1. Description

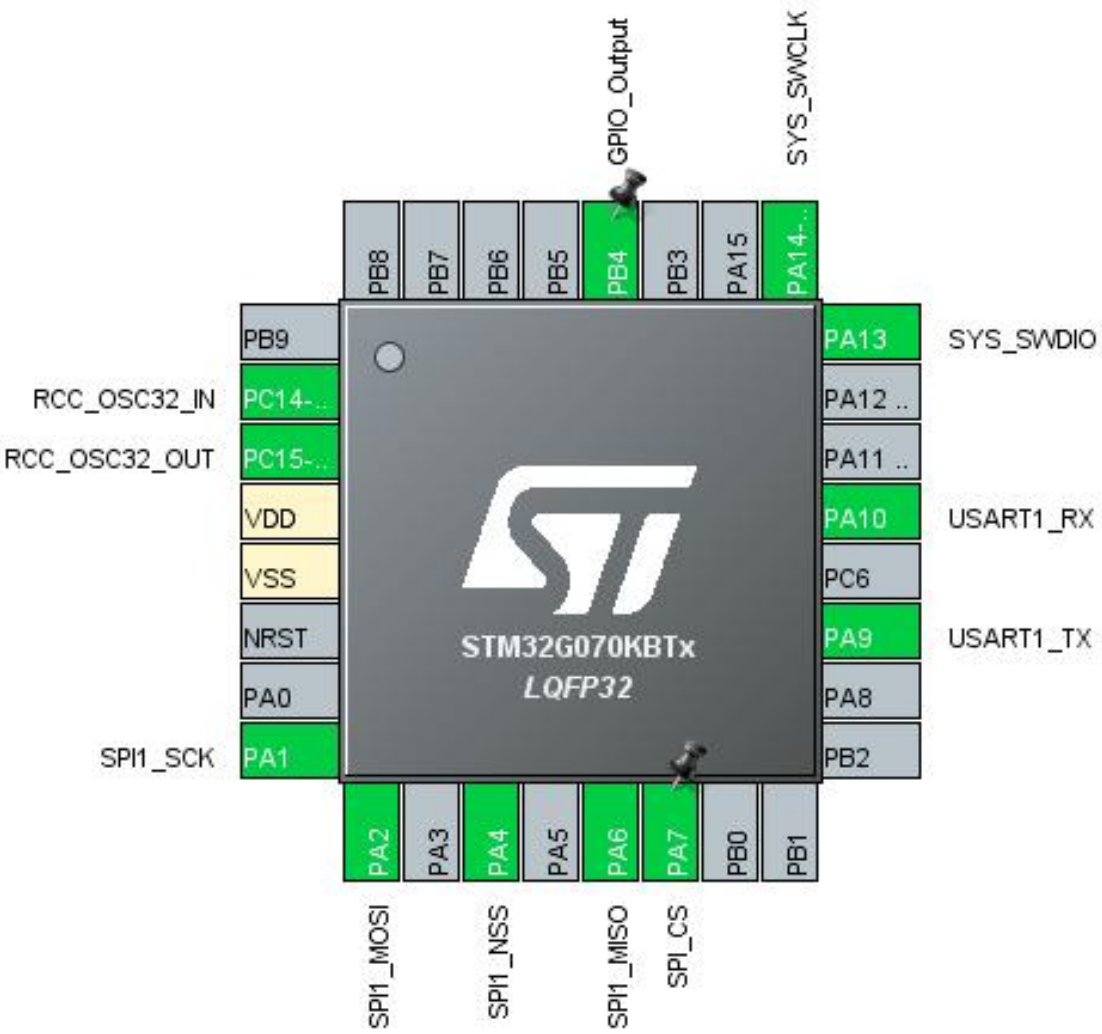
1.1. Project

Project Name	stm32g070_Hardware_SPI
Board Name	custom
Generated with:	STM32CubeMX 5.6.1
Date	07/27/2020

1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x0 Value line
MCU name	STM32G070KBTx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration

