



# Game Audio Middleware

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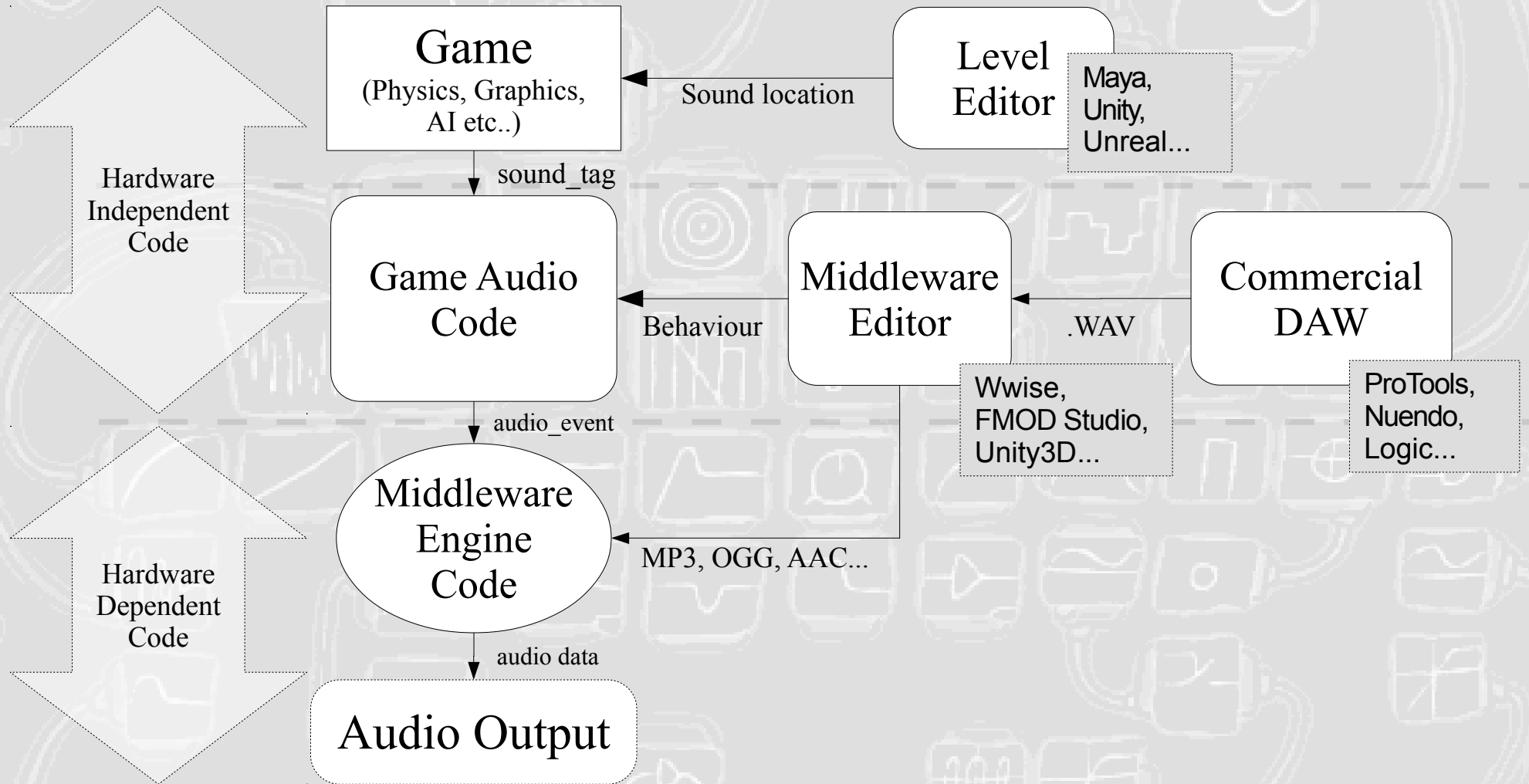
School of Video Game Audio

[VideoGameAudio.com](http://VideoGameAudio.com)

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# Game Audio Flowchart



# Wwise

The screenshot displays the Wwise v2014.1.4 (32-bit) interface. The top menu bar includes Project, Edit, Views, Layouts, Audio, Windows, and Help. The main window is titled "SampleProject\* - Wwise v2014.1.4 (32-bit)".

