



STM32 intro

What the STM32 family offers

Real-time performance

- Powerful Cortex® cores
- Multicore performance
- Fast interfaces
- Hardware accelerators



Outstanding power efficiency

- Ultra-low dynamic power consumption
- Long lifetime, small battery
- Sustainable technology



Advanced, innovative peripherals

- Graphic acceleration
- Digital & analog peripherals
- USB Type-C®
- Peripherals for wireless and edge AI solutions



Optimized integration

- Best fit for application requirements (package size, cost, performance)
- Safety & security features



Extensive ecosystem

- Comprehensive development tools
- Wide range of partners
- Community support



3,700+ part numbers

The STM32 portfolio

STM32

Five product categories



Wireless
MCU

Short- and long-range connectivity



Ultra-low-power
MCU

32-bit general-purpose microcontrollers: from 75 to 3,224 CoreMark score



Mainstream
MCU



High-performance
MCU



Embedded
MPU

32- and 64-bit microprocessors



The STM32 portfolio

-  MPU
-  High-performance MCUs
-  Mainstream MCUs
-  Ultra-low-power MCUs
-  Wireless MCUs



						STM32MP1 Up to 1 GHz Cortex-A7 209 MHz Cortex-M4	STM32MP2 Dual 1.5 GHz Cortex-A35 400 MHz Cortex-M33	
						STM32F7 1082 CoreMark 216 MHz Cortex-M7	STM32H7 Up to 3224 CoreMark Up to 600 MHz Cortex-M7 240 MHz Cortex-M4	STM32N6 MCU with neural processing unit
			STM32F2 Up to 398 CoreMark 120 MHz Cortex-M3	STM32F4 Up to 608 CoreMark 180 MHz Cortex-M4	STM32H5 Up to 1023 CoreMark 250 MHz Cortex-M33			
			STM32F3 245 CoreMark 72 MHz Cortex-M4	STM32G4 569 CoreMark 170 MHz Cortex-M4			<i>Mixed-signal MCUs</i>	
	STM32C0 114 CoreMark 48 MHz Cortex-M0+	STM32F0 106 CoreMark 48 MHz Cortex-M0	STM32G0 142 CoreMark 64 MHz Cortex-M0+	STM32F1 177 CoreMark 72 MHz Cortex-M3				
	STM32L0 75 CoreMark 32 MHz Cortex-M0+	STM32U0 140 CoreMark 48 MHz Cortex-M0+	STM32L4 273 CoreMark 80 MHz Cortex-M4	STM32L4+ 409 CoreMark 120 MHz Cortex-M4	STM32L5 443 CoreMark 110 MHz Cortex-M33	STM32U5 651 CoreMark 160 MHz Cortex-M33		
		STM32WL 162 CoreMark 48 MHz Cortex-M4 48 MHz Cortex-M0+	STM32WB0 64 MHz Cortex-M0+	STM32WB 216 CoreMark 64 MHz Cortex-M4 32 MHz Cortex-M0+	STM32WBA 407 CoreMark 100 MHz Cortex-M33			

STM32 high-performance MCUs

STM32H5

- Arm® Cortex®-M33 at 250 MHz – 375 DMIPS
- From 128 Kbytes to 2 Mbytes of Flash memory
- High performance, scalable security, affordable

STM32H7

- Arm® Cortex®-M7 + Arm® Cortex®-M4 FPU at 480 MHz – 1327 DMIPS and up to 600 MHz - 1284 DMIPS on single core Arm® Cortex®-M7
- From 64 Kbytes to 2 Mbytes of Flash memory
- High Performance, scalable memory and security

STM32F7

- Arm® Cortex®-M7 + FPU at 216 MHz – 462 DMIPS
- From 256 Kbytes to 2 Mbytes of Flash memory
- Embedded flash & external memories

