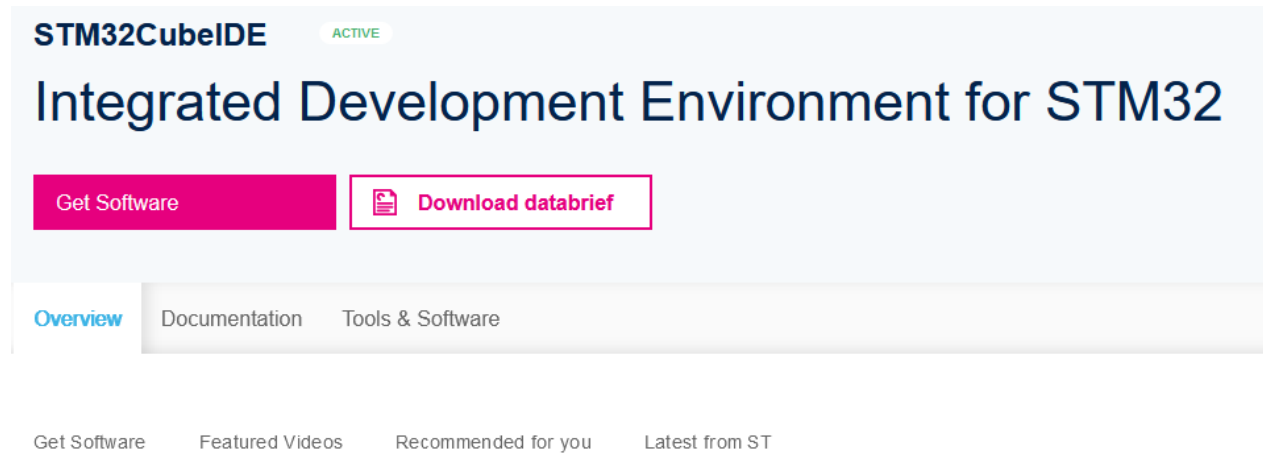


Getting Started STM32CubeIDE

Mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET



STM32CubeIDE is an all-in-one multi-OS development tool, which is part of the STM32Cube software ecosystem.



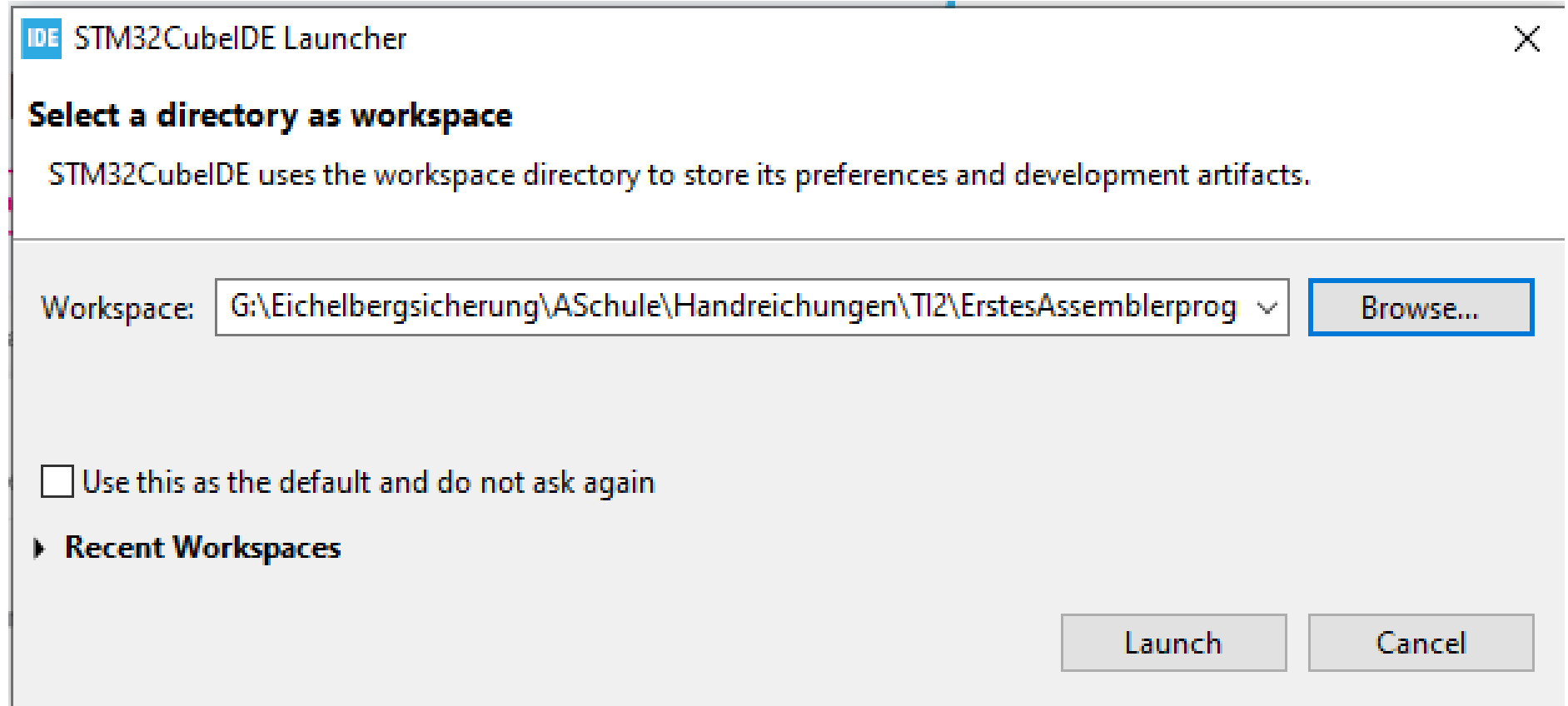
STM32CubeIDE is an advanced C/C++ development platform with peripheral configuration, code generation, code compilation, and debug features for STM32 microcontrollers and microprocessors. It is based on the Eclipse®/CDT framework and GCC toolchain for the development, and GDB for the debugging. It allows the integration of the hundreds of existing plugins that complete the features of the Eclipse® IDE. STM32CubeIDE integrates STM32 configuration and



Die Entwicklungsumgebung kann bei ST kostenlos heruntergeladen werden



Getting Started STM32CubeIDE mit STM32L152RET

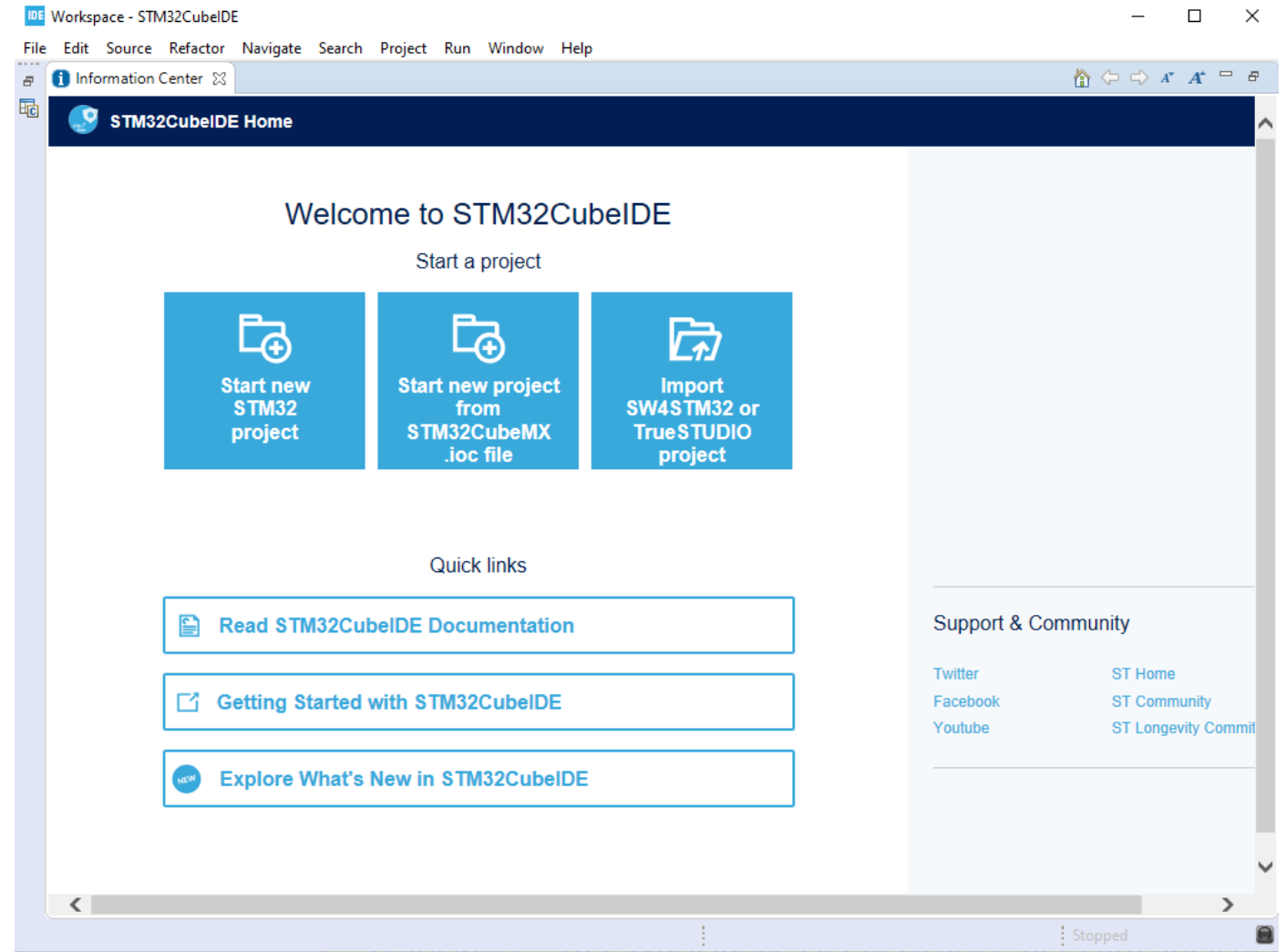


Nach der Installation fragt die Entwicklungsumgebung nach einem „Workspace“. Der Workspace ist ein Ordner, der zum Speichern der Projekte verwendet wird. Mit „Browse...“ kann ein gewünschter Ordner erstellt und angegeben werden. Dann Launch ...



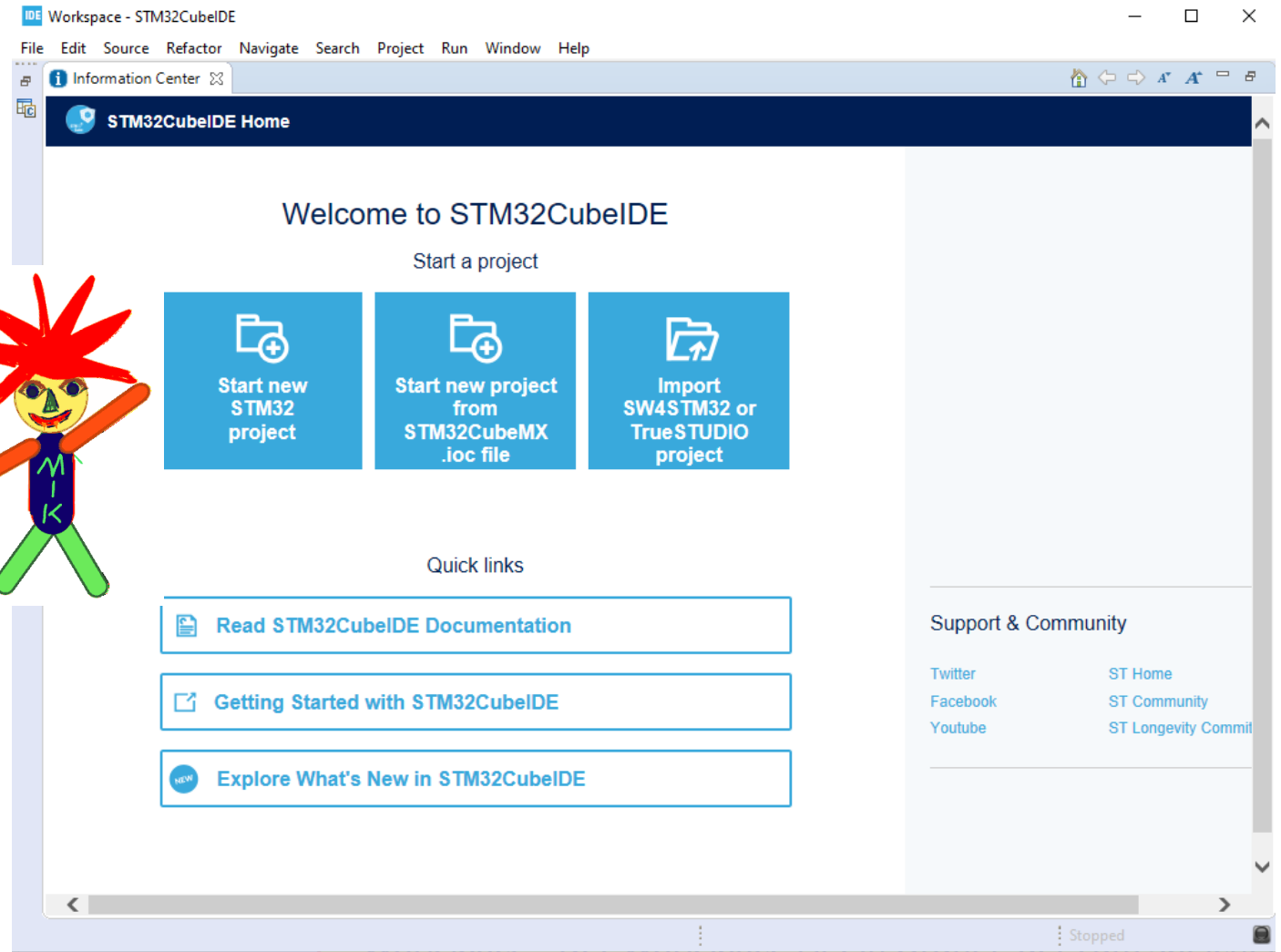
Getting Started STM32CubeIDE mit STM32L152RET

Wer weitere
Informationen
braucht klickt auf die
Quick-Links

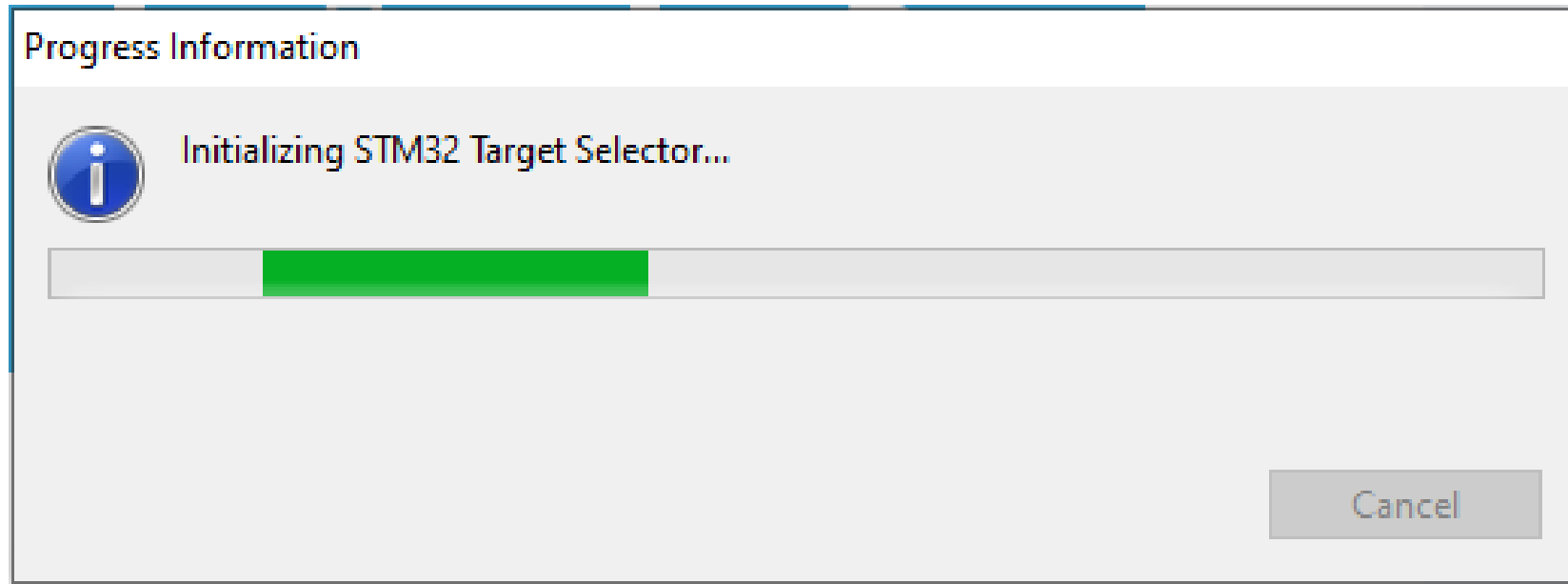


Getting Started STM32CubeIDE mit STM32L152RET

Wir starten ein neues
STM32 Projekt




Getting Started STM32CubeIDE mit STM32L152RET



Der Target Selector
wird initialisiert
Das dauert etwas.



Getting Started STM32CubeIDE mit STM32L152RET



Board Selector | Cross Selector

Core >
Series >
Line >
Package >
Other >

Price From 0.0 to 9.54
IO From 11 to 176
Eeprom From 0 to 16384 (Bytes)
Flash From 0 to 2048 (kBytes)
Ram From 0 to 1184 (kBytes)
Freq. From 24 to 800 (MHz)

Peripheral >

☒ ADC 12-bit 0 42
☒ ADC 16-bit 0 36

IDE

Board Selector | Cross Selector

Features | Block Diagram | Docs & Resources | Datasheet | Buy

ST MCU Finder
All STM32 & STM8 MCUs in one place

MCUs/MPUs List: 1698 items

	Part No	Reference	Marketing Status	Unit Price for 10kU (US\$)	Board	Package	Flash	RAM	ID	Freq.
☆	STM32F030C6	STM32F030C6Tx	Active	0.597		LQFP48	32 kBytes	4 kBytes	39	48 MHz
☆	STM32F030C8	STM32F030C8Tx	Active	0.722		LQFP48	64 kBytes	8 kBytes	39	48 MHz
☆	STM32F030CC	STM32F030CCTx	Active	1.1		LQFP48	256 kBytes	32 kBytes	37	48 MHz
☆	STM32F030F4	STM32F030F4Px	Active	0.424		TSSOP20	16 kBytes	4 kBytes	15	48 MHz
☆	STM32F030K6	STM32F030K6Tx	Active	0.518		LQFP32	32 kBytes	4 kBytes	25	48 MHz
☆	STM32F030R8	STM32F030R8Tx	Active	0.754	N... 32	LQFP64	64 kBytes	8 kBytes	55	48 MHz
☆	STM32F030RC	STM32F030RCTx	Active	1.21		LQFP64	256 kBytes	32 kBytes	51	48 MHz
☆	STM32F031C4	STM32F031C4Tx	Active	0.97		LQFP48	16 kBytes	4 kBytes	39	48 MHz
☆	STM32F031C6	STM32F031C6Tx	Active	1.013		LQFP48	32 kBytes	4 kBytes	39	48 MHz
☆	STM32F031E6	STM32F031E6Yx	Active	0.776		WLCSP25	32 kBytes	4 kBytes	20	48 MHz
☆	STM32F031F4	STM32F031F4Px	Active	0.711		TSSOP20	16 kBytes	4 kBytes	15	48 MHz
☆	STM32F031F6	STM32F031F6Px	Active	0.755		TSSOP20	32 kBytes	4 kBytes	15	48 MHz
☆	STM32F031G4	STM32F031G4Ux	Active	0.733		UFQFPN28	16 kBytes	4 kBytes	23	48 MHz

Wir wählen: **Board Selector** für unser Board

Getting Started STM32CubeIDE mit STM32L152RET

Wir geben die
Bezeichnung unseres
Boards:
NUCLEO-L152RE
ein



MCU/MPU Selector Board Selector Cross Selector

Board Filters

Part Number Search

Vendor

Type

MCU/MPU Series

Other

Price From 13.0 to 13.0


Oscillator Freq. = 0 (MHz)

Peripheral

Accelerometer	0	0
Analog I/O	0	0
Arduino Form Factor	0	0
Audio Line In	0	0

Features Large Picture

Boards List: 1 item

*	Overview	Part No
☆		NUCLEO-L152RE



Getting Started STM32CubeIDE mit STM32L152RET

In der Board List ist nur
noch unser Board
aufgeführt

MCU/MPU Selector Board Selector Cross Selector

Board Filters

★ [Icons]

Part Number Search

🔍 NUCLEO-L152RE

Vendor >

Type >

MCU/MPU Series >

Other

Price From 13.0 to 13.0
13.0

Oscillator Freq. = 0 (MHz)

Peripheral

- ⊗ Accelerometer
- ⊗ Analog I/O
- ⊗ Arduino Form Factor
- ⊗ Audio Line In

Features Large Picture

★ [Image]



Boards List: 1 item

*	Overview	Part No
★		NUCLEO-L152RE

🔊

Getting Started STM32CubeIDE mit STM32L152RET

Boards List: 1 item

*	Overview	Part No	Type	Marketing Status	Unit Price (US
		NUCLEO-L152RE	Nucleo64	Active	13.0

Markieren und auf
Next klicken



Getting Started STM32CubeIDE mit STM32L152RET

Projektname angeben



IDE STM32 Project

Setup STM32 project

Project

Project Name:

☒ Use default location

Location:

Options

Targeted Language

☒ C ☐ C++

Targeted Binary Type

☒ Executable ☐ Static Library

Targeted Project Type

☒ STM32Cube ☐ Empty



Getting Started STM32CubeIDE mit STM32L152RET

Target Language: C
(geht auch mit
Assembler)



STM32 Project

Setup STM32 project

Project

Project Name:

☒ Use default location

Location:

Options

Targeted Language
☒ C ☐ C++

Targeted Binary Type
☒ Executable ☐ Static Library

Targeted Project Type
☒ STM32Cube ☐ Empty



Getting Started STM32CubeIDE mit STM32L152RET

Binary Type:
Executable



STM32 Project

Setup STM32 project

Project

Project Name:

☒ Use default location

Location:

Options

Targeted Language

☒ C ☐ C++

Targeted Binary Type

☒ Executable ☐ Static Library

Targeted Project Type

☒ STM32Cube ☐ Empty



Getting Started STM32CubeIDE mit STM32L152RET

Target Project Type:
STM32Cube



STM32 Project

Setup STM32 project

Project

Project Name:

☒ Use default location

Location:

Options

Targeted Language

☒ C ☐ C++

Targeted Binary Type

☒ Executable ☐ Static Library

Targeted Project Type

☒ STM32Cube ☐ Empty

? < Back Next > **Finish** Cancel



Getting Started STM32CubeIDE mit STM32L152RET

IDE STM32 Project

Setup STM32 project

Project

Project Name:

☒ Use default location

Location:

Options

Targeted Language

☒ C ☐ C++

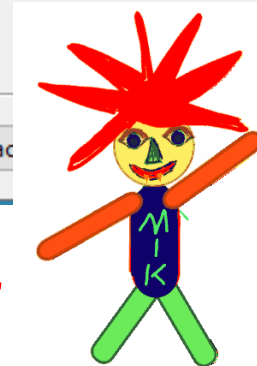
Targeted Binary Type

☒ Executable ☐ Static Library

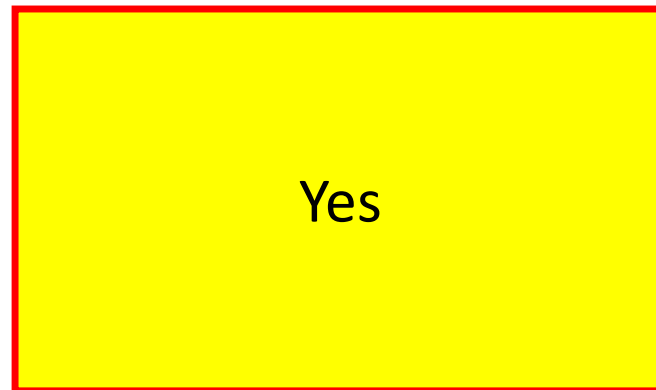
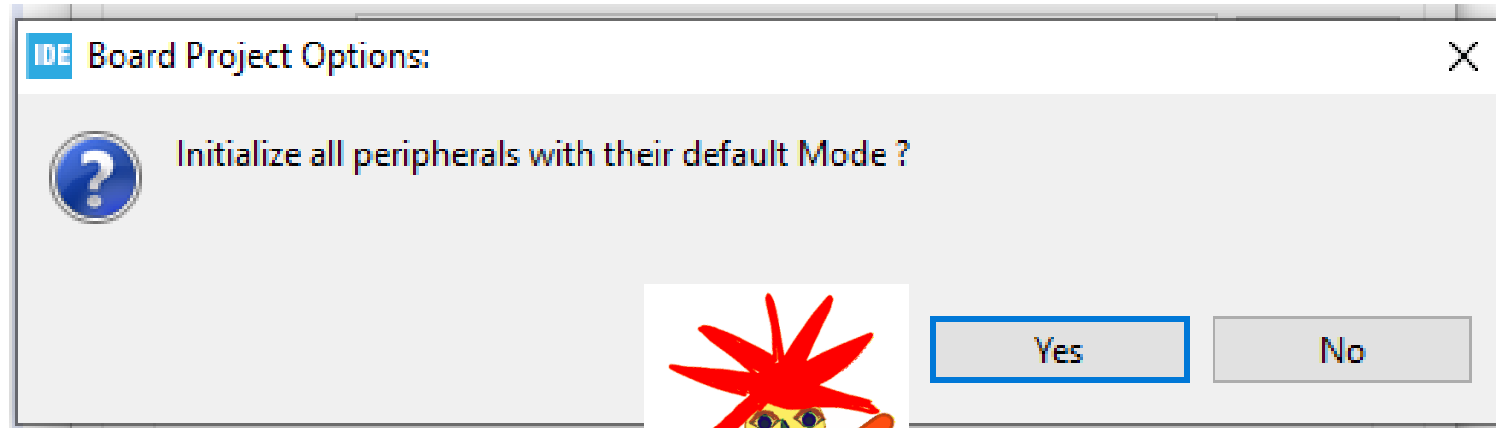
Targeted Project Type

