1. Description

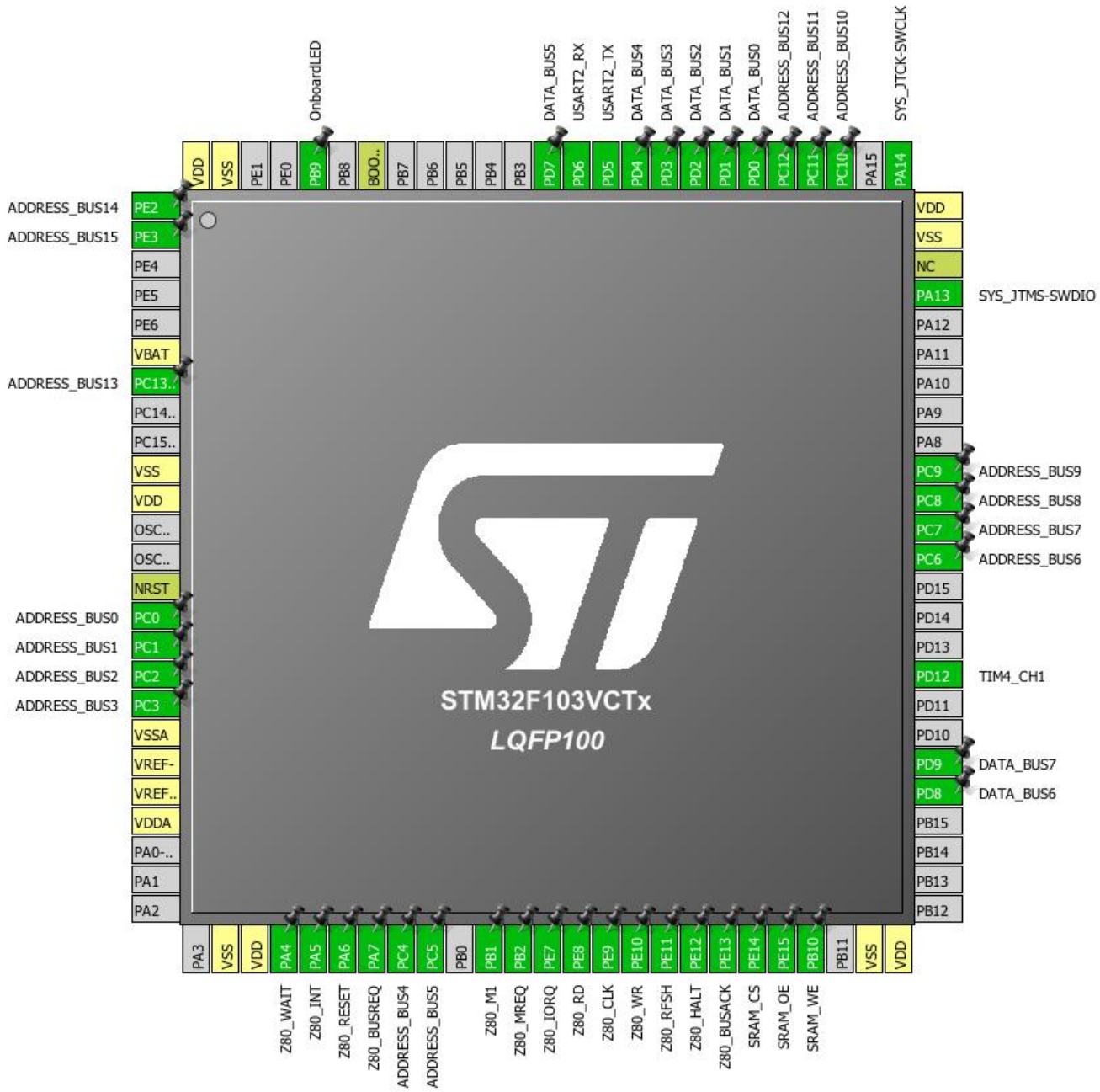
1.1. Project

Project Name	SeniorProject
Board Name	SeniorProject
Generated with:	STM32CubeMX 4.23.0
Date	11/19/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103VCTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



