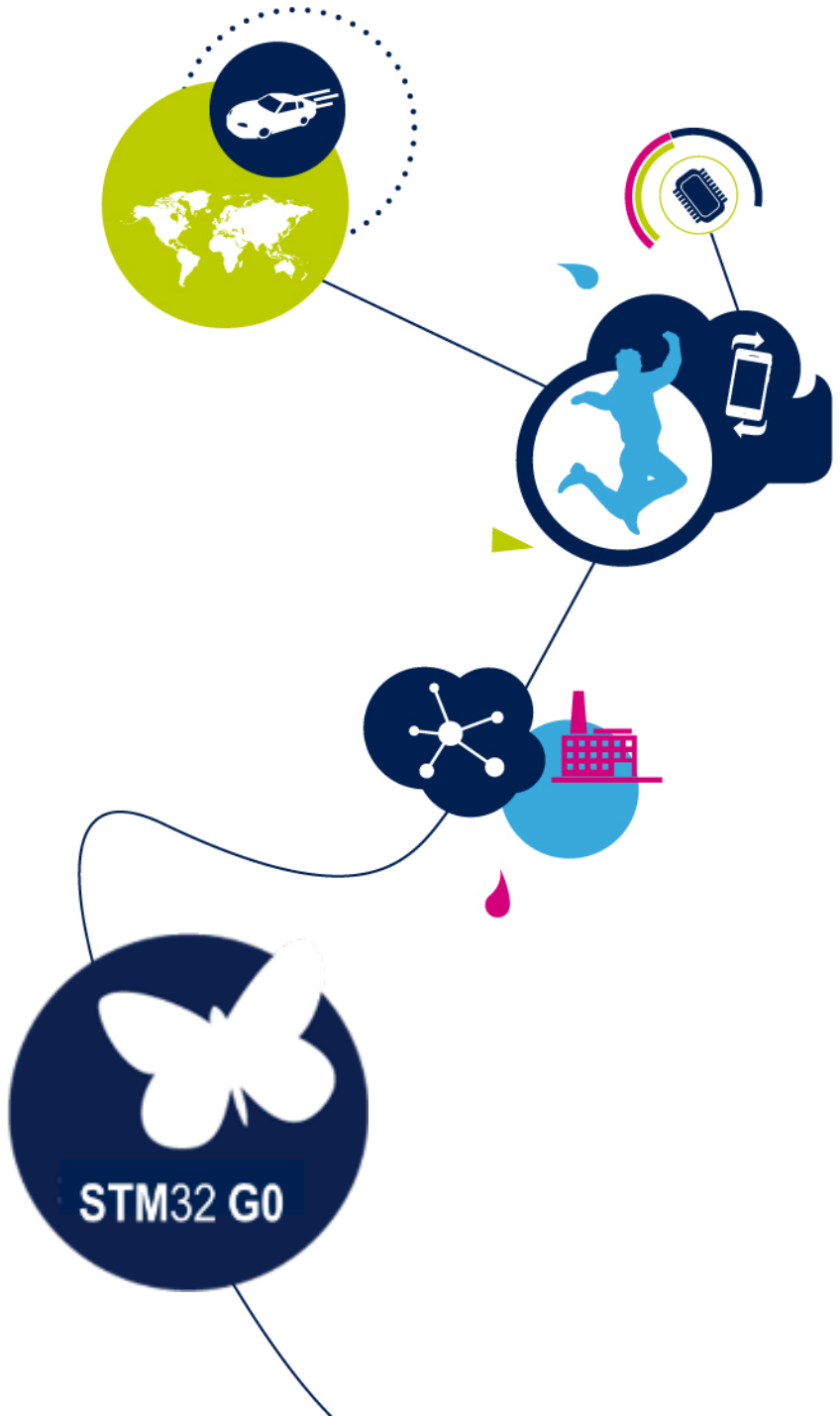
STM32G0 MCU Series
Efficiency at its Best



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Key Messages of STM32G0 Series

1 Efficient

- Arm® Cortex®-M0+ at 64 MHz
- Compact cost: maximum I/Os count
- Best RAM/Flash Ratio
- Smallest possible package down to 8-pin
- Very low power consumption (3 µA in stop, <100µA/MHZ in Run)
- Accurate internal high-speed clock 1% RC
- Best optimization, down to each and every detail
- Offers the best value for money

2 Robust

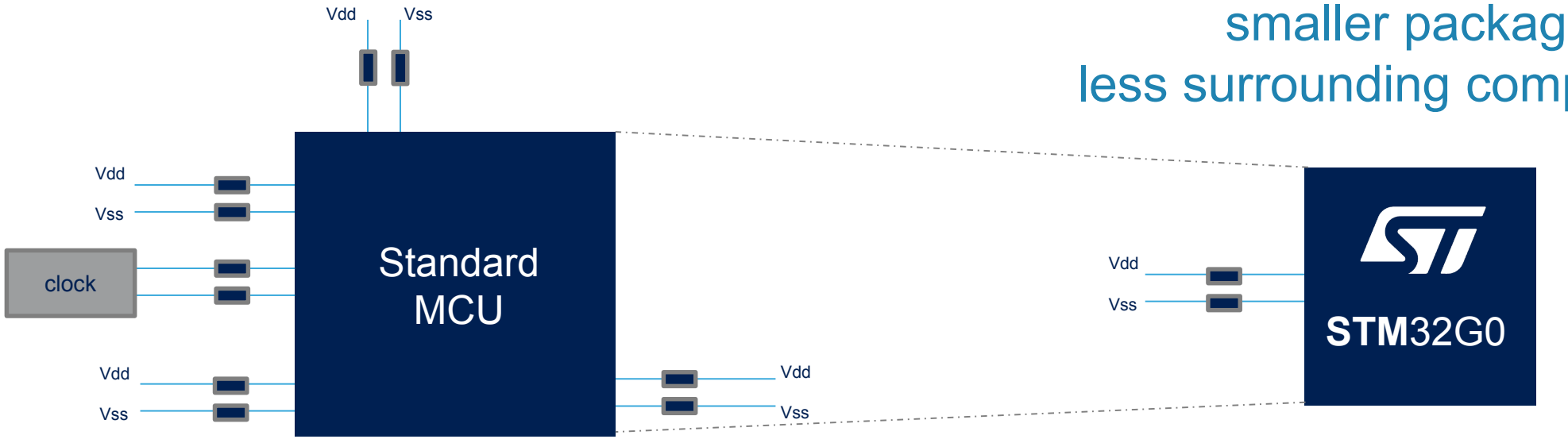
- Low electromagnetic susceptibility, EMC
- Clock Monitoring and 2 Watchdogs
- Error correction on Flash
- IoT ready with embedded security
- Hardware AES-256 encryption or the new Securable Memory Area.
- Safe Firmware upgrade / Install

