Haptics Gaming SDKs
A Market Survey

Document Content

This document includes a market survey of available SDKs and Haptic Design software to develop custom haptics implementation for video games.

SDKs are classified and presented in this order:

- Cross-Platform SDK
- Major Platform SDK
- Peripheral SDK

Haptic Design Software are presented only when working cross-platform (not only for a specific haptic device).

Disclaimer & Authors

This document is published by the Haptics Industry Forum, a non-profit industrial association of haptics companies and experts. www.hapticsif.org

This document is a work product of the Haptics Gaming Working Group.

Survey Methods

This survey was performed with publicly accessible official documentation. The SDK and products were not all tested by the authors.

A peripheral was considered in this research if it would ship at the date of research.

An SDK was considered if it was possible to access at the date of research following the validation of the license.

A Design Tool was considered if it was possible to access at the date of research following the validation of the license.

Definitions

Cross-Platform: ability to play a piece of content across at least two devices from two different vendors.

HOTAS: Hands On Throttle-And-Stick.

Mixing: ability to mix two haptics effects at the same time.

Perceptions: haptics modalities supported.

Real time update: Ability to modify the haptics effect once the playback started.

SDK: Software Development Kit.

Targeting: Ability to localize the haptic effect over the human avatar.

Testing - In App: haptic testing in the design tool by playing a button.

Testing - In Engine: haptic testing in the game engine without compiling.

Testing - Over the air: haptics synchronization over Network with haptics device.

Wideband: haptic effect with multiple vibrational frequencies.

Cross-Platform Gaming SDKs

Cross-Platform Gaming Haptics SDK - Features

Full functionalities

Reduced Functionalities

SDK/APIs	Unity Native	Unreal Native	Core Haptics	Android	Nice Vibrations	Interhaptics	Wwise
API Name	InputSystem.Haptics	Force Feedback	Core Haptics SDK	Android SDK	Nice Vibrations	Interhaptics SDK	Wwise Motion
Asset	No	.wav	.AHAP	.ogg	.AHAP	.haps	.wav
Scripting	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No
Game Engine	Unity	Unreal	Unity	Any	Unity	Unity/Unreal/Any	Any
Haptic Engine	No	No	Core Haptics	No	No	Interhaptics Engine	Audio Engine Plugin
Wideband	No	No	**Yes - 1 sharpness**	No	**Yes - 1 sharpness**	**Yes**	**Yes**
Real Time Update	No	No	**Yes**	No	No	**Yes**	-
Targeting	Left/Right	Left/Right	Left/Right	Left/Right	Left/Right	Body Mapping	Device Actuators
Mixing	No	No	No	No	No	**Yes**	**Yes**
Perceptions	Vibration	Vibration	Vibration / Force	Vibration	Vibration	Vibration / Stiffness / Texture	Vibration / Stiffness
Documentation	Link	Link	Link	Link	Link	Link	Link
License	Licensing plan	Licensing Plan	License	License	MIT	License	License
Design Tool	-	-	Haptic Sampler / Haptrix	-	Lofelt Studio - Rust build (deprecated)	Haptic Composer	Wwise Motion

Cross-Platform Gaming Haptics SDK - Device Compatibility

Supported devices/Protocols	Unity Native	Unreal Native	Core Haptics SDK	Android SDK	Nice Vibrations	Interhaptics	Wwise
DualSense	No	No	Yes - Amplitude	No	No	Yes - Wideband	Yes - Wideband
DUALSHOCK	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PSVR2	No	No	Yes - Amplitude	No	No	Yes - Wideband	Yes - Wideband
XInput/HID	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDK	No	No	No	No	No	No	Yes
Android	No	Yes	No	Yes	No	Yes	Yes
Core Haptics	No	Yes - Amplitude	Yes	No	Yes - Wideband	Yes - Wideband	No
Meta Quest	Yes	No	No	No	No	Yes	No
Meta Quest Pro	No	No	No	No	No	No	No
OpenXR	Yes	No	No	No	No	Yes	No
Nintendo Switch	Yes	No	No	No	No	Yes	Yes
Steering Wheel	No	No	Yes - Limited	No	No	No	No