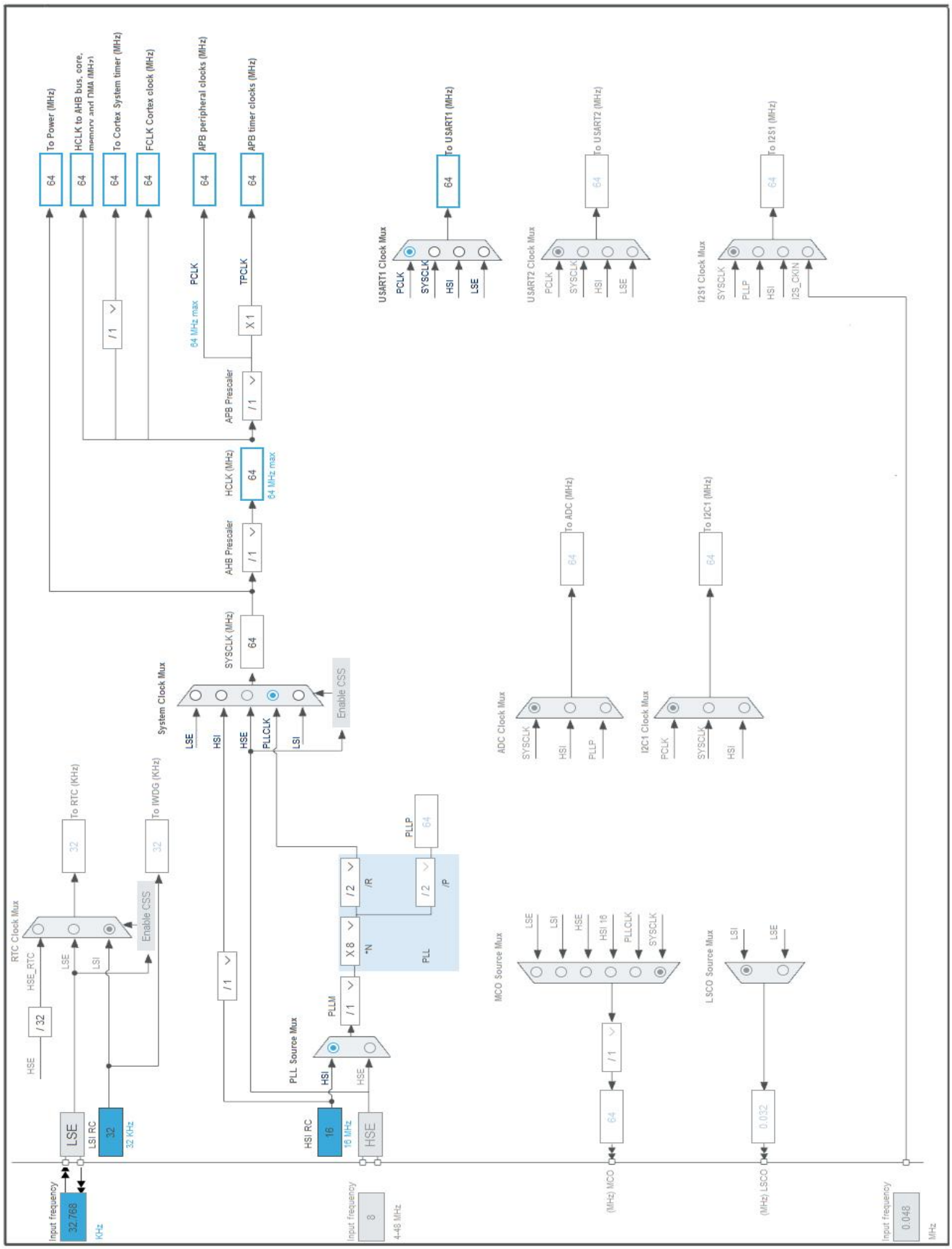


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
2	PC14-OSC32_IN (PC14)	I/O	RCC_OSC32_IN	
3	PC15-OSC32_OUT (PC15)	I/O	RCC_OSC32_OUT	
4	VDD	Power		
5	VSS	Power		
8	PA1	I/O	SPI1_SCK	
9	PA2	I/O	SPI1_MOSI	
11	PA4	I/O	SPI1_NSS	
13	PA6	I/O	SPI1_MISO	
14	PA7 *	I/O	GPIO_Output	SPI_CS
19	PA9	I/O	USART1_TX	
21	PA10	I/O	USART1_RX	
24	PA13	I/O	SYS_SWDIO	
25	PA14-BOOT0	I/O	SYS_SWCLK	
28	PB4 *	I/O	GPIO_Output	

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	stm32g070_Hardware_SPI
Project Folder	D:\STM32G070_project\stm32g070_Hardware_SPI_1
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_G0 V1.3.0

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	Yes
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32G0
Line	STM32G0x0 Value line
MCU	STM32G070KBTx
Datasheet	DS12766_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

