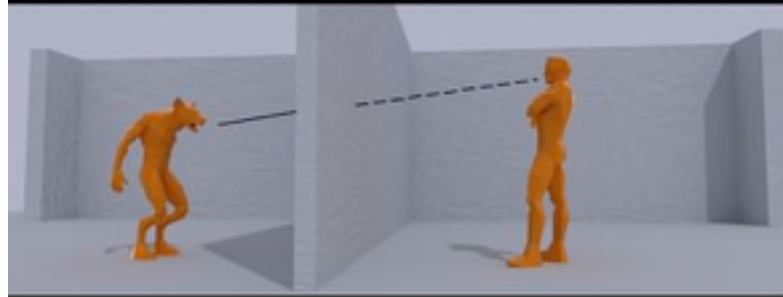
Effekte



4

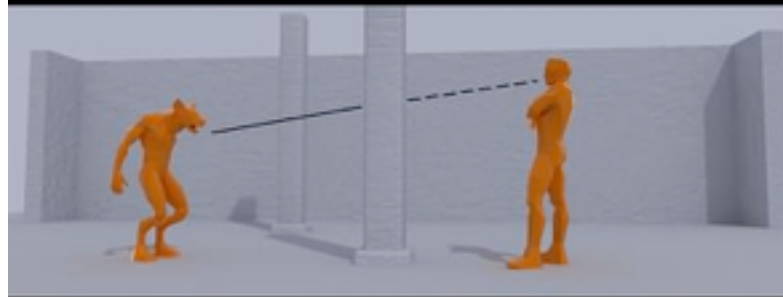
Umgebung: Environment Morphing (4)

Occlusions



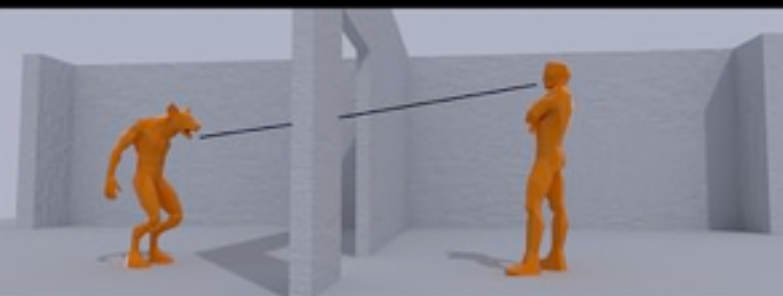
- Direct path is muffled
- Reflections are muffled

