

EXHIBIT 21

Samsung's Use of Apple Patents in Smartphones



PLAINTIFF'S EXHIBIT NO. 52

United States District Court
Northern District of California
No. 11-CV-01846-LHK (PSG)

Apple Inc. v. Samsung Elecs.

Date Admitted: _____ By: _____

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Key issues

- Samsung is a key Apple partner
- The Android software platform makes extensive use of Apple intellectual property ... without Apple's permission
 - Android is designed to lead companies to imitate the iPhone product design and strategy
- Samsung's choice to use Android without a license undermines Samsung's greater relationship with Apple



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Apple Patents

- Large worldwide patent portfolio on computing technology
 - Over 3500 US patents
 - Worldwide coverage for many key patents
- Tracks Apple's 35 years of leadership in personal and mobile computing and communications
- Definitive patent portfolio for industry --
 - Modern computing and consumer electronics hardware
 - Internet architecture and services
 - Modern software - OS, applications, and user interface



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Apple Patents: General Computing

- Apple patents broadly cover general computing technologies used in all modern computing devices and consumer electronics
 - Core processor technologies
 - High speed internal buses and peripheral device buses
 - Graphics processors
 - Networking and communications
 - Power management
 - Mechanical and input technologies



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Apple Patents: Internet architecture and services

- Apple patents are essential to modern Internet-enabled devices and services
 - Dynamic web page generation
 - Persistent objects in a web page
 - Object/ relational database mapping
 - Location based services
 - Mobile computer IP address assignment
 - Media and application store services
 - Multimedia format and delivery



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Apple Patents: Software

- Apple has definitive patents on modern operating systems and applications architecture
 - Operating systems and basic software architecture
 - Graphics
 - User Interface
 - Multimedia processing
 - Networking and communication
 - Object oriented software
 - Development technologies



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Convergence In Modern Smartphones

Basic telephony
Basic network interface -- industry-standardized air interface (least common denominator) and data format

Apple core computing
Apple core computing technologies for modern and mobile computing developed over 20 years on desktop and laptop computer platform

- Modern, real computing platform
- Extensible, programmable OS
- Software application platform
- Advanced, friendly user interface
- Graphics and multimedia
- Component-based architecture with component links
- Internet and network technology

Apple advanced features

Apple's iPod and iPhone innovations have defined the standard for modern high-end consumer devices

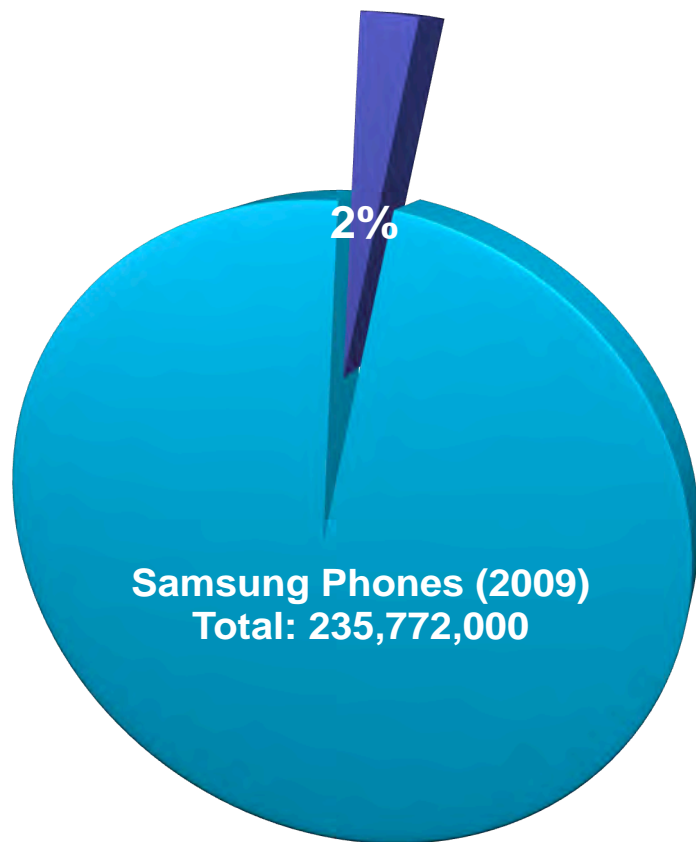
- Multitouch user interface
- Apps and App Store
- iTunes media store and media player
- Real Web and Web services
- Advanced sensors and device context
- Service-oriented offering