3 Simple

- Easy to configure thanks to the intuitive and graphic STM32CubeMX configuration tool.
- Easy to develop based on the Hardware Abstraction Layer library (HAL) or the low-layer library (LL) allowing maximum re-use and faster time-to-market.

Reducing BOM Cost

New platform optimized with 1 power supply pair only up to 64-pin packages



smaller package
less surrounding components

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Innovations for Your Benefit

- **No external clock** **-10cts**
  Accurate internal high speed clock +/-1% for 0 / 90°C
- **No decoupling capacitances** **-4cts**
  Remove up to 6 decoupling capacitors for supply and clocks
- **Smaller PCB** **-1cts**
  Smaller package, less components: save on PCB area

Additional benefits for your convenience:

- **USB-C power delivery** **-15cts**
  Integrated transceivers, pull-up/down resistors and digital
- **Secure programming** **-25cts**
  In house or at 3rd parties

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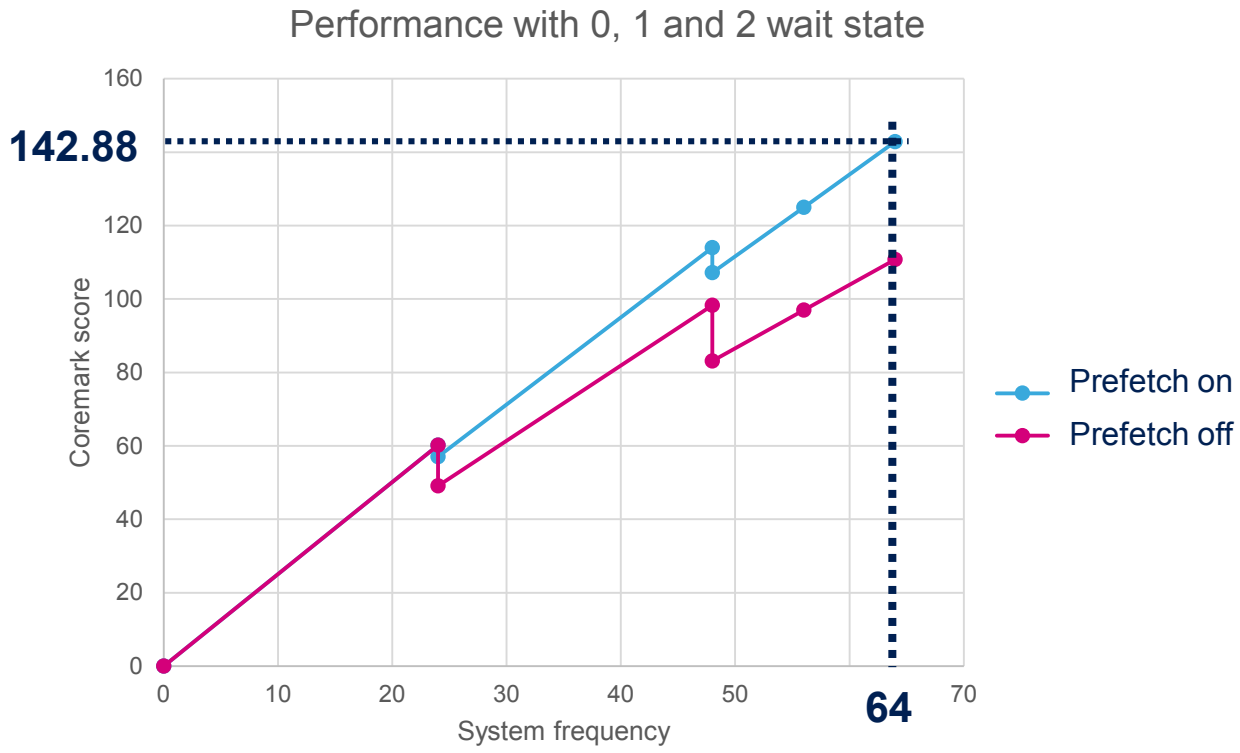
Providing More Performance

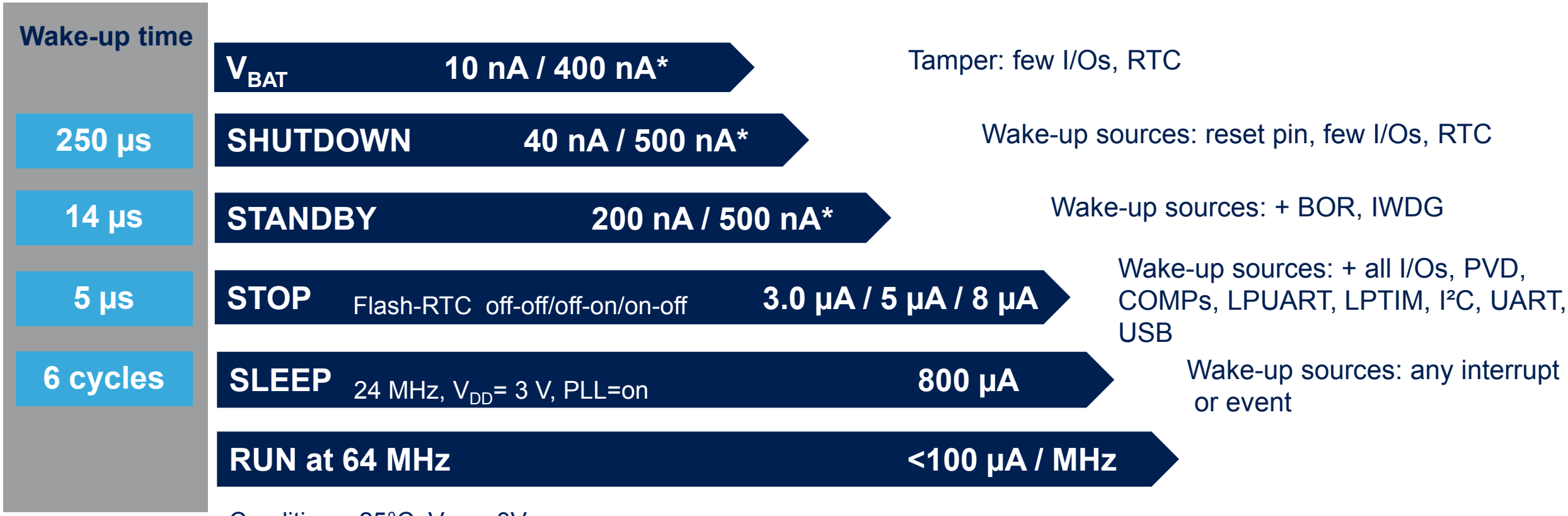
Do not compromise on performance with STM32G0



