STM32H723/733 STM32H725/735 STM32H730 Value lines MCUs for rich and complex applications

Marketing presentation

STM32 MCUs and MPUs portfolio

MPU

STM32MP1
4158 CoreMark
Up to 800 MHz Cortex-A7
209 MHz Cortex-M4

High Perf MCUs

LONGEVITY 10 YEARS COMMITMENT

STM32**F2**	STM32**F4**	STM32**F7**	STM32**H7**
Up to 398 CoreMark	Up to 608 CoreMark	1082 CoreMark	Up to 3224 CoreMark
120 MHz Cortex-M3	180 MHz Cortex-M4	216 MHz Cortex-M7	Up to 550 MHz Cortex -M7
			240 MHz Cortex -M4

Mainstream MCUs

STM32**F0**	STM32**G0**	STM32**F1**
106 CoreMark	142 CoreMark	177 CoreMark
48 MHz Cortex-M0	64 MHz Cortex-M0+	72 MHz Cortex-M3

	STM32**F3**	STM32**G4**
	245 CoreMark	569 CoreMark
	72 MHz Cortex-M4	170 MHz Cortex-M4

Mixed-signal MCUs

Ultra-low Power MCUs

STM32**L0**	STM32**L1**	STM32**L4**	STM32**L4+**	STM32**L5**	STM32**U5**
75 CoreMark	93 CoreMark	273 CoreMark	409 CoreMark	443 CoreMark	651 CoreMark
32 MHz Cortex-M0+	32 MHz Cortex-M3	80 MHz Cortex-M4	120 MHz Cortex-M4	110 MHz Cortex-M33	160 MHz Cortex-M33

Wireless MCUs

STM32**WL**	STM32**WB**
162 CoreMark	216 CoreMark
48 MHz Cortex-M4	64 MHz Cortex-M4
48 MHz Cortex-M0+	32 MHz Cortex-M0+ ●

Latest product generation   ● **Radio co-processor only**

life.augmented

"If only
I could address the design challenges
in factory automation systems

High performance for optimized control or HMI

Large embedded memory and external memory support
- Up to 1 MB of Flash & up to 564 KB of SRAM
- 2 x Octo-SPI interface

Extended connectivity with Ethernet MAC, 3x FD-CAN and USB

Fast 16-bit and 12-Bit ADC, and extended Temp range support up to 125 °C

SIL ready enabled by native hardware features

"If only

I could run deeply embedded applications with advanced performance at minimum cost

# STM32H7 - Creating a smartphone-like graphic UI for your embedded device

High performance STM32 with Arm Cortex-M7 up to 550 MHz

TFT LCD controller and Graphic hardware accelerations for better effects, transitions and fluidity

Multiple high-speed memory interfaces

Graphic support from 68-pin QFN packages (improved cost effectiveness) up to UFBGA / LQFP176

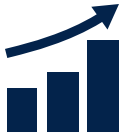TouchGFX free graphic tool suite for stunning HMI and simplified development

life.augmented
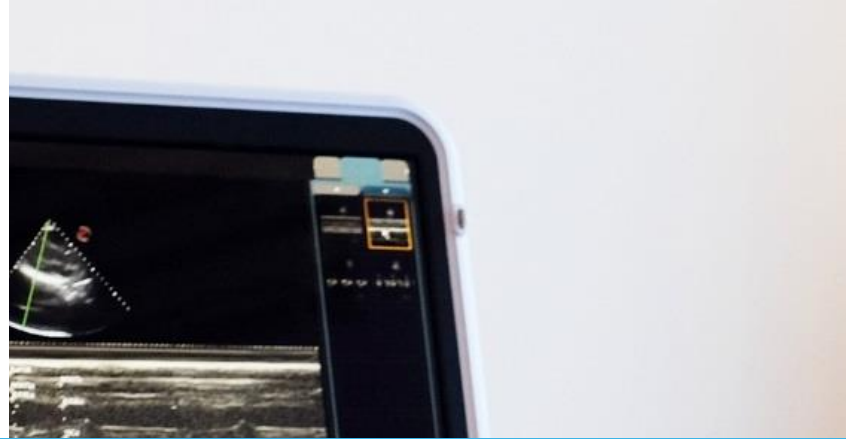
STM32**H7**

STM32H723/725 lines & STM32H730 Value line

New product lines expanding the STM32 portfolio

New Performance Record
Up to 2778 CoreMark (Cortex©-M7 @550MHz)

Flexible architecture for industrial, security or AI applications
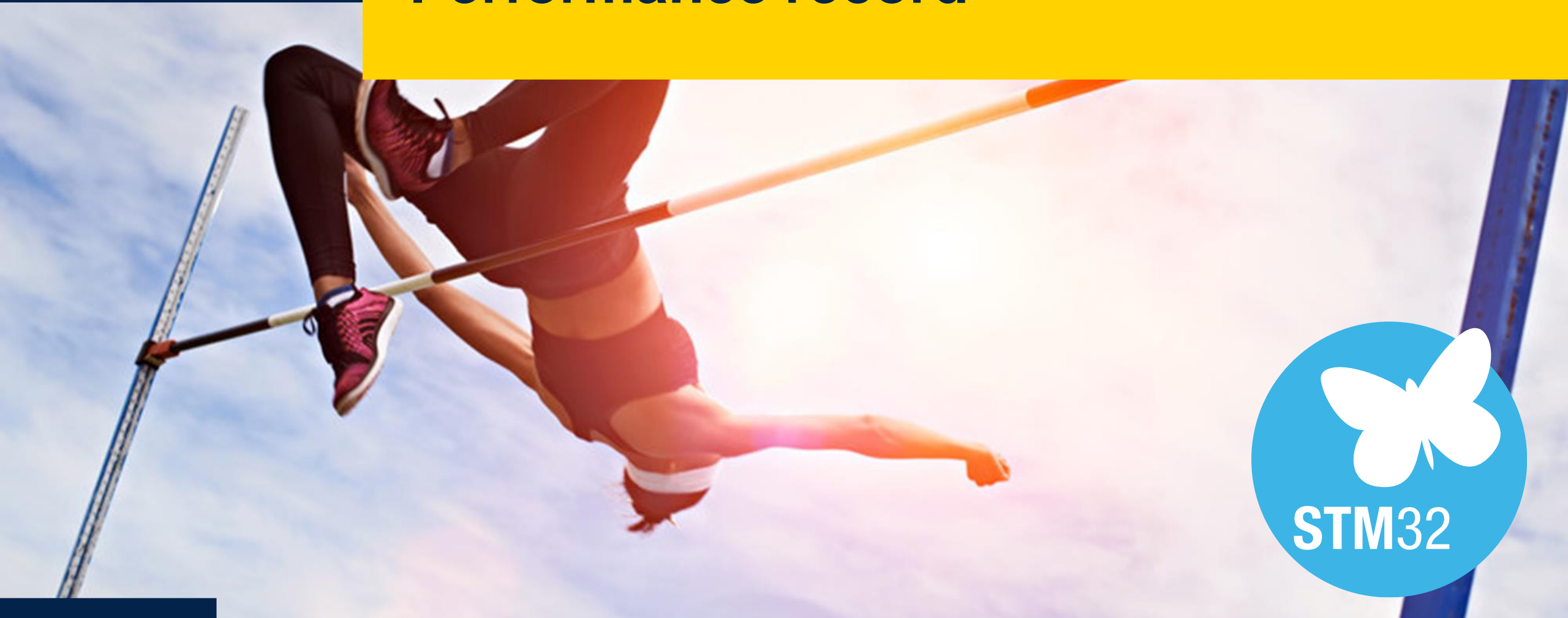Accelerated graphics, fast data transfer, advanced peripherals

Advanced security features
Crypto Hash, Cortex©-M7 Security services

Rich eco-system to speed-up your design
SW tools, HW boards, community and partners

