STM32W for RF applications

Embedded world 2010

STM32W - IEEE 802.15.4 open platform

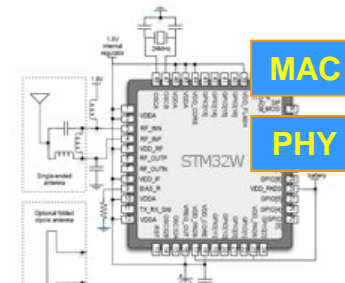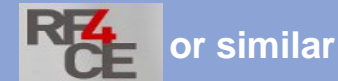| Smart energy	Home & building automation	Wireless sensor network	Healthcare

Consumer

Remote control

Home automation

Mesh networking / performance /secured Stacks

 or similar

ZigBee

Star / PtoP networks / Cost optimized

RF4CE **or similar**

MAC

PHY

A complete SOC solution (µC, Radio and FW)

STM32W – IEEE 802.15.4 radio/open platform

- **IEEE 802.15.4 / 2.4Ghz Radio**
  - Transmitter: 2-point direct synthesizer modulation
  - Receiver: low IF super heterodyne architecture
  - Digital BB DSP & MAC support
  - -100 dBm sensitivity and up to 7dBm output power

- **Microcontroller**
  - ARM Cortex-M3 core architecture
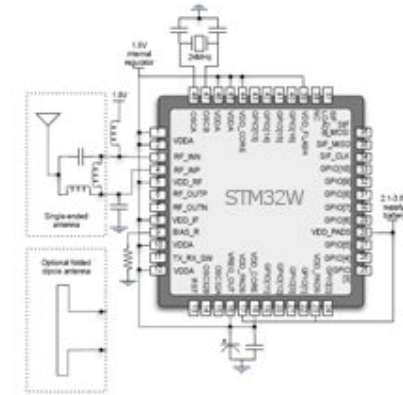 - Embedded memory (eFlash 16kx64, SRAM 4kx16)

- **Networking**
  - Zigbee compliant PRO stack w/ some enhancements
  - 128 Kbytes Flash for stack & apps codes

- **Peripherals**
  - AES encryption HW accelerator
  - Debug channel via JTAG
  - USART, SPI, I2C, 24 GPIOs

- **Other**
  - Compatible with SN2xx series
  - QFN48 and QFN40 packages available

STM32 Releasing your creativity

STM32W architecture overview

Fully IEEE 802.15.4 compliant radio

Power management

- § Sleep mode <1µA

On-chip debug support

- § Packet trace module interface enables remote monitoring of radio messages
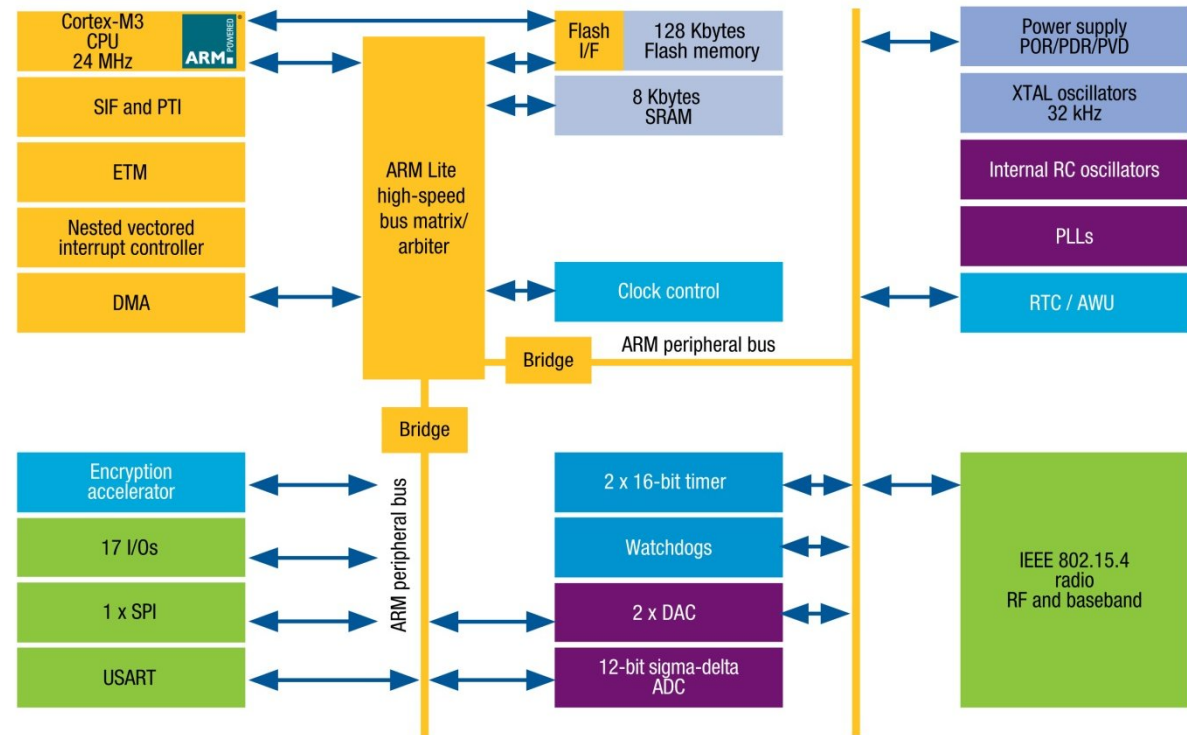
Memory protection

