

Introduction to the STM32MP1 Microprocessor Series

Mike Hartmann
Product Marketing



Technology Tour 2019

Minneapolis, MN | October 24



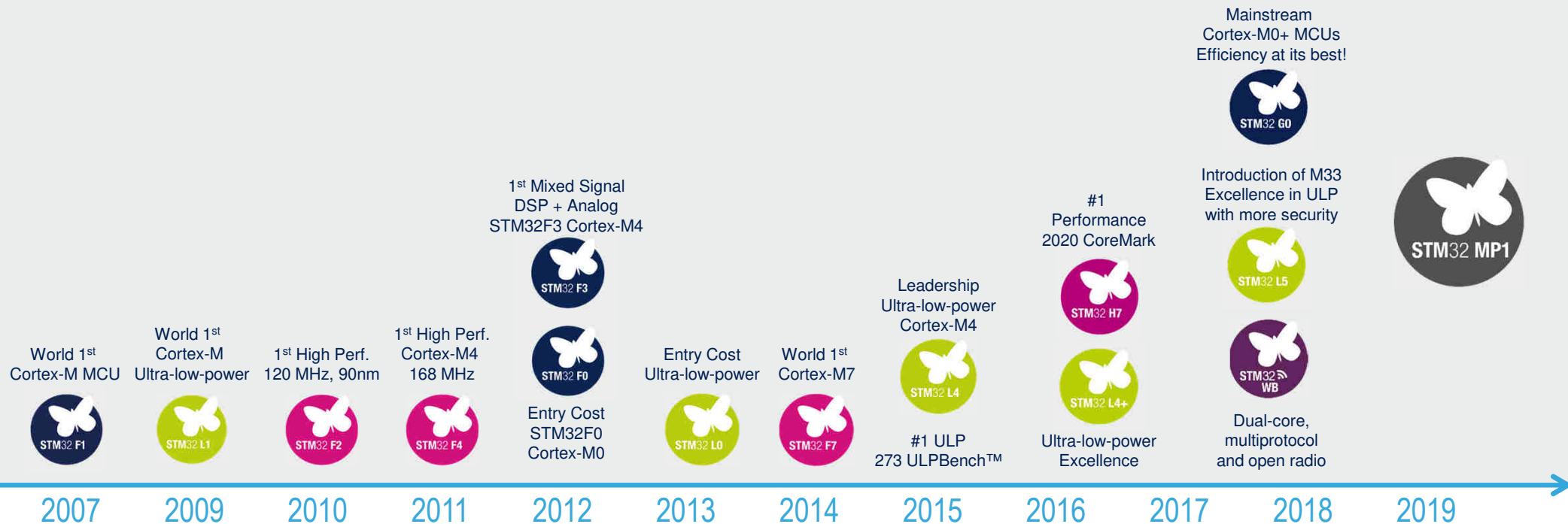
Extending STM32 Success and Commitment with Microprocessors



Continuing the STM32 Success Story

3

Leader in Arm Cortex-M 32-bit General Purpose MCU



STM32 Rolling Longevity Commitment

4

Longevity commitment is renewed every year

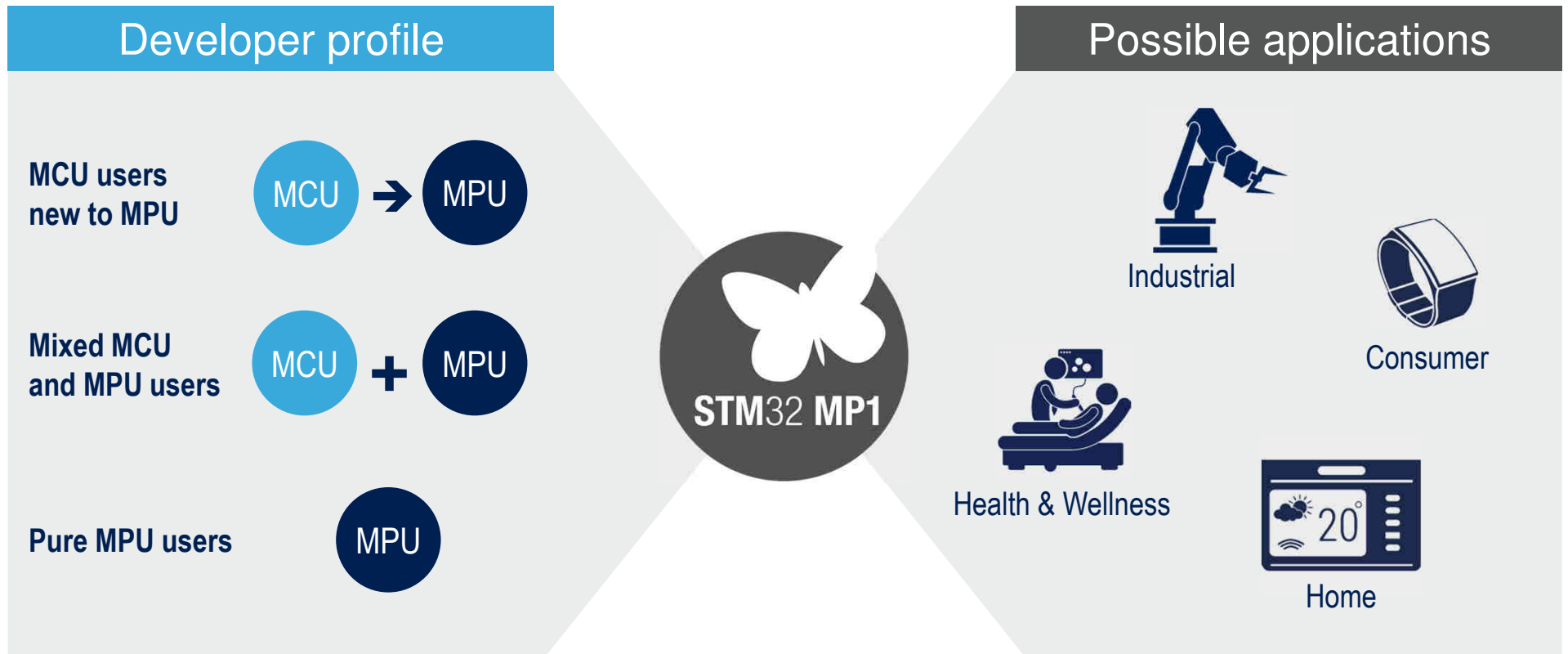


starting January
1st 2019
→ Until 2029

• STM32F1	(launched in 2007)	22 years of commitment
• STM32L1	(launched in 2009)	20 years of commitment
• STM32F2	(launched in 2010)	19 years of commitment
• STM32F4	(launched in 2011)	18 years of commitment
• STM32F0	(launched in 2012)	17 years of commitment
• STM32F3	(launched in 2012)	17 years of commitment
• STM32L0	(launched in 2013)	16 years of commitment
• STM32F7	(launched in 2014)	15 years of commitment
• STM32L4	(launched in 2015)	14 years of commitment
• STM32L4+	(launched in 2016)	13 years of commitment
• STM32H7	(launched in 2016)	13 years of commitment
• STM32WB	(launched in 2018)	11 years of commitment
• STM32G0	(launched in 2018)	11 years of commitment

