1. Description

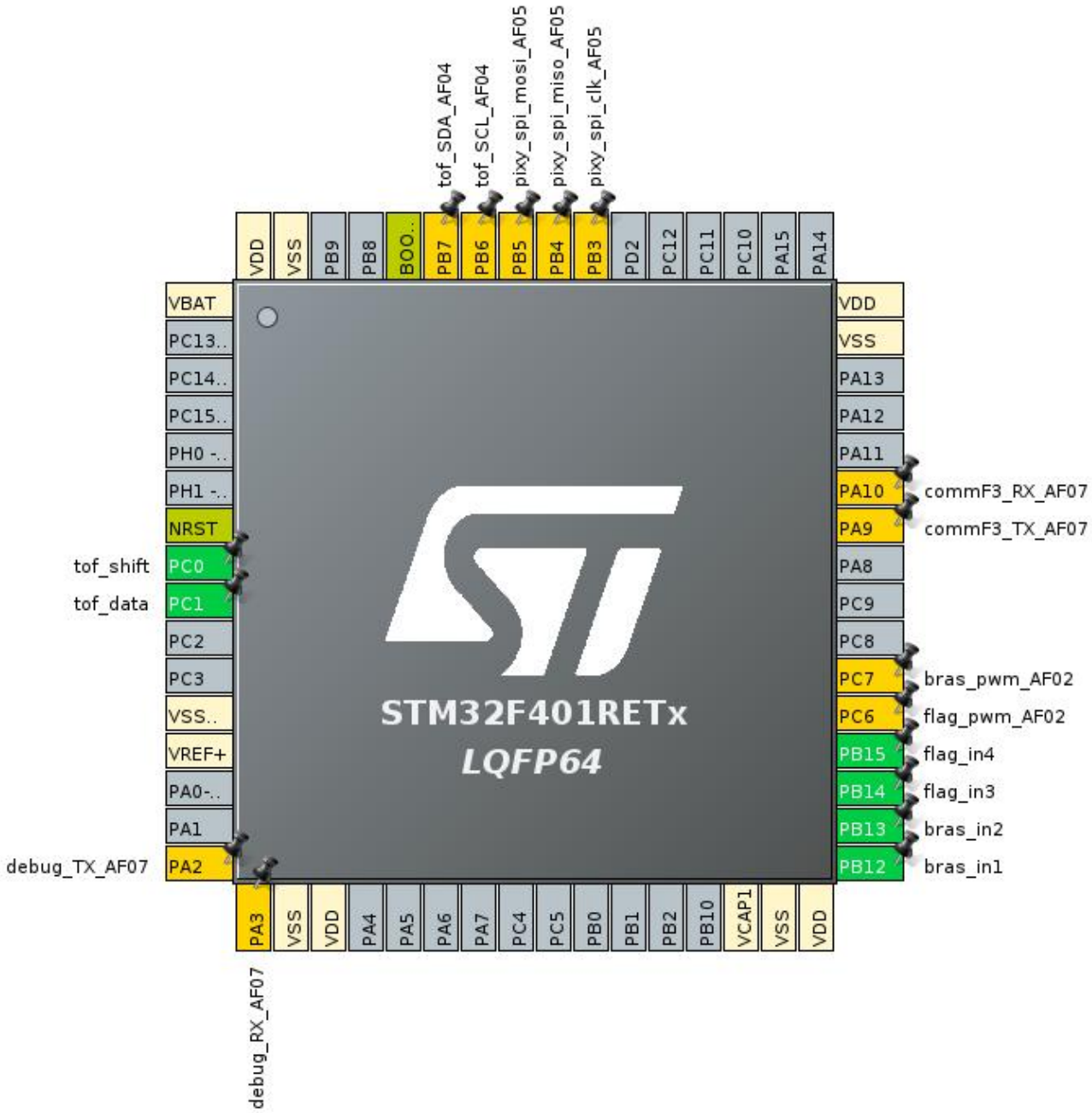
1.1. Project

Project Name	pinMapF4
Board Name	custom
Generated with:	STM32CubeMX 5.6.0
Date	03/26/2020

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F401
MCU name	STM32F401RETx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