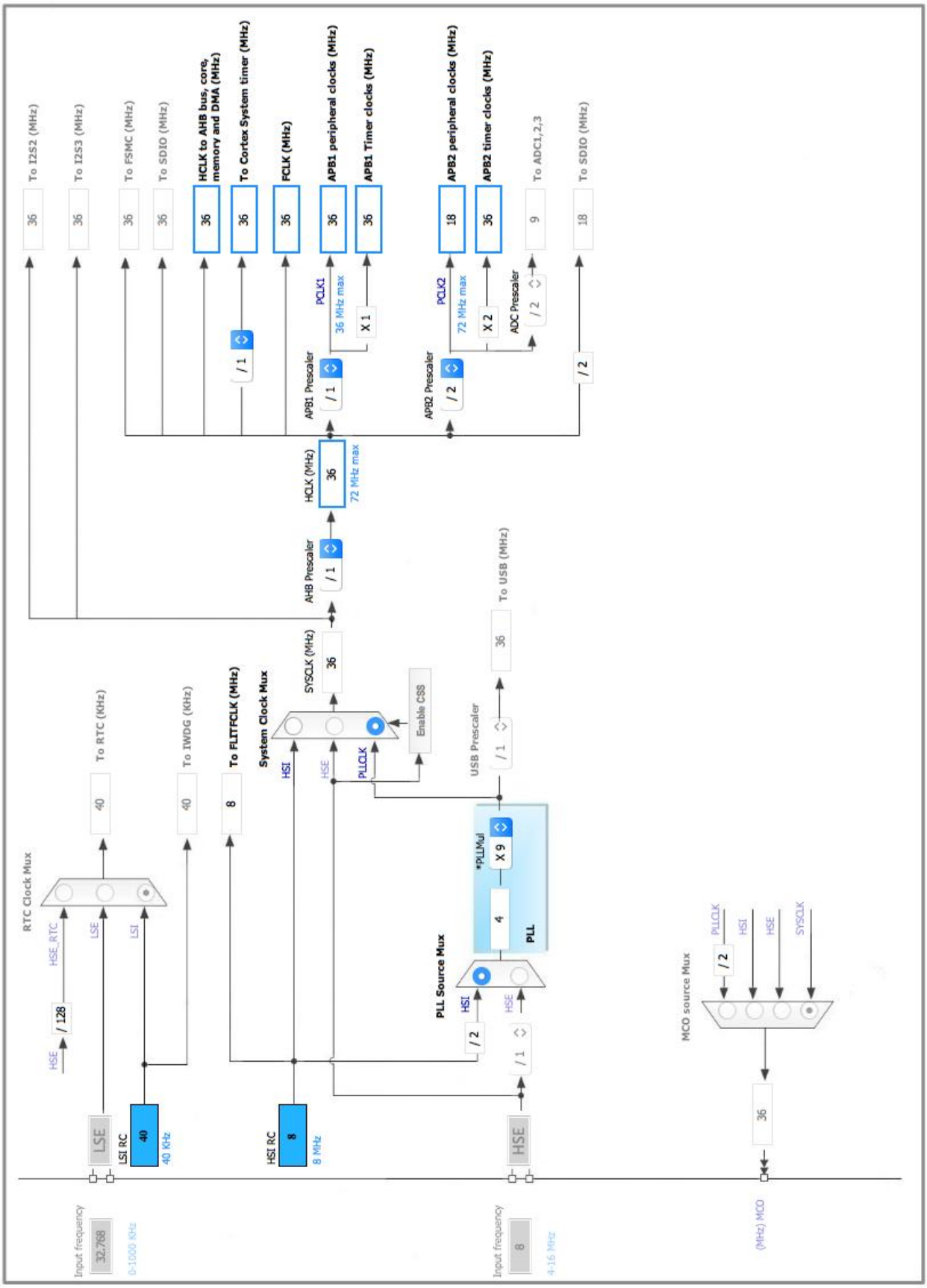
3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Input	ADDRESS_BUS14
2	PE3 *	I/O	GPIO_Input	ADDRESS_BUS15
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	GPIO_Input	ADDRESS_BUS13
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Input	ADDRESS_BUS0
16	PC1 *	I/O	GPIO_Input	ADDRESS_BUS1
17	PC2 *	I/O	GPIO_Input	ADDRESS_BUS2
18	PC3 *	I/O	GPIO_Input	ADDRESS_BUS3
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Output	Z80_WAIT
30	PA5 *	I/O	GPIO_Output	Z80_INT
31	PA6 *	I/O	GPIO_Output	Z80_RESET
32	PA7 *	I/O	GPIO_Output	Z80_BUSREQ
33	PC4 *	I/O	GPIO_Input	ADDRESS_BUS4
34	PC5 *	I/O	GPIO_Input	ADDRESS_BUS5
36	PB1 *	I/O	GPIO_Input	Z80_M1
37	PB2 *	I/O	GPIO_Input	Z80_MREQ
38	PE7 *	I/O	GPIO_Input	Z80_IORQ
39	PE8 *	I/O	GPIO_Input	Z80_RD
40	PE9 *	I/O	GPIO_Output	Z80_CLK
41	PE10 *	I/O	GPIO_Input	Z80_WR
42	PE11 *	I/O	GPIO_Input	Z80_RFSH
43	PE12 *	I/O	GPIO_Input	Z80_HALT
44	PE13 *	I/O	GPIO_Input	Z80_BUSACK
45	PE14 *	I/O	GPIO_Output	SRAM_CS
46	PE15 *	I/O	GPIO_Output	SRAM_OE
47	PB10 *	I/O	GPIO_Output	SRAM_WE
49	VSS	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
50	VDD	Power		
55	PD8 *	I/O	GPIO_Input	DATA_BUS6
56	PD9 *	I/O	GPIO_Input	DATA_BUS7
59	PD12	I/O	TIM4_CH1	
63	PC6 *	I/O	GPIO_Input	ADDRESS_BUS6
64	PC7 *	I/O	GPIO_Input	ADDRESS_BUS7
65	PC8 *	I/O	GPIO_Input	ADDRESS_BUS8
66	PC9 *	I/O	GPIO_Input	ADDRESS_BUS9
72	PA13	I/O	SYS_JTMS-SWDIO	
73	NC	NC		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	
78	PC10 *	I/O	GPIO_Input	ADDRESS_BUS10
79	PC11 *	I/O	GPIO_Input	ADDRESS_BUS11
80	PC12 *	I/O	GPIO_Input	ADDRESS_BUS12
81	PD0 *	I/O	GPIO_Input	DATA_BUS0
82	PD1 *	I/O	GPIO_Input	DATA_BUS1
83	PD2 *	I/O	GPIO_Input	DATA_BUS2
84	PD3 *	I/O	GPIO_Input	DATA_BUS3
85	PD4 *	I/O	GPIO_Input	DATA_BUS4
86	PD5	I/O	USART2_TX	
87	PD6	I/O	USART2_RX	
88	PD7 *	I/O	GPIO_Input	DATA_BUS5
94	BOOT0	Boot		
96	PB9 *	I/O	GPIO_Output	OnboardLED
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.2. TIM4