STM32F4

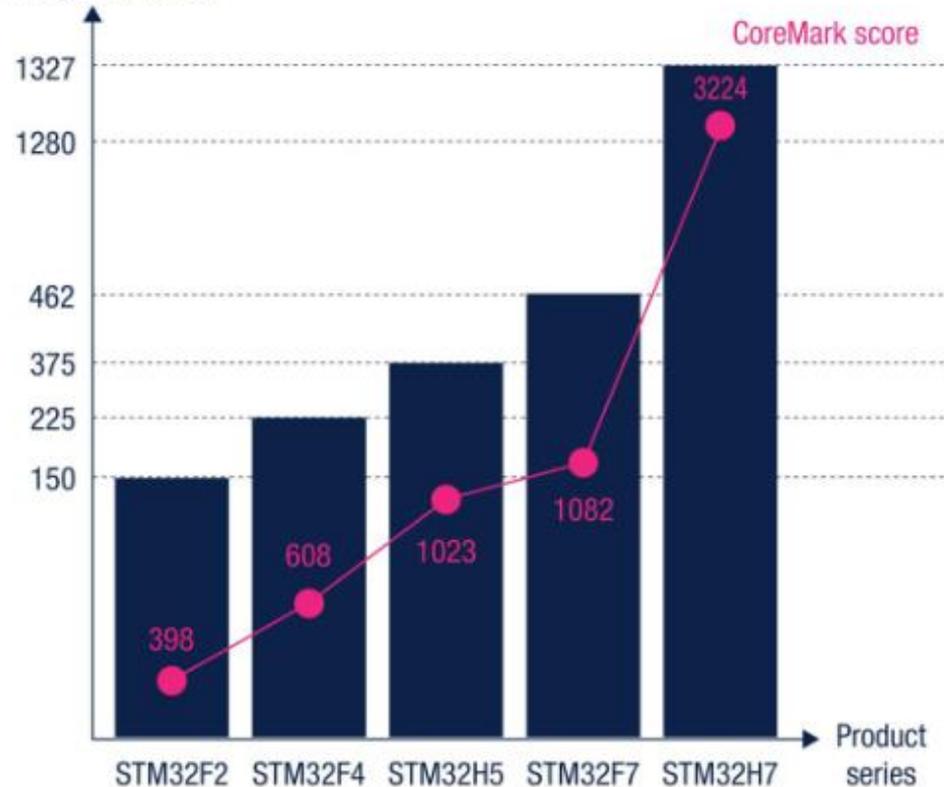
- Arm® Cortex®-M4 + FPU up to 180 MHz – 225 DMIPS
- From 64 Kbytes to 2 Mbytes of Flash memory
- Cost-effective and power efficiency