- § EmberZNet has unrestricted access to all areas of the chip
- § The application runs in protected mode
- § Stack overflow protection
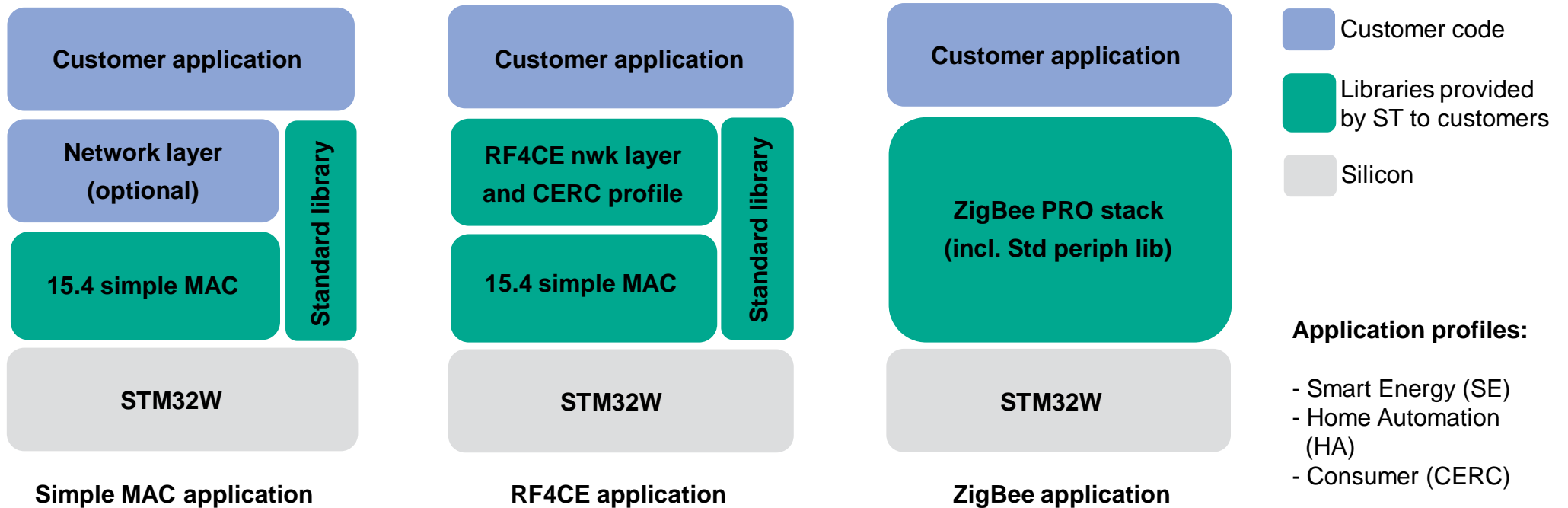
Encryption acceleration