The interface is divided into several panels:

- Project Explorer:** Shows a hierarchy of assets including Soundcaster Sessions, MIDI, Minigun, Music, Mixing Sessions, and Control Surface Sessions.
- Music Track Property Editor:** Displays settings for the "Stealth\_BrassPiano&Ride" track, including Voice, Output Bus, and various filters.
- Performance Monitor:** A window showing real-time performance metrics such as Audio Thread CPU, Number of Streams (Active), Total Streaming Bandwidth (Low-Level), and Total Used Memory.
- Loudness Meter:** A window showing the Master Audio Bus - Loudness Meter, displaying values for Momentary and Short-term loudness.
- Music Segment Editor:** A timeline view showing various music segments like "Stealth\_Orchestra\_BrassPiano&Ride1\_Seg2\_01", "Stress\_Bass", "Stress\_Orchestra", "Stress\_Percussion", and "Stress\_Various".

The bottom of the interface features a MIDI Music - Transport Control panel with buttons for Original, PF Only, and various transport controls.

# Wwise

- Audiokinetic is based in Montréal
- Launched 2006
- 900+ page manual
- Forum: <https://www.audiokinetic.com/qa/>
- Authoring tool available for PC & Mac
- Plugins for Unity, Unreal, CryEngine & more
- [AkCube](#) open source game available (Mac/PC)
- [Limbo](#) demo game available for PC