- **Up to 64** MHz/ **59 DMIPS**
- **Up to >142** CoreMark Result
- Arm Cortex-M0+ with Memory Protection Unit (MPU)
- Flexible **DMA** up to 12 channels

Low-power Modes Efficiency

When Mainstream MCU Series meets low-power requirements



Conditions: 25°C, V_{DD} = 3V

Note : * without RTC / with RTC

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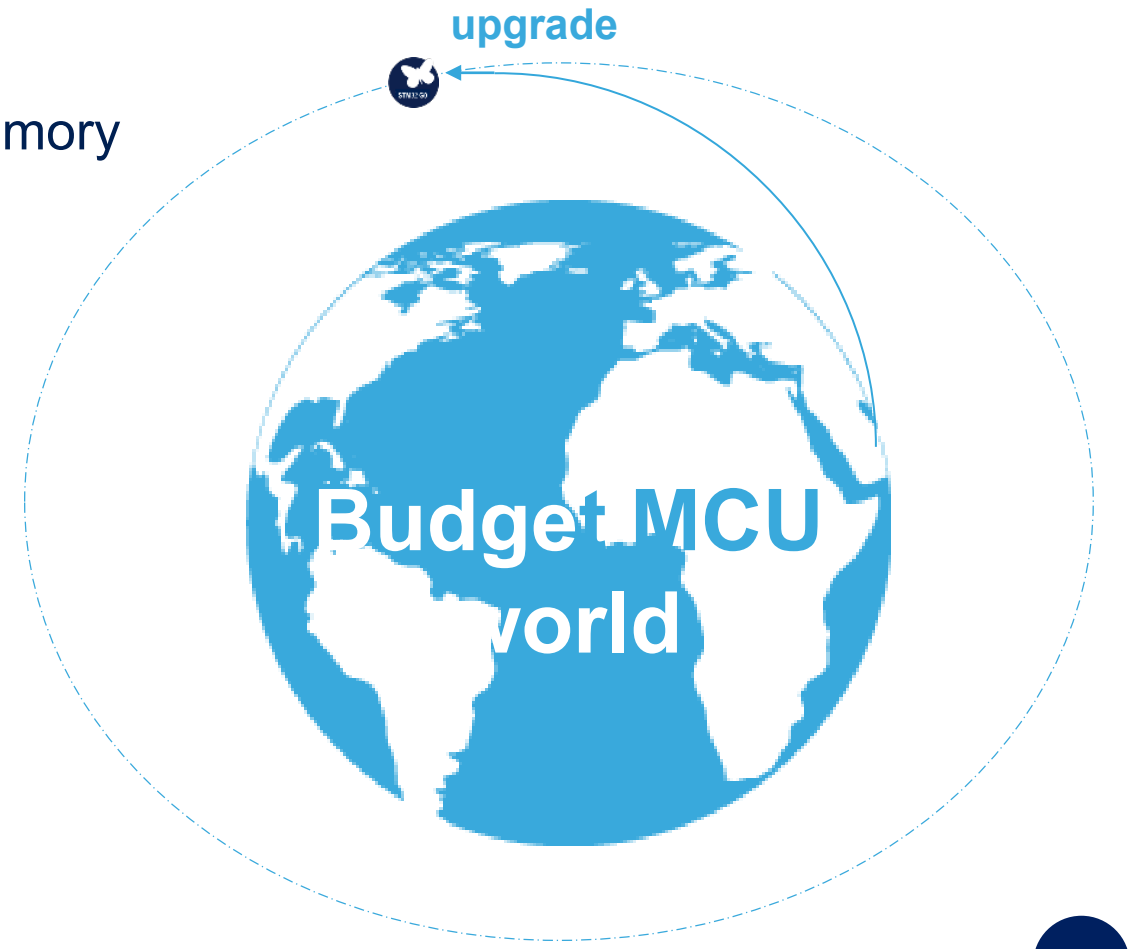
Ready for Tomorrow

Faster, more accurate analog and digital functions

- More **RAM** for Flash
  - Up to 36KB SRAM for 128KB and 64KB Flash memory
- **Timers** frequency up to **128 MHz** resolution (**<8 ns)**
  - **Advanced control** capabilities
- **12-bit ADC** up to **2.5 MSPS** (0.4µs) conversion time
  - **16-bit** oversampling by hardware
- **32 Mbit/s SPI**, 7 Mbaud/s USART, 1Mbit/s I²C communication



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Smart Peripherals

OBD

FD CAN
Up to 2 instances

Industrial

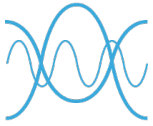
V_{BAT} with RTC
for battery backup
400 nA in V_{BAT} mode
for RTC and
20x 32-bit backup registers

