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BREW 2008 CONFERENCE

BREW 3.1.5 SP01 Overview

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BREW 3.1.5 SP01

- BREW 3.1.5 update released in Dec'07
- Products Released
 - SDK
 - PKM
 - PKG
 - PEK



Why BREW 3.1.5 SP01?

- To enable application developers develop feature rich applications and UI leveraging various cutting edge technologies available on modern devices
- To enable OEMs come up with compelling devices that leverage various cutting edge technologies available on chipsets



What's there for developers?

- Multimedia Enhancements
- APIs for Bluetooth profiles
- Touch Screen Support
- External and QWERTY keypad support



What's there for developers?

- API support for Sensors
- ICamera Enhancements
- Image Processing and Scaling
- API support for vCard/vCal



What's there for developers?

- Exposing LocationOn and MannerMode flags to applications
- Support for larger than 4GB file system
- Support for networking features (QoS)
- Component Building Blocks
- Deletion of sensitive data on test enabled devices



Multimedia Enhancements

- API access to EVRC-B
- Support for RTSP Protocol in BREW
- Haptic Feedback



API access to EVRC-B

- Support for the recording and playback of EVRC-B media (.evb file types)
 - Playback control functionality has been enabled for playing back from a file, buffer, and streaming
 - Recording is supported along with APIs for recording control, such as Pause and Resume
- Support for auto type detection on the device by defining a new MIME type audio/evb, and signature of EVRC-B content



Support for RTSP Protocol in BREW

- Introduces IMediaVideo interface that provides the capability for video playback and streaming features
- MPEG-4 Simple Profile Level 3, H.263 Profile 0 Level 45, H.264 Baseline v1.2 and RTSP/RTP streaming video formats are supported
- QCELP - all rates, AMR-NB - all rates and AAC - all rates audio formats are supported



Support for RTSP Protocol in BREW

- Supported MIME Types
 - video/url
 - video/sdp
 - video/3gp, video/3gpp
 - video/amc
 - video/3g2
 - video/k3g
 - video/skm
 - video/m4a



Haptic Feedback

- ISound API has been enhanced to include a set of feedback tones (AEE_TONE_FEEDBACK_<key>) that are natively mapped to corresponding Haptic feedback patterns for keys
- Twenty-two new tone IDs have been defined for Haptic feedback
- A BREW application can play these tones via the regular ISound APIs: ISOUND_PlayTone() or ISOUND_PlayToneList()



More Information on Multimedia

- PROG 501 – Multimedia Services
- BREW 3.1.5 SP01 API Reference



APIs for Bluetooth profiles

- Generic Access Profile (GAP)
- Serial Port Profile (SPP)
- Headset (HSP)/Handsfree Profile (HFP)
- Advanced Audio Distribution Profile (A2DP)
- Audio Video Remote Control Profile (AVRCP)
- Generic Object Exchange Profile (GOEP)



More Information on BlueTooth

- TECH603 – BREW, Bluetooth and You
- BREW 3.1.5 SP01 API Reference



Touch Screen Support

- EVT_POINTER_DOWN, EVT_POINTER_MOVE, EVT_POINTER_UP and EVT_POINTER_STALE_MOVE are introduced
- EVT_POINTER_XYZ events provide information about clicks and movement on touch-enabled screens



Touch Screen Support

- EVT_POINTER_XYZ events also enable application gather information like touch coordinates, timestamp, click-count, display ID and key/touch-screen specific modifiers
- Existing pen events (EVT_PEN_DOWN, EVT_PEN_MOVE, EVT_PEN_UP and EVT_PEN_STALE_MOVE) have been deprecated in favor of the new pointer events



Touch Screen Support

- UI controls are enhanced for touch screen support
- Following text entry modes are defined for ITextCtl
 - AEE_TM_TOUCH_NUMERIC
 - AEE_TM_TOUCH_EXTENDED
 - AEE_TM_TOUCH_PREDICTIVE
- Menu, Static, Image and Text UI controls have been enhanced to accept touch inputs for scrolling on any area of the screen



