
STM32
CubeMX

1. Description

1.1. Project

Project Name	h7-wake-on-lan
Board Name	NUCLEO-H745ZI-Q
Generated with:	STM32CubeMX 6.6.0
Date	07/03/2022

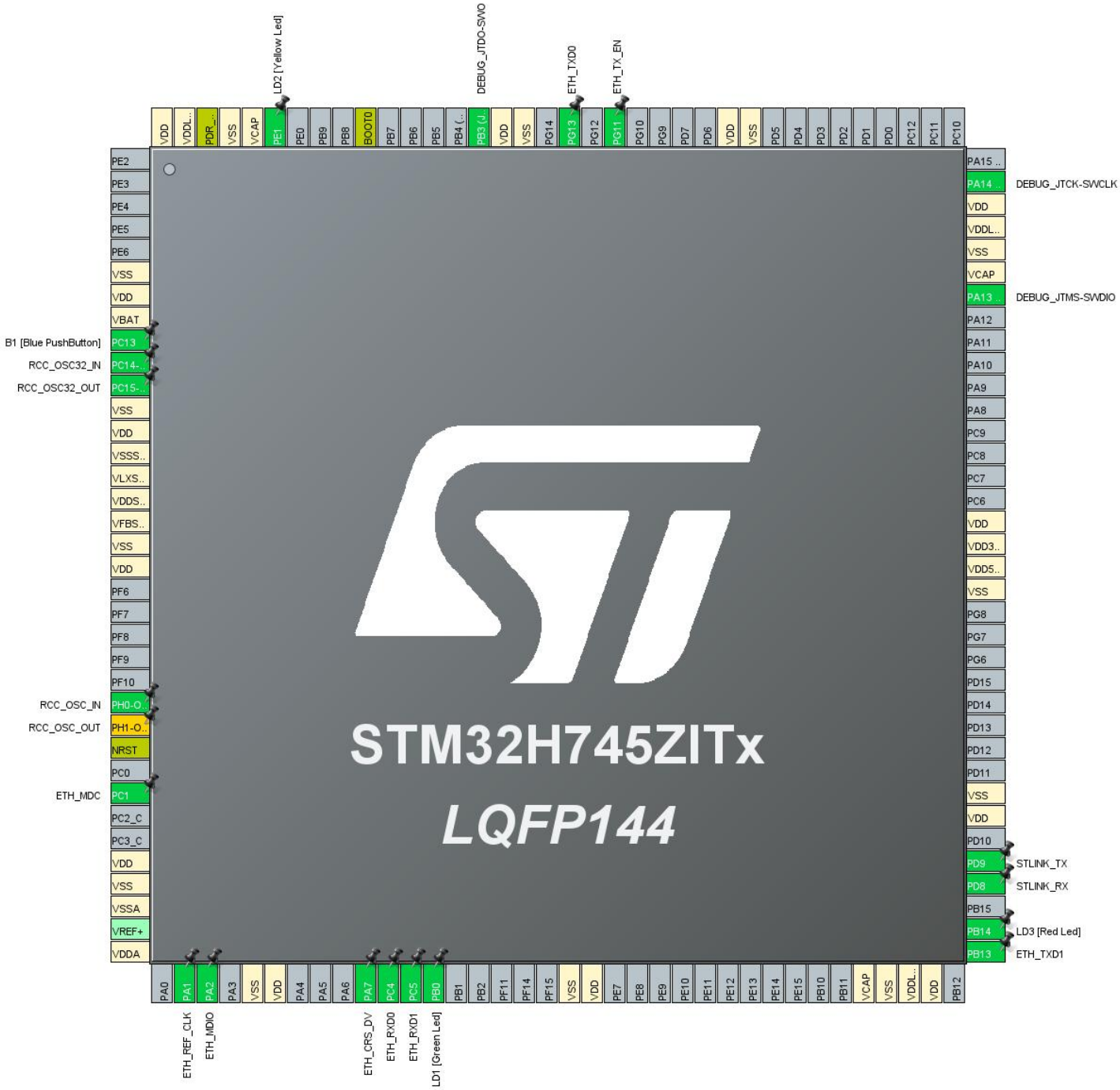
1.2. MCU

MCU Series	STM32H7
MCU Line	STM32H745/755
MCU name	STM32H745ZITx
MCU Package	LQFP144
MCU Pin number	144