STM32MP1: A General Purpose MPU

Suitable for all Developer Types and Multiple Applications



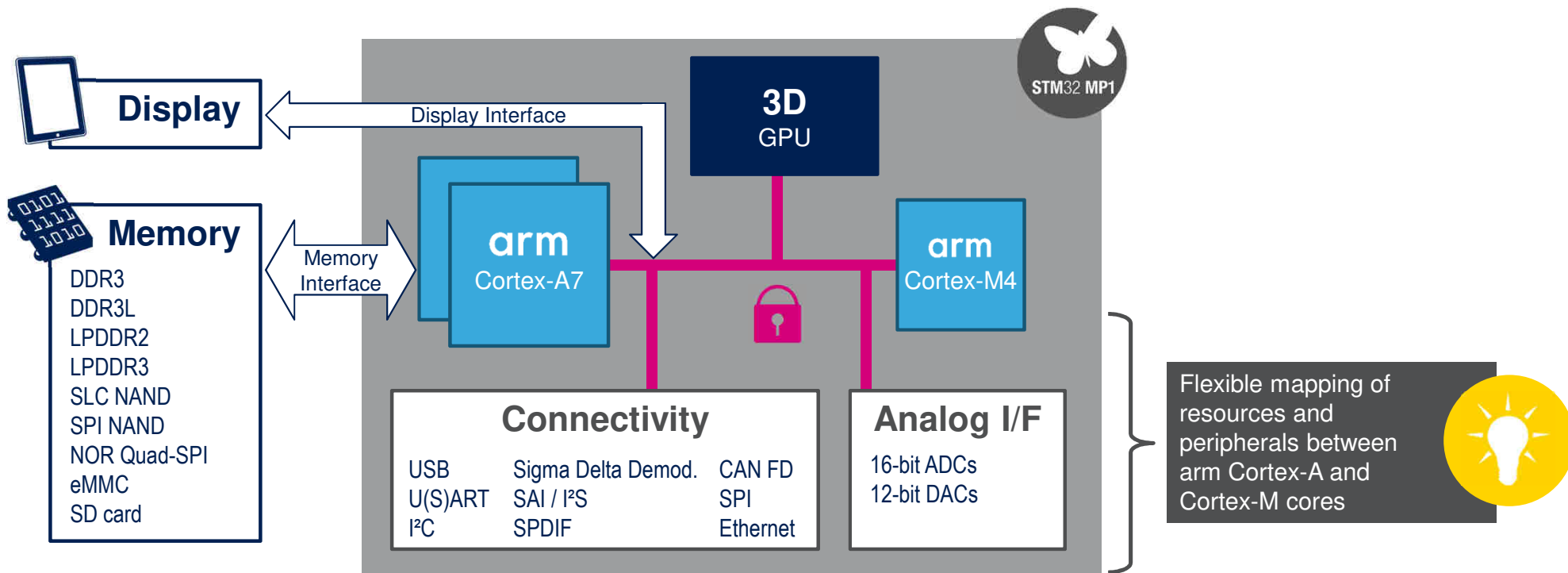


Flexible architecture for a wide range of applications

STM32MP1 Rich Feature Set

7

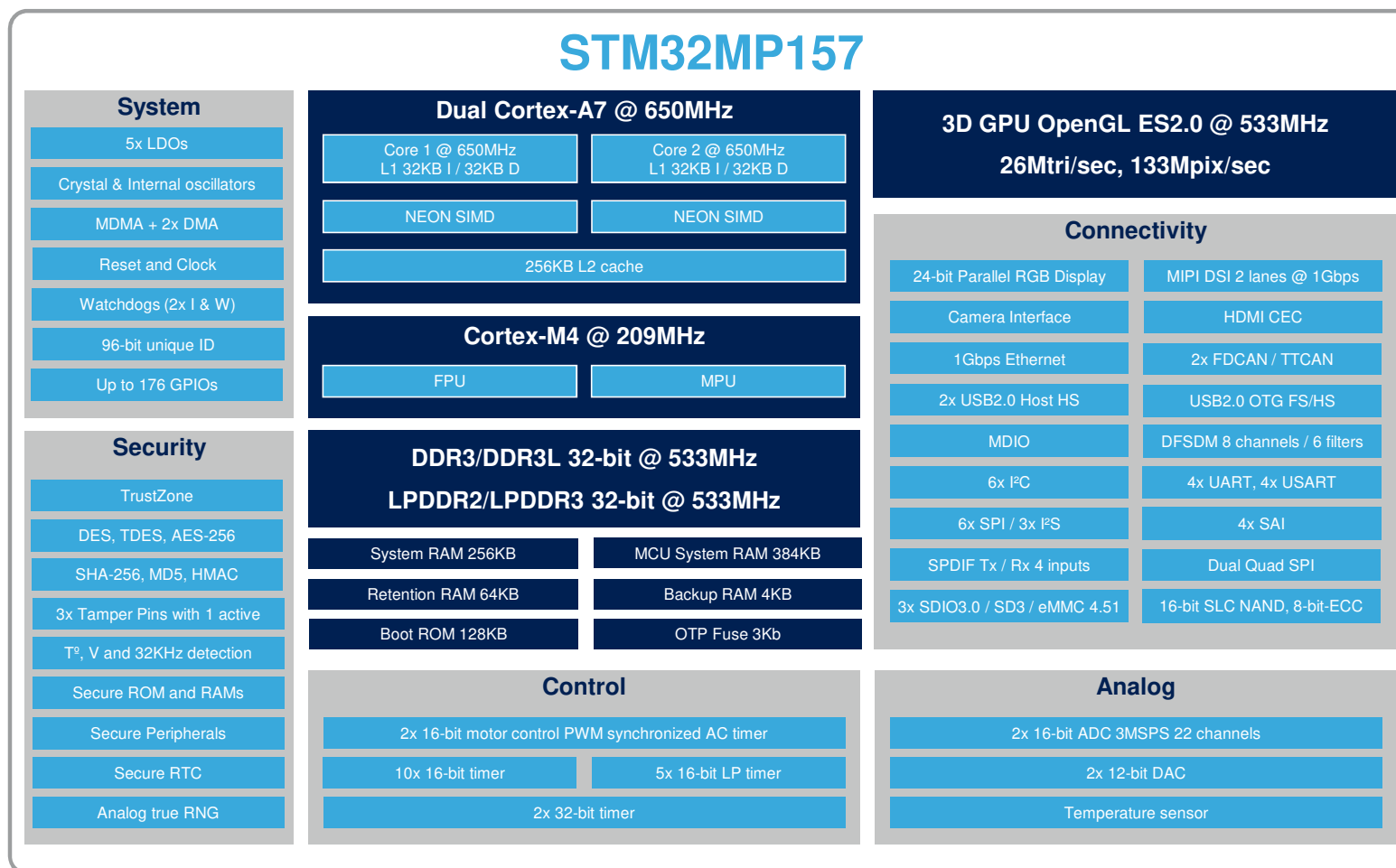
Advanced & Flexible Architecture with 3D GPU