More Information on Touch Screen Support

- TECH-303 - Touchscreen Support in BREW and UI Widgets
- PROG-602 - Touchscreen Support in TrigML
- PROG-801 - Touchscreen And Multiple Device Form Factor Support
- BREW 3.1.5 SP01 API Reference
- BREW Programming Concepts section “Handling Pointer Events and UI Guidelines for IControl Derived Classes”



External and QWERTY Keypad Support

- New key events and key codes defined to support the extended keys
- Extended key mapping capability including support for Digit Wireless Fastap (<http://www.digitwireless.com/>) based keypads provided to OEMs



External and QWERTY Keypad Support

- A new API called IKeysMapping for the mapping of keys, since key combination meanings can differ across handsets
- A new API called IKeysConfig for providing services to get and set the state of sticky keys on the device



More Information on QWERTY Keypad Support

- PROG-701 - QWERTY Keypad Support – BREW Standardized Approach
- BREW 3.1.5 SP01 API Reference



API support for Sensors

- Provides Sensor APIs that provide methods in support of compass, accelerometer, and gyroscope sensor types
- The Sensors APIs are provided as an implementation of the IPORT1 interface
- The implementation allows applications to request certain data types and attributes that are supported by specific Sensors



More Information on API support for Sensors

- TECH-102 - Sensor Technologies – Enabling a New Breed of “Smart” Mobile Phones
- BREW 3.1.5 SP01 API Reference



ICamera Enhancements

- Best Shot mode
 - CAM_BESTSHOT_LANDSCAPE, CAM_BESTSHOT_SNOW, CAM_BESTSHOT_BEACH, CAM_BESTSHOT_SUNSET, CAM_BESTSHOT_NIGHT, CAM_BESTSHOT_PORTRAIT, etc are defined
 - By selecting a particular camera shooting mode, the camera settings are adjusted accordingly to optimize the resultant image quality



ICamera Enhancements

- Exposure Control
 - CAM_ISO_AUTO and CAM_ISO_AUTO_DEBLUR exposure control values are added for CAM_PARM_ISO
 - CAM_ISO_AUTO supports auto ISO selection
 - CAM_ISO_AUTO_DEBLUR supports auto ISO selection with deblur (hand-jitter reduction)



Image Processing and Scaling

- IBitmapFX
 - Provides image processing capabilities in support of various special effects on bitmaps
 - Capabilities supported are posterize, solarize, magnify, motion blur, hue, intensity, filtering, and others



Image Processing and Scaling

- IBitmapScale
 - Used to perform image scaling
 - Any rectangular region may be copied from one bitmap to another rectangular region in another bitmap
 - Scaling is performed if the rectangles are different sizes
 - An additional clipping rectangle may optionally be passed the API, which limits drawing in the destination bitmap to that region



Image Processing and Scaling

- IBitmapScale transparency operations
 - opaque (all pixels are copied)
 - key color transparency (all pixels except the key color are copied)
 - alpha transparency (the source bitmap's alpha channel is used to determine how to blend the pixels with the destination)



API support for vCard/vCal

- For calendar data streams the feature supports parsing and generation of both versions namely, vCalendar (1.0) and iCalendar (2.0)
- For card data streams the feature supports parsing and generation of both versions of vCard 2.1 and 3.0
- Calendar-access APIs that allow a BREW App to read from or write to the calendar on the device



Exposing LocationOn/MannerMode flags to applications

- IItemStore interface allows BREW applications to get, set and be notified of changes to string based items
- The item and its possible values are defined by the classid that implements the IItemStore interface
- The classid AEECLSID_GPSOneLock implements the IItemStore interface for the GPSOneLock item
- The classid AEECLSID_MannerMode implements the IItemStore interface for the



Support for larger than 4GB file system

- AEE_DEVICEITEM_FSSPACE_ROOT for querying total and free space for main internal flash file system on the phone (AEEFS_ROOT_DIR)
- AEE_DEVICEITEM_FSSPACE_CARD0 for querying total and free space for primary MMC/SD card file system (referred via AEEFS_CARD0_DIR in BREW)