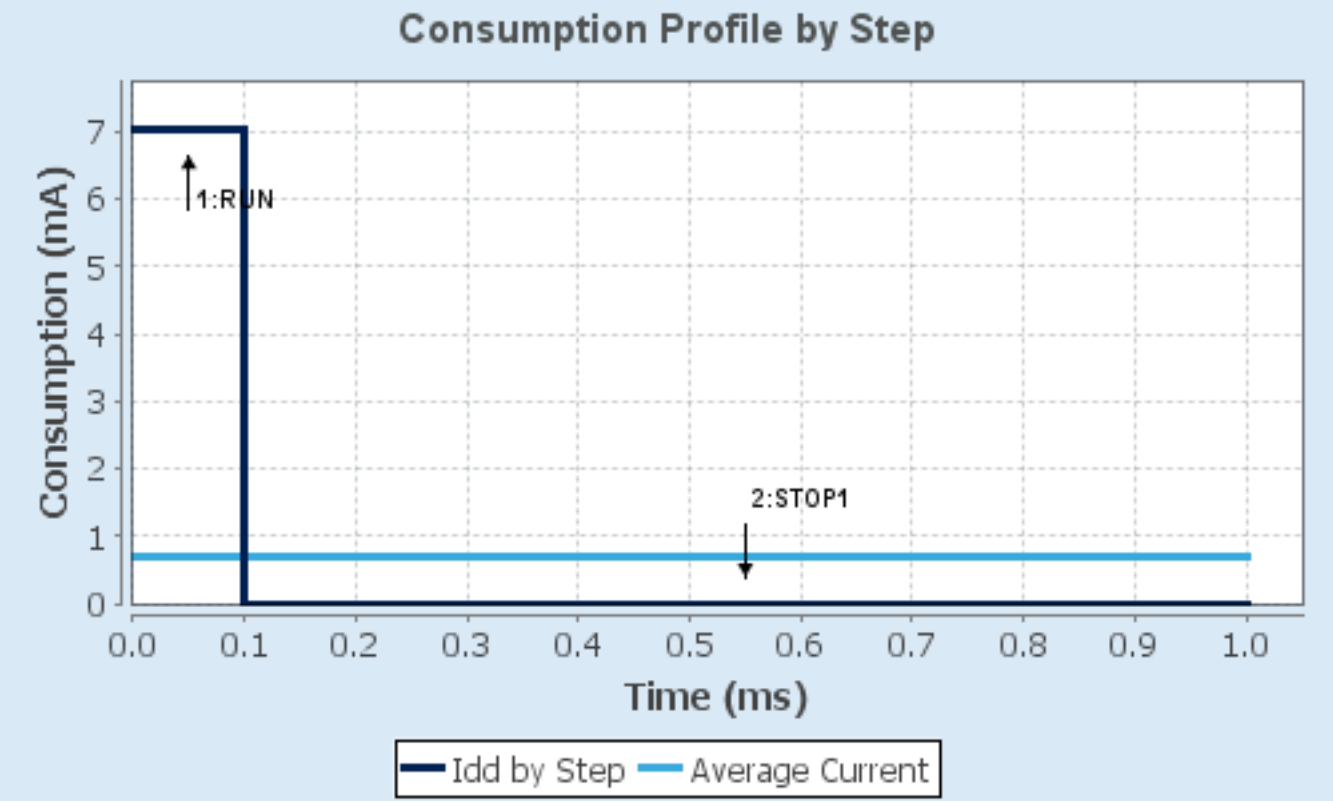
6.4. Sequence

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	7.04 mA	3.74 µA
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	128.39	130
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	707.37 µA
Battery Life	1 month, 10 days, 18 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. IPs and Middleware Configuration

7.1. GPIO

7.2. RCC

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	2 WS (3 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

7.3. SPI1

Mode: Full-Duplex Slave

Hardware NSS Signal: Hardware NSS Input Signal

7.3.1. Parameter Settings:

Basic Parameters:

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

Clock Parameters:

Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled

NSS Signal Type	Input Hardware

7.4. SYS

mode: Debug

Timebase Source: SysTick

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

7.5. USART1

Mode: Asynchronous

7.5.1. Parameter Settings:

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	clock /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	
SPI1	PA1	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA2	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA4	SPI1_NSS	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	**Very High ***	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14-BOOT0	SYS_SWCLK	n/a	n/a	n/a	
USART1	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PA7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	SPI_CS
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

8.2. DMA configuration

DMA request	Stream	Direction	Priority
USART1_RX	DMA1_Channel1	Peripheral To Memory	**Medium ***
USART1_TX	DMA1_Channel2	Memory To Peripheral	**Medium ***