☒ STM32Cube ☐ Empty

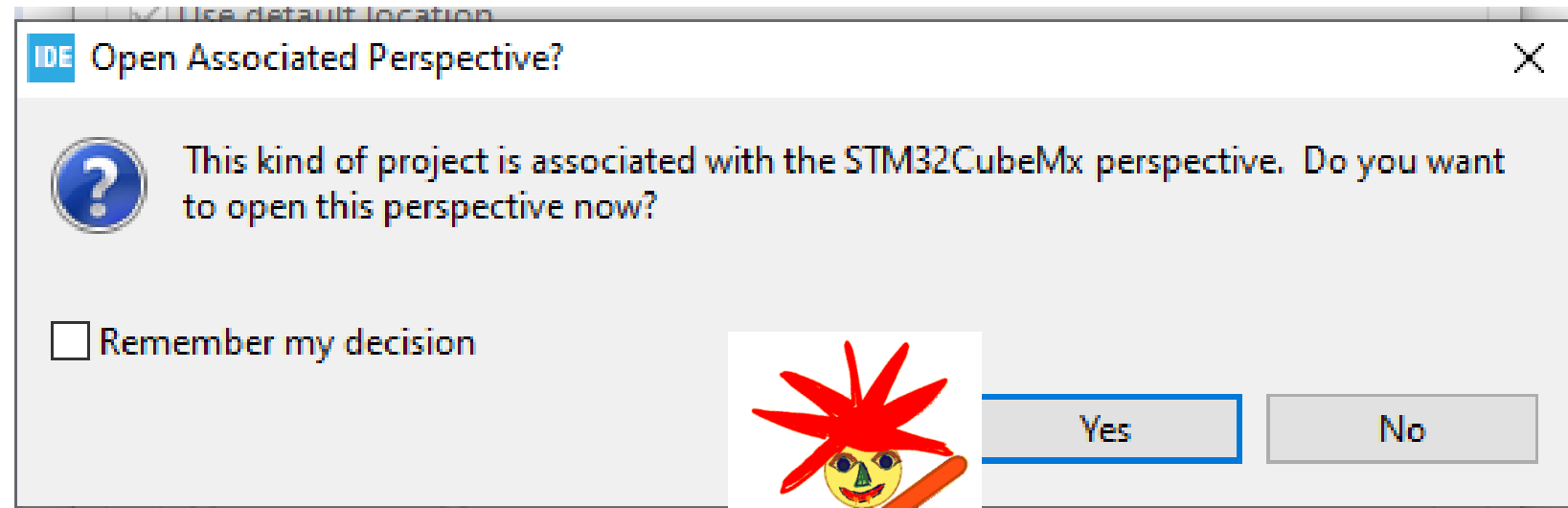
Finish anklicken



Getting Started STM32CubeIDE mit STM32L152RET



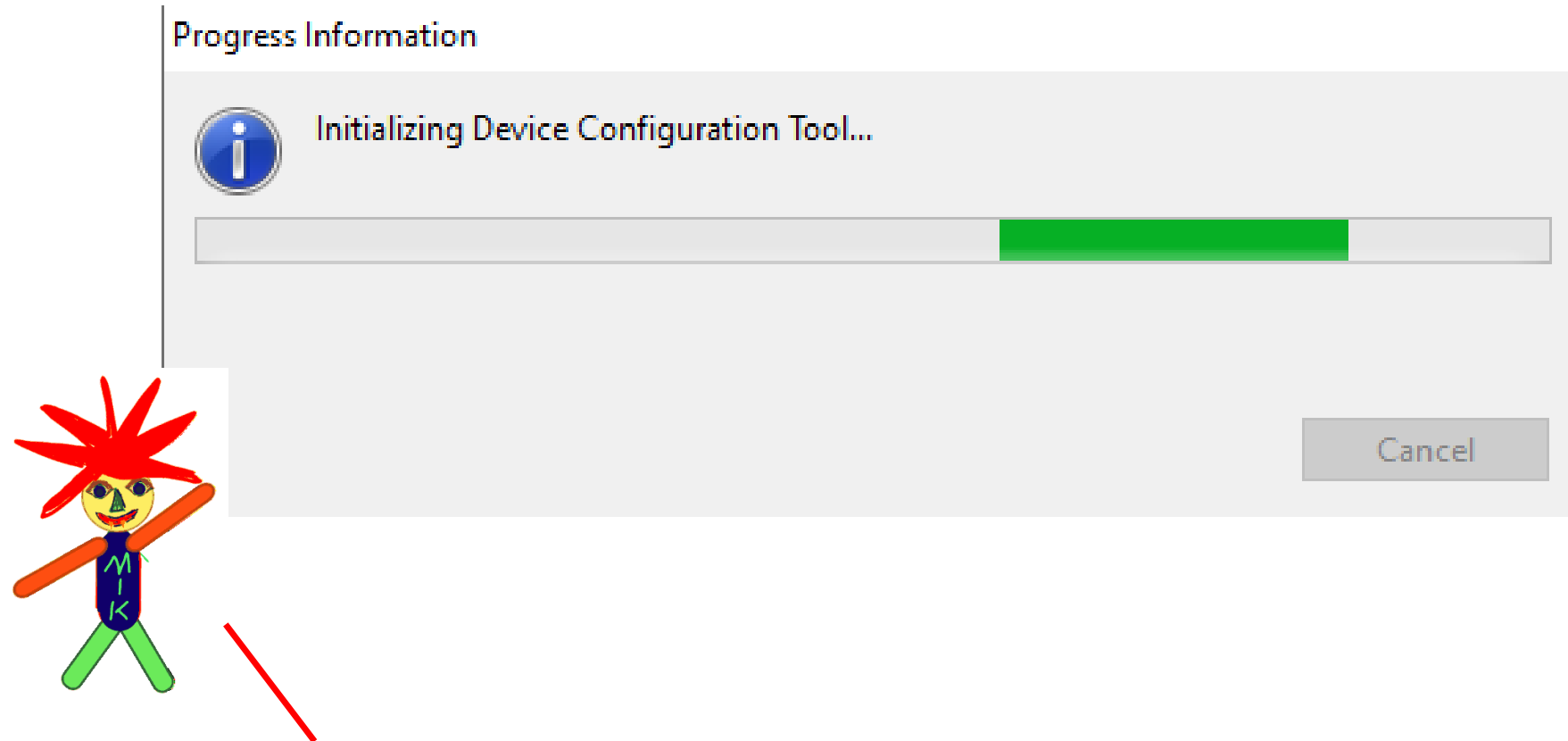
Getting Started STM32CubeIDE mit STM32L152RET



Yes
Ansicht zur
Konfiguration des
Mikrocontrollers



Getting Started STM32CubeIDE mit STM32L152RET



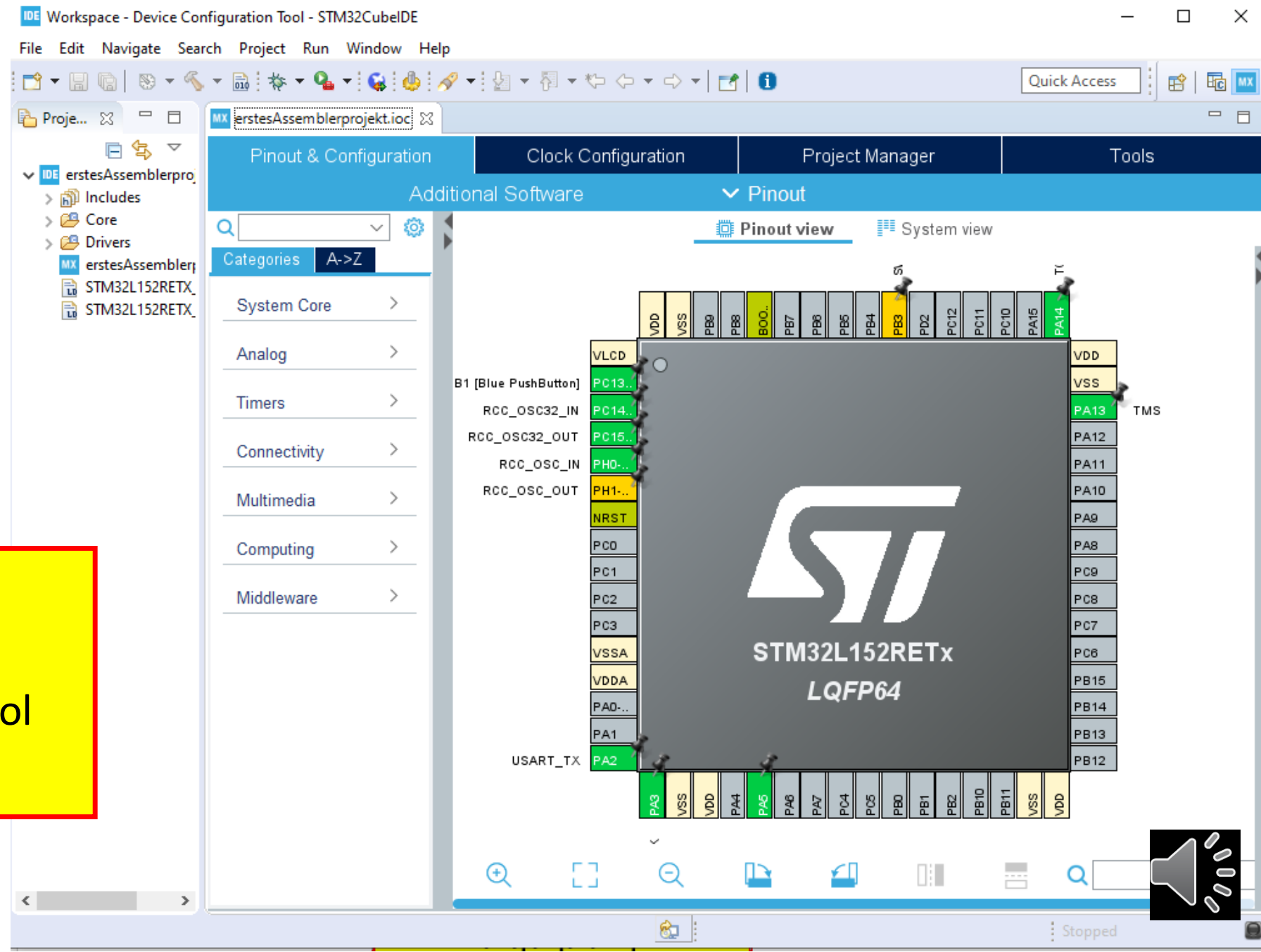
Das Device
Configuration Tool wird
initialisiert



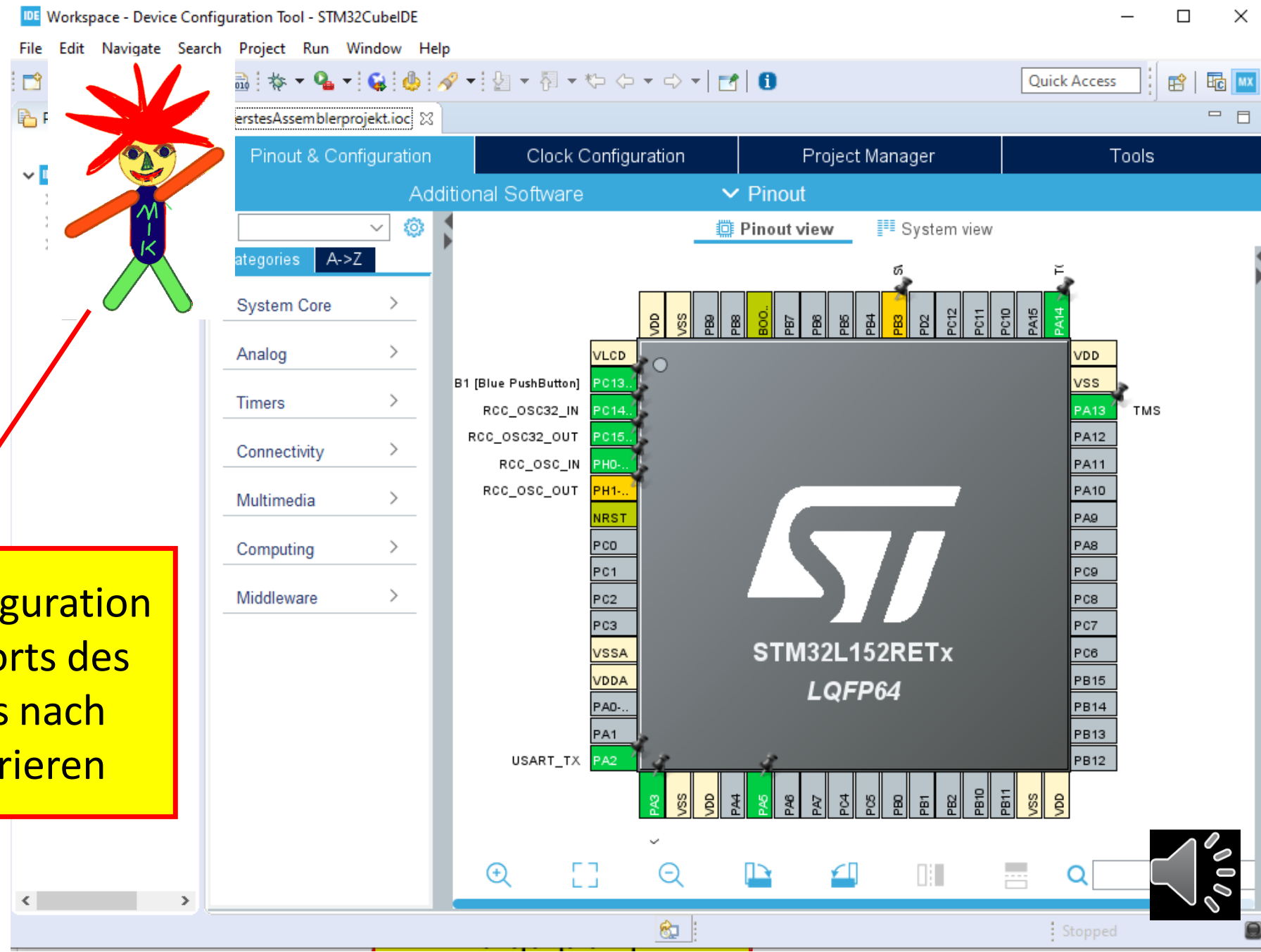
Getting Started STM32CubeIDE mit STM32L152RET



Das Device
Configuration Tool



Getting Started STM32CubeIDE mit STM32L152RET



Mit Pinout & Configuration
können wir die Ports des
Mikrokontrollers nach
Wunsch konfigurieren

Getting Started STM32CubeIDE mit STM32L152RET

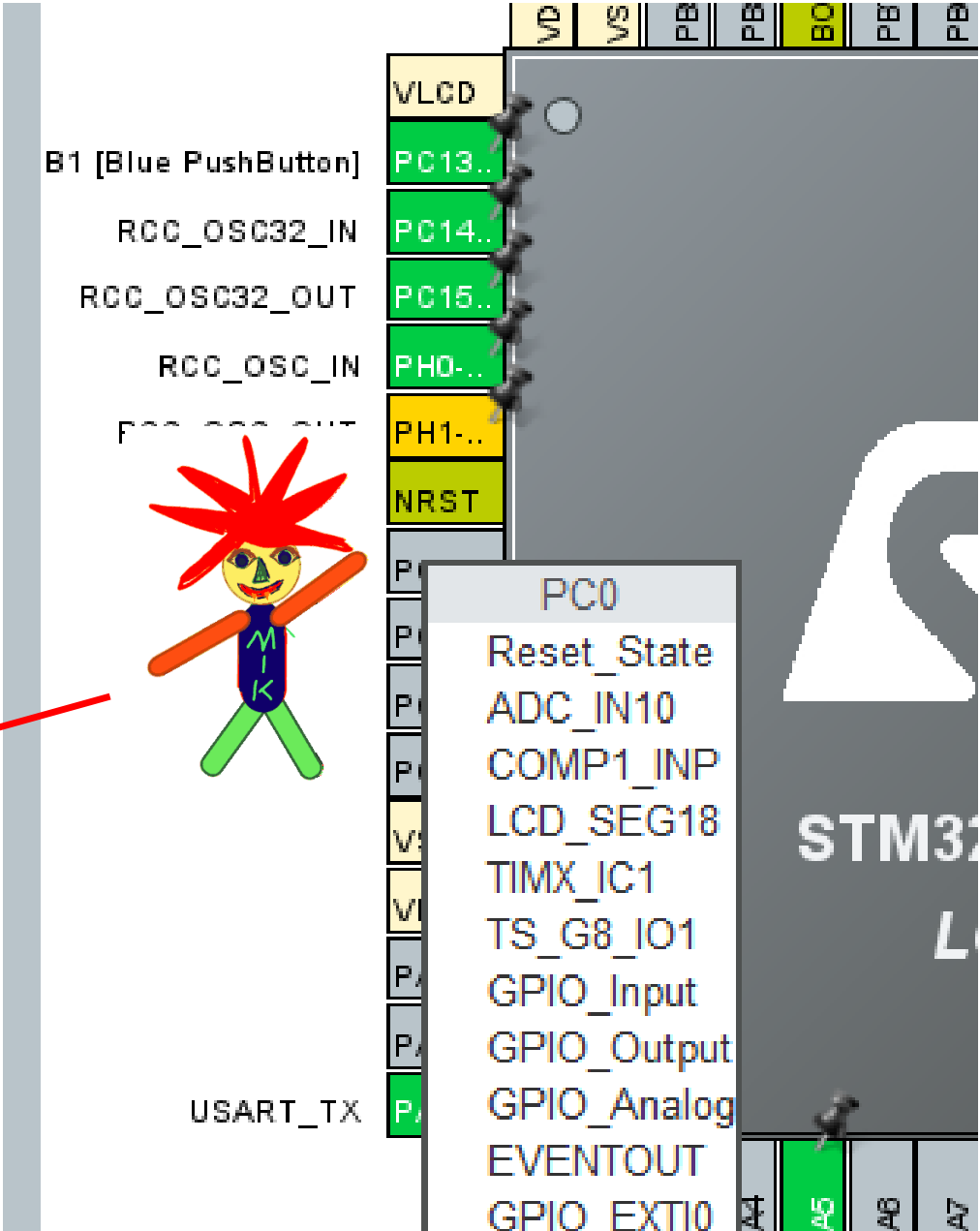


Die Leuchtdioden sind an
PC0..PC7 angeschlossen.
Wir konfigurieren PC0..PC7
als Output



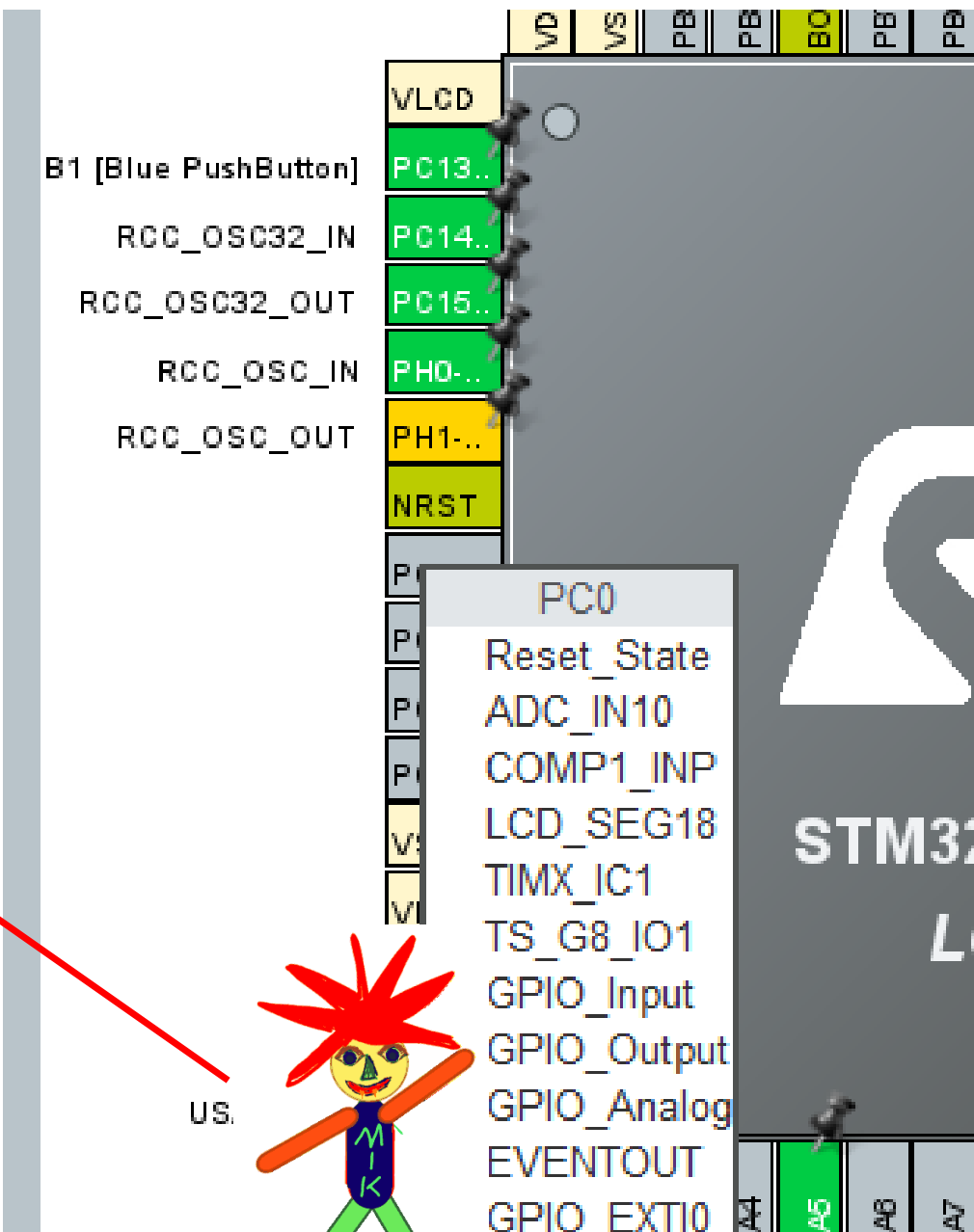
Getting Started STM32CubeIDE mit STM32L152RET

Das Anschlussbeinchen PC0 anklicken und ...