Support for larger than 4GB file system

- AEE_DEVICEITEM_FSSPACE_USBHMS1 for querying total and free space for the first USB host mass storage device supported (AEEFS_USB_HOST_MASS_STORAGE1)
- AEE_DEVICEITEM_FSSPACE_USBHMS2 - For querying total and free space for the second USB host mass storage device supported (AEEFS_USB_HOST_MASS_STORAGE2)



Support for networking features (QoS)

- New APIs, parameters, socket options/support, info codes, and enhanced air interface support (WLAN), that builds upon the QoS capabilities originally released in the BREW 3.1.5 baseline
- New interfaces added in support of this feature are IBearerTechnology and IPrimaryQoSSession



Component Building Blocks

- BREW 3.1.5 SP01 provides IEnv, IRealloc, ISignal, ISignalBus, ISignalCBFactory, ISignalCtl and IVersion interfaces as building blocks for new features such as support for Sensors and BlueTooth



More Information on Component Building Blocks

- PROG-201 - BREW Operating System Services Overview
- BREW 3.1.5 SP01 API Reference



Deletion of sensitive data on test enabled devices

- Applications that want to prevent access to their sensitive data (in the module's home directory) from test signature enabled applications can do so by providing test-enable-delete.txt file in the <module home>/private subdirectory
- test-enable-delete.txt file lists all the directories (can be non empty) and files which need to be deleted when a test signature enabled application is loaded



Deletion of sensitive data on test enabled devices

- "*" file name means delete all files including .mod, .sig and .mif file, basically meaning uninstall the module
- ISHELL_GetDeviceInfoEx(AEE_DEVICESTATE_TESTSIG_MOD) can be used to determine if the phone has loaded a test enabled signature application



More Information

- BREW 3.1.5 SP01 SDK Release Notes
- BREW 3.1.5 SP01 API Reference
- BREW 3.1.5 SP01 Programming Concepts



What's there for OEMs?

- Registering preloaded applications on data session only
- Hotplug manager support in BREW for RMC notifications
- OEM Layer files
- BREW MA Dynamic External Credentials



Registering preloaded applications on data session only

- Introduced OEM configuration item that enables BREW delay sending ACK on preloaded applications till data service availability is detected
- Solves the problem of UI displaying “Registering Applications ...” even when data service isn’t available



Hotplug manager support in BREW for RMC notifications

- Implements the OEM Note (80-D7614-1 Rev. A)
- Involves an OEM layer implementation for the IDeviceNotifier API based upon the HotPlug Manager feature in EFS (reference EFS VU MSMSHARED_EFS.01.02.48)
- The HotPlug Manager provides the notification API so that tasks can be signaled (via callbacks) when there is a media event of interest like media insertion and removal



OEM layer files

- In this release the PKM OEM reference files have been updated to correspond to the OEM reference files which are provided with AMSS releases
- This consolidation effort, results in a significant reduction in the effort associated with the OEM's integration and porting.



BREW MA Dynamic External Credentials

- This BREWMA feature, known as Next Nonce (NN), supports the use of credentials that are created and used outside of the BREWMA protocol
- This feature enables full NN operation across a supporting ADS e.g. 4.1 and a 3.1.5 SP01 BREWMA client
- Presence of this 3.1.5 SP01 feature does not compromise backward compatibility with ADS 3.x



BREW MA Dynamic External Credentials

- NN call flow consists of a nonce generated on the ADS and received by an RUIM card on the device
- Both the operator's ADS and the RUIM share a secret and the RUIM card uses this secret to create a NN response (NNR)
- The NNR is passed back to the ADS and processed in an ADS Callout and thus the RUIM card is authenticated and processing proceeds



More Information

- BREW 3.1.5 SP01 PKM Release Notes
- BREW 3.1.5 SP01 OEM Porting Guide