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# STM32Cube and Azure RTOS Overview

July 2021



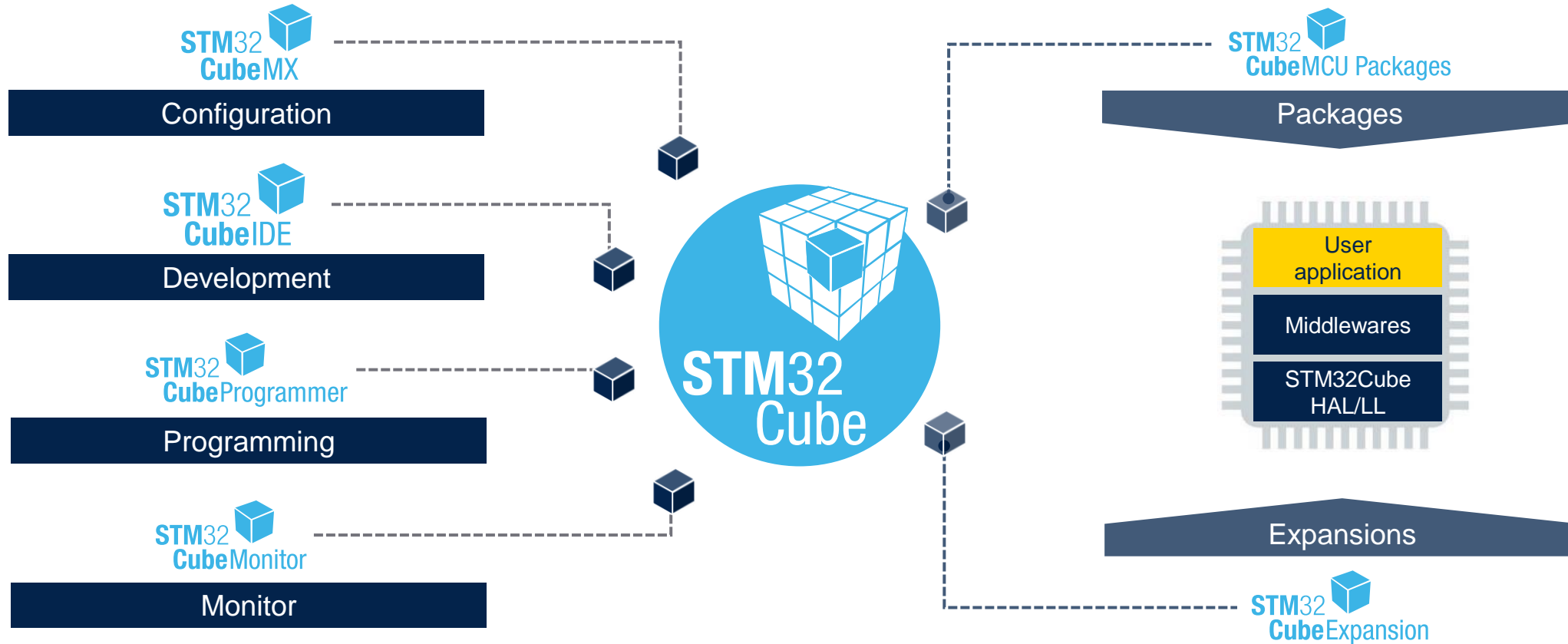


# Today - STM32Cube Software Suite Offer

Software Tools



Embedded Software



ST proposal for STM32, since 2014



# Ongoing - STM32Cube Software Suite

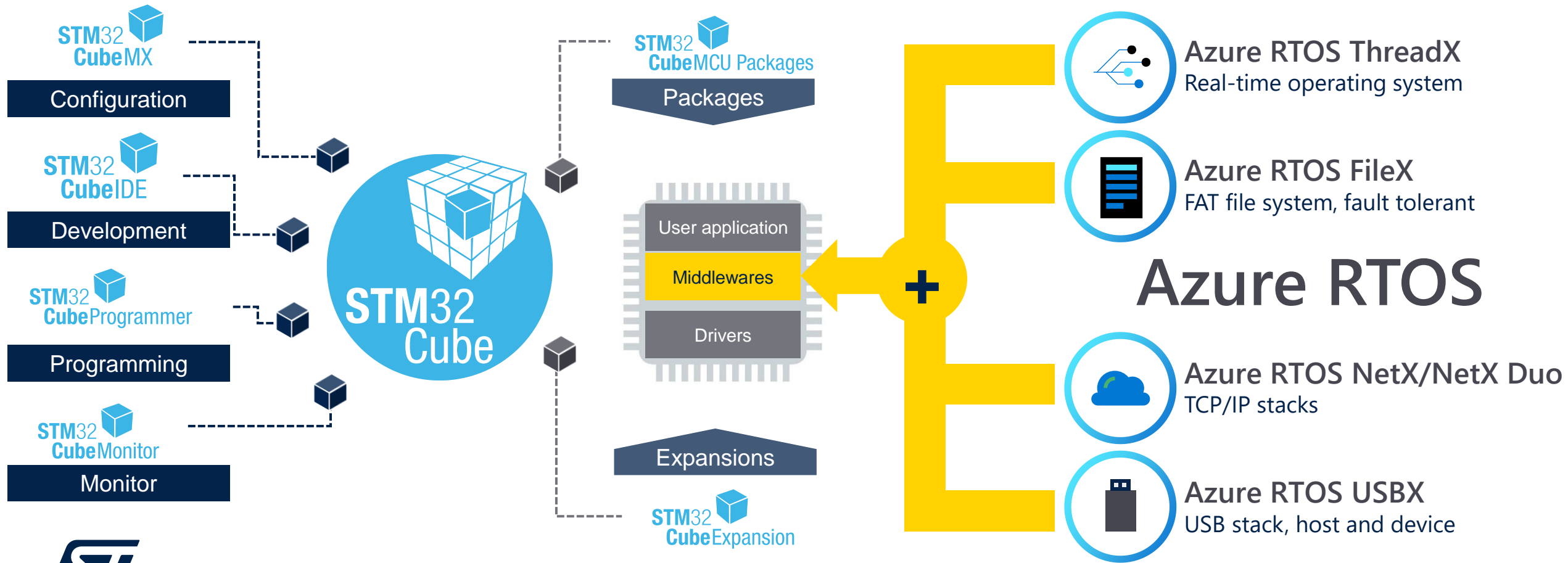
Software Tools



Embedded Software



Complemented with Microsoft Azure RTOS (2021)





# Ongoing - STM32Cube Software Suite

Microsoft Azure RTOS bringing additional Key benefits to STM32Cube software Suite, from 2021



+ Azure RTOS

Faster & Easier Development

Business-friendly terms

Better Quality

Fast performance

+

Complete consistent solution

Industry certifications



# Microsoft Azure RTOS: Key Features

Professional grade, highly reliable and market proven MW suite

- **Industrial grade** networking stack: optimized for performance coming with **many IoT protocols**