STM32MP1 Block Diagram

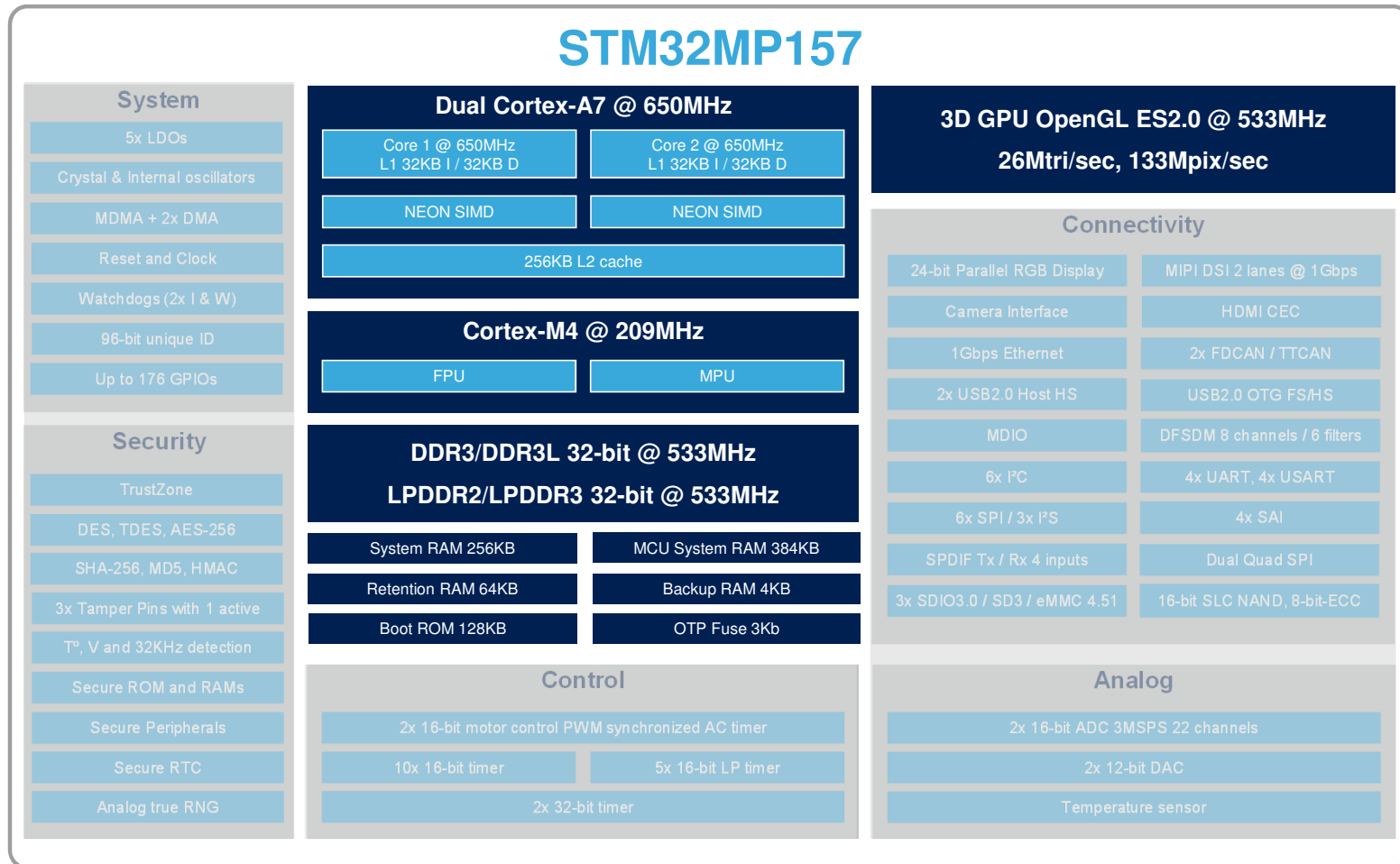
8





STM32MP1 Block Diagram

9

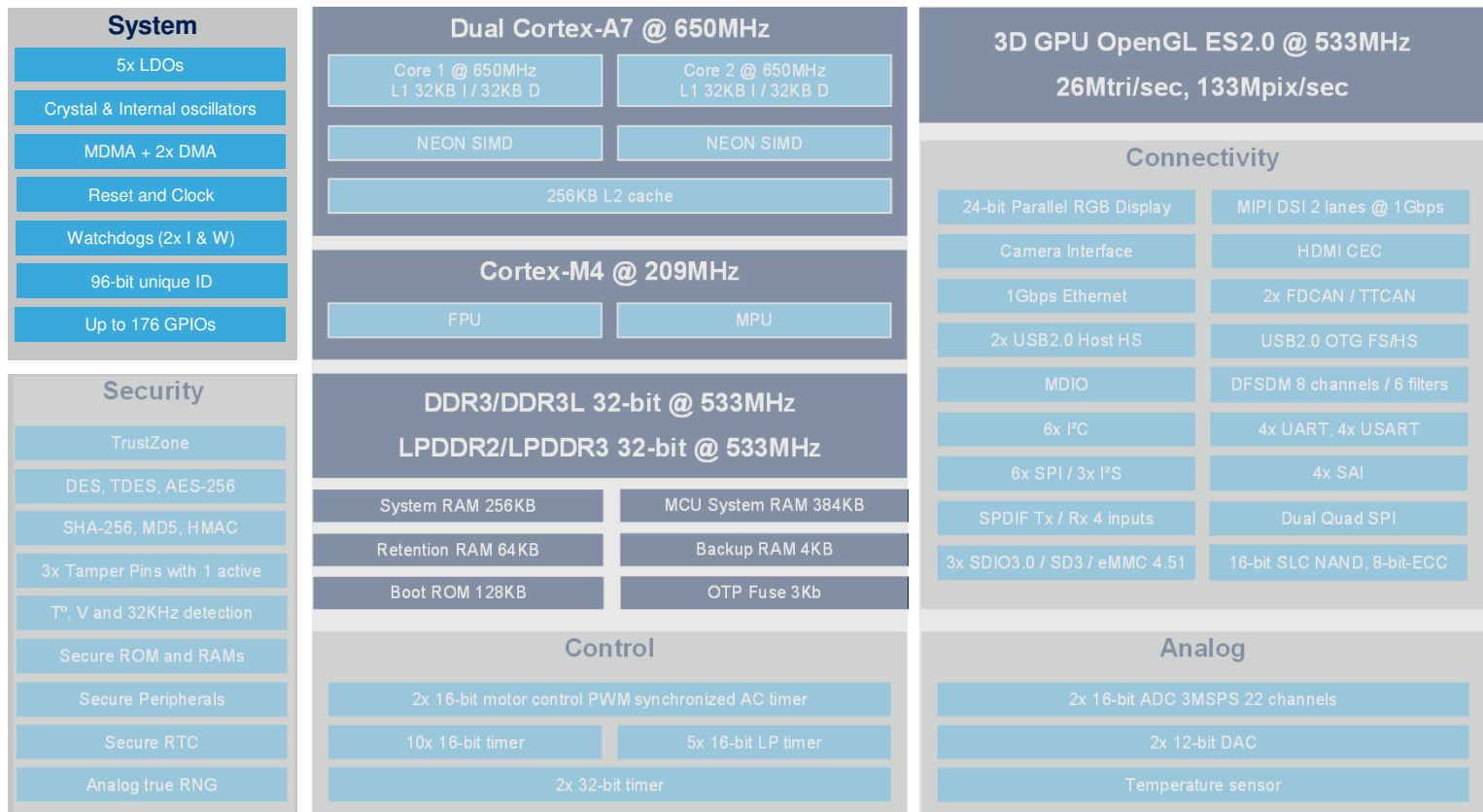




STM32MP1 Block Diagram

10

