



## Technical characteristics

- Cortex M4 Microprocessor (STM32F417ZTG)
- 1 Mb Flash memory
- 192 Kb SRAM
- 10/100 Ethernet
- RS485 Transceivers
- USB OTG
- Serial wire debug (SWD) y JTAG interfaces
- SDK based on Eclipse, ChibiOS, LwIP and Emtech libraries for GNU toolchain

## Tools/Programming Languages

- Schematic Capture
- PCB design
- Bare metal and OS based firmware design
- Communications (TCP/IP, SPI, I2C, etc.)
- Embedded web server development
- GNU Toolchain

## Project Description

After designing several small microprocessor-based boards for different applications and clients we decided to develop a board and the supporting software platform using a mature toolchain that could be used as the base for different projects. The Lanin board is based on ST's Cortex M4 STM32F4 microprocessor, and includes different communications interfaces such as Ethernet, USB and RS485, a debug port with an on-board USB-JTAG converter and Emtech's standard connector layout, so it can be integrated with daughter cards and FPGA boards to implement I/O extension and custom interfaces.

The Lanin board is offered as a product and has been used in different projects and proof of concept designs. Several daughter cards have been developed, including basic I/O, touch-display and Wi-Fi communications.

An SDK based on ChibiOS, LwIP and Emtech libraries, which uses Eclipse and the GNU toolchain is made available to allow rapid development of sophisticated applications. including communications, web-based interfaces and real-time applications.

The board is also used as the base for training courses on embedded systems design.

## Experience and skills

- Hardware design (schematic capture)
- PCB Design.
- Embedded Systems software development
- TCP/IP stack
- GNU Toolchain
- RTOS and bare metal SW application development
- SDK development
- Embedded software and Web Servers
- Engineering and manufacturing documentation (Requirements, Specifications, Interface Control Documents (ICD), Test Plan, etc.)

## Industry/Applications

- Education (development kit)
- Rapid prototyping
- Instrumentation and Control
- Communications protocol conversion
- Remote monitoring
- Internet of Things applications
- etc.