# FMOD Studio

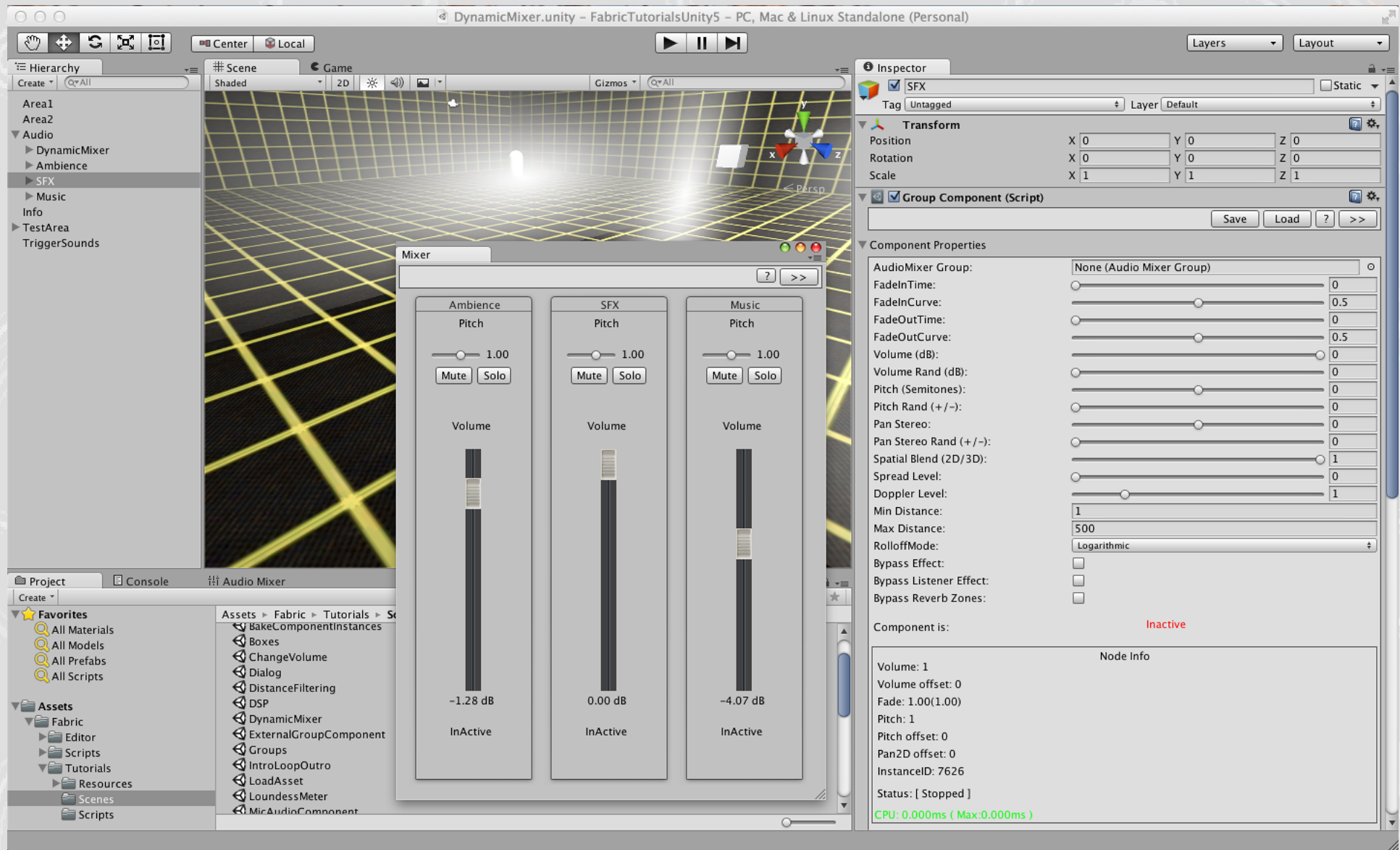


# FMOD Studio

- Firelight Technologies is based in Melbourne, Australia
- Launched 2012
- 200+ page manual
- Forum: <http://www.fmod.org/support/qa/>
- Authoring tool available for PC & Mac
- Plugins for Unity & Unreal
- [EarthWarrior3D](#) open source PC game available



# Fabric



# Fabric Audio

- Tazman Audio is based in Brighton, UK
- Launched version 1.0 in 2011
- 50+ page manual
- Forum:  
<http://www.tazman-audio.co.uk/#!/moot-forum/c1nh8>
- Runs on all Unity platforms
- Unity 5 demos available
- Will be released as a stand-alone soon



# Pure Data

The screenshot displays the Unity development environment with the following components:

- Scene View:** A 3D perspective view of a scene with a grid floor and a small cube with a red dot on top.
- Project Panel:** Shows the file hierarchy with folders like Gizmos, Other Assets, Plugins, Resources, Scenes, and StreamingAssets. The 'Scenes' folder contains 'PDPlayerExample'.
- Hierarchy Panel:** Shows the current scene hierarchy: Example > AudioPlayer > alchemy1 > Listener.
- Inspector Panel:** Shows the properties of the 'alchemy1' audio source, including Fade In, Fade Out, Random Volume, Random Pitch, and various audio settings.
- Profiler Panel:** Displays performance metrics for CPU Usage, Rendering, and other system components.
- example.pd Window:** A Pure Data patch window with the following text:
 

In Unity you will need to first follow these steps in order to make everything work properly:

  - 1- In the menus, click Magicolo's Tools/Create/AudioPlayer
  - 2- Add sounds to the Resources folder (notice that the AudioPlayer will create a hierarchy representing your sounds where you can change their settings).
  - 3- In a script, call `PDPlayer.OpenPatch(nameOfPatch)` where `nameOfPatch` should be "example" in order to make this patch work.
  - 4- Then, call `PDPlayer.Play(moduleName, soundName, source)` where `moduleName` should be "Test" in order to make this patch work, `soundName` should be the name of a sound as it appears in the AudioPlayer's hierarchy and `source` should be a Gameobject around which the sound will be spatialized.