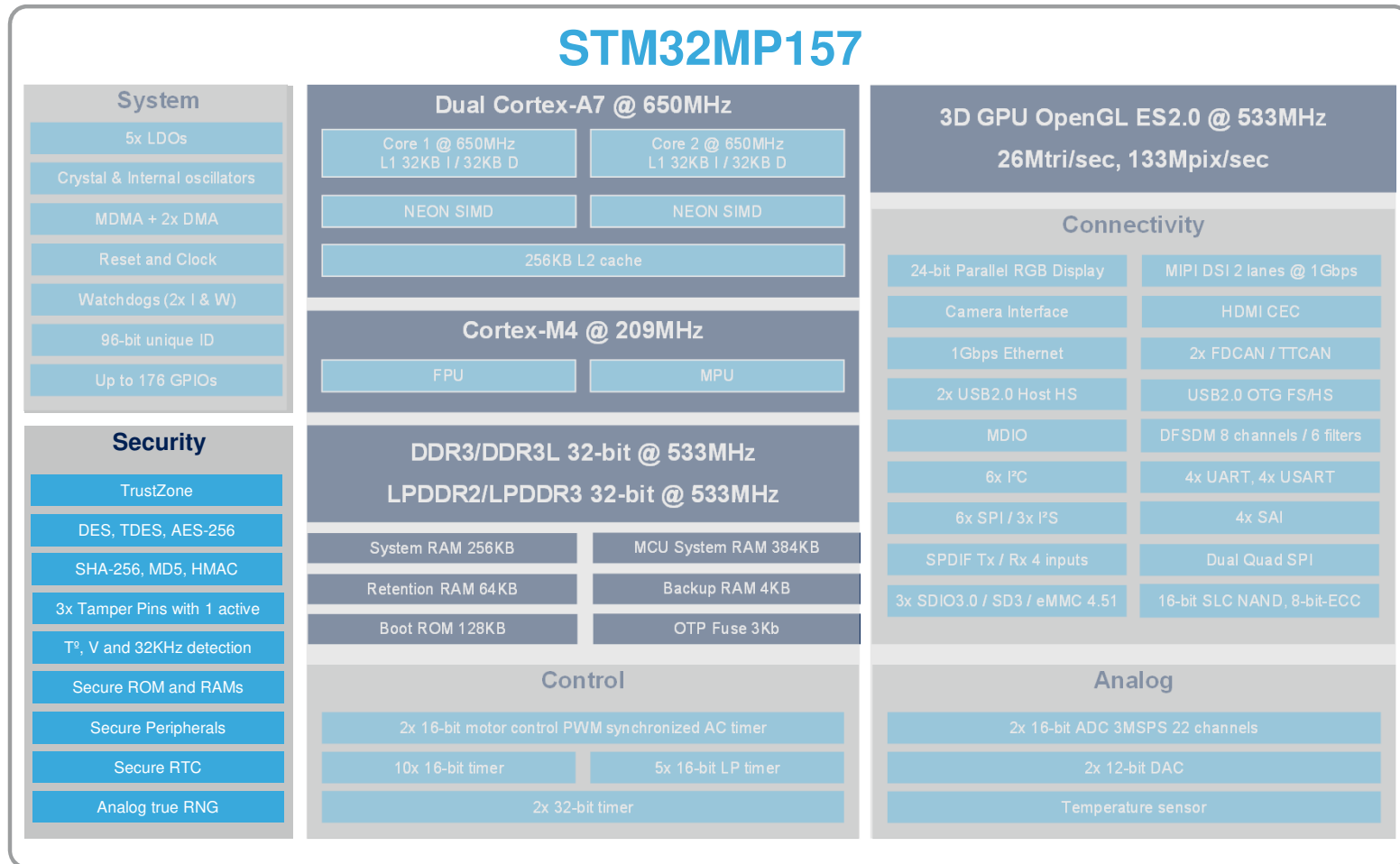
STM32MP157





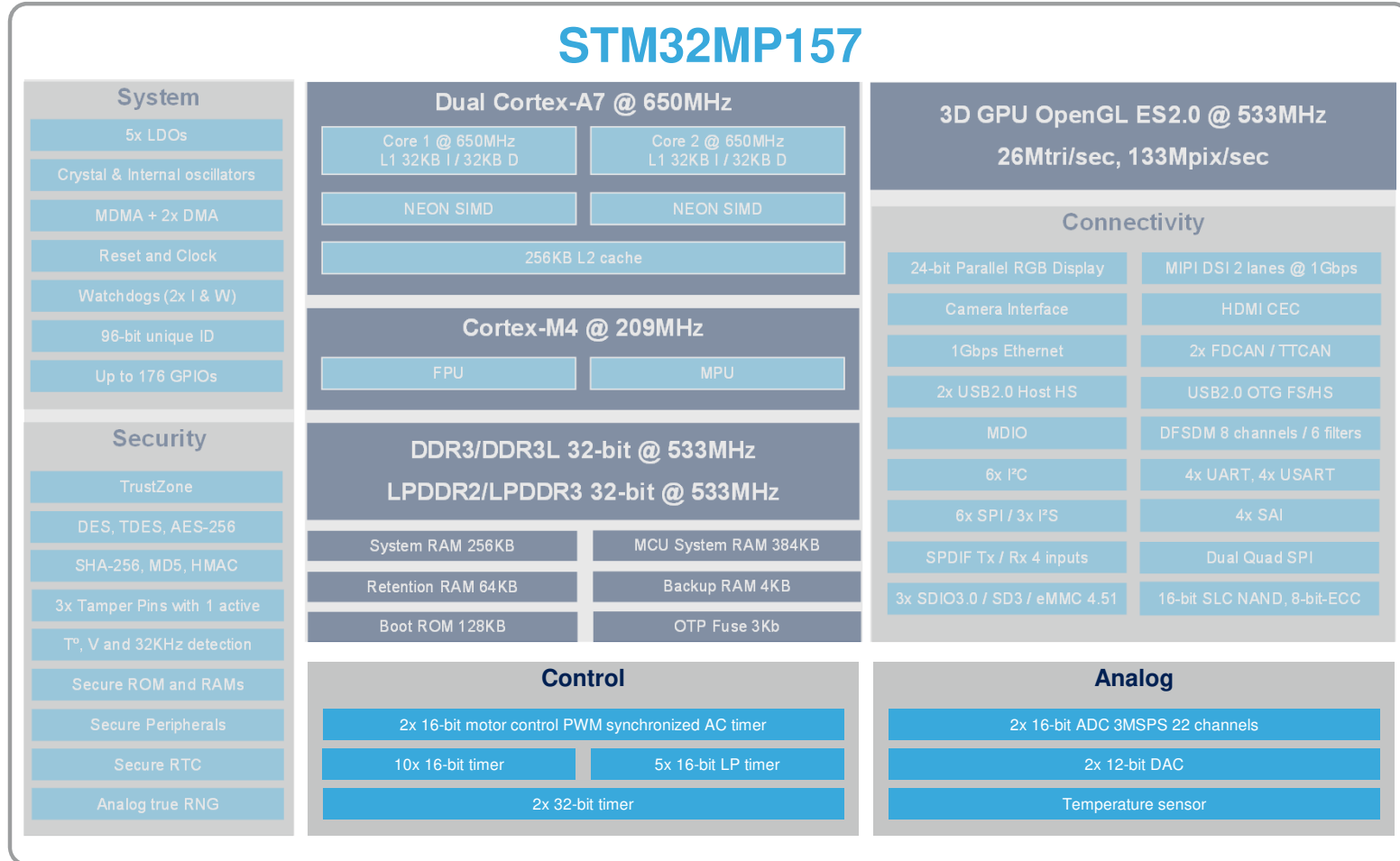
STM32MP1 Block Diagram

11





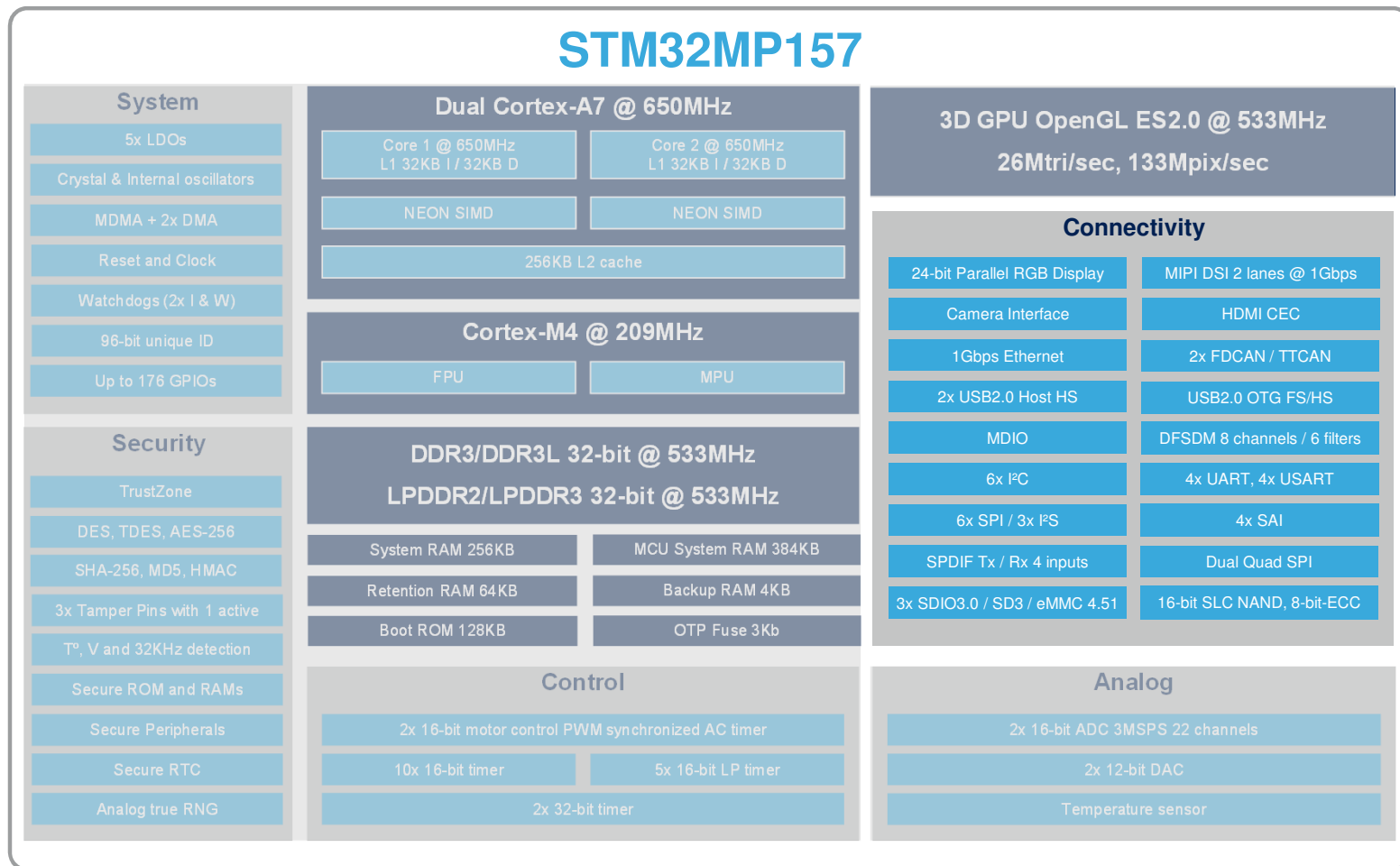
12





STM32MP1 Block Diagram