STM32F2

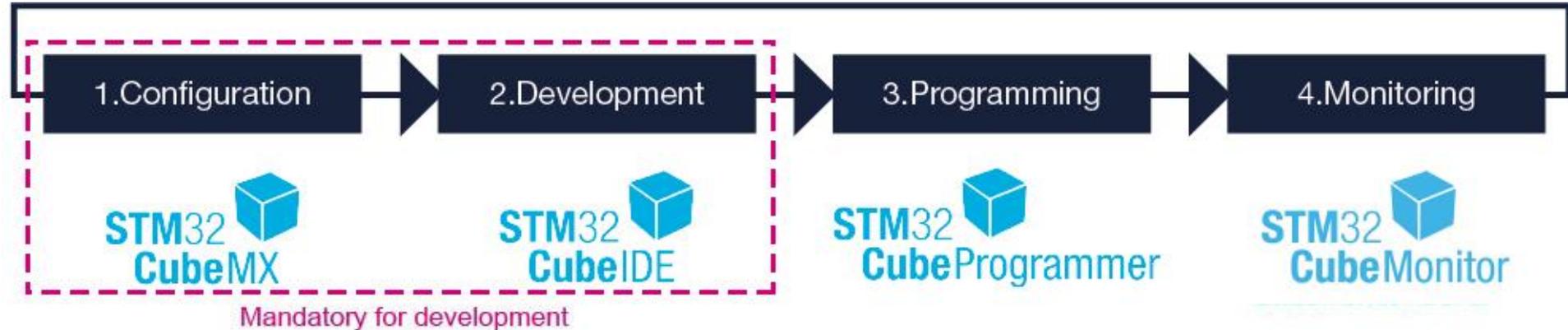
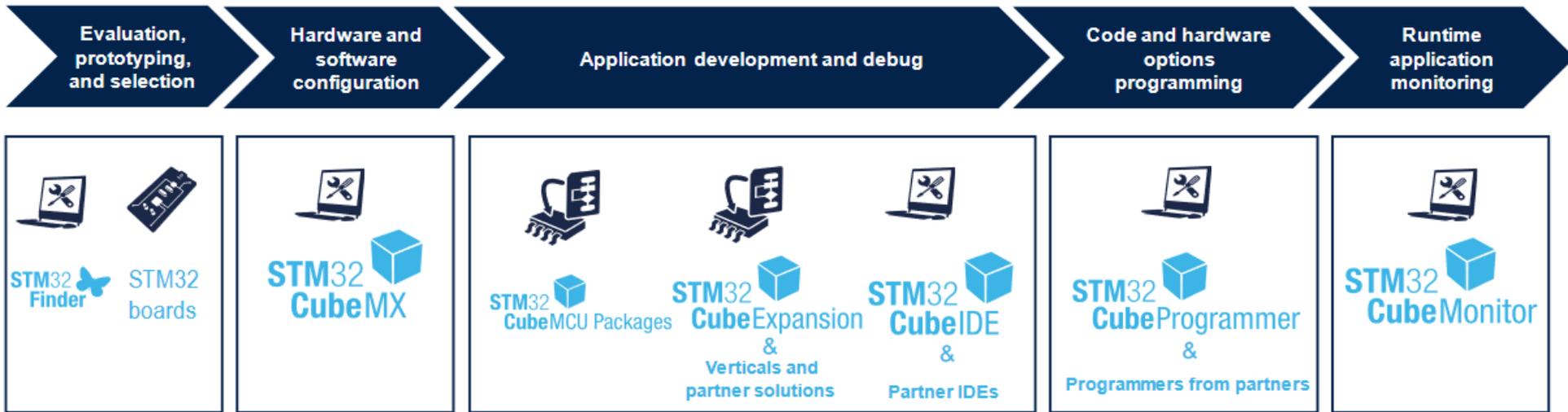
- Arm® Cortex®-M3 at 120 MHz – 150 DMIPS
- From 128 Kbytes to 1 Mbyte of Flash memory
- Foundation lines for performance and connectivity

Legend:  Latest product series/lines generation

DMIPS performance



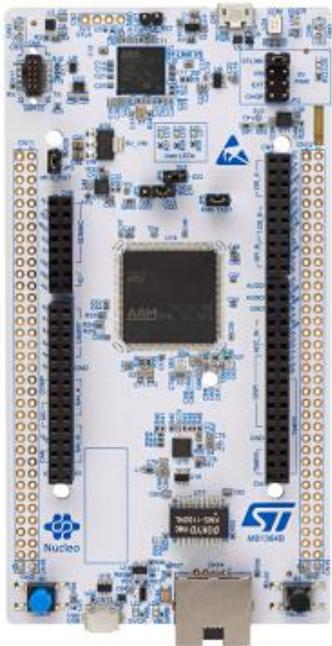
Tools and software supporting you during all your design steps