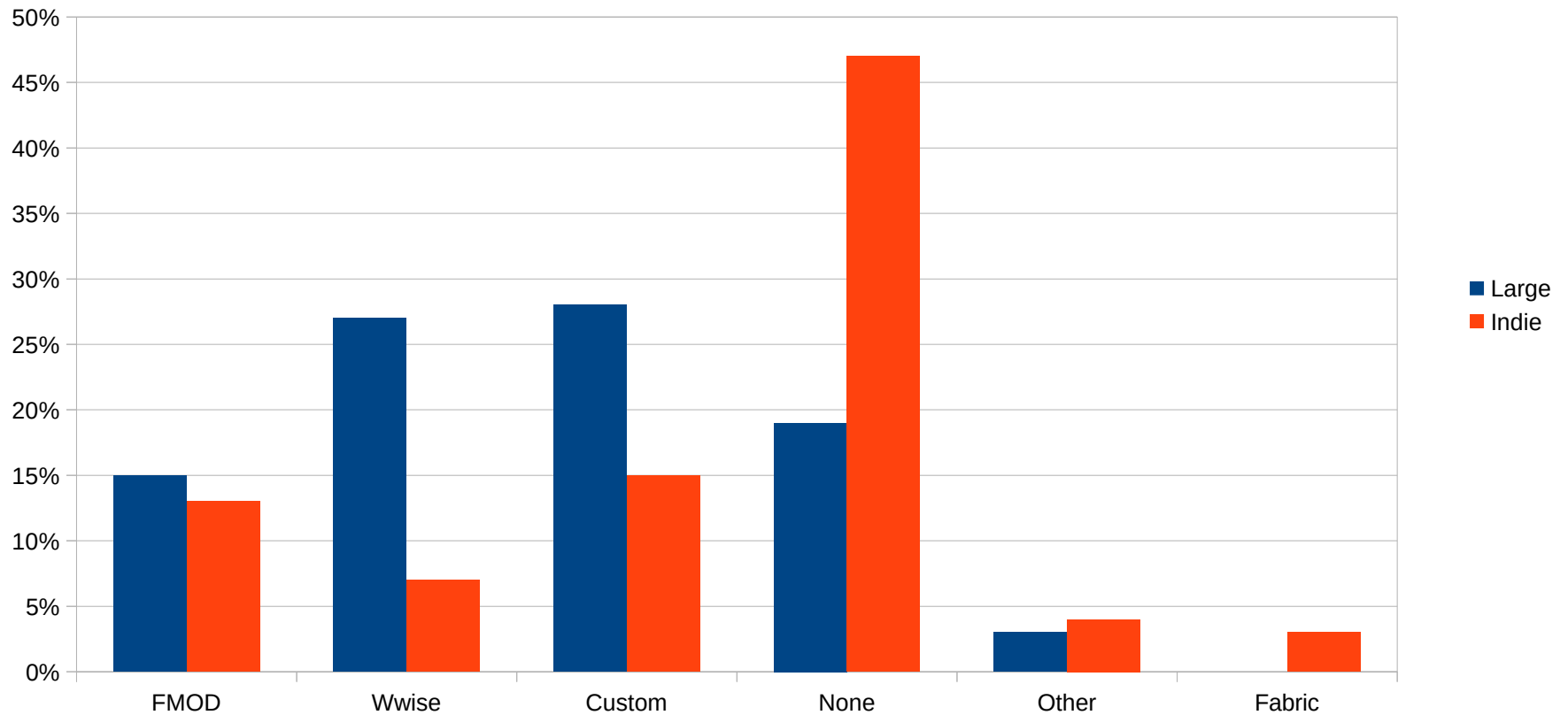
The patch itself contains objects: `pd source` (Simple AM audio source), `spatialize~ Test` (This object will spatialize the source around the scene object defined in Unity. The argument is the name of the object), and several `outlet~` objects.
- Console:** Shows a debug message: "Debug received Float: 73.43253".

# Pure Data

- Pure Data by Miller Puckette in San Diego
- Launched in 1996
- *Designing Sound* by Andy Farnell is a good reference book and is 600+ pages
- Forum: <http://forum.pdpatchrepo.info/>
- Android, iOS, Mac & Windows platforms
- Runs on PC & Mac with [Unity](#)
- In early development but free & open source

