

STM32CubeIDE

A New Integrated Development Platform for STM32 Embedded Solutions

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STMicroelectronics / Microcontroller Division

Application & Tools Development / IDE team



eclipse

Tools Day Grenoble 2019

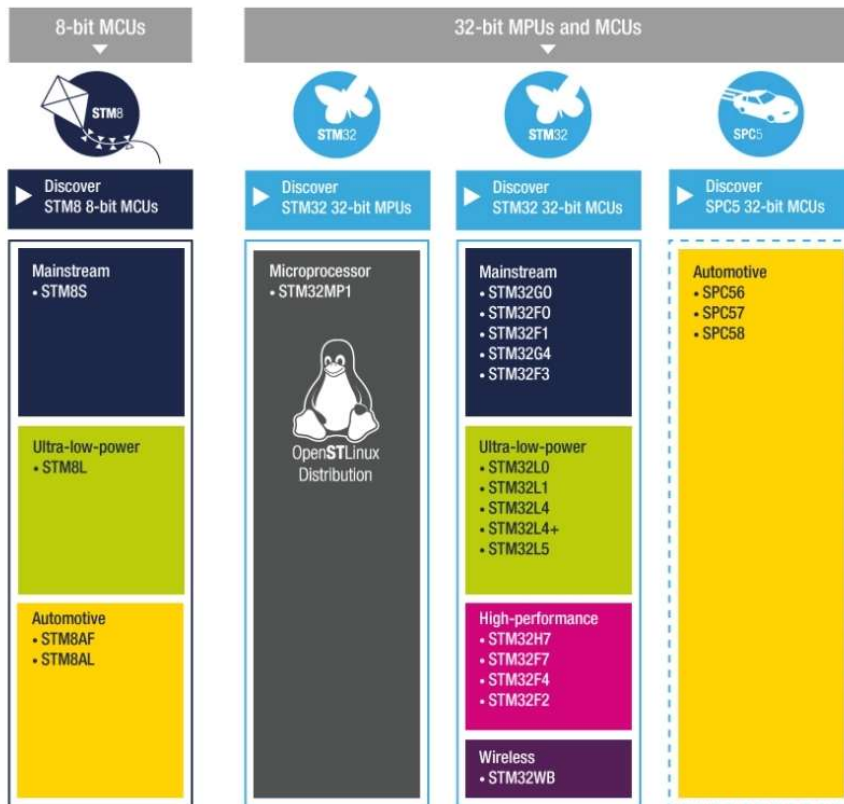


STMicroelectronics

2

Microcontrollers & Microprocessors Hardware Offer

- STMicroelectronics is a semiconductor provider
- **STM32** is μC & μP general purpose brand
 - Arm $\text{\textcircled{C}}$ 32b CPU(s) based
 - Part of worldwide top 3 μC vendors
 - More than x32 μC unit sold per second
- **STM32** devices are augmenting our daily life
 - Kitchen appliances, power plugs, audio headsets, white appliances, car facilities, energy smart grid, E-city facilities, E-toys, E-cigarettes, E-bicycles, E-watches, ...
 - Whatever brand fan you're, you most probably daily rely on some STM32 devices! ... we are serving >40k end customers promoting mass market distribution style

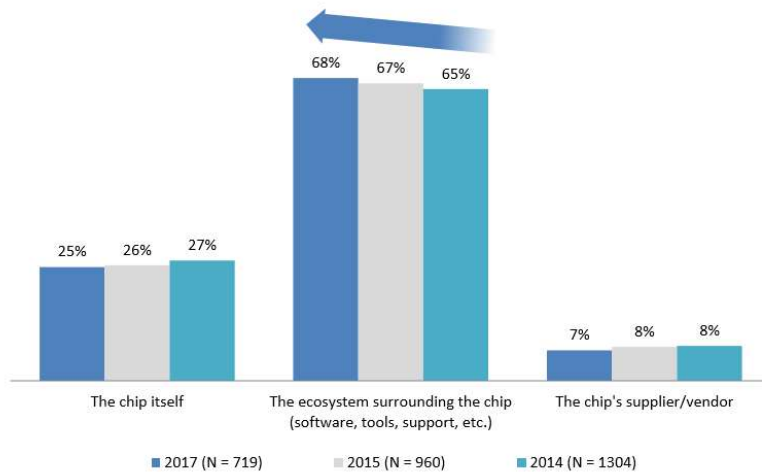


STMicroelectronics

Semiconductors and Beyond

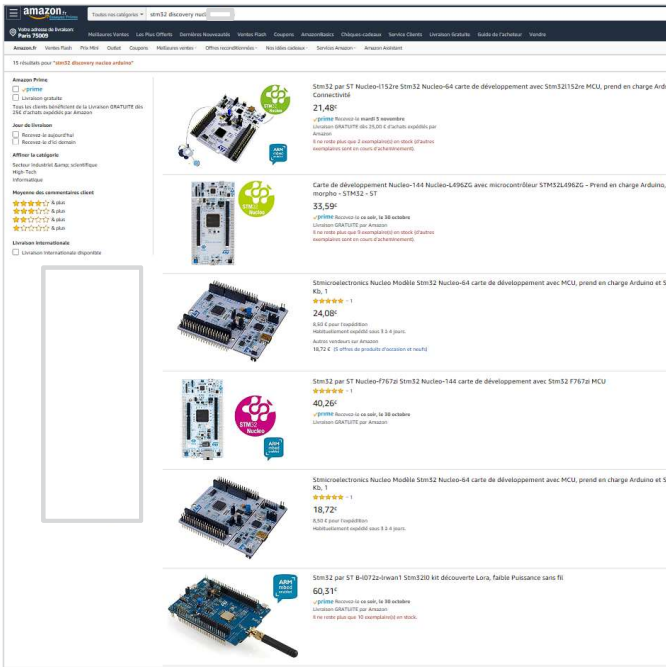
- All is μ C & μ P devices are programmable devices
 - Without application software ... there're just useless hardware devices

What's most important when choosing a microprocessor?



**ECOSYSTEM
is a
KEY ENABLER**

STMicroelectronics STM32Cube Ecosystem HW Offer



STM32 Nucleo development boards	Discovery kits	Evaluation boards	STM32 Nucleo expansion boards	Third-party boards
Flexible prototyping	Key feature prototyping	Full feature evaluation	Add-on functionalities	From full evaluation to open hardware