Performance record

STM32H723/725 lines & STM32H730 Value line High performance range

CoreMark

Chart (CoreMark scores):
- STM32**F2**: 298
- STM32**F4**: 608
- STM32**F7**: 1082
- STM32**H7**: 1414 — Arm Cortex-M7 @ 280 MHz
- STM32**H7**: 2400 — Arm Cortex-M7 @ 480 MHz
- STM32**H7**: 2778 — Arm Cortex-M7 @ 550 MHz
- STM32**H7**: 2424+800 — Arm Cortex-M7 + M4 Dual Core @ 480 MHz & 240 MHz
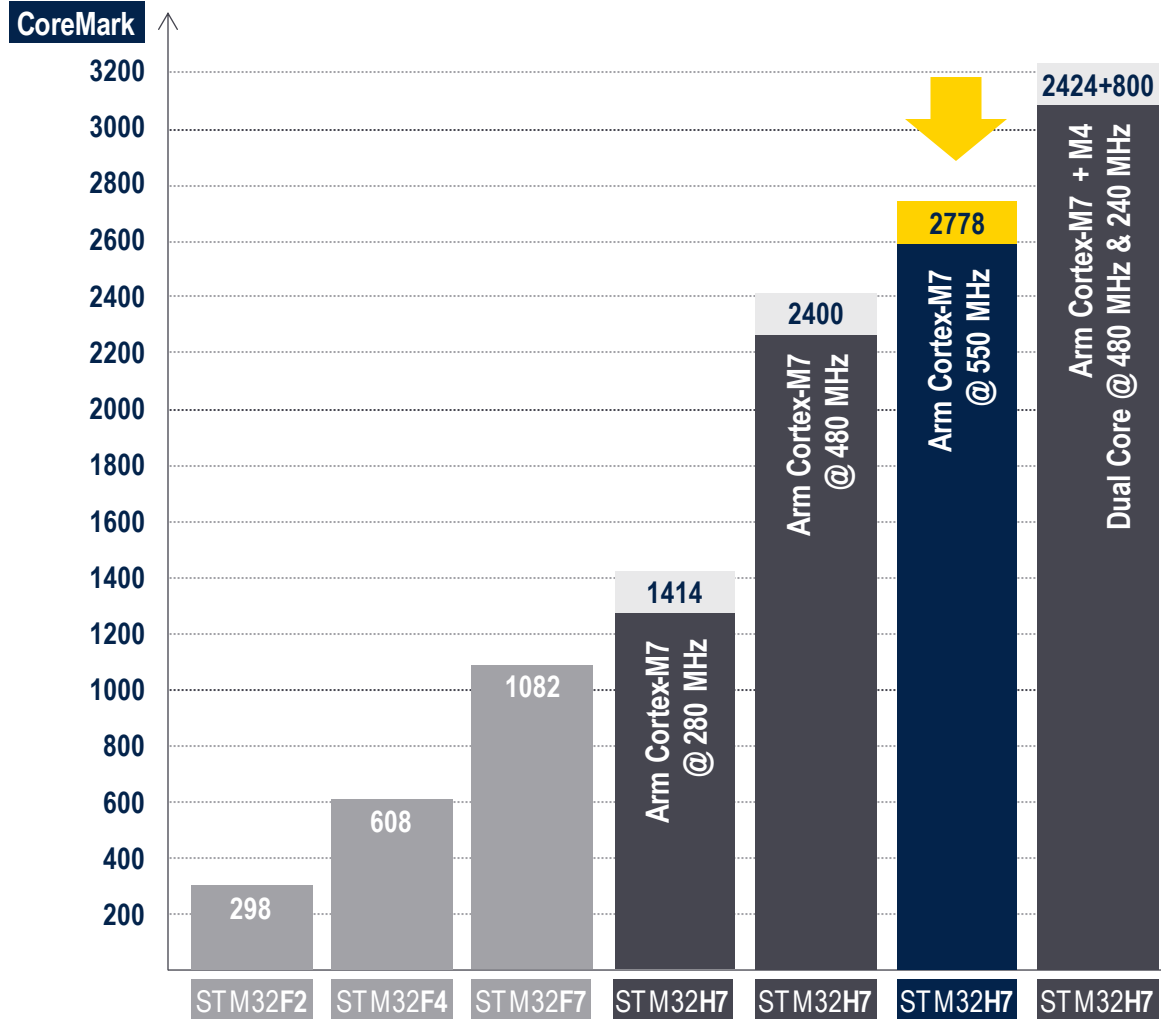
Arm® Cortex® -M7 up to 550 MHz

Most powerful Cortex core with double precision FPU, MPU, advanced DSP and L1 cache

Single Core Architecture Approach for performance and advanced HMI

Cortex-M7 = HMI, process control, power management

Cortex-M7 = Alarm panel, Wireless Modules

MY HOME GATEWAY

100 %
50 %
0 %

36 %

65 %

open door

Create a rich human machine interface
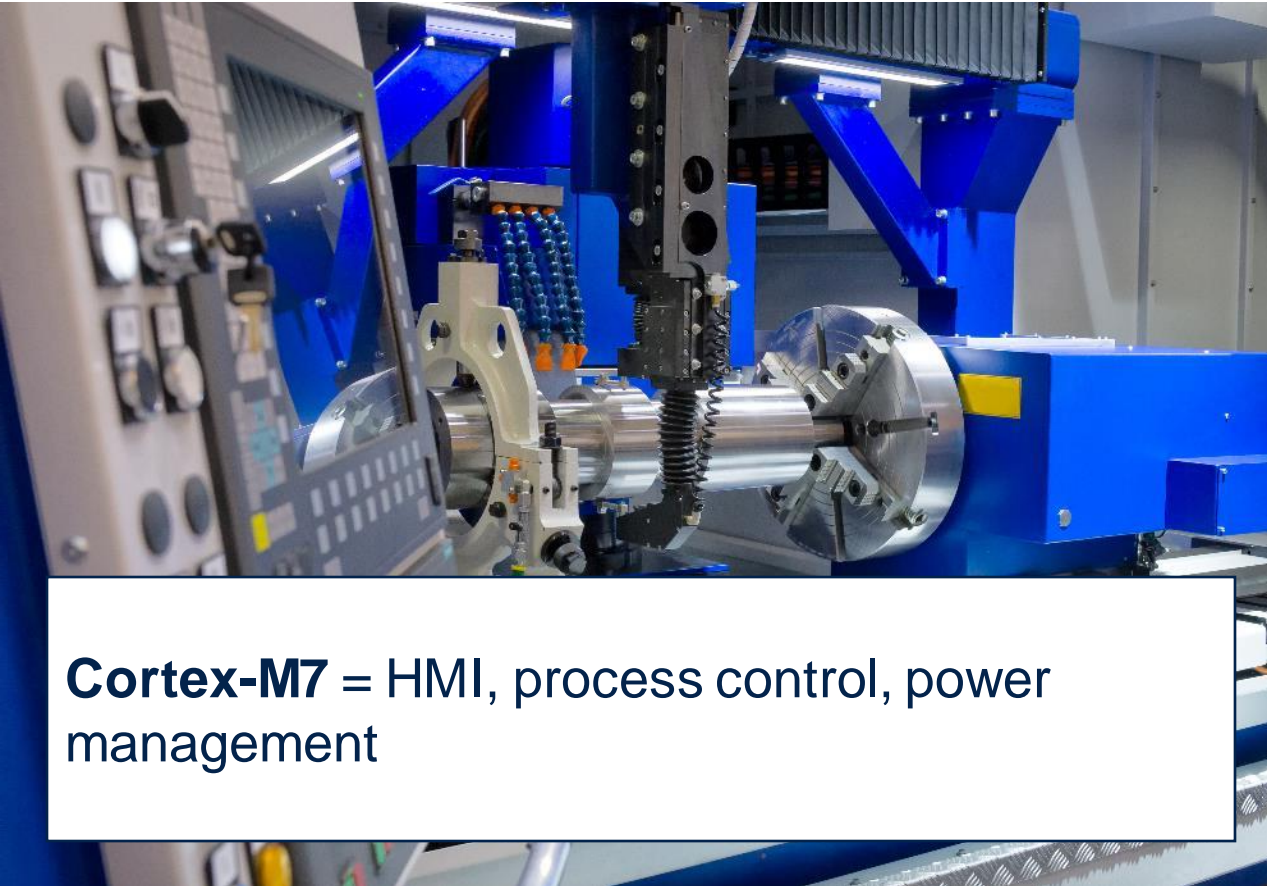
Cortex-M7 - handling audio and rich HMI, Real Time control tasks

STM32**H7**

- Display — High Resolution
- LCD-TFT — Display Interface
- Memory: NOR, PSRAM-Octo-SPI, eMMC, SDRAM, SD card — Memory Interface
- arm Cortex-M7
- Chrom-ART Accelerator™ JPEG codec
- Crypto Hash
- RAM
- FLASH
- Main DMA
- Audio decoding and output

optional

life.augmented
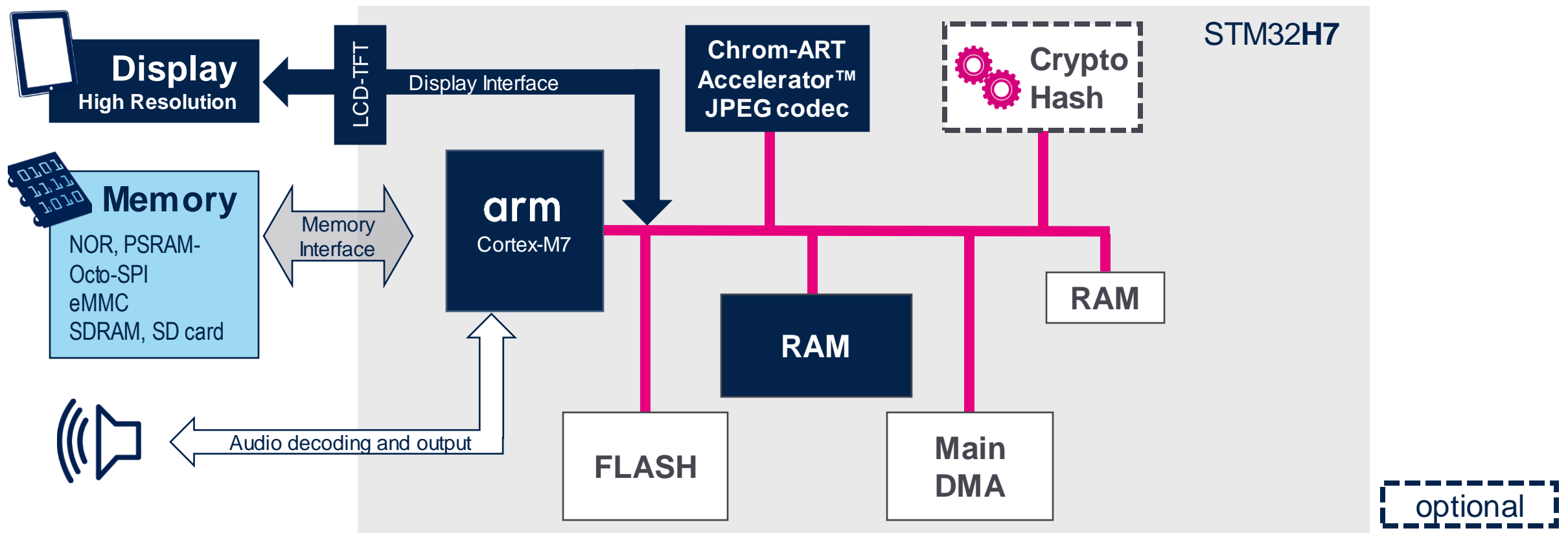
Powerful core supported by a powerful architecture