TRNG & AES
for Security
128-/256-bit AES
key encryption hardware
accelerator

Comparators
2 instances
Down to 30ns propagation delay

DAC
2x 12-bit DAC,

ADC
16x12-bit, 16-bit oversampling
2.5MSPS (0.4µs)



Timers
8ns PWM resolution
Advanced control
16- and 32-bit

I/Os
Up to 92 fast I/Os

USB-C Power Delivery
Up to 2 ports with dead-battery management

USB
USB 2.0
Full speed
Device / Host

SPI / UART / I²C
4x SPIs
8 USARTs (ISO 7816, LIN, IrDA, modem)
3 I²C

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Smart Integration

Save on battery life

Low consumption process and design
Low-Power UART: wake-up on frame
Low-Power Timer: counts and generate signals
I²C wake-up on address

Save on BOM cost

+/-1% high speed clock internal from 0 to 90°C
+/-2% high speed clock internal from **-40 to 125°C**
IO maximization: **smaller package footprint**

More flexibility

More RAM or **more safety** with parity enable/disable
Dynamic DMA assignment on **DMAMUX**
All IOs with external interrupt capability

Always keep control
Diagnose, react

Main Clock monitoring
Backup clock and interrupts
Voltage monitoring: programmable interrupts and reset
Window watchdog on CPU clock
Independent watchdog on independent clock
Checksum by hardware
ECC on Flash, **Parity** on RAM

High temperature

from -40°C
up to + **125°C**

High robustness

Highly immune to fast-transients
Robust IOs against negative injections

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Smart Applications

- High temperature 125°C
- Fast CPU 64MHz
- Advanced timers with high-resolution 7.8ns
- Fast comparators
- ADC-12bit, DAC-12bit
- Low-thickness packages
- AES & security for secure upgrades

Lighting

Consumer objects

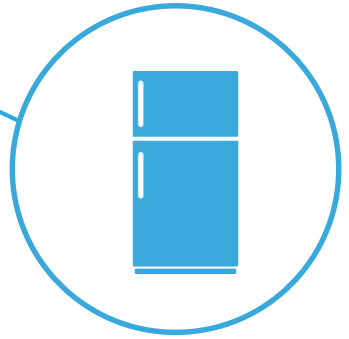
Smartphones, IoT devices, rechargeable connected devices, drones, toys

- Low-thickness, small form-factor
- 64MHz CPU with DMA
- Low consumption in run and low-power, fast wake-up
- USB type-C Power Delivery 3.0
- USB FS 2.0 dev/host crystal-less

Air conditioning, e-bikes, industrial equipments

- High temperature 125°C
- CANFD support
- SPI, USART, I²C
- Advanced timers with high-resolution 7.8ns
- Real Time Clock with backup registers
- AES & security for secure upgrades

Industrial devices
Motor control
Advanced control



Smart Home

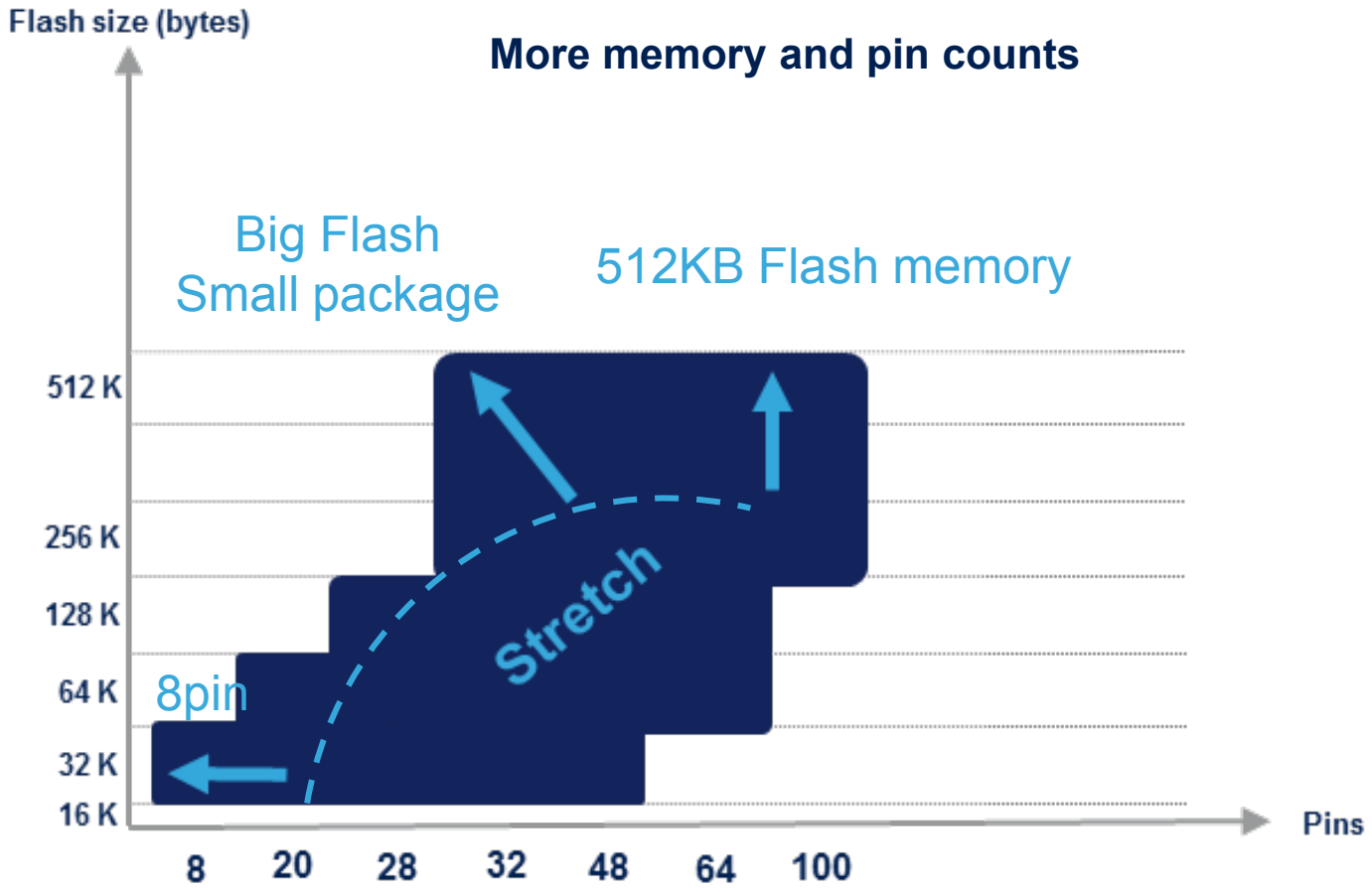
Home appliances, alarms and safety, advanced user interfaces

