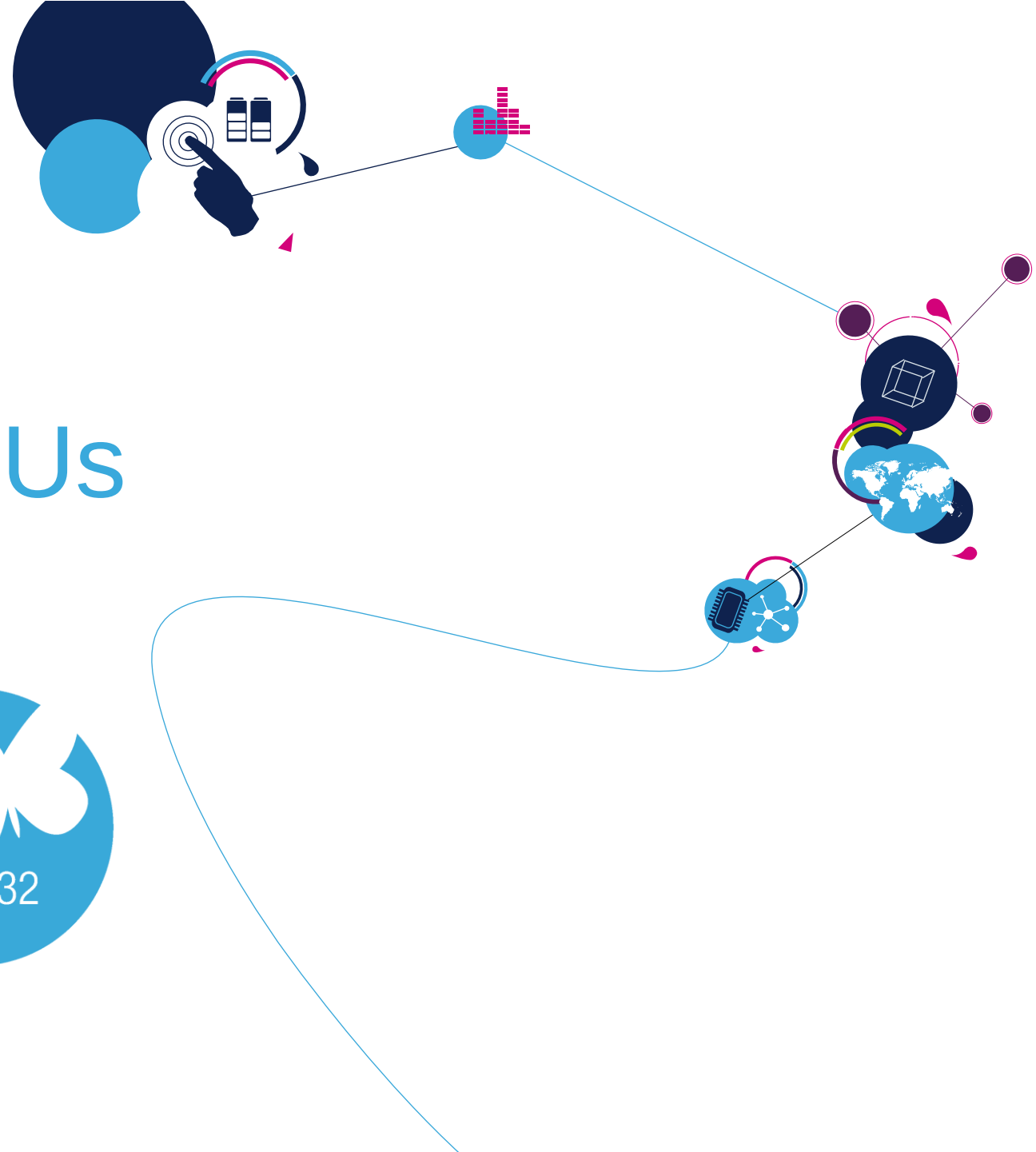


STM32 32-bit MCUs

Releasing your creativity





Select the Best Partner 2

STMicroelectronics is leading the market



Pioneer in introducing a full range of ARM® Cortex®-M cores

Market-share leader in ARM® Cortex®-M

Owner of the largest Cortex®-M portfolio

Reliable industrial partner able to guarantee 10 years lifetime

Expert in ultra-low-power, performance and cost-efficiency



Developers **benefit** from one of the largest MCU communities on ARM® or partner websites