USART1_RX: DMA1_Channel1 DMA request Settings:

Mode:	**Circular ***
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART1_TX: DMA1_Channel2 DMA request Settings:

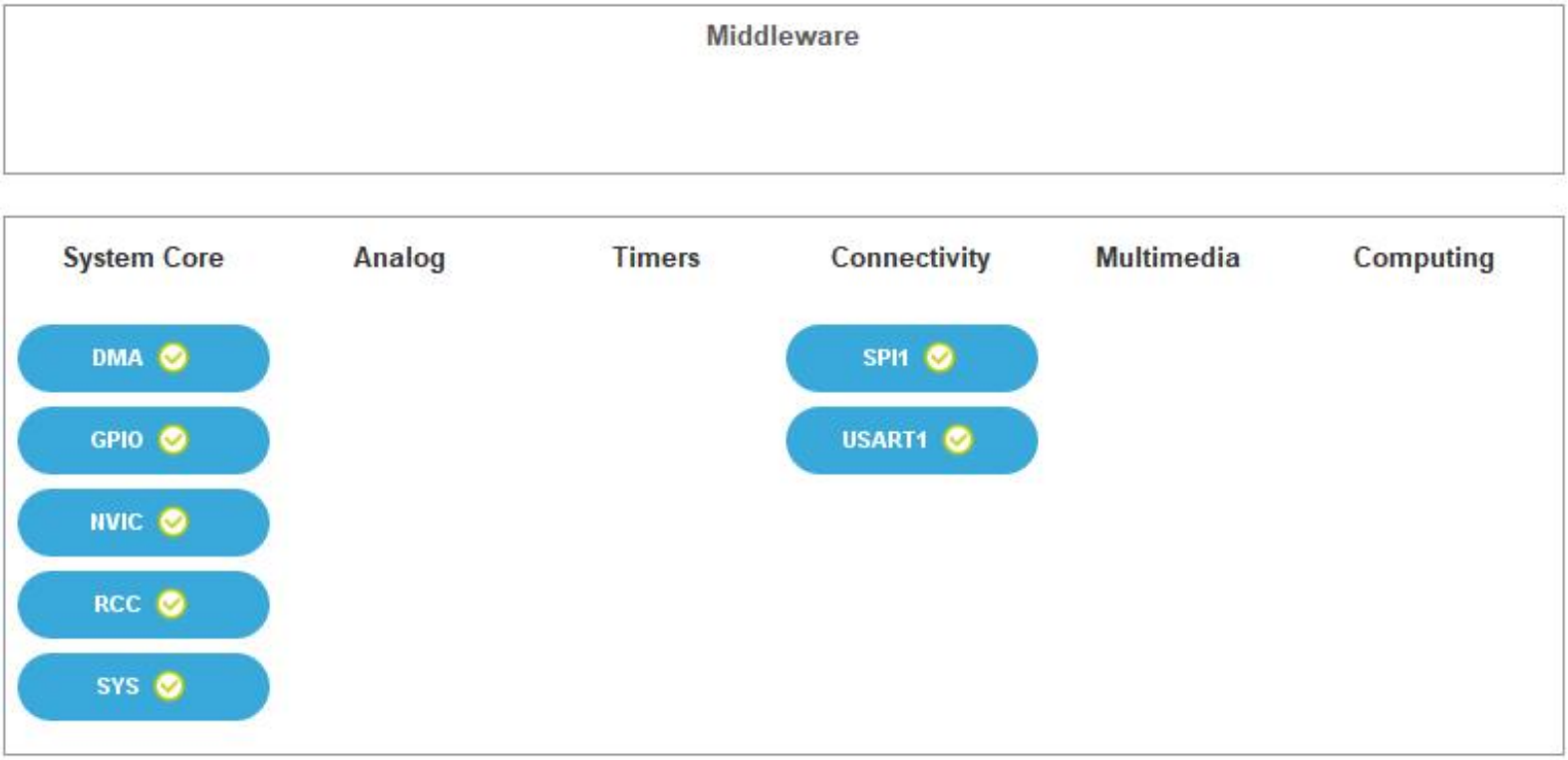
Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

8.3. NVIC configuration

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
DMA1 channel 1 interrupt	true	0	0
DMA1 channel 2 and channel 3 interrupts	true	0	0
SPI1 global interrupt	true	0	0
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		

*** User modified value**

9. Predefined Views - Category view : Current



10. Software Pack Report