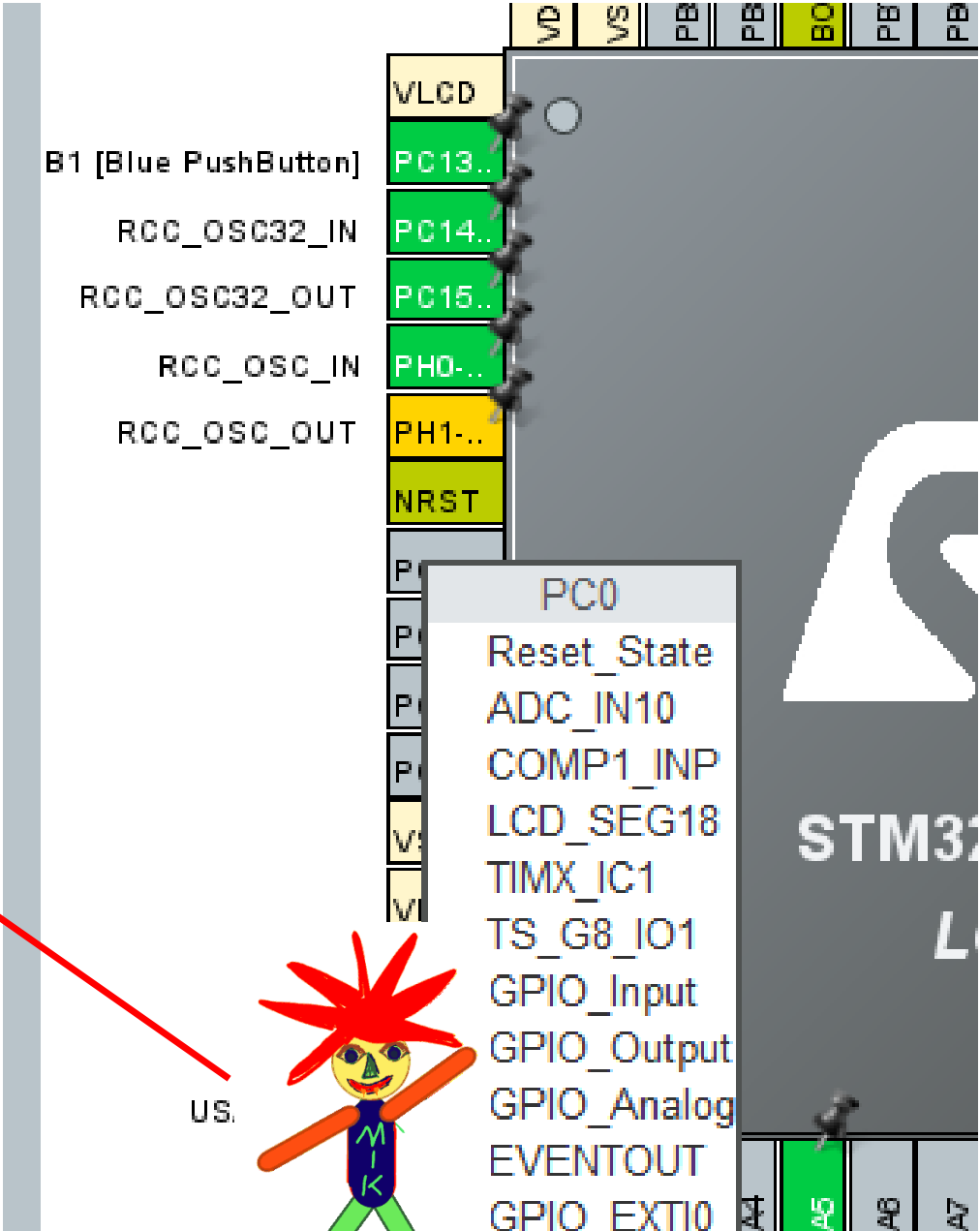
Getting Started STM32CubeIDE mit STM32L152RET

GPIO_Output auswählen



Getting Started STM32CubeIDE mit STM32L152RET

Ebenso mit PC1 .. PC7

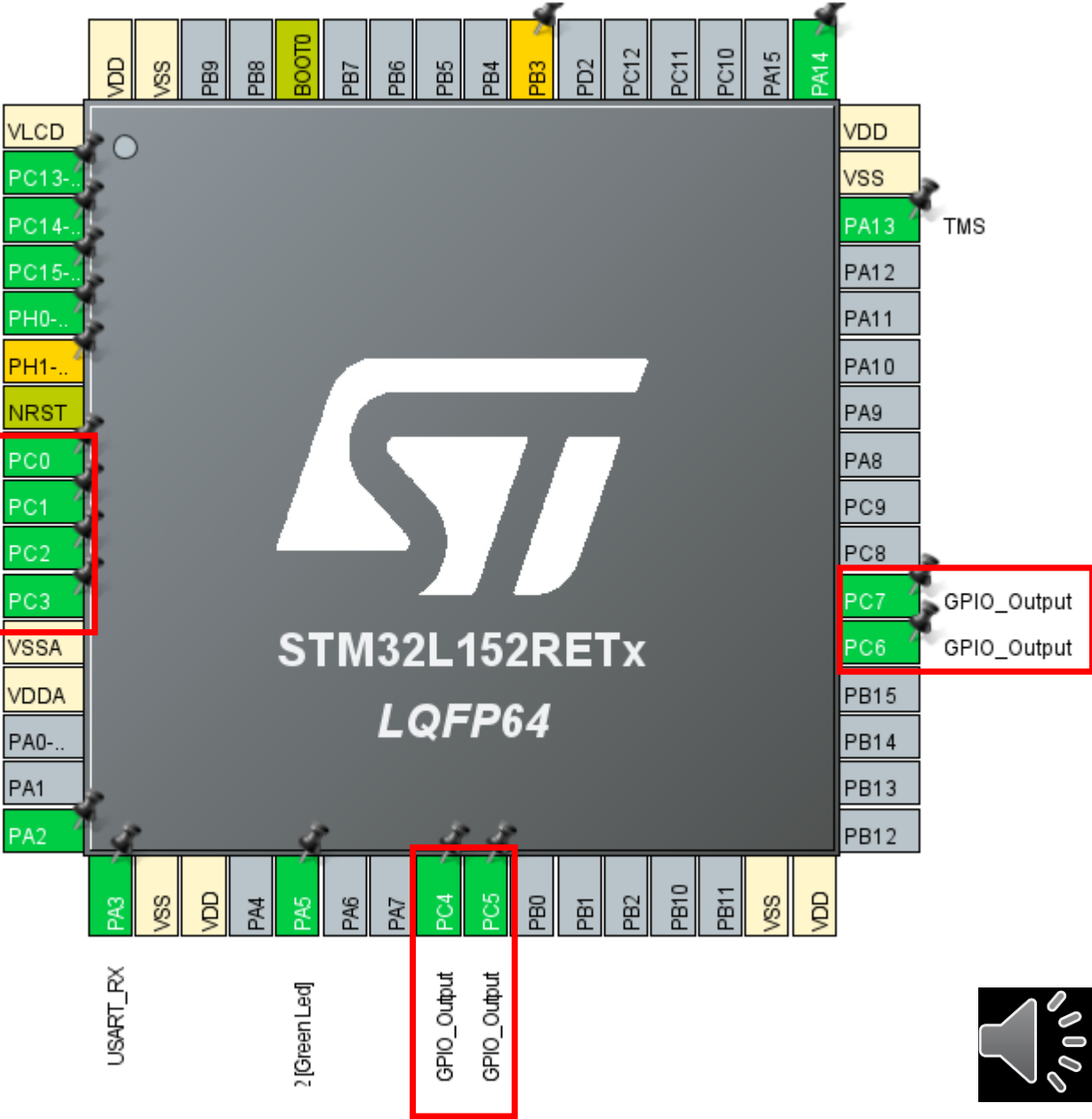


Getting Started STM32CubeIDE mit STM32L152RET

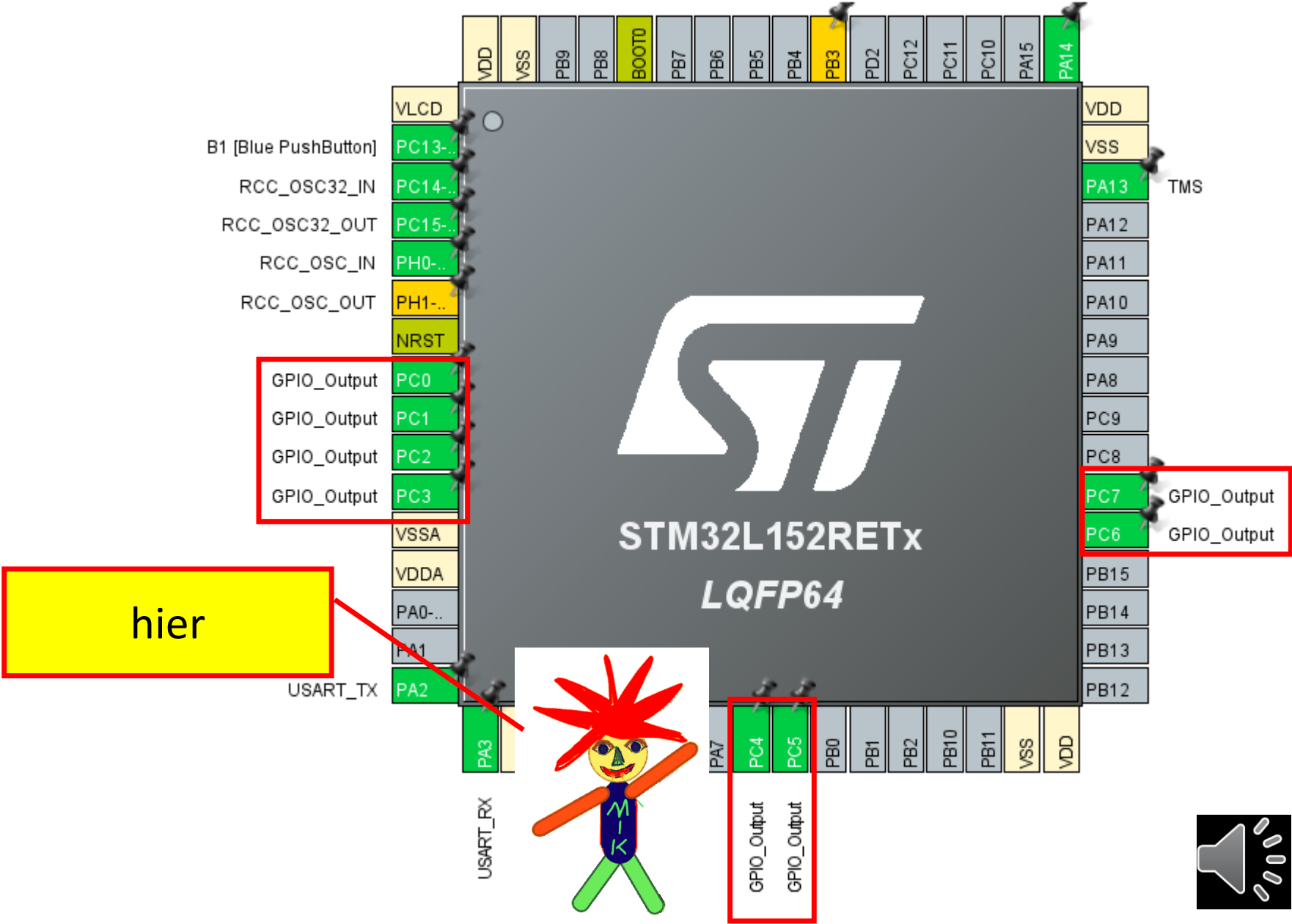
Hier



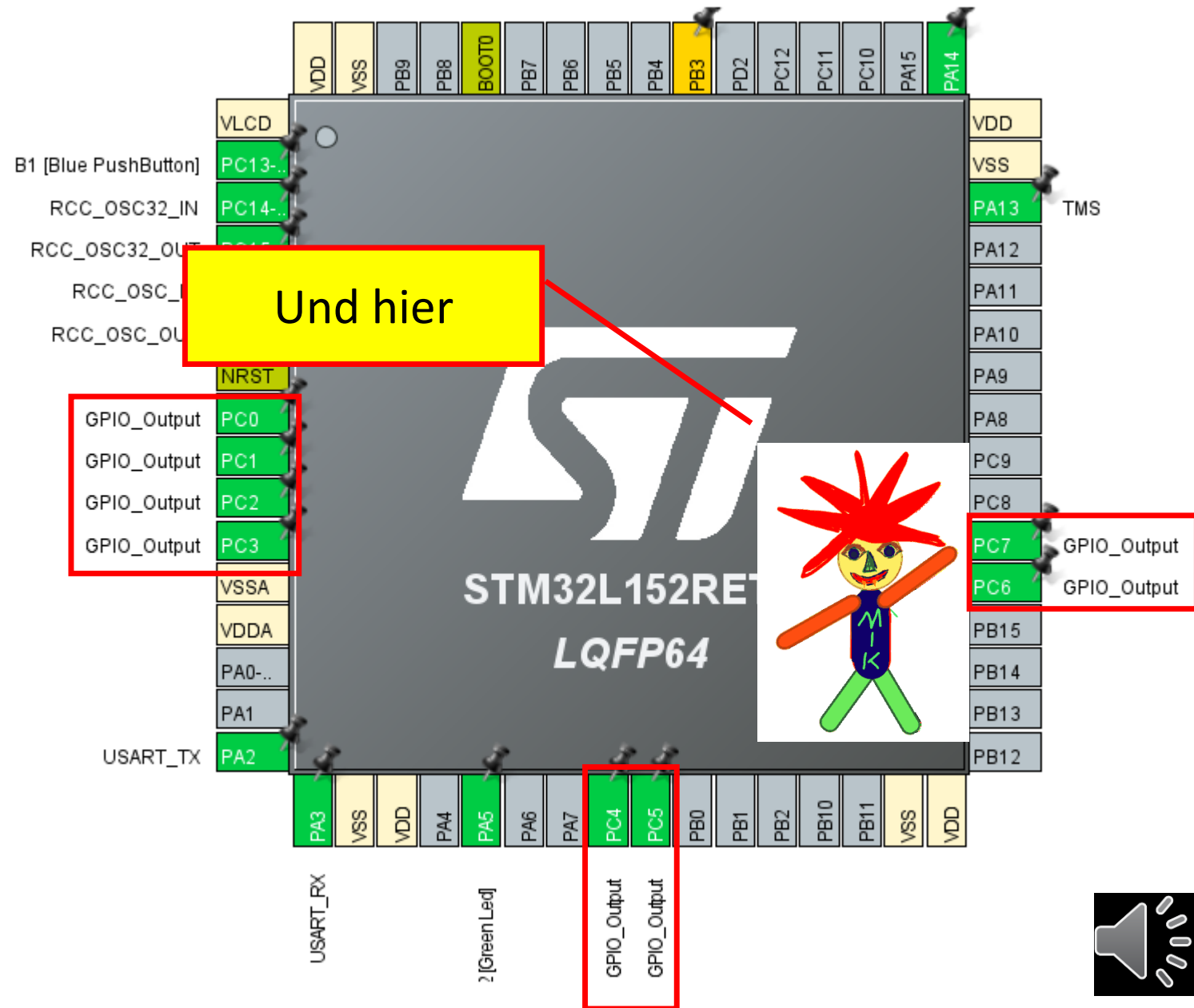
- B1 [Blue PushButton]
- RCC_OSC32_IN
- RCC_OSC32_OUT
- RCC_OSC_IN
- RCC_OSC_OUT
- GPIO_Output PC0
- GPIO_Output PC1
- GPIO_Output PC2
- GPIO_Output PC3
- VSSA
- VDDA
- PA0-..
- PA1
- USART_TX PA2



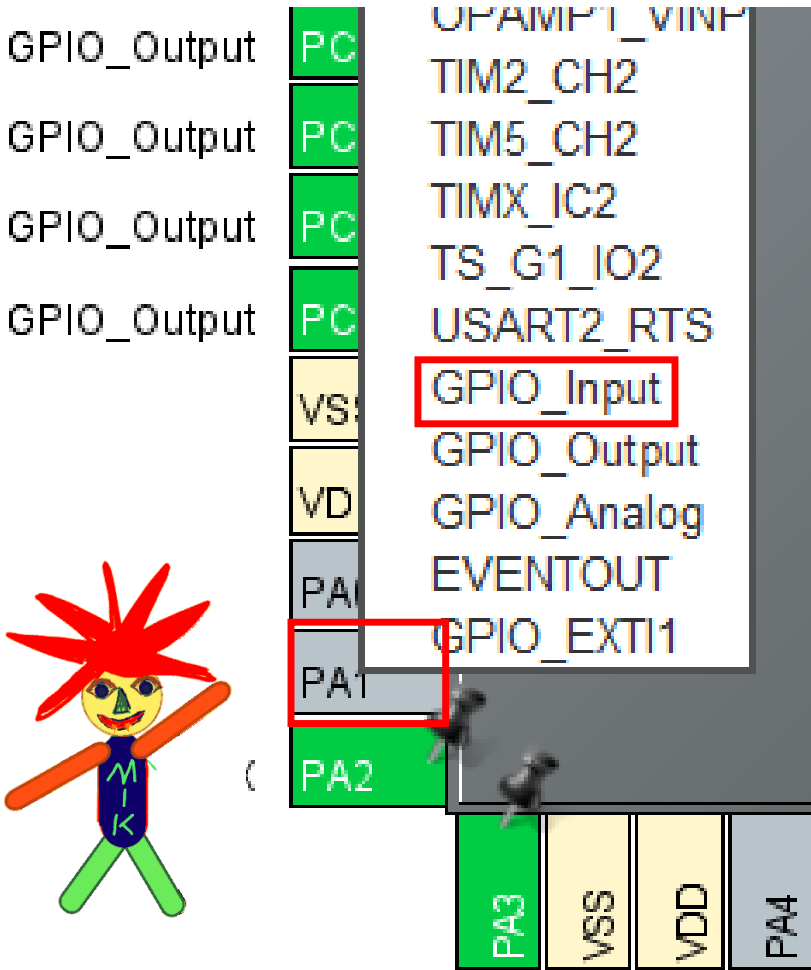
Getting Started STM32CubeIDE mit STM32L152RET



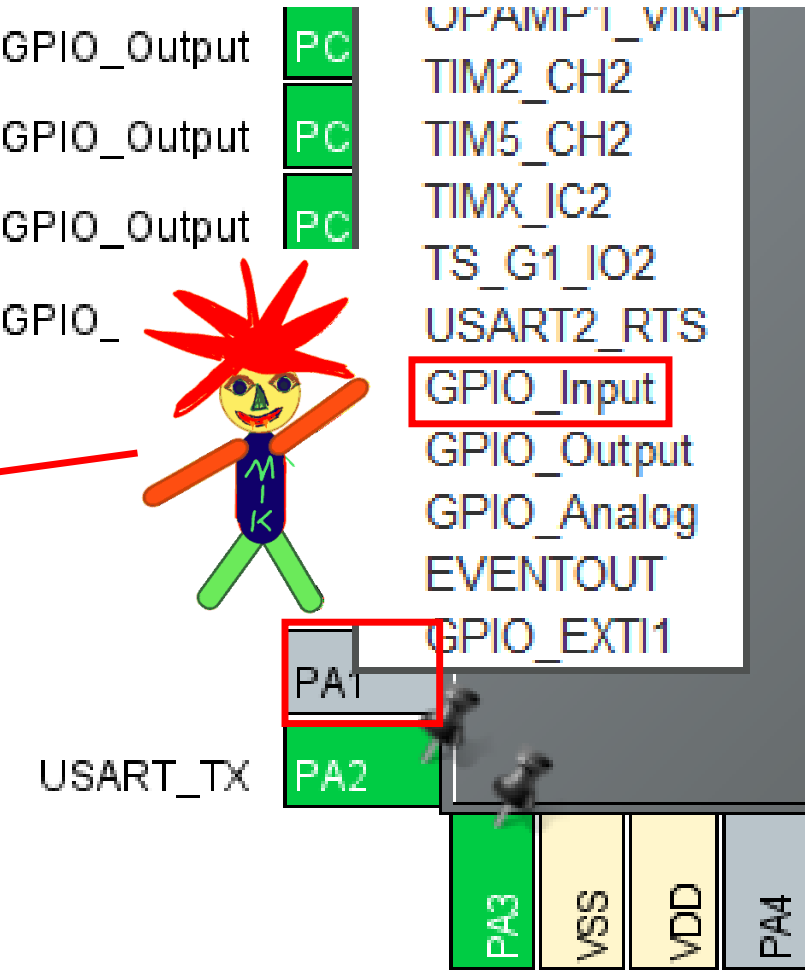
Getting Started STM32CubeIDE mit STM32L152RET



Tasten sind an
PA1, PA6 und PA10
angeschlossen

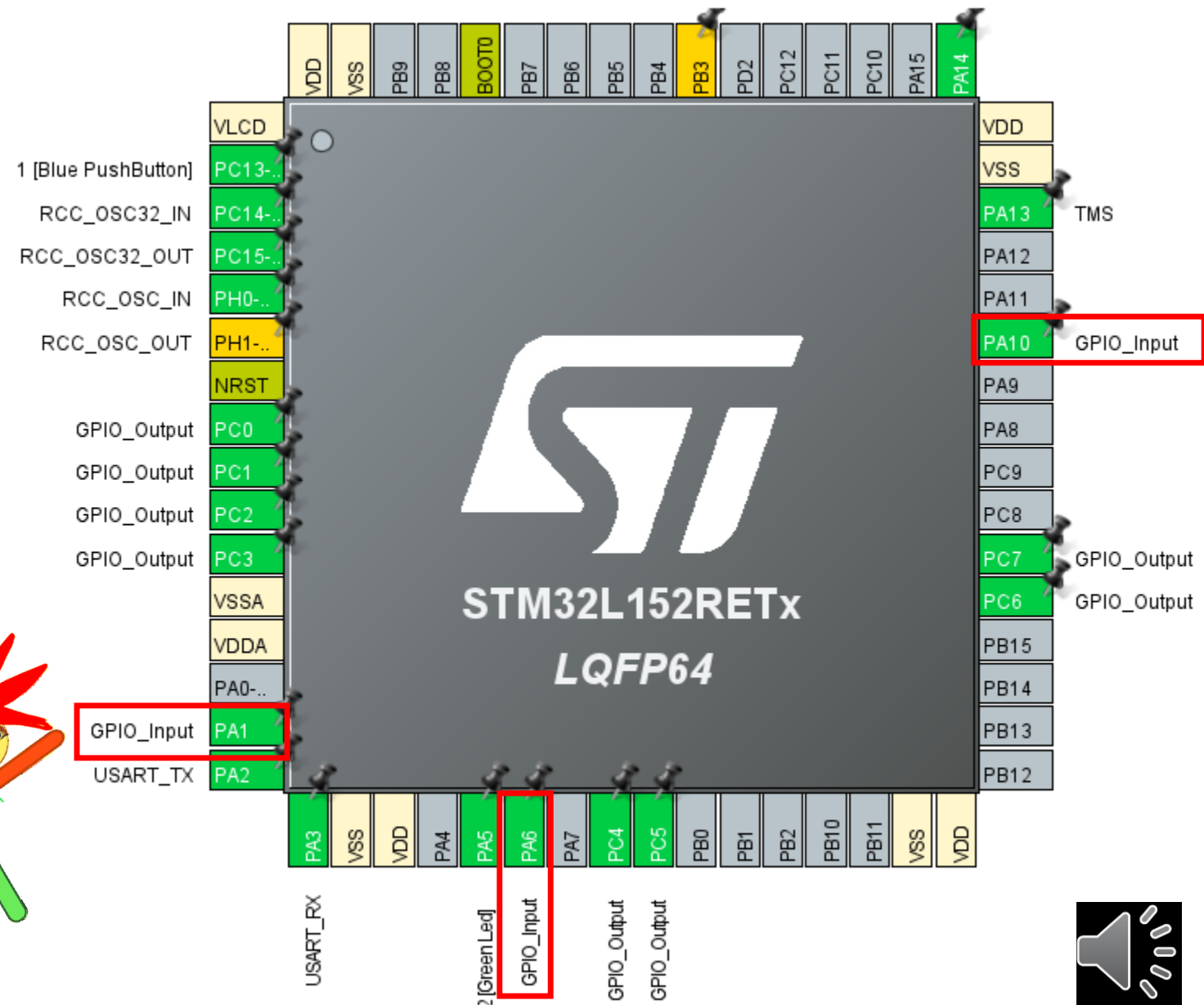


Alle als GPIO_Input
einstellen
(Eingabetaster)