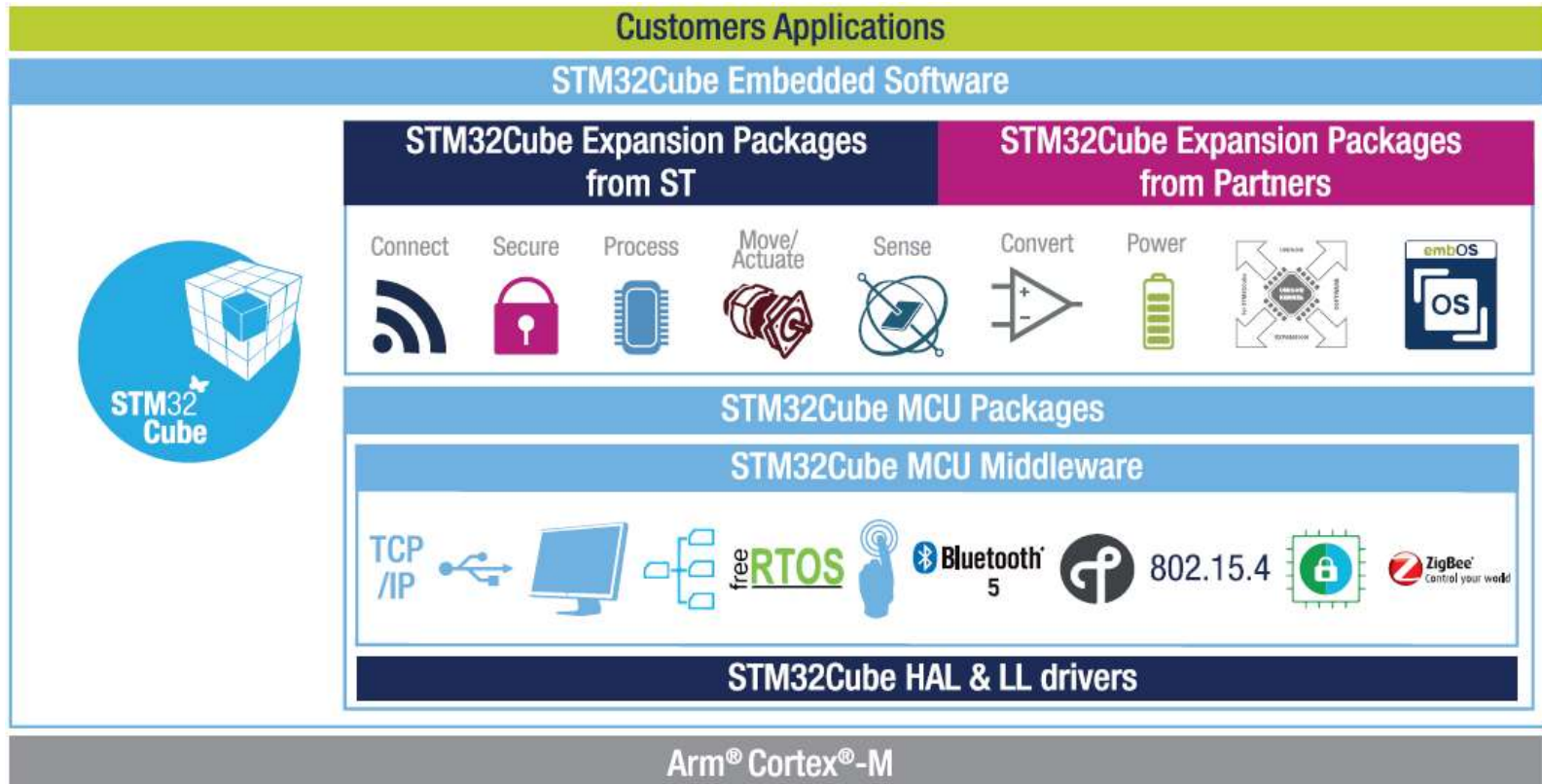
www.st.com/en/evaluation-tools/stm32-mcu-mpu-eval-tools.html

Product Name	Price	Supplier
STMicroelectron - Cartes et kits ...	€16.85	Mouser France
STMicro NUCLEO-...	€10.00	Digi-Key France
STMicroelectron Kit de ...	€15.77	RS Component.
STMicroelectron Carte de ...	€10.99	RS Component.
STMicro STM32F407G-	€18.11	Digi-Key France
STMicro NUCLEO-...	€10.00	Digi-Key France
STMicro NUCLEO-...	€12.58	Digi-Key France
STMicro STM32F0DISCC	€8.08	Digi-Key France
STMicro STM32F429I-...	€27.20	Digi-Key France
STMicro B-L475E-	€48.22	Digi-Key France