Platform Native Gaming SDKs

Platform Native Gaming Haptics SDKs

SDK/APIs	PlayStation SDK	Microsoft GDK	Nintendo SDK	Meta Haptic SDK	Steam Deck
API Name	Dual Shock, DualSense, Sense, Head Haptics	All Xbox controllers/XInput	Switch (non Switch Lite)	Quest Pro and Quest controllers	Steam Deck, Steam Controller
Asset	.wav	no	no	.haptics	MIDI
Scripting	Yes	Yes	Yes	Yes	Yes
Game Engine	Unity/Unreal/Other	Any	Any	Unity	Any
Haptic Engine	No	No	No	?	No
Wideband	Yes	No	No	Yes	No
Real Time Update	Yes	Yes	Yes	Yes	Yes
Targeting	Left/Right/Triggers/Head	Left/Right/Triggers	Left/Right/Center	Left/Right	Left/Right
Mixing	No	No	No	N/A	Yes
Perceptions	Vibration/Force	Vibration	Vibration	Vibration	Vibration
Documentation	After NDA	After NDA	After NDA	Link	Link
License	Playstation Partners	XBox Game Developer Program	Nintendo developer	Oculus Developer	Steamworks
Design Tool	Yes (available in the PS SDK)	-	-	Meta Haptics Studio	-

Gaming Peripherals
Haptics SDKs

Gaming Peripherals Haptics SDKs

SDK/APIs	b-Haptics	D-Box	Teslasuit SDK	Unitouch
Supported Devices	bHaptics	D-Box Actuators	Teslasuit / Teslaglove	Actronika Vest
Script	yes	yes	N/A	yes
Asset	.tact	-	N/A	.wav
Game Engine	Unity	Any	Unity	Unity
Haptic Engine	No	No	N/A	Yes
Wideband	No	Yes	Yes - Teslaglove	Yes
Real Time Update	yes	Yes	N/A	Yes
Targeting	Body Mapping	Pitch/Roll/Heave/4 Corner/Yaw/Sway/Surge	Body / Hands	Chest
Mixing	Yes	Yes	Yes	Yes
Perceptions	Vibration	Vibration/Position/Texture	Vibrations and weight throughTENS (Nerve Stimulation) and EMS (Electrical Muscle Stimulation)	Vibrations
Documentation/ Tutorial	Link	Link	N/A	Link
License	Not shared	N/A	Requires hardware	Link
Design Tool	bHaptics Designer	N/A	Teslasuit Haptic Editor	Unitouch Studio

Force Feedback in Steering Wheels

Steering wheels are used in many vehicle games. These peripherals can produce haptic feedback such as loss of grip, vibrations, resistance, etc. Manufacturers have their SDK to implement these effects using vehicle telemetry. It is in constant evolution to provide the most realistic sensations. We are seeing haptic feedback in brake pedals/HOTAS as well. Since this has a specific application, it will not be covered in depth in this document.

Cross-Platform Haptic Design Tools

Cross-Platforms Haptic Design Tools - Features

	Haptrix	Apple Sampler	Meta Studio	Haptic Composer	Wwise Motion
Asset	.ahap	.ahap	.haptic	.haps	Soundbank file, .bnk
Perceptions Design	Vibrotactile, Force	Vibrotactile	Vibrotactile	Vibrotactile, Texture, Force	Vibrotactile, force
Audio to Haptics	No	No	Yes	Yes	No
Wideband	No	1 sharpness	1 frequency	Multifrequency	Multifrequency
Testing - Over the air	iOS	iPhone through http request	Quest Controller Quest Pro Controller	iOS Android	Android, PS4, PS5, Switch, Windows, Xbox
Testing - In app	No	No	No	DualSense Razer Kraken Hypersense	Yes
Testing - In Engine Emulation	No	No	Quest Controller Quest Pro Controller	Quest Controller X-Input	Yes
Multichannel Design	Mono	Mono	Mono	Mono	1, 2 or 4 channel depending on device
Documentation	Link	Yes	Yes	Yes	Yes
License	No commercial license	License	Oculus Developer	Interhaptics EULA	Audiokinetic EULA (and request)

Cross-Platforms Haptic Design Tools - Compatibility

Supported devices/Protocols	Haptrix / Haptics Sampler	Meta Studio	Haptic Composer	Wwise Motion
DualSense	Yes - Amplitude	No	Yes - Wideband	Yes - Wideband
DualShock	Yes	No	Yes	Yes
PSVR2	Yes - Amplitude	No	Yes - Wideband	Yes - Wideband
X-input/HID	Yes	No	Yes	Yes
Android	No	No	Yes	Yes
Core Haptics	Yes	No	Yes - Wideband	No
Meta Quest	No	Yes	Yes	No
Meta Quest Pro	No	Yes - Wideband	No	No
OpenXR	No	No	Yes	No
Nintendo Switch	No	No	Yes	Yes
Steering wheel	Yes - Limited	No	No	No