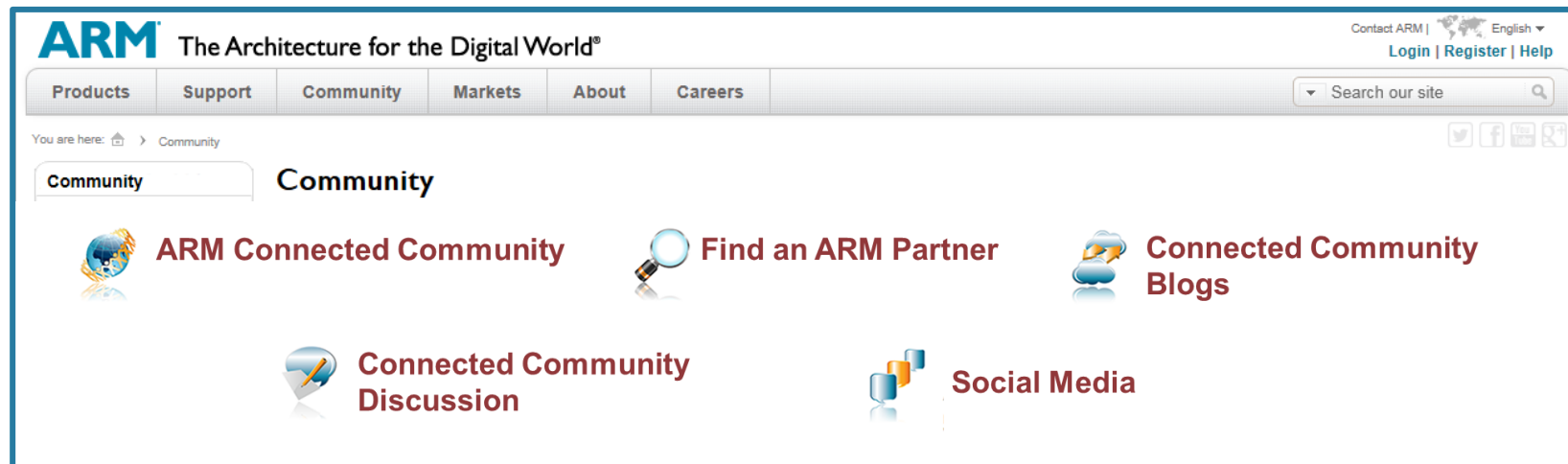
As a leading partner, **STMicroelectronics** is very active in supporting and promoting **ARM®-based solutions**



Re-using and porting existing **applications** has never be so convenient



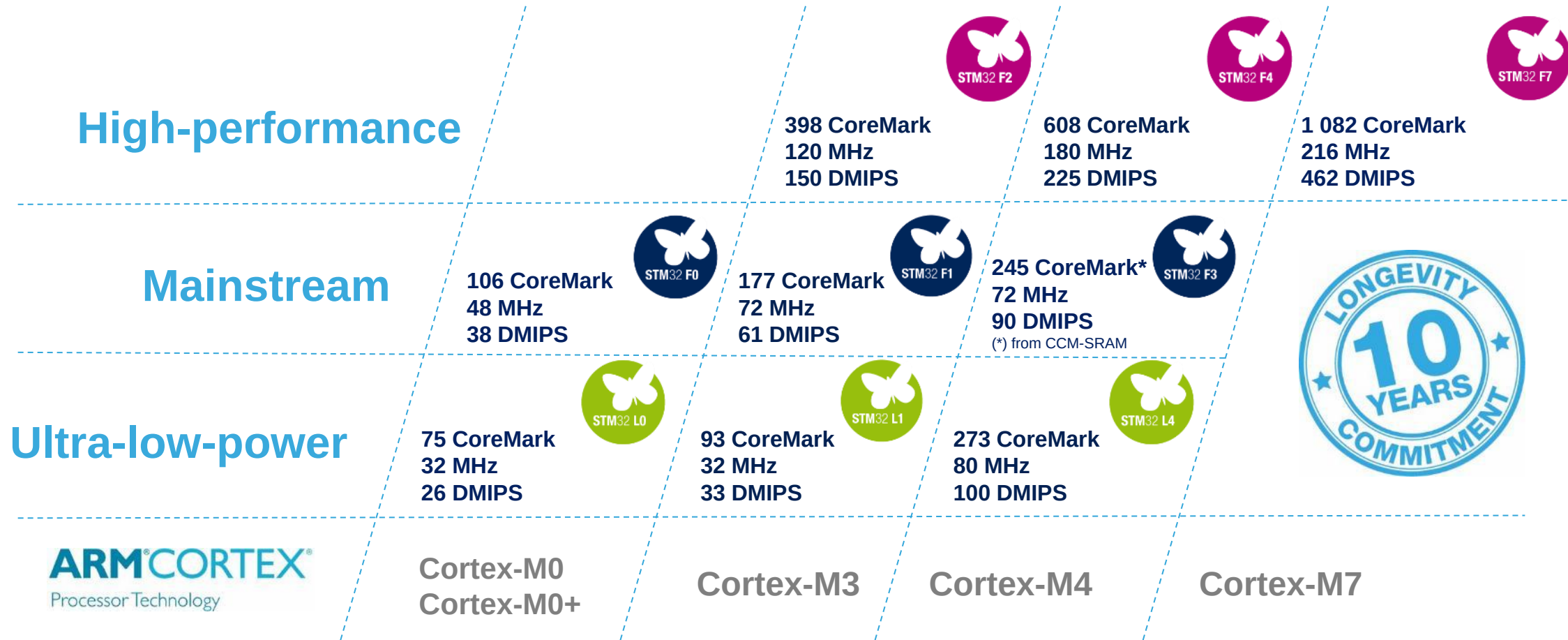
Gain precious time, while increasing your **knowledge** and **creativity**