STMicroelectronics STM32Cube

Layered, Scalable and Consistent Embedded SW Offer



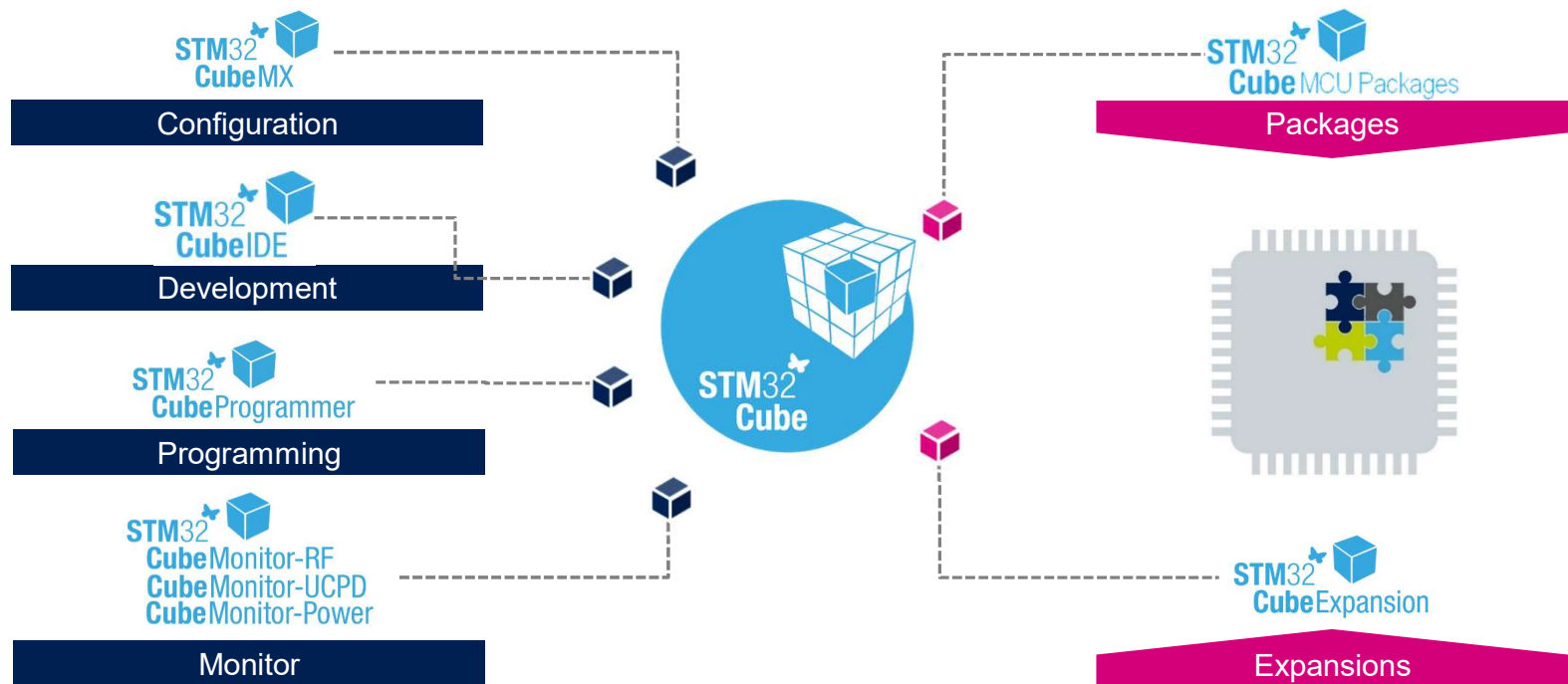
www.st.com/STM32CubeEmbeddedSoftware





STMicroelectronics

STM32Cube Ecosystem SW Offer



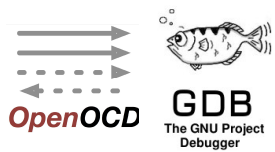
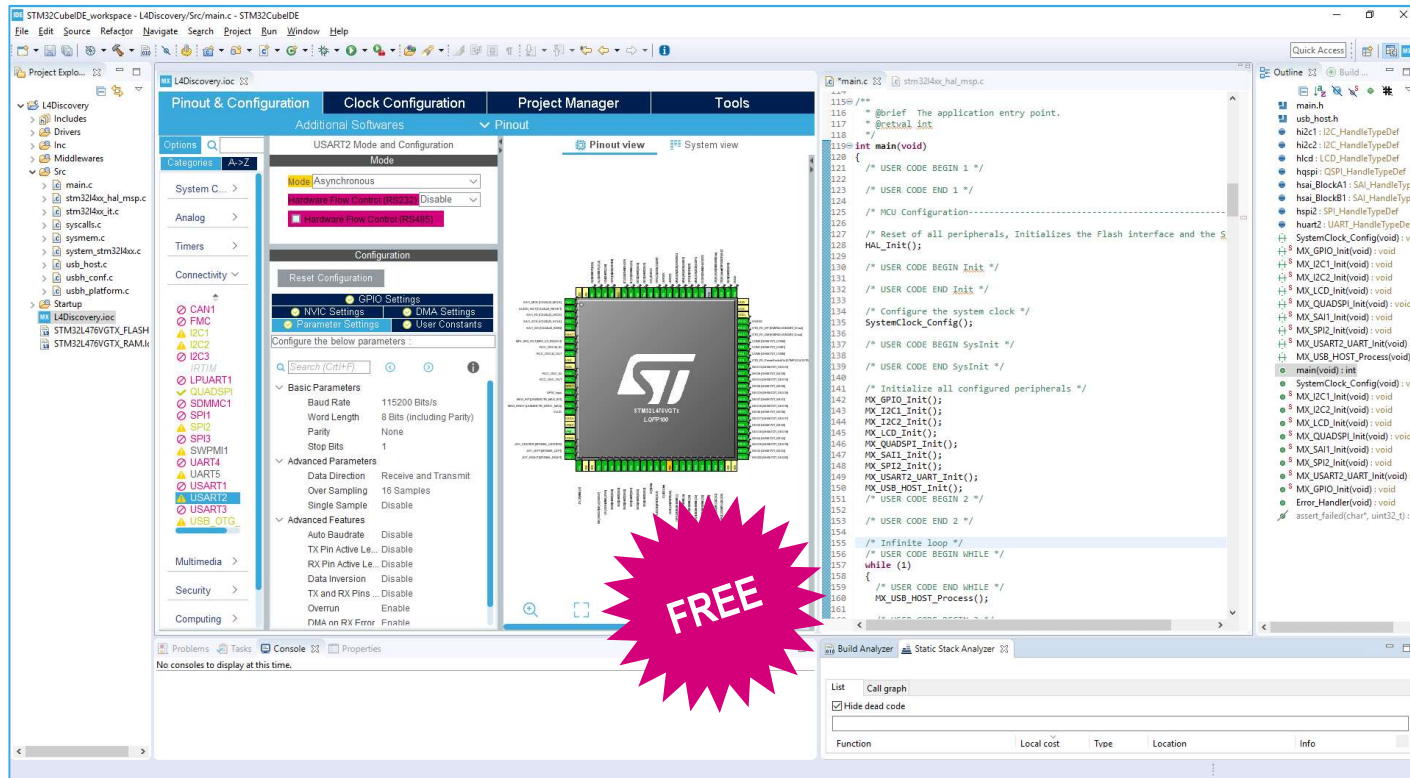
Welcome to the ST Community!

community.st.com/s/



STM32  
CubeIDE

STMicroelectronics STM32CubeIDE Offer



Eclipse / GCC Based

Free for Commercial
Development

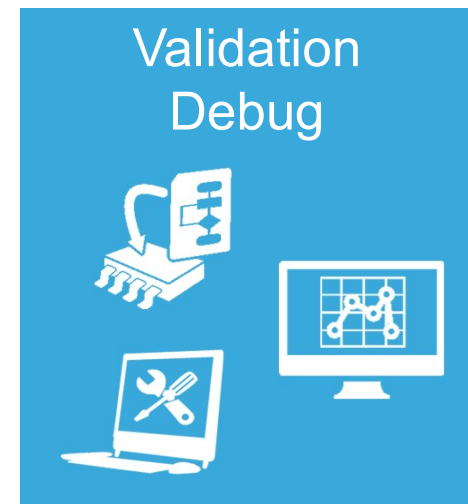
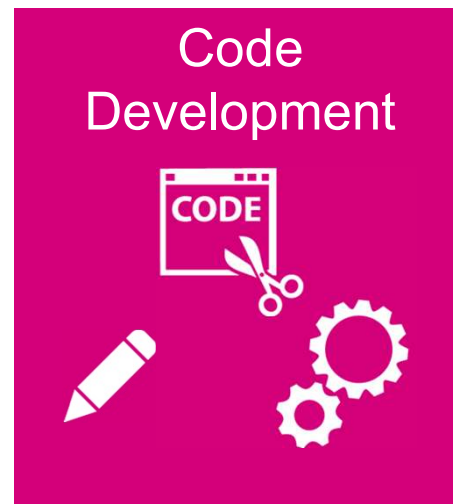
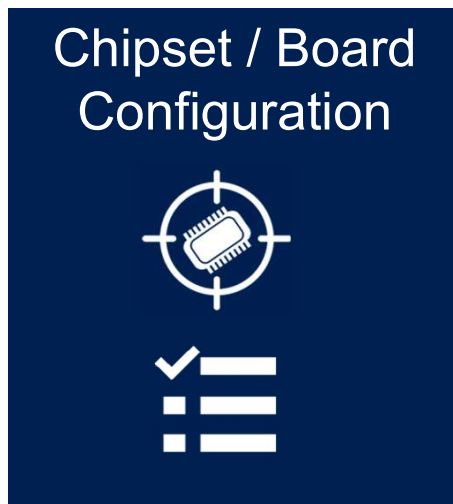
Multi-OS Support



STM32CubeIDE

One Tool for all Your STM32 Development

- **STM32CubeIDE** is an advanced C/C++ development platform with IP configuration, code generation, code compilation, and debug features for **STM32** microcontrollers. It is based on the Eclipse™ / CDT framework and GCC toolchain for the development, and GDB for the debugging. It allows the integration of the hundreds of existing plugins that complete the features of the Eclipse™ IDE.





STM32CubeIDE

Project Management

10

Importer

STM32CubeIDE Home

Welcome to STM32CubeIDE

Start a project

Start new STM32 project

Import SW / TS project

TrueSTUDIO Project

SW4STM32 Project

Device Configuration Editor

st-community - Device Configuration Tool - STM32CubeIDE

File Edit Navigate Search Project Run Window Help

Pinout & Configuration

Additional Software

Pinout

Categories A-Z

Connectivity >

Multimedia >

Security >

Computing >

Middleware >

FATFS

✓ FREERTOS

GRAPHICS

LIBJPEG

LWIP

MBEDTLS

PDM2PDM

USB_DEVICE

USB_HOST

Mode

Class For HS IP Communication Host Class (Virtu...