- High temperature 125°C
- Safety monitoring features
- More RAM for flash
- Low consumption <100µA/MHz in run

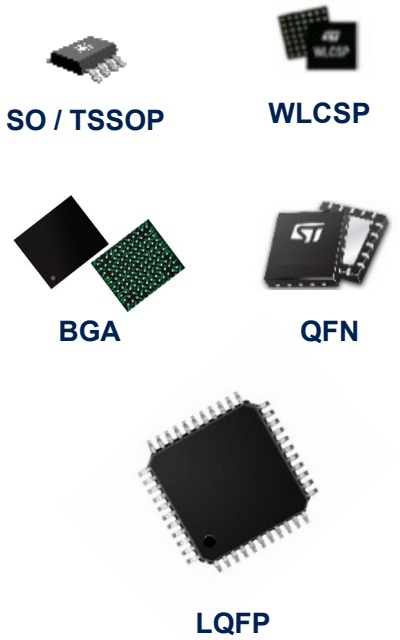
Wider Platform

Portfolio stretched for efficient budget applications

More memory and pin counts



More packages



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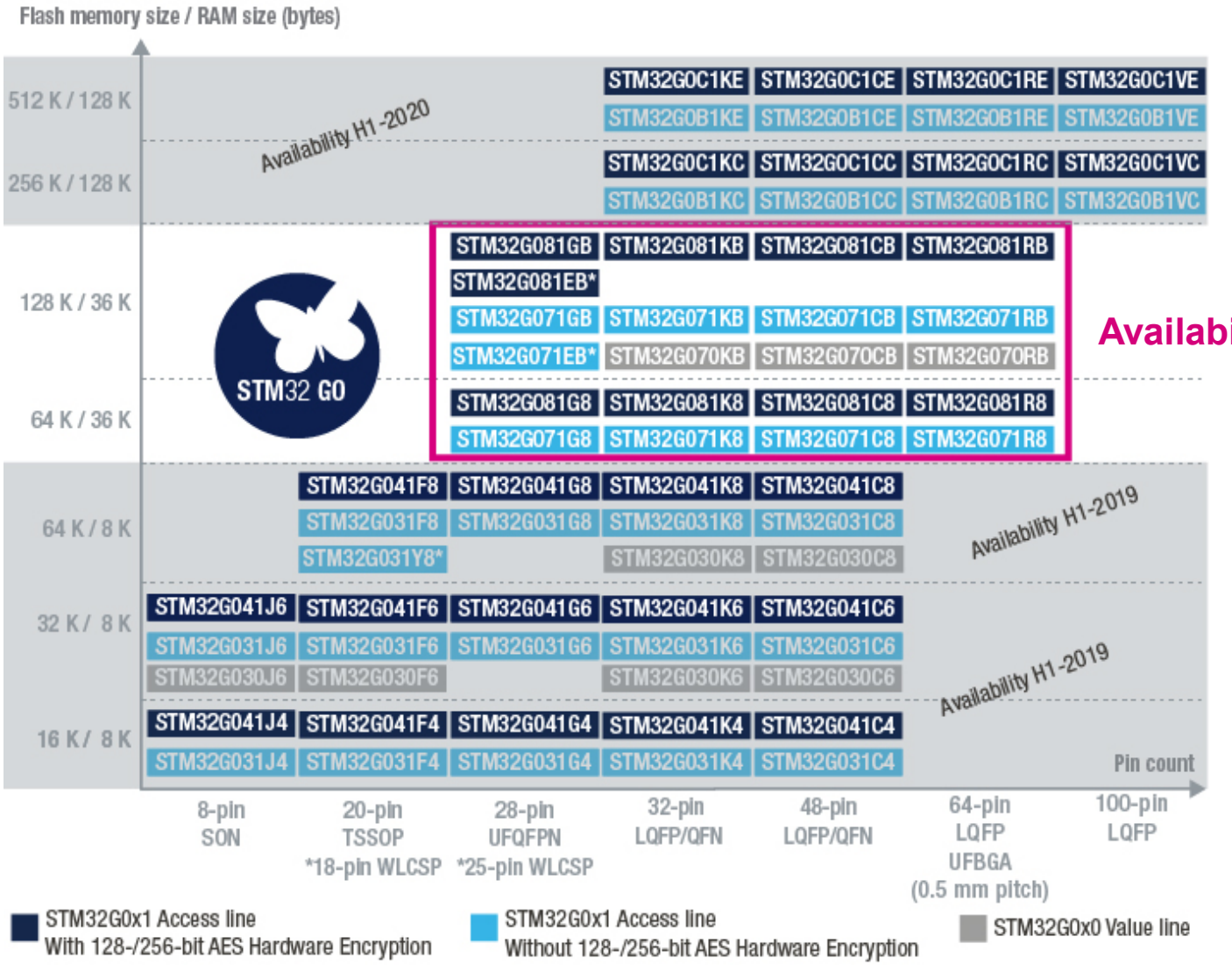
STM32G0 Portfolio