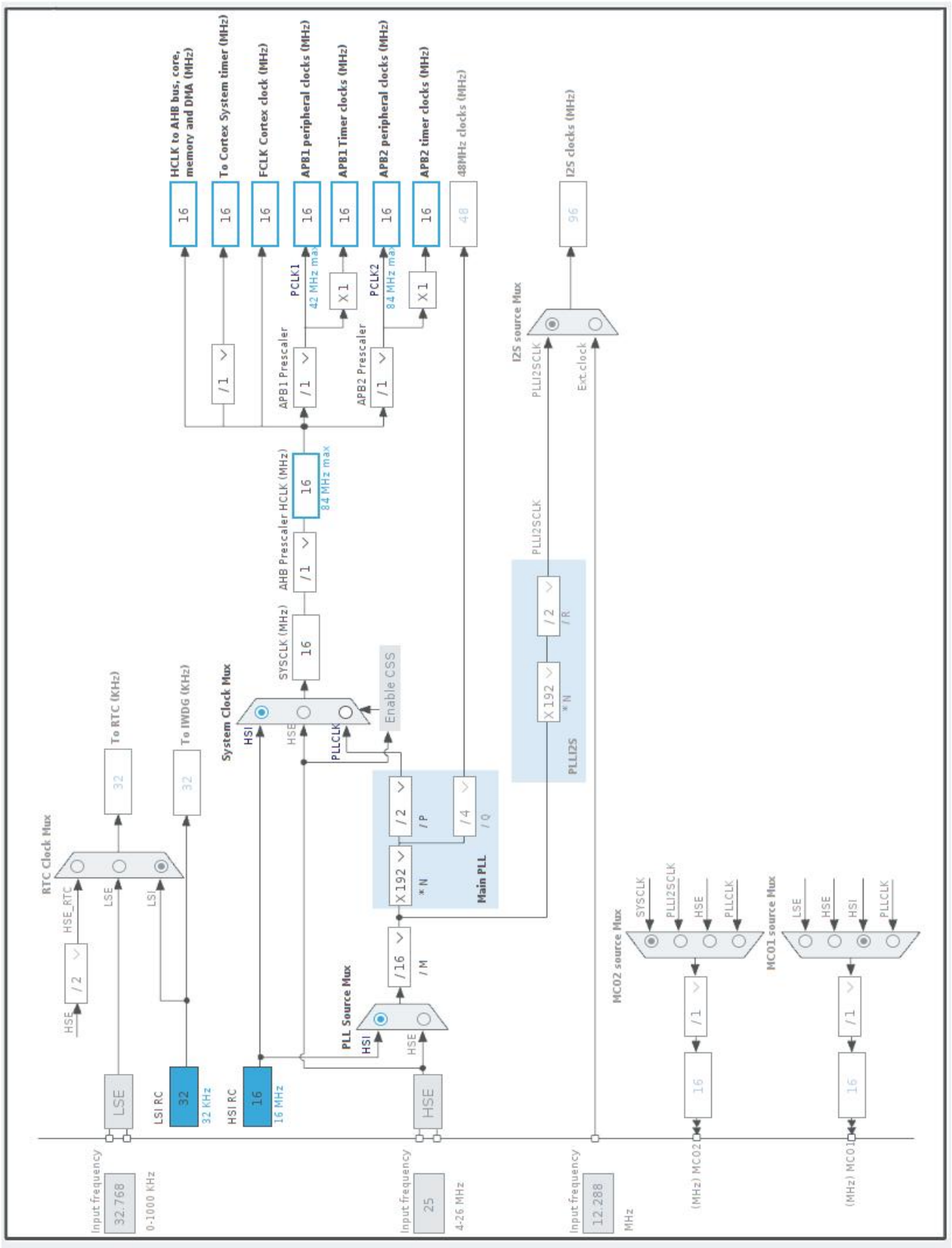
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
7	NRST	Reset		
8	PC0 *	I/O	GPIO_Output	tof_shift
9	PC1 *	I/O	GPIO_Output	tof_data
12	VSSA/VREF-	Power		
13	VREF+	Power		
16	PA2 **	I/O	USART2_TX	debug_TX_AF07
17	PA3 **	I/O	USART2_RX	debug_RX_AF07
18	VSS	Power		
19	VDD	Power		
30	VCAP1	Power		
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Output	bras_in1
34	PB13 *	I/O	GPIO_Output	bras_in2
35	PB14 *	I/O	GPIO_Output	flag_in3
36	PB15 *	I/O	GPIO_Output	flag_in4
37	PC6 **	I/O	TIM3_CH1	flag_pwm_AF02
38	PC7 **	I/O	TIM3_CH2	bras_pwm_AF02
42	PA9 **	I/O	USART1_TX	commF3_TX_AF07
43	PA10 **	I/O	USART1_RX	commF3_RX_AF07
47	VSS	Power		
48	VDD	Power		
55	PB3 **	I/O	SPI1_SCK	pixy_spi_clk_AF05
56	PB4 **	I/O	SPI1_MISO	pixy_spi_miso_AF05
57	PB5 **	I/O	SPI1_MOSI	pixy_spi_mosi_AF05
58	PB6 **	I/O	I2C1_SCL	tof_SCL_AF04
59	PB7 **	I/O	I2C1_SDA	tof_SDA_AF04
60	BOOT0	Boot		
63	VSS	Power		
64	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	pinMapF4
Project Folder	/home/hina/Documents/robotronik/pinMapF4
Toolchain / IDE	EWARM V8.32
Firmware Package Name and Version	STM32Cube FW_F4 V1.25.0

