Open AT® Software Suite 2.0

Cellular Multitasked Event-Based Pre-Emptive Real-Time Operating System

With increasing numbers of customers realising the benefits of the Open AT® Software Suite, especially its ability to reduce Total Cost of Ownership (TCO), Wavecom has designed the 2.0 release to deliver new integrated functionality for M2M and automotive customers to further reduce cost.

PORTABILITY

Design your software application once and run it on a Plug & Play Wireless CPU® or a Quik Wireless CPU® or a Wireless Microprocessor® without changing a single line of code* – guaranteed.

ELIMNATE PRODUCT COST

By using this environment on a tightly integrated single CPU architecture, it's now possible to remove host processors up to 70 MIPS, and a range of product specific ASICs such as DTMF encode/decode chips, IO expanders, audio DSPs, and many other analogue and digital devices.

OPEN AT® OS

Providing real-time, multi-tasking and what another OS would, Open AT® OS transparently manages on top of it all GSM related activities to allow developers to natively execute their ANSI C based program with a minimum memory footprint and processor resource overhead.

OPEN AT® IDE

Built on the de-facto standard Eclipse™ it enables you to code in C, compile, download, and debug wireless applications that are run directly on the Wireless CPU® of your choice.

OPEN AT® PLUG-INS

The Plug-In architecture of Open AT® Software allows developers to write their own Plug-Ins or take advantage of the off the shelf range from Wavecom and its partners.

INTELLIGENT DEVICE SERVICE COMPLIANT

With remote monitoring & diagnosis capabilities combined together with secure delta upgrades and over the air campaign management, improve your call resolution rate and reduce your technician dispatches with Intelligent Devices Services.

*Assumes that the developer uses a common set of hardware interfaces across the chosen Wireless CPU® devices.

wavecom

Smart wireless. Smart business.

Wireless CPU® | *Operating Systems | Plug-Ins | Integrated Development Environments* | *Services*

Open AT® Software Suite 2.0

- **Multitasked Pre-Emptive Event-Based Real-Time Operating System**
- **Integrated Development Environment built on Eclipse™**
- **Extensive Set of Plug-Ins (Internet Suite, C-GPS and more)**
- **GSM Release 99 compliant modem firmware**
- **Secure Intelligent Device Services (IDS) compatible**

Key Features

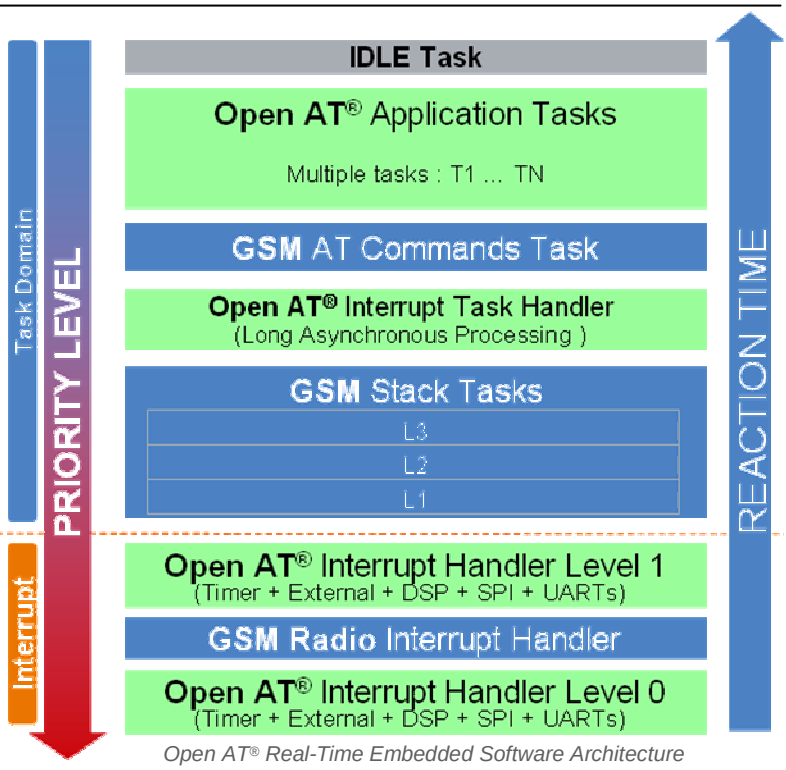
Real Time Operating System

Real-Time
Guarantied response time to interruption (even during GSM/GPRS/EDGE activities, calls and transfer).