Obstructions



- Direct path is muffled
- Reflections are clear

Exclusions



- Direct path is clear
- Reflections are muffled

Effekte

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

Zeit

Echo

Hall

Chorus

Frequenz

EQ

Hochpass

Tiefpass

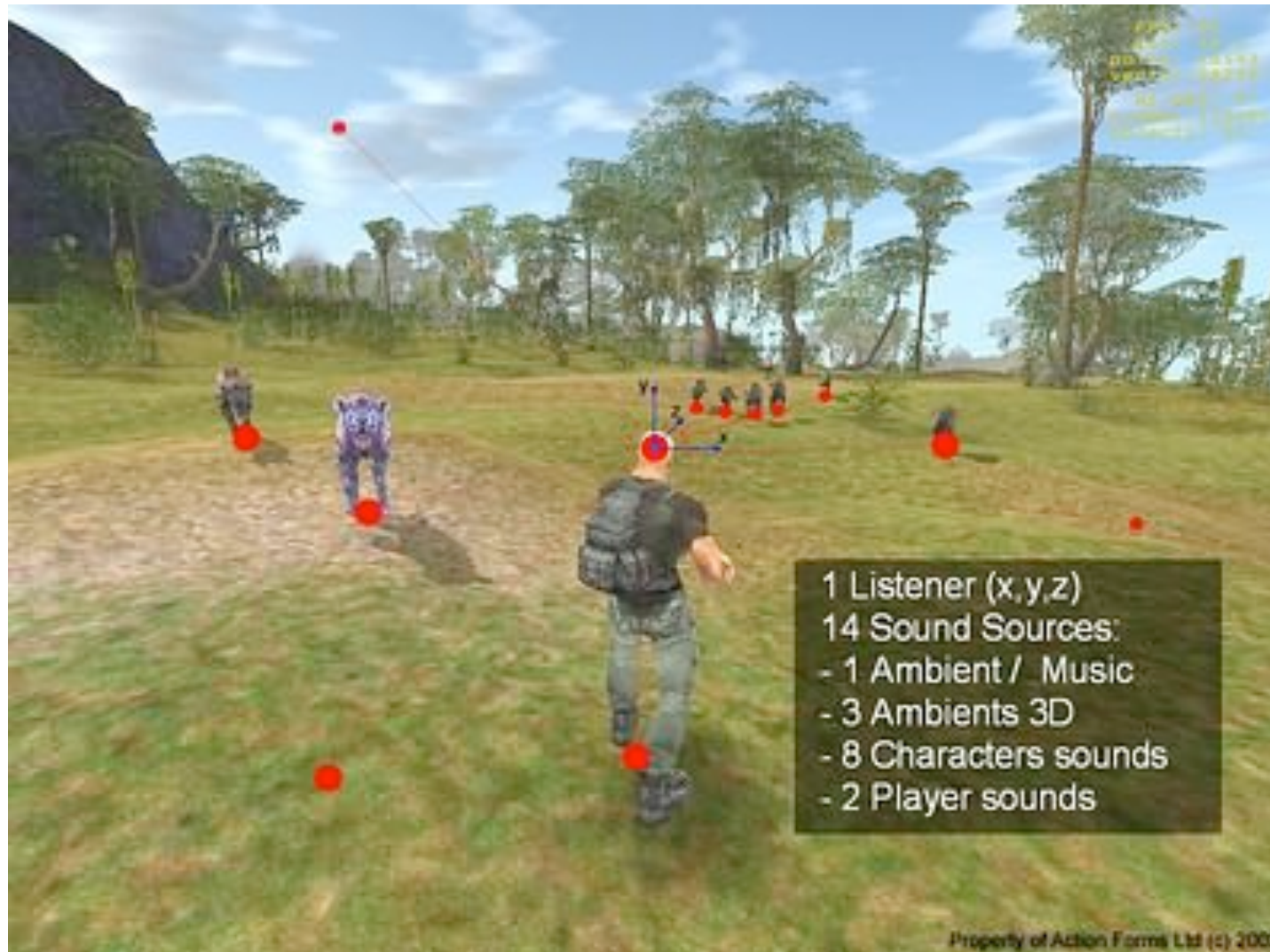
Bandpass

Lautstärke

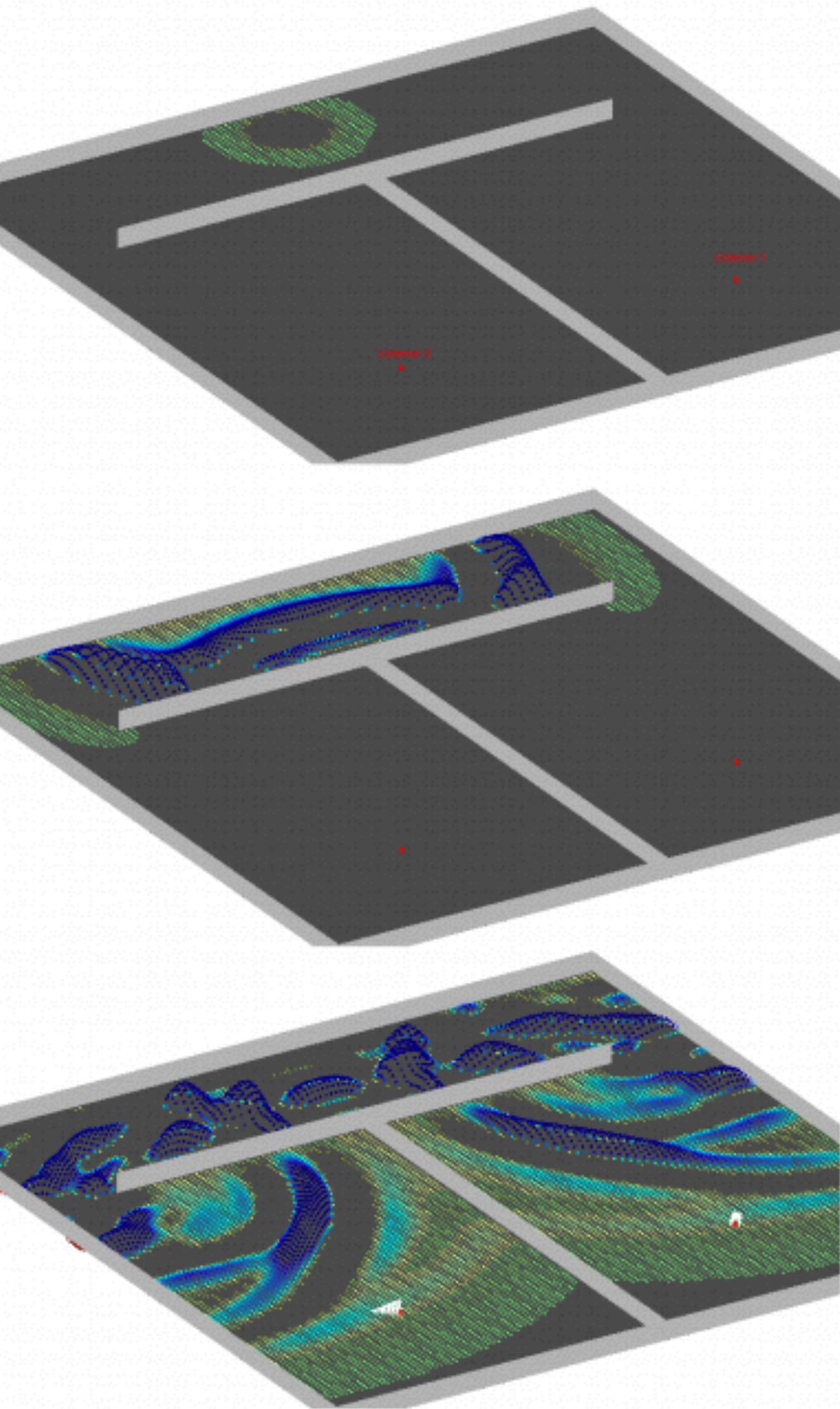
Verzerrung

Compressor

3D-Sound-Mixing



Sound Wave Propagation



Sound Wave Propagation Applied in Games

Diegese

Bezogen auf die Erzählhandlung

Intradiegetisch



