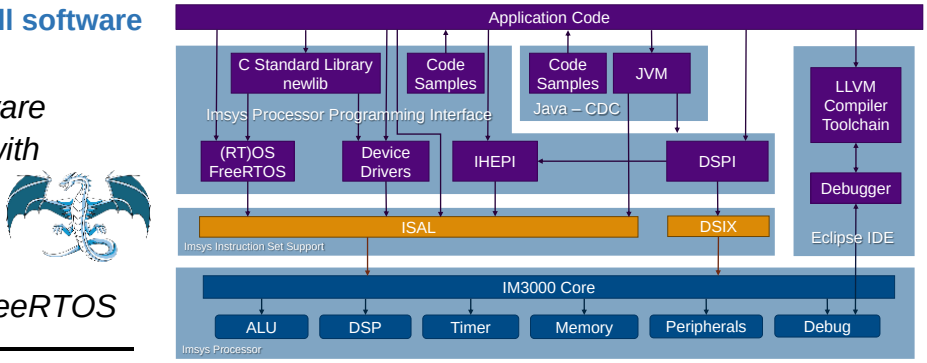
IM4000 Processor family with full software stack and tool support

- *Evolution of proven IM3000 hardware*
- *ISAL, instruction set architecture with LLVM semantics*
- *LLVM toolchain and development environment*
- *C (Clang, newlib), Java (CDC), FreeRTOS*



The IM4000 processor is an evolution of the well proven IM3000 processor hardware. IM4000 features a dual core processor available in several configurations and as IP.
The IM4000 uses a modern software stack for embedded application development. The applications can be developed in C or Java. Imsys can also provide services for using the Imsys High-Efficiency Programming Interface (IHEPI), internal modules and microprogramming for critical parts of applications.
It supports development of IoT applications and can be part of a smart IoT device or deployed in a local hub connecting sensors and actuators of different kinds.
The use of industry standard open-source software in IM4000 protects the SW investment by using enablers with large eco-systems. This caters both for evolution, stability, access to competence and 3:rd party software. Through these enablers the Imsys processor family unique low footprint features are made available.

IM4000

- Evolved IM3000 based dual core processor architecture
- Enablers for features with low resource footprint
- C & Java
- Real time operating system
- TCP/IP including TLS
- File system & Device drivers
- Platform support for OTA upgrade
- Configuration management

Benefits

The IM4000 software stack is built on well proven open-source components and tool chain support. Software add-on and plug-ins for efficient execution on Imsys hardware. ISAL is Imsys' Instruction Set Architecture for LLVM made to be an efficient and compiler-friendly ISA meeting the semantics of LLVM. The software stack is compatible with IM3000 series processors trough ISAL.

- Evolved processor hardware with peripherals.
- Open-source based software stack
- State of the art compiler support using LLVM (ISAL)
- Microcoded acceleration of performance critical functions.
- Integrated development environment
- Possibility to test prerelease HW on FPGA

Language support

C

- Clang compiler frontend for C.
  Clang is built on top of LLVM and provides a library based architecture to allow tight integration
- ISAL instruction set architecture implemented in microcode on IM-thousand series of processors.
- C standard library newlib support on the real time operating system (FreeRTOS).
  The library is optimized for embedded applications using IM4000 processors.

Java

- The JVM, Mika VM, implements the Connected Device Configuration of JavaME.

Real time operating system

IM4000 uses the real time operating system FreeRTOS. A stable platform for embedded applications with a low footprint adapted to IM4000 and the IM-thousand series of processors.

I/O and protocols

IM4000 hardware devices will be used trough the operating system. Drivers for GPIO, RS232, SPI, I2C, modbus, TCP/IP, TLS and Flash memory driver is part of IM4000. Performance enhanced drivers is provided through microcode that has direct access to the processors HW resources.

Toolchain

The Imsys tools are based on open-source and supports efficient application development. They are by choice integration friendly and can be integrated into the tool environment defined to support modern development processes.

- State of the art compiler for ISAL
- Debugger of application on target
- Integrated development environment (IDE).
  The LLVM based tools, Clang, debugger … are specifically designed for integration into IDE.
- Trace hooks in the operating system opens up for analysis tools

Processor

Evolved dual core processor with ISAL and IoT friendly peripherals. Multiple configurations for SoC and availability as IP core.

- Based on Imsys IP