
STM32
CubeMX

1. Description

1.1. Project

Project Name	snake_nokia5510
Board Name	NUCLEO-G071RB
Generated with:	STM32CubeMX 6.2.0
Date	10/14/2023

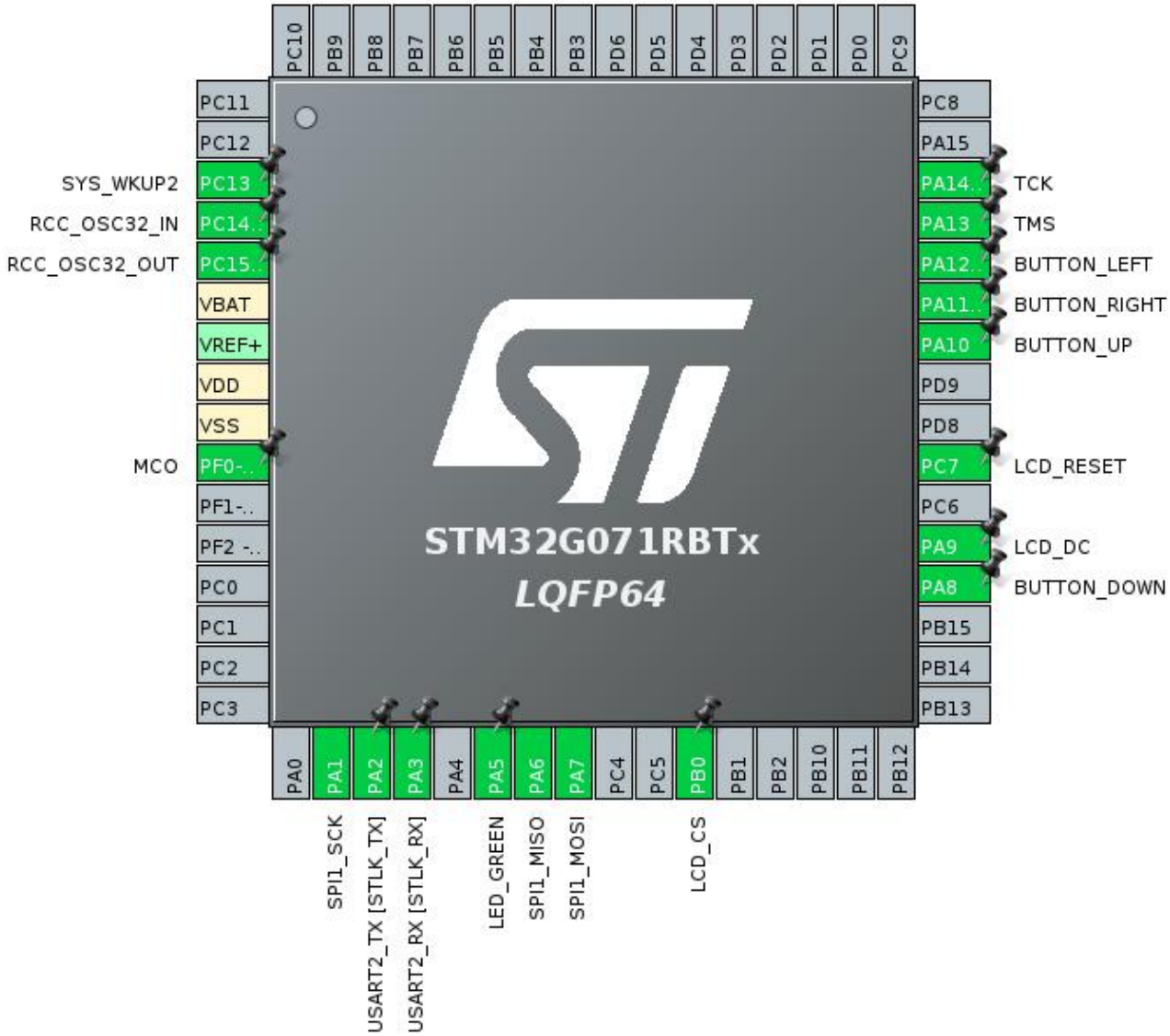
1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x1
MCU name	STM32G071RBTx
MCU Package	LQFP64
MCU Pin number	64