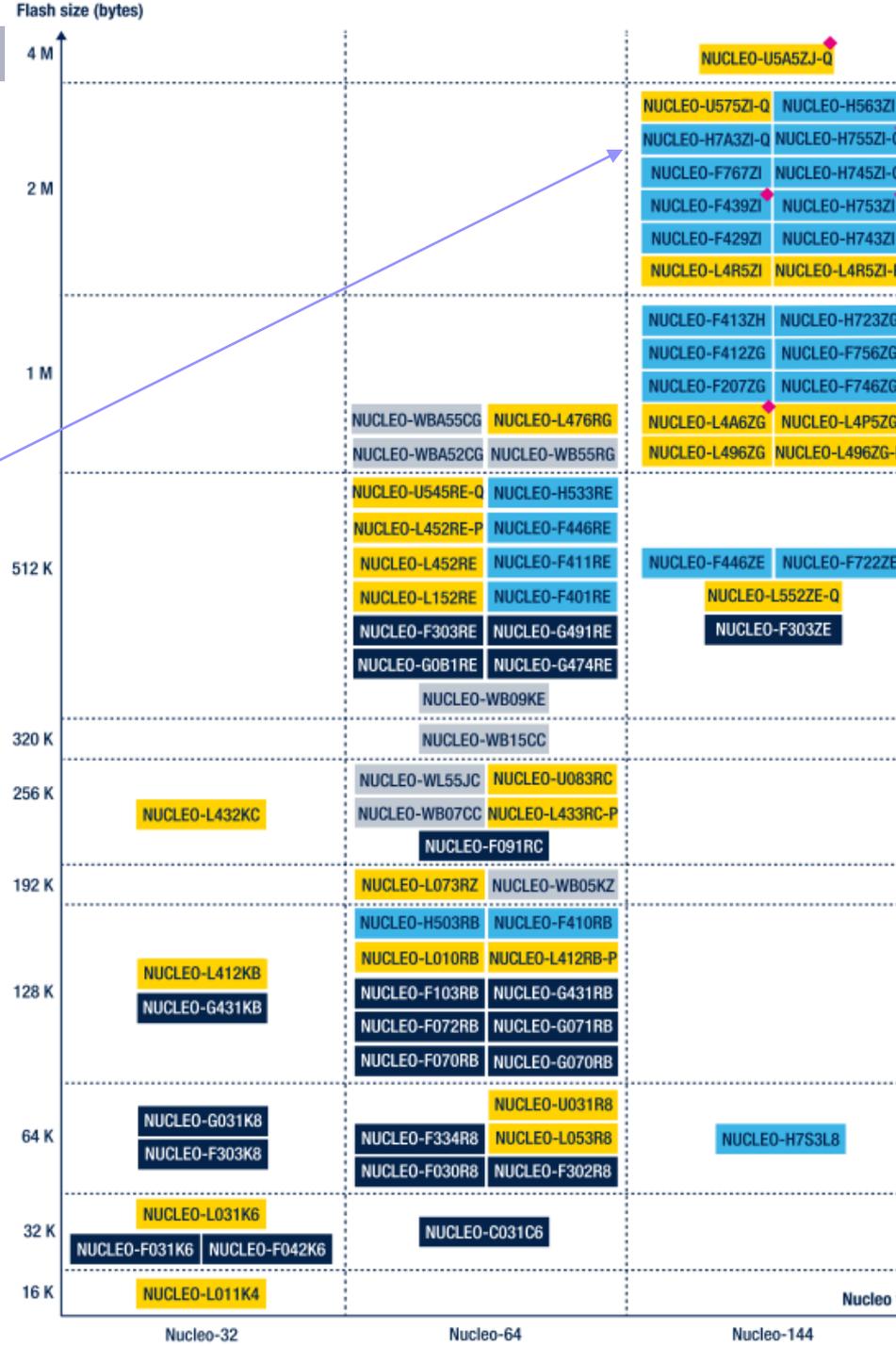
STM32 board portfolio (1/2)

- STM32 Nucleo boards: low-cost and easy-to-use platform developments to quickly create prototypes with any STM32 MCU

STM32 Nucleo-144 board



We'll use this one



STM32 board portfolio (2/2)

- [STM32 Discovery](#) kits:
 - to easily develop applications with high-performance microcontrollers
 - they carry out the necessary infrastructure for a demonstration of specific device characteristics
- [STM32 Eval](#) boards:
 - complete demonstration and development platform for STM32 MCUs and MPUs
 - they carry external circuitry, such as transceivers, sensors, memory interfaces, displays and many more
 - they can be considered as a reference design for application development



STM32Cube firmware and hardware tools

STM32Cube firmware[↑]

STM32Cube: set of tools and embedded software bricks to enable fast and easy development on the STM32 platform

- HAL(High Abstraction Layer)
- LL(Low Layer)
- Examples
- Readme files



Hardware tools[↑]

- The ST-LINK/V3 is an in-circuit debugger for the STM8 and STM32 microcontrollers
- Most of the time it is embedded on the board
- If not, you can use the STLinks-V3mini or STLinks-V3SET standalone devices

Fast-track your certification journey to meet functional safety standards with STM32