Class for FS IP Disable

Configuration

Reset Configuration

User Constants

Platform Settings

Parameter Settings

Configure the below parameters:

Search (Ctrl+F)

Host Configuration

USB_MAX_NUM.. 2

USB_MAX_NUM.. 2

USB_MAX_NUM.. 1

usb_host.c

```
76 if (USB_Init(&usbHostHS, USBH_UserProcess, HOST_HS) != USBH_OK)
77 {
78     Error_Handler();
79 }
80 if (USB_RegisterClass(&usbHostHS, USBH_CDC_CLASS) != USBH_OK)
81 {
82     Error_Handler();
83 }
```



STM32CubeIDE

Code Editor – Navigation (1/2)

Symbol Hyperlink

```
BSP_LED_Init(LED1);  
BSP_LED_Init(LED2);  
BSP_LED_Init(LED3);  
BSP_LED_Init(LED4);  
void BSP_LED_Init(Led_TypeDef Led)  
{  
  GPIO_InitTypeDef gpio_init_structure;  
  
  if (Led <= LED4)  
  {  
    /* Configure the GPIO LED pin */  
    gpio_init_structure.Pin = GPIO_PIN[Led];  
    gpio_init_structure.Mode = GPIO_MODE_OUTPUT_PP;  
    gpio_init_structure.Pull = GPIO_PULLUP;  
    gpio_init_structure.Speed = GPIO_SPEED_HIGH;  
  }  
}
```

Include Browser

Files included by 'main.c' (/F746-DISCO-HID/Src) - in workspace

- main.c
 - main.h
 - stm32f7xx_hal.h
 - stm32f7xx_hal_conf.h
 - stm32f7xx_hal_exti.h
 - stm32f7xx_hal_gpio.h
 - stm32f7xx_hal_dma.h
 - stm32f7xx_hal_cortex.h

Call Hierarchy

Callers of USB_WritePacket(USB_OTG_GlobalTypeDef *uint8_1, uint8_t uint16_t, uint8_t) - /F746-DISCO-TEST/DiversUS

- USB_WritePacket(USB_OTG_GlobalTypeDef *uint8_1, uint8_t uint16_t, uint8_t) - HAL_StatusTypeDef
- PCD_WriteEmptyTxFifo(PCD_HandleTypeDef *uint32_t) - HAL_StatusTypeDef
 - HAL_PCD_IRQHandler(PCD_HandleTypeDef *void)
 - OTG_FS_IRQHandler(void)
 - USB_EPStartXfer(USB_OTG_GlobalTypeDef *USB_OTG_EPTypeDef *uint8_t) - HAL_StatusTypeDef
 - HAL_PCD_EP_Receive(PCD_HandleTypeDef *uint8_t, uint8_t *uint32_t) - HAL_StatusTypeDef
 - USB0_LL_PrepareReceive(USB0_HandleTypeDef *uint8_t, uint8_t *uint16_t) - USB0_StatusTypeDef
 - HAL_PCD_EP_Transmit(PCD_HandleTypeDef *uint8_t, uint8_t *uint32_t) - HAL_StatusTypeDef
 - USB0_LL_Transmit(USB0_HandleTypeDef *uint8_t, uint8_t *uint16_t) - USB0_StatusTypeDef
 - USB_HC_StartXfer(USB_OTG_GlobalTypeDef *USB_OTG_HCTypeDef *uint8_t) - HAL_StatusTypeDef

Brace Navigation

```
294 /* Check the parameters */  
295 assert_param(IS_OPTIONBYTE(p0BInit->OptionType));  
296  
297 /* Write protection configuration */  
298 if((p0BInit->OptionType & OPTIONBYTE_WRP) == OPTIONBYTE_WRP)  
299 {  
300   assert_param(IS_WRPSTATE(p0BInit->WRPState));  
301   if(p0BInit->WRPState == OB_WRPSTATE_ENABLE)  
302   {  
303     /*Enable of Write protection on the selected Sector*/  
304     status = FLASH_OB_EnableWRP(p0BInit->WRPSector);  
305   }  
306   else  
307   {  
308     /*Disable of Write protection on the selected Sector*/  
309     status = FLASH_OB_DisableWRP(p0BInit->WRPSector);  
310   }  
311 }  
312
```

Macro Expansion Browser

Explore Macro Expansion - 2 step(s)

Original	Fully Expanded
1 USB_OTG_FS	1 ((USB_OTG_GlobalTypeDef *) 0x50000000UL)

Explore Macro Expansion - 2 step(s)

```
#define USB_OTG_FS ((USB_OTG_GlobalTypeDef *) USB_OTG_FS_PERIPH_BASE)
```

Explore Macro Expansion - 2 step(s)

Original	Expansion #1 of 2
1 USB_OTG_FS	1 ((USB_OTG_GlobalTypeDef *) USB_OTG_FS_PERIPH_BASE)

Explore Macro Expansion - 2 step(s)

```
#define USB_OTG_FS_PERIPH_BASE 0x50000000UL
```

Expansion #1 of 2

Fully Expanded	
1 USB_OTG_FS	1 ((USB_OTG_GlobalTypeDef *) 0x50000000UL)

Type Hierarchy

Type Hierarchy: UART_HandleTypeDef

- UART_HandleTypeDef
 - AdvcInit: UART_AdvFeatureInitTypeDef - _UART_HandleTypeDefDef
 - gState: volatile HAL_UART_StateTypeDef - _UART_HandleTypeDefDef
 - hdmax: DMA_HandleTypeDef - _UART_HandleTypeDefDef
 - hdmatx: DMA_HandleTypeDef - _UART_HandleTypeDefDef
 - hnt: UART_InitTypeDef - _UART_HandleTypeDefDef
 - Instance: USART_TypeDef - _UART_HandleTypeDefDef
 - Lock: HAL_LockTypeDef - _UART_HandleTypeDefDef
 - Mask: uint16_t - _UART_HandleTypeDefDef
 - pRxBuffPtr: uint8_t * - _UART_HandleTypeDefDef
 - pTxBuffPtr: uint8_t * - _UART_HandleTypeDefDef





STM32CubeIDE

Code Editor – Navigation (2/2)

Outline View

```
main.c
21 /* Includes
22 #include "main.h"
23 #include "usb_device.h"
24
25 /* Private
26 /* USER CODE
27
28 /* USER CODE
29
30 /* USER CODE
31 #include "stm327xx_hal.h"
32
33
34
35
36 /* USER CODE BEGIN HW
37
38 /* USER CODE BEGIN HW
39
40 /* USER CODE BEGIN HW
41
42
43 /* USER CODE END HW */
44
45 /* Private variables
```

Powerful Search

```
Search
File Search C/C++ Search
Search string (= any string != any character):
NIIC Case sensitive
Search For:
- Class / Struct
- Function
- Union
- Enumeration
- Typedef
- Macro
- More
Note: The C/C++ Search only
Scope:
- Workspace
- Selected
- Working set
Customize...
```

Open Resource

```
Open Resource
Enter resource name prefix, path prefix or pattern (?,* or camel case):
hal_uart
Matching items:
- stm327xx_hal_uart.c - F746-DISCO-TEST/Drivers/STM32F7xx_HAL_Driver/Src
- stm327xx_hal_uart.h - F746-DISCO-TEST/Drivers/STM32F7xx_HAL_Driver/Inc
- stm327xx_hal_uart_ex.c - F746-DISCO-TEST/Drivers/STM32F7xx_HAL_Driver/Src
- stm327xx_hal_uart_ex.h - F746-DISCO-TEST/Drivers/STM32F7xx_HAL_Driver/Inc
```

Task Tags

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Tasks
16 items
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```

Bookmark

```
startups_stm32746ngx
103 LoopFillZeroBss
104 ldr r3, =
105 cmp r2, r5
106 bcc fillZeroBss
107
108 /* Call the clod
109 bl SystemInit
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```

Minimap

```
Minimap
startups_stm32746ngx
81 movs r1, #0
82 b LoopCopyDataInit
83
84 CopyDataInit:
85 ldr r3, _sdata
86 ldr r3, [r3, r1]
87 str r3, [r0, r1]
88 adds r1, r1, #4
89
90 LoopCopyDataInit:
91 ldr r0, _sdata
92 ldr r3, _edata
93 adds r2, r0, r1
94 cmp r2, r3
95 bcc CopyDataInit
96 ldr r2, _sbss
97 b LoopFillZeroBss
```





STM32CubeIDE

Code Editor – Writing

Highlight Inactive Code

