The Atmel SAM R21 Xplaines Pro is based on the ATSAMR21G18A microchip. As for the Atmel microcontrollers usual it is recommended to use the Atmel Studio IDE.
Link: https://www.microchip.com/mplab/avr-support/atmel-studio-7

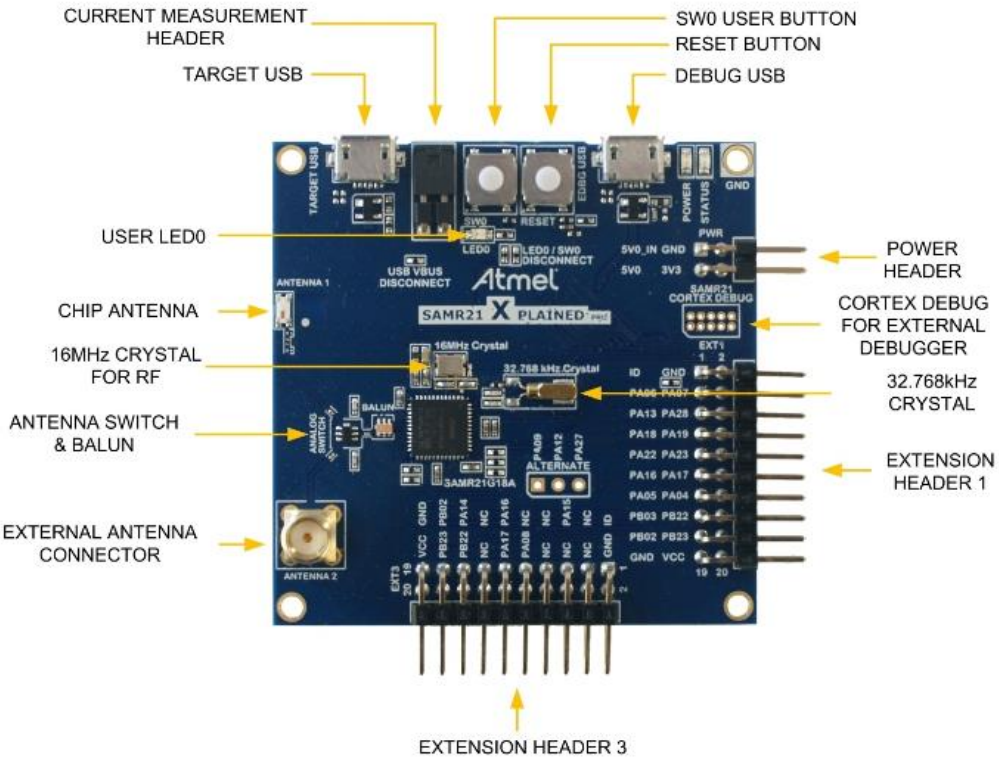
To program the Micro controller, you must connect the EDBG USB port with your PC. After that the SAM R21 Xplained Pro Tab should open in Atmel Studio.

It is possible to download example programs, by using the *NEW ASF Example Project* link. To ensure that your evaluation kit works it is recommended to load the *LED Link Toggle Application* example.

The examples are based on the Advanced Software Framework (asf). Read the Documantation here:
https://www.microchip.com/mplab/avr-support/advanced-software-framework

The evaluation board comes with two main Extensions headers. The Pins and their use are listed in the table below.

Pin number	1st function	2nd function	Description
1	ID		Communication line to the ID chip on an extension board
2	GND		Ground
3	ADC (+)		Analog to digital converter
4	ADC (-)		Analog to digital converter
5	GPIO 1		General Purpose I/O
6	GPIO 2		General Purpose I/O
7	PWM (+)		Pulse width modulation
8	PWM (-)		Pulse width modulation
9	IRQ	GPIO	Interrupt request line and/or general Purpose I/O
10	SPI SS B	GPIO	Slave select for SPI and/or general Purpose I/O
11	I^2C SDA		Data line for I^2C
12	I^2C SCL		Clock line for I^2C
13	UART RX		Receiver line of target device UART
14	UART TX		Transmitter line of target device UART
15	SPI SS A		Save select for SPI
16	SPI MOSI		Master out slave in line of SPI
17	SPI MISO		Master in slave out line of SPI
18	SPI SCK		Clock for SPI
19	GND		Ground
20	VCC		Power for extension board