Display nice graphic
The Chrom-ART Accelerator™
and LCD-TFT controller
offload the CPU by more than 90%

Manage security
Use dedicated **cryptography**
and **Hashing** HW acceleration
to **offload the CPU by more than 90%**

STM32H7

Transfer data efficiently across peripherals
The Main DMA takes care
of the most complex schemes
between memories and peripherals
with **up to 16 channels to offload the CPU**

Data acquisition with multiple fast ADCs
2 x 16-bit ADC and 12-bit ADC for real time
control of application in factory automation
or appliance applications

life.augmented

STM32H7 line-up

Extensive STM32H7 portfolio

							NEW	STM32**H745/755**	STM32**H747/757**

Dual-core Line

STM32**H745/755**	STM32**H747/757**
480+240 MHz SMPS	**480+240 MHz** SMPS
1027 + 300 DMIPS	1027 + 300 DMIPS
RAM 1 MB	RAM 1 MB
Flash up to 2 MB	Flash up to 2 MB

Single-core Line

STM32**H7A3/B3**	STM32**H742**	STM32**H743/753**	STM32**H723/733**	STM32**H725/735**
280 MHz LDO	480 MHz LDO	480 MHz LDO	**550 MHz** LDO	**550 MHz** SMPS
599 DMIPS	1027 DMIPS	1027 DMIPS	1177 DMIPS	1177 DMIPS
RAM 1.4 MB	RAM 692 KB	RAM 1 MB	RAM 564 KB	RAM 564 KB
Flash up to 2 MB	Flash up to 2 MB	Flash up to 2 MB	Flash up to 1 MB	Flash up to 1 MB

Extended temperature range 125 ° C ambient

Value Line $

STM32**H7B0**		STM32**H750**	STM32**H730**	STM32**H730Q**
280 MHz LDO		480 MHz LDO	**550 MHz** LDO	**550 MHz** SMPS
599 DMIPS		1027 DMIPS	1177 DMIPS	1177 DMIPS
RAM 1.4 MB		RAM 1 MB	RAM 564 KB	RAM 564 KB
Flash 128 KB		Flash 128 KB	Flash 128 KB	Flash 128 KB

Arm® Cortex® core   Cortex-M7   Cortex-M7 & -M4

life.augmented

STM32H7 MCU Series
32-bit Arm® Cortex®-M7

10 YEARS LONGEVITY COMMITMENT

CORE, MEMORIES AND ACCELERATION
- Single-core Cortex-M7 up to 550 MHz
- 32-Kbyte data and 32-Kbyte instruction cache
- Flash and RAM acceleration
- SP-FPU and DP-FPU
- 4 x DMA
- Mathematics

CONNECTIVITY
- 1 x USB2.0 OTG FS/HS with embedded FS PHY
- 2 x SDMMC
- USART, UART, SPI, I²C
- 3 x CAN (2 x FD and 1 x TT)
- HDMI-CEC
- FMC, 2 x Octo-SPI
- Camera I/F

AUDIO
- 3 x I²S + audio PLL
- 2 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

GRAPHIC
- Chrom-ART Accelerator™

OTHER
- Crypto/Hash option [1]
- Security services option
- TRNG
- DFSDM
- 16- and 32-bit timers
- 2 x ADCs with up to 16-bit resolution (up to 3.6 MSPS)
- 1 x ADC with up to 12-bit resolution (up to 5 MSPS)
- Analog (compt,AOP)
- Voltage range 1.62 to 3.6 V (except 100-pin and VFQFPN68 packages : 1.71 to 3.6 V)
- Multi-power domains
- -40°C up to 85°C ambiant
- -40°C up to 125°C ambiant [2]

Product line	f_{CPU} (MHz)	Dual-Bank Flash memory (bytes)	RAM (bytes)	Octo-SPI & OT - FDEC [3]	Ethernet	Graphic	Power supply	Stop mode (typical) / RAM reten-tion
Single-core lines								
STM32H725/735 [3]	550	Up to 1 Mbyte	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	•	•	TFT-LCD	SMPS [5] + LDO	200 µA / 564KB
STM32H723/733 [3]	550	Up to 1 Mbyte	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	•	•	TFT-LCD	LDO	520 µA / 564KB
Value line								
STM32H730	550	128 Kbytes	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)	•	•	TFT-LCD	SMPS [4] + LDO	200 µA / 564KB 520 µA / 564KB

Notes :
1. Optional - dedicated CPN, STM32H733 and STM32H735 for the Crypto Variants
2. 125 °C ambiant / 140 °C junction. Dedicated part numbers on STM32H725/H735
3. Crypto and Security services on CPN : STM32H733, STM32H735 and STM32H730
4. SMPS available only on STM32H730Q CPN
5. SMPS only on the QFN68 variant (no LDO)

- High performance up to 550 MHz in Single core Arm® Cortex® -M7
- 128 KB to 1 MB embedded Flash
- 564 KB RAM
- Security features (Boot, Tamper …), OTFDEC on external memories, Crypto/Hash and security services (optional)
- Graphic support with TFT-LCD controller and Chrom-ART Accelerator™
- 35 communication peripherals
- 16-bit ADC up to 3.6 MSPS, up to 5 Msps in 12-bit, Comparators, Op Amp
- TT-FD-CAN and FD-CAN
- Low-Power Timers
- LDO and SMPS option
- Up to 140 °C junction temperature / 125 °C ambient (optional)
- Available in Value Line version

Example of block diagram STM32H735xG

System

SMPS, LDO, USB and backup regulators POR/PDR/PVD/BOR

Multi-power domains

Xtal oscillators 32 kHz + 4 ~48 MHz

Internal RC oscillators 32 kHz + 4, 48 & 64 MHz

3x PLL

Clock control

RTC/AWU

1x SysTick timer

2x watchdogs (independent and window)

46/67/97/119/121/128 I/Os

Cyclic redundancy check (CRC)

Unique ID

Digital Temperature sensor

Control

2x 16-bit motor control PWM synchronized AC timer

10x 16-bit timers 4x 32-bit timers

5x Low-power timer

Optional extended temperature range support (125°C)

Crypto/Hash processor

3DES, AES 256, GCM, CCM

SHA-1, SHA-256, MD5, HMAC

Security services SFI and SB-SFU

Chrom-ART Accelerator™

Cache I/D 32+32 Kbytes

Arm® Cortex® -M7 550 MHz

Floating point unit (DP-FPU)

Nested vector interrupt controller (NVIC)

JTAG/SW debug/ETM

Memory Protection Unit (MPU)

ROP, PC-ROP anti-tamper

AXI and Multi-AHB bus matrix

4x DMA

True random number generator (RNG)

1-Mbyte single-bank Flash memory

RAM 560KB incl. Up to 256KB ITCM

FMC/SRAM/NOR/NAND/ SDRAM

2x Octo-SPI

1024-bit + 4-Kbyte backup SRAM

Connectivity

TFT LCD controller

HDMI-CEC

6x SPI, 4x I²S, 5x I²C

Camera interface, PSSI

Ethernet MAC 10/100 with IEEE 1588

MDIO slave

3x FDCAN (Flexible Data rate)

1x USB 2.0 OTG FS/HS

2x SDMMC

5x USART + 5 UART LIN, smartcard, IrDA, modem control

1x Low-power UART

2x SAI (Serial audio interface)

SPDIF input x4

DFSDM (8 inputs/4 filters)

SWP (Single Wire Protocol)

Analog

2x 12-bit, 2-channel DACs

2 x 16-bit ADC (up to 3.6 MSPS) 18 channels

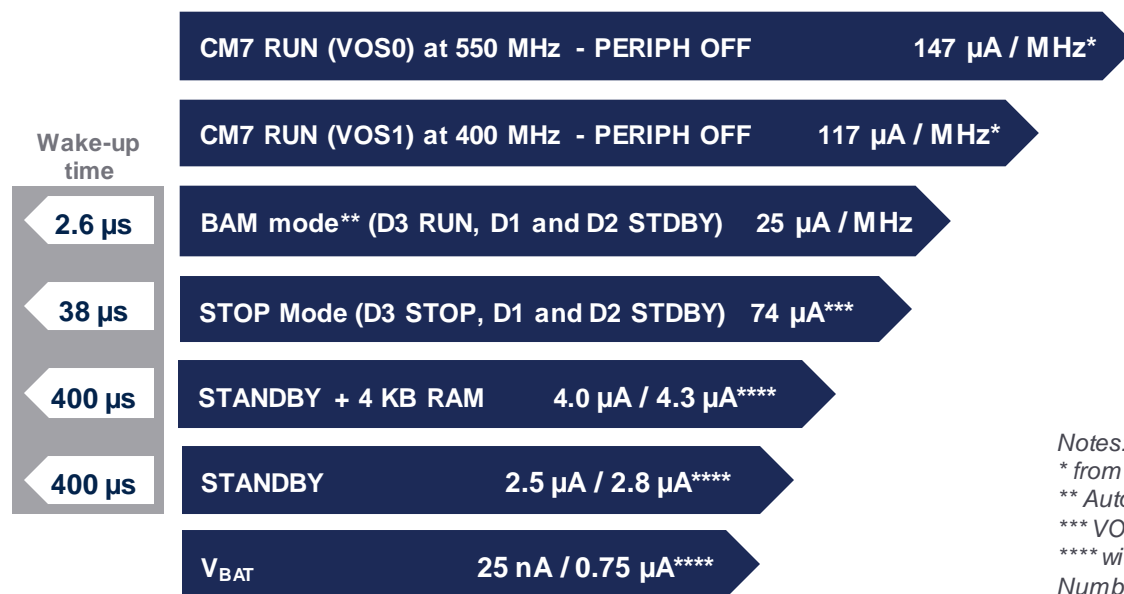1 x 12-bit ADC (up to 5 MSPS) 12 channels