```
157 #if defined ( __ICARM__ ) /* IAR Compiler */
158 #pragma data_alignment=4
159 #endif /* defined ( __ICARM__ ) */
160 /* USB standard device descriptor. */
161 #define USB_LEN_DEV_DESC 12
162 #define USB_LEN_CFG_DESC 9
163 #define USB_LEN_STR_DESC 9
164 #define USB_LEN_DEV_QUALIF_DESC 9
165 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
166 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
167 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
168 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
169 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
170 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
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174 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
175 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
176 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
177 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
178 #define USB_LEN_DEV_QUALIF_DESC_MIN 9
179 #define USB_LEN_DEV_QUALIF_DESC_MAX 9
```

Auto-Complete

```
97 /* USER CODE BEGIN 2 */
98 HAL_GPIO
99
100 HAL_GPIO_DeInit(GPIO_TypeDef * GPIOx, uint32_t GPIO_Pin): void
101 HAL_GPIO_EXTI_Callback(uint16_t GPIO_Pin): void
102 HAL_GPIO_EXTI_IRQHandler(uint16_t GPIO_Pin): void
103 while (1)
104 {
105 HAL_GPIO_Init(GPIO_TypeDef * GPIOx, GPIO_InitTypeDef * GPIO_Init): void
106 HAL_GPIO_LockPin(GPIO_TypeDef * GPIOx, uint16_t GPIO_Pin): HAL_StatusTypeDef
107 HAL_GPIO_ReadPin(GPIO_TypeDef * GPIOx, uint16_t GPIO_Pin): GPIO_PinStatus
108 HAL_GPIO_TogglePin(GPIO_TypeDef * GPIOx, uint16_t GPIO_Pin, GPIO_PinState)
109 HAL_GPIO_WritePin(GPIO_TypeDef * GPIOx, uint16_t GPIO_Pin, GPIO_PinState)
110 # HAL_GPIO_MODULE_ENABLED
111 }
112 /**
113 * @brief
114 * @retval
```

Syntax Highlight

```
116 void SystemClock_Config(void)
117 {
118 RCC_OscInitTypeDef RCC_OscInitStruct = {0};
119 RCC_ClkInitTypeDef RCC_ClkInitStruct = {0};
120 RCC_PeriphCLKInitTypeDef PeriphClkInitStruct = {0};
121
122 /** Configure the main internal regulator output voltage
123 */
124 __HAL_RCC_PWR_CLK_ENABLE();
125 __HAL_PWR_VOLTAGESCALING_CONFIG(PWR_REGULATOR_VOLTAGE_SCALE3);
126 /** Initializes the CPU, AHB and APB busses clocks
127 */
128 RCC_OscInitStruct.OscillatorType = RCC_OSCILLATORTYPE_HSI;
129 RCC_OscInitStruct.HSEState = RCC_HSE_ON;
130 RCC_OscInitStruct.HSIState = RCC_HSI_ON;
131 RCC_OscInitStruct.HSICalibrationValue = RCC_HSICALIBRATION_DEFAULT;
132 RCC_OscInitStruct.PLL.PLLState = RCC_PLL_ON;
133 RCC_OscInitStruct.PLL.PLLSource = RCC_PLLSOURCE_HSE;
134 RCC_OscInitStruct.PLL.PLLM = 15;
135 RCC_OscInitStruct.PLL.PLLN = 144;
```

File Diff/Compare

Compare (F746-DISCO-TEST-2/Src/main.c - F746-DISCO-TEST-2/Src/main.c)

C Compare (Cannot Compare Structures)

- StartDefaultTask
- SystemClock_Config
- cmsis_os.h
- fatfs.h
- usb_device.h

C Compare Viewer

F746-DISCO-TEST-2/Src/main.c

```
20
21 /* Includes -----
22 #include "main.h"
23 #include "usb_device.h"
24 #include "fatfs.h"
25 #include "usb_host.h"
26 /* USER CODE BEGIN Includes */
27
28 /* USER CODE END Includes */
```

Block Select

```
/* USER CODE BEGIN 2 */
HAL_GPIO_Toggle(GPIOA, GPIO_PIN1);
HAL_GPIO_Toggle(GPIOA, GPIO_PIN2);
HAL_GPIO_Toggle(GPIOA, GPIO_PIN3);
/* USER CODE END 2 */

/* Infinite loop */
/* USER CODE BEGIN WHILE */
while (1)
{
/* USER CODE BEGIN 2 */
HAL_GPIO_Toggle(GPIOA, GPIO_PIN1);
HAL_GPIO_Toggle(GPIOA, GPIO_PIN2);
HAL_GPIO_Toggle(GPIOA, GPIO_PIN3);
/* USER CODE END 2 */

/* Infinite loop */
/* USER CODE BEGIN WHILE */
while (1)
```

Code Style

Preferences

format

C/C++

Code Style

Formatter

Editor

Active profile: K&R [built-in]

Formatter: K&R [built-in]

Editor: BSD/Allman [built-in], GNU [built-in], Whitesmiths [built-in]

```
/*
 * A sample source file for the code formatter preview
 */
#include <math.h>