1.3. Core(s) information

Core(s)	ARM Cortex-M0+

2. Pinout Configuration

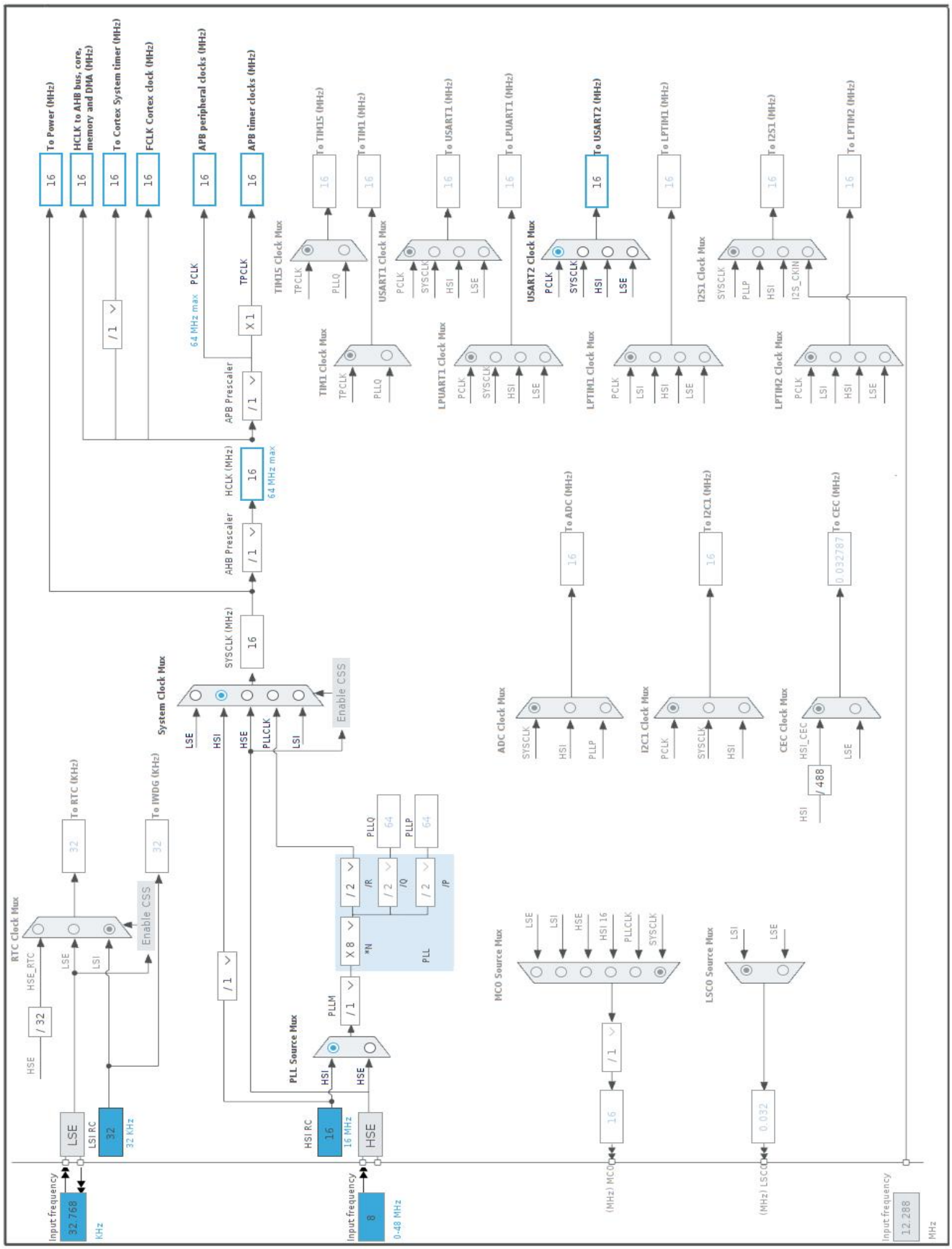


3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
3	PC13	I/O	SYS_WKUP2	
4	PC14-OSC32_IN (PC14)	I/O	RCC_OSC32_IN	
5	PC15-OSC32_OUT (PC15)	I/O	RCC_OSC32_OUT	
6	VBAT	Power		
8	VDD	Power		
9	VSS	Power		
10	PF0-OSC_IN (PF0)	I/O	RCC_OSC_IN	MCO
18	PA1	I/O	SPI1_SCK	
19	PA2	I/O	USART2_TX	USART2_TX [STLK_TX]
20	PA3	I/O	USART2_RX	USART2_RX [STLK_RX]
22	PA5 *	I/O	GPIO_Output	LED_GREEN
23	PA6	I/O	SPI1_MISO	
24	PA7	I/O	SPI1_MOSI	
27	PB0 *	I/O	GPIO_Output	LCD_CS
36	PA8	I/O	GPIO_EXTI8	BUTTON_DOWN
37	PA9 *	I/O	GPIO_Output	LCD_DC
39	PC7 *	I/O	GPIO_Output	LCD_RESET
42	PA10	I/O	GPIO_EXTI10	BUTTON_UP
43	PA11 [PA9]	I/O	GPIO_EXTI11	BUTTON_RIGHT
44	PA12 [PA10]	I/O	GPIO_EXTI12	BUTTON_LEFT
45	PA13	I/O	SYS_SWDIO	TMS
46	PA14-BOOT0	I/O	SYS_SWCLK	TCK

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	snake_nokia5510
Project Folder	/home/kacper/projects/snake_nokia5510
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G0 V1.4.1
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
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	Yes
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	No
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	MX_GPIO_Init	GPIO
2	SystemClock_Config	RCC
3	MX_USART2_UART_Init	USART2
4	MX_SPI1_Init	SPI1

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32G0
Line	STM32G0x1
MCU	STM32G071RBTx
Datasheet	DS12232_Rev0

6.2. Parameter Selection

Temperature	25
Vdd	3.0

6.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 mA
Cells in series	1
Cells in parallel	1