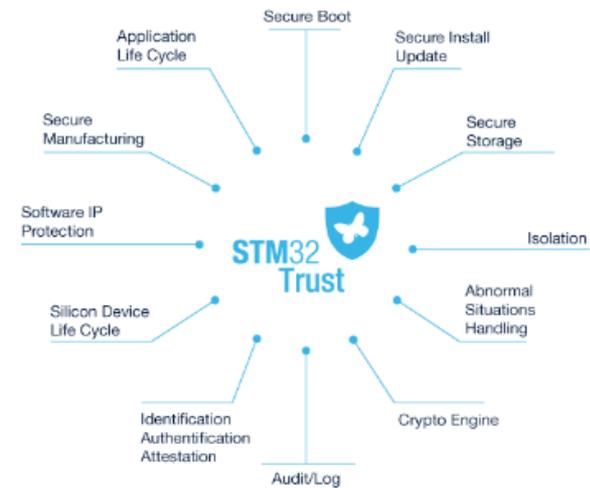
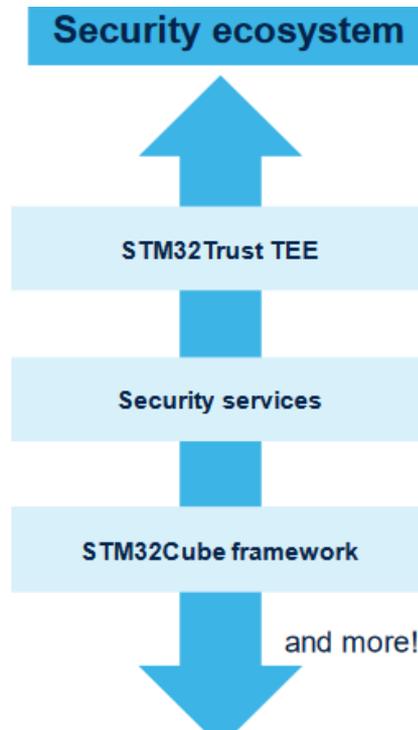
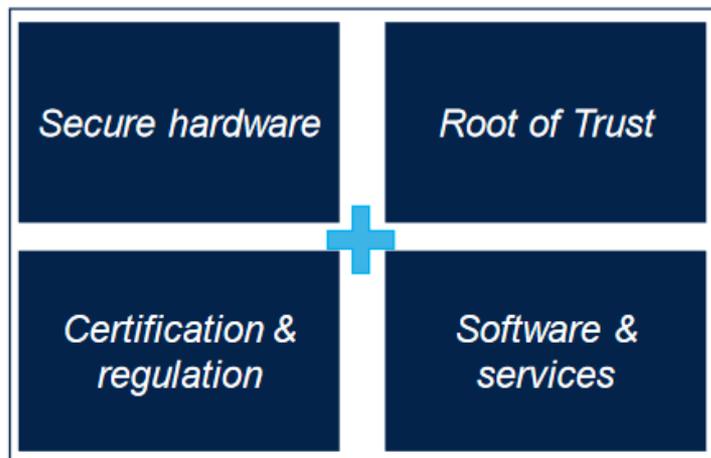
ST provides certified **functional safety packages** and documentation based on robust built-in MCU/MPU safety features.

- **SIL functional safety package**
for industrial IEC 61508 (STM32)
- **ASIL functional safety package**
for automotive ISO 26262 (STM8A)
- **Class B functional safety package**
for household electrical appliances
IEC 60335-1/60730-1 (STM32 & STM8)



Security in STM32

**Building trust in embedded systems:
the pillars of STM32Trust**



**Provide the right levels of security
assurance thanks to the
STM32Trust security functions**



Which STM32 MCU to select?

- To make the best decision on the STM32 microcontroller selection, there are several factors to consider, mainly
 - architecture to select
 - memory and power requirements,
 - communication peripherals (USB, I2C, SPI, UART...)
 - cost
- The selection depends on the functional requirements of the application: graphics, ultra-low-power performance, high-performance, or wireless connectivity
- *ST-MCU-FINDER* tool is integrated in STM32CubeIDE and STM32CubeMX tools to select an MCU or a development board