

Game Effects



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Game Programming

- Rendering
- Looping and control
- Math
- Animation
- Physics
- Behaviour and navigation (AI)
- Effects
- Networking

Game Programming

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- **Effects**
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Effects

- Visual effects
 - Post-processing
 - Particle systems
- Sound effects

Depth of Field



https://en.wikipedia.org/wiki/File:Dof_blocks_f4_0.jpg

Depth of Field (cont'd)



<https://www.nintendo.com/games/detail/octopath-traveler-switch/>

Bloom



[https://en.wikipedia.org/wiki/Bloom_\(shader_effect\)](https://en.wikipedia.org/wiki/Bloom_(shader_effect))



Post Processing (before)



<https://docs.unity3d.com/Manual/PostProcessingOverview.html>

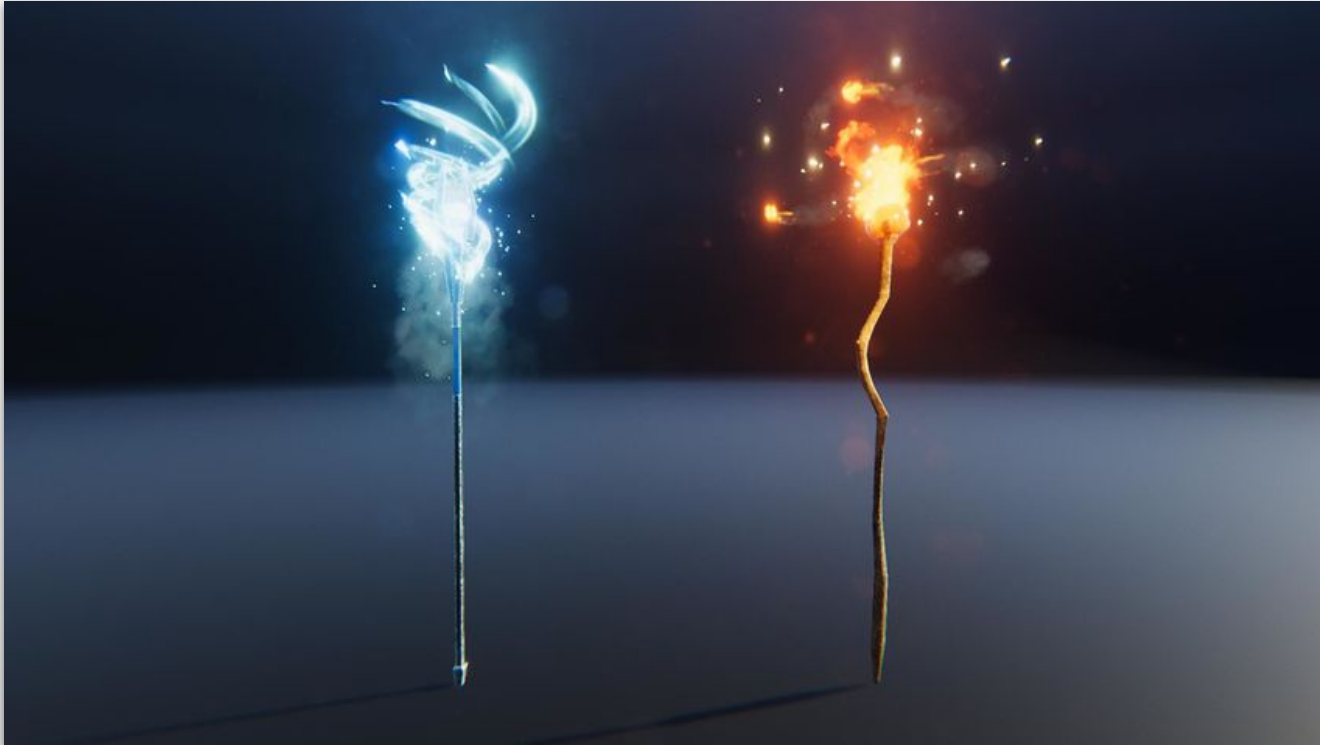


Post Processing (after)



<https://docs.unity3d.com/Manual/PostProcessingOverview.html>

Particle systems





Built-in particle systems

Particle System

Open Editor...

Particle System

- Emission
- Shape
- Velocity over Lifetime
- Limit Velocity over Lifetime
- Inherit Velocity
- Force over Lifetime
- Color over Lifetime
- Color by Speed
- Size over Lifetime
- Size by Speed
- Rotation over Lifetime
- Rotation by Speed
- External Forces
- Noise
- Collision
- Triggers
- Sub Emitters
- Texture Sheet Animation
- Lights
- Trails
- Custom Data
- Renderer

Particle Effect

Pause	Stop
Playback Speed	1.00
Playback Time	9.79
Particle Count	300





DEMO: 2D Game Kit

- Steps :
 - Open scene “**Zone 5**”
 - Show the particle system of “**HealthParticles**”
 - Adjust different modules

Performance issues

- Complex geometries
- Transparent
- Lots of instances

Object pooling

- Don't destroy objects if not necessary
 - Disable only
- Instantiate new objects if necessary



DEMO: 2D Game Kit

- Steps :
 - Open scene “**Zone 5**”
 - Show the particle system of “**DustBuff**”
 - Explain “**Object Pool**”



Control the timing of spawning effects

- By the editor tool
 - Animation events
- By customized codes



DEMO: 2D Game Kit

- Steps :
 - Open scene “**Zone 5**”
 - Explain how “**DustBuff**” is spawned
 - Show the animation “**Ellen_Run**”



Visual effect graph



Sound Effects



Visual effects vs. sound effects

- What's the major differences between these two types of effects ?