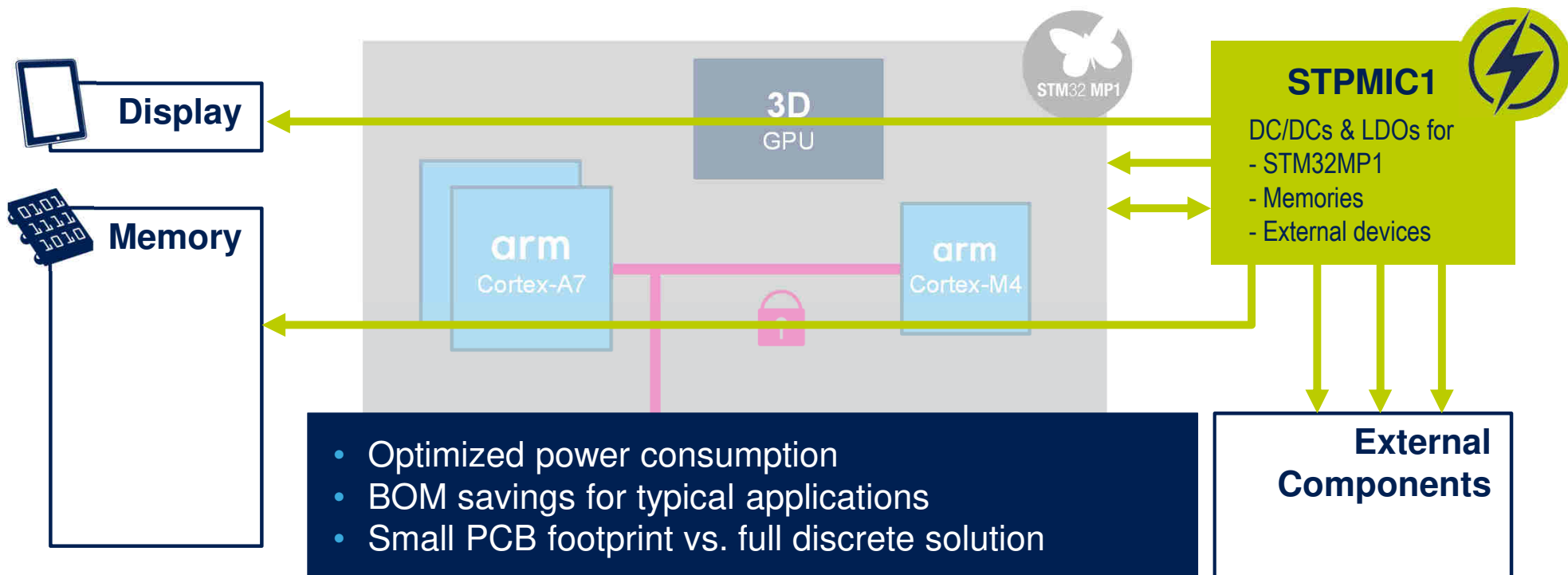
13



STPMIC1 Power Management IC

14

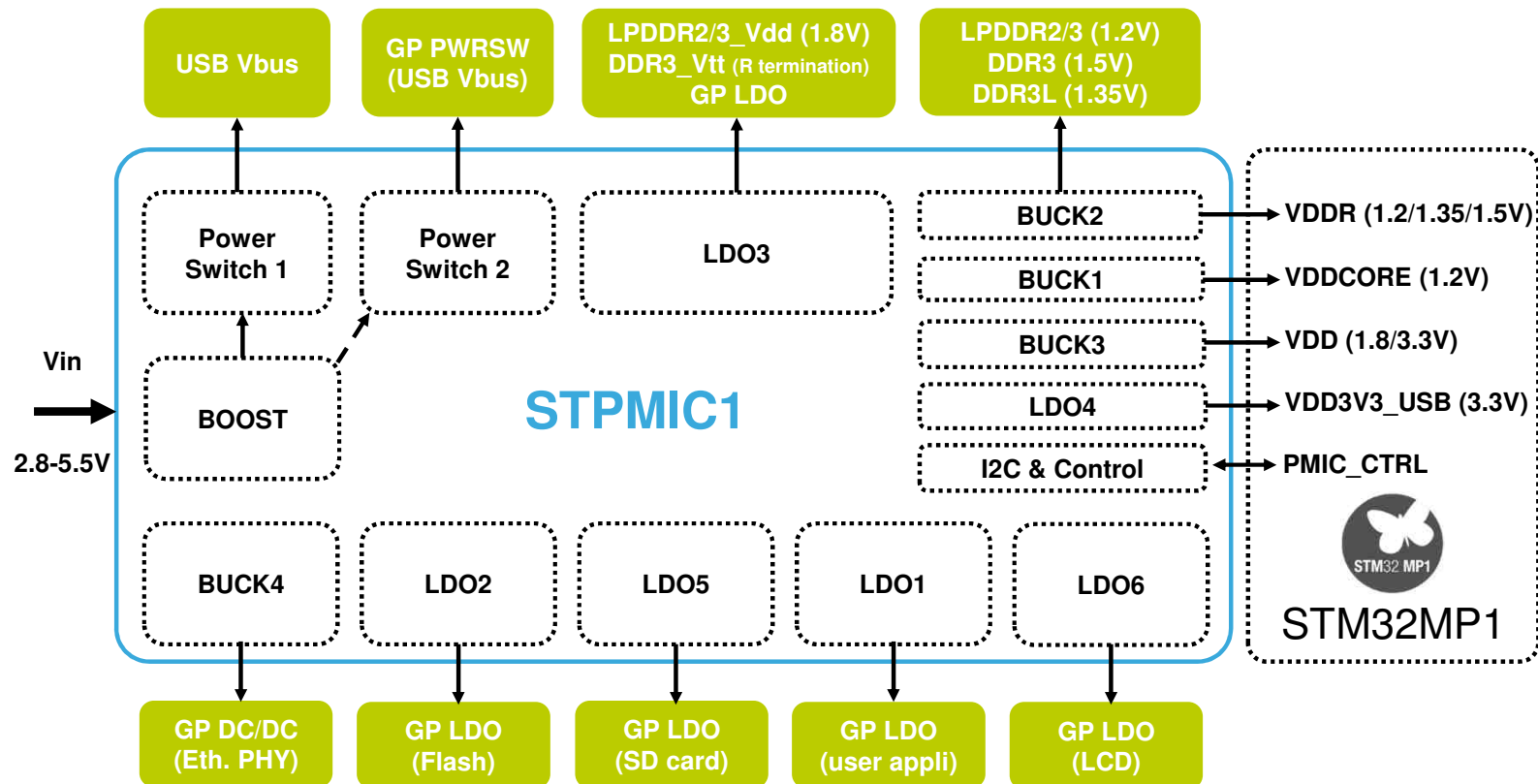
Simplify your design and optimize power consumption