Clock Source : Internal Clock

Channel1: PWM Generation CH1

5.2.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**9000 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**4000 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	**2000 ***
Fast Mode	Disable
CH Polarity	High

5.3. USART2

Mode: Asynchronous

5.3.1. 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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM4	PD12	TIM4_CH1	Alternate Function Push Pull	n/a	Low	
USART2	PD5	USART2_TX	Alternate Function Push Pull	n/a	**High ***	
	PD6	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PE2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS14
	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS15
	PC13-TAMPER-RTC	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS13
	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS0
	PC1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS1
	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS2
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS3
	PA4	GPIO_Output	Output Push Pull	n/a	Low	Z80_WAIT
	PA5	GPIO_Output	Output Push Pull	n/a	Low	Z80_INT
	PA6	GPIO_Output	Output Push Pull	n/a	Low	Z80_RESET
	PA7	GPIO_Output	Output Push Pull	n/a	Low	Z80_BUSREQ
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS4
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS5
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_M1
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_MREQ
	PE7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_IORQ
	PE8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_RD
	PE9	GPIO_Output	Output Push Pull	n/a	Low	Z80_CLK
	PE10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_WR
	PE11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_RFSH
	PE12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_HALT
	PE13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Z80_BUSACK
	PE14	GPIO_Output	Output Push Pull	n/a	Low	SRAM_CS
	PE15	GPIO_Output	Output Push Pull	n/a	Low	SRAM_OE
	PB10	GPIO_Output	Output Push Pull	n/a	Low	SRAM_WE

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS6
	PD9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS7
	PC6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS6
	PC7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS7
	PC8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS8
	PC9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS9
	PC10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS10
	PC11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS11
	PC12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ADDRESS_BUS12
	PD0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS0
	PD1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS1
	PD2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS2
	PD3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS3
	PD4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS4
	PD7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_BUS5
	PB9	GPIO_Output	Output Push Pull	n/a	Low	OnboardLED

6.2. DMA configuration

nothing configured in DMA service

6.3. 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
Prefetch 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		
TIM4 global interrupt	unused		
USART2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103VCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	SeniorProject
Project Folder	/Users/andrewpbingham/Documents/workspace/SeniorProject
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	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
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No