STM32 Broad Portfolio

4

More than 600 p/n select





STM32L Ultra-Low-Power

5

Ultra-low-power, market-proven solutions
Best in class with up to 100 DMIPS performance

STM32L DNA	Product Series	System	Advanced Periph.	USB 2.0	LCD	Security
• Ultra-low leakage technology • Flexible LP⁴ Modes • Optimized design for ULP⁴ • Operating from 1.65 to 3.6 V • From - 40 to 125 °C • Reset circuitry • Rich peripheral set • Advanced analog features • 16-bit, 32-bit timers • Low power Batch acquisition mode (BAM) • 2 watchdogs • Temperature sensor • Unique ID • Cap. touch-sensing • Single wire protocol	STM32L4	ART Accelerator™ Vbat New LP ⁴ Modes SDIO/FSMC ¹	SAI CAN Quad-SPI DFSDM ² LP UART LP Timers	FS OTG + Xtal less	Seg. up to 8x40 + TFT	256-bit AES + TRNG
	STM32L1	True EEPROM with RWW ³ + SDIO/FSMC ¹		FS	Seg. up to 8x40	256-bit AES
	STM32L0	True EEPROM with RWW ³	LP UART LP Timer	FS + Xtal less	Seg. up to 8x48	256-bit AES + TRNG



- ▶ ARM Cortex-M4 + FPU at 80 MHz – 100 DMIPS
- ▶ From 256 Kbytes to 1 Mbyte of Flash memory
- ▶ Lowest power mode + RAM + RTC: 0.6 µA

ULPBENCH™ 153
An EEMBC Benchmark

COREMARK® 273
An EEMBC Benchmark



- ▶ ARM Cortex-M3 at 32 MHz – 33 DMIPS
- ▶ From 32 to 512 Kbytes of Flash memory
- ▶ Lowest power mode + RAM + RTC: 1.2 µA

ULPBENCH™ 84
An EEMBC Benchmark

COREMARK® 93
An EEMBC Benchmark



- ▶ ARM Cortex-M0+ at 32 MHz – 26 DMIPS
- ▶ From 8 to 192 Kbytes of Flash memory
- ▶ Lowest power mode + RAM + RTC: 0.8 µA

ULPBENCH™ 153
An EEMBC Benchmark

COREMARK® 75
An EEMBC Benchmark

¹ FSMC : Flexible Static Memory Controller

² DFSDM : Digital Filters for Sigma Delta Modulation. Accepts digital microphones pdm input signal

³ RWW : Read While Right (Dual Bank Flash and Dual Bank EEPROM)

⁴ ULP / LP : Ultra-low-power / Low power



STM32F Mainstream MCUs

6

The mainstream family matches with a large variety of needs found in general-purpose applications