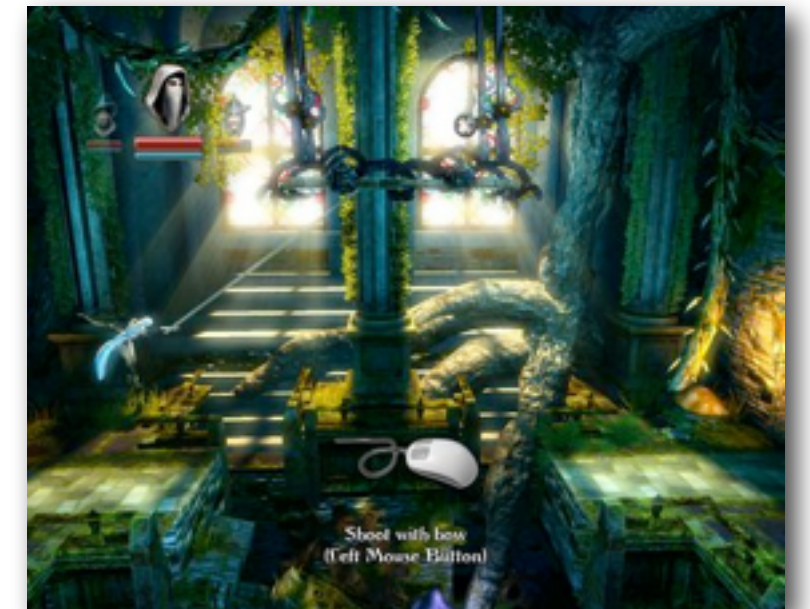
Outrun

Extradiegetisch



Star Wars

Metadiegetisch



Trine

Dynamische Musik



Adaptiv: Passt sich der Spielumgebung an

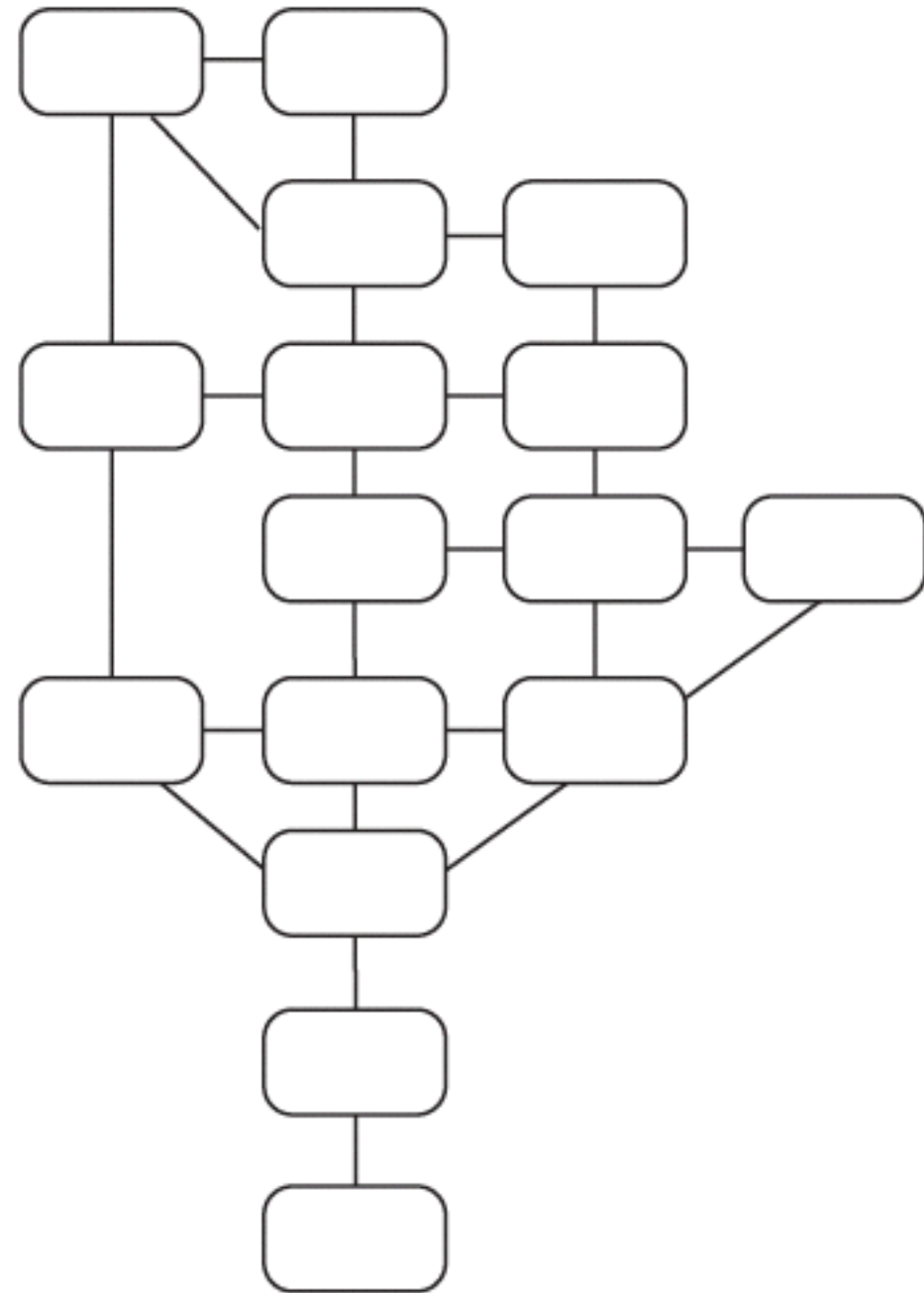
Interaktiv: Reagiert auf die Spielerhandlungen