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	No
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	STM32F4
Line	STM32F401
MCU	STM32F401RETx
Datasheet	025644_Rev3

6.2. Parameter Selection

Temperature	25
Vdd	3.3

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

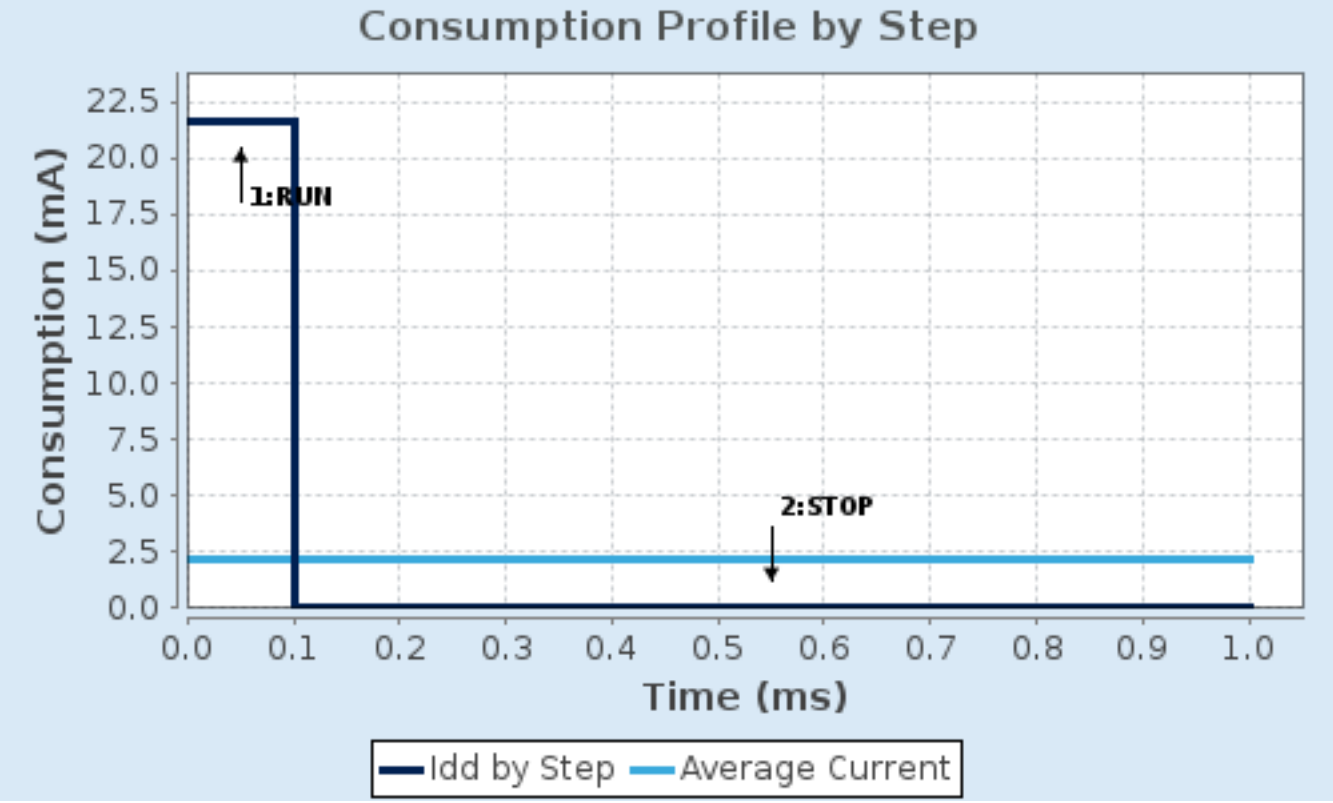
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	Scale2-Medium	No Scale
Fetch Type	FLASH/ART/PREFETCH	n/a
CPU Frequency	84 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator_LPLV Flash-PwrDwn
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	21.6 mA	10 µA
Duration	0.1 ms	0.9 ms
DMIPS	105.0	0.0
Ta Max	101.44	105
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	2.17 mA
Battery Life	2 months, 4 days, 8 hours	Average DMIPS	105.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
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. IPs and Middleware Configuration