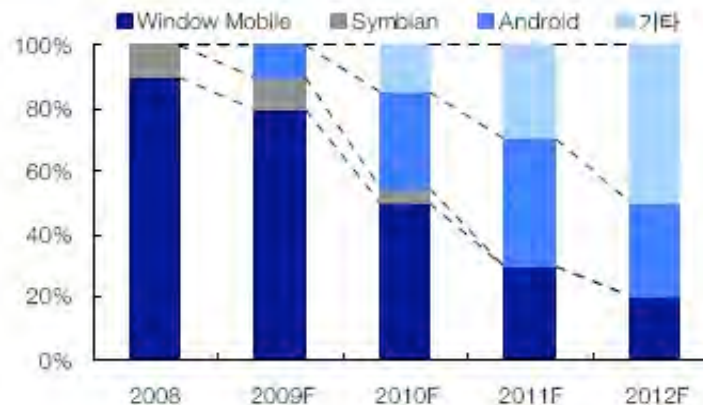
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Samsung Smartphone Sales

Samsung Smartphones (2009)
Total: 5,872,000



Samsung Smartphones by OS



Source : HMC Investment Securities



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Apple Patents and Android

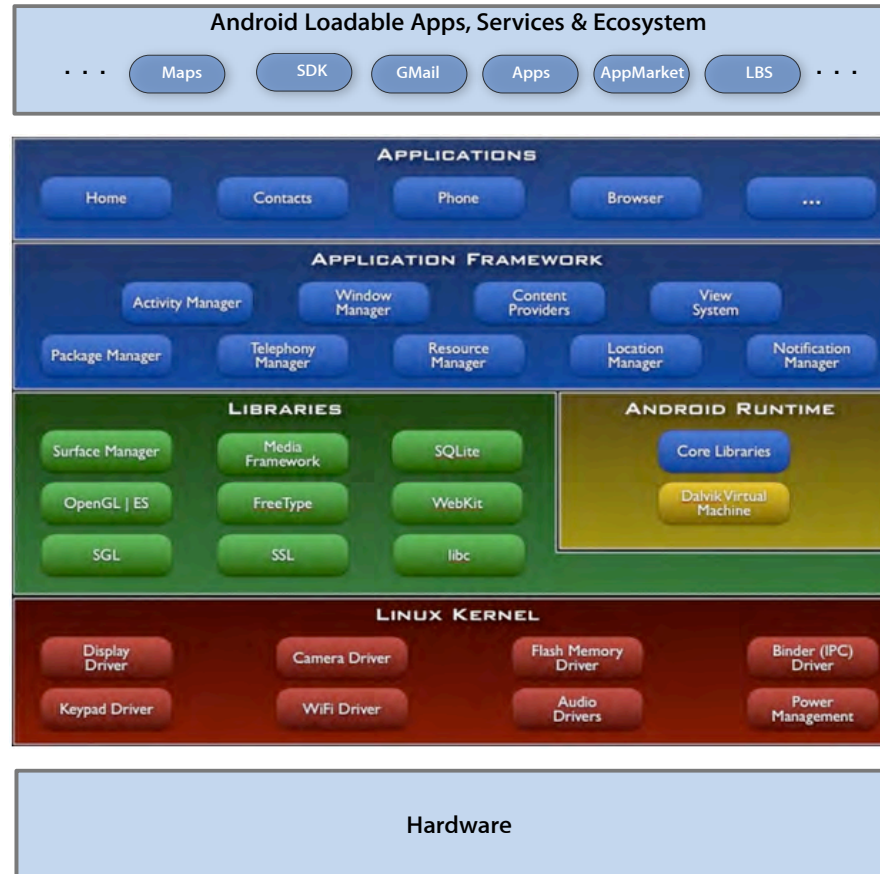
- Apple has identified dozens of examples where Android is using or encouraging others to use Apple patented technology
- Many more Apple patents are relevant to the Android platform
- Apple has not authorized the use of any of these patents
- Limited examples to follow