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

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

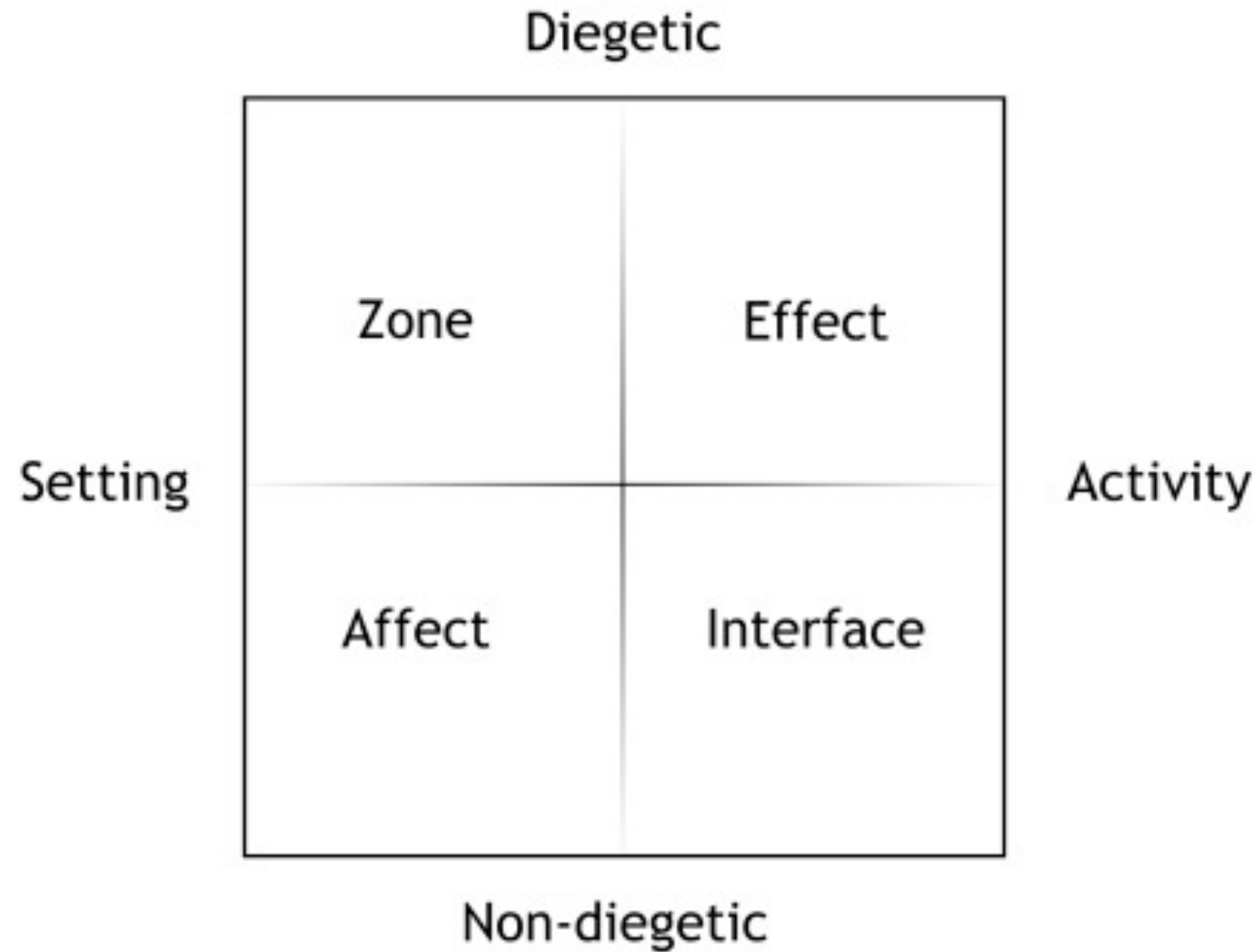
<http://www.kejero.com/>

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

Dialogue (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