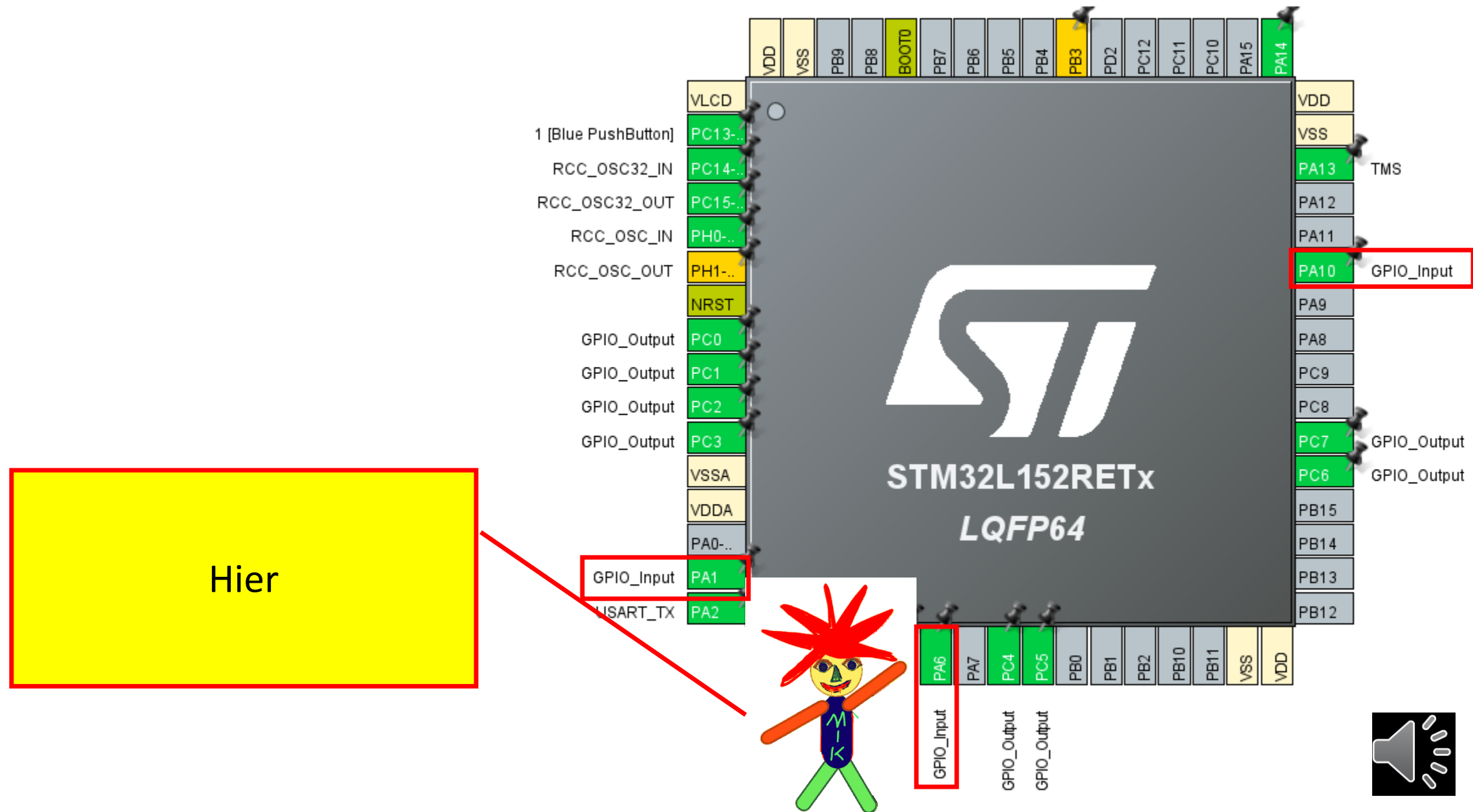


Getting Started STM32CubeIDE mit STM32L152RET

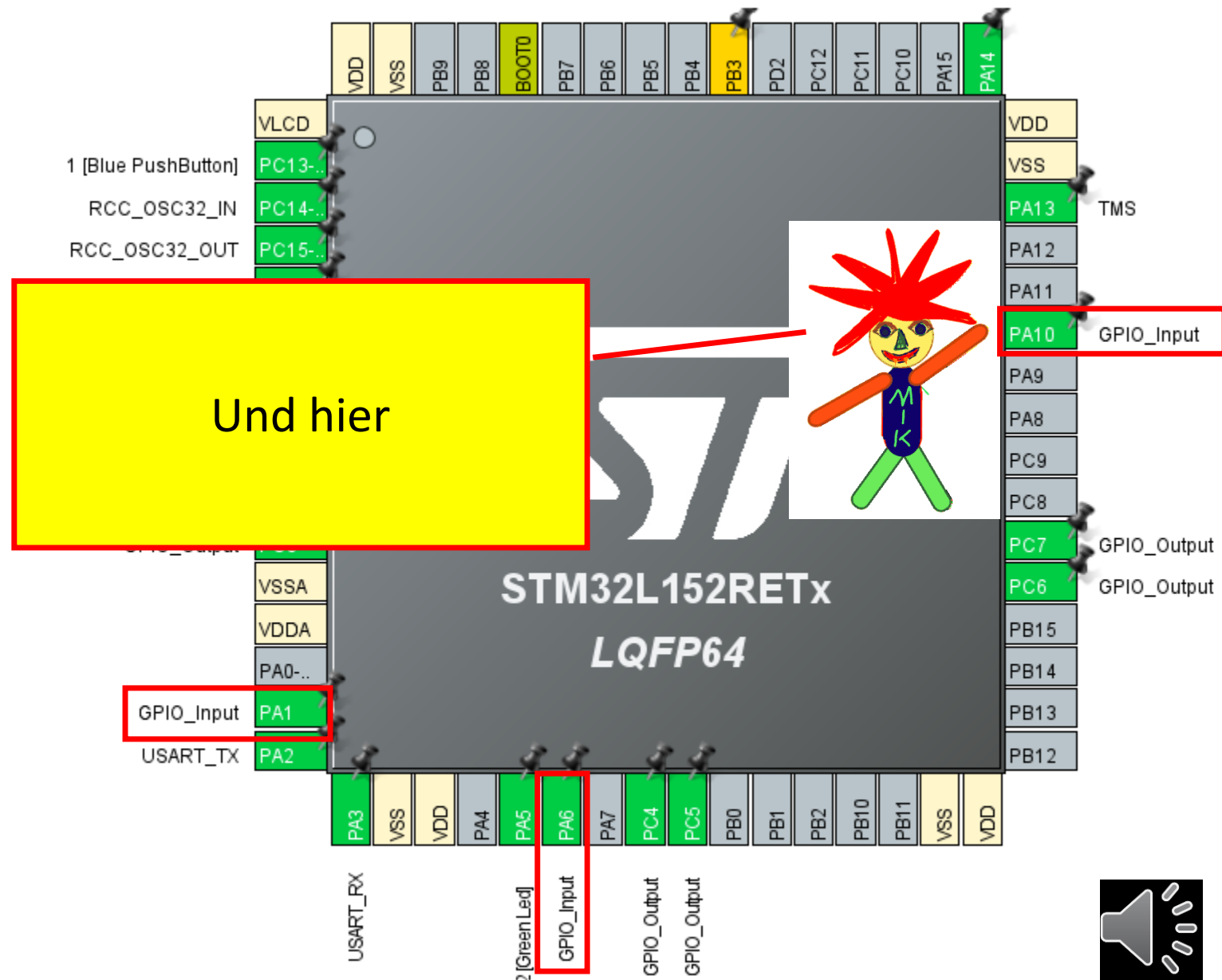
Hier



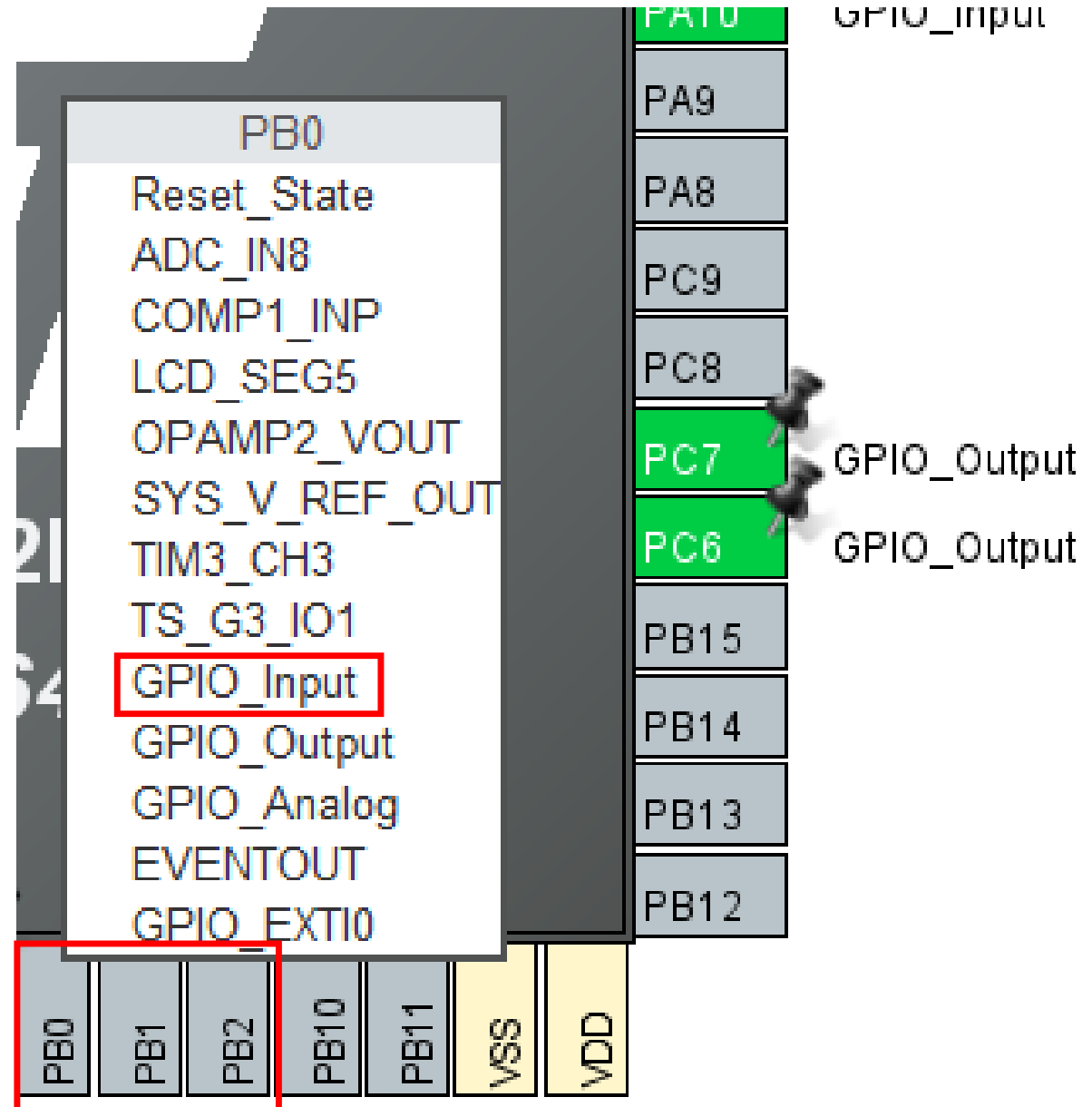
Getting Started STM32CubeIDE mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET

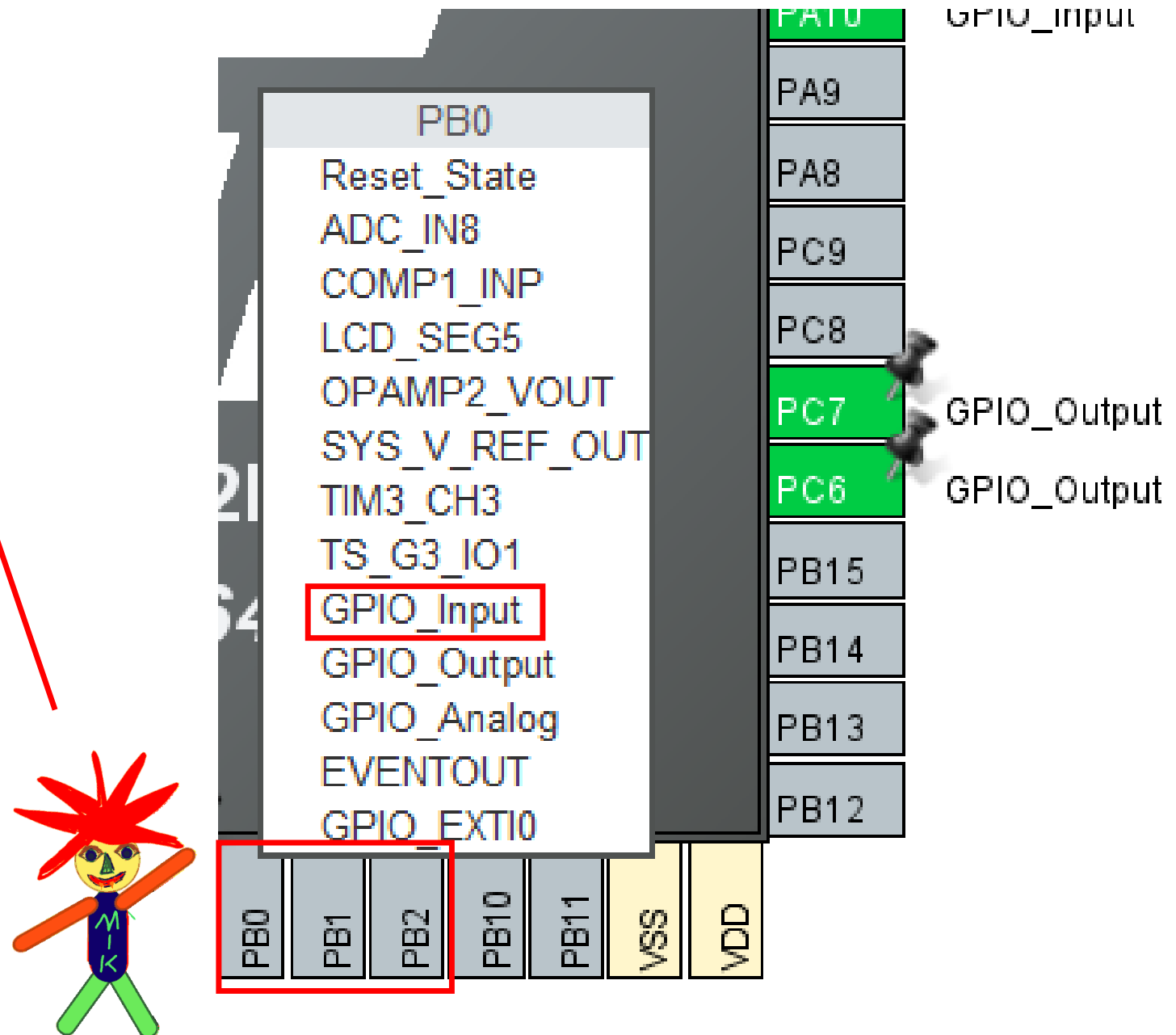


Die Eingabeschalterchen
sind an PB0..PB7
angeschlossen

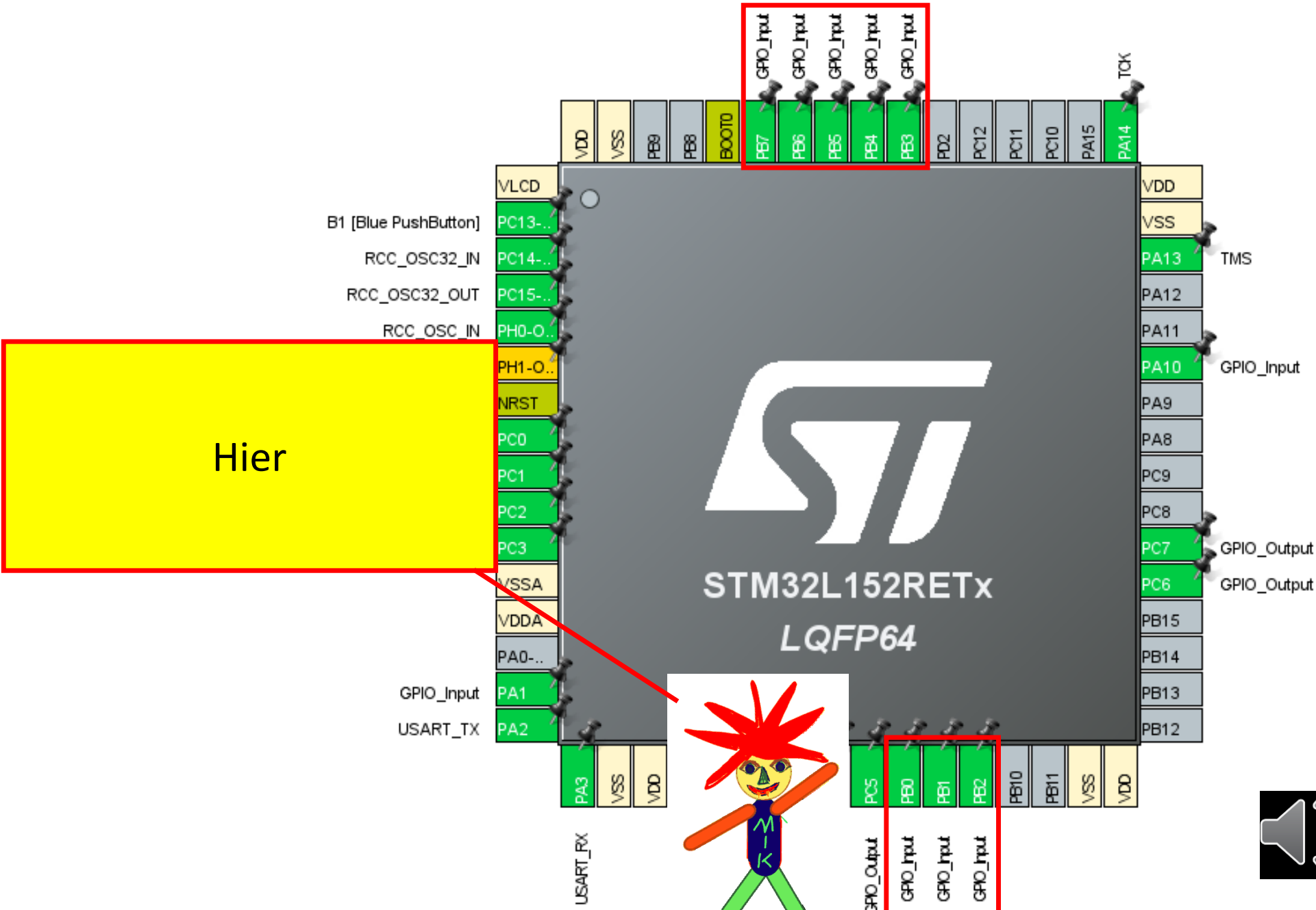


Getting Started STM32CubeIDE mit STM32L152RET

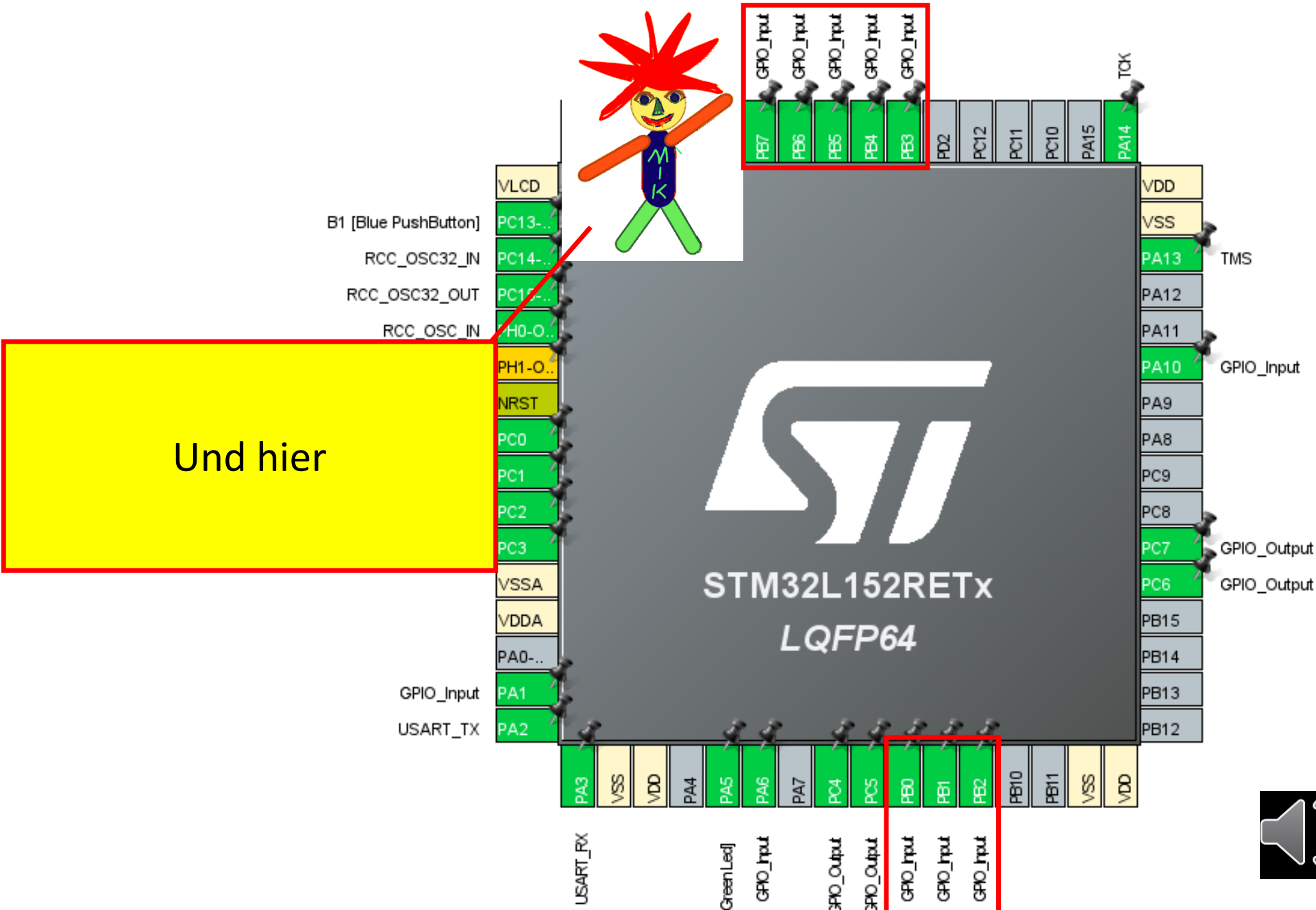
Alle als GPIO_Input konfigurieren



Getting Started STM32CubeIDE mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET

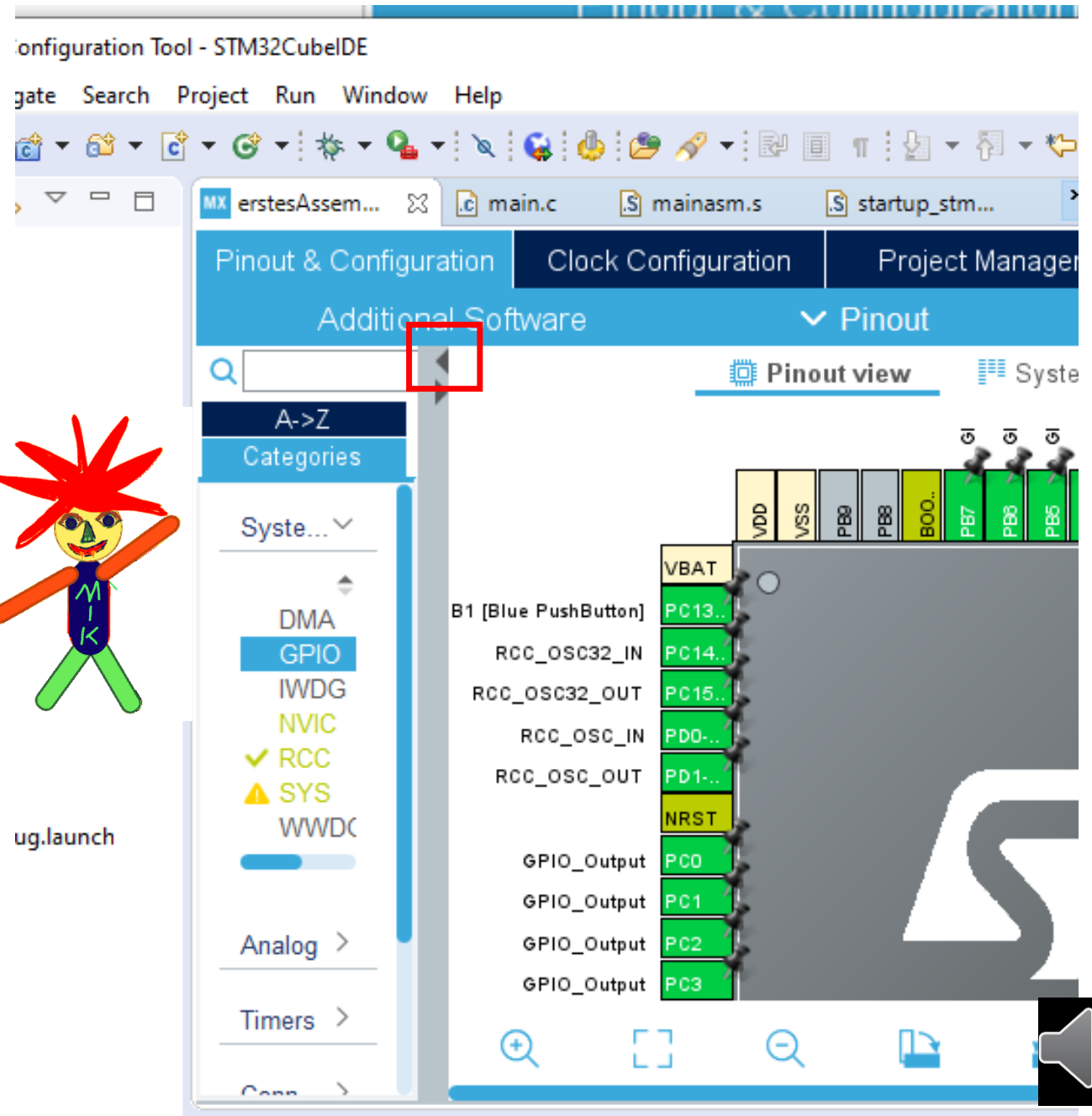


Getting Started STM32CubeIDE mit STM32L152RET

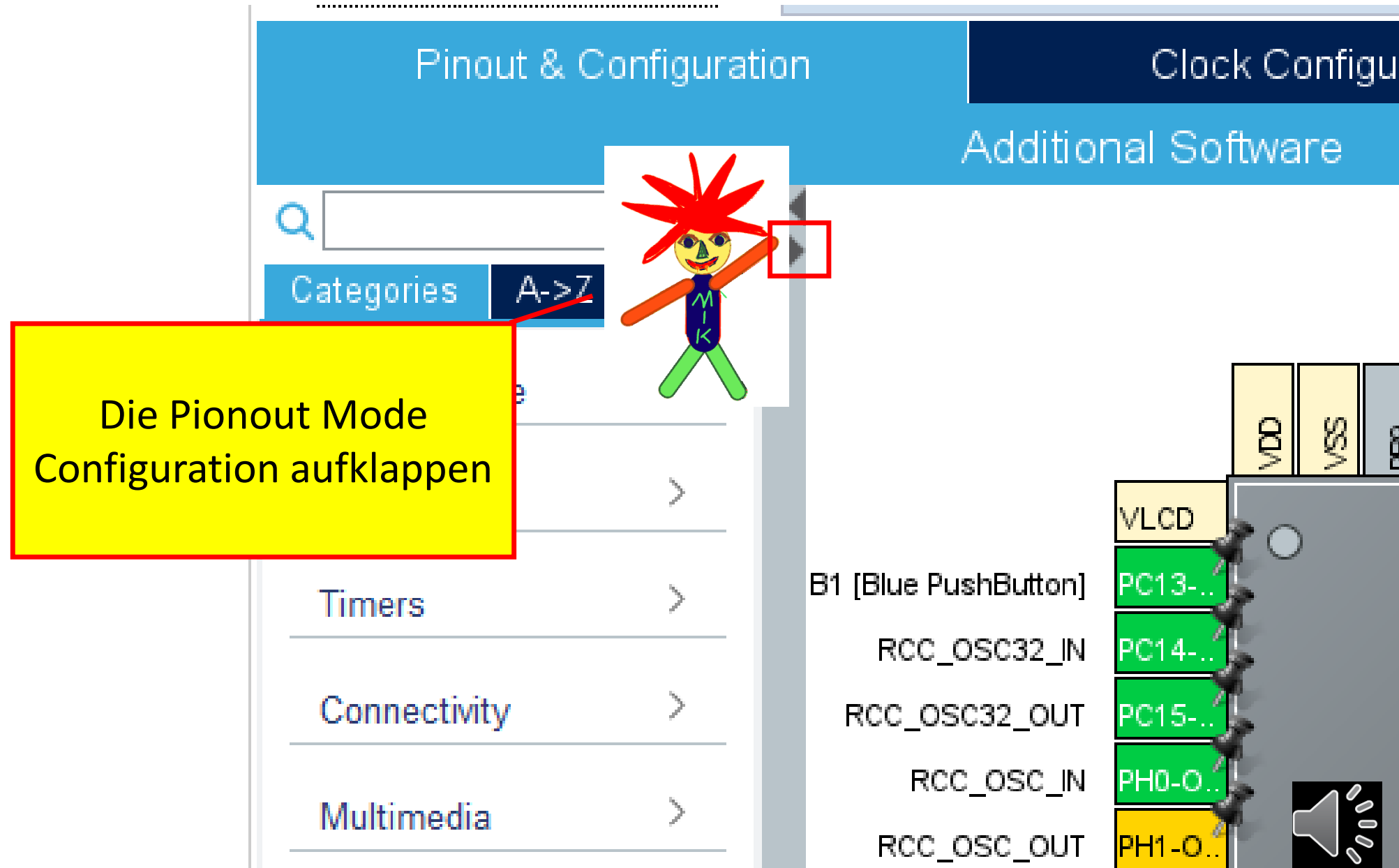
System -> GPIO
auswählen



ug.launch



Getting Started STM32CubeIDE mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET

Unsere Taster und
Schalter liefern bei
Betätigung eine „1“

Pinout & Configuration

Clock Configuration

Additional Software

GPIO Mode and Configuration

Configuration

Group By Peripherals

☒ RCC

☒ SYS

☒ USART

☒ NVIC

☒ GPIO

☒ Single Mapped Signals

Search Signals

Search (Ctrl+F)

☐ Show only Modified Pins

	Sig	GPI	GPI	GPI	Ma	Use	Mo
PA1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC4	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC5	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC6	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC7	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC...	n/a	n/a	Ext...	No ...	n/a	B1 [...]	<input checked="" type="checkbox"/>

B1



Getting Started STM32CubeIDE mit STM32L152RET

Und bei Nichtbetätigung

Pinout & Configuration

Clock Configuration

Additional Software

GPIO Mode and Configuration

Configuration

Group By Peripherals

RCC

SYS

USART

NVIC

GPIO

Single Mapped Signals

Search Signals

Search (Ctrl+F)

☐ Show only Modified Pins

	Sig	GPI	GPI	GPI	Ma	Use	Mo
PA1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC4	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC5	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC6	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC7	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC...	n/a	n/a	Ext...	No ...	n/a	B1 [...]	<input checked="" type="checkbox"/>

Categories

A->Z

System Core

Analog

Timers

Connectivity

Multimedia

Computing

Middleware

B1



Getting Started STM32CubeIDE mit STM32L152RET

Und bei Nichtbetätigung
leider nichts!!