2x COMP

2x OpAmp

- STM32H735 is the crypto variant of the STM32H725

- It offers the Security services (SFI and SB-SFU) for secure programing or secure firmware update

- LDO and SMPS

- Optional 125 °C ambient Temp support / Max 140 °C junction temperature(*)

(*) : on dedicated part numbers

STM32

Typical 25°c data in RUN and LOW POWER modes

Wake-up time	
	CM7 RUN (VOS0) at 550 MHz - PERIPH OFF 147 µA / MHz*
	CM7 RUN (VOS1) at 400 MHz - PERIPH OFF 117 µA / MHz*
2.6 µs	BAM mode** (D3 RUN, D1 and D2 STDBY) 25 µA / MHz
38 µs	STOP Mode (D3 STOP, D1 and D2 STDBY) 74 µA***
400 µs	STANDBY + 4 KB RAM 4.0 µA / 4.3 µA****
400 µs	STANDBY 2.5 µA / 2.8 µA****
	V_{BAT} 25 nA / 0.75 µA****

Typ @ V_{DD} =3.3 V, @ 25 °C

Notes:
* from Flash (Cache ON and Reg. ON)
** Autonomous Mode - run at 64MHz, I2C4 and BDMA
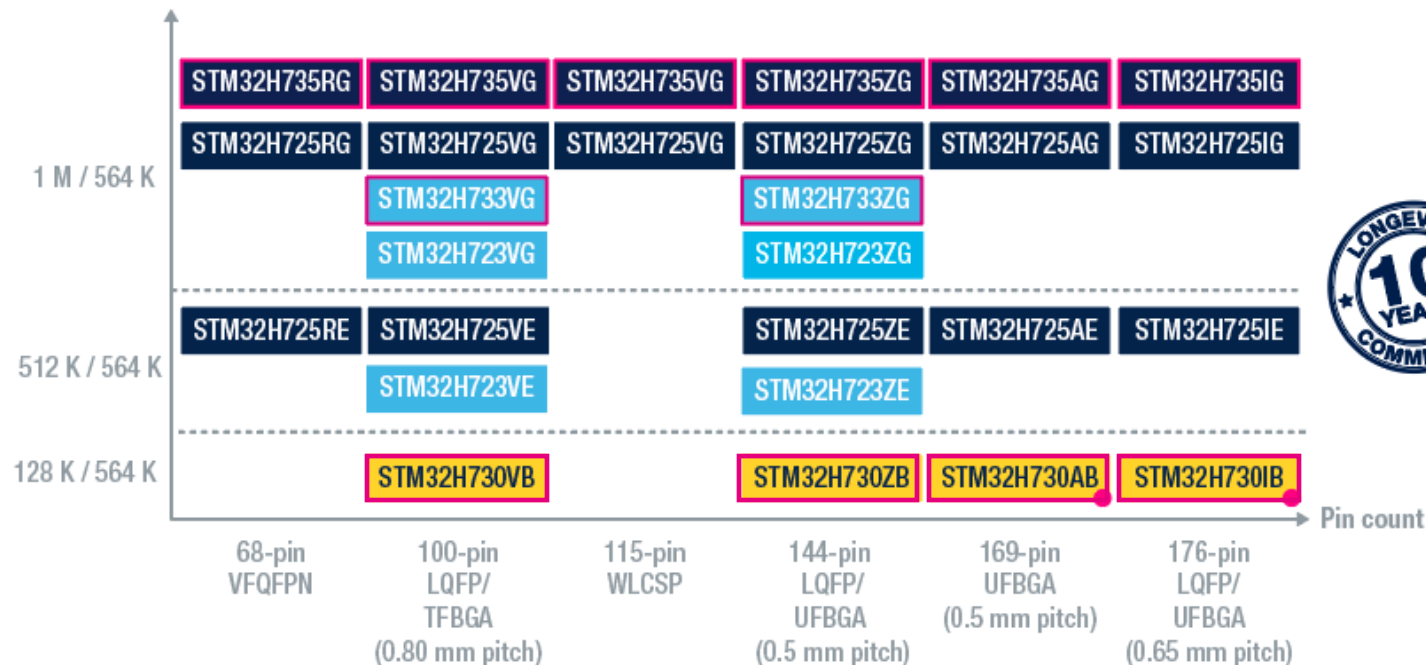**** VOS5; Flash OFF, no IWDG*
**** without and with RTC. At 3V
Numbers are typical. More details available in product Sheet available at www.st.com

ST's new STM32H7 microcontrollers combine the high performance of a single core with/and rich feature integration

Flash memory size / RAM size (bytes)

STM32H735RG	STM32H735VG	STM32H735VG	STM32H735ZG	STM32H735AG	STM32H735IG
STM32H725RG	STM32H725VG	STM32H725VG	STM32H725ZG	STM32H725AG	STM32H725IG
	STM32H733VG		STM32H733ZG		
	STM32H723VG		STM32H723ZG		

1 M / 564 K

LONGEVITY 10 YEARS COMMITMENT

STM32H725RE	STM32H725VE		STM32H725ZE	STM32H725AE	STM32H725IE
	STM32H723VE		STM32H723ZE		

512 K / 564 K

128 K / 564 K

	STM32H730VB		STM32H730ZB	STM32H730AB	STM32H730IB

Pin count

| 68-pin VFQFPN | 100-pin LQFP/ TFBGA (0.80 mm pitch) | 115-pin WLCSP | 144-pin LQFP/ UFBGA (0.5 mm pitch) | 169-pin UFBGA (0.5 mm pitch) | 176-pin LQFP/ UFBGA (0.65 mm pitch) |

Legend:
- ■ STM32H725/735 lines
- ■ STM32H723/733 lines
- ■ STM32H730 Value line
- ▢ with HW crypto/hash
- ● with internal SMPS

STM32H7

- System integration
- Advanced connectivity and control
- Security services

► STM32H723/733 here

► STM32H725/735 here

► STM32H730 here

► ST blog article here

www.st.com/STM32H7

life.augmented

Performance and smart architecture are yours to innovate

STM32

Industrial and health & wellness DNA

Industrial

Health & Wellness

- Error Code Correction on all Flash and RAM

- Large choice of packages

- Advanced digital and analog

  (16-bit and 12-bit ADC, Op-Amp, Ethernet, CANFD…)

- High temperature -40°C up to 140°C junction temperature (125°C ambient)

Industrial and health & wellness DNA

Industrial

- **Inverters**
  Advanced timers and analog peripherals

- **Communication gateway**
  Rich connectivity

- **Human Machine Interface**
  Chrom-ART Accelerator and display interfaces for TFT and MIPI-DSI

Health & Wellness

- **Health and wellness**
  Chrom-ART Accelerator™ and display interfaces for TFT displays

- **Individual assistance** (hearing, respiratory)
  Advanced timers and analog

- **Measurements and Data logger**
  Advanced Analog

Consumer

- Small packages

- Power efficiency and high performance

- Advanced audio and graphic

- High-speed peripherals

- Large expandable memories to support ever increasing communication protocols

Consumer

- **IoT gateway**
  Large memory and rich communication peripherals

- **Access control**
  Chrom-ART Accelerator™ and display interfaces for TFT

- **Drones**
  High processing architecture, advanced timers and analog peripherals, small packages

24

Secure your production and your applications

STM32

STM32Trust on STM32H7 Series

STM32 Trust

www.st.com/stm32trust

Global security
ecosystem and services

STM32 concept
Support customer's
Secure Boot / Root Of Trust

SFI
A Secure Installer of
Secure Boot / Root Of Trust

SBSFU
A reference SW package for **FW Update**
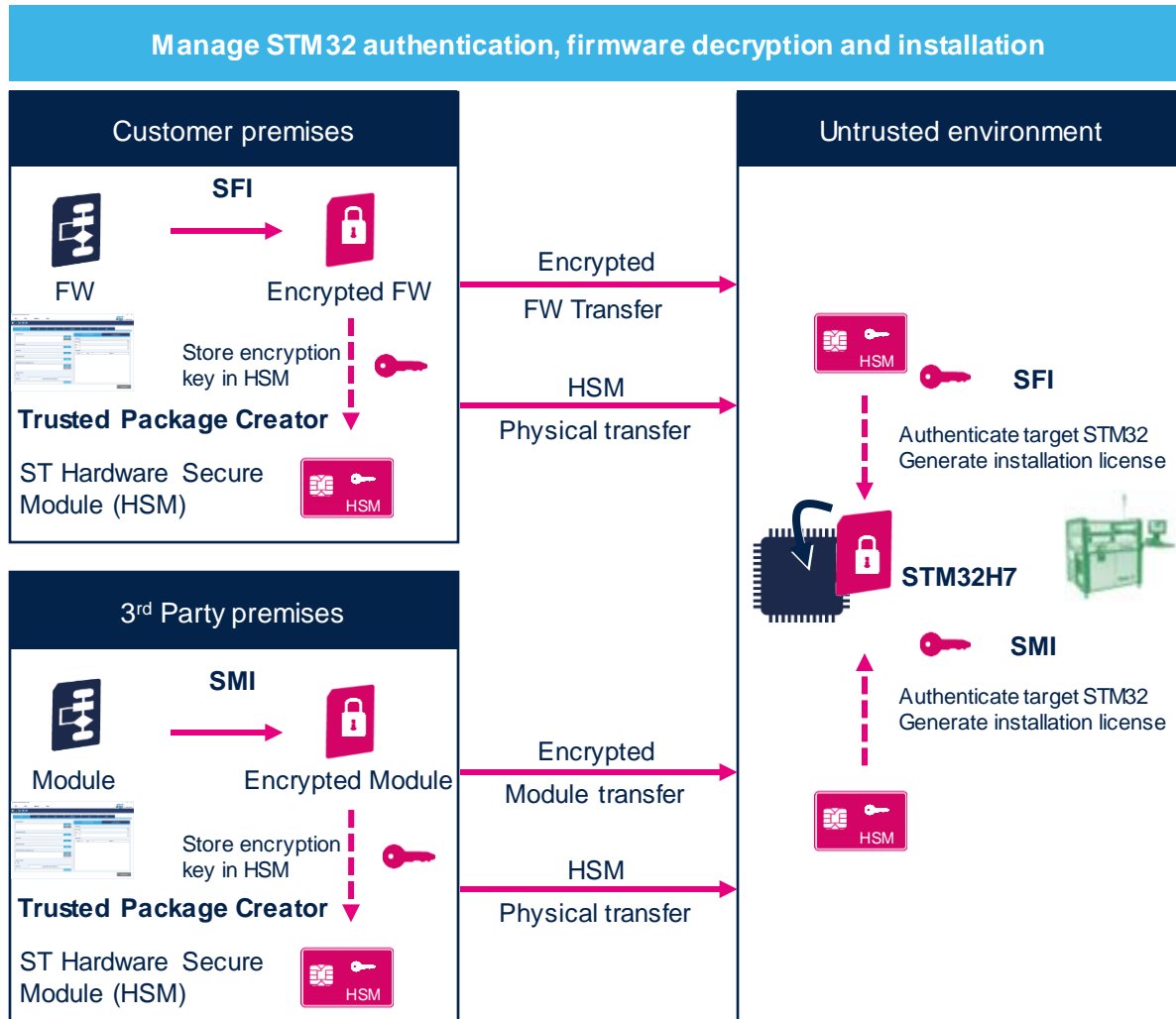and **Secure Boot / Root Of Trust**