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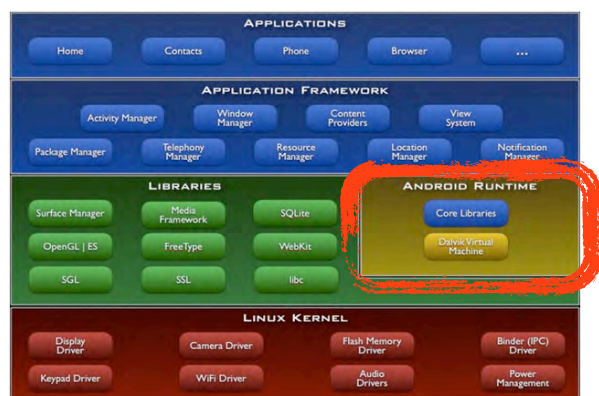
Android Architecture



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Apple Patents Infringed by Android Runtime

Example Apple patents infringed by Samsung phones using Android runtime



- U.S. 6,424,354 (EP, JP)* - Interest-based notification
- U.S. 5,481,721* - Dynamic binder
- U.S. 5,519,867* - Object oriented multitasking
- U.S. 6,275,983 (EP, JP, CN)* - Wrapper loader
- U.S. 5,367,633 (EP, JP) - OO notification framework
- U.S. 5,566,337 (EP, JP)* - Event handling
- U.S. 5,915,131 (EP)* - Tailored distinct IO APIs
- U.S. 5,969,705* - Background event handling
- U.S. 6,684,261 (EP, JP, CN) - OO operating system
- U.S. 5,379,432 (EP, JP, CN) - Wrappers
- U.S. 7,380,116 (JP) - Real-time display adaptation
- U.S. 6,067,577 - Dynamic resolution
- U.S. 5,911,067 - Application switching
- U.S. 5,911,069 - Exception handling
- U.S. 5,404,529 - IPC Wrapper
- U.S. 5,473,777 - VM Wrapper
- U.S. 5,475,845 (EP, JP, CN) - Wrapper system

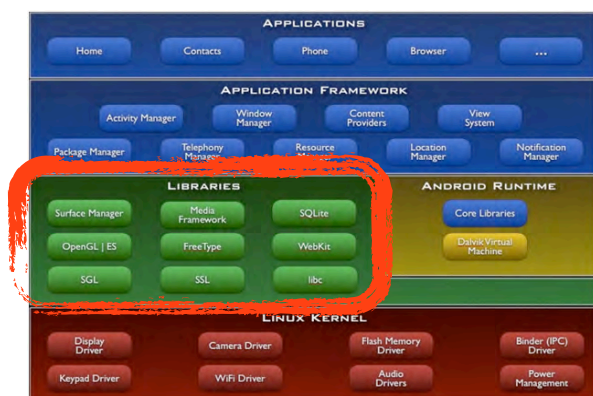
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Apple Patents Infringed by Android Libraries

Example Apple patents infringed by Samsung phones using Android libraries



- U.S. 6,343,263 (EP)* - Realtime signal processing APIs
- U.S. 5,920,726* - OS camera management
- U.S. 7,281,212 - Multi-track media
- U.S. 7,043,694 - Multi-track media
- U.S. 5,379,129 - Compositing images
- U.S. 5,404,447 (GB) - Manipulating pixel streams
- U.S. 7,292,636 (EP,CN,JP) - Processing a video picture
- U.S. 6,757,438 - Video compression
- U.S. 6,728,315 (EP,CN,JP) - Digital video encoding
- U.S. 5,828,904 - Synchronizing data retrieval
- U.S. 6,098,126 - Synchronizing data retrieval

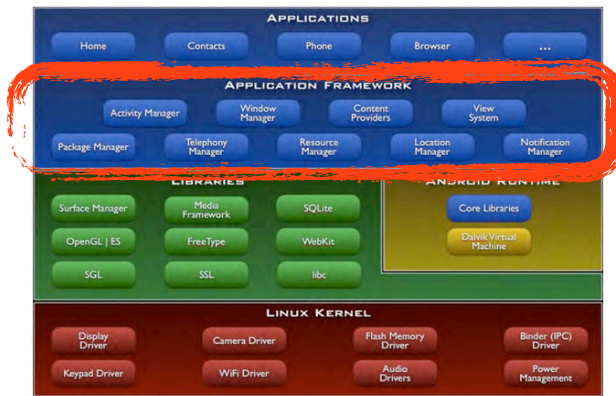
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Apple Patents Infringed by Android Application Framework