1.3. Core(s) information

Core(s)	ARM Cortex-M7 ARM Cortex-M4

2. Pinout Configuration



3. Pins Configuration

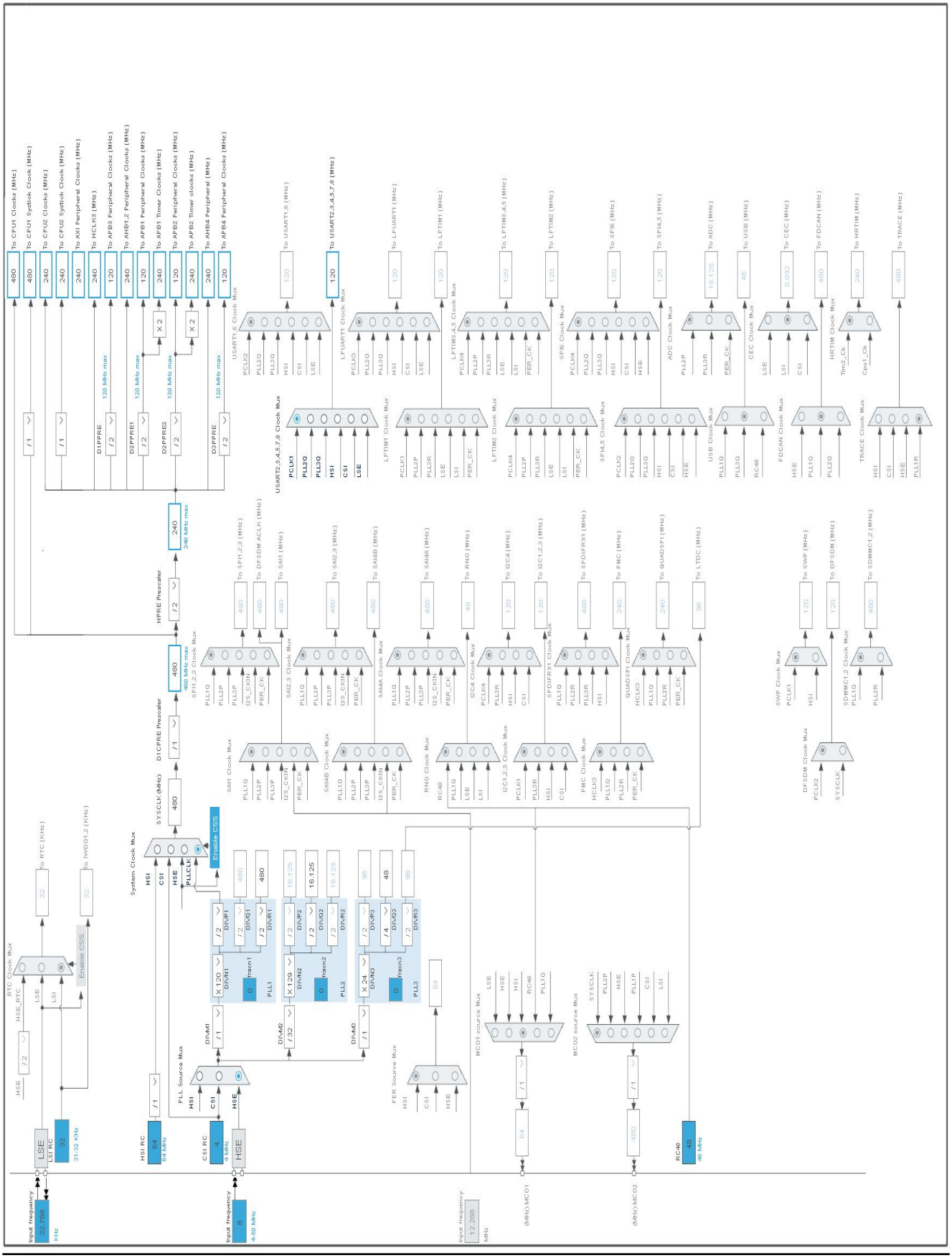
Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VSS	Power		
7	VDD	Power		
8	VBAT	Power		
9	PC13 *	I/O	GPIO_Input	B1 [Blue PushButton]
10	PC14-OSC32_IN (OSC32_IN)	I/O	RCC_OSC32_IN	
11	PC15-OSC32_OUT (OSC32_OUT)	I/O	RCC_OSC32_OUT	
12	VSS	Power		
13	VDD	Power		
14	VSSSMPS	Power		
15	VLXSMPS	Power		
16	VDDSMPS	Power		
17	VFBSMPS	Power		
18	VSS	Power		
19	VDD	Power		
25	PH0-OSC_IN (PH0)	I/O	RCC_OSC_IN	
26	PH1-OSC_OUT (PH1) **	I/O	RCC_OSC_OUT	
27	NRST	Reset		
29	PC1	I/O	ETH_MDC	
32	VDD	Power		
33	VSS	Power		
34	VSSA	Power		
36	VDDA	Power		
38	PA1	I/O	ETH_REF_CLK	
39	PA2	I/O	ETH_MDIO	
41	VSS	Power		
42	VDD	Power		
46	PA7	I/O	ETH_CRS_DV	
47	PC4	I/O	ETH_RXD0	
48	PC5	I/O	ETH_RXD1	
49	PB0 *	I/O	GPIO_Output	LD1 [Green Led]
55	VSS	Power		
56	VDD	Power		
68	VCAP	Power		
69	VSS	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
70	VDDLDO	Power		
71	VDD	Power		
73	PB13	I/O	ETH_TXD1	
74	PB14 *	I/O	GPIO_Output	LD3 [Red Led]
76	PD8	I/O	USART3_TX	STLINK_RX
77	PD9	I/O	USART3_RX	STLINK_TX
79	VDD	Power		
80	VSS	Power		
89	VSS	Power		
90	VDD50_USB	Power		
91	VDD33_USB	Power		
92	VDD	Power		
102	PA13 (JTMS/SWDIO)	I/O	DEBUG_JTMS-SWDIO	
103	VCAP	Power		
104	VSS	Power		
105	VDDLDO	Power		
106	VDD	Power		
107	PA14 (JTCK/SWCLK)	I/O	DEBUG_JTCK-SWCLK	
118	VSS	Power		
119	VDD	Power		
124	PG11	I/O	ETH_TX_EN	
126	PG13	I/O	ETH_TXD0	
128	VSS	Power		
129	VDD	Power		
130	PB3 (JTDO/TRACESWO)	I/O	DEBUG_JTDO-SWO	
135	BOOT0	Boot		
139	PE1 *	I/O	GPIO_Output	LD2 [Yellow Led]
140	VCAP	Power		
141	VSS	Power		
142	PDR_ON	Reset		
143	VDDLDO	Power		
144	VDD	Power		

* The pin is affected with an I/O function

** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	h7-wake-on-lan
Project Folder	D:\work\tests\h7-wake-on-lan
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_H7 V1.10.0
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x00
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls ARM Cortex-M7

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_USART3_UART_Init	USART3
4	MX_FREERTOS_Init	FREERTOS_M7
5	MX_LWIP_Init	LWIP

5.4. Advanced Settings - Generated Function Calls ARM Cortex-M4

Rank	Function Name	Peripheral Instance Name

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32H7
Line	STM32H745/755
MCU	STM32H745ZITx
Datasheet	DS12923_Rev1

6.2. Parameter Selection

Temperature	25
Vdd	3.0

6.3. Battery Selection

Battery	Li-SOCL2(DD36000)
Capacity	36000.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	450.0 mA
Max Pulse Current	1000.0 mA
Cells in series	1
Cells in parallel	1