- Advanced FS/FTL: **fully featured** to support **NAND/NOR Flash** memories
- **USB Host** and **Device** stacks coming with **many classes**
- **Safety pre-certifications (from MSFT)**: IEC 61508 SIL4, IEC 62304 Class C and ISO 26262 ASIL D
- **Security pre-certifications (from MSFT)**: EAL4+ for TLS/DTLS, FIPS 140-2 for SW crypto lib
- **STM32 granted production license:**  
<https://github.com/azure-rtos/guix/blob/master/LICENSED-HARDWARE.txt>



# Azure RTOS Deployment within STM32 and STM32Cube portfolio

STM32Cube Expansions for existing STM32 series, enhanced for ST Toolset

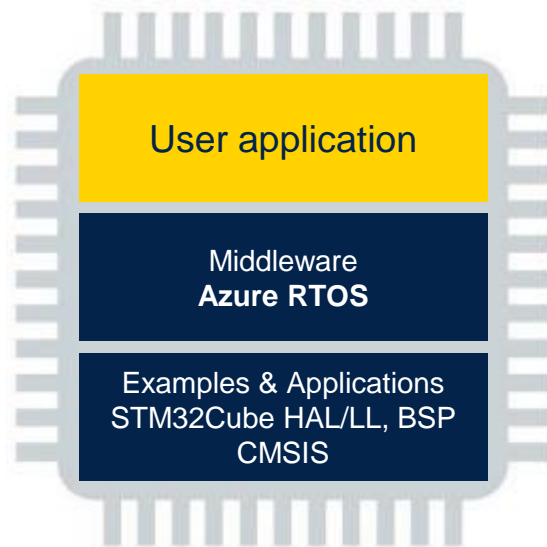




# Azure RTOS deployment within STM32 and STM32Cube portfolio

STM32Cube native support for new STM32 series from 2021 onward

## STM32Cube MCU package





# Getting started with Azure RTOS examples

Start from STM32CubeMX or from ready-to-use examples to easily get up to speed with Azure RTOS