Xplained Pro Power Header

Pin number	Function	Description
1	VEXT P5V0	External 5V input
2	GND	Ground
3	VCC P5V0	Unregulated 5V
4	VCC P3V3	Regulated 5V

Extension Header EXT1:

Pin on EXT1	SAM R21 pin	Function	Shared functionality
1 [ID]		ID	
2 [GND]		GND	
3 [ADC (+)]	PA06	AIN [6]	
4 [ADC (-)]	PA07	AIN [7]	
5 [GPIO 1]	PA13	GPIO	
6 [GPIO 2]	PA28	GPIO	
7 [PWM (+)]	PA18	TCC0 / WO [2]	
8 [PWM (-)]]	PA19	TCC0 / WO [3]	
9 [IRQ / GPIO]	PA22	EXTINT [6]	
10 [SPI SS B / GPIO]	PA23	GPIO	
11 [I²C SDA]	PA16	SERCOM1 PAD [0] I²C SDA	EXT3 and EDBG
12 [I²C SCL]	PA17	SERCOM1 PAD [1] I²C SCL	EXT3 and EDBG
13 [UART RX]	PA05	SERCOM0 PAD [1] UART RX	EDBG

14 [UART TX]	PA04	SERCOM0 PAD [0] UART TX	EDBG
15 [SPI SS A]	PB03	SERCOM5 PAD [1] SPI SS	
16 [SPI MOSI]	PB22	SERCOM5 PAD [2] SPI MOSI	EXT3 and EDBG
17 [SPI MISO]	PB02	SERCOM5 PAD [0] SPI MISO	EXT3 and EDBG
18 [SPI SCK]	PB23	SERCOM5 PAD [3] SPI SCK	EXT3 and EDBG
19 [GND]		GND	
20 [VCC]		VCC	

Extension Header EXT3:

Pin on EXT1	SAM R21 pin	Function	Shared functionality
1 [ID]		ID	
2 [GND]		GND	
3 [ADC (+)]			
4 [ADC (-)]			
5 [GPIO 1]	PA15	GPIO	
6 [GPIO 2]			
7 [PWM (+)]			
8 [PWM (-)]]			
9 [IRQ / GPIO]			
10 [SPI SS B / GPIO]	PA08	GPIO	EDBG
11 [I²C SDA]	PA16	SERCOM1 PAD [0] I²C SDA	EXT1 and EDBG
12 [I²C SCL]	PA17	SERCOM1 PAD [1] I²C SCL	EXT1 and EDBG
13 [UART RX]			
14 [UART TX]			
15 [SPI SS A]	PA14	GPIO	EDBG
16 [SPI MOSI]	PB22	SERCOM5 PAD [2] SPI MOSI	EXT1 and EDBG
17 [SPI MISO]	PB02	SERCOM5 PAD [0] SPI MISO	EXT1 and EDBG
18 [SPI SCK]	PB23	SERCOM5 PAD [3] SPI SCK	EXT1 and EDBG
19 [GND]		GND	
20 [VCC]		VCC	

Alternate Signals Header:

Pin on header	PIN on SAM R21	Function
1	PA09	RFCTRL1, negative antenna switch control signal
2	PA12	RFCTRL2, positive antenna switch control signal
3	PA27	GPIO, chip select on EDBG DGI SPI bus

Cortex Debug Connector

Pin on connector	Connected	Function
1	VCC Target	Voltage reference
2	PA31 SWDIO	Debug data
3	GND	GND
4	PA30 SWCLK	Debug clock
5	GND	GND
6	NC	
7	NC	
8	NC	

9	GND	GND detect
10	RESETN	Target reset

Peripherals

External 32.768kHz Crystal

Pin on SAM R21	Function
PA00	XIN32
PA01	XOUT32

External 16kHz Crystal

Pin on SAM R21	Function
XTAL1	XIN
XTAL2	XOUT

Buttons

Pin on SAM R21	Silkscreen text
RESETN	RESET
PA28	SW0

LED

Pin on SAM R21	LED
PA19	Yellow LED0

USB Connections

Pin on SAM R21	USB
PA07	VBUS Detection
PA24	USB D-
PA25	USB D+

RF Connections

Pin on SAM R21	RF	Shared functionality
RFP	RF balanced output (positive)	
PFN	RF balanced output (negative)	
PA09 / RFCTRL1	RF switch control signal (negative)	EDBG
PA12 / RFCTRL2	RF switch control signal (positive)	EDBG