STM32F DNA	Product series	System	Comm. Periph.	Analog & timers
1.8V ± 8% and 2.0 to 3.6 V operation - Up to 105 °C - Calendar RTC - Multiple DMAs - USARTs, SPIs, I²Cs ,... 16-bit, 32-bit timers - Motor Control timer 2 independent watchdogs - Temperature sensor - CRC - Unique ID	STM32F3	80-Kbyte RAM CCM-SRAM FSMC DSP and FPU	CAN 2.0B HDMI-CEC USB 2.0 FS	217 ps HR 3 x 16-bit (144 MHz) 2 x 5 MSPS ADC 4 x 12-bit DAC 7 x comparators 4 x PGA 3 x 16-bit Σ/Δ ADC 24 x Cap sense
	STM32F1	96-kbyte RAM FSMC	2 x CAN 2.0B SDIO USB 2.0 FS OTG FS Ethernet MAC	14 x 16-bit 2 x 16-bit MC 3 x 1 MSPS ADC 2 x 1 MSPS DAC
	STM32F0	32-kbyte RAM DMA Multiply	1 x CAN 2.0B HDMI-CEC USB 2.0 FS (Xtal-less)	1 MSPS 12-bit ADC 2 x comparators 1 MSPS 12-bit DAC 24 x Cap. Sense



- ▶ ARM Cortex-M4 + FPU at 72 MHz – 90 DMIPS*
- ▶ From 16 to 512 Kbytes of Flash memory
- ▶ Mixed-signals: CCM-SRAM, 16-bit ADC $\Sigma \Delta$, HR-timer...

COREMARK
An EEMBC Benchmark **245***



- ▶ ARM Cortex-M3 at 72 MHz – 61 DMIPS
- ▶ From 16 Kbytes to 1 Mbyte of Flash memory
- ▶ STM32 foundation: USB, Ethernet, CEC...

COREMARK
An EEMBC Benchmark **177**



- ▶ ARM Cortex-M0 at 48 MHz – 38 DMIPS
- ▶ From 16 to 256 Kbytes of Flash memory
- ▶ Entry-level, cost-sensitive: 1st 32-bit MCU at 32 cents, USB, CAN...

COREMARK
An EEMBC Benchmark **106**



STM32F High Performance MCUs

7

The high performance STM32 series offers up to 1082 CoreMark of performance and a rich set of peripherals to address all developers needs

Performance DNA	Product Series	System	HW acceleration	Advanced Comm. Periph. Graphic and Audio
• Smart architecture for fast data transfers: DMAs, Bus Matrix • Operating from 1.7 to 3.6V • From - 40 up to 105 °C • Rich peripheral set including: CAN, Ethernet, Camera interface, SDMMC, USB OTG • Advanced analog features • 16-bit, 32-bit timers • Low power Batch Acquisition Mode (BAM) • 2 watchdogs • Temperature sensor • Unique ID • CRC	STM32F7	FPU, DSP instructions MPU	Execution: ART Accelerator™ Graphics: Chrom-ART Accelerator™ Crypto-Hash: coprocessor	SDRAM I/F, Dual Quad-SPI I/F SPDIF, HDMI-CEC 2xSAI TFT LCD
	STM32F4	FPU, DSP instructions MPU	Execution: ART Accelerator™ Graphics: Chrom-ART Accelerator™ Crypto-Hash: coprocessor	SDRAM I/F, Dual Quad-SPI I/F SPDIF, HDMI-CEC up to 2xSAI TFT LCD I/F MIPI DSI I/F
	STM32F2	MPU	Execution: ART Accelerator™ Crypto-Hash: coprocessor	



- ▶ ARM Cortex-M7 + FPU up to 216 MHz – 462 DMIPS
- ▶ From 512 KB to 1 MB Flash, 320 KB RAM
- ▶ Very High performance from Flash and external memories (including dual Quad-SPI)

COREMARK® 1082
An EEMBC Benchmark



- ▶ ARM Cortex-M4 + FPU up to 180 MHz – 225 DMIPS
- ▶ From 64 KB to 2 MB Flash, up to 384 KB RAM
- ▶ Select the right F4 for your needs: from the F401/F411 Access lines to the most Advanced Lines

COREMARK® 608
An EEMBC Benchmark



- ▶ ARM Cortex-M3 at 120 MHz – 150 DMIPS
- ▶ From 128 KB to 1 MB Flash, up to 128 KB RAM
- ▶ Foundation for performance and connectivity