## Azure RTOS ThreadX



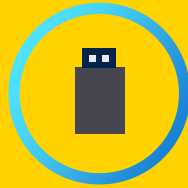
### Thread

Creation, Synchronization,  
message queue

### OS wrappers

FreeRTOS  
CMSIS OS

## Azure RTOS USBX



### Host

MSC, HID, CDC ACM  
Dual class

### Device

MSC, CDC ACM,  
HID, CDC ECM,  
HID CDC ACM (dual-class)

## Azure RTOS NetX Duo



### TCP

Server, Client

### UDP

Server, Client

### Application

Web server, MQTT client, SNTP  
client

## Azure RTOS FileX



Micro SD File edit

Multi-thread access

NOR memory File RW

NAND memory File RW

Multi-instance

In-Application-Programming

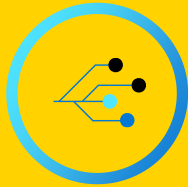




# Migrate to Azure RTOS

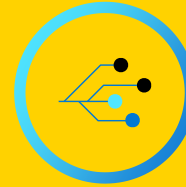
**Keep your application layer, simply integrate an industry-leading real time operating system**

**FreeRTOS**



**FreeRTOS** compatibility  
layer for ThreadX

**CMSIS OS**



**CMSIS OS** compatibility  
Layer for ThreadX \*



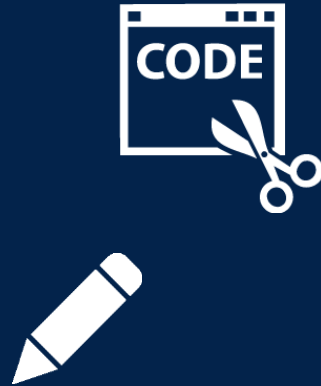
# Azure RTOS supported by STM32Cube Toolset

## Supporting Azure RTOS ThreadX-aware debugging

**Project configuration  
with STM32CubeMX**



**Code development  
Advanced IDE**



**Debugging and  
programming**



**Azure RTOS  
OS awareness \***

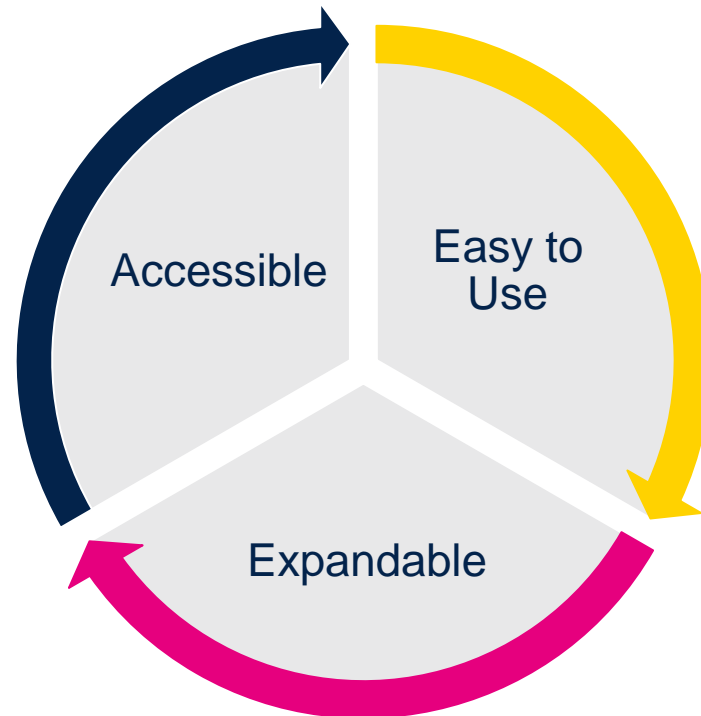




# Azure RTOS and STM32Cube: User Benefits

Getting the most out of Azure RTOS and STM32 MCUs is now easier than ever with STM32Cube

Source code available  
Free of charge  
User-friendly license terms



Drastically reduced learning curve:

- Azure RTOS made compatible with ST Toolset
- Many applicative examples provided  
Developers can focus on their application and differentiators

Expanding the ecosystem of existing and upcoming STM32 series by leveraging Azure RTOS middleware

# Our technology starts with You



Find out more at [www.st.com/STM32Cube](http://www.st.com/STM32Cube)

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