class Point {
public:
    Point(double x, double y) :
        x(x), y(y) {}
```



STM32CubeIDE

Build Tools

Build Analyzer

Build Analyzer Static Stack Analyzer Search

F769-DISCO-ITCM.elf - /F769-DISCO-ITCM/Debug - May 10, 2019 3:28:29 PM

Region	Start address	End address	Size	Free	Used	Usage (%)
FLASH	0x08000000	0x08200000	2048 KB	2043.22 KB	4.78 KB	0.23%
RAM	0x20000000	0x20080000	512 KB	510.45 KB	1.55 KB	0.30%
ITCMRAM	0x00000000	0x00004000	16 KB	15.48 KB	528 B	3.22%

Build Analyzer Static Stack Analyzer Search

F769-DISCO-ITCM.elf - /F769-DISCO-ITCM/Debug - May 10, 2019 3:28:29 PM

Name	Run address (VMA)	Load address (LMA)	Size
ITCMRAM	0x00000000		16 KB
.itcmram	0x00000000	0x0800110c	528 B
FLASH	0x08000000		2048 KB
.itcmram	0x00000000	0x0800110c	528 B
.isr_vector	0x08000000	0x08000000	60 B
.text	0x0800003c	0x0800003c	4.16 KB
.rodata	0x080010e0	0x080010e0	16 B
.ARM	0x080010f0	0x080010f0	8 B
.preinit_array	0x080010f8	0x080010f8	0 B
.init_array	0x080010f8	0x080010f8	4 B
.fini_array	0x080010fc	0x080010fc	4 B
.data	0x20000000	0x08001100	12 B
RAM	0x20000000		512 KB
.data	0x20000000	0x08001100	12 B
.bss	0x2000000c		32 B
_user_heap_stack	0x2000002c		1.5 KB

Static Stack Analyzer

Build Analyzer Static Stack Analyzer Search

F769-DISCO-ITCM.elf - /F769-DISCO-ITCM/Debug - May 10, 2019 3:28:29 PM

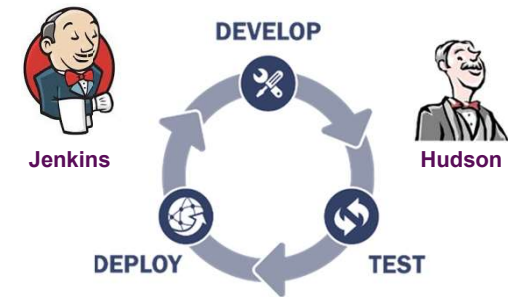
Function	L...	Type	Location	Info
SystemClock_Config	88	STATIC	main.c:108	
NVIC_EncodePriority	40	STATIC	core_cm7.h:2071	
HAL_RCC_GetSysClockFreq	40	STATIC	stm32f7xx_hal_rcc.c:982	
HAL_NVIC_SetPriority	32	STATIC	stm32f7xx_hal_cortex.c:165	
HAL_RCC_OscConfig	32	STATIC	stm32f7xx_hal_rcc.c:344	
_NVIC_SetPriorityGrouping	24	STATIC	core_cm7.h:1865	
HAL_RCC_ClockConfig	24	STATIC	stm32f7xx_hal_rcc.c:703	
HAL_InitTick	16	STATIC	stm32f7xx_hal.c:231	

Build Analyzer Static Stack Analyzer Search

F769-DISCO-ITCM.elf - /F769-DISCO-ITCM/Debug - May 10, 2019 3:28:29 PM

Function	Depth	Max cost	Local cost	Type	Location
LoopFillZerobss	7	208	0		
SysTick_Handler	0	8	8	STATIC	stm32f7xx_it.c:182
NMI_Handler	0	4	4	STATIC	stm32f7xx_it.c:70
UsageFault_Handler	0	4	4	STATIC	stm32f7xx_it.c:128
PendSV_Handler	0	4	4	STATIC	stm32f7xx_it.c:169
HardFault_Handler	0	4	4	STATIC	stm32f7xx_it.c:83
HAL_IncTick	0	4	4	STATIC	stm32f7xx_hal.c:290
SVC_Handler	0	4	4	STATIC	stm32f7xx_it.c:143
DebugMon_Handler	0	4	4	STATIC	stm32f7xx_it.c:156
MemManage_Handler	0	4	4	STATIC	stm32f7xx_it.c:98
BusFault_Handler	0	4	4	STATIC	stm32f7xx_it.c:113
Reset_Handler	0	0	0		

Headless Build



Continuous Integration

- Build project without opening IDE
- No GUI shown but build system becomes active
- Supported for makefile and managed projects



STM32CubeIDE

Debug

Debugger

Debug probe: **SEGGER J-LINK**
GDB Connection: **ST-LINK (ST-LINK GDB server)**
Autostart: **SEGGER J-LINK**
Connect to remote GDB server: Port number
GDB Server Command Line Options:

Live expressions

Expression	Type	Value
uwTick	volatile uint32_t	1603

Add new expression

Serial Wire Viewer

Function	% in use	Samples	Start address	Size
vApplicationInitHook()	23.53%	17984	0x001939	0x30
profileInitTaskList()	23.02%	18156	0x002bad	0x44
profileTask()	15.86%	11852	0x002b11	0x24
vApplicationTickHook()	15.65%	11692	0x001969	0x30
prvCheckTaskBeingT...	14.20%	10912	0x002c11	0x28
vTaskMissedField()	7.79%			
ITM_Out()	0.16%			
ts_Formatting()	0.16%			
swiHook()	0.14%			
vTaskSwitchContext()	0.10%			
ts_Heap()	0.05%			
vPortEnterCritical()	0.04%			

SWV Data Trace Timeline Graph: Shows waveforms for accex[Axis] and accey[Axis].

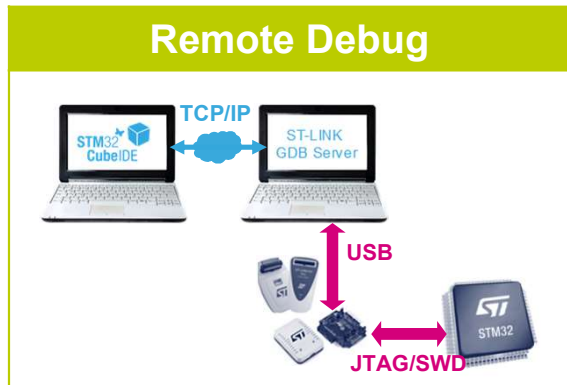
Integrated UART Terminal

Selected Remote Connection: **F746-DISCO-VirtualCom (CONNECTED)**