26

STM32

Manage STM32 authentication, firmware decryption and installation

Customer premises

FW

Encrypted FW

Encrypted FW transfer

Store encryption key
into HSM

**ST Hardware
Secure Module (HSM)**

HSM

HSM **physical** transfer

Untrusted environment

**STM32H7
SFI**

Authenticate target STM32
Generate installation license

HSM

(*) : optional – SFI service available on specific part numbers

life.augmented

Embedded Secure Firmware Install - SFI

Manage STM32 authentication, firmware decryption and installation

Customer premises

SFI

FW → Encrypted FW

Store encryption key in HSM

Trusted Package Creator

ST Hardware Secure Module (HSM)

3rd Party premises

SMI

Module → Encrypted Module

Store encryption key in HSM

Trusted Package Creator

ST Hardware Secure Module (HSM)

Encrypted FW Transfer

HSM Physical transfer

Encrypted Module transfer

HSM Physical transfer

Untrusted environment

HSM

SFI

Authenticate target STM32 Generate installation license

STM32H7

SMI

Authenticate target STM32 Generate installation license

HSM

Secure Loader embedded services provisioned by ST ➔ Mass Market approach

ST ecosystem with Encryption, HSM and programming tools

Firmware cloning protection on the first installation via UART / SPI / USB

Protect 3rd party Software IP (SMI)

Secure Boot Secure FW Update - SBSFU

Secure Firmware Update

Secure Boot — Root of trust

Firmware Update — Multi image

Secure Engine — Crypto + key

HAL Libraries

Security Guidance

STM32 CubeIDE

IAR SYSTEMS

OEM Firmware with security and code isolation

Fortified
- Disable All Debug Ports
- Secure Firmware Update
- Secure Boot — Secure Provisioning

Trustworthiness
- Authenticity
- Data Confidentiality
- Firmware Integrity
- Device Integrity

Tamper Detection — Crypto Hardware

Trusted / Certified Libraries

Memory Segmentation / Protection

Reference library source code for IAP

Demonstrate SW modules for:
- Secure Boot
- Secure Engine for Crypto and key
- Firmware Update image management

Ensure authentication and secure programing of in the field products

Reference implementation of STM32H7 hardware memory protections

Encryption
Decryption
Authentication

Memory
and
IP protection

STM32**H7**

- AES-128/256 Encryption
- DES/TDES crypto engine
- SHA-256 Authentication
- Certified Crypto library
- True Random Number Generator
- Unique ID
- Key provisioning for STM32 authentication

- **Anti-tamper detection**
- Memory Protection Unit (MPU)
- Secure Boot
- Read and Write Protection
- **Secure User Area (Hide Protect)**
- **PC-ROP**
- JTAG fuse
- **Octo-SPI On The Fly Decrypt engine on external NOR Flash**

Some of the above features are optional and require to procure dedicated part numbers. Please refer to product specification

STM32H7 detailed security functions

STM32Trust Security function	CM7 CM7/CM4 STM32H72x STM32H74x STM32H7Ax	CM7 Crypto CM7/CM4 Crypto STM32H75x	CM7 STM32H73x STM32H7Bx
Secure Boot Secure User Memory for SBSFU software package		•	•
Secure Install/Update By SBSFU software package		•	•
Secure Storage for Boot only		•	•
Access Debug Read Out Protection RDPL0/1/2	•	•	•
Resource Isolation Memory Protection Unit	•	•	•
Secure Execution By SBSFU software package		•	•
Crypto Engine Hardware crypto accelerator	TRNG Fips	AES / DES / SHA / TRNG Fips	AES / DES / SHA / TRNG Fips
Crypto Engine On-the-fly decryption from external memories			•
SWIP Protection/Collaborative Dev Secure Module Install (SMI)		•	•
Secure Manufacturing Secure Firmware Install (SFI)		•	•

Note: a crypto library is available on request for both crypto and non crypto parts.

Enhance your product with great graphic

Smart home
Watch video
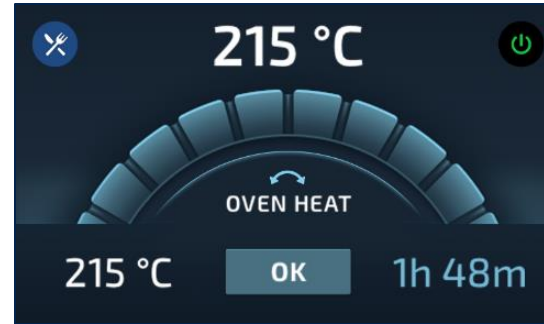
Kitchen appliances
Watch video

Industrial
Watch video

Smart home
Watch video
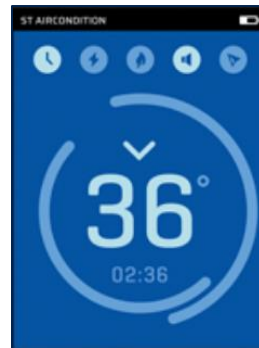
Smart home
Watch video

Industrial
Watch video

Industrial
Watch video

Enhanced graphic UI for any resolution

24bpp 16bpp 8bpp

2" – 3"

Display **with GRAM**
Single frame buffer

4" – 5"

Display without GRAM
Double frame buffer

7"

Display without GRAM
Double frame buffer

+10"

Display without GRAM
Double frame buffer

Internal RAM

STM32H7A3/7B3/7B0

STM32H723/725/730

STM32H743/745/747/750

External RAM

STM32H7A3/7B3/7B0

STM32H723/725/730

STM32H743/745/747/750
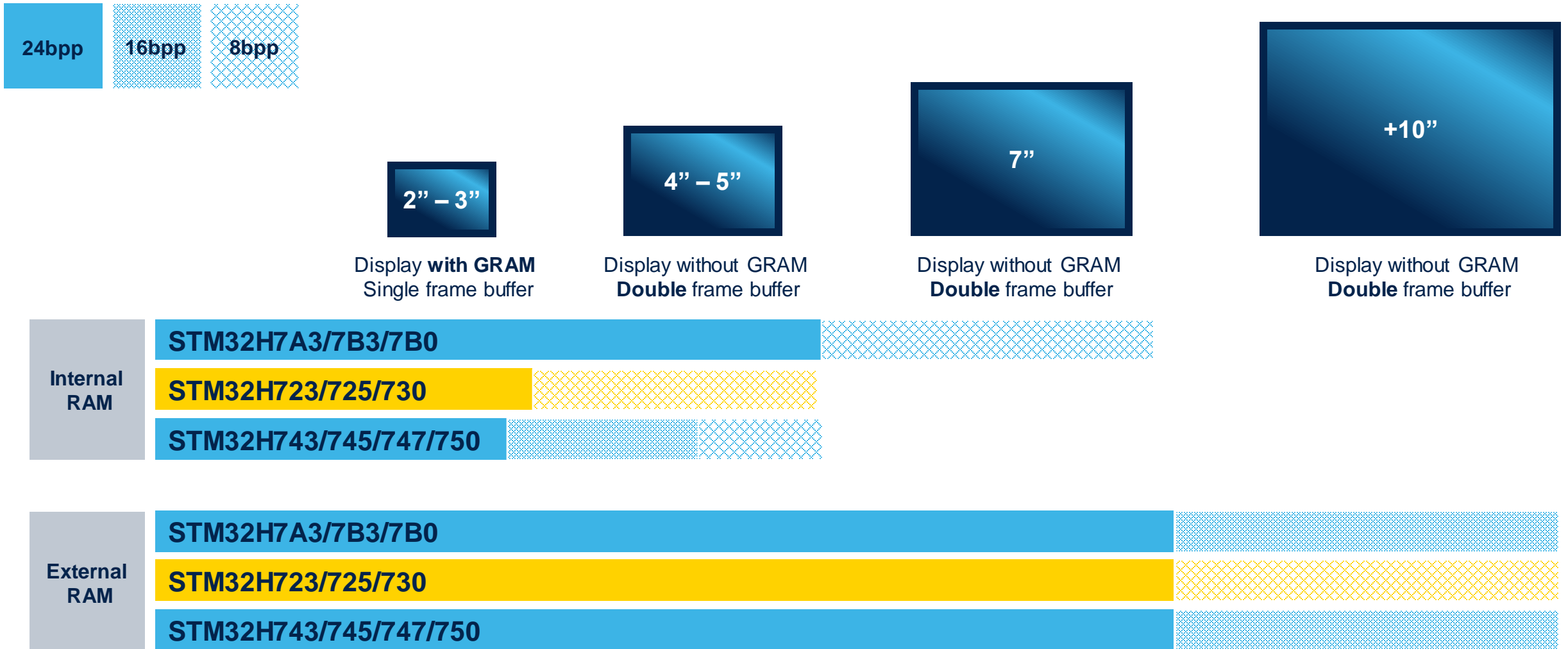
STM32H7 detailed graphic features