- § Application runs at full speed with strong encryption

DMA improves data throughput

broad range of peripherals

- § USART/SPI/I²C/GPIO/ADC

STM32W S/W libraries

Customer application

Network layer (optional)

Standard library

15.4 simple MAC

STM32W

Simple MAC application

Customer application

RF4CE nwk layer and CERC profile

Standard library

15.4 simple MAC

STM32W

RF4CE application

Customer application

ZigBee PRO stack (incl. Std periph lib)

STM32W

ZigBee application

Customer code

Libraries provided by ST to customers

Silicon

Application profiles:

- Smart Energy (SE)
- Home Automation (HA)
- Consumer (CERC)

STMicroelectronics

STM32W in a nutshell

- **Highest performance**
  - Industry leading RF performance
  - Network performance – highest throughput, lowest latency for routing, security computations
  - Enhanced battery life by 25%+

- **Application code space**
  - ZigBee PRO stack 20%+ smaller than former products generation, plus architecture provides more usable flash

- **Power Consumption**
  - 1/3rd less active current than 250/260 series, combined with core efficiencies, results in longest battery life in industry

- **Industry standard/leading core**
  - High performance, standard tools, powerful debug capabilities
  - Part of largest ARM Cortex-M3 product family: STM32
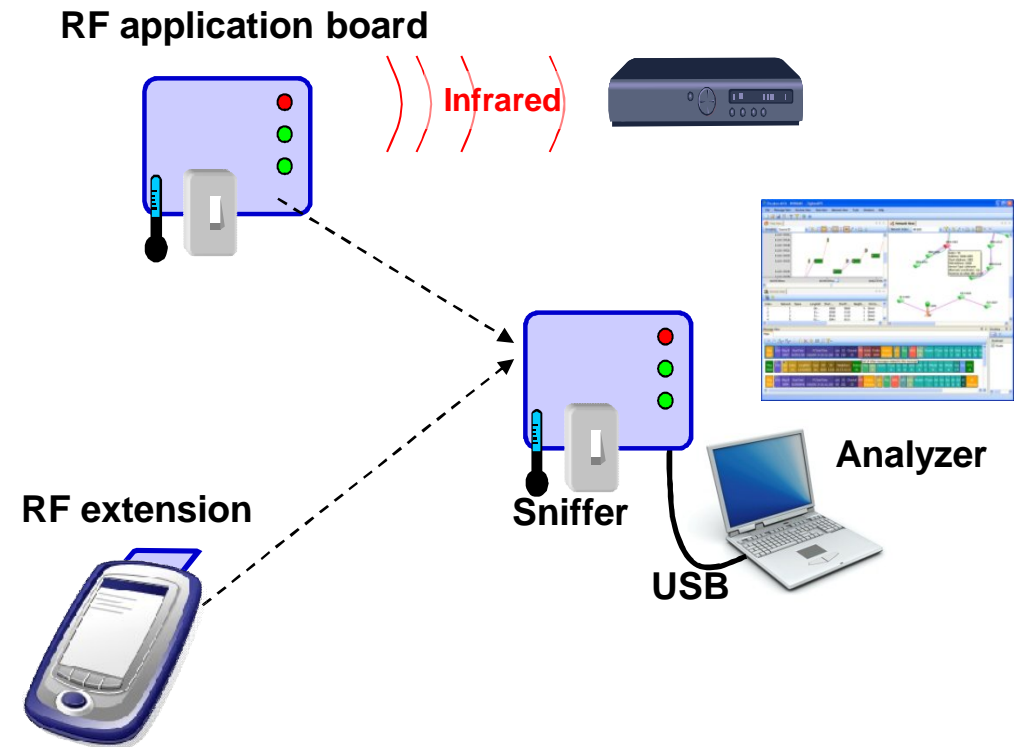
STM32W starter kit

Network analyzer

Perytons

STLink + IAR compiler

RF application board

x2

Extension board + Primer 2

x4

RF application board

Extension kit

Developer kit

RF application board

Infrared

Analyzer

Sniffer

RF extension

USB

Thank you

Integrated 2.4 GHz radio MCU enables efficient and low-cost wireless network implementation

STM32W is Zigbee certified platform (PRO Stack)

STM32W is ZigBee RF4CE certified platform

STM32W is IEEE 802.15.4 certified platform