Pinout & Configuration

Clock Configuration

Additional Software

GPIO Mode and Configuration

Configuration

Group By Peripherals

RCC

SYS

USART

NVIC

GPIO

Single Mapped Signals

Search Signals

Search (Ctrl+F)

☐ Show only Modified Pins

	Sig	GPI	GPI	GPI	Ma	Use	Mo
PA1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC4	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC5	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC6	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC7	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC...	n/a	n/a	Ext...	No ...	n/a	B1 [...]	<input checked="" type="checkbox"/>

Categories

A->Z

System Core

Analog

Timers

Connectivity

Multimedia

Computing

Middleware

B1



Getting Started STM32CubeIDE mit STM32L152RET

Zum Glück können wir festlegen, was „**nichts**“ sein soll

Pinout & Configuration

Clock Configuration

Additional Software

GPIO Mode and Configuration

Configuration

Group By Peripherals

☒ RCC

☒ SYS

☒ USART

☒ NVIC

☒ GPIO

☒ Single Mapped Signals

Search Signals

Search (Ctrl+F)

☐ Show only Modified Pins

	Sig	GPI	GPI	GPI	Ma	Use	Mo
PA1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inpu...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC4	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC5	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC6	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC7	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC...	n/a	n/a	Ext...	No ...	n/a	B1 [...]	<input checked="" type="checkbox"/>

B1

PA1 (ist eine Taste)
markieren




...
PA1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PA1 Configuration :

GPIO mode

GPIO Pull-up/Pul...

User Label



Bei GPIO Pull-up/Pul...



...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PA1 Configuration :

GPIO mode

GPIO Pull-up/Pul...

User Label

Getting Started STM32CubeIDE mit STM32L152RET

Pull-down auswählen




...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PA1 Configuration :

GPIO mode

GPIO Pull-up/Pul...

User Label



Getting Started STM32CubeIDE mit STM32L152RET

...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low		No ...	Ver...		<input type="checkbox"/>

PA1 Config

GPIO

mode

GPIO Pul

Pull-down

Pull-down auswählen

Getting Started STM32CubeIDE mit STM32L152RET

...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low		No ...	Ver...		<input type="checkbox"/>

Pull-down: **Nichts** = „0“
(Pull-up wäre „1“)

PA1 Config

GPIO mode

GPIO Pull-down



Ebenso bei:
PA6, PA10, PB0..PB7



...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PA10	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB0	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB1	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB2	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB3	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB4	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB5	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB6	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PB7	n/a	n/a	Inp...	No ...	n/a		<input type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PA1 Configuration :

GPIO mode

Input mode

GPIO Pull-up/Pul...

Pull-down

Ebenso bei:
PA6, PA10, PB0..PB7



Search (Ctrl+F)

Show only modified Pins

	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA10	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB0	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB2	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB3	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB4	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB5	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB6	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB7	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PB7 Configuration :

GPIO mode

Input mode

GPIO Pull-up/Pul...

Pull-down

Was bleibt noch zu tun?



☐ Show only modified Pins

...	Sig...	GPI...	GPI...	GPI...	Ma...	Use...	Mo...
PA1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA5	n/a	Low	Out...	No ...	Ver...	LD2...	<input checked="" type="checkbox"/>
PA6	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PA10	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB0	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB1	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB2	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB3	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB4	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB5	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB6	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PB7	n/a	n/a	Inp...	Pull...	n/a		<input checked="" type="checkbox"/>
PC0	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC1	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC2	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>
PC3	n/a	Low	Out...	No ...	Ver...		<input type="checkbox"/>

PB7 Configuration :

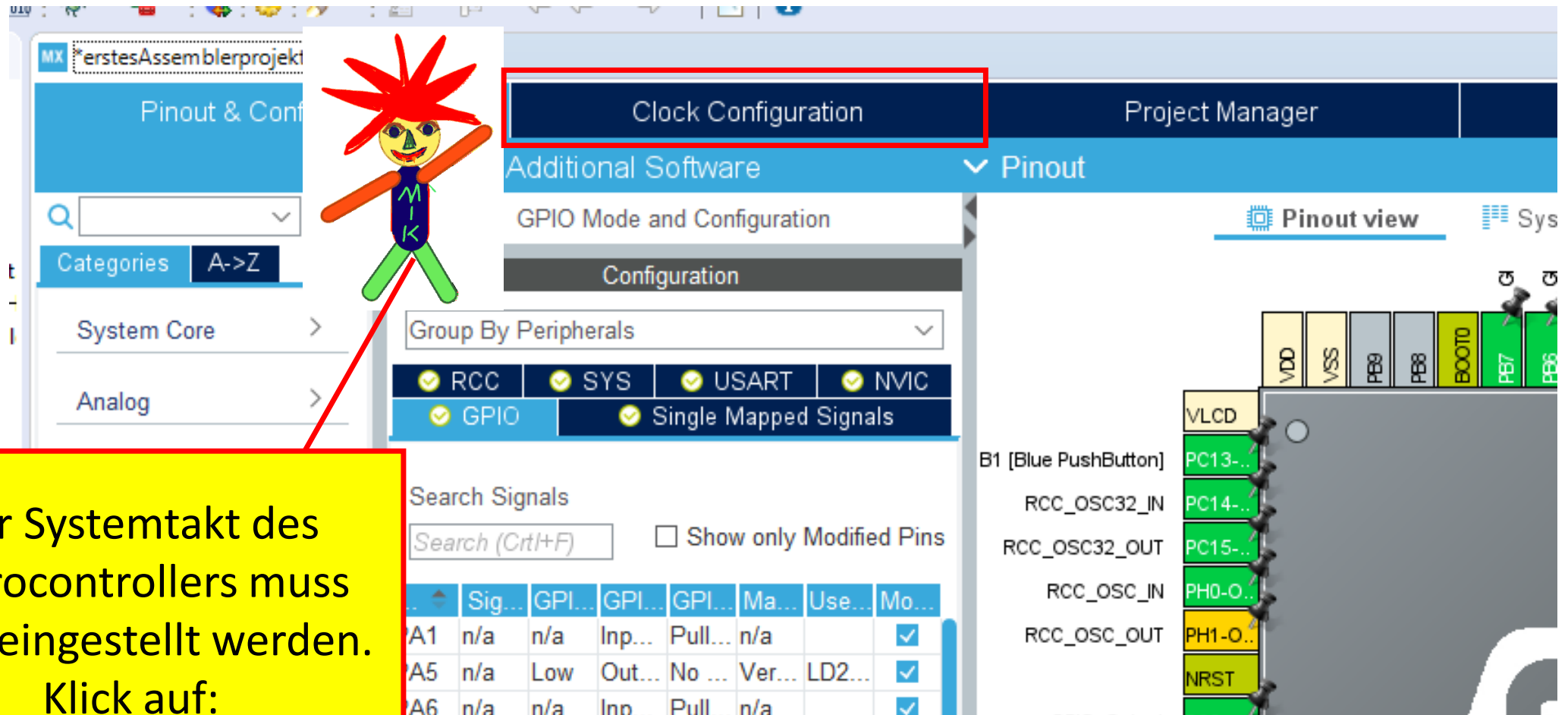
GPIO mode

Input mode

GPIO Pull-up/Pul...

Pull-down

Getting Started STM32CubeIDE mit STM32L152RET



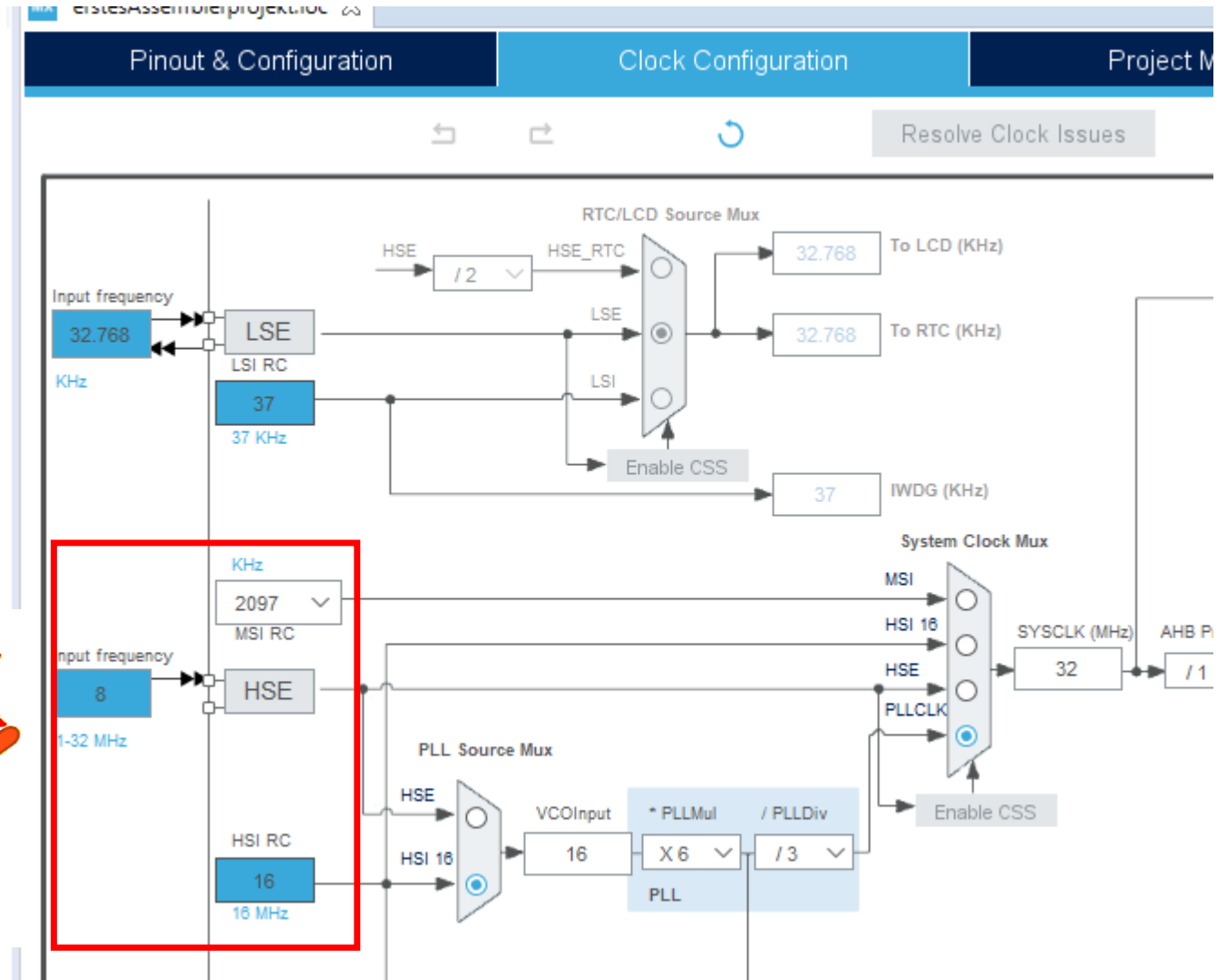
The screenshot shows the STM32CubeIDE interface. A red box highlights the 'Clock Configuration' button in the top navigation bar. A yellow callout box with a red border contains German text. A red arrow points from the callout box to the 'Clock Configuration' button. The interface also shows a 'Pinout & Configuration' sidebar on the left, a 'Configuration' panel in the center, and a 'Pinout view' on the right showing a pinout diagram.

Der Systemtakt des Mikrocontrollers muss noch eingestellt werden.
Klick auf:
Clock Configuration



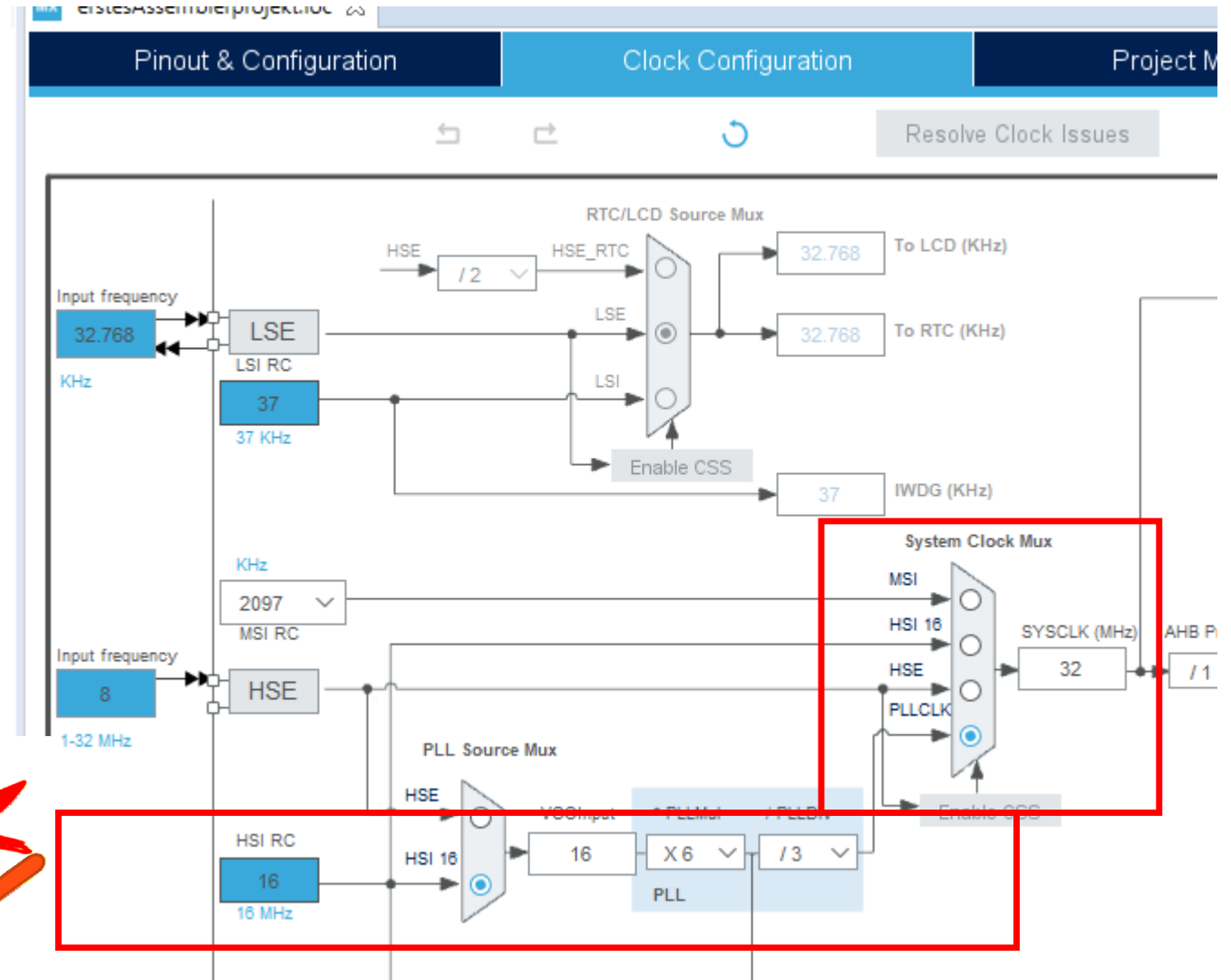
Getting Started STM32CubeIDE mit STM32L152RET

Der Mikrocontroller hat viele Möglichkeiten den Systemtakt ein zu stellen



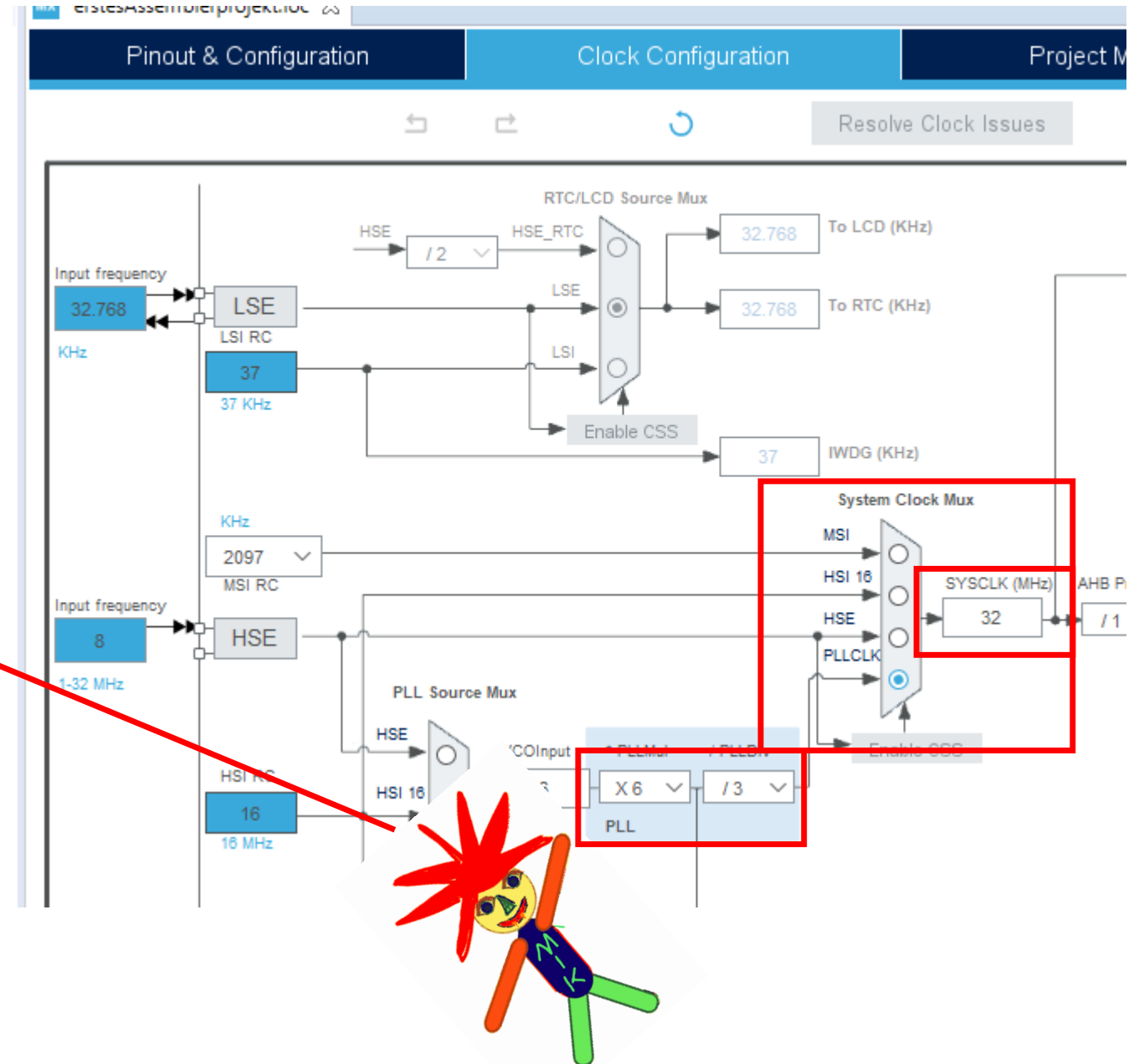
Getting Started STM32CubeIDE mit STM32L152RET

Ausgewählt wurde der 16 MHz
interne Taktgenerator
(HSI High Speed Internal)



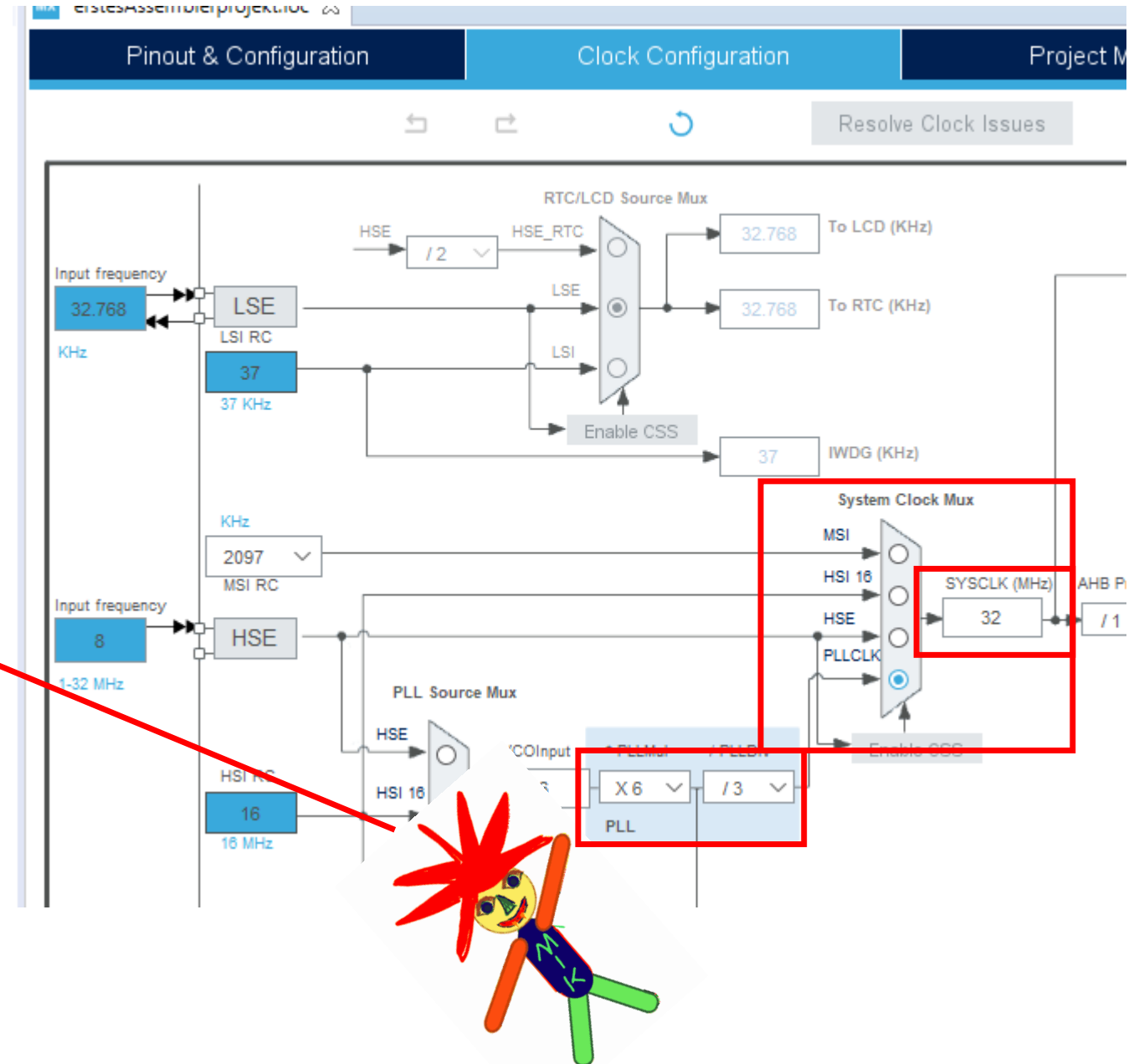
Getting Started STM32CubeIDE mit STM32L152RET