STPMIC1 Power Management IC

15

Simplify your design and optimize power consumption

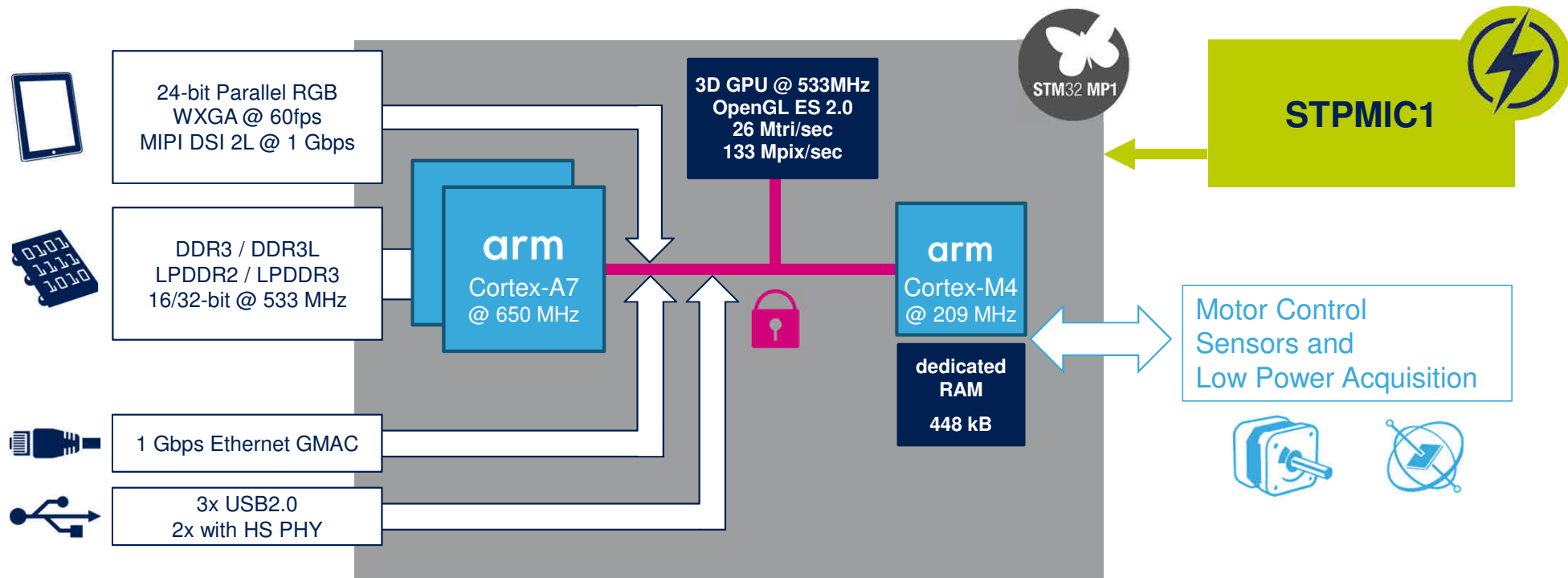


Arm Cortex-A + Cortex-M Architecture

16

High Speed I/F and Processing

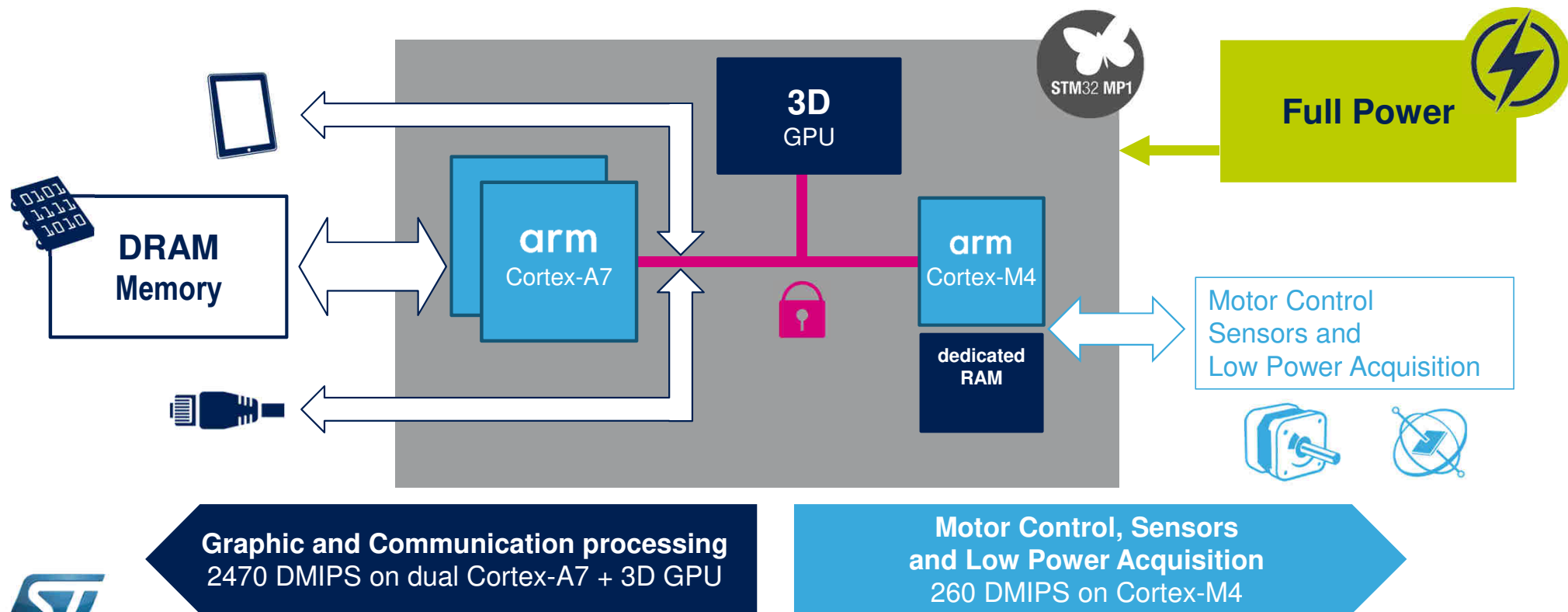
Real Time Operations



STM32MP1 Flexible Architecture

17

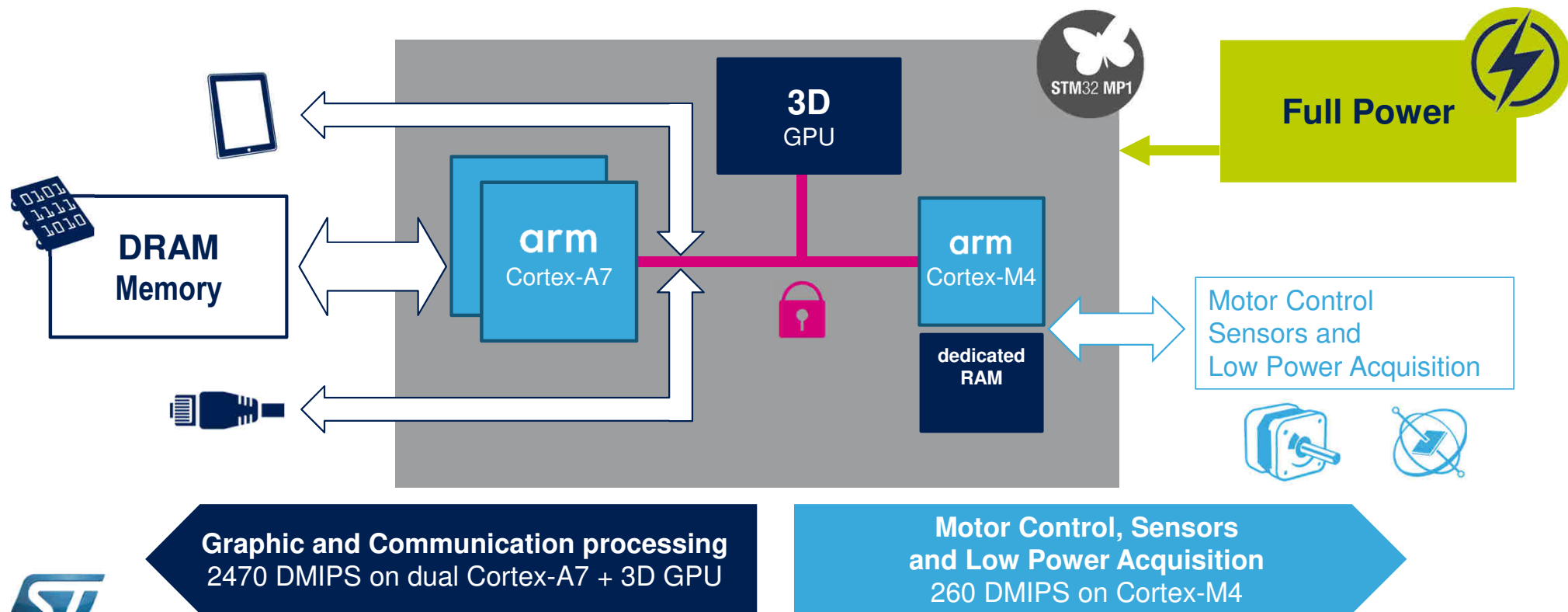
Processing for HMI and Communication + Motor Control and Sensing



Flexible Architecture for Power Efficiency

18

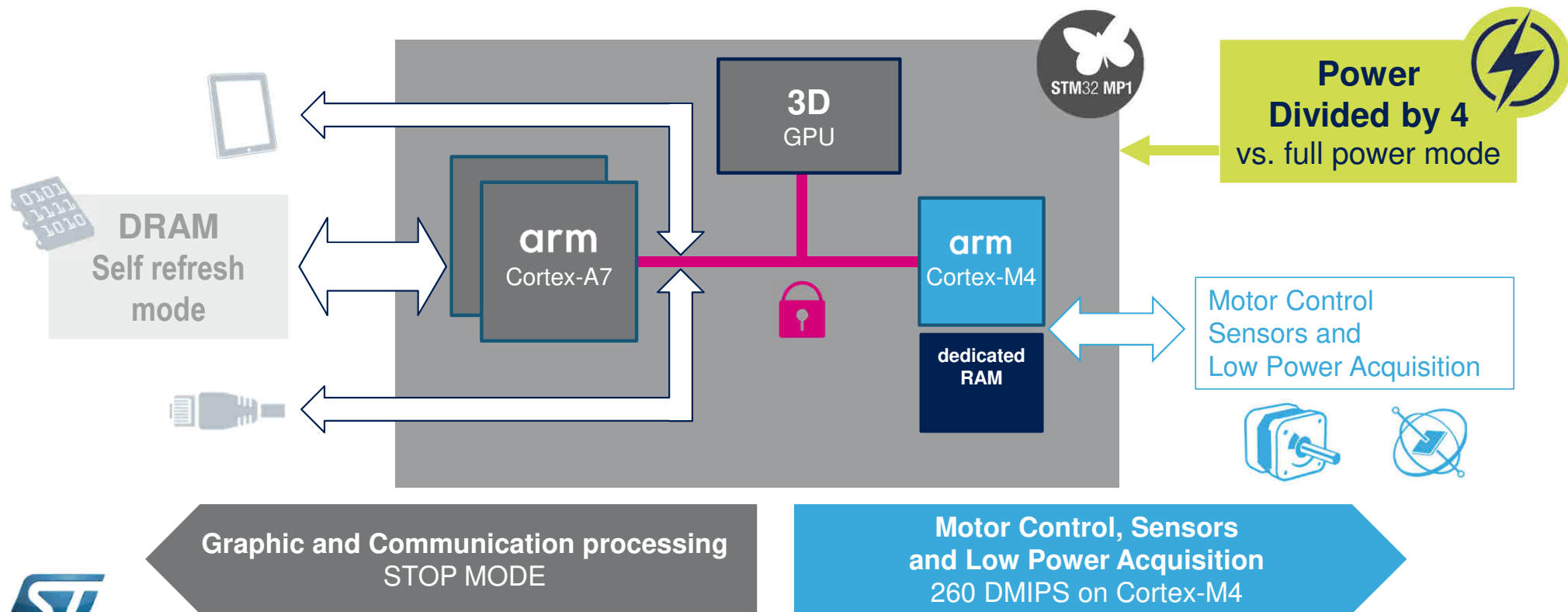
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Flexible Architecture for Power Efficiency