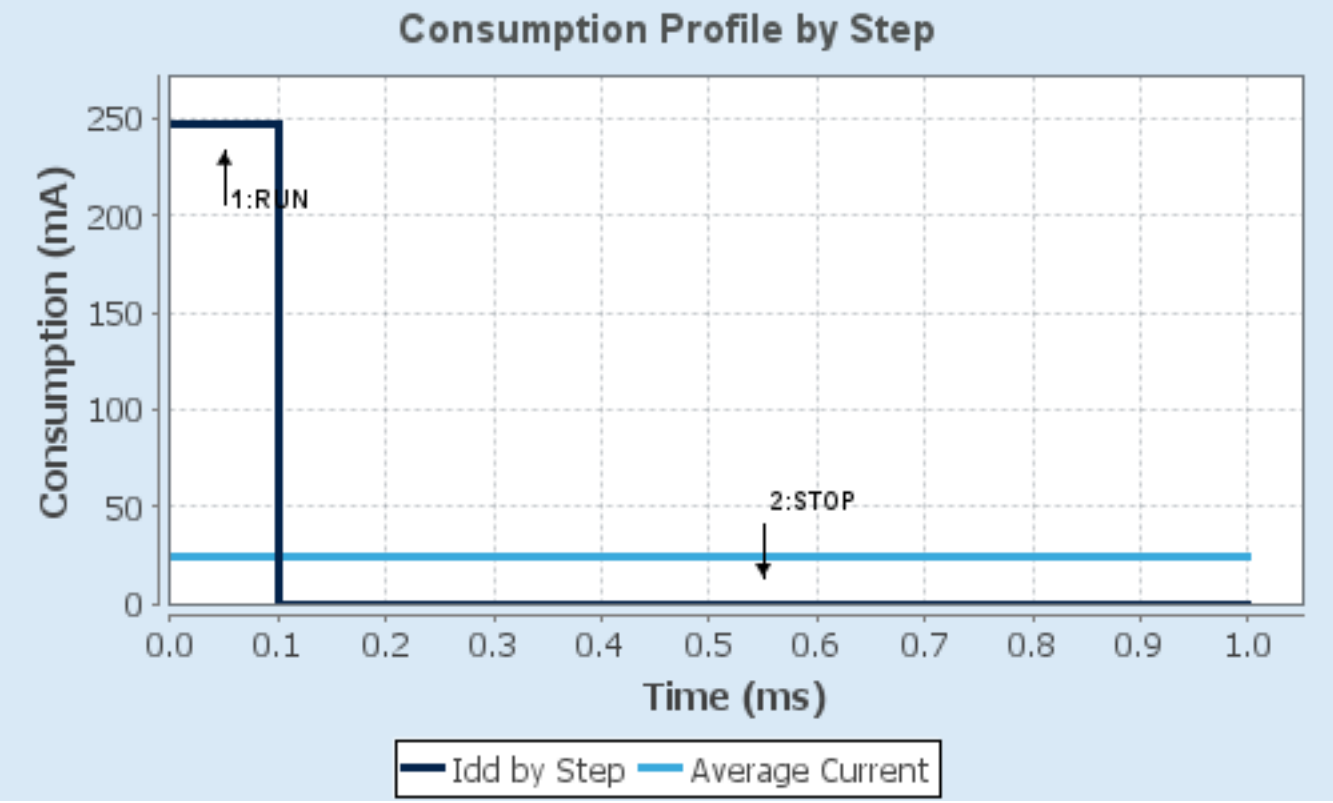
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	VOS0: Scale0	SVOS5: System-Scale5
D1 Mode	DRUN/CRUN	DSTANDBY
D2 Mode	DRUN/CRUN	DSTANDBY
D3 Mode	DRUN	DSTOP
Fetch Type	CM7: ITCM/Cache / CM4: FLASH_B/ART	CM7: NA / CM4: NA
CM7 Frequency	480 MHz	0 Hz
Clock Configuration	HSE BYP PLL ALL_IPs_ON	LSE Flash-ON
CM4 Frequency	240 MHz	0 Hz
Clock Source Frequency	25 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	247 mA	145 µA
Duration	0.1 ms	0.9 ms
DMIPS	1027.0	0.0
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	24.83 mA
Battery Life	1 month, 29 days, 21 hours	Average DMIPS	1027.2001 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
250
200
150
100
50
0
1:RUN
2:STOP
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

7. Peripherals and Middlewares Configuration

7.1. DEBUG

Debug: Trace Asynchronous Sw

7.1.1. Core(s) Settings:

Context(s):	Cortex-M7 Cortex-M4
Initialized Context:	Cortex-M7
Power Domain:	

7.2. ETH

Mode: RMII

7.2.1. Parameter Settings:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D2

General : Ethernet Configuration:

Warning	The ETH can work only when RAM is pointing at 0x24000000
Note	PHY Driver must be configured from the LwIP 'Platform Settings' top right tab
Ethernet MAC Address	00:80:E1:00:00:00
Tx Descriptor Length	4
First Tx Descriptor Address	**0x30000200 ***
Rx Descriptor Length	4
First Rx Descriptor Address	**0x30000000 ***
Rx Buffers Length	1536

7.3. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.3.1. Parameter Settings:

Core(s) Settings:

Context(s):	Cortex-M7 Cortex-M4
Initialized Context:	Cortex-M7
Power Domain:	D3

Power Parameters:

SupplySource	PWR_DIRECT_SMPS_SUPPLY
Power Regulator Voltage Scale	Power Regulator Voltage Scale 0

RCC Parameters:

TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
CSI Calibration Value	16
HSI Calibration Value	32

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	4 WS (5 CPU cycle)
Product revision	rev.Y

PLL range Parameters:

PLL1 clock Input range	Between 8 and 16 MHz
PLL1 clock Output range	Wide VCO range

7.4. SYS

Timebase Source: TIM17

7.4.1. Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	

7.5. SYS_M4

Timebase Source: SysTick

7.5.1. Core(s) Settings:

Context(s):	Cortex-M4
Initialized Context:	Cortex-M4

Power Domain:

7.6. USART3

Mode: Asynchronous

7.6.1. Parameter Settings:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D2

Basic Parameters:

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable
ClockPrescaler	1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.7. FREERTOS_M7

Interface: CMSIS_V2

7.7.1. Config parameters:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

API:

FreeRTOS API	CMSIS v2

Versions:

FreeRTOS version	10.3.1
CMSIS-RTOS version	2.00

MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	Disabled

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	56
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Enabled
USE_COUNTING_SEMAPHORES	Enabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Disabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled
RECORD_STACK_HIGH_ADDRESS	Disabled

Memory management settings:

Memory Allocation	Dynamic / Static
TOTAL_HEAP_SIZE	15360
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled

USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Disabled
USE_TRACE_FACILITY	Enabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Enabled
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10
TIMER_TASK_STACK_DEPTH	256

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

Added with 10.2.1 support:

MESSAGE_BUFFER_LENGTH_TYPE	size_t
USE_POSIX_ERRNO	Disabled

CMSIS-RTOS V2 flags:

USE_OS2_THREAD_SUSPEND_RESUME	Enabled
USE_OS2_THREAD_ENUMERATE	Enabled
USE_OS2_EVENTFLAGS_FROM_ISR	Enabled
USE_OS2_THREAD_FLAGS	Enabled
USE_OS2_TIMER	Enabled
USE_OS2_MUTEX	Enabled

7.7.2. Include parameters:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled

vTaskDelayUntil	Enabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Enabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Enabled
xTaskGetCurrentTaskHandle	Enabled
eTaskGetState	Enabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Enabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

7.7.3. Advanced settings:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT	**Enabled ***

Project settings (see parameter description first):

Use FW pack heap file	Enabled

7.8. LWIP

mode: Enabled

Advanced parameters are not listed except if modified by user.

7.8.1. General Settings:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

LwIP Version:

LwIP Version (Version of LwIP supported by CubeMX ** CubeMX specific **)	2.1.2

IPv4 - DHCP Options:

LWIP_DHCP (DHCP Module)	Enabled

RTOS Dependency:

WITH_RTOS (Use FREERTOS ** CubeMX specific **)	Enabled
CMSIS_VERSION (CMSIS API Version used)	CMSIS v2
RTOS_USE_NEWLIB_REENTRANT (RTOS used - 1)	Enabled

Platform Settings:

PHY Driver	Choose/LAN8742

Protocols Options:

LWIP_ICMP (ICMP Module Activation)	Enabled
LWIP_IGMP (IGMP Module)	Disabled
LWIP_DNS (DNS Module)	Disabled
LWIP_UDP (UDP Module)	Enabled
MEMP_NUM_UDP_PCB (Number of UDP Connections)	4
LWIP_TCP (TCP Module)	Enabled
MEMP_NUM_TCP_PCB (Number of TCP Connections)	5

7.8.2. Key Options:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Infrastructure - OS Awarness Option:

NO_SYS (OS Awarness)	OS Used

Infrastructure - Timers Options:

LWIP_TIMERS (Use Support For sys_timeout)	Enabled

Infrastructure - Core Locking and MPU Options:

SYS_LIGHTWEIGHT_PROT (Memory Functions Protection)	Enabled

Infrastructure - Heap and Memory Pools Options:

MEM_SIZE (Heap Memory Size)	1600
LWIP_RAM_HEAP_POINTER (RAM Heap Pointer)	**0x30044000 ***

Infrastructure - Internal Memory Pool Sizes:

MEMP_NUM_PBUF (Number of Memory Pool struct Pbufs)	16
MEMP_NUM_RAW_PCB (Number of Raw Protocol Control Blocks)	4
MEMP_NUM_TCP_PCB_LISTEN (Number of Listening TCP Connections)	8
MEMP_NUM_TCP_SEG (Number of TCP Segments simultaneously queued)	16

MEMP_NUM_LOCALHOSTLIST (Number of Host Entries in the Local Host List)	1

Pbuf Options:

PBUF_POOL_SIZE (Number of Buffers in the Pbuf Pool)	16
PBUF_POOL_BUFSIZE (Size of each pbuf in the pbuf pool)	592

IPv4 - ARP Options:

LWIP_ARP (ARP Functionality)	Enabled

Callback - TCP Options:

TCP_TTL (Number of Time-To-Live Used by TCP Packets)	255
TCP_WND (TCP Receive Window Maximum Size)	2144
TCP_QUEUE_OOSEQ (Allow Out-Of-Order Incoming Packets)	Enabled
LWIP_TCP_SACK_OUT (Allow Sending Selective Acknowledgements)	Disabled
TCP_MSS (Maximum Segment Size)	536
TCP_SND_BUF (TCP Sender Buffer Space)	1072
TCP_SND_QUEUELEN (Number of Packet Buffers Allowed for TCP Sender)	9

Network Interfaces Options:

LWIP_NETIF_STATUS_CALLBACK (Callback Function on Interface Status Changes)	Disabled
LWIP_NETIF_EXT_STATUS_CALLBACK (Extended Callback Function for several netif)	Disabled
LWIP_NETIF_LINK_CALLBACK (Callback Function on Interface Link Changes)	Enabled

NETIF - Loopback Interface Options:

LWIP_NETIF_LOOPBACK (NETIF Loopback)	Disabled

Infrastructure - Threading Options:

TCPIP_THREAD_NAME (TCPIP Thread Name)	"tcpip_thread"
TCPIP_THREAD_STACKSIZE (TCPIP Thread Stack Size)	1024
TCPIP_THREAD_PRIO (TCPIP Thread Priority Level)	24
TCPIP_MBOX_SIZE (TCPIP Mailbox Size)	6
DEFAULT_THREAD_NAME (Default LwIP Thread Name)	"lwIP"
DEFAULT_THREAD_STACKSIZE (Default LwIP Thread Stack Size)	1024
DEFAULT_THREAD_PRIO (Default LwIP Thread Priority Level)	3
DEFAULT_RAW_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN Raw)	0
DEFAULT_TCP_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN TCP)	6
DEFAULT_ACCEPTMBOX_SIZE (Default Mailbox Size for Incoming Connections)	6

Thread Safe APIs - Netconn Options:

LWIP_NETCONN (NETCONN API)	Enabled

Thread Safe APIs - Socket Options:

LWIP_SOCKET (Socket API)	Enabled
LWIP_COMPAT_SOCKETS (BSD-style Socket Functions Names)	1
LWIP_SOCKET_OFFSET (Socket Offset Number)	0
LWIP_SOCKET_SELECT (Select for Socket)	Enabled
LWIP_SOCKET_POLL (Poll for Socket)	Enabled

7.8.3. PPP:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

PPP Options:

PPP_SUPPORT (PPP Module)	Disabled

7.8.4. IPv6:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

IPv6 Options:

LWIP_IPV6 (IPv6 Protocol)	Disabled

7.8.5. HTTPD:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

HTTPD Options:

LWIP_HTTPD (LwIP HTTPD Support ** CubeMX specific **)	Disabled

7.8.6. SNMP:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

SNMP Options:

LWIP_SNMP (LwIP SNMP Agent)	Disabled

7.8.7. SNTP/SMTP:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

SNTP Options:

LWIP_SNTP (LWIP SNTP Support ** CubeMX specific **)	Disabled

SMTP Options:

LWIP_SMTP (LWIP SMTP Support ** CubeMX specific **)	Disabled

7.8.8. MDNS/TFTP:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

MDNS Options:

LWIP_MDNS (Multicast DNS Support ** CubeMX specific **)	Disabled

TFTP Options:

LWIP_TFTP (TFTP Support ** CubeMX specific **)	Disabled

7.8.9. Perf/Checks:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Sanity Checks:

LWIP_DISABLE_TCP_SANITY_CHECKS (TCP Sanity Checks)	Disabled
LWIP_DISABLE_MEMP_SANITY_CHECKS (MEMP Sanity Checks)	Disabled

Performance Options:

LWIP_PERF (Performace Testing for LwIP)	Disabled

7.8.10. Statistics:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Debug - Statistics Options:

LWIP_STATS (Statictics Collection)	Disabled

7.8.11. Checksum:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

Infrastructure - Checksum Options:

CHECKSUM_BY_HARDWARE (Hardware Checksum ** CubeMX specific **)	Enabled
LWIP_CHECKSUM_CTRL_PER_NETIF (Generate/Check Checksum per Netif)	Disabled
CHECKSUM_GEN_IP (Generate Software Checksum for Outgoing IP Packets)	Disabled
CHECKSUM_GEN_UDP (Generate Software Checksum for Outgoing UDP Packets)	Disabled
CHECKSUM_GEN_TCP (Generate Software Checksum for Outgoing TCP Packets)	Disabled
CHECKSUM_GEN_ICMP (Generate Software Checksum for Outgoing ICMP Packets)	Enabled
CHECKSUM_GEN_ICMP6 (Generate Software Checksum for Outgoing ICMP6 Packets)	Disabled
CHECKSUM_CHECK_IP (Generate Software Checksum for Incoming IP Packets)	Disabled
CHECKSUM_CHECK_UDP (Generate Software Checksum for Incoming UDP Packets)	Disabled
CHECKSUM_CHECK_TCP (Generate Software Checksum for Incoming TCP Packets)	Disabled
CHECKSUM_CHECK_ICMP (Generate Software Checksum for Incoming ICMP Packets)	Enabled
CHECKSUM_CHECK_ICMP6 (Generate Software Checksum for Incoming ICMP6 Packets)	Disabled

7.8.12. Debug:

Core(s) Settings:

Context(s):	Cortex-M7
Initialized Context:	Cortex-M7
Power Domain:	D1

LwIP Main Debugging Options:

LWIP_DBG_MIN_LEVEL (Minimum Level)	All

7.8.13. Platform Settings:

Driver_PHY	LAN8742

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label	Context	Power Domain
DEBUG	PA13 (JTMS/SWDIO)	DEBUG_JTMS-SWDIO	n/a	n/a	n/a		Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
	PA14 (JTCK/SWCLK)	DEBUG_JTCK-SWCLK	n/a	n/a	n/a		Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
	PB3 (JTDO/TRACESWO	DEBUG_JTDO-SWO	n/a	n/a	n/a		Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
ETH	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PG11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
	PG13	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Low		Cortex-M7	D2
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a		Cortex-M7* Cortex-M4	D3
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a		Cortex-M7* Cortex-M4	D3
	PH0-OSC_IN (PH0)	RCC_OSC_IN	n/a	n/a	n/a		Cortex-M7* Cortex-M4	D3
USART3	PD8	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	STLINK_RX	Cortex-M7	D2
	PD9	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	STLINK_TX	Cortex-M7	D2
Single	PH1-	RCC_OSC_	n/a	n/a	n/a			

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label	Context	Power Domain
Mapped Signals	OSC_OUT (PH1)	OUT						
GPIO	PC13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	B1 [Blue PushButton]	Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD1 [Green Led]	Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Red Led]	Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4
	PE1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [Yellow Led]	Cortex-M7* Cortex-M4	Cortex-M7* Cortex-M4

* Initialized context

8.2. DMA configuration

nothing configured in DMA service

8.3. BDMA configuration

nothing configured in DMA service

8.4. MDMA configuration

nothing configured in DMA service

8.5. NVIC configuration

8.5.1. NVIC1

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	15	0
System tick timer	true	15	0
TIM17 global interrupt	true	15	0
PVD and AVD interrupts through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART3 global interrupt	unused		
Ethernet global interrupt	unused		
Ethernet wake-up interrupt through EXTI line 86	unused		
CM4 send event interrupt for CM7	unused		
FPU global interrupt	unused		
HSEM1 global interrupt	unused		
RAM ECC diagnostic global interrupt	unused		
Hold core interrupt	unused		

8.5.2. NVIC1 Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	false	false
Debug monitor	false	true	false
Pendable request for system service	false	false	false
System tick timer	false	false	true
TIM17 global interrupt	false	true	true

8.5.3. NVIC2

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	15	0
PVD and AVD interrupts through EXTI line 16	unused		
Flash global interrupt	unused		
CM7 send event interrupt for CM4	unused		
FPU global interrupt	unused		
HSEM2 global interrupt	unused		
RAM ECC diagnostic global interrupt	unused		
Hold core interrupt	unused		