Wireless CPU® Resources Direct Access and IT Management
- Hardware and Software Timers
- DSP
- SPI
- ADC
- External Interrupt Pins
- GPIOs
- UARTS (coming in 2008)

Multitasking

Application dedicated Hardware Watchdog
- application dedicated for close monitoring
- tunable depending on the complexity of the processing (ex: Pulse count Vs RSA signature calculation…)



Open AT® Real-Time Embedded Software Architecture

Open AT® OS Services

Real Time Operations (Interrupt handlers)
Hardware Timer
Software Timer
Memory
Tasks Management
Tasks Communication
Scheduling Policies
DOTA I, II, III
Built-In Security
VariSpeed©
Application Watchdog
Exception Management
IP Networking
VariPower©
Data Transfer
Battery Charging
IO & Buses
Audio Chain
AT Commands
Wireless Bearers
SIM
PLMN / Carrier Selection
IMEI Management
Messaging
Voice and Data Calls
Flow Control Manager
Emergency Call
Positioning
Intelligent Device Services

Cross-Platform Integrated Development Environment:

For eased application debug it can be performed on PC:
- for very fast and convenient application debugging **through Remote Task Environment**

On target for final Integration and time-critical behavior management:
- Live through **Traces**
- Post mortem through **BackTraces**
- Step By Step on Target through **JTAG**

On field:
- for difficult error causing operating scenarios through **IDS device monitoring** services and **BackTraces over the air retrieval**.

High Performance Audio

Open Programmable Audio Interfaces

Full **access** and **control** of the audio path for in depth tuning and complex audio processing to allow you to record local / network audio, play it back at ease whenever you need, embed pre-stored voice prompts, send data in the voice band or even save money by using our built in DTMF decoder and encoder.

- **Audio interfaces** (2x Analog and PCM)
- **Echo Cancellation** (Long & Short)
- **Quad codec** (HR / FR / EFR / AMR + RATCCH)
- **Data in-band modem** ready
- **Audio Chain Full Control** (16 KHz Audio path, Programmable Digital FIR filter, Analog and Digital step gain)
- **Audio Players and recorder** (PCM Audio 16bits)
- **TTY** (TSB-121 Interface)
- **DTMF & Tones** (Built in DSP Based DTMF decoder / encoder with length setting and tone and voice mixing)

Open AT® Plug-Ins

Seamlessly Plug-In key features

Plug-Ins are an optional range of software feature packages that are selected when your order your Wireless CPU®. The standard range provides access to Internet clients & protocols, controllerless companion wireless peripherals such as Bluetooth & GPS. Of course, the powerful flexibility of Open AT® Software Suite means that you can also develop your own Plug-Ins and own custom AT commands.