19

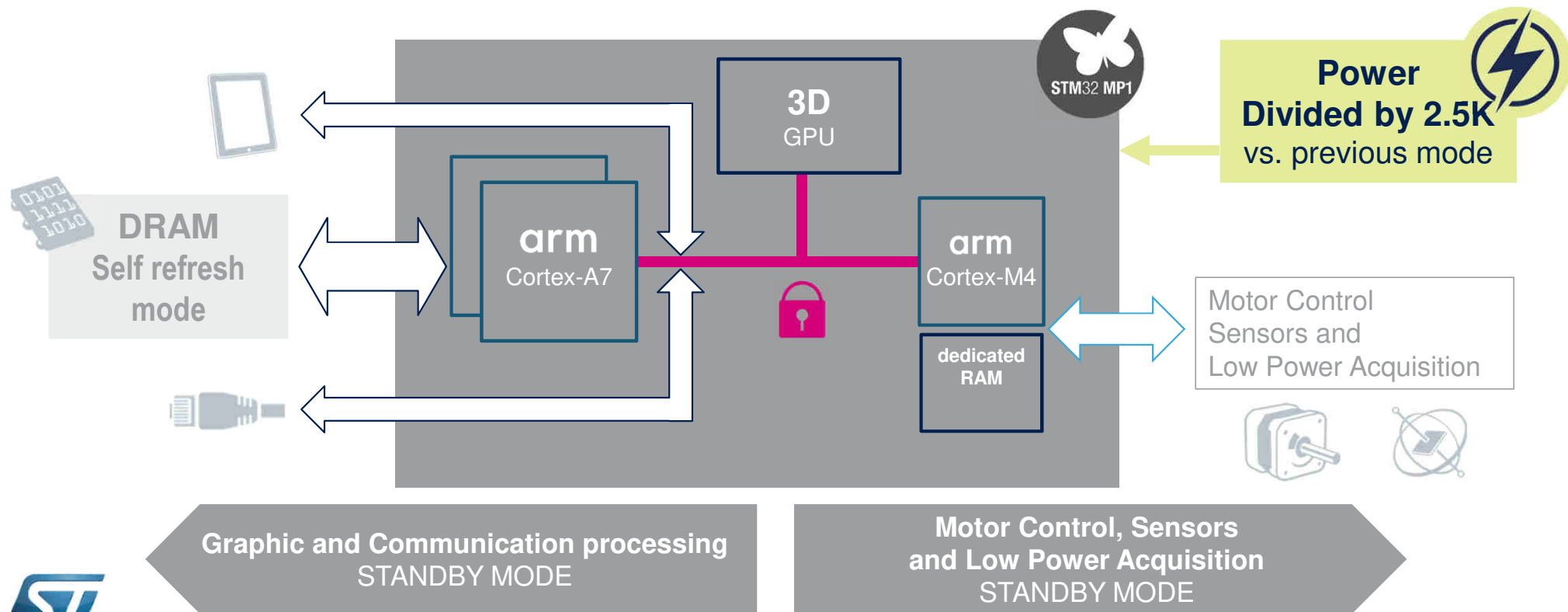
Motor Control and Sensing



Flexible Architecture for Power Efficiency

20

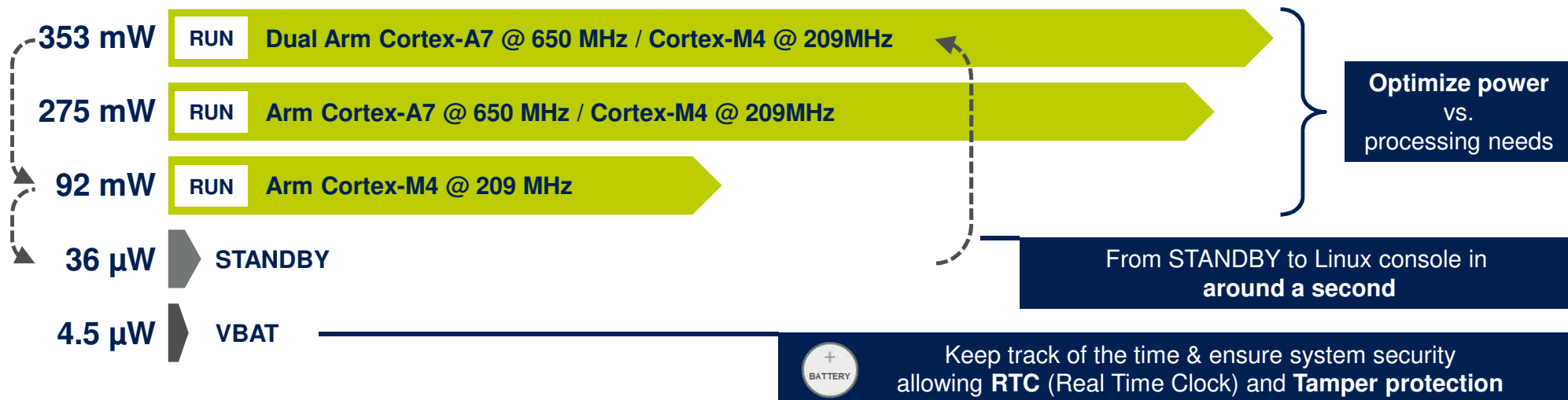
Standby Mode



Flexible Architecture for Power Efficiency

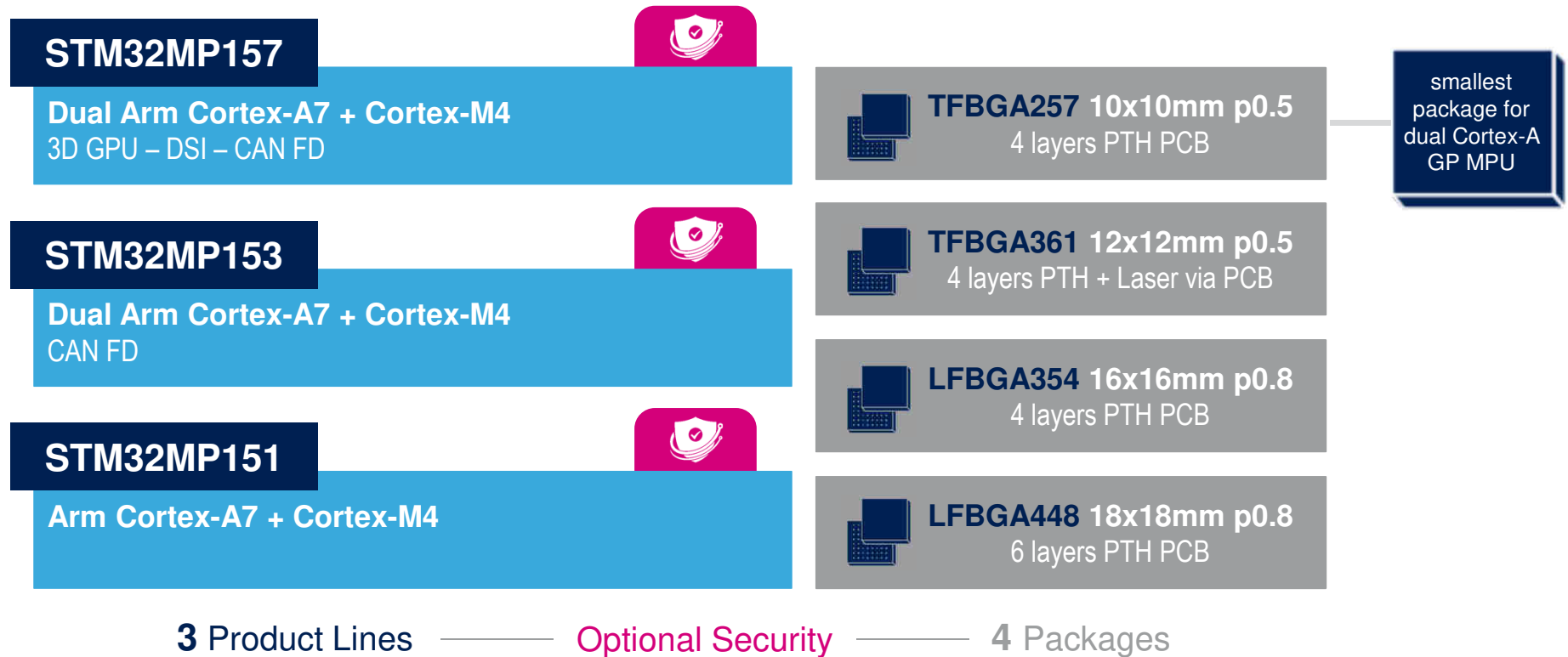
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Power Figures