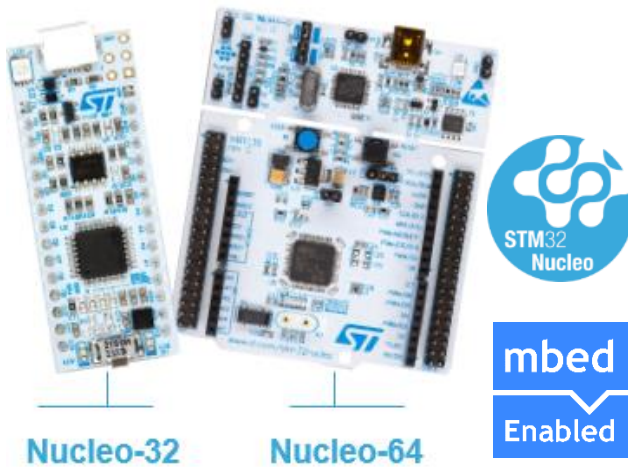
COREMARK® 398
An EEMBC Benchmark

Hardware tools

STM32 Ecosystem

8

STM32 Nucleo boards



Flexible prototype

Discovery kits



Creative demos

Evaluation boards



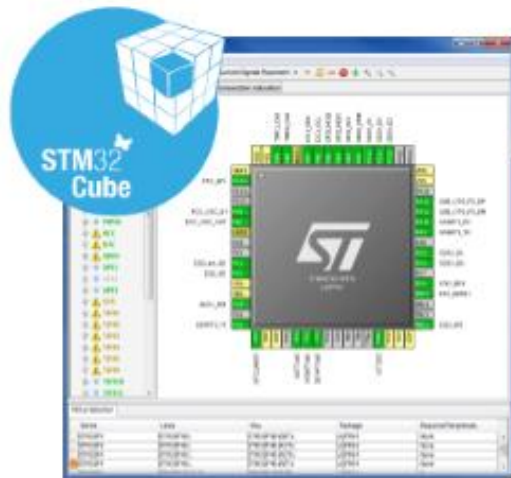
Full-feature evaluation

Software tools

STM32 Ecosystem

9

STM32Cube MX



Configure & generate code

Partners IDE



Compile & debug

STMStudio



Monitor

Embedded
software

STM32 Ecosystem

10

STM32Cube MX

STM32Cube &
Standard libraries

CMSIS and mbed
SDK

Virtual machine
and models



High integration
Low portability



Average optimization
STM32 portability

ARM[®]mbed[™]