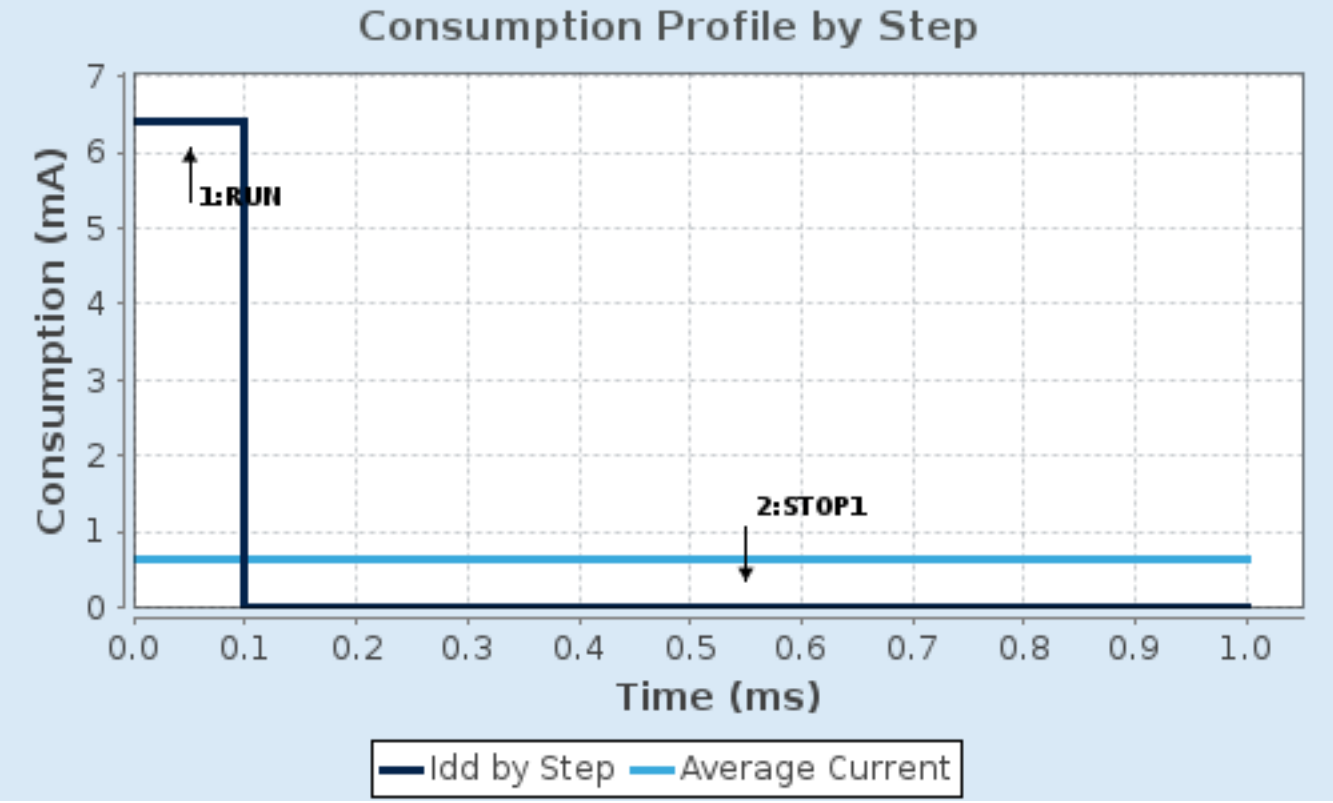
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP1
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	FLASH	Flash-PowerDown
CPU Frequency	64 MHz	16 MHz
Clock Configuration	HSI PLL	HSI
Clock Source Frequency	16 MHz	16 MHz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	6.4 mA	3.4 µA
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	128.75	130
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	643.06 µA
Battery Life	1 month, 14 days, 21 hours	Average DMIPS	80.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
7
6
5
4
3
2
1
0
1:RUN
2:STOP1
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. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE

7.2. SPI1

Mode: Full-Duplex Master

7.2.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**8 Bits ***
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**4.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled

NSS Signal Type	Software

7.3. SYS

mode: Debug

mode: System Wake-Up 2

Timebase Source: SysTick

mode: save power of non-active UCPD - deactive Dead Battery pull-up

7.4. USART2

Mode: Asynchronous

7.4.1. Parameter Settings:

Basic Parameters:

Baud Rate	**9600 ***
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

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
RCC	PC14-OSC32_IN (PC14)	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT (PC15)	RCC_OSC32_OUT	n/a	n/a	n/a	
	PF0-OSC_IN (PF0)	RCC_OSC_IN	n/a	n/a	n/a	MCO
SPI1	PA1	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SYS	PC13	SYS_WKUP2	n/a	n/a	n/a	
	PA13	SYS_SWDIO	n/a	n/a	n/a	TMS
	PA14-BOOT0	SYS_SWCLK	n/a	n/a	n/a	TCK
USART2	PA2	USART2_TX	Alternate Function Push Pull	**Pull-up ***	Low	USART2_TX [STLK_TX]
	PA3	USART2_RX	Alternate Function Push Pull	**Pull-up ***	Low	USART2_RX [STLK_RX]
GPIO	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	LED_GREEN
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_CS
	PA8	GPIO_EXTI8	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	BUTTON_DOWN
	PA9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_DC
	PC7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_RESET
	PA10	GPIO_EXTI10	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	BUTTON_UP
	PA11 [PA9]	GPIO_EXTI11	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	BUTTON_RIGHT
	PA12 [PA10]	GPIO_EXTI12	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	BUTTON_LEFT

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
EXTI line 4 to 15 interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
SPI1 global interrupt	unused		
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	unused		

