



The Best Haptic Experiences Start with Immersion

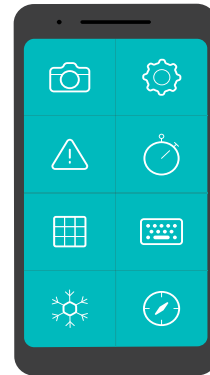
TOUCHSENSE® SOFTWARE

High-performance haptic solutions for mobile devices with comprehensive integration and support – from the app layer down to the haptic hardware.

HIGH-QUALITY HAPTIC EXPERIENCES MADE EASIER

TouchSense software vastly improves the quality of haptics in Android mobile devices, making it easier to create a variety of life-like digital experiences that appeal to users through the sense of touch. It does this by optimizing the control of the underlying hardware components, the haptic driver IC and actuator, with software to ensure the best possible haptic performance. TouchSense software improves device functionality and enables new, exciting, digital touch use cases that redefine how users interact with their devices through high-quality, haptic experiences.

Built to work well with the new Treble architecture from Google, TouchSense software is highly customizable, yet easy to integrate. The haptic software solution is made to scale with the ability to add new features as technology advances. This streamlined integration process makes it easier to bring quality haptic experiences to market faster.



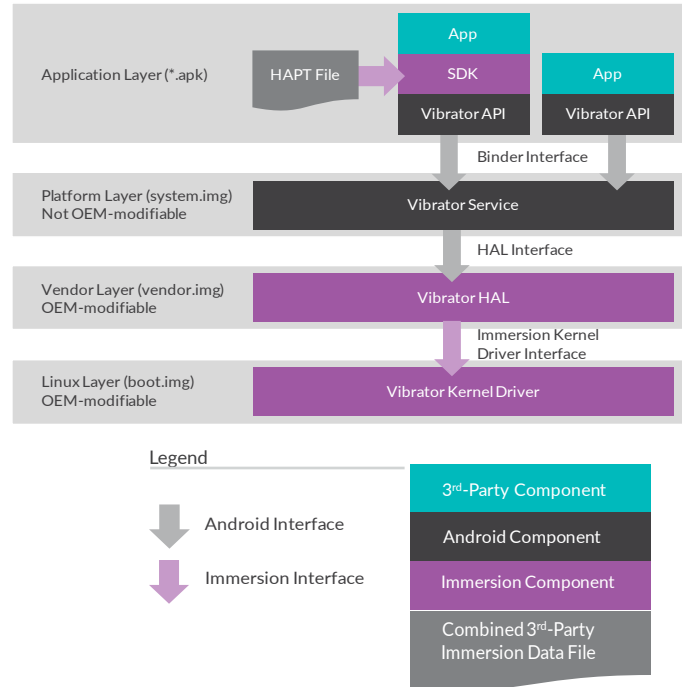
The solution also offers a simpler and more manageable way to control amplitude and apply wider range of frequencies to custom effects to leverage the richer vibration API now available through the Android OS, enabling device makers to broaden their ability to create experiences that engage and delight users.

Benefits

- ~ Customized haptic use cases for unique and differentiated product experiences
- ~ Streamlined mobile application integration with a robust API and pre-designed library of effects
- ~ **NEW!** Improved actuator linearization for higher fidelity of haptic effect design
- ~ **NEW!** Tailor-made implementation with a hardware abstraction layer that optimizes haptic performance specifically for the underlying hardware components
- ~ **NEW!** Increased actuator control and performance with advanced features such as power boost, power control, haptic synchronization and improved kernel driver support

Solution Components

- ~ **TouchSense Software and API**
System-level haptic solution with control algorithms tuned to the specific hardware configuration to render effects at the highest level of quality and consistency
- ~ **Haptic Effects Library**
Pre-designed effects for a variety of UI and applications to streamline haptic implementation on mobile devices
- ~ **NEW! Mobile Apps Haptic Use Cases**
Source code and design implementation documentation for haptics in standard mobile applications
- ~ **NEW! Advanced IC Driver Support**
Custom-built kernel drivers for specific haptic driver ICs to maximize actuator performance
- ~ **NEW! Extensible and Customizable Binary Modules**
Upgradable feature set through add-on binary modules to increase haptic functionality



Features and Modules

- ~ **Custom Haptic Playback**
All-in-one effect encoding and decoding of custom haptic effects for in-app rendering and content streaming
- ~ **Power Boost and Power Control**
Quick acceleration and deceleration to support use cases such as buttons and sequential scrolling
- ~ **Haptic Synchronization**
Video, audio, and haptic timeline synchronization for quality playback of interactive or video content in the embedded layer
- ~ **SD and HD Actuator Support**
Improve performance for both SD & HD actuators to produce rich and detailed haptic effects
- ~ **Pressure Haptics Support**
Haptic effects based on location and pressure level applied across the touchscreen for shortcuts, quick menus, and layered interactions
- ~ **Audio-to-Haptics**
Converts sound into a haptic track using an algorithm to produce effects that fit the context of the media or game

HAPTIC DESIGN AND ENGINEERING SUPPORT

User interfaces, camera apps, ringtones, entertainment content, games and so on – there are dozens of ways to enhance the mobile experience with haptics. For customized designs, Immersion offers easy-to-use haptic design tools and expert design and integration services, services to help device makers get the most out of their haptic implementations.

- ~ **Haptic Design Tools**
A powerful suite of tools for designing, editing, and evaluating an unlimited range of creative expressions
- ~ **UX Customization Services**
Expert support for use case conceptualization, user experience design, and customized tactile effects creation
- ~ **Field Application Engineering Services**
Onsite hardware and software integration, testing, tuning, implementation, and verification services
- ~ **Engineering Design Services**
Services for hardware performance characterization, hardware certification, and haptic hardware selection

LEARN MORE ABOUT IMMERSION TOUCHSENSE SOFTWARE AT
WWW.IMMERSION.COM/OUR-TECHNOLOGY