Apple Sampler
Apple AHAP Editing

[AHAP example files are available](#)

No GUI, edit JSON human readable

Transient and Continuous editing
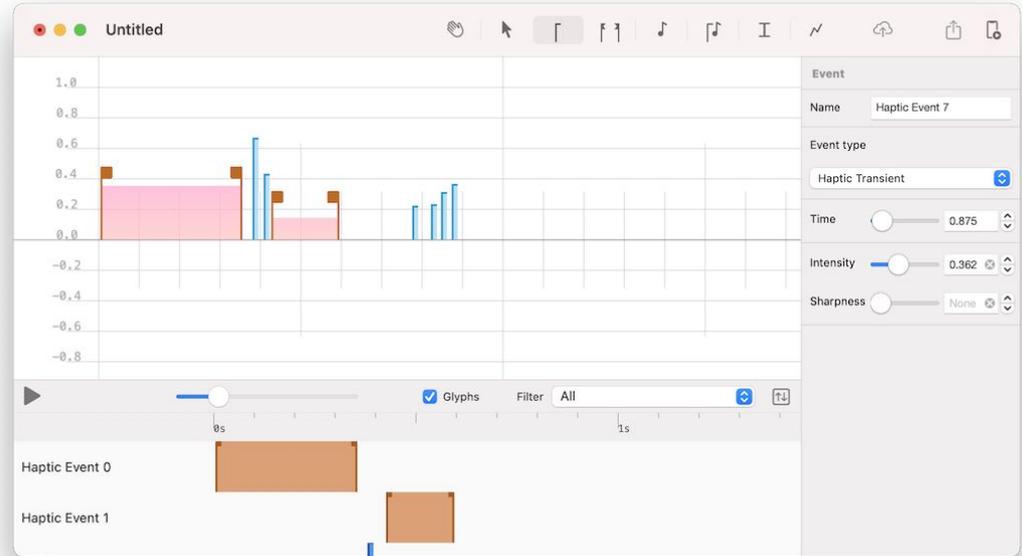
Testing based on Apple platform
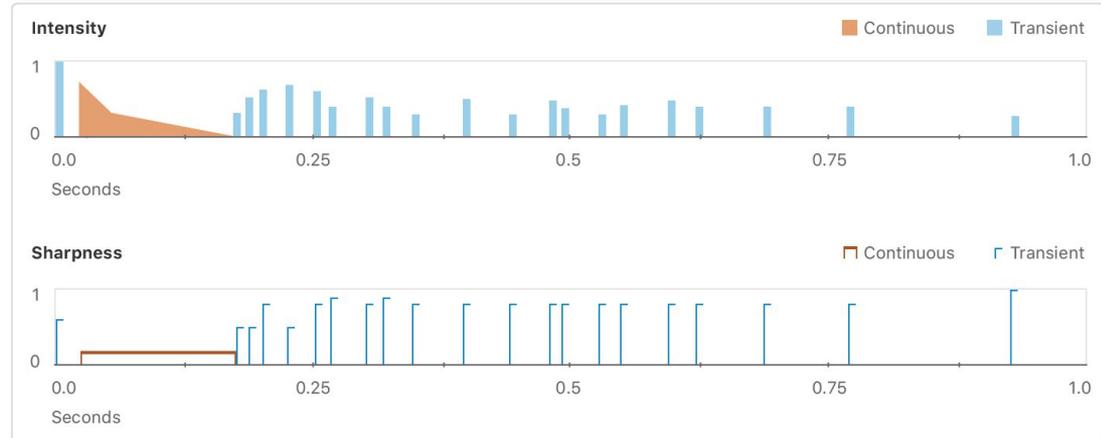
Haptrix
Haptic Designer for AHAP files