# Usage Comparison Chart

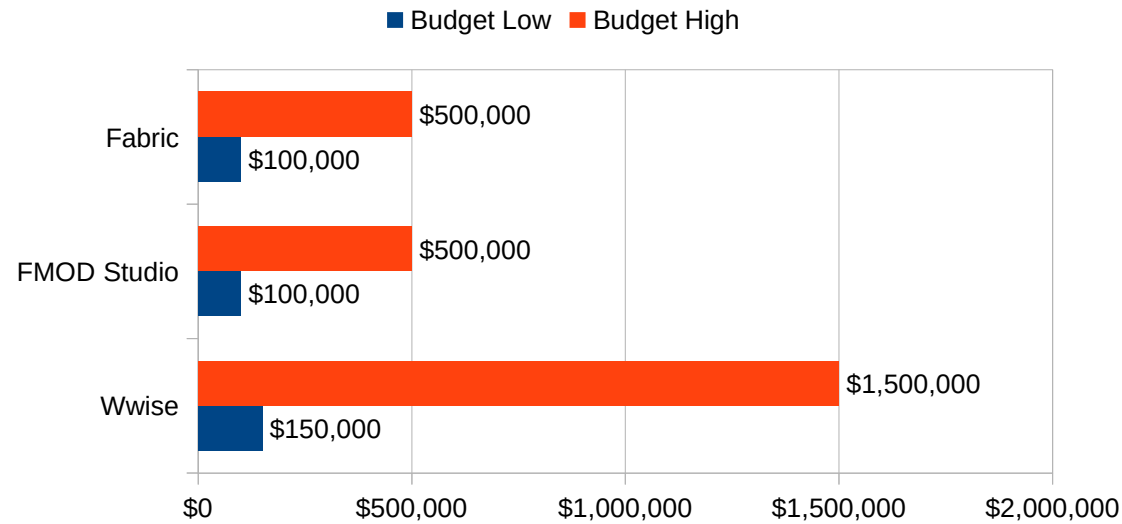
Middleware Use in Large & Indie Titles



From [GameSoundCon 2014 Survey](#) of 500+ game audio professionals

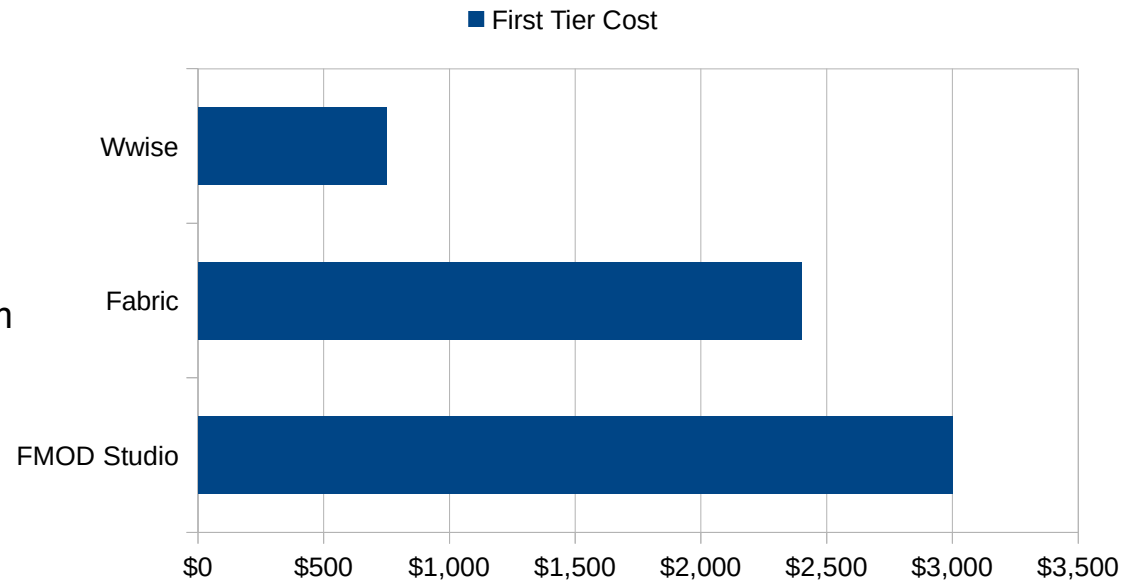
# Cost Comparison Chart

First Tier Budget Ranges



\* Free version of Wwise only supports 200 sound objects

Tier Cost is per platform



# Platform Comparison Chart

	Wwise Free	Wwise Paid	FMOD Free	FMOD Paid	Fabric	Pure Data
Android	✓	✓	✓	✓	✓	✓
iOS	✓	✓	✓	✓	✓	✓
Linux	✓	✓	✓	✓	✓	
Mac	✓	✓	✓	✓	✓	✓
Windows	✓	✓	✓	✓	✓	✓
Windows Phone 8	✓	✓	✓	✓	✓	
3DS		✓		✓		
Wii		✓		✓		
Wii U		✓		✓	✓	
PS3		✓		✓	✓	
PS4		✓		✓	✓	