```
LD1: 1
LD1: 0
LD1: 1
LD1: 0
LD1: 1
LD1: 0
LD1: 1
LD1: 1
LD1: 0
```

External Loader

External Loader configuration window showing memory addresses and flash download options.



STM32CubeIDE

Brand New Eclipse™ RCP Product

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- Issued releases
 - 1.0.0 - April 2019 based on 2019-03 target platform
 - 1.1.0 - October 2019 based on 2019-09 target platform

- Good end-customer interest
 - > 60.000 download done already

- Releases availability
 - P2 repository <http://sw-center.st.com/stm32cubeide/updatesite1>
 - Native self installers www.st.com/content/st_com/en/products/development-tools/software-development-tools/stm32-software-development-tools/stm32-ides/stm32cubeide.html

- ST Community support forum
 - <https://community.st.com/s/topic/0TO0X000000y2j7WAA/stm32cubeide>

Get Software

Part Number	General Description	Software Version	Download	Previous versions
+ STM32CubeIDE-DEB	STM32CubeIDE Debian Linux Installer	1.1.0	Get Software	Select version
+ STM32CubeIDE-Lnx	STM32CubeIDE Generic Linux Installer	1.1.0	Get Software	Select version
+ STM32CubeIDE-Mac	STM32CubeIDE macOS Installer	1.1.0	Get Software	Select version
+ STM32CubeIDE-RPM	STM32CubeIDE RPM Linux Installer	1.1.0	Get Software	Select version
+ STM32CubeIDE-Win	STM32CubeIDE Windows Installer	1.1.0	Get Software	Select version



STM32CubeIDE

Development Policy

- STM32CubeIDE is not open source
 - But fully relying on up streamed material thinking to non proprietary assets (we do not fork ...).
 - Relying on regular open source security and compliance checks

ECLIPSE FOUNDATION							
Subject	Status	Project	Branch	Updated	Size	CR	V
★ Bug 551818: Fix broken link in about.html	Merged	ecf/org.eclipse.ecf	master	Oct 12		✓	✓
★ Bug 550702: Fixed memory leak in SerialPort.open0()	Merged	cdt/org.eclipse.cdt	master	Sep 6		✓	✓
★ Bug 482946: Implement InputStream.available()	Merged	cdt/org.eclipse.cdt	master	Sep 6		✓	✓
★ Bug 550697: Also set DCB.Parity=NOPARITY on Windows	Merged	cdt/org.eclipse.cdt	master	Sep 6		✓	✓
★ Bug 549013 - Eclipse menu won't display on Ubuntu 16.04 LTS when SSH/Serial ...	Merged	tm/org.eclipse.tm	master	Jul 17		✓	✓
★ Bug 542436 - Added method to override which IGDBBackend instance to control	Merged	cdt/org.eclipse.cdt	master	Dec 6, 2018		✓	✓
★ Bug 539882: Applicability calculator should be called with option category	Merged	cdt/org.eclipse.cdt	master	Oct 9, 2018		✓	✓
★ Bug 535024: Use deviceId for determine JTAG probe	Merged	cdt/org.eclipse.cdt	master	May 24, 2018		✓	✓
★ Bug 330204 - Use ManagedBuildManager to build	Merged	cdt/org.eclipse.cdt	master	May 9, 2018		✓	✓
★ Bug 533771 - Allow limit scope of MStackListArguments	Merged	cdt/org.eclipse.cdt	master	Apr 20, 2018		✓	✓
★ Bug 533769 - Show error messages directly	Merged	cdt/org.eclipse.cdt	master	Apr 20, 2018		✓	✓
★ Bug 533766 - Deadlock at IDE shutdown with active debug session	Merged	cdt/org.eclipse.cdt	master	Apr 18, 2018		✓	✓
★ Bug 528940 - Execute pre/post build step	Merged	cdt/org.eclipse.cdt	master	Apr 17, 2018		✓	✓
★ Bug 217674 - Added incremental build support	Merged	cdt/org.eclipse.cdt	master	Apr 17, 2018		✓	✓
★ Bug 533499 - Check all problem markers for errors	Merged	cdt/org.eclipse.cdt	master	Apr 17, 2018		✓	✓
★ Bug 533379 - Only add space when appropriate	Merged	cdt/org.eclipse.cdt	master	Apr 16, 2018		✓	✓
★ Bug 533473 - Dynamically hide option categories	Merged	cdt/org.eclipse.cdt	master	Apr 13, 2018		✓	✓
★ Bug 461646 - Allow EOL+EOF in 8bit RE-encoded BMP	Merged	platform/eclipse.platform.swt	master	Mar 27, 2018		✓	✓
★ Bug 531915: Abstract page is now able to deal with fragment icon(s)	Merged	cdt/org.eclipse.cdt	master	Mar 2, 2018		✓	✓
★ Bug 529448 : Allows build debug level setting to be restored to proper value	Merged	cdt/org.eclipse.cdt	master	Jan 16, 2018		✓	✓
★ Bug 528471 - Property change on Serial connection is no fully propagated ...	Merged	ptp/org.eclipse.remote	master	Dec 19, 2017		✓	✓
★ Bug 528470 - Can't retrieve an active console if connection is removed	Merged	ptp/org.eclipse.remote	master	Dec 19, 2017		✓	✓
★ Bug 528471 - Property change on Serial connection is no fully propagated (core)	Merged	ptp/org.eclipse.remote	master	Dec 19, 2017		✓	✓
★ Bug 514385: defaultValue-generation for a build-option	Merged	cdt/org.eclipse.cdt	master	Apr 18, 2017		✓	✓
★ Bug 514244: ability to add custom wizard page prior project creation one	Merged	cdt/org.eclipse.cdt	master	Mar 27, 2017		✓	✓

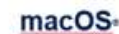
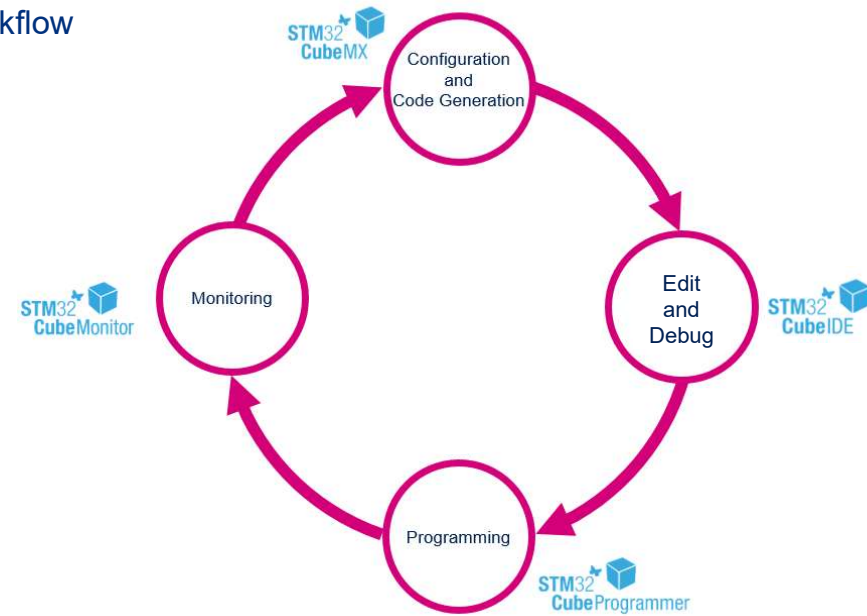
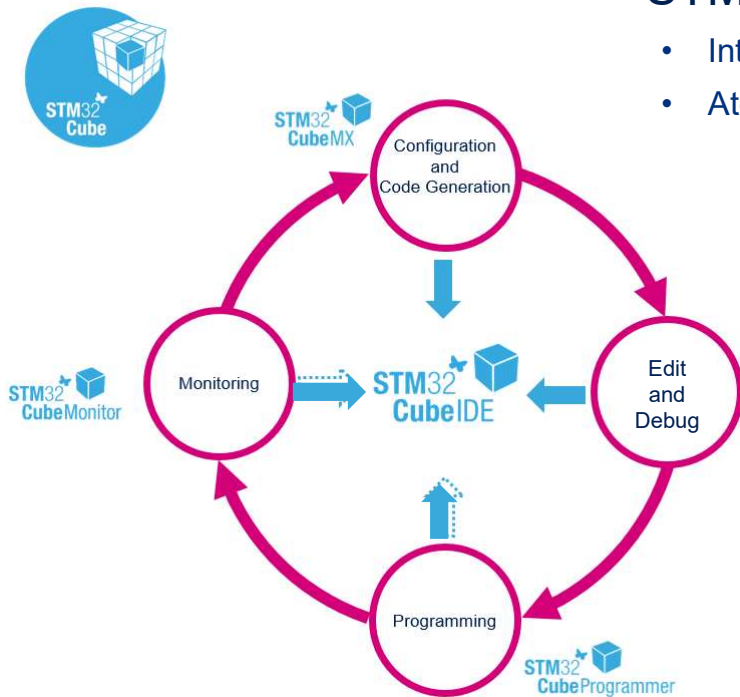


STM32CubeIDE

Workflows Flexible Support

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- STM32CubeIDE is supporting both
 - Integrated workflow
 - Atomic applications based workflow



Assets Integration challenges



Base technology = Eclipse SWT (Java)



Base technology = Swing (Java)



Base technology = Swing (Java)



Base technology = C++/Qt CLI (C++/Qt and Java FX GUI)



Base technology = Java FX (Node-RED and Node.js)

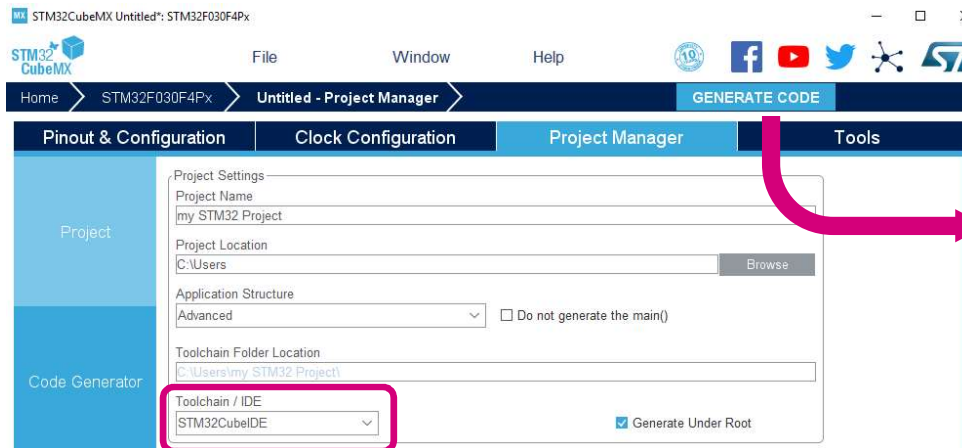
STM32CubeIDE

Key Must Have Technologies (1/2)

- Eclipse CDT
 - Managed builder - `org.eclipse.cdt.managedbuilder.*`
- Eclipse platform
 - SWT↔AWT bridge helping assets integration - `org.eclipse.swt.awt.SWT_AWT`
- RCP Testing Tool 
- Tycho / Maven
 - 'eclipse-application' packaging type as compact OSe agnostic STM32CubeIDE pervasion helper



Pure Java application



STM32CubeIDE
RCP light
inside

- Eclipse platform
 - Hierarchical containers support

STM32CubeIDE

Key Must Have Technologies (2/2)

Multi CPUs Project →

CPU 0 →

CPU 1 →

Secure Project →

Non Secure →

Secure →

The Project Explorer shows a multi-CPU project structure. At the top is the 'H7 serie Project' container. Underneath are two CPU-specific containers: 'H7 serie Project_CM4 (in CM4)' and 'H7 serie Project_CM7 (in CM7)'. Below these are two more containers: 'L5 serie Project' and 'L5 serie Project_Secure (in Secure)'. Each container contains sub-elements like Includes, Inc, Src, Startup, .settings, .cproject, .project, and specific ID files (e.g., STM32H745BGTX_FLASH.Id, STM32H745BGTX_RAM.Id).

Projects Presentation

- Flat
- Hierarchical**

Top Level Elements

- Hierarchical**

Select Working Set...
 Deselect Working Set
 Edit Active Working Set...
 1 Window Working Set
 Filters and Customization...
 Recent Filters
 Link with Editor

workspace_1.1.0 - Device Configuration Tool - STM32CubeIDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer

my MultiCpu Project

- Common
- Drivers
- Middlewares
 - my MultiCpu Project_CM4 (in CM4)
 - Binaries
 - Includes
 - Common
 - Debug
 - Drivers
 - Middlewares
 - Third_Party
 - Src
 - Startup
 - Debug
 - Inc
 - STM32H745BGTX_FLASH.Id
 - STM32H745BGTX_RAM.Id
 - my MultiCpu Project_CM7 (in CM7)
 - Binaries
 - Includes
 - Common
 - Debug
 - Drivers
 - CMSIS
 - STM32H7xx_HAL_Driver
 - Middlewares
 - Third_Party
 - Src
 - libjpeg.c
 - main.c
 - stm32h7xx_hal_msp.c
 - stm32h7xx_it.c
 - syscalls.c
 - system.c
 - Startup
 - startup_stm32h745gtxs
 - Debug
 - Inc
 - jcconf.h
 - jitite_conf.h
 - jmorcfc.h
 - libjpeg.h
 - main.h
 - stm32h7xx_hal_conf.h
 - stm32h7xx_it.h
 - STM32H745BGTX_FLASH.Id
 - STM32H745BGTX_RAM.Id
 - mxscratch

Pinout & Configuration

Clock Configuration

Project Manager

Tools

Additional Software

Pinout

System view

Categories A-Z

System Core >

Analog >

Timers >

Connectivity >

Multimedia >

Security >

Computing >

Middleware >

- ✓ FATFS_M4
- FATFS_M7
- ✓ FREERTOS_
- LIBJPEG
- LWIP
- MBEDTLS
- PDM2PCM_I
- PDM2PCM_I
- USB_DEVIC
- USB_DEVIC
- USB_HOST_
- USB_HOST_

ST
STM32H745BGTX
LQFP208

Problems Tasks Console Properties

Build Analyzer Static Stack Analyzer

CDT Global Build Console

14:21:51 Build Finished. 0 errors, 0 warnings. (took 1s.576ms)

14:23:07 **** Incremental Build of configuration Debug for project my MultiCpu Project_CM4 ****