8.5.4. NVIC2 Code generation

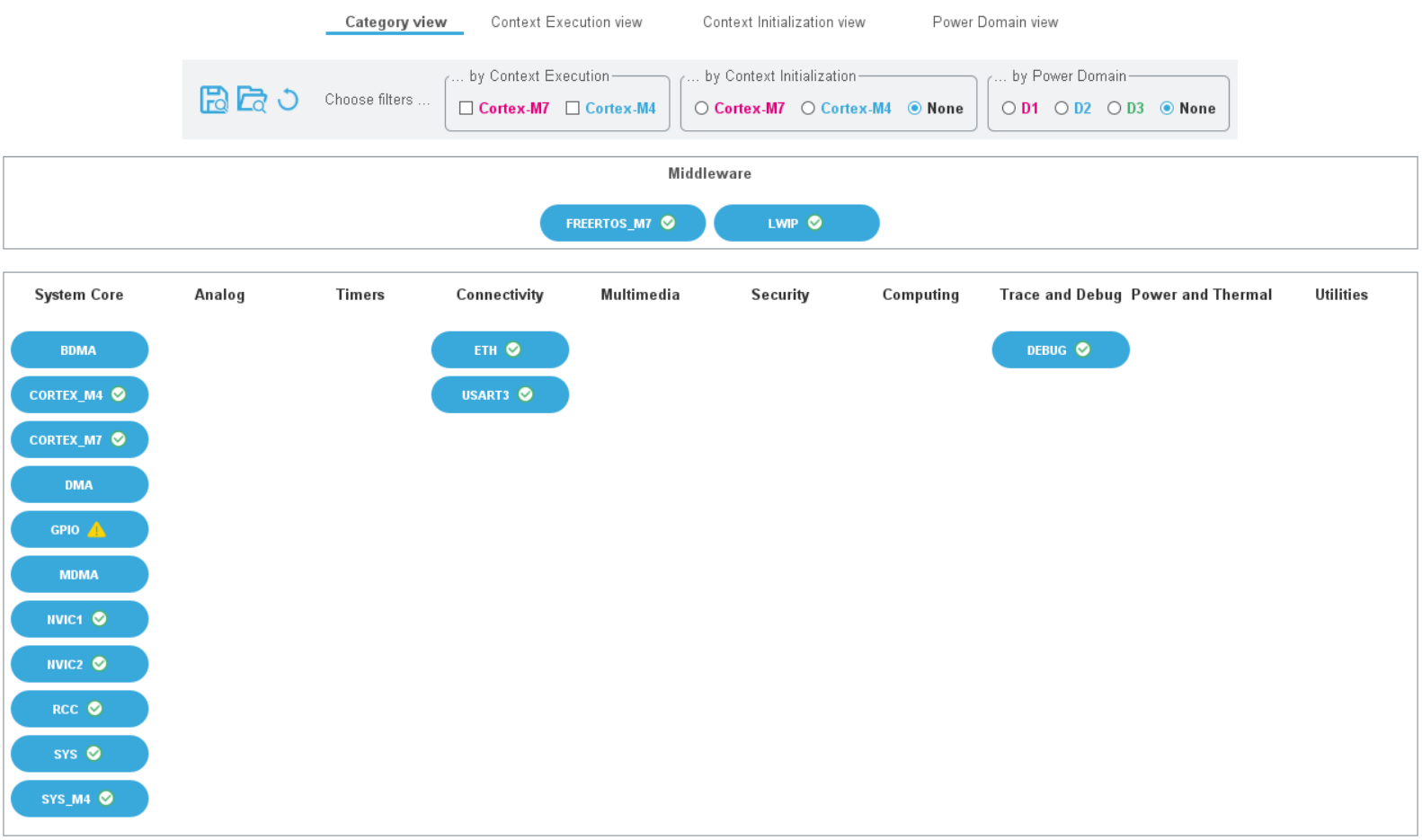
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true