8.3.2. NVIC Code generation

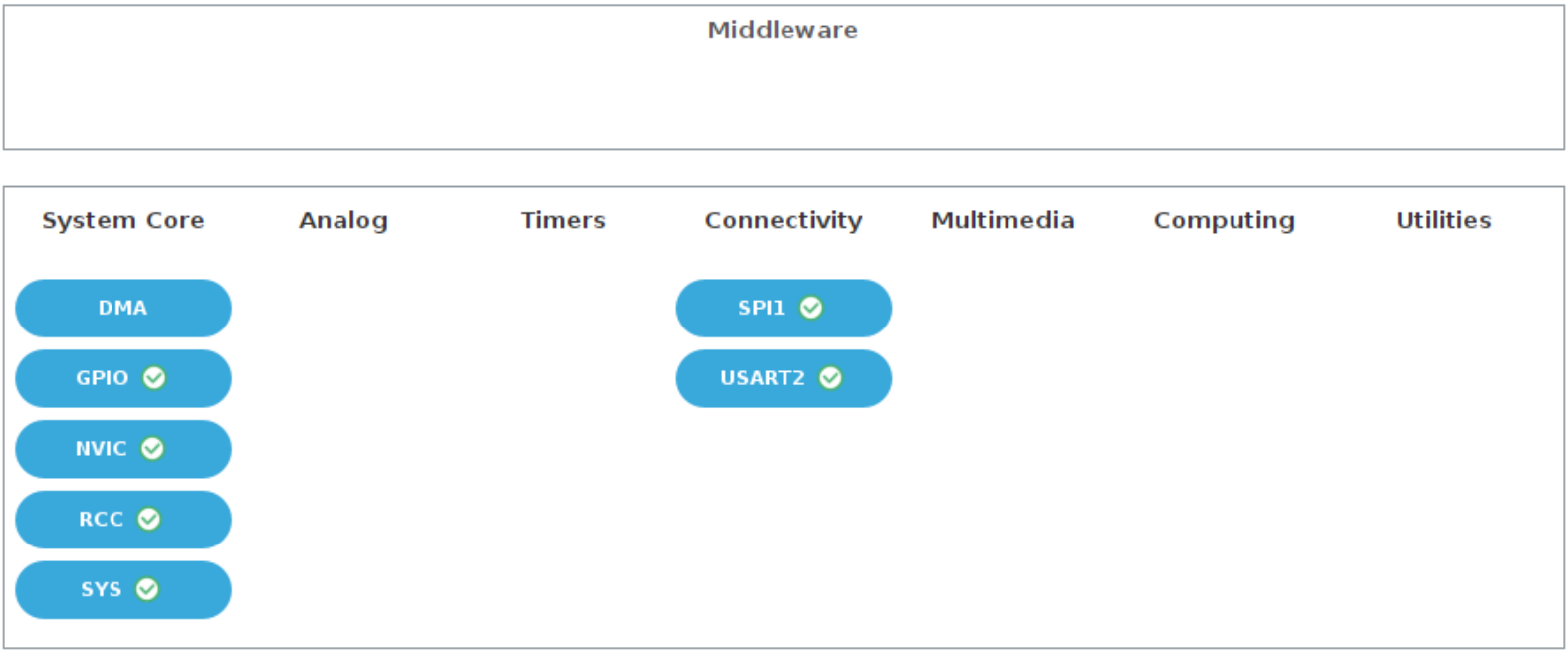
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
System service call via SWI instruction	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true
EXTI line 4 to 15 interrupts	true	true	true

*** User modified value**

9. System Views

9.1. Category view

9.1.1. Current



10. Docs & Resources

Type	Link
Datasheet	http://www.st.com/resource/en/datasheet/DM00412180.pdf
Reference manual	http://www.st.com/resource/en/reference_manual/DM00371828.pdf
Programming manual	http://www.st.com/resource/en/programming_manual/DM00104451.pdf
Errata sheet	http://www.st.com/resource/en/errata_sheet/DM00463881.pdf
Application note	http://www.st.com/resource/en/application_note/CD00160362.pdf
Application note	http://www.st.com/resource/en/application_note/CD00167594.pdf
Application note	http://www.st.com/resource/en/application_note/CD00259245.pdf
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Application note	http://www.st.com/resource/en/application_note/DM00072315.pdf
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