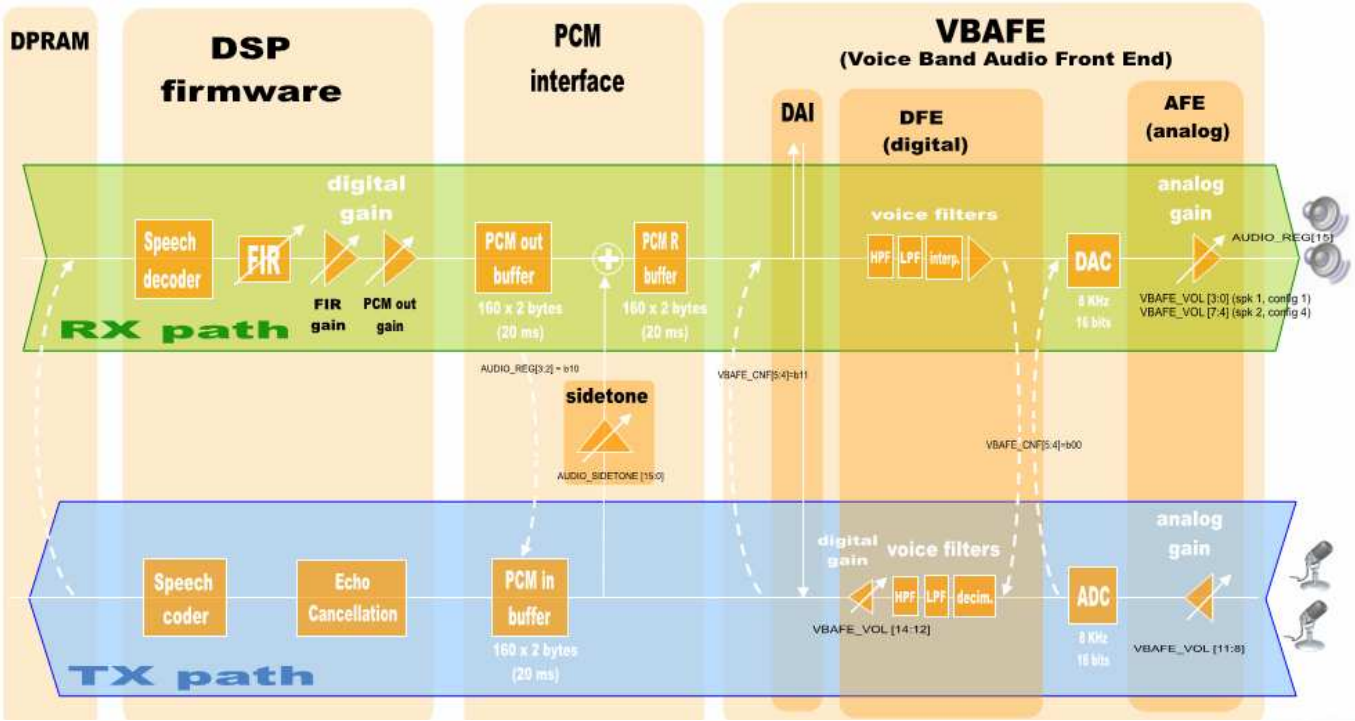
Lua
Easy Scripting

Internet
Clients & Protocols

C-GPS
Companion

C-Bluetooth™
Companion

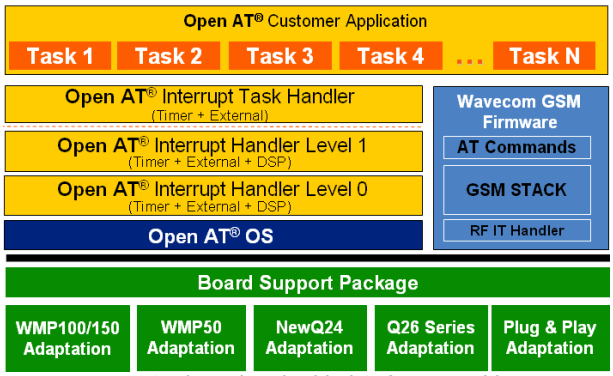
aqLink®
in-band modem



Wavecom Fully Programmable Audio Chain

Portability

Open AT® Application porting from one Wireless CPU® to another without any software redesign independently from the wireless bearers, the core microcontroller and common IOs.



Wavecom BSP-based Embedded Software Architecture

Key Benefits

Take the best out of the BSP architecture:

• A developer can develop its application on top of any Wireless CPU® (and namely the easiest one for fast prototyping and early testing)

• It could then be executed on the most cost effective Wireless CPU®.

• One might choose to launch its commercial product on the current platform to gain time to market knowing that he will be able to easily rework the cost structure of his design when the quantities would rocket.

Eliminate unnecessary material costs:

• Processor thanks to the 70/87 MIPS (min/max) available and Open AT® RTOS.

• External DTMF Decoder thanks to the new built-in decoder / encoder.

• "AUTOTEST" your audio chain on the field (ex: after a crash) or during your product manufacturing.

• Tune the Wireless CPU® Audio response to fit with your Audio Chain (Loudspeakers + microphones).

Upgrade your field device with the IDS RDMS turn key solution.

Secure IDS Compliant

IDS agents are ready-to-use to provide you secure device management capabilities based on a field proven OMA-DM 1.2 standard protocol with authentication mechanism pre-installed in Wavecom Wireless CPU®s.

No specific development nor investment in any new back-end system for:

• Remote Monitoring & diagnosis of devices on the field

• Remote application parameters setting

• Remote installation of Wavecom Firmware and Customers' application delta upgrades.

Benefit from the delta technology to send over the air only the parts that have changed between 2 software versions: spare memory, enjoy secured and faster transmissions and reduce data traffic up to 99%.

Robust delta software installation:

• Software signature management

• Data integrity check

• Power interruption robustness

• Fallback / recovery mechanism

Wavecom IDS Console

Access IDS Services through www.wavecomservices.com or through our web services interfaces.

Wireless CPU® Support

Q26 ☑ WMP 100/150 ☑ WMP50 ☑ Plug & Play ☑

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