PS Vita		✓		✓	✓	
Xbox One		✓		✓	✓	
Xbox 360		✓		✓	✓	
BlackBerry			✓	✓	✓	
PSP				✓		
Google Native Client			✓	✓		
Oculus Rift					✓	
Gear VR					✓	
Android TV					✓	
Samsung SMART TV					✓	
Tizen					✓	

# Which to Choose?

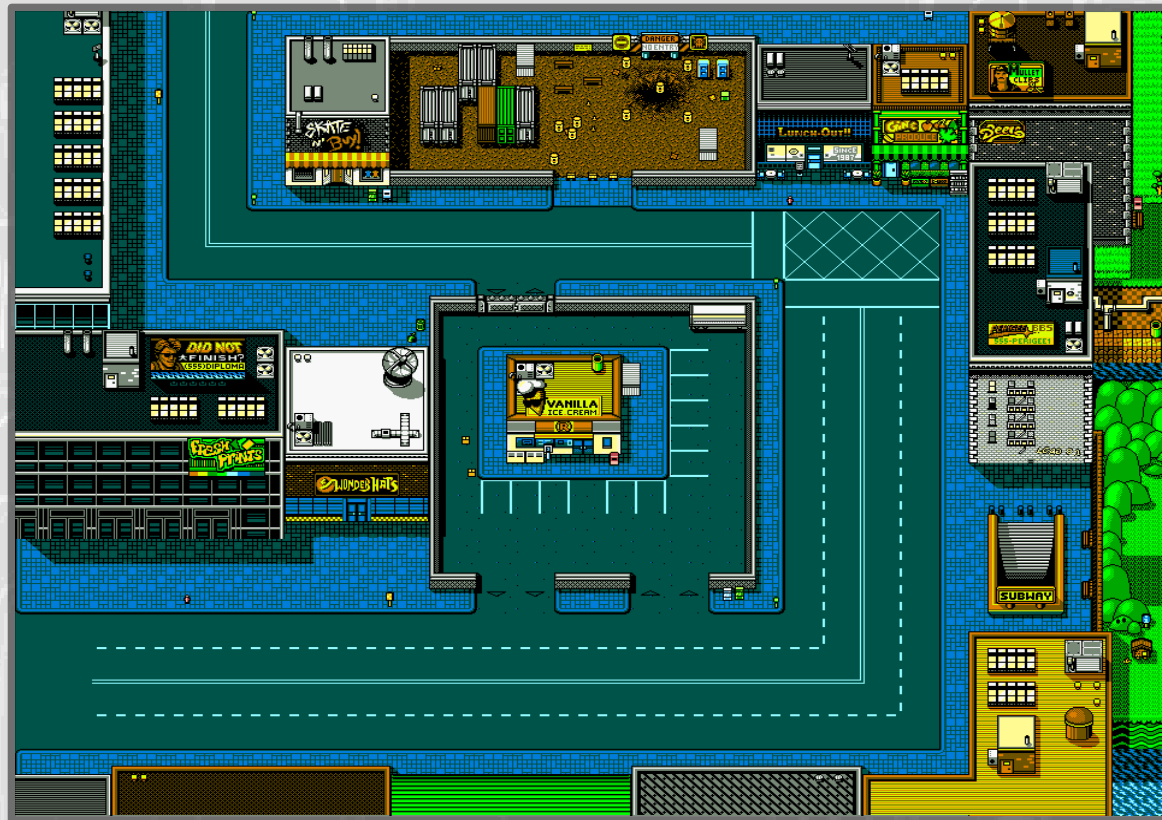
- Wwise used more for AAA games & overall
  - FMOD Studio used more with indies
  - Fabric supports all Unity platforms
  - Pure Data is free but risky
- 
- All solutions lower time & cost to developers





# Indie Games = Make your Own :)

- *Retro City Rampage*



RetroCityRampage.com

# Questions ?

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