Low optimization
ARM portability



Low optimization
Large portability

STM32 Ecosystem

11

Hardware tools

STM32 Nucleo boards



Discovery kits

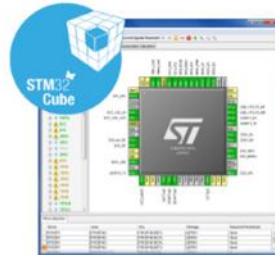


Evaluation boards



Software tools

STM32Cube MX



Partners IDE



STMStudio



Embedded software

STM32Cube MX



STM32Cube & Standard libraries



CMSIS and mbed SDK

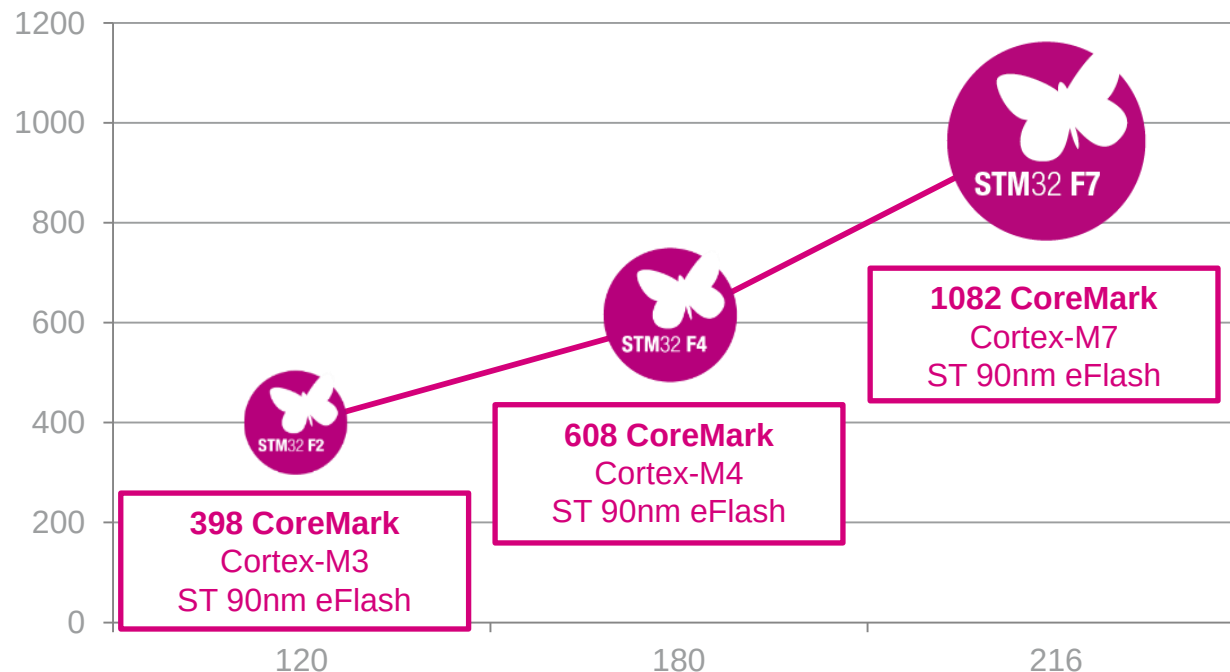


Virtual machine and models



Being smart is not about brain size, it is about connecting the right amount of neurons at the right time

- **STM32F7** is built on the new **state-of-art ARM® Cortex®-M7** core
- **STM32F7** is about ST's art of **combining and interconnecting the right features** around the Cortex-M7 core, to deliver the **smartest STM32 ever**



Delivering more than
1000 CoreMark performance
executing from Flash or
Quad-SPI !



In full production now!

www.st.com/stm32f7

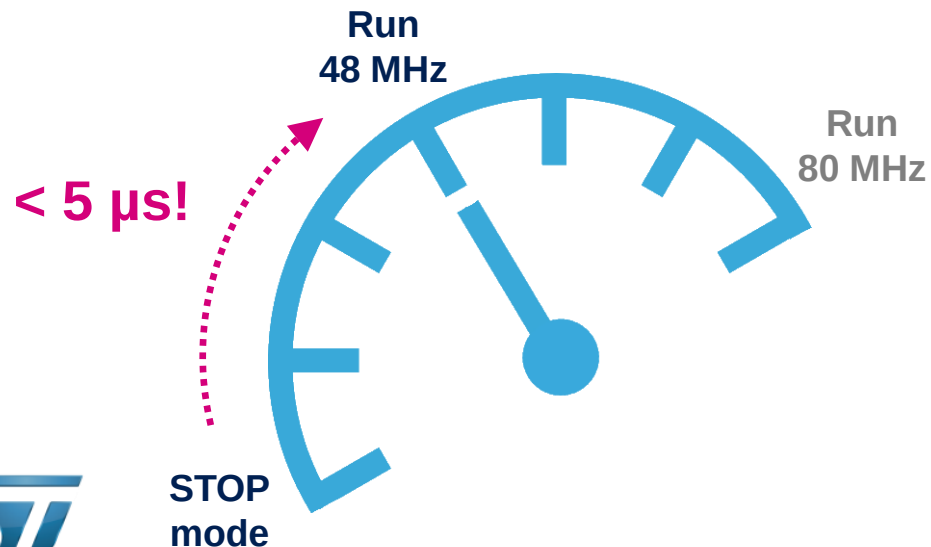
Unique combination of ultra-low power and high performance