Visual effects vs. sound effects

- What's the major differences between these two types of effects ?



“ created a method of almost automatically generating **vibration patterns** *from* a game's **sound effects**.”



Audio middlewares: FMOD

The screenshot displays the FMOD software interface, specifically the Mixer view. The window title is "celeste_audio.fspro* - Mixer". The menu bar includes "File", "Edit", "Create", "View", "Window", "Scripts", "FMOD.io", and "Help".

The interface is divided into several sections:

- Routing:** A sidebar on the left showing a tree view of audio groups and returns. The "Grp music" group is selected and highlighted in yellow.
- Mixing Desk:** The main area showing a row of audio groups: "Group stings", "Group tunes", "Group rename_piano", "Group worldmap_whoosh", "Return rename_verb", "Group _design_tools", "Group gameplay_sfx", "Group music", and "Master Master Bus". Each group has a "SOLO" and "MUTE" button and a vertical level meter. The "Group music" meter is highlighted with a yellow box.
- Parameters:** Below the mixing desk, there are several control panels for the selected "Group music":
 - Volume:** A knob set to 0.00 dB.
 - Multiband EQ:** A frequency response graph with a red curve. The Q parameter is set to 1.96.
 - Gain:** A knob set to 0.00 dB.
 - Reverb:** A knob set to 1.50 sec.
 - HF Decay:** A knob set to 50%.
 - Pan:** A knob set to 0.00.
 - Pitch:** A knob set to 0.00 st.
- Group Macros:** A section on the right with a "Stealing" knob and a dropdown menu set to "Oldest".

At the bottom of the interface, there are buttons for "New Group", "New Return", and "Flatten", along with a status bar showing "Live Update Off" and "Platform Desktop".



Audio middlewares: Wwise

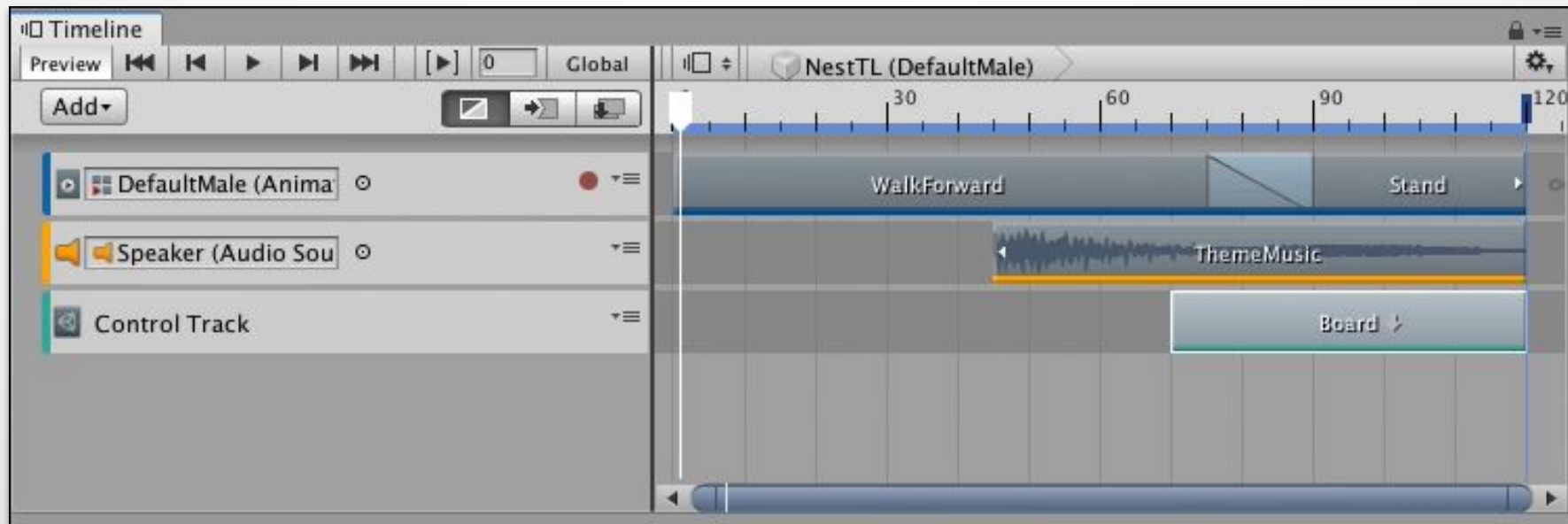
The screenshot displays the Wwise Music Switch Container Property Editor. The left pane shows a hierarchy of audio assets, including 'Music' with 'Playlist 1' and 'Playlist A'. The main editor is set to the 'Transitions' tab, showing a table of transitions:

Name	ID	Source	Destination
Transition	1	>> Any	>> Any
Transition	2	>> Playlist 1	>> Playlist A

Below the table, the 'Source' section is configured with 'Exit source at' set to 'Exit Cue' and 'Play post-exit' checked. The 'Destination' section has 'Jump' set to 'Last Played Segment'. A dropdown menu is open for 'Jump', showing options: 'Start of Playlist', 'Specific Playlist Item', 'Last Played Segment' (highlighted), and 'Next Segment'. The 'Transition Segment' section on the right has 'Use transition segment' unchecked and 'Play transition pre-exit' checked.



Unity Package : Timeline



Q & A