	Features	STM32H7A3/7B0	STM32H723/725/730	STM32H745/747	STM32H743/750
Hardware acceleration	**Chrom-ART Accelerator™** Hardware acceleration for graphical operations	●	●	●	●
	Chrom-GRC™ Minimizing memory usage for round displays	●	-	-	-
	JPEG CODEC Optimized video playback	●	-	●	●
Memory interfaces	**Quad-SPI** Connecting QSPI Flash	●	●	●	●
	Octo-SPI Connecting Octo SPI flash or Octal RAM	●	●	-	-
	FMC Connecting parallel flash, SDRAM, PSRAM	●	●	●	●
	SDMMC Connecting eMMC, MMC,	●	●	●	●
Display interfaces	**LCD-TFT display controller**	●	●	●	●
	MIPI-DSI	-	-	●	-
	Parallel 8080/6800	●	●	●	●
Embedded memory	**Embedded SRAM** **for frame buffers**	Up to 1024 Kbytes	Up to 364 Kbytes	Up to 512 Kbytes	Up to 512 Kbytes
	Embedded flash for code and data	128 Kbytes to 2048 Kbytes	128 Kbytes to 1024 Kbytes	1024 Kbytes to 2048 Kbytes	128 Kbytes to 2048 Kbytes

Faster and easier GUI Development

Free for all STM32 Developers

Maximum Performance on minimum footprint

Interoperable with STM32Cube Ecosystem

Simplify your GUI development with TouchGFX

- STM32H7 is included in the X-CUBE-TouchGFX toolchain
  - Available through STM32CubeMX on STM32CubeIDE, Arm® Keil and IAR Embedded Workbench®

- Out-of-the-box support of the STM32H735G-DK Discovery Kit

- Application template and demo available in TouchGFX Designer

X-CUBE-TOUCHGFX

TouchGF×
GENERATOR → STM32CubeMx plugin
Graphic HW and SW configuration and project generation

TouchGF×
DESIGNER → TouchGFX PC tool
Graphic application development and simulation

TouchGF×
ENGINE → TouchGFX embedded library
Optimized and Hardware accelerated graphic library
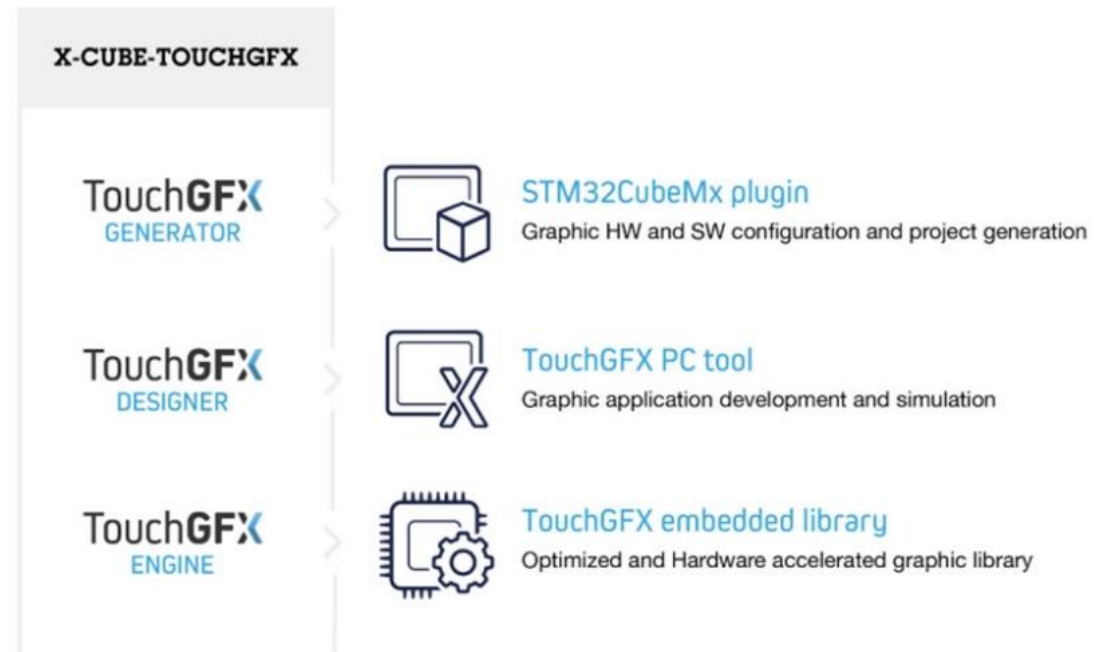
STM32 Graphics Extended Ecosystem

TouchGFX Implementers
World-wide network for TouchGFX expertise
and design services

Advanced Graphics Solutions
Software partners taking the full advantages
of STM32 graphic capabilities

Solutions for STM32H7
Artificial Intelligence

life.augmented

STM32

Embed AI in your applications with STM32H7
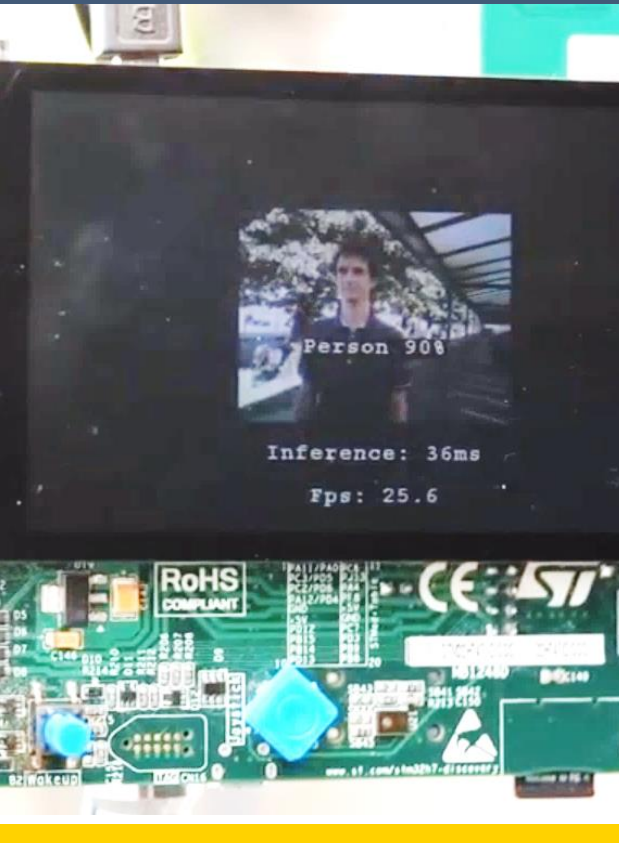
People detection	Food classification	Voice recognition	Industrial applications

The key steps behind Neural Networks on STM32

Optimized C code generated by STM32Cube.AI

Keras TensorFlowLite ONNX PyTorch And more

Pre-trained model → STM32 Cube.AI / STM32 CubeMX → NN C files STM32.AI lib →

User app
- NN C files
- STM32.AI lib
- STM32 BSP
- STM32 device

run-time

Model is pre-compiled and linked only with used ops
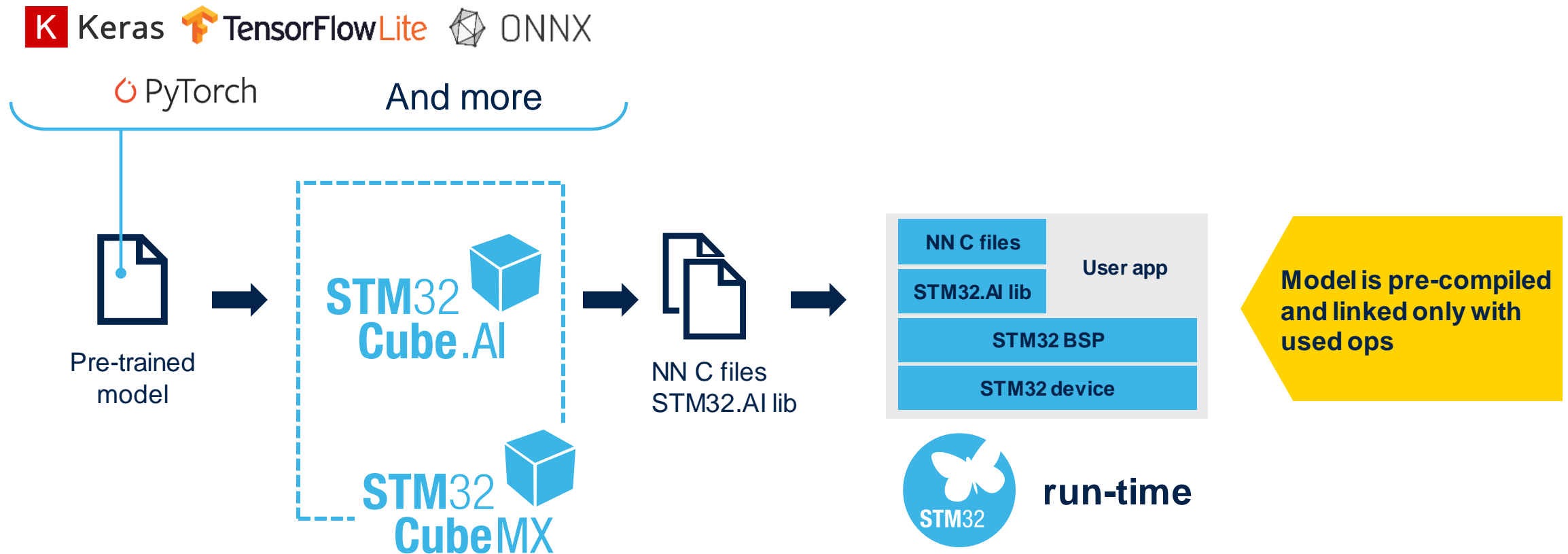
STM32 high performance built-in safety features

