LINUTRONIX

Linux Internals

Day 1

- **Scheduling in Linux**

- **Interprocess-/Interprocessor communication**
  Posix IPC (Shared Memory, Semaphores, Signals, Sockets (MessageQueues), Pipes, Dbus

- **„Best Practice "recommendations for application development**
  Do's and don'ts
  Analysis of applications and structured layering of applications

- **Kernel – roll your own (ryo) Linux kernel**
  Cross development for ARM architecture

- **Driver development**
  Kernel build-system / integration of your own device driver
  Driver model (structure) of Linux
  Driver details – shown on the character device driver

Day 2

- **Real-time and Linux**
  Presentation of different approaches (RTAI, Xenomai, Preempt-RT)
  Design principles and structure of Preempt-RT patch
  Test programs for user- and kernel space
  Real-time application development (process, thread, driver, ...)
  „Best Practice "recommendations

Do's and don'ts
Analysis of applications and structured layering of applications

Day 3

- **Error analysis / debugging of Linux with build-in tools**
  Use of ftrace - debugging, tracing
  Performance analysis; appropriate tools and methods

- **Introduction to packet management systems for Linux, shown on Debian**
  Principles and idea of a packet management system
  Structural design of Debian as an example

- Reasonable HW infrastructure for Linux development
- Reasonable SW Infrastructure for Linux development (Build System, version control system, distributed development ...)

Software:
Linutronix provides an USB HDD with an x86 64-bit based Debian system for the host system, a Debian and a toolchain and for the target system an ARM Linux (running in a virtual machine). The HDD is a gift for the participant and can be taken home for further studies.

Hands-On training:
Scheduled are hands-on examples for the following themes: shell, cross compiling, and cross debugging (hardware could be provided by Linutronix; please contact us if wished).

Hands-on examples might be limited to 2 persons for a single device

Number of participants:
Due to our experience we know that a single instructor could coach a maximum of 6 persons. Our courses are therefore limited to this number of individuals.