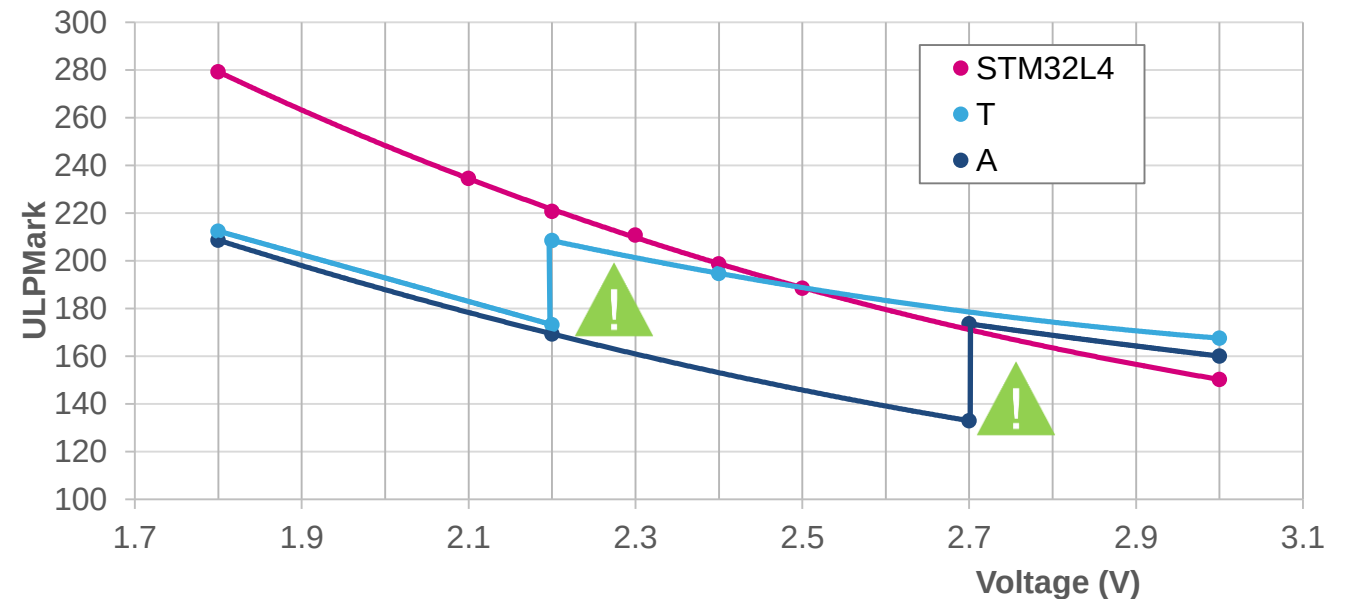
Dhrystone
MIPS 100

ULPBENCH™
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COREMARK®
An EEMBC Benchmark 273



Define new performance limits in ULP world



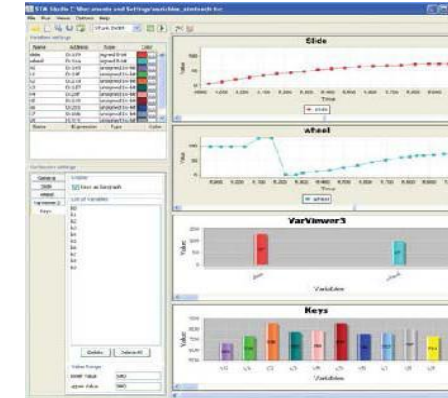
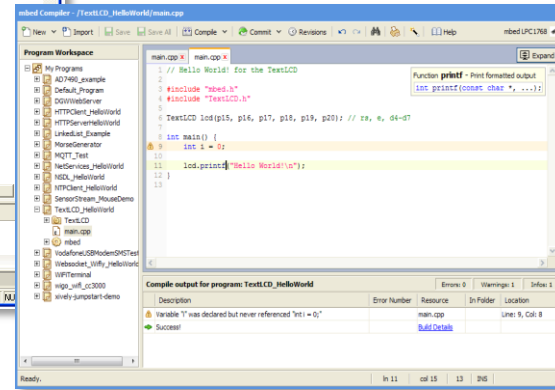
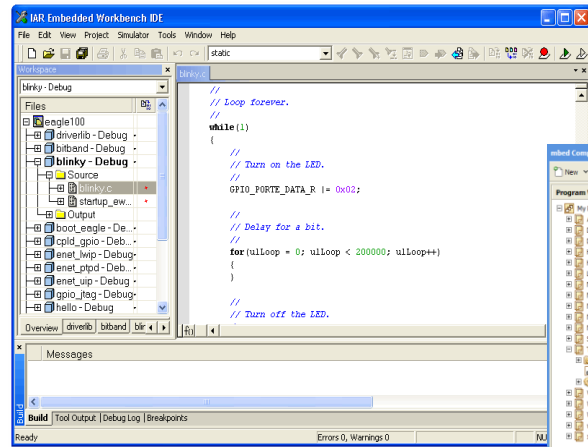
The higher the better!



On competition devices: discontinuity due to DC/DC no longer functional when voltage decreases

Comprehensive Choice of free IDEs

11



Partner IDEs

STMStudio

Compile & Debug

Monitor



Free
IDE



STM32 Apps & Social Media

12

Find more about STM32 products and solutions

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+ARM[®]Connected Community

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Releasing your creativity

13



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