Features	STM32F2/F4	STM32F7	STM32H7
Dual watchdogs: Independent watchdog and system window watchdog	●	●	●
Backup clock circuitry with clock security system (CSS)	●	●	●
Hardware CRC unit / Programmable polynomial	● / -	● / ●	● / ●
Supply monitoring (POR, BOR, PVD)	●	●	●
I/O function locking	●	●	●
PWM critical register protections (write-once registers)	●	●	●
Memory protection unit (MPU) 8 zones – to ensure data integrity from invalid behavior	●	●	●
Multiple Flash memory protection levels	●	●	●
PWM stop on core lockup	-	-	●
ECC Error Code Correction (SECDED) for SRAM	-	-	●
ECC Error Code Correction (SECDED) for Flash memory	-	-	●

Note: Arm Cortex-M cores also have built-in safety features (dual stack pointer, fault exceptions, and debug module).

Reduce time and cost to build STM32-based systems certified to IEC 61508 industrial safety standard

SIL Ready

TÜVRheinland® CERTIFIED

SIL2/SIL3 SIL✓

Customer Development

STM32

Certified STM32 Self-Test Library X-CUBE-STL

Safety Documentation

MCU Safety Features

Product Portfolio

ST Quality foundations

This Safety solution will be available on STM32H723/33; STM32H725/35 & STM32H730 Value line in Q1-2021

SIL Ready

MCU Hardware Level
failure mode coverage

Certification body assessment

MCU Software level
failure mode coverage

Application level
failure mode coverage

ST provides a complete, certified offering to

- Lower project costs

- Reduce design complexity

- Ease SIL certification assessment

MCU Hardware Level
failure mode coverage
with STM32 Embedded Safety Features

Certification body assessment
Certified STM32 Self-Test Library X-CUBE-STL

with STM32 Self-Test Library X-CUBE-STL
MCU Software level
failure mode coverage

with STM32 Safety Documentation
Application level
failure mode coverage

without design package
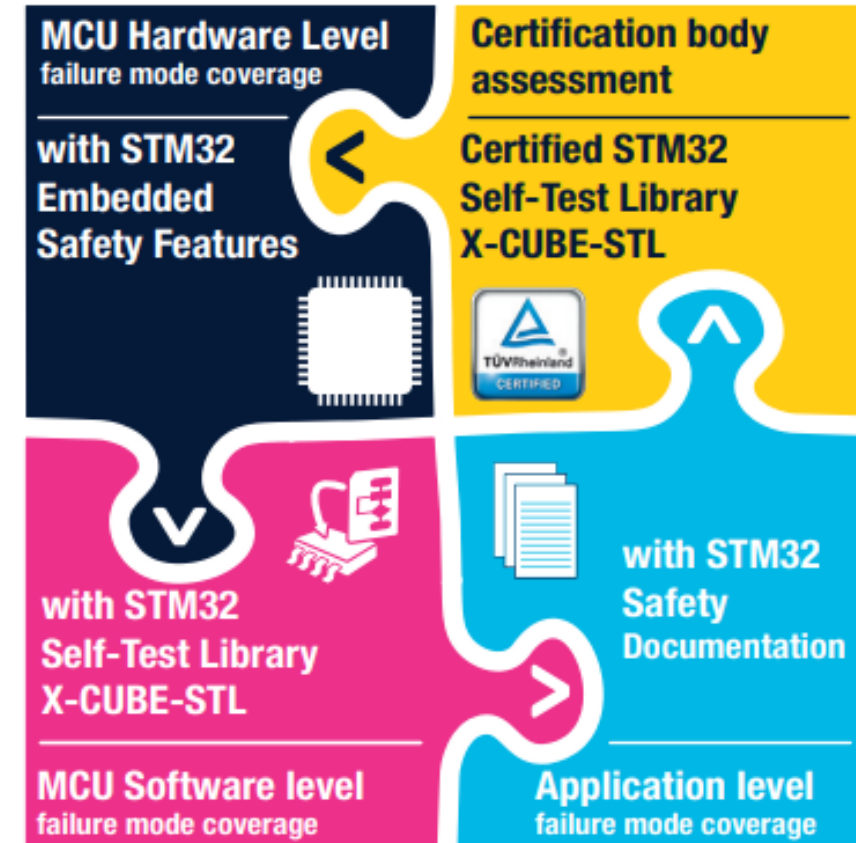
with design package

life.augmented

Solutions for STM32H7 Motor control

STM32

Drive your motor with STM32H7

Robotic	High end Appliance	Servo motor - Industrial	Medical

FOC (field-oriented control) for BLDC/PMSM motors

STM32 tools and software provide an in**tegrated development environment** to ease and support the design of motor control solutions.

ST-MC-SUITE
Motor Control
Solution Finder

STM32Cube
Generic Software
Toolset

X-Cube-MCSDK
Software
Development Kit

STM32

Dedicated Motor Control
Software Tool
Motor Profiler

STM32CubeH7
Generic Embedded
Software Library
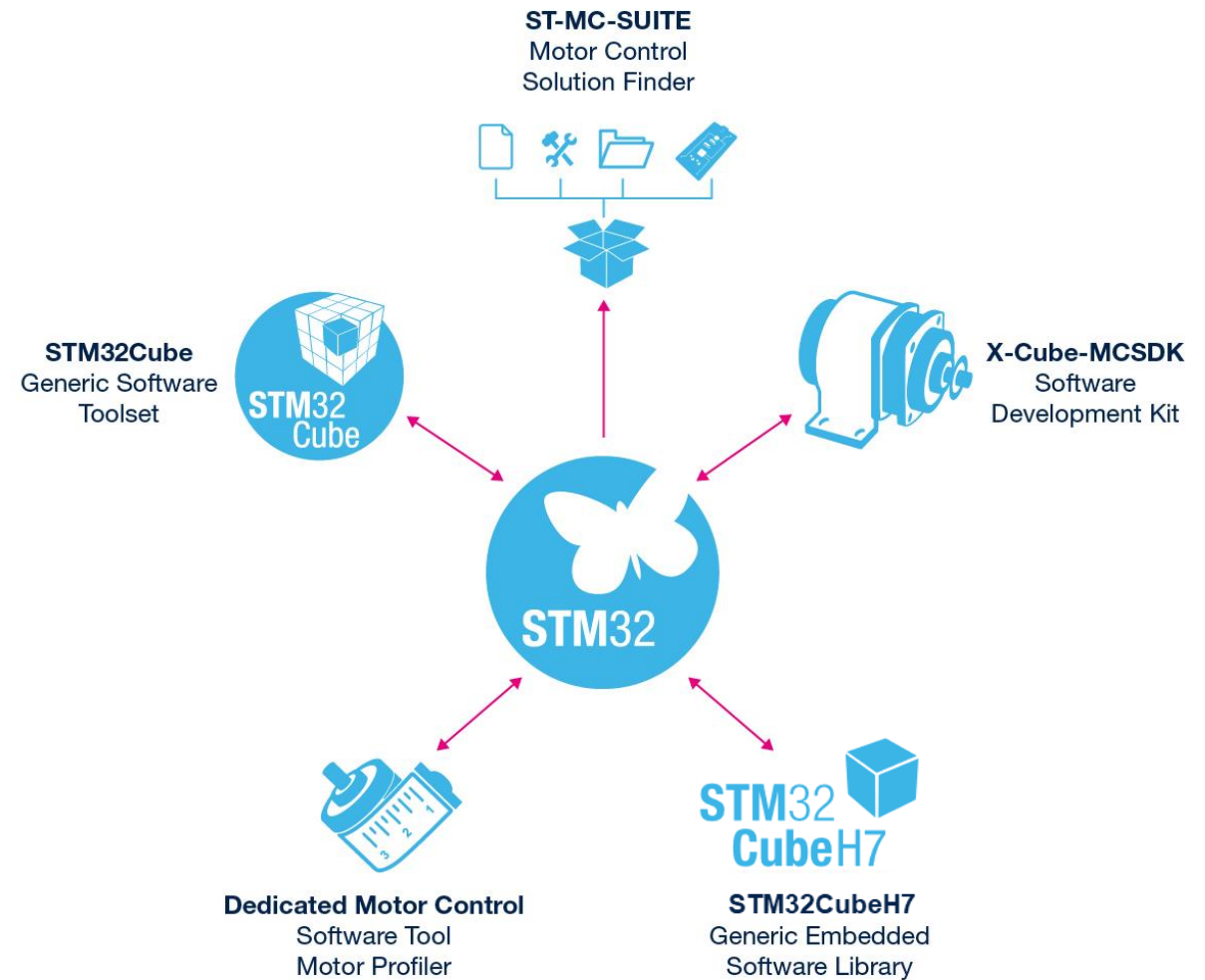
STM32H7 features for Motor control