Availability: NOW

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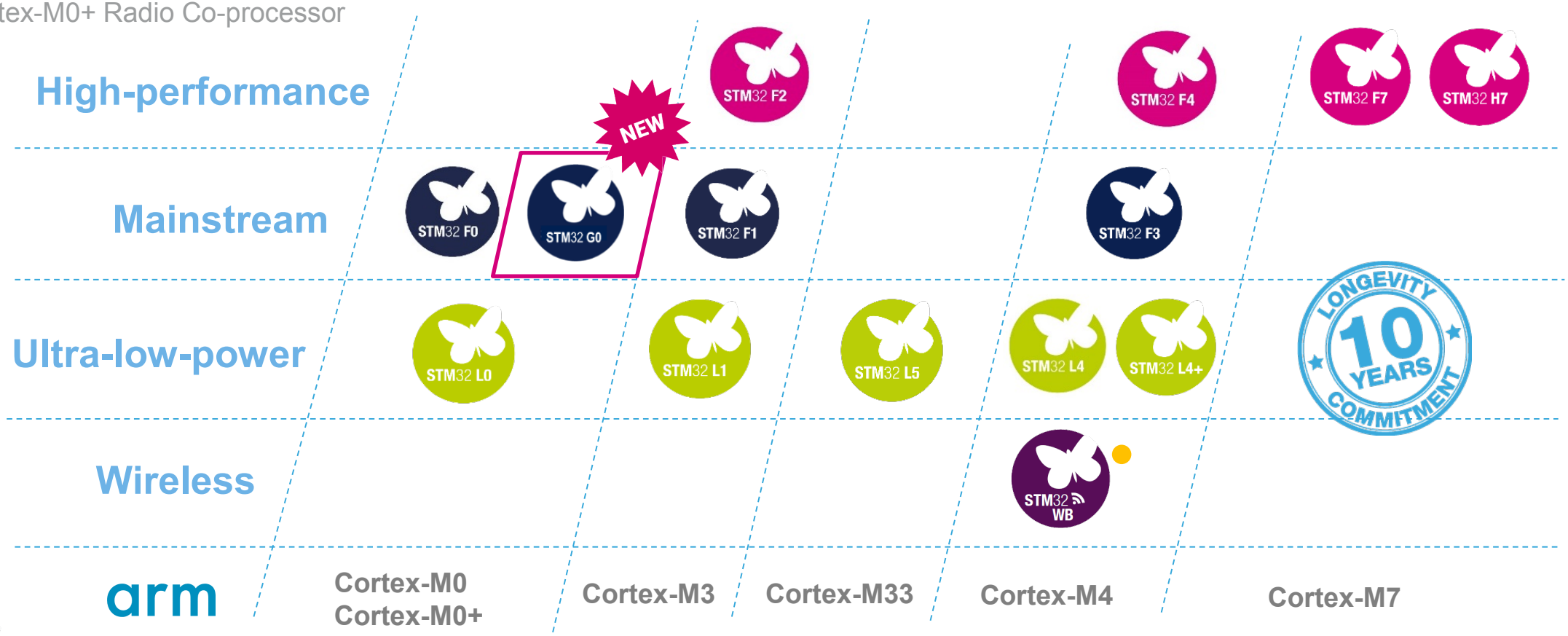
STM32G0: Great Investment

Keep releasing your growing creativity

Note ● Cortex-M0+ Radio Co-processor



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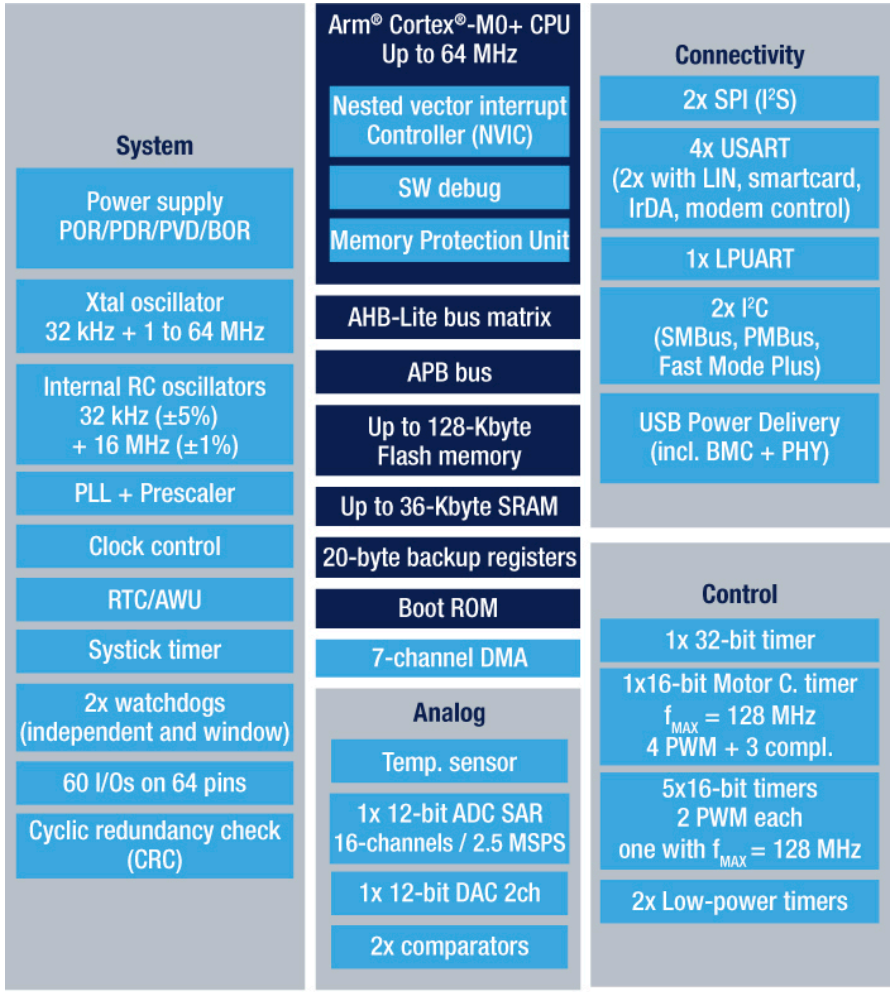
STM32 G0

Access Line

Advanced features and solutions

- 32-bit Arm Cortex-M0+ core
- 1.7 to 3.6V power supply
- RAM maximization
- 1% internal clock
- Direct Memory Access (DMA)
- Communication peripherals
- USB-C Power Delivery



