Embedded Software Labs

Embedded Software labs (ESL) a Research and Product Development Organization, with Well Experienced Embedded Technology Experts . ESL enables researchers, potential end-users and interested professionals to trial some of the new Embedded Technologies , Our Team has developed a range of realistic applications. ESL enables companies to design and develop next generation devices based on open-standards based technologies and allows developers to fully integrate high quality Open Source Stacks and Libraries with the existing development platform.

An Organization which meets the requirements of Industry by giving **Business Solutions for Embedded Technology based Products.**

ESL started its activities in Heart of the Hyderabad city in a modest place with 2000 sqr.ft premise with Full False roofing with very good wood work. It can accommodate 30 Desktop Work stations with an ambient Lab , LCD & OHP projector .

Some of our Design and Development Services include:

· Development of Multimedia Applications
· Design, Development and Testing of Board Support Packages
· Device Drivers
· Embedded Applications such as Embedded TCP / IP Stack, Porting, Integration and Testing.
· Mobile Handset Applications.
. Integration of Wi-Fi, Bluetooth and ZigBee protocol stack into Customer products
Wireless Applications
· Security Components
· Custom Profile Development & prototype products such as Wi-Fi, Bluetooth and ZigBee
· Development of VoIP Protocol such as SIP, IMS
· Various Networking Protocol Development such as DHCP, DNS, RTP / RTCP and others
· RF Applications with a frequency range from 1Hz to 2.4 GHz. . UI Designing FlashLite.

. **Specification:**

Hardware Support

• 32 bit include ARM9, ARM11, ARM – A9 reference platforms, 8 & 16 bit includes Rabbit, PIC and X86 Processors.

Development Hosts

• RedHat, Suse, Ubuntu Linux
• Windows OS

Middleware Core Modules

• Boot loader
• Linux OS Kernel configuration and porting
• Firmware loader
• RTOS (VxWorks) kernel

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Runtime Services

- Network services
- Flash/File-system services
- Hardware interfacing services
- Serial console services

Embedded Operating System Kernel for Application development using

- Linux 2.4/2.6.X kernel for ARM
- Optimized Real Time Scheduler
- Preemptive Kernel
- Priority Inheriting Mutex
- High resolution POSIX timer
- Scalable Interrupt handler
- Dynamic Power Management
- Variable Scheduling Timeouts
- Memory Type-based Allocation
- Execute In Place (XIP)
- JFFS2, CRAMFS support
- Optimized IPv4 and IPv6 stack for VoIP
- Fast boot-up

Hardware Device Support

- Storage (IDE/Flash/SD/EEPROM)
- Network (Ethernet 802.3, WiFi802.11a/b/g)
- Display (Serial Console, Framebuffer, Touch Screen, LCD)
- Multimedia (OSS and ALSA supported audio chipsets, Camera Interface)
- I/O (Serial, IrDA, SDIO, USB), GPIO
- External DSP Interface
- Timers and Watchdogs

GNU Tool chains for cross development

- GCC 4.4.3/4.3.2 , EABI for arm
- Binutils 2.15 for arm
- Glibc 2.3.3 for arm
- Glibc- linux thread 2.3.3 for arm

Integrated Development Environment

- Eclipse based IDE
- Graphical debugger and profiler
- Graphical interface designer
- CVS/Subversion, git interface
- Integrated target-board flashing tool
- Integration with KGDB,DDD , ADB
- Integration with JTAG directives

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Userland Libraries and Stacks

- GUI toolkit – DirectFB, Embedded-QT,Widgets
- VoIP – SIP stack
- Libraries - Glibc, Boost, Glib
- Security - IPSEC stack, SSL
- Codec Engine (Speex, GSM)

- **Localization Engine**

Userland Applications
- Organizer, Messaging (SMS/MMS)
- Mobile Browser, Email Client
- Address Book, SIP Phone, IM
- Media Player with codecs
- Embedded Application for Data Base Management using Server Software
- Application Framework – C,C++, .net , Java, Flash, DBM support .

Products Profile:

Device Driver (BSP) on ARM based Samsung Processor (**Android 2.3.4, Linux OS on ARM Processor)** .
- TFT LCD/Touch screen, Audio I/O, MMC/SD card, NET, USB host, USB OTG, Serial port, Watchdog, RTC, Matrix keypad, I2C, SPI, ADC ,WIFI, GPS, GPRS, Camera, FLAC, Multi Format Codec (MFC) , SIP.
- Microcontroller for SMS application.
- Microcontroller for caller ID application.

Data Acquisition Products with Sensors :

- CMX based ICs for Telephonic and Digital communication for Data acquisition and Security applications.

Technical Capabilites :

- We develop Products from scratch by identifying components for a given application, Hardware Design solution, Prototype implementation , Required software Protocol implementation , Field Testing, and bringing the product up to the production.
- Testing and Validation of the Product.

ESL is providing a unique training facility to impart wide range of skills in Embedded Systems Development for Industry and for in-house requirements. Our Training Modules Include:

- Advanced C
- Linux Internals & Networking
- RTOS
- Embedded Linux Development.

Academic Consultants for :
- BITS Pilani
- IIIT Hyderabad.
- JNTU Affiliated UG/PG Programs.
- M.Tech Program LAB Development.