*** User modified value**

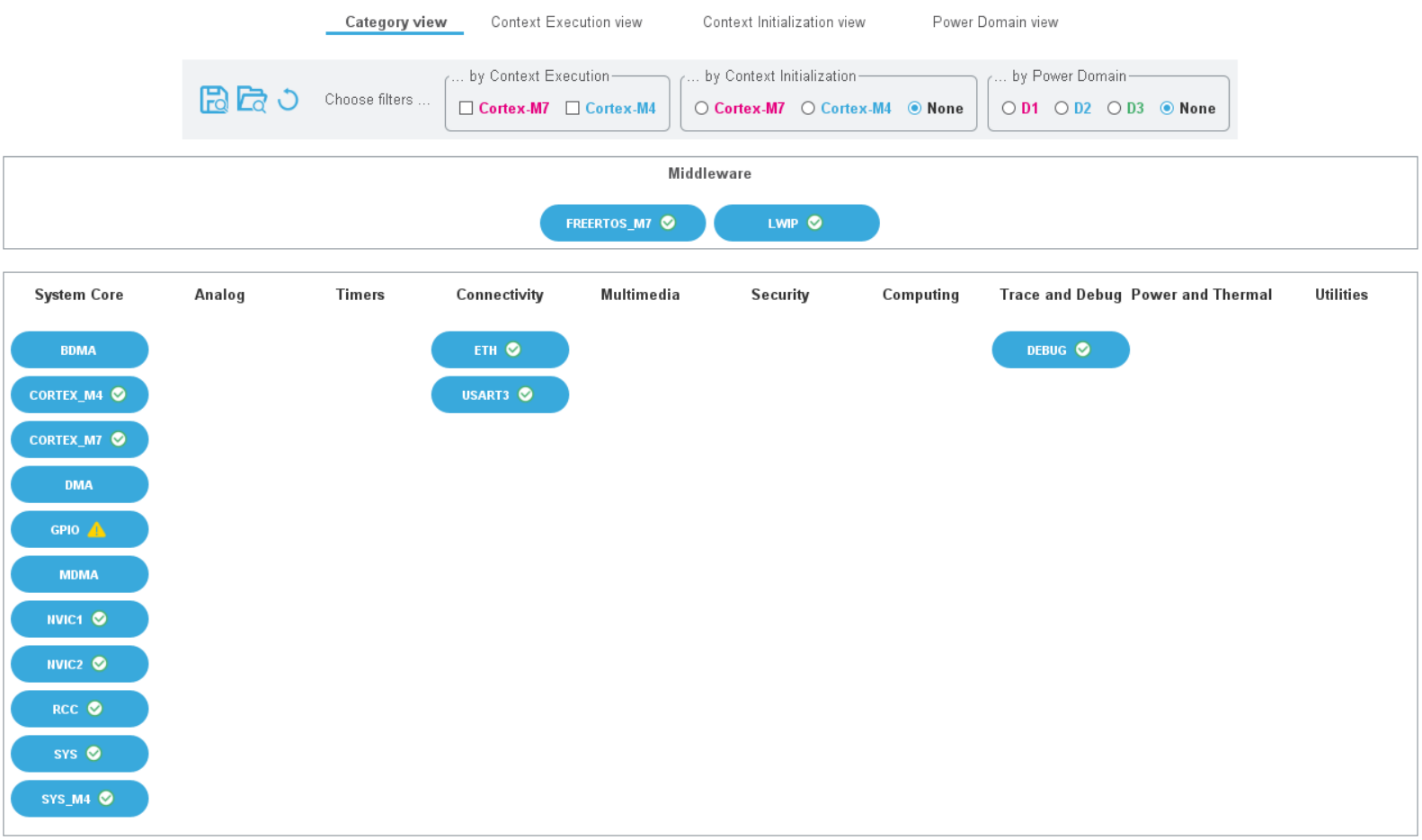
9. System Views

9.1. Category view

9.1.1. Current

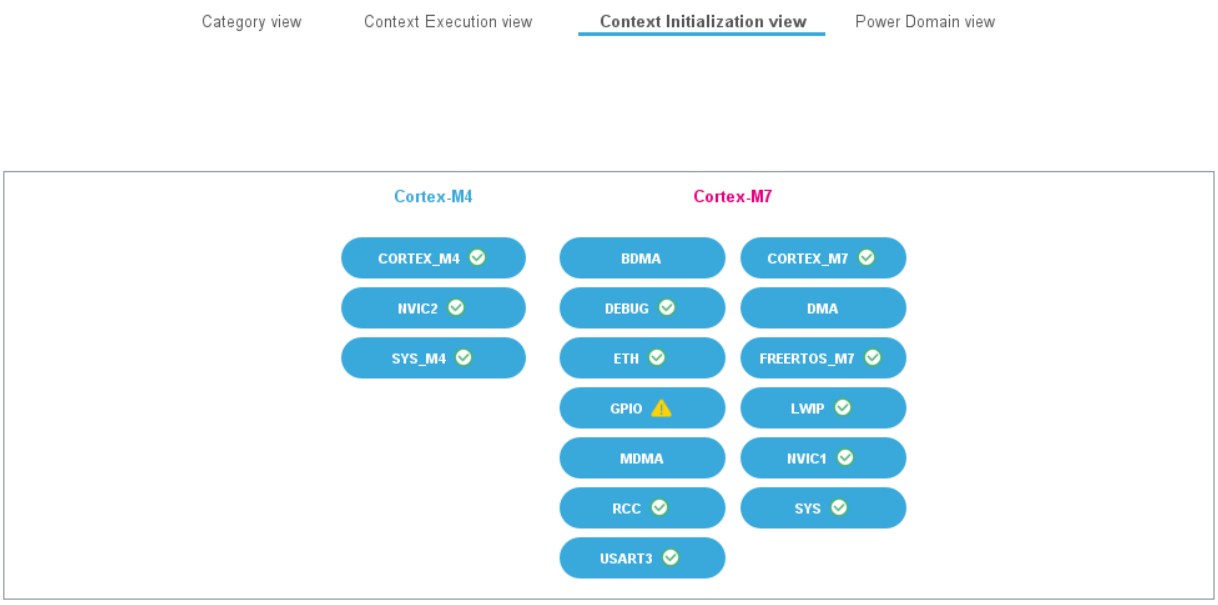


9.1.2. Without filters

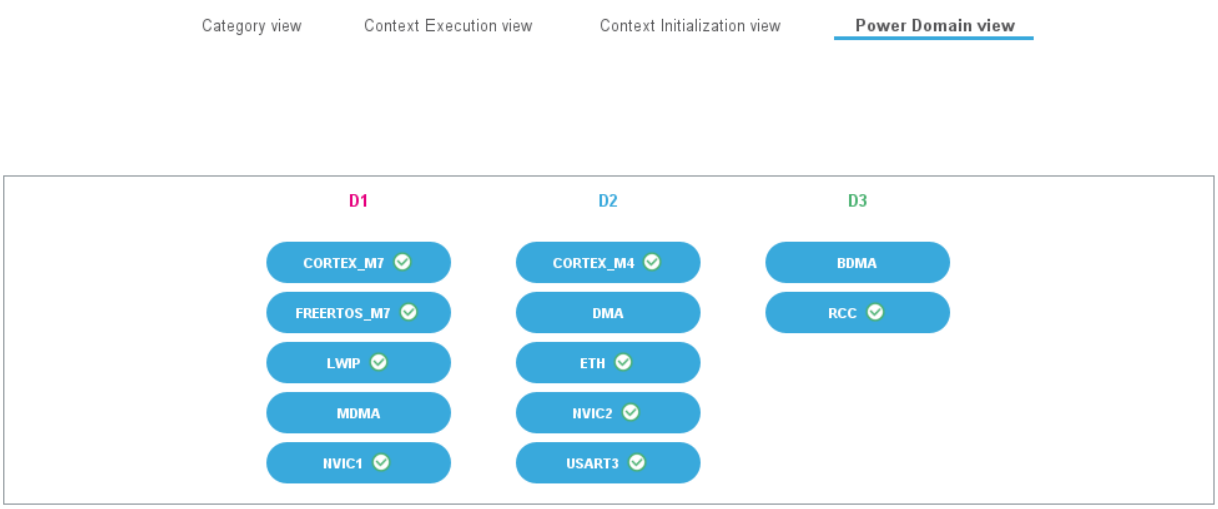


9.2. Context Execution view

9.3. Context Initialization view



9.4. Power Domain view



10. Docs & Resources

Type	Link
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers_stm32h7_series_product_overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Training Material	https://www.st.com/resource/en/sales_guide/sg_sc2154.pdf
Training Material	https://www.st.com/resource/en/training_certification/faecp_stm32h7_dualcore_edr.pdf
Training Material	https://www.st.com/resource/en/training_certification/faecp_stm32h7_edr.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32h7.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32h7vl.pdf
Flyers	https://www.st.com/resource/en/flyer/flnucleolrwan.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an2834-how-to-get-the-best-adc-accuracy-in-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2867-oscillator-design-guide-for-stm8afals-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4013-stm32-crossseries-timer-overview-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4229-how-to-implement-a-vocoder-solution-using-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4230-stm32-microcontroller-random-number-generation-validation-using-the-nist-statistical-test-suite-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4539-hrtim-cookbook-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4566-extending-the-dac-performance-of-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4635-minimization-of-power-consumption-using-lpuart-for-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4759-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4838-managing-memory-protection-unit-in-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4839-level-1-cache-on-stm32f7-series-and-stm32h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4861-lcdtft-display-controller-ltdc-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4908-stm32-usart-automatic-baud-rate-detection-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4938-getting-started-with-stm32h74xig-and-stm32h75xig-hardware-development-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4989-stm32-microcontroller-debug-toolbox-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4990-getting-started-with-sigmadelta-digital-interface-on-applicable-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4996-hardware-jpeg-codec-peripheral-in-stm32f7677xxx-and-stm32h743534555475750a3b3b0xx-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5033-stm32cube-

	mcu-package-examples-for-stm32h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5036-thermal-management-guidelines-for-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5073-receiving-spdif-audio-stream-with-the-stm32f4f7h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5156-introduction-to-stm32-microcontrollers-security-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5200-getting-started-with-stm32h7-series-sdmmc-host-controller-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5224-stm32-dmamux-the-dma-request-router-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5225-usb-typec-power-delivery-using-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5286-stm32h7x5x7-dualcore-microcontroller-debugging-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5337-stm32h7-series-lifetime-estimates-stmicroelectronics.pdf
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Application Notes	https://www.st.com/resource/en/application_note/an5354-getting-started-with-the-stm32h7-series-mcu-16bit-adc-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5405-fdcan-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5543-enhanced-methods-to-handle-spi-communication-on-stm32-devices-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5557-stm32h745755-and-stm32h747757-lines-dualcore-architecture-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5617-stm32h745755-and-stm32h747757-lines-interprocessor-communications-

	stmicroelectronics.pdf