```
make -j4 all
arm-none-eabi-size my\ MultiCpu\ Project_CM4.elf
text data bss dec hex filename
3672 44 2788 6424 1910 my MultiCpu Project_CM4.elf
Finished building: default.size.stdout
```

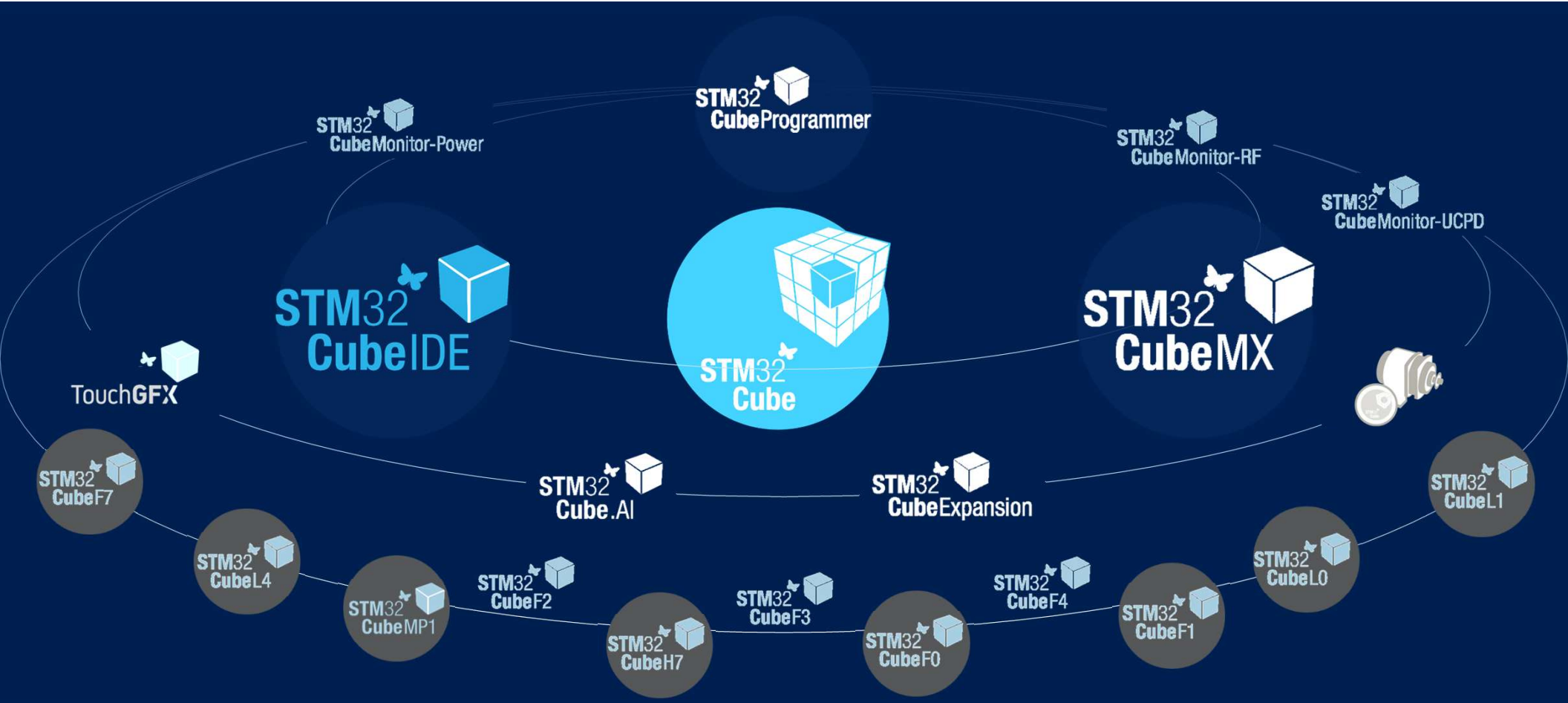
Region	Start addr	Size
FLASH	0x081000C	1024 KB
RAM	0x100000C	288 KB

STM32CubeIDE

Live Demo

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- Live Demo
-  YouTube
 - STM32CubeIDE announcement
 - <https://www.youtube.com/watch?v=5tsigqTCSdk&feature=youtu.be>
 - How to use STM32CubeIDE
 - <https://www.youtube.com/watch?v=eumKLXNIM0U>
 - STMicroelectronics channel
 - <https://www.youtube.com/user/STonlineMedia/featured>



Thank You!