Example Apple patents infringed by Samsung phones using Android application framework



- U.S. 5,455,599 (EP, JP)* - OO graphics framework
- U.S. 7,362,331 (EP, JP)* - Non-linear animation of GUI
- U.S. 6,031,532 - Composite images
- U.S. 5,929,852 (EP)* - Network widget
- U.S. 6,344,855 (EP) - Encapsulated entity
- U.S. RE39,486 (EP)* - Extensible NW component system
- U.S. 7,469,381* - Scrolling with bounce and snapback
- U.S. 6,259,446 (EP, JP) - Menu system
- U.S. 6,593,947 - OO image rendering
- U.S. 6,956,564 (EP, CN) - Tilt-based display mode
- U.S. 5,764,218 - Touch gesture control
- U.S. 5,469,194 - Orientation-aware touch interface
- U.S. RE41,088 - Orientation of captured image
- U.S. 6,282,646 - Adaptive display configuration
- U.S. 7,003,260 - Database programs for handhelds
- U.S. 5,455,854 (EP) - Telephony system
- U.S. 7,084,859 - Tactile touch screen
- U.S. 5,880,729 (EP, JP) - Animated transitions
- U.S. 5,196,838 - Autoscrolling

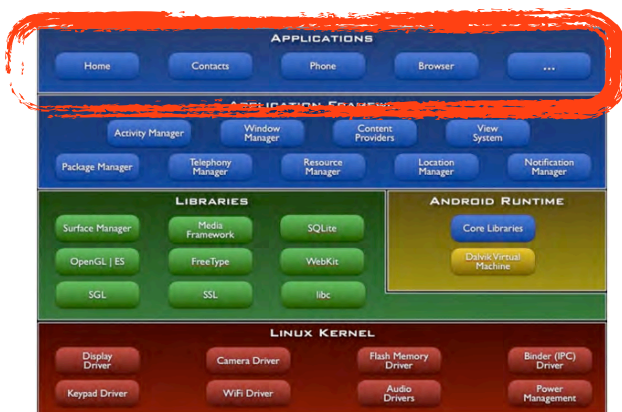
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Apple Patents Infringed by Android Applications Layer

Example Apple patents infringed by Samsung phones using Android standard applications



- U.S. 7,657,849 (EP, JP)* - Swipe to unlock
- U.S. 5,946,647* - Data detectors
- U.S. 7,479,949* - Multiple distinct touch heuristics
- U.S. 7,602,378 - Selective soft keypad
- U.S. 5,128,672 (JP) - Dynamic predictive keyboard
- U.S. 6,236,396 - Calendar data entry
- U.S. 7,479,971 - Automatic window scrolling
- U.S. 5,612,719 - Gesture sensitive buttons
- U.S. 7,669,134 - Messaging UI
- U.S. 6,072,489 - Translucent user interfaces
- U.S. 5,949,432 - Translucent user interfaces
- U.S. 5,544,358 - Card/ list view for contacts
- U.S. 5,446,882 - Card/ list views for contacts
- U.S. 5,603,053 - Pop-up interactive tools
- U.S. 6,493,002 - Status bar

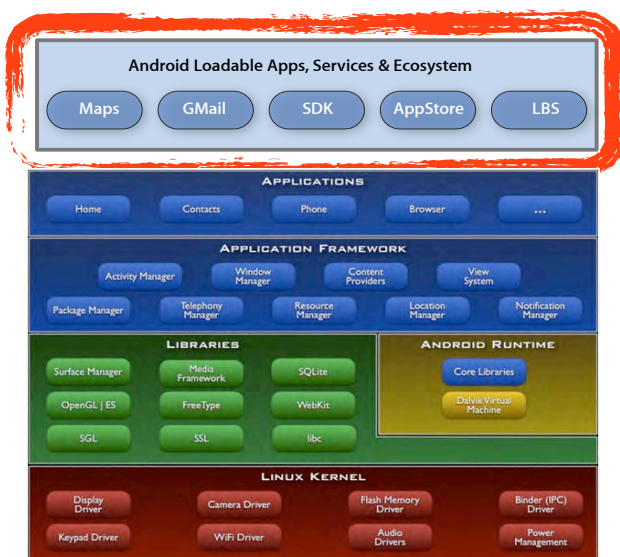
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Apple Patents Infringed by Android Ecosystem