- Timers up to 2xfcpu resolution
- Real-time Clock
- I/O ports maximization
- 12-bit Ultra-fast ADC
- 12-bit DAC
- Comparators
- Safety features
- Advanced Security features

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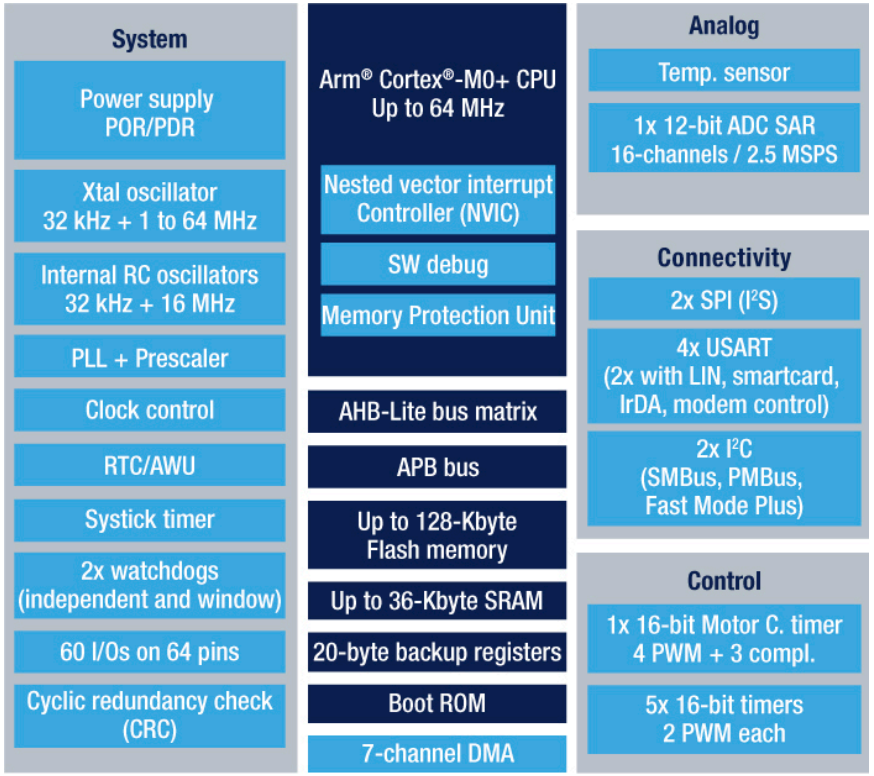
No compromise on what matters

- 32-bit Arm Cortex-M0+ core
- 2.0 to 3.6V power supply
- RAM maximization
- 1% internal clock
- Direct Memory Access (DMA)
- Communication peripherals



- Timers
- Real-time Clock
- I/O ports maximization
- 12-bit Ultra-fast ADC
- Safety features

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More Security

Integrated security features, ready for tomorrow's needs

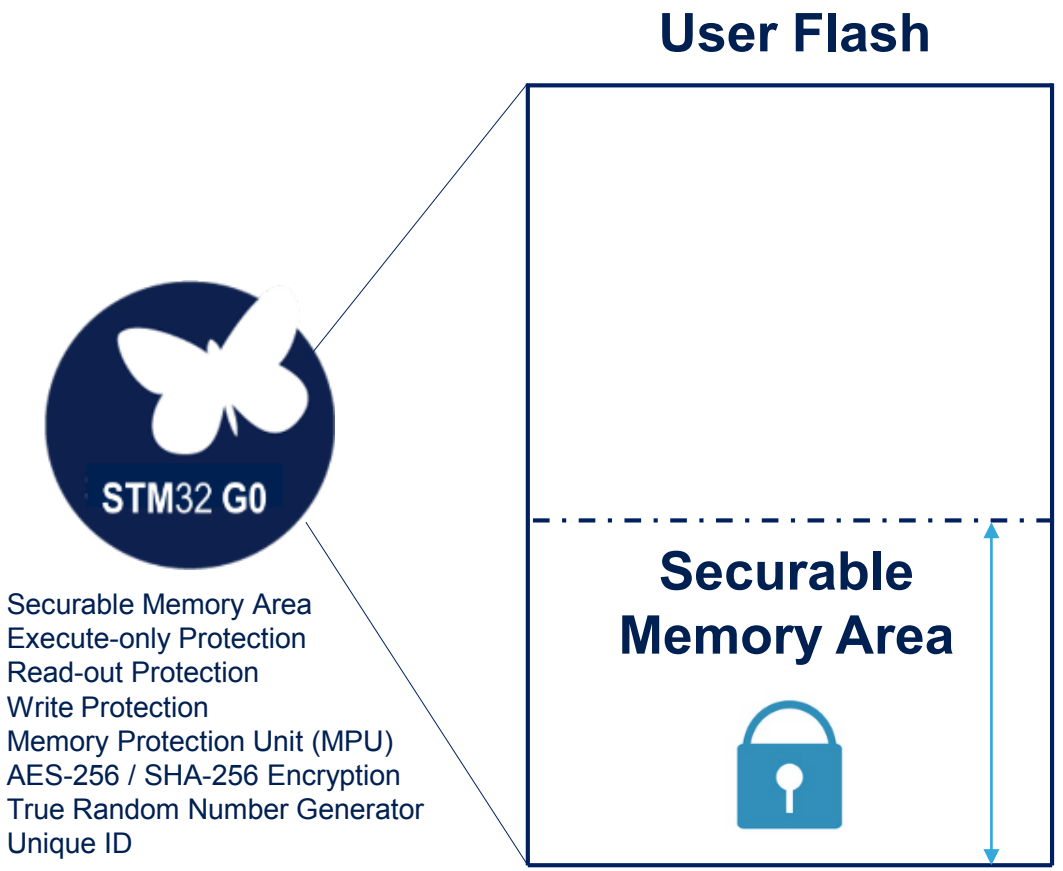
Firmware IP protection

Mutual distrustful

Secret key storage

Authentication

Secure firmware upgrade



Standard user flash by default

Can be secured once exiting
No more access nor debug

Configurable size

Good fit to store critical data
- **Critical routines**
- **Keys**

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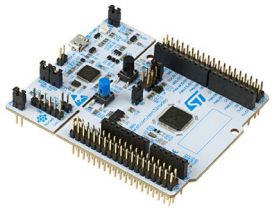
STM32G0 Ecosystem