7.1. GPIO

7.2. RCC

7.2.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

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

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 2

7.3. SYS

Timebase Source: SysTick

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
Single Mapped Signals	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	debug_TX_AF07
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	debug_RX_AF07
	PC6	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	flag_pwm_AF02
	PC7	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	bras_pwm_AF02
	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	commF3_TX_AF07
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	commF3_RX_AF07
	PB3	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	pixy_spi_clk_AF05
	PB4	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	pixy_spi_miso_AF05
	PB5	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	pixy_spi_mosi_AF05
	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	**Very High** *	tof_SCL_AF04
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	**Very High** *	tof_SDA_AF04
GPIO	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	tof_shift
	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	tof_data
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	bras_in1
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	bras_in2
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	flag_in3
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	flag_in4

8.2. DMA configuration

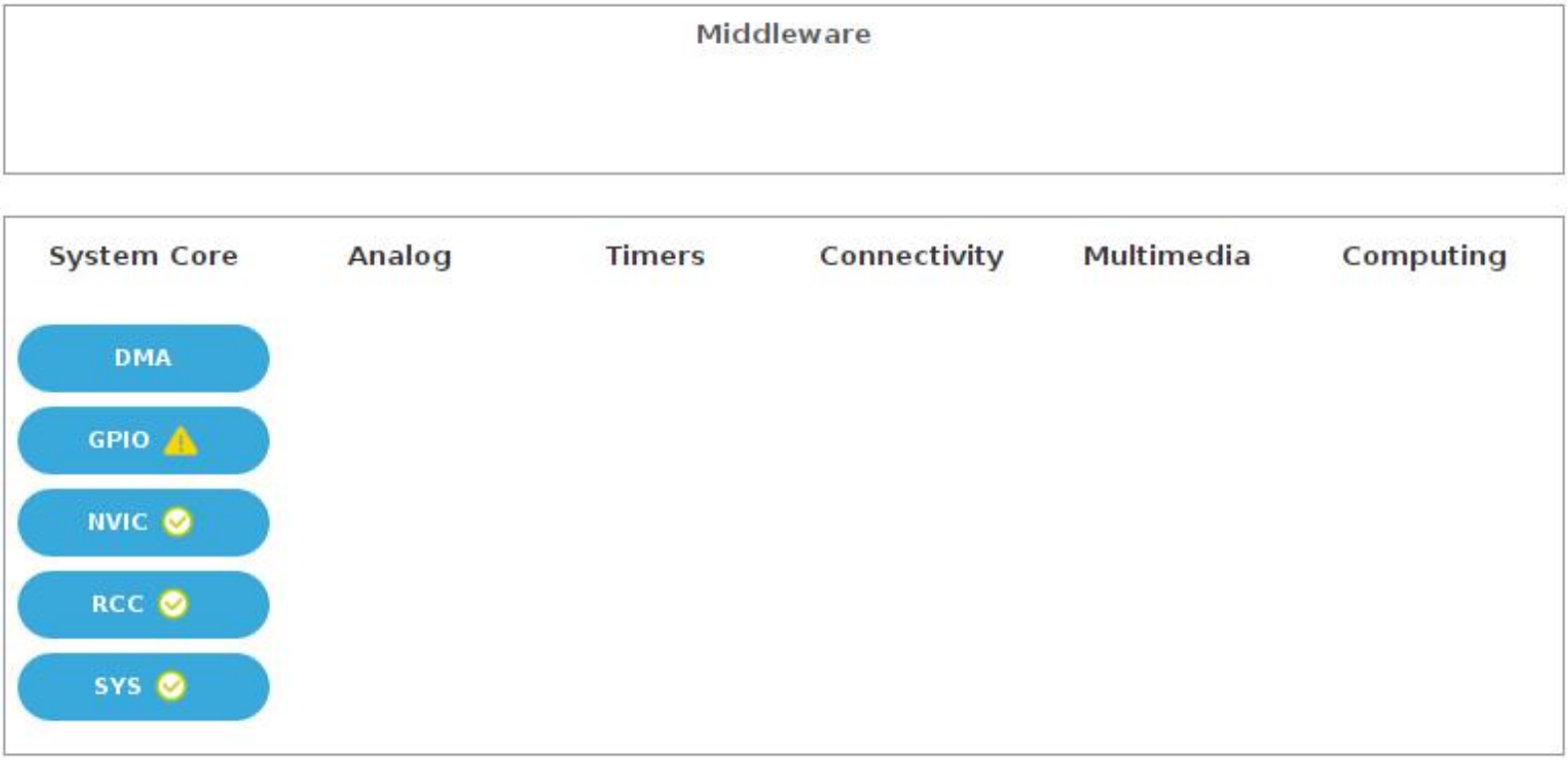
nothing configured in DMA service

8.3. NVIC configuration

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	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

9. Predefined Views - Category view : Current



10. Software Pack Report