Features	STM32H723/733/725/735/730	Benefit
Core	Cortex-M7	Performance and efficiency
FPU	yes	Performance and efficiency
MPU	yes	Safety
Freq CPU max	550MHz	Performance and efficiency
DMIPS	1177	Performance and efficiency
Flash / SRAM data size	128KB to 1MB / 564KB	Performance and integration/cost
Including : ITCM/DTCM RAM	*Up to 256KB (configurable) / 128KB*	*Performance and efficiency*
Error Code Correction	SECDED on full memory map	Safety
ADC SAR	2x16bit 3.6Msps, 1x12bit 5Msps	Efficiency
Other Analog	2x Comp, 2x PGA, 2xDAC, 1xDFSDM	Integration/cost
Advanced Motor Control timer	2x (275MHz)	Performance and efficiency
Cache and Accelerator	32KB+32KB L1 cache Graphic, Cordic, FMAC, Crypto(**)	Performance and efficiency
Security Services (SFI and SB-SFU)	yes(*)	System Integrity
Package	VFQFPN68 LQFP100/144/176 BGA100/144/169/176 WLCSP115	Cost/Integration/flexibility
Max Temperature range °C	[-40 .. +125] Tj max 140 ° C	Integration and cost

(*) : on crypto part numbers

A complete ecosystem
for single and dual-core architecture
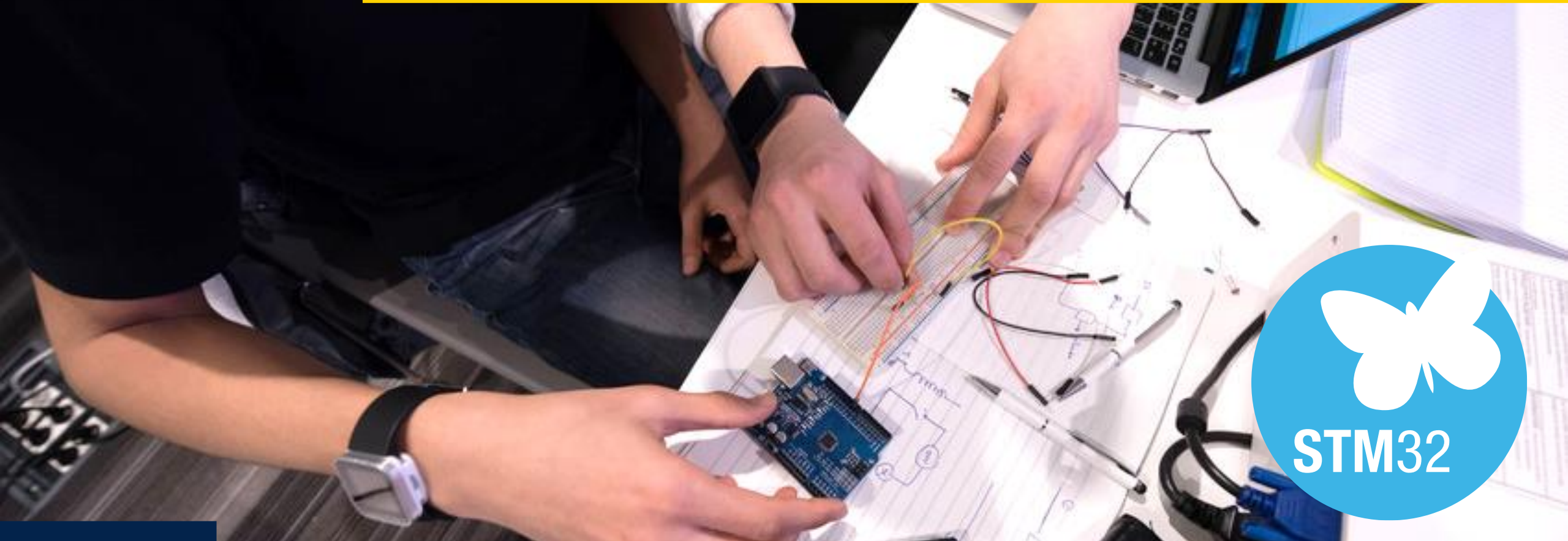
STM32

Supported by the STM32 ecosystem

Software

Software Tools

Embedded Software

STM32 **CubeMX**

STM32 **CubeMCU Packages**

Configuration

Packages

STM32 **CubeIDE**

Development

STM32 **Cube**

STM32 **CubeProgrammer**

Programming

STM32 **CubeMonitor**

Monitor

Expansions

STM32 **CubeExpansion**
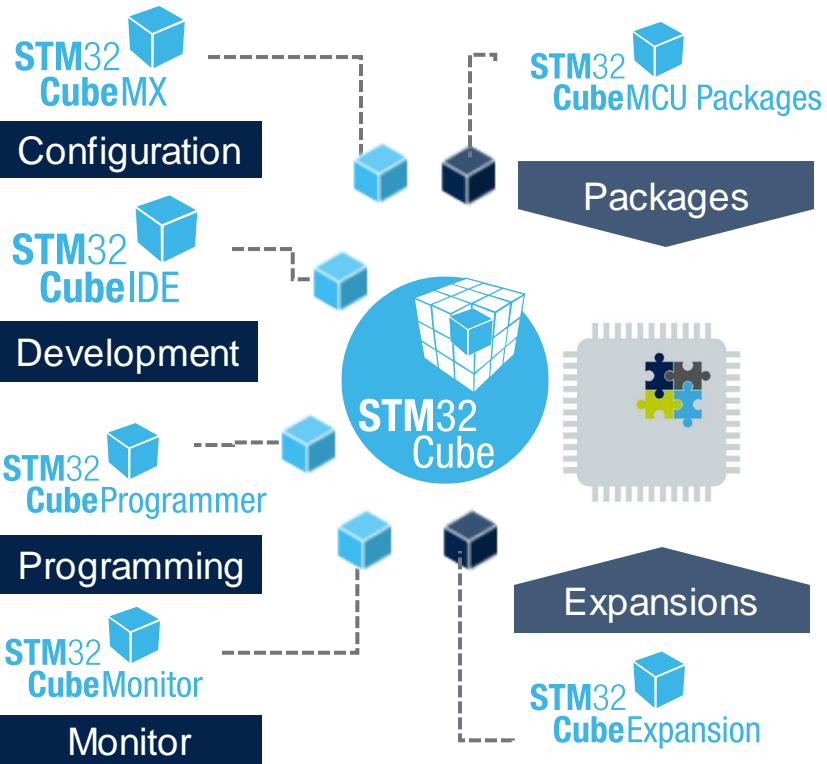
Hardware

STM32 Nucleo-144 boards

STM32 **Nucleo**

Discovery kits

Customer support

FAE - Worldwide Customer Support

community.st.com

MO OC

Partner Program

life.augmented

Complete support of Arm Cortex-M architecture
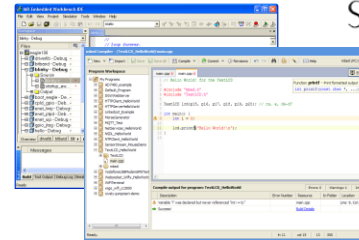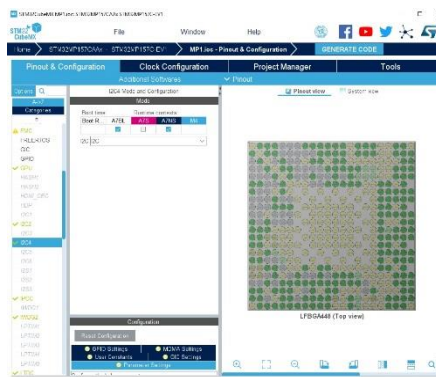
STM32CubeMX	**IDEs** Compile and Debug	**STM32** Programming & Monitoring tools
Graphical tool **for easy configuration**	**Simple and powerful Solutions**	**STM32CubeProg** **STM32CubeMonitor**
• Configure and generate Code • Peripherals configuration	• Partners IDE • Free IDE based on Eclipse	• Program the application into the chip • Sign the application and generate license • Monitor variables at run-time

Speed-up evaluation, prototyping and design (board selection guide available at the end of this presentation)

Starting at **$87**
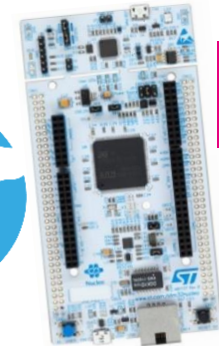
Starting at **$29**

STM32H7 class	Cores/Speed	Part numbers	Discovery Kit	Nucleo-144 board
STM32H72x/3x	Single Core 550 MHz	**STM32H723/733**	-	NUCLEO-H723ZG
		STM32H725/735	STM32H735G-DK	-
		STM32H730, Value line, Crypto enabled	*STM32H735G-DK ***	-

* Recommended board (no dedicated board for this part number)

1 Discovery Kit

1 Nucleo-144 Board

Flexible prototyping & demo

Affordable and quick prototyping

Software, tools and services
a broad ecosystem to support development

Partner Program
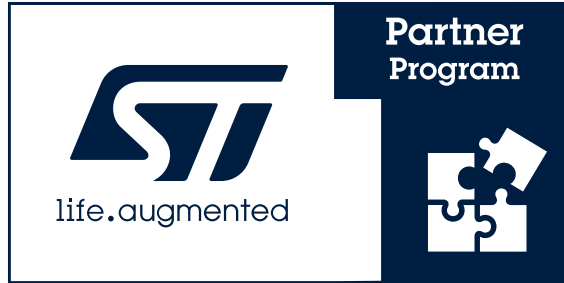
Large selection of partners already engaged for:

- Embedded software
- Software tools
- Graphics UI
- Security
- Training and services

HCC embedded

arm KEIL

IAR SYSTEMS

free RTOS

DSP CONCEPTS

SEGGER

ARDUINO

WITTENSTEIN

STM32 Partner Ecosystem

and many more …

Releasing your creativity

/STM32

@ST_World

community.st.com

www.st.com/STM32H7

wiki.st.com/stm32mcu

github.com/STMicroelectronics

STM32H7_online training

STM32H7_blog article

STM32

Our technology starts with You

🌐 Find out more at www.st.com/STM32H7

life.augmented