Go fast, be first

HARDWARE TOOLS

STM32 Nucleo



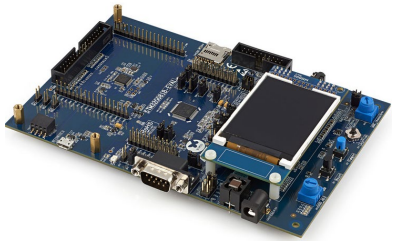
Flexible prototyping

Discovery kit

Coming soon

Key feature prototyping

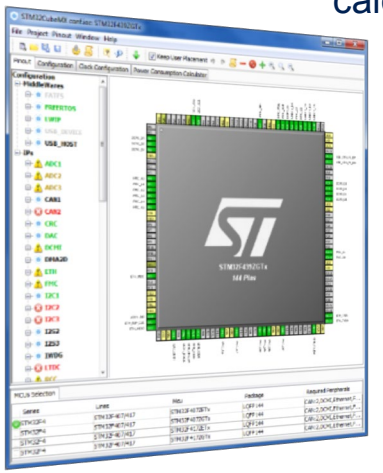
Evaluation board

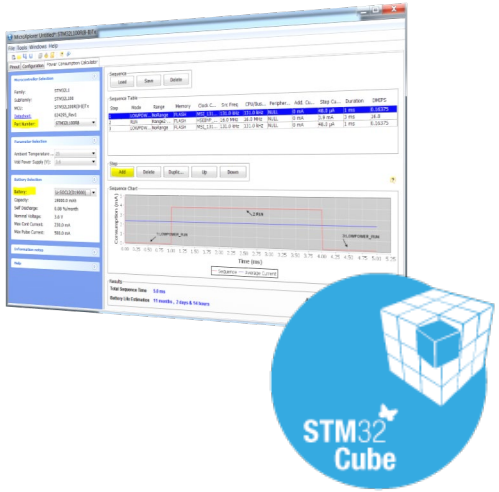


Full feature evaluation

SOFTWARE TOOLS

STM32CubeMX featuring intuitive pin selection, clock tree configuration, code generation and power consumption calculation





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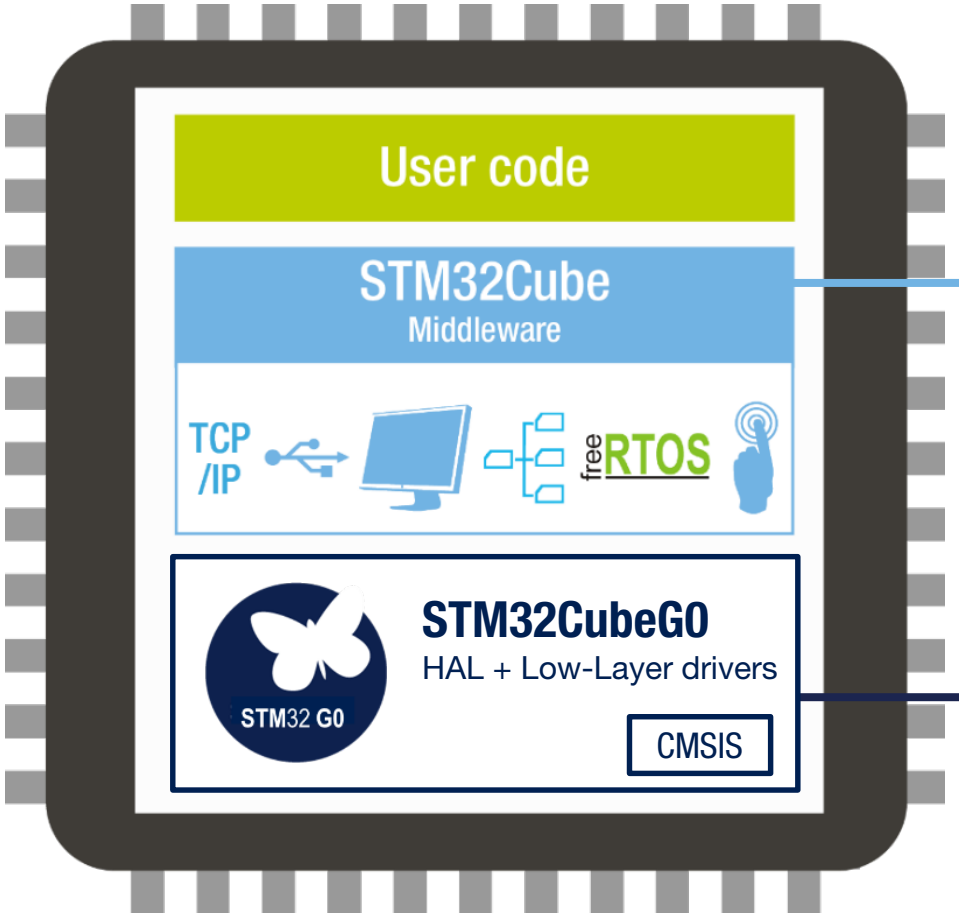
STM32G0 Ecosystem

Platform approach or custom code: you choose



EMBEDDED SOFTWARE

- Open-source TCP/IP stack (lwIP)
- USB Host and Device library from ST
- STemWin graphical stack library from ST and SEGGER
- Open-source FAT file system (FatFs)
- Open-source real-time OS (FreeRTOS)
- Dozens of examples

- STM32G0 Hardware Abstraction Layer (HAL) portable APIs
- **High-performance, light-weight low-layer (LL) APIs**
- High coverage for most STM32 peripherals
- Production-ready and fully qualified
- Dozens of usage examples
- Open-source BSD license

Summary

3 Keys of STM32G0 Series

1. **Efficient**
2. **Robust**
3. **Simple**

Thank You

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