

# Linux and Open Source Solutions for Embedded Systems



Mind is Essensium's embedded software division, which delivers development, technical consulting, tool chains, training and support on Linux and Open Source software for embedded systems. Mind was founded in 1999 and is one of the main players specialized in Embedded Linux,  $\mu$ Clinux, RTEMS and eCos development for the European market.

## Specialists in Open Source Software for Embedded Platforms:

- **Consultancy and Services:** Feasibility studies, Portability, Security, Target cost, Low-level and Application development, Kernel configuration, Device drivers and BSPs, Libraries & Protocol stacks, Real-Time debugging and optimisations, Trainings, etc
- **Target Processors:** ARM, PowerPC, ColdFire, MIPS, X86, IA32, SH3, Cell, etc
- **Open Source OS:** Embedded Linux,  $\mu$ Clinux, Android, RTEMS, eCOS, FreeRTOS, etc
- **Open Source Tools:** Customisation of C/C++ Compilers, Debuggers and Boot loaders
- **Open Source Middleware:** Configuration, Extension and Customisation of Protocol stacks, Multimedia frameworks, User Interface toolkits, Web servers, Firewalls, etc

## Hardware-Software Co-Design:

- **Architectural trade-offs** between SW and HW
- **HW/SW integration testing**
- **FPGA** based Design and FPGA Coding (VHDL)

## Main areas of expertise:

- **Communications & Networking:** TCP/IP v4 & v6, IEEE 802.3 (Ethernet), IEEE 802.11 (WiFi, WLAN & related), IEEE 802.16 (WiMAX), USB, Bluetooth, VoIP, Broadband xDSL, Residential Gateways, Satellite communication, etc
- **Multimedia:** Multiple video and audio streaming, MPEG4 & H.264 video codecs, Image processing, Set-top boxes, MP3 players, etc
- **User Interfaces / HMI:** Multi-platform GUIs, Qt, GTK, SDL, Pango, Cairo, Touch-screens
- **Security and Access Control systems:** Certificates & Authentication, SSL, SSH, etc
- **Payment systems & Logistics systems**

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## Key values:

- **Expertise:** we focus on bringing strong skills and experience in the field of Open Source Software for Embedded Systems, into our customer's projects.
- **Reactivity:** we deliver fast and accurate project estimates for all new project requests. During the actual implementation we always focus on meeting our customer's deadlines.
- **Commitment:** we are dedicated to the success of our customers by providing a high level of attention and by being very perceptive and responsive to their specific needs.

## Project examples:

- **Port of Embedded Linux and eCOS to Multi-Core ASIC for Banksys**
  - OS environment was created for an ASIC with two ARM cores
  - eCOS was ported on security core, Linux on applications core
  - Inter-processor communication mechanism (asynchronous multiprocessing)
  - Driver development for several communications and peripheral interfaces (Ethernet, UART, Keyboard, LCD, Magnetic stripe, smart-cards, printer, ...)
  - Complete tool chain was delivered to the customer to ease applications development
  - Design and development of HW simulation environment



- **Video Storage Server for Security Platform**
- **Water flow measuring application**
- **Voice Messaging System for Public Transportation Systems**
- **Satellite Broadband Access Modem & Satellite Ground Equipment**
- **Wifi Communication for an Image Transfer Device**
- **Animations on Video Feeds**
- **Medical Image Acquisition Equipment**



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