Example Apple patents infringed by Android phones offering Android loadable apps, Internet services and ecosystem



- U.S. 7,421,690 - Threaded email
- U.S. 5,926,190 - Virtual reality images
- U.S. 7,187,997 - LBS
- U.S. 7,710,290 - Invocable speed reference
- U.S. 7,003,260 - Database programs for handheld
- U.S. 5,555,369 - SDK with device emulator
- U.S. 5,572,582 (EP) - Teleconference communication
- U.S. 6,910,052 - Software update
- U.S. 6,430,576 - Software update
- U.S. 7,584,468 - Software update
- U.S. 7,660,831 (EP) - Data synchronization
- U.S. 5,710,922 - Last-time altered sync
- U.S. 6,253,228 (EP) - Package-based sync
- U.S. 6,947,967 (EP) - Package-based sync



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Samsung Copying iPhone



Apple iPhone 4

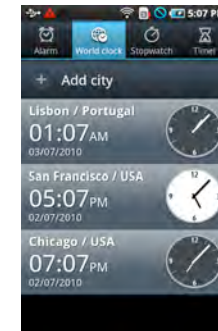
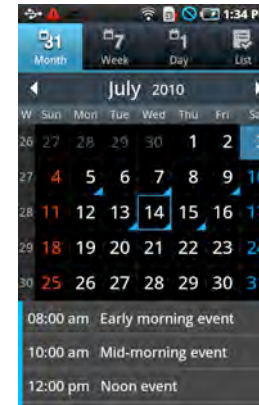
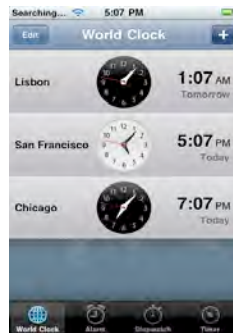
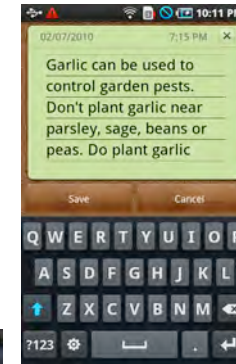
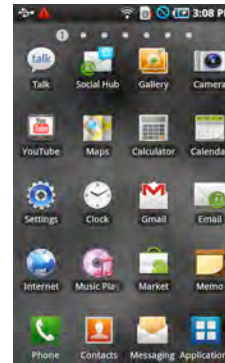
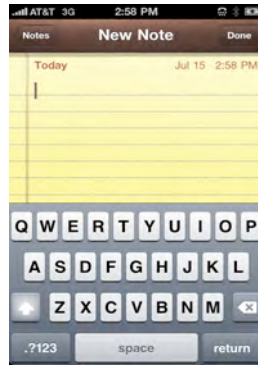
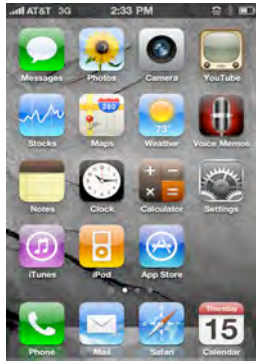


Samsung Galaxy S



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Samsung Copying iPhone



Apple iPhone 4

Samsung Galaxy S



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Samsung Copying iPhone



Apple iPhone 4

Samsung Galaxy S



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Macworld 2007 - January 9, 2007



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Android Phones



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Samsung's Bada Platform



Device Applications	Service Applications	Web and Flash Applications
bada Framework Open API framework that consists of an application framework and functions exported by underlying layers.		
Service Service-centric functions that are provided by application engines and server-assisted components.		
Device Core functions of a device platform that are provided by system, security, graphics, multimedia, and communication components.		
Kernel OS kernel.		



TOUCHWIZ



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Key issues

- Samsung is a key Apple partner
- The Android platform is causing Samsung to unfairly use Apple's intellectual property to undermine and imitate iPhone
 - Symbian and Bada also using Apple patents
- Samsung needs a license to continue to use Apple patents in infringing smartphones



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