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Application Notes	https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5507-cyclic-redundancy-check-in-stm32h7-series-flash-memory-interface-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an1202_freertos_guide-freertos-guide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an1602_semihosting_in_truestudio-how-to-do-semihosting-in-truestudio-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an1801_stm32cubeprogrammer_in_truestudio-installing-stm32cubeprogrammer-in-truestudio-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/atollic_editing_keyboard_shortcuts-atollic-editing-keyboard-shortcuts-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/iar_to_atollic_truestudio_migration_guide-truestudio-for-arm-migration-guide-iar-embedded-workbench-to-truestudio-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/stm32cubemx_installation_in_truestudio-stm32cubemx-installation-in-truestudio-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4323-getting-started-with-stemwin-library-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4435-guidelines-for-

for related Tools & Software	obtaining-ulcsaiec-607301603351-class-b-certification-in-any-stm32-application-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4502-stm32-smbuspmbus-embedded-software-expansion-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4635-minimization-of-power-consumption-using-lpuart-for-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4657-stm32-inapplication-programming-iap-using-the-usart-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4759-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4841-digital-signal-processing-for-stm32-microcontrollers-using-cmsis-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4891-stm32h72x-stm32h73x-and-singlecore-stm32h74x75x-system-architecture-and-performance-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5001-stm32cube-expansion-package-for-stm32h7-series-mdma-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5014-stm32h7x3-smart-power-management-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5033-stm32cube-mcu-package-examples-for-stm32h7-series-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5054-secure-programming-using-stm32cubeprogrammer-stmicroelectronics.pdf
Application Notes for related Tools	https://www.st.com/resource/en/application_note/an5056-integration-guide-for-the-xcubesbsfu-stm32cube-expansion-package-

& Software	stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5360-getting-started-with-projects-based-on-the-stm32mp1-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5361-getting-started-with-projects-based-on-dualcore-stm32h7-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5418-how-to-build-a-simple-usbpd-sink-application-with-stm32cubemx-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5426-migrating-graphics-middleware-projects-from-stm32cubemx-540-to-stm32cubemx-550-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5534-stm32h735gdk-firmware-upgrade-for-atbased-emw3080-wifi-module-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5564-getting-started-with-projects-based-on-dualcore-stm32wl-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4865-lowpower-timer-lptim-applicative-use-cases-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5698-adapting-the-xcubestl-functional-safety-package-for-stm32-iec-61508-compliant-to-other-safety-standards-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5731-stm32cubemx-and-stm32cubeide-threadsafe-solution-stmicroelectronics.pdf
Design Notes & Tips	https://www.st.com/resource/en/design_tip/dt0117-microphone-array-beamforming-in-the-pcm-and-pdm-domain-stmicroelectronics.pdf
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0445-stm32h745747xig-

	and-stm32h755757xi-device-limitations-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00600954.pdf
Data brief	https://www.st.com/resource/en/data_brief/dm00344021.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0214-stm32-cortexm4-mcus-and-mpus-programming-manual-stmicroelectronics.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0253-stm32f7-series-and-stm32h7-series-cortexm7-processor-programming-manual-stmicroelectronics.pdf
Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0399-stm32h745755-and-stm32h747757-advanced-armbased-32bit-mcus-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1163-description-of-wlcsp-for-microcontrollers-and-recommendations-for-its-use-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1204-tape-and-reel-shipping-media-for-stm32-microcontrollers-in-bga-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1205-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-fpn-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1206-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-qfp-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1207-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-so-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1208-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-tssop-and-ssop-packages-stmicroelectronics.pdf