Mal 6 geteilt durch 3 ergibt
den Systemtakt 32MHz



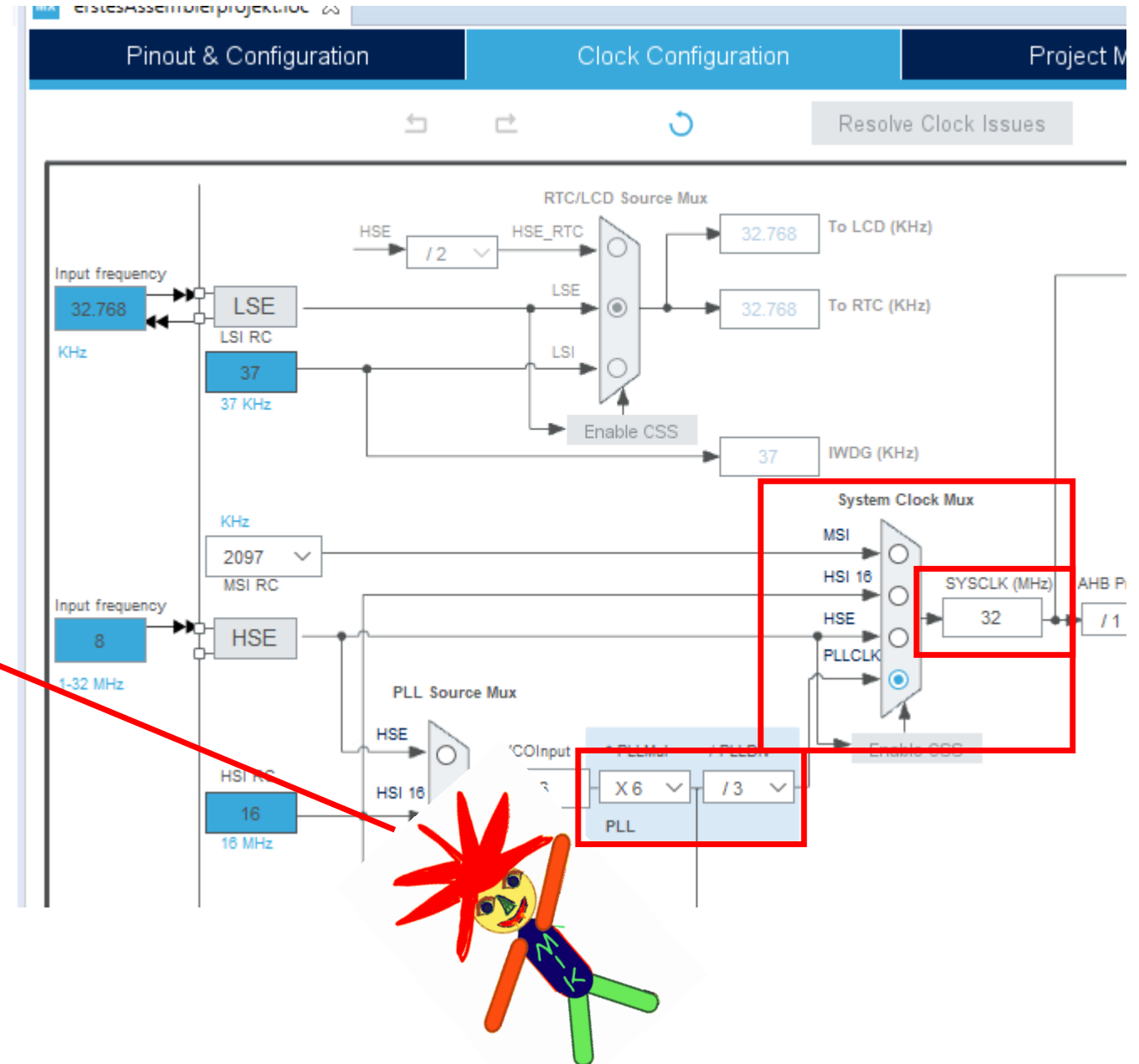
Getting Started STM32CubeIDE mit STM32L152RET

allerdings



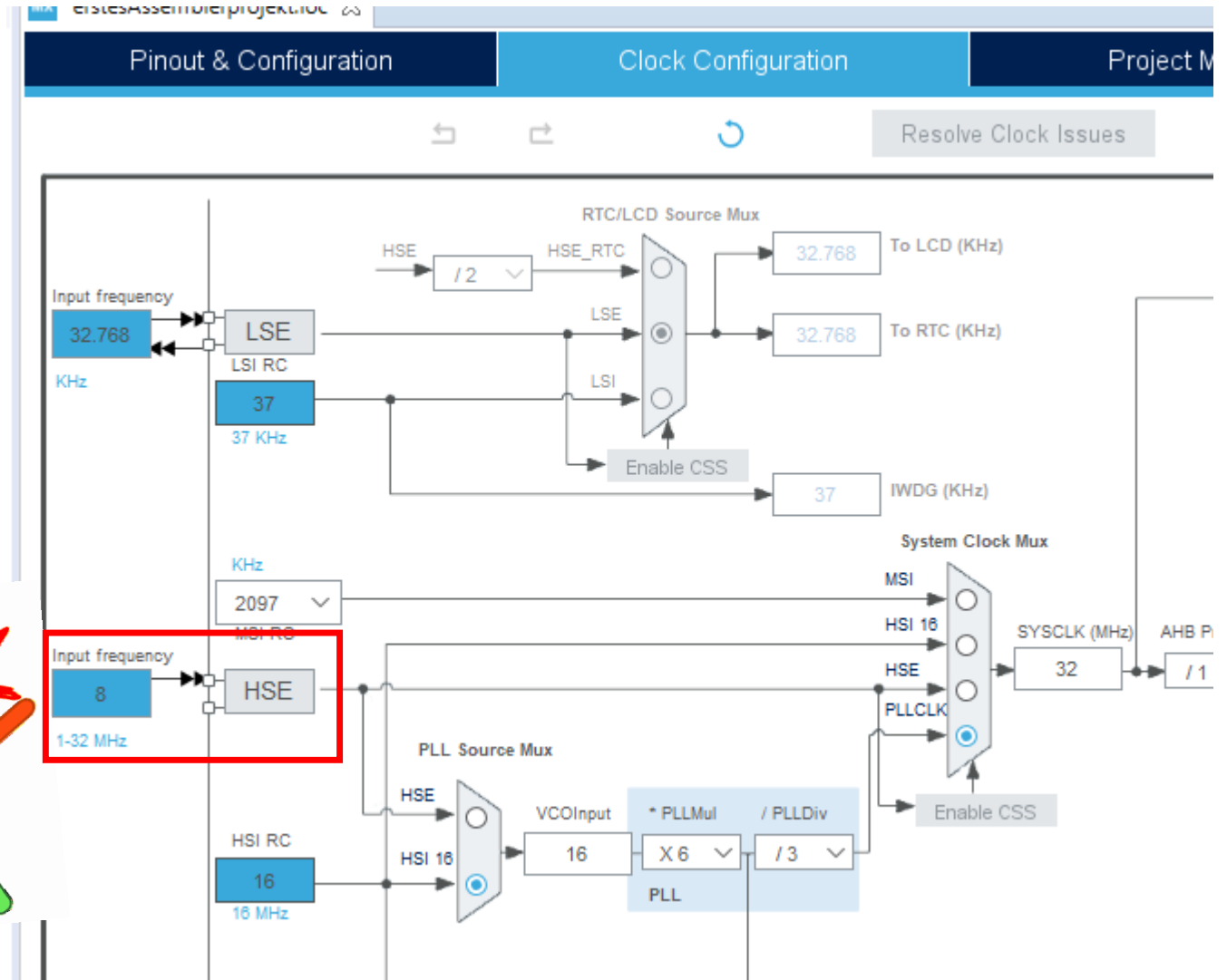
Getting Started STM32CubeIDE mit STM32L152RET

Ist der sehr ungenau. Geht aber.



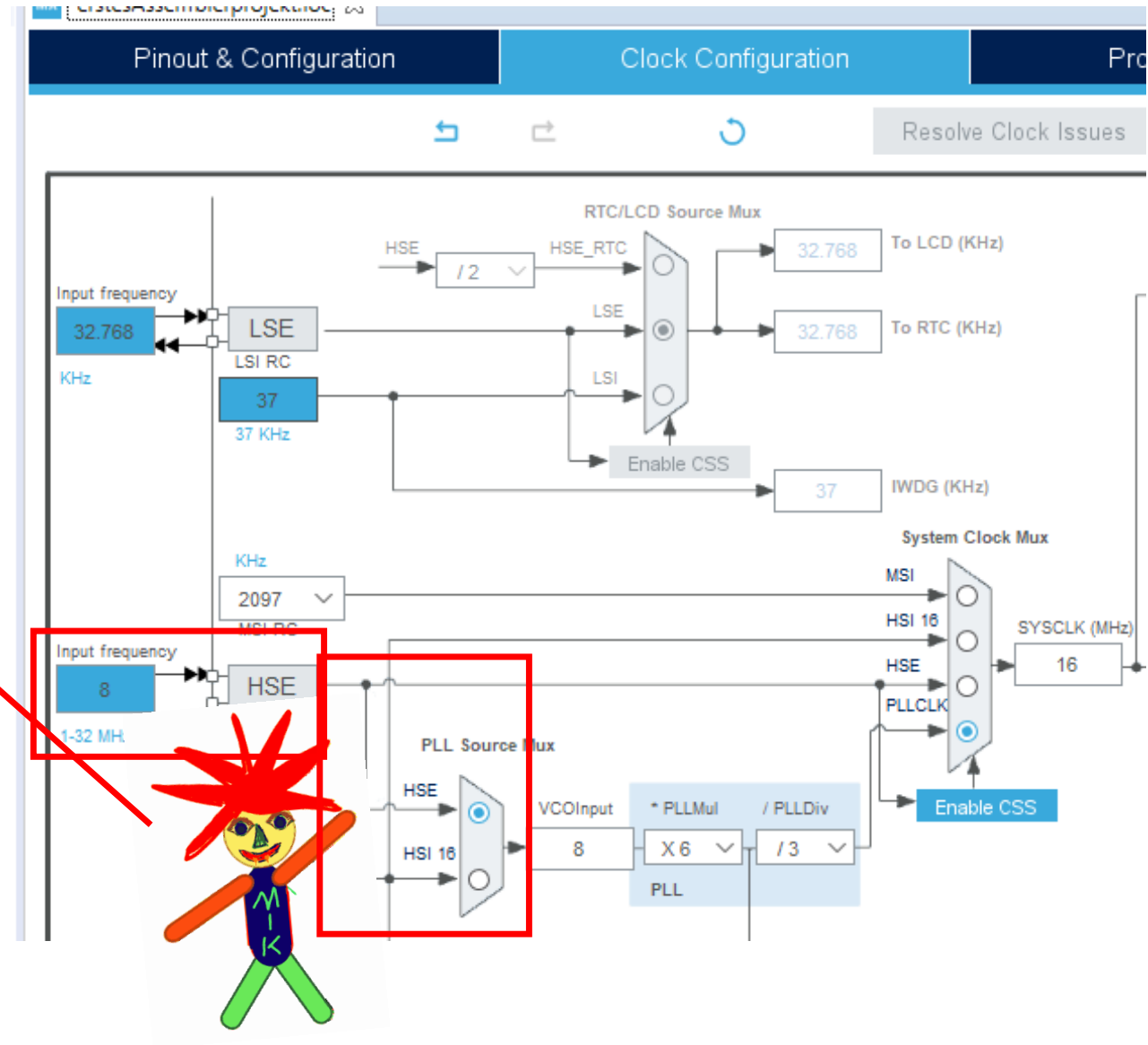
Getting Started STM32CubeIDE mit STM32L152RET

Besser ist der extern
Eingespeiste Takt von 8 MHz
(HSE High Speed External



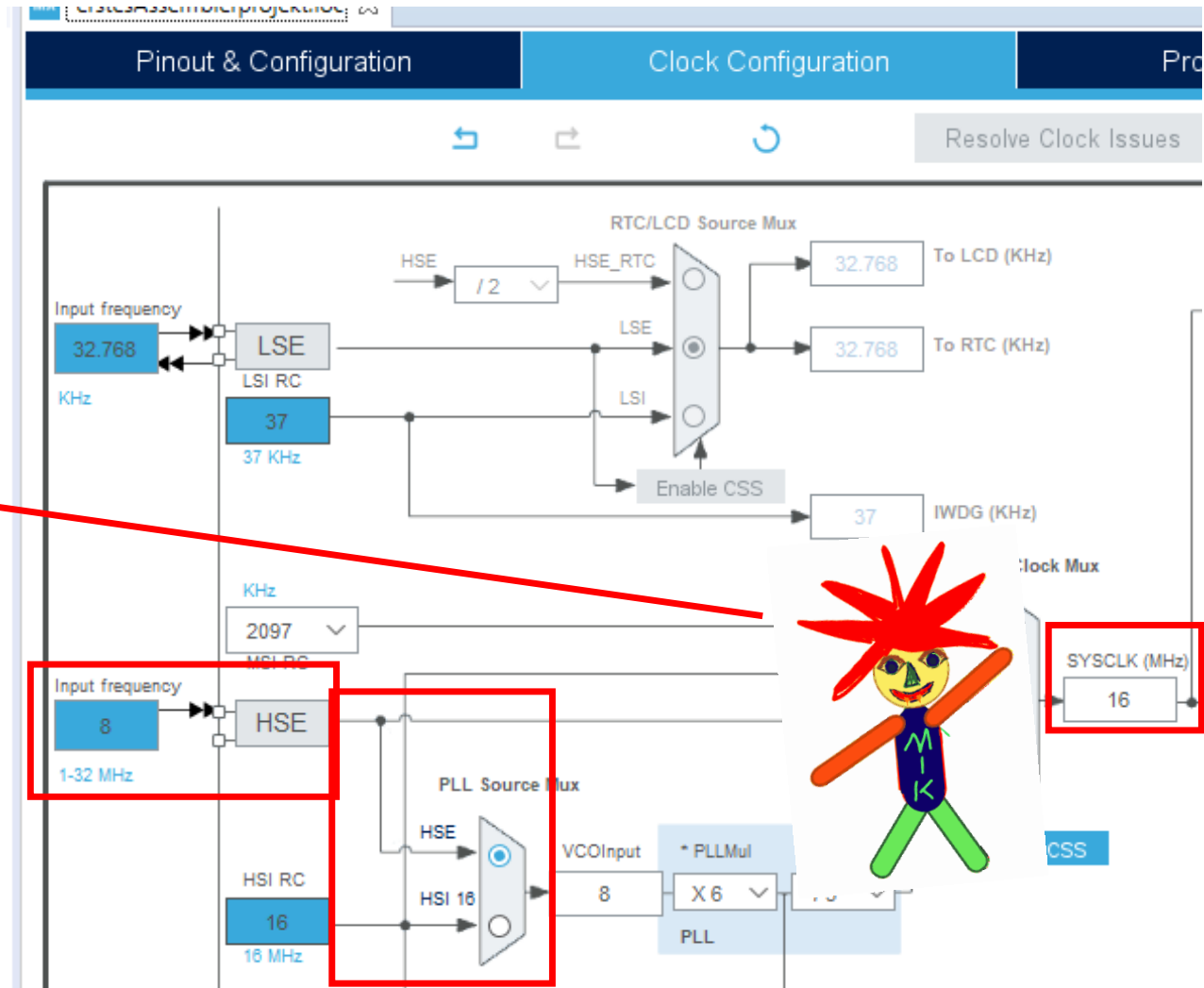
Getting Started STM32CubeIDE mit STM32L152RET

Also HSE auswählen



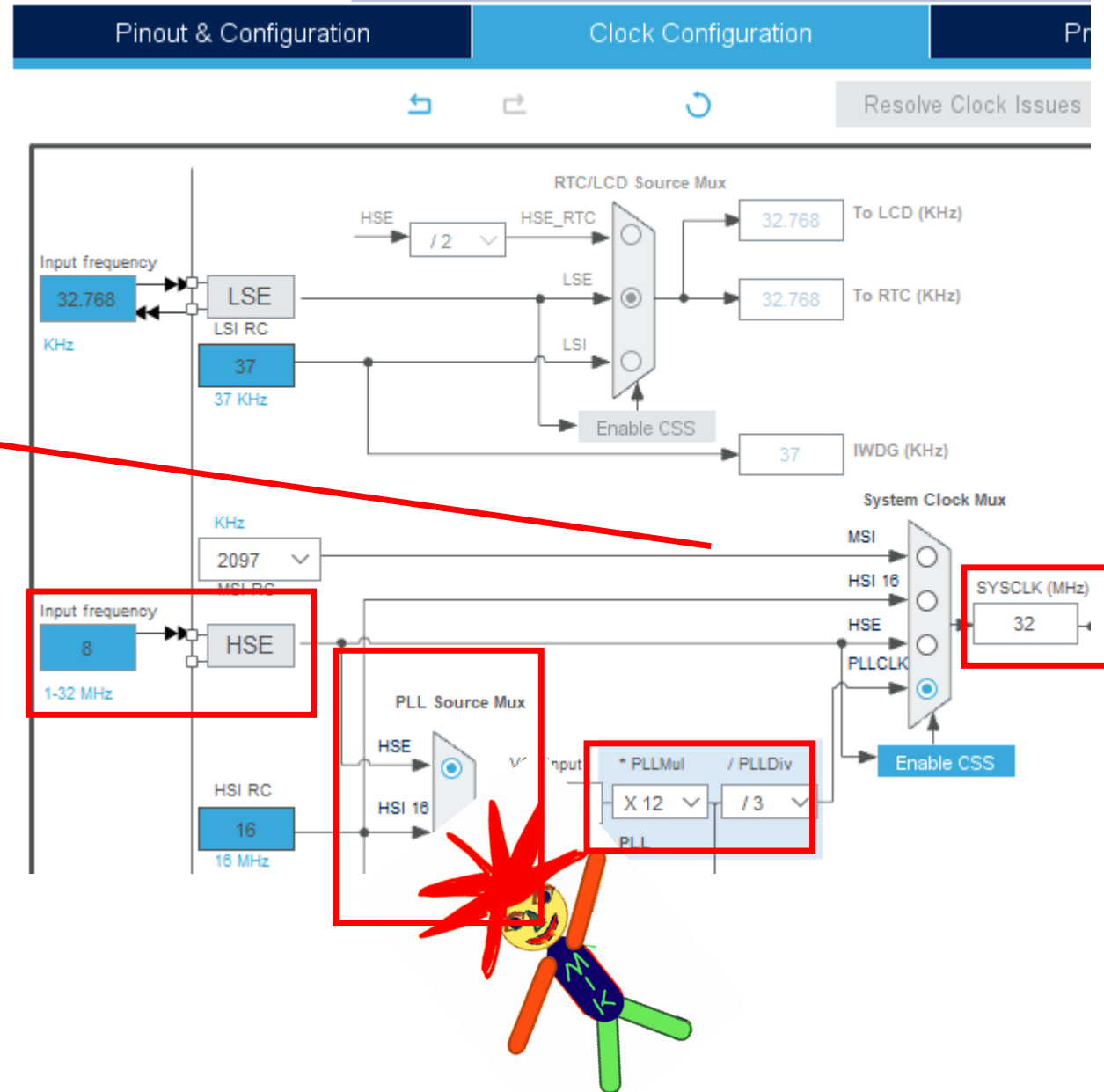
Getting Started STM32CubeIDE mit STM32L152RET

Jetzt stimmt der Systemtakt
nicht mehr (16 statt 32 MHz)



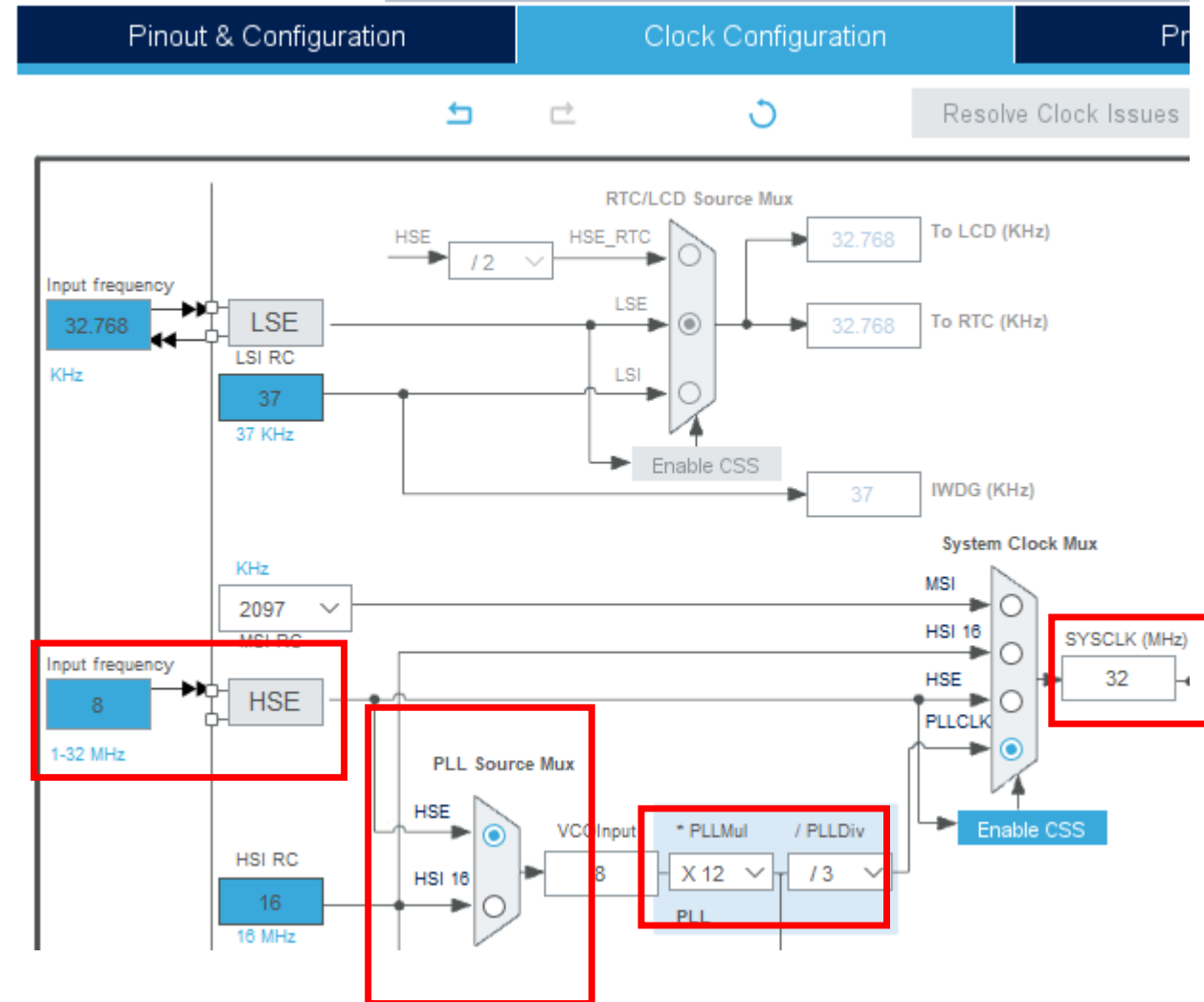
Getting Started STM32CubeIDE mit STM32L152RET

Also ändern auf x12:
 $8\text{MHz} \times 12 / 3 = 32\text{MHz}$



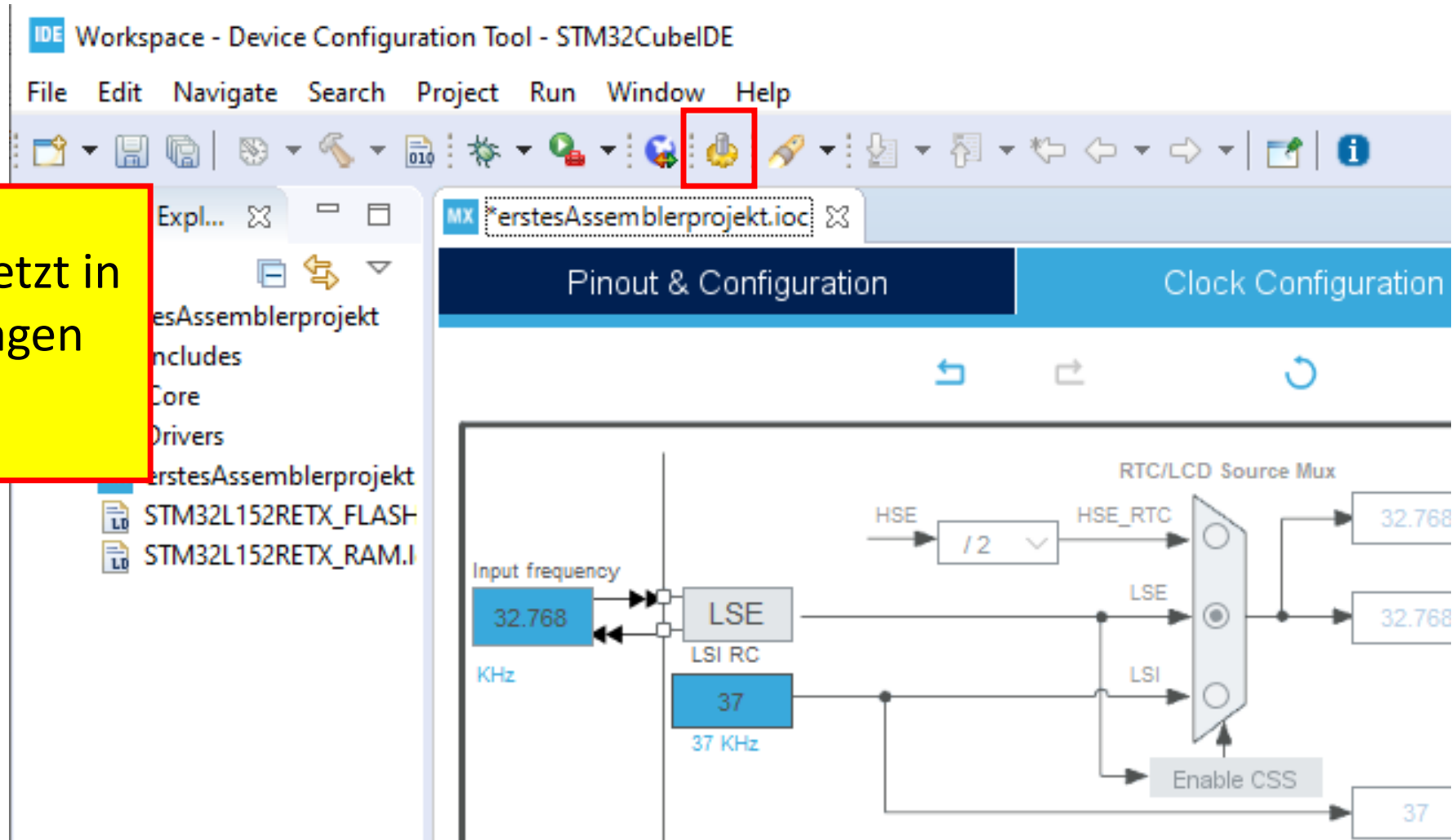
Getting Started STM32CubeIDE mit STM32L152RET

Alles erledigt.
Diese Einstellungen sind nur einmal erforderlich und sind im File .ioc gespeichert.