Typ @ VDDCORE = 1.2V, VDD = 3.3V @ 25 °C, Peripherals OFF

STM32MP1 Tailored for Multiple Applications



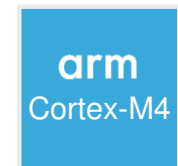


Accelerated development leveraging the STM32 Ecosystem

A Fully Integrated Design Suite

Leveraging the STM32Cube Environment

24

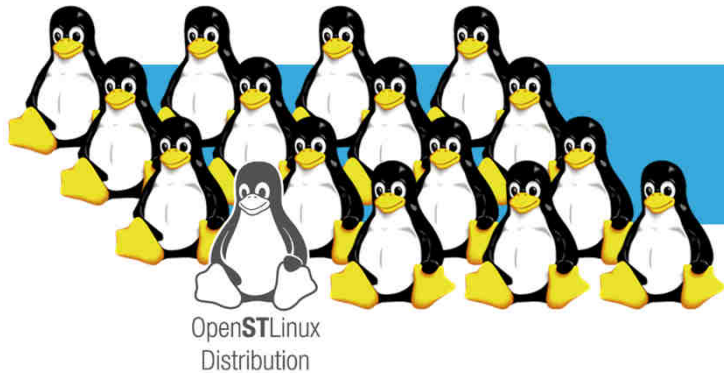


STM32MP1 Embedded Software Distribution

Simplify your Linux Development

25

Fully mainlined open source Linux distribution for Arm Cortex-A7



STM32MP1 SoC drivers
already adopted by the Linux community

STM32MP1 supported in Linux 4.19 LTS

Fully compliant
with
open-source
standards



yocto
PROJECT



Pre-integrated
Secure OS



OP-TEE
.org

Benefit from Field-Proven RTOS Tools

26

Full re-use of STM32Cube Firmware on Arm Cortex-M



Several APIs to access peripherals



Collection of Middleware components for Cortex-M



Hundreds of Examples



Production-ready Quality



Business-friendly license terms

Supported by the STM32 Ecosystem

All the Tools for Successful MPU Development

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Software



Hardware



Discovery boards



Evaluation boards

Customer support



FAE - Worldwide
Customer Support



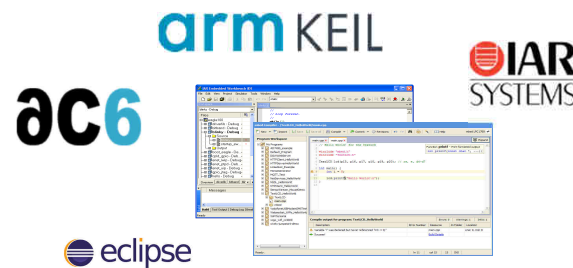
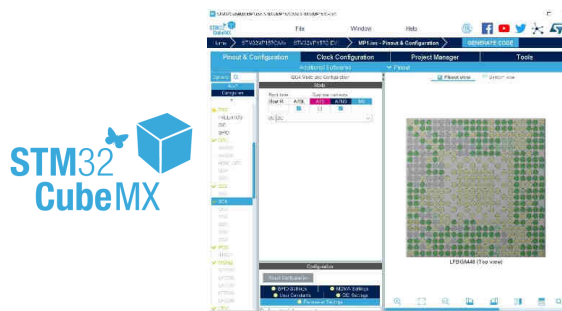
community.st.com



STM32MP1 Software Tools

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Complete support of Arm Cortex-A + Cortex-M architecture



All-in-one STM32 programming tool
Multi-mode, user-friendly



STM32CubeMX

STM32CubeMX enhanced for MPU

- Configure and generate code
- DRAM interface tuning tool
- Device Tree generation

IDEs Compile and Debug

Multi-Core Solutions

- Partners IDE
- Free IDE based on Eclipse
- Multi-core debugging

STM32 Programming Tool

STM32CubeProgrammer

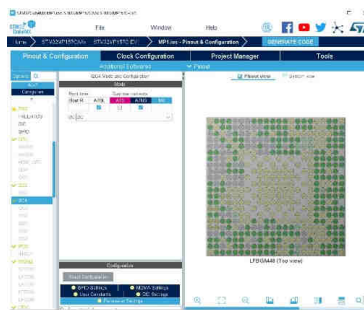
- Flash, DRAM and/or system memory
- OTP programming
- Signing tool & Keys generation

STM32MP1 Software Tools

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Complete support of Arm Cortex-A + Cortex-M architecture

STM32
CubeMX

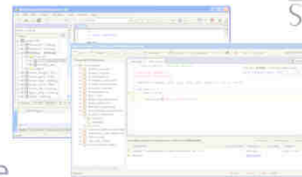


ac6

arm KEIL

IAR
SYSTEMS

eclipse



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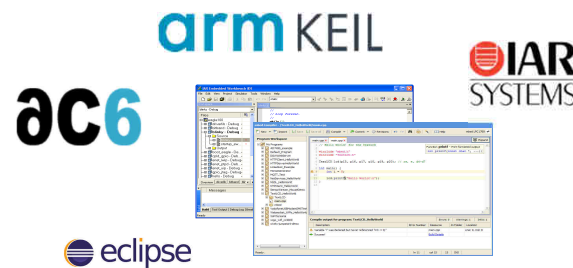
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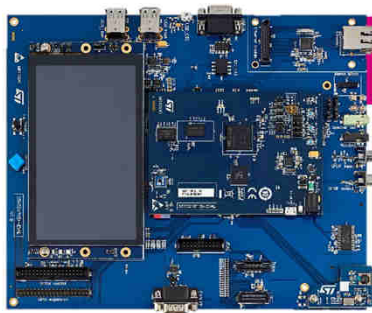
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STM32MP1 Hardware Solutions

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Speed-up evaluation, prototyping and design

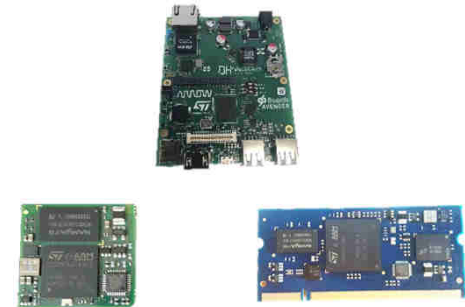


Available at
\$399



Available at
\$99

Available at
\$69



Evaluation Board

Full feature STM32MP1 evaluation

- STM32MP157A-EV1
- STM32MP157C-EV1

Discovery Board

Flexible prototyping & demo

- STM32MP157A-DK1
- STM32MP157C-DK2
 - + MIPI DSI WVGA display
 - + Wi-Fi/BT combo module

Boards & SoM*s

3rd Parties Boards for prototyping and production

- Board Specification from Linaro (96boards.org)
- Commercial SoM w/ different forms

STM32MP1 Hardware Solutions

33

Speed-up evaluation, prototyping and design



Available at
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Evaluation Board

Full feature STM32MP1 evaluation

- STM32MP157A-EV1
- STM32MP157C-EV1

- STM32MP157, 18x18mm
- ST PMIC, QFN 6x5mm
- 2x DDR3L 4Gb, 533MHz
- eMMC 4GB
- SLC NAND 8Gb
- 2x Quad-SPI NOR 512Mb
- µSD card slot
- Gigabit Ethernet
- 4x USB Host HS Type-A
- 1x USB OTG HS Type-C
- 720p 5.7" DSI Display
- Audio Codec
- CMOS camera sensor
- Motor Control connector

Available at
\$69

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STM32MP1 Hardware Solutions

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Speed-up evaluation, prototyping and design

- STM32MP157, 12x12mm
- ST PMIC, QFN 6x5mm
- DDR3L 4Gb, 533MHz
- µSD card slot
- Gigabit Ethernet
- 4x USB Type-A
- USB Type-C
- WiFi 802.11b/g/n / BT 4.1
- WVGA 4" DSI display
- HDMI Transceiver
- Arduino™ Uno V3 connector
- 5V USB type-C power supply
- Audio headset jack



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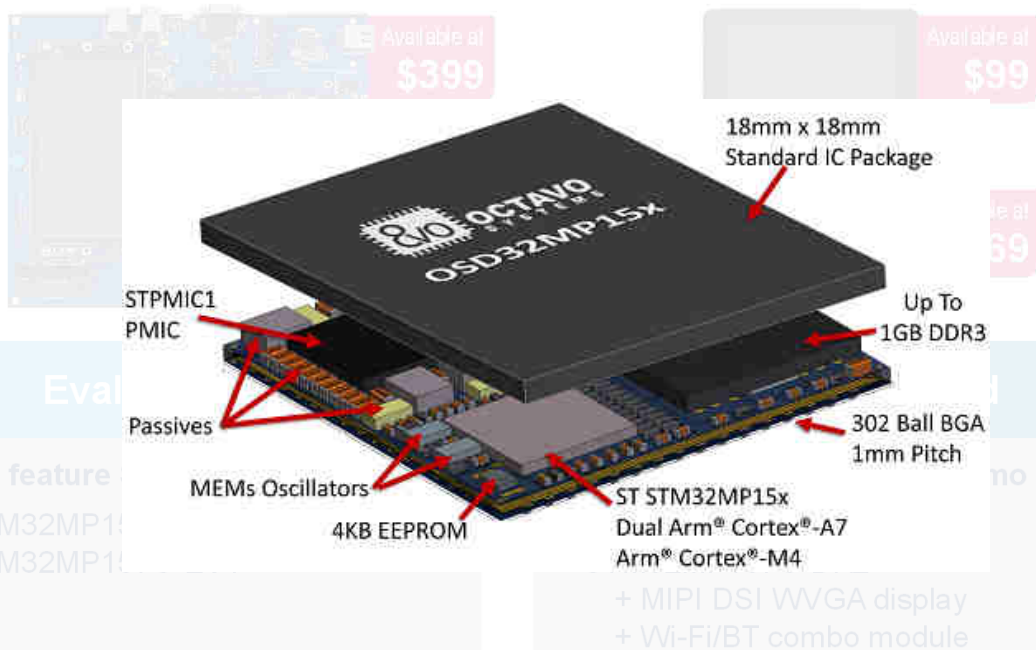
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STM32MP1 Hardware Solutions

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Software, Training and Services

a Broad Ecosystem to Support Development



ST's **wiki** user guide
for beginners and experts
<https://wiki.st.com/>

Large selection of partners
already engaged for:

- Graphics UI
- Security
- Training and services



STM32MP1 - Your New Companion

for Advanced Applications

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Extending STM32 success and commitment
with **Microprocessors**



Flexible architecture
for a wide range of applications



Accelerated development
leveraging the **STM32 Ecosystem**

Releasing Your Creativity

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