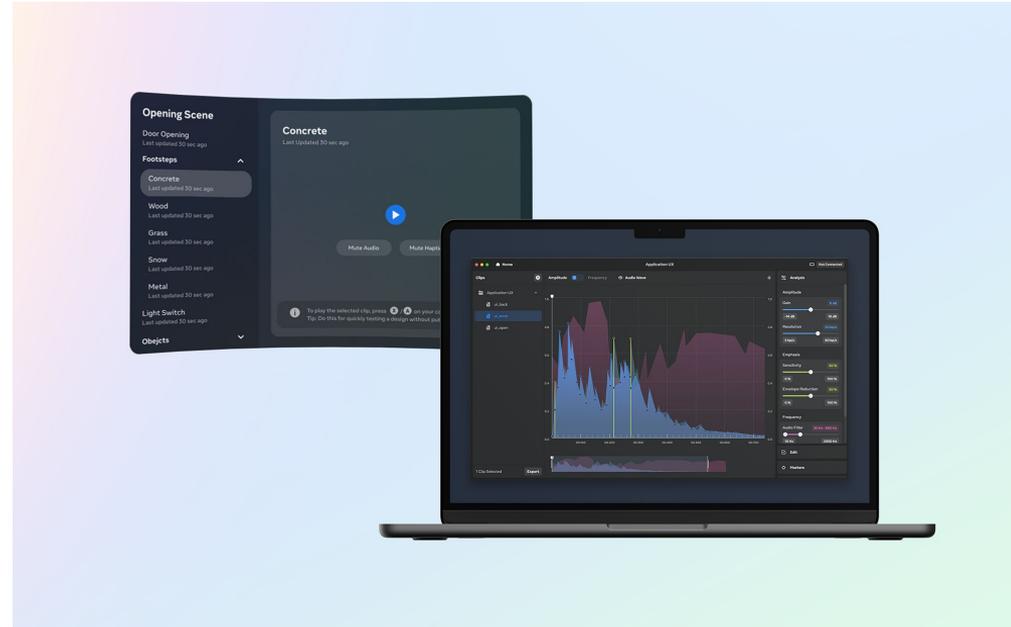Marketplace of paid and free effects

Download

Testing App for iOS

Import audio and extract haptics

Edit Transient and 1 haptic pattern

Test over the air on Meta devices

Meta Haptics Studio

Interhaptics Haptic Composer
Haptic Designer for .haps files

Import audio and extract haptics

Edit Transient and up to 16 mixed patterns

Design adaptive triggers haptics

Test over the air iOS and Android

Test in app: PlayStation DualSense, Kraken
Hypersense

Test in engine: GameInput / XInput controllers,
Meta Quest, Open XR controllers, PlayStation
DualSense

Haptic Composer

Wwise Motion
Design haptics parametrically or audio to haptics

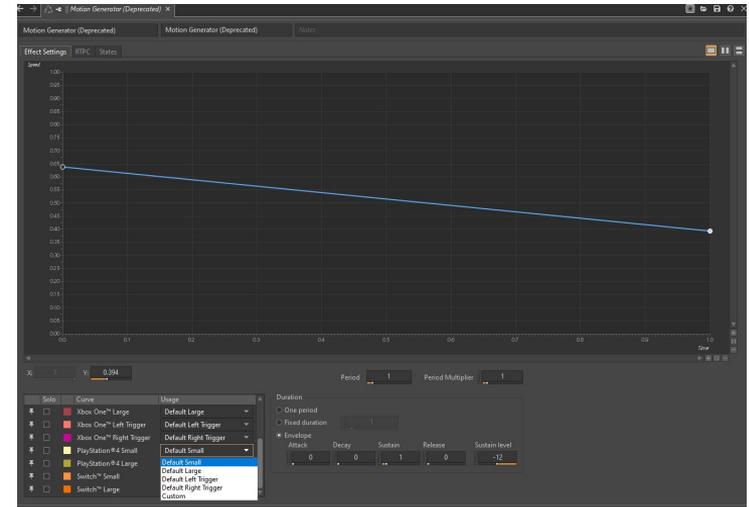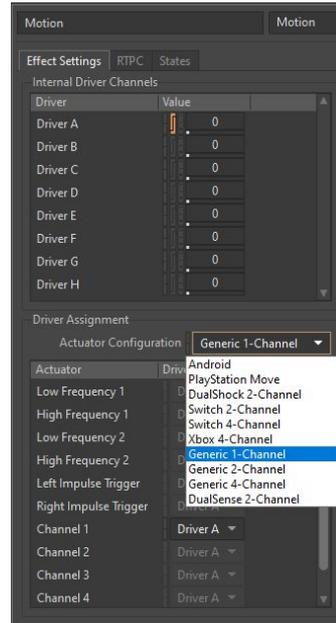Plugin of the Wwise Audio Engine

Draw and design haptic effects

Able to generate haptics from audio source as well

Motor-assignable

Test in app (license needed)

Test in audio engine

Wwise Motion

Contacts

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