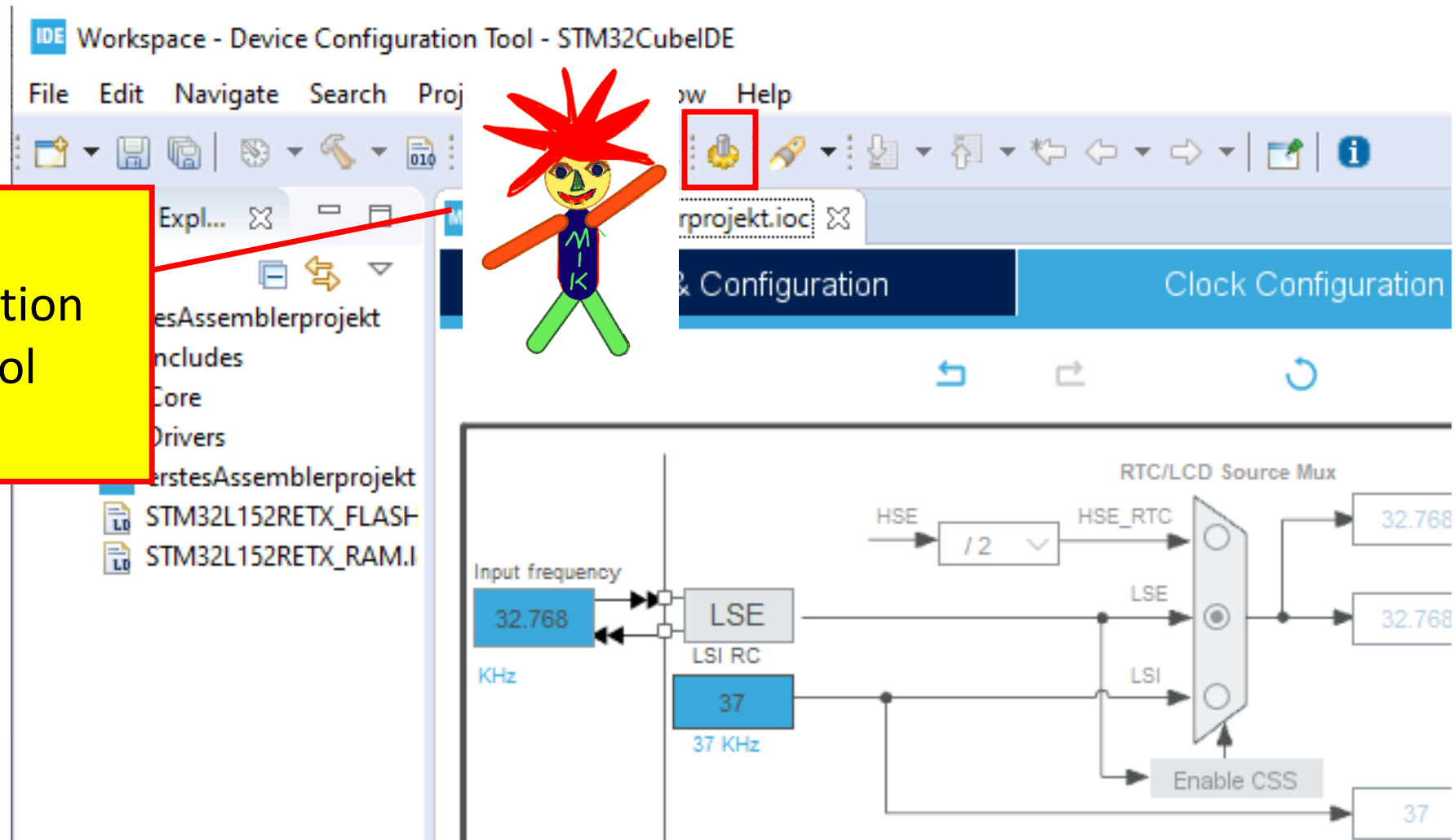
Getting Started STM32CubeIDE mit STM32L152RET

Die Konfiguration wird jetzt in
das Programm übertragen
mit...



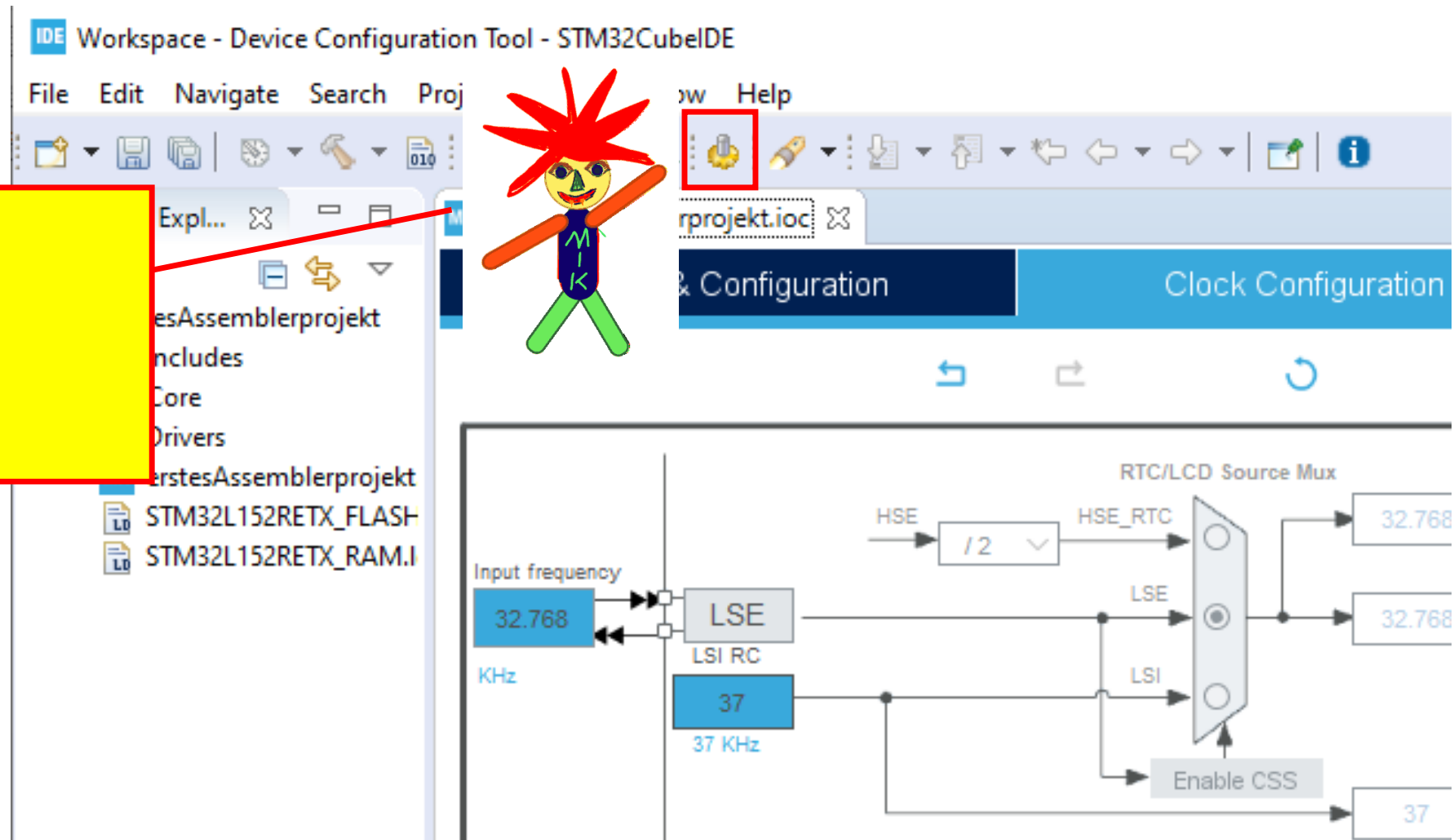
Getting Started STM32CubeIDE mit STM32L152RET

Dem Device Configuration
Code Generation Tool



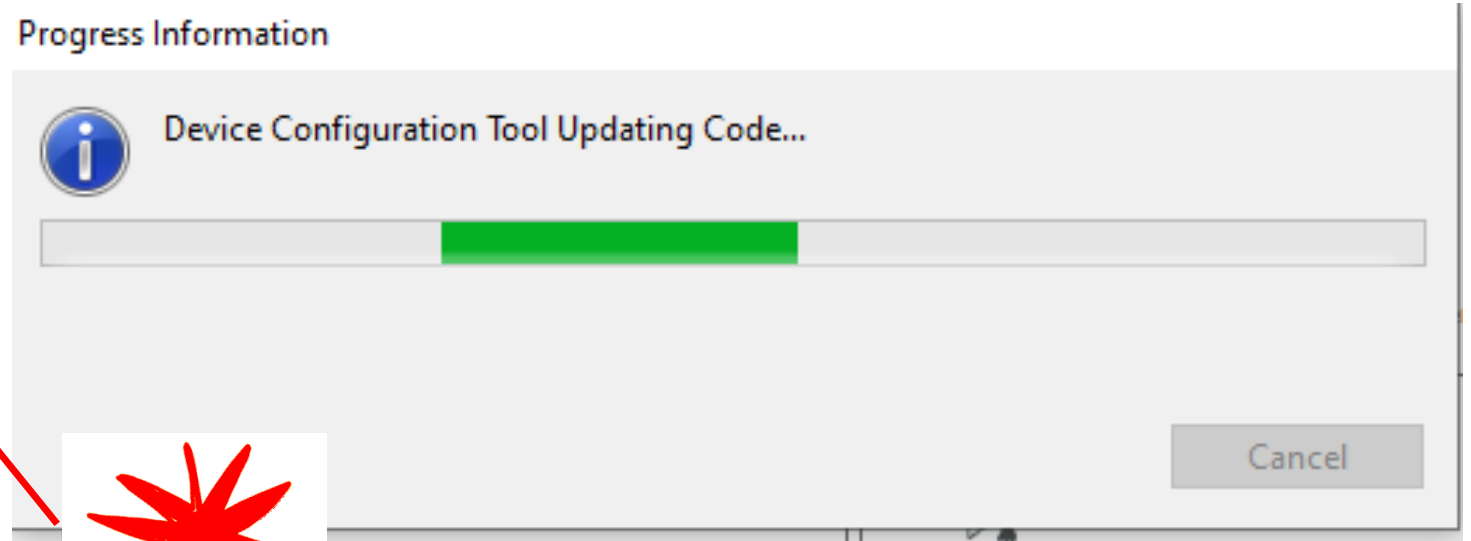
Getting Started STM32CubeIDE mit STM32L152RET

Einfach anklicken



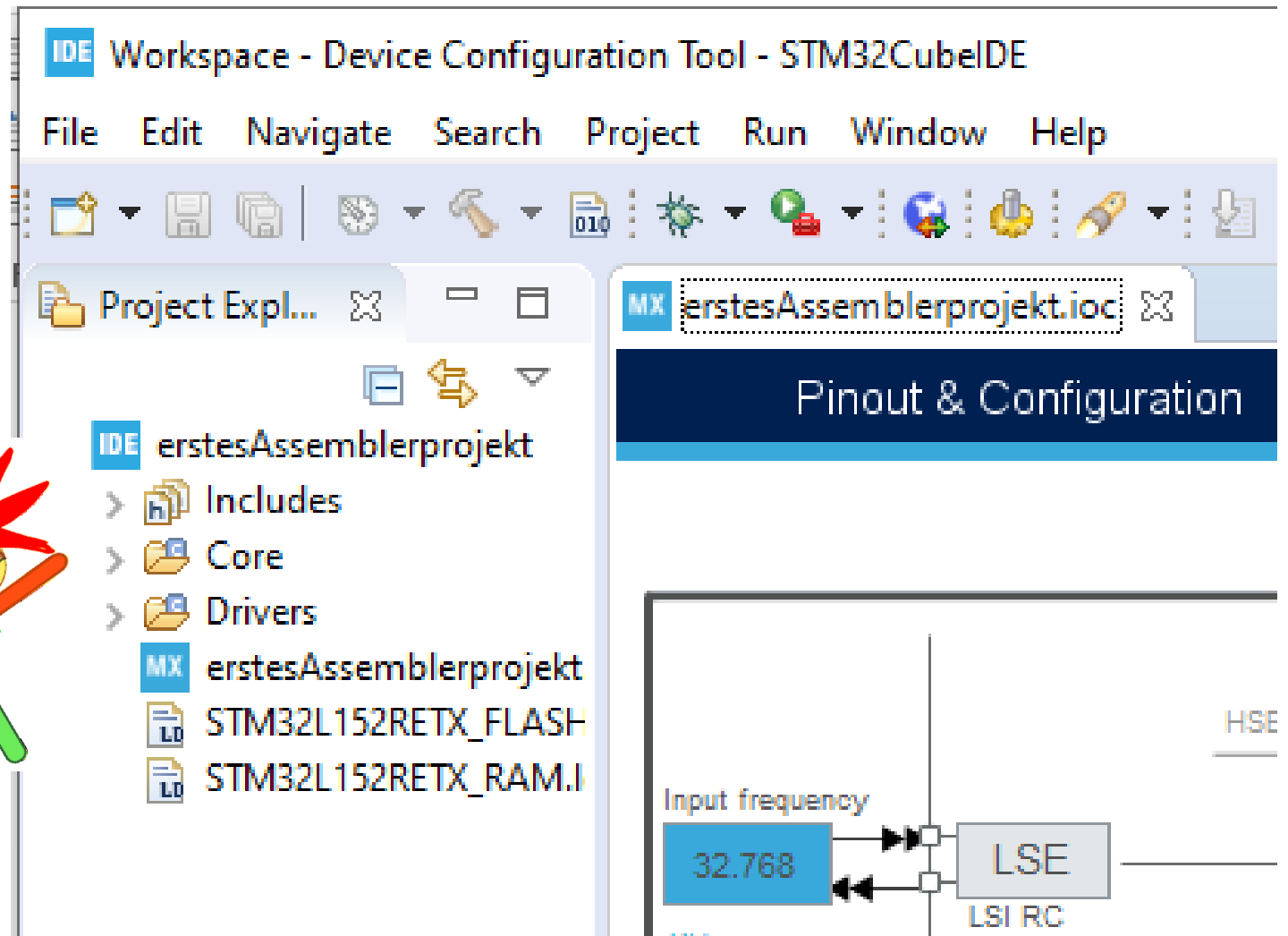
Getting Started STM32CubeIDE mit STM32L152RET

Der Code wird erzeugt



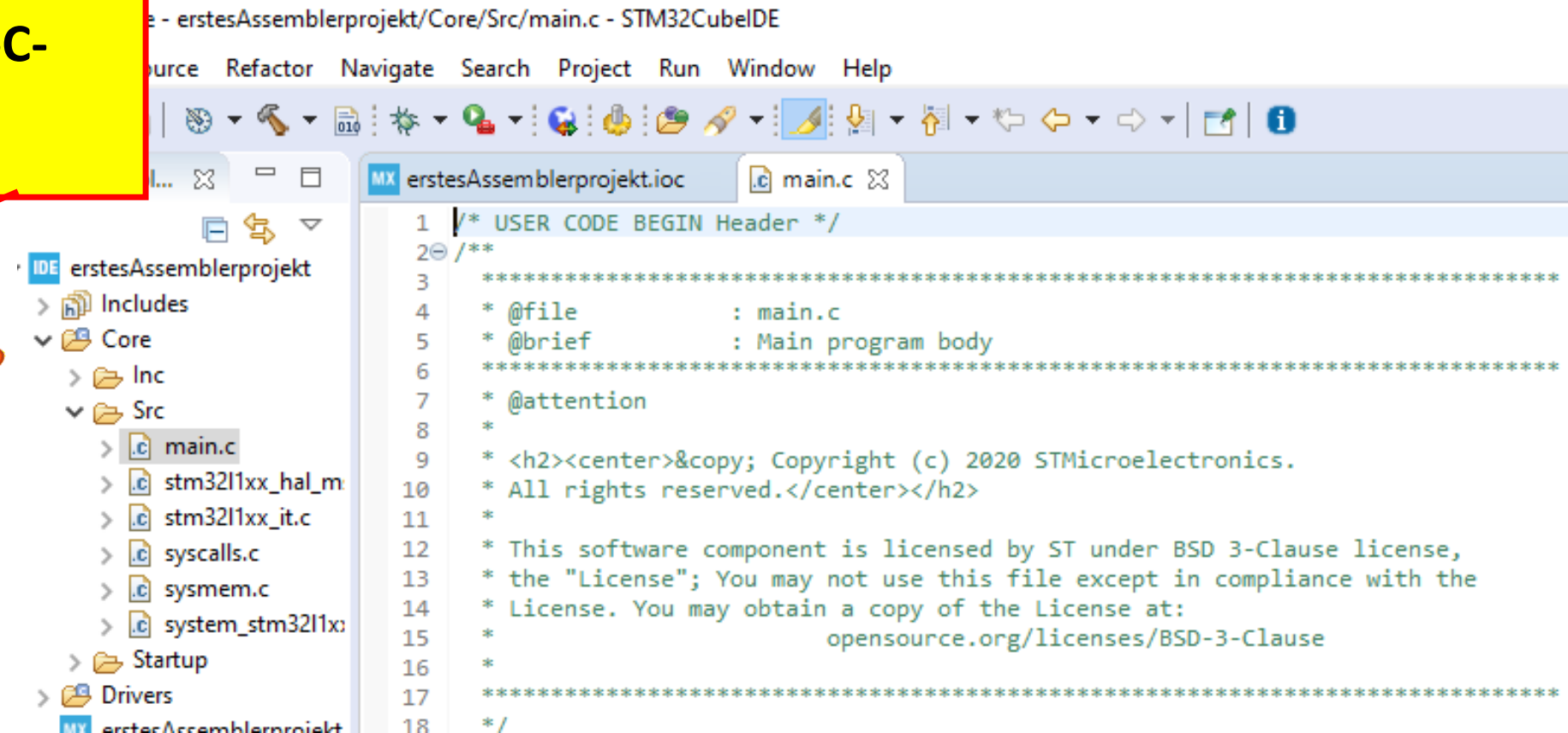
Getting Started STM32CubeIDE mit STM32L152RET

Aber wo ist er zu finden?



Getting Started STM32CubeIDE mit STM32L152RET

Unter Core/Src
**Main.c ist das Haupt-C-
Programm**



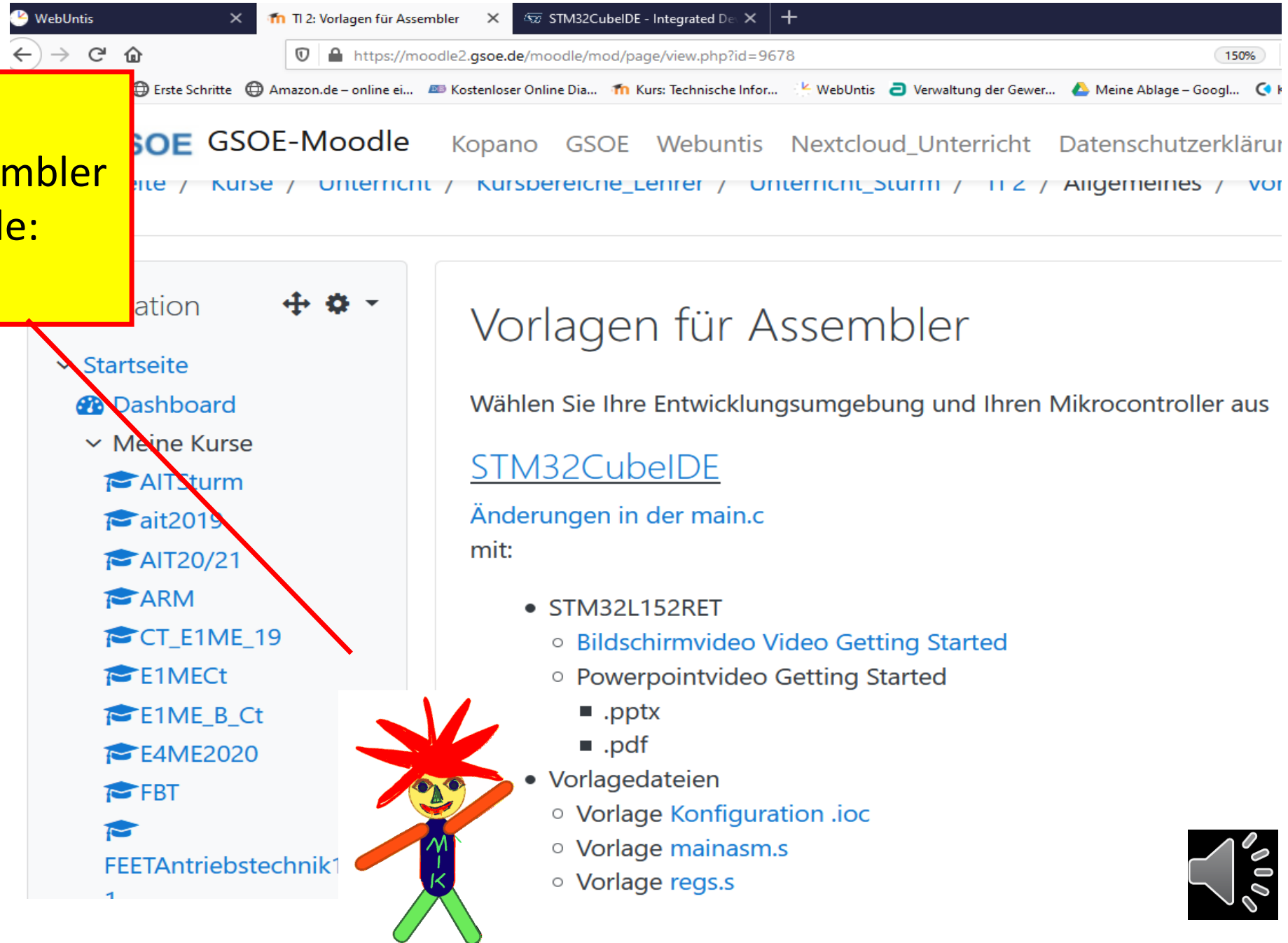
The screenshot shows the STM32CubeIDE interface. The project explorer on the left displays the project structure for 'erstesAssemblerprojekt'. The 'Core' folder is expanded, showing the 'Src' subfolder which contains the 'main.c' file. The main editor window displays the content of 'main.c', which is a header file for user code. The code includes a copyright notice for 2020 STMicroelectronics and a license statement (BSD 3-Clause).

```
1 /* USER CODE BEGIN Header */
2 /**
3  *
4  * @file          : main.c
5  * @brief         : Main program body
6  *
7  * @attention
8  *
9  * <h2><center>&copy; Copyright (c) 2020 STMicroelectronics.
10 * All rights reserved.</center></h2>
11 *
12 * This software component is licensed by ST under BSD 3-Clause license,
13 * the "License"; You may not use this file except in compliance with the
14 * License. You may obtain a copy of the License at:
15 *
16 *             opensource.org/licenses/BSD-3-Clause
17 *
18 */
```



Getting Started STM32CubeIDE mit STM32L152RET

Vorlagedateien für Assembler
finden sich in Moodle:



WebUntis x TI 2: Vorlagen für Assembler x STM32CubeIDE - Integrated De x +

https://moodle2.gsoe.de/moodle/mod/page/view.php?id=9678 150%

Erste Schritte Amazon.de – online ei... Kostenloser Online Dia... Kurs: Technische Infor... WebUntis Verwaltung der Gewer... Meine Ablage – Googl...

GSOE Moodle Kopano GSOE Webuntis Nextcloud_Unterricht Datenschutzerklärung

ite / Kurse / Unterricht / Kursbereiche_Lerner / Unterricht_Sturm / TI 2 / Allgemeines / vor

ation

Startseite

Dashboard

Meine Kurse

AITSturm

ait2019

AIT20/21

ARM

CT_E1ME_19

E1MECt

E1ME_B_Ct

E4ME2020

FBT

FEETAntriebstechnik1


Vorlagen für Assembler

Wählen Sie Ihre Entwicklungsumgebung und Ihren Mikrocontroller aus

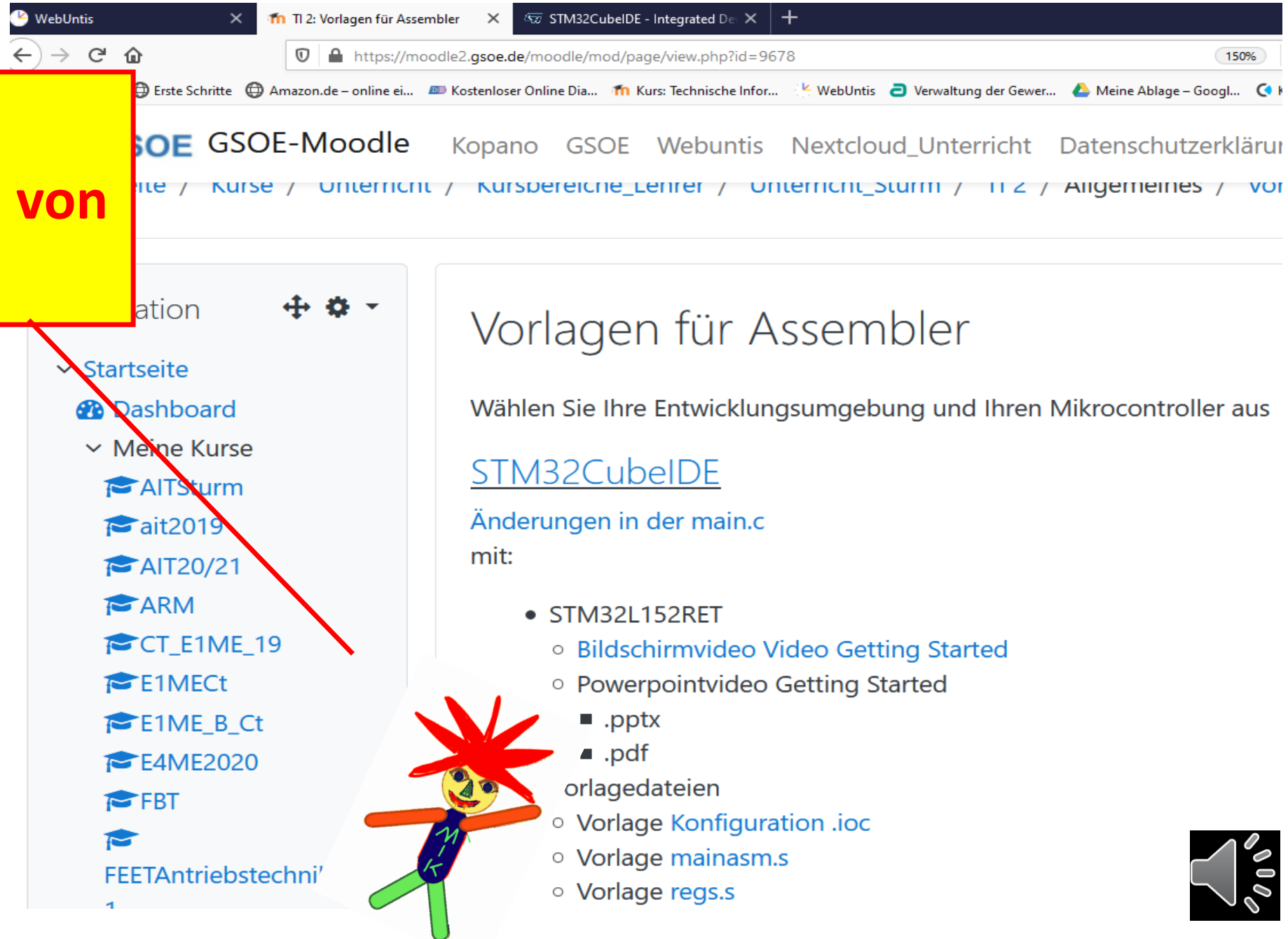
[STM32CubeIDE](#)

Änderungen in der main.c mit:

- STM32L152RET
 - Bildschirmvideo Video Getting Started
 - Powerpointvideo Getting Started
 - .pptx
 - .pdf
- Vorlagedateien
 - Vorlage Konfiguration .ioc
 - Vorlage mainasm.s
 - Vorlage regs.s



Getting Started STM32CubeIDE mit STM32L152RET



The screenshot shows a web browser window displaying a Moodle course page. The browser tabs include 'WebUntis', 'TI 2: Vorlagen für Assembler', and 'STM32CubeIDE - Integrated De...'. The address bar shows the URL 'https://moodle2.gsoe.de/moodle/mod/page/view.php?id=9678'. The page title is 'Vorlagen für Assembler'. The main content area has the heading 'Vorlagen für Assembler' and the text 'Wählen Sie Ihre Entwicklungsumgebung und Ihren Mikrocontroller aus'. Below this, there is a link to 'STM32CubeIDE' and the text 'Änderungen in der main.c mit:'. A list of files is shown, including 'STM32L152RET', 'Bildschirmvideo Video Getting Started', 'Powerpointvideo Getting Started', '.pptx', '.pdf', 'orlagedateien', 'Vorlage Konfiguration .ioc', 'Vorlage mainasm.s', and 'Vorlage regs.s'. A yellow callout box with a red border and a red arrow points to the 'Konfiguration.ioc' file in the list. The callout box contains the text 'Konfiguration.ioc: Die Konfiguration von eben'. A small cartoon character with red hair and a blue shirt is visible near the bottom center of the page.

Konfiguration.ioc:
Die Konfiguration von
eben

Vorlagen für Assembler

Wählen Sie Ihre Entwicklungsumgebung und Ihren Mikrocontroller aus

[STM32CubeIDE](#)

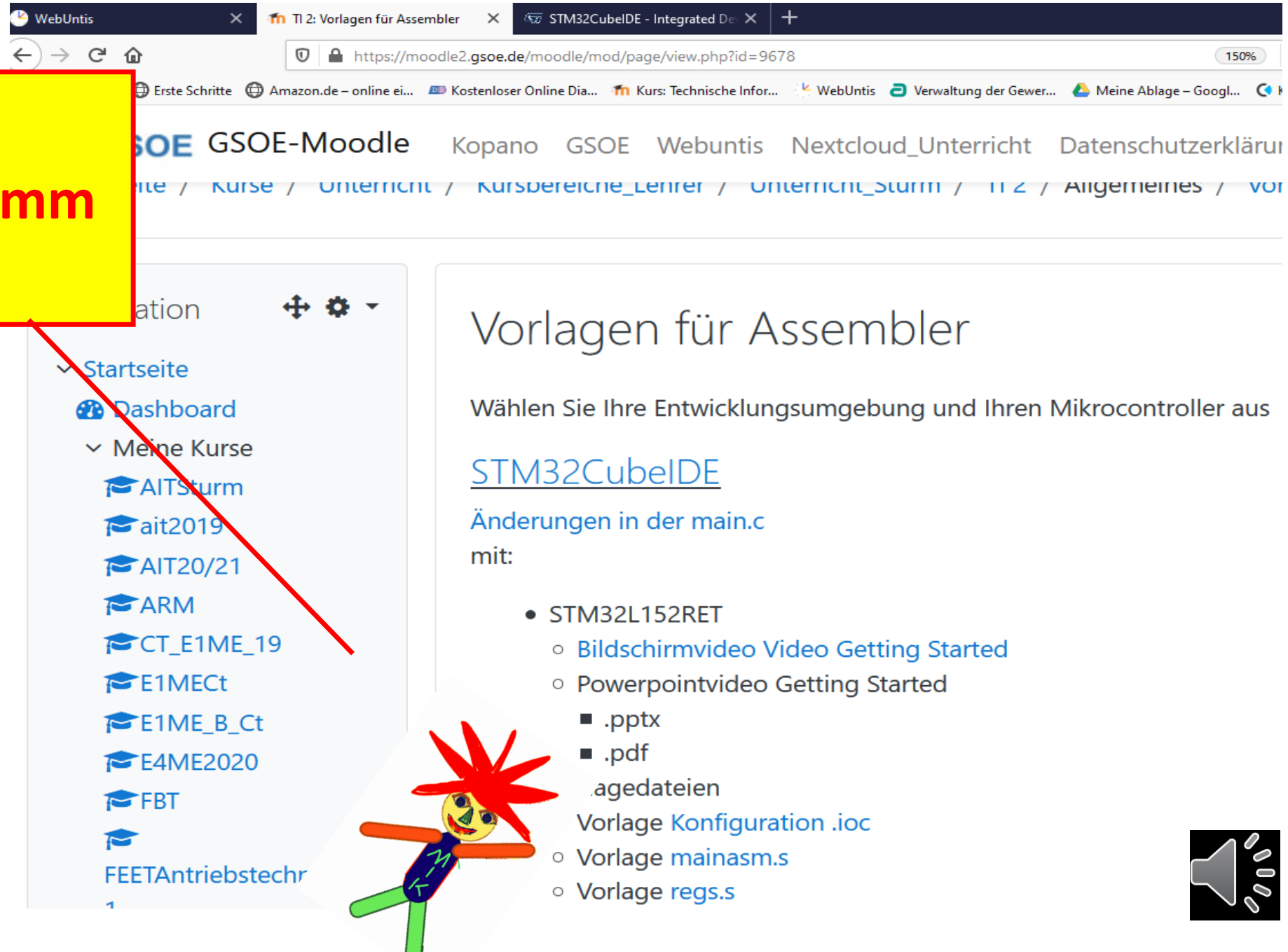
Änderungen in der main.c mit:

- STM32L152RET
 - Bildschirmvideo Video Getting Started
 - Powerpointvideo Getting Started
 - .pptx
 - .pdf
 - orlagedateien
 - Vorlage Konfiguration .ioc
 - Vorlage mainasm.s
 - Vorlage regs.s

Getting Started STM32CubeIDE mit STM32L152RET

mainasm.s:

**Das Hauptprogramm
in Assembler**



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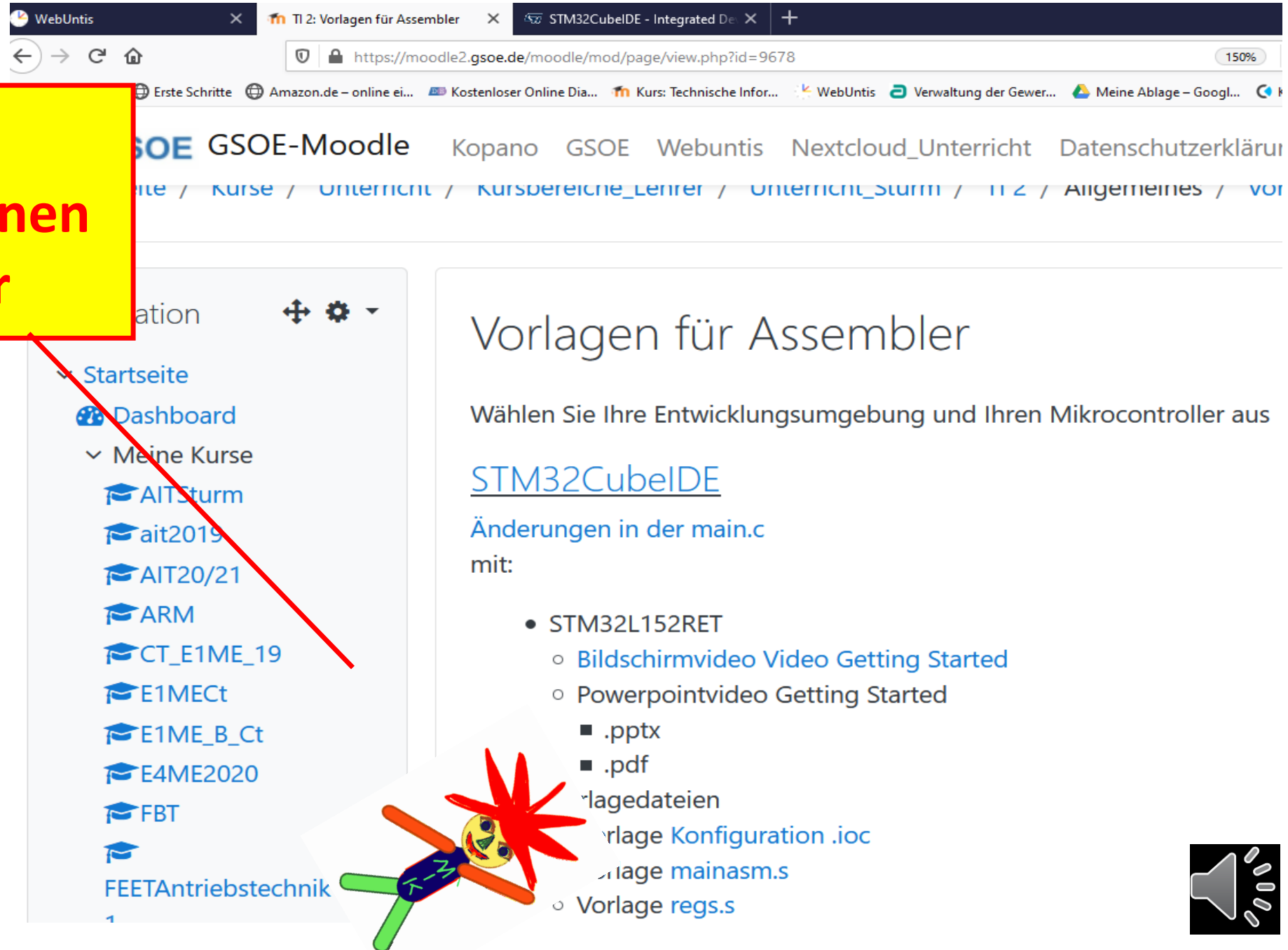
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 - Vorlage [mainasm.s](#)
 - Vorlage [regs.s](#)

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regs.s: Registerdefinitionen für Assembler



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Startseite

Dashboard

Meine Kurse

- AITSturm
- ait2019
- AIT20/21
- ARM
- CT_E1ME_19
- E1MECt
- E1ME_B_Ct
- E4ME2020
- FBT
- FEETAntriebstechnik


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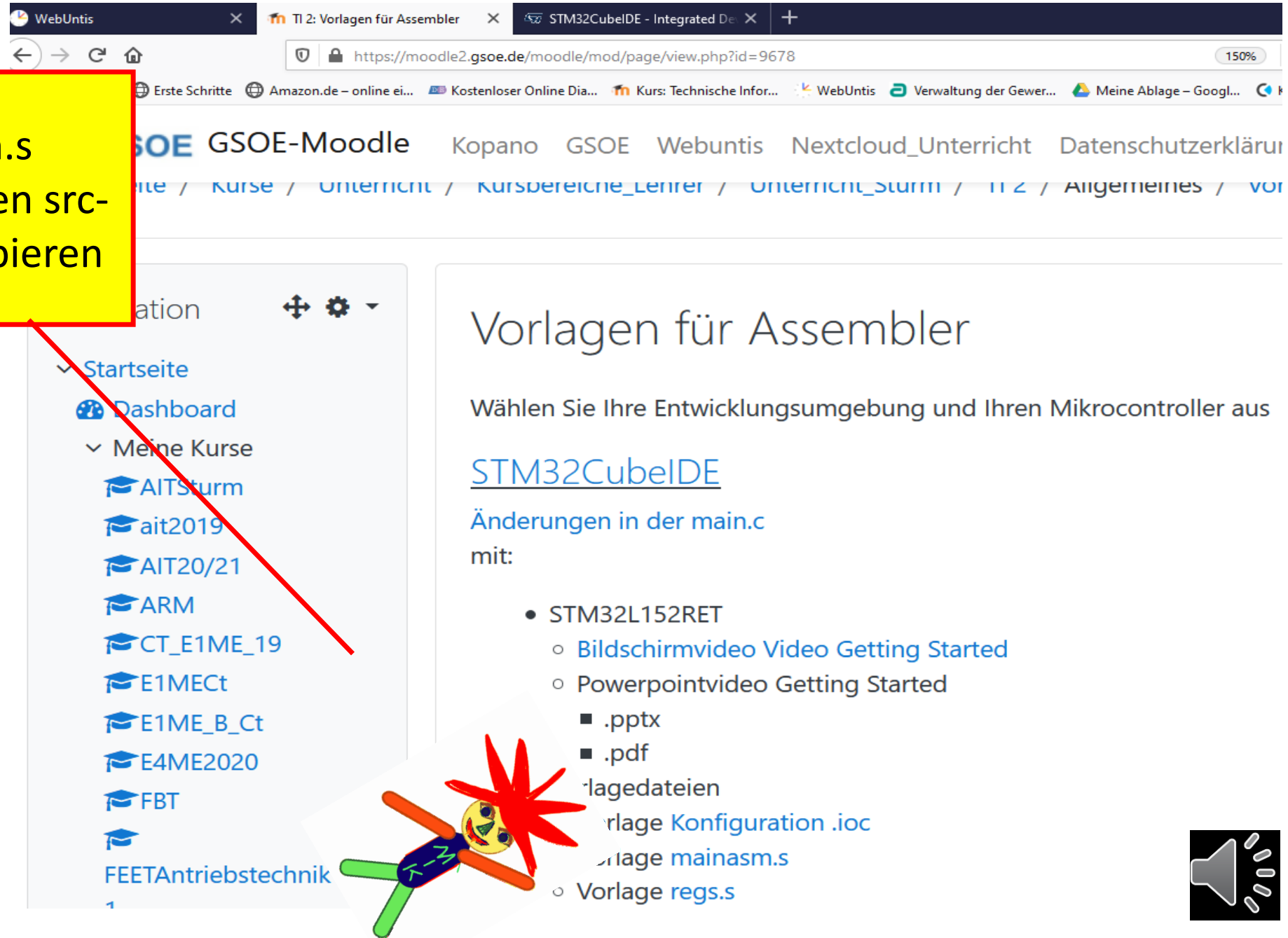
Änderungen in der main.c mit:

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 - .pptx
 - .pdf
 - rlagedateien
 - rlage Konfiguration .ioc
 - rlage mainasm.s
 - Vorlage [regs.s](#)



Getting Started STM32CubeIDE mit STM32L152RET

regs.s und mainasm.s
herunterladen und in den src-
Ordner des Projekts kopieren



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 - lagedateien
 - rlage Konfiguration .ioc
 - rlage mainasm.s
 - Vorlage regs.s



Getting Started STM32CubeIDE mit STM32L152RET

mainasm als C-Operation
deklarieren bei USER CODE
BEGIN Includes



```
*****
*/
/* USER CODE END Header */

/* Includes -----
#include "main.h"

/* Private includes -----
/* USER CODE BEGIN Includes */
void mainasm(void) asm("mainasm");
/* USER CODE END Includes */

...

int main(void)
{
    //verschiedene Inits
    /* USER CODE BEGIN 2 */
    mainasm();
    /* USER CODE END 2 */

    /* Infinite loop */
    /* USER CODE BEGIN WHILE */
    while (1)
    {
        /* USER CODE END WHILE */

        /* USER CODE BEGIN 3 */
    }
    /* USER CODE END 3 */
}
```



Getting Started STM32CubeIDE mit STM32L152RET

mainasm() aufrufen in USER
CODE BEGIN 2



```
*****
*/
/* USER CODE END Header */

/* Includes -----
#include "main.h"

/* Private includes -----
/* USER CODE BEGIN Includes */
void mainasm(void) asm("mainasm");
/* USER CODE END Includes */

...

int main(void)
{
    //verschiedene Inits
    /* USER CODE BEGIN 2 */
    mainasm();
    /* USER CODE END 2 */

    /* Infinite loop */
    /* USER CODE BEGIN WHILE */
    while (1)
    {
        /* USER CODE END WHILE */

        /* USER CODE BEGIN 3 */
    }
    /* USER CODE END 3 */
}
```



Getting Started STM32CubeIDE mit STM32L152RET

Das erste
Assemblerprogramm:
Blinkt LED an PC0



Workspace - erstesAssemblerprojekt/Core/Src/mainasm.s - STM32CubeIDE

File Edit Navigate Search Project Run Window Help

Project Explorer

- IDE erstesAssemblerprojekt
 - Includes
 - Core
 - Inc
 - Src
 - main.c
 - mainasm.s**
 - regs.s
 - stm32l1xx_hal_m
 - stm32l1xx_it.c
 - syscalls.c
 - systemem.c
 - system_stm32l1x
 - Startup
 - Drivers
 - MX erstesAssemblerprojekt
 - STM32L152RETX_FLASH
 - STM32L152RETX_RAM.I

MX erstesAssemblerprojekt.ioc

*main.c

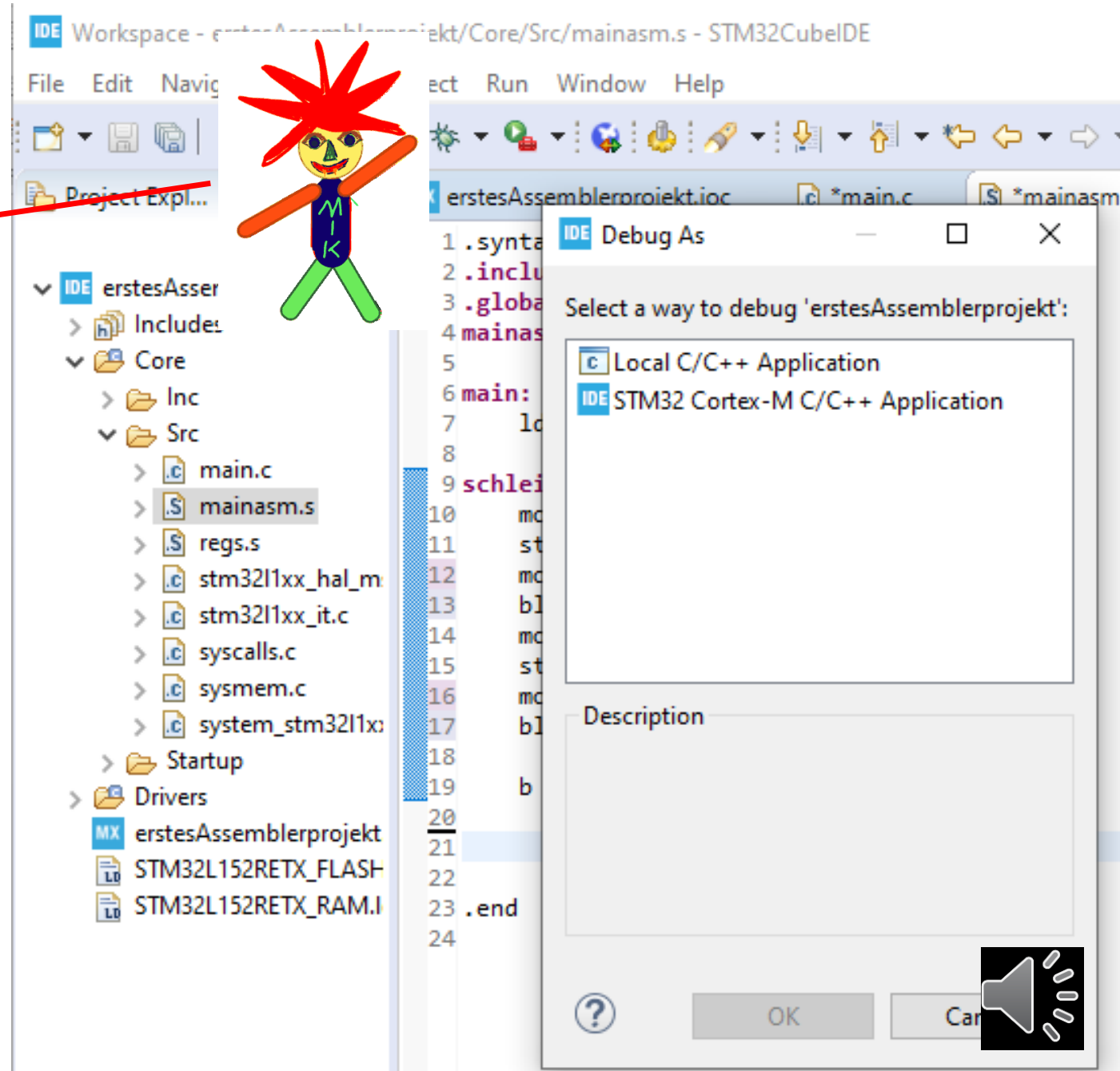
*mainasm.s

```
1 .syntax unified
2 .include "../Core/src/regs.s"
3 .global mainasm
4 mainasm:
5
6 main:
7     ldr    R1,=GPIOC
8
9 schleife:
10    mov    R0,#Bit0
11    strb   R0,[R1,ODR]
12    mov    R0,#1000
13    bl     wait_ms
14    mov    R0,#0
15    strb   R0,[R1,ODR]
16    mov    R0,#1000
17    bl     wait_ms
18
19    b      schleife
20
21
22
23 .end
24
```



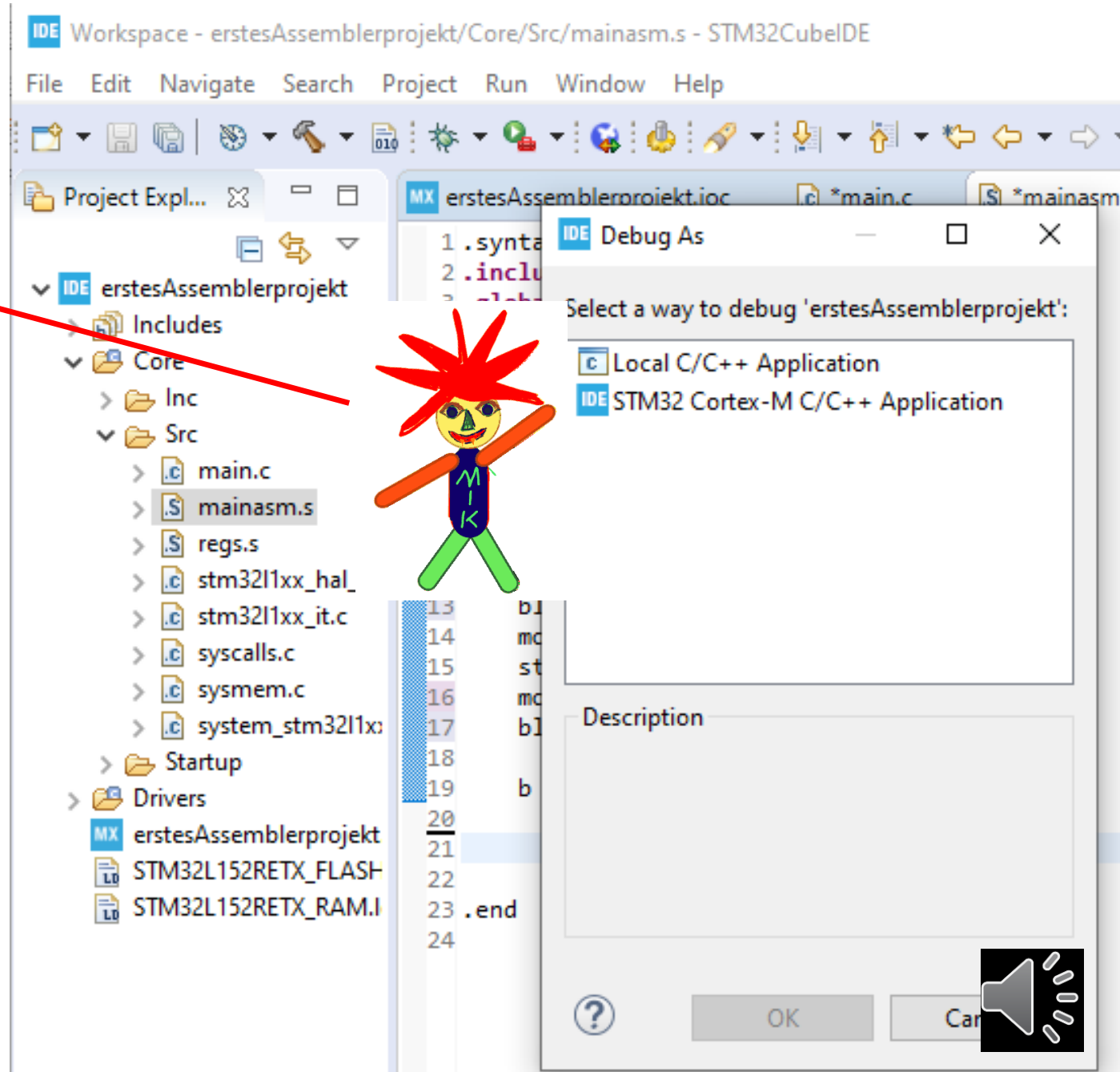
Getting Started STM32CubeIDE mit STM32L152RET

Debug-Button klicken um das Programm zu übersetzen und auf den Mikrocontroller zu laden



