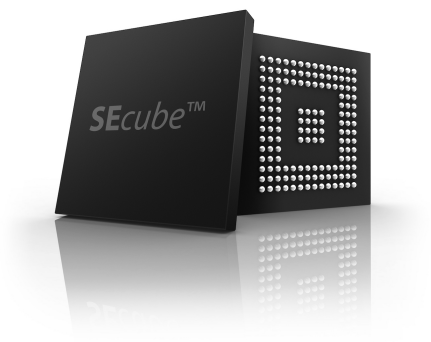
SE*cube*™

Reconfigurable Silicon



SE*cube*™ - Secure Environment cube - is the open hardware and software platform for your own security and application developments.

Powerful and security-oriented, SE*cube*™ is easy to integrate and capable of hiding all the complexity behind a simple set of APIs.

In a single-chip design, SE*cube*™ embeds three main cores: a highly powerful processor, a Common Criteria certified security controller and a high-performance FPGA.

The result of this innovative combination delivers an extremely versatile secure environment in a single SoC (System-On-Chip), in which developers can rapidly implement their complex applications with and deploy into various ICT devices.

SE*cube*™ platform provides many functional entry levels, ranging from hardware to software APIs amenable to become service-ready applications. Whilst easy-to-use and high-security abstraction layer are availed to developers, security experts are now capable of building their system from ground up, starting from the elementary low-level blocks.

Suitable for demanding security projects, SE*cube*™ chip has multiple embedded communication interfaces. In addition, the internal FPGA provides up to 47 fast I/O for custom high-speed interface implementation. This allows fast integration of SE*cube*™ chip into any hardware design, while drastically reducing the final BOM (bill of material).

SE*cube*™ provides several communication interfaces for the integration into any kind of device, as well as multi-level, open source libraries. Blu5 Optimised and GovMil Libraries are available to realise high-grade security services and applications minimising the development effort and reducing drastically the time-to-market.

SE*cube*™ is the ultimate solution for high-end design, delivering integration of a flexible, configurable and certified secure core.

Blu5 Group
info@blu5group.com
www.blu5group.com

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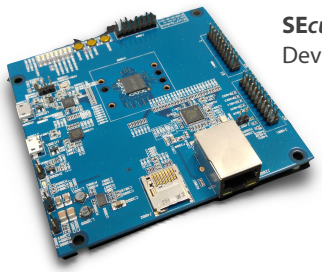
*Technical Specifications**

SE*cube*™ Secure Environment

- STM32F4 - ARM® 32-bit Cortex®-M4 CPU with FPU, Adaptive real-time accelerator (ART Accelerator™) allowing 0-wait state execution from Flash memory, frequency up to 180 MHz, MPU, 225 DMIPS/1.25 DMIPS/MHz (Dhrystone 2.1), and DSP instructions - FLASH 2 MB - RAM 256 KB
- Security Controller SLJ52G - JavaCard Platform, including ePassport and eSign applets
- Supported standards: JC 3.0, GP 2.2, ICAO BAC, SAC, AA, BSI-TR03110 v1.11 EAC, ISO 18013 BAP, EAP config 1-4 - 128 Kbyte EEPROM - DES, 3DES, AES up to 256-bit - RSA up to 2048-bit, ECC up to 521-bit
- Certified Common Criteria CC EAL5+ high
- Space resilient for LEO satellite applications
- FPGA - MachXO2-7000 - 6864 LUTs - Ultra Low Power Device (65 nm process, 19 µW standby power, programmable low swing differential I/Os, Stand-by mode and other power saving options)
- Embedded and distributed memory
  - 240 Kbits SysMEM™ embedded blocks RAM
  - 54 Kbits distributed RAM
  - Dedicated FIFO control logic
- 256 Kbits On-Chip User Flash Memory
- Wide Frequency range (10 MHz to 400 MHz)
- Non-Volatile infinitely reconfigurable
- In-field logic configuration while system operates
- Interfaces
  - USB 2.0 high-speed/full-speed device/host/OTG controller with dedicated DMA, on-chip full-speed PHY and ULPI
  - 47 FPGA I/Os

SE*cube*™ DevKit - Development Board

- Two USB 2.0 interfaces (Full Speed, High Speed)
- MicroSD card interface
- 10/100Mb Ethernet interface
- 8 User LED, 2 general purpose buttons, 1 reset
- Expansion connectors (GPIOs, SPI, I2C, PWM, ADC, etc.)
- 20-pin JTAG interface
- Powered by USB cable



SE*cube*™ DevKit
Development Board

Open Source Firmware & Libraries

- 10Mbps USB and SDCard communication drivers
- AES256, SHA256, CMAC-AES256
- HW AES256, single session, 100 Mbps
- SE*file*™ basic libraries, for data at rest protection
- SE*link*™ basic libraries, for data in motion protection

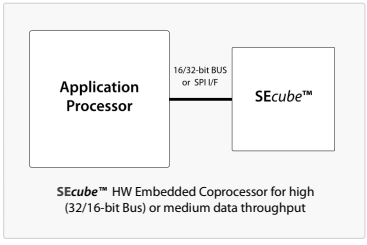
Enhanced/Optimised Firmware & Libraries

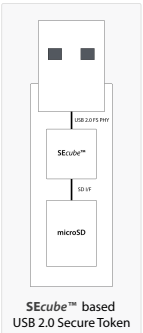
- Smart Boot-loader, multi interface, fast and safe FW injection
- 100Mbps USB and SDCard communication drivers
- Low power management libraries (dynamic, stop, standby)
- Key Management libraries (generation, update, storage, etc.)
- Communication libraries (vocoders, negotiation, etc.)
- SHA256, CMAC-AES256, Elliptic Curves (up to 521-bit), RSA (up to 2048-bit)
- JavaCard Blu5 Crypto Applet (based on EAL5+ security chip)
- Ultra Fast, Configurable HW AES256 ECB/CBC/CFB/OFB/CTR
  - 1.6 Gbps, 6 pipeline levels
  - 8 independent sessions, 8 SBOX
  - enhanced CTR mode (customisable polynomials)
  - SE*file*™ high speed libraries, for data at rest protection2 cache levels, ultra-low overhead
  - SE*link*™ libraries, for data-in-motion protection unlimited sessions, full set of security policies

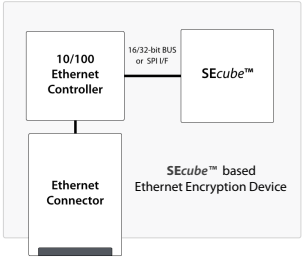
GovMil Firmware and Libraries

Full set of hardware & firmware security functions and libraries for Military and Government users, including specific libraries to allow cryptographic flexibility and full customisation with exclusive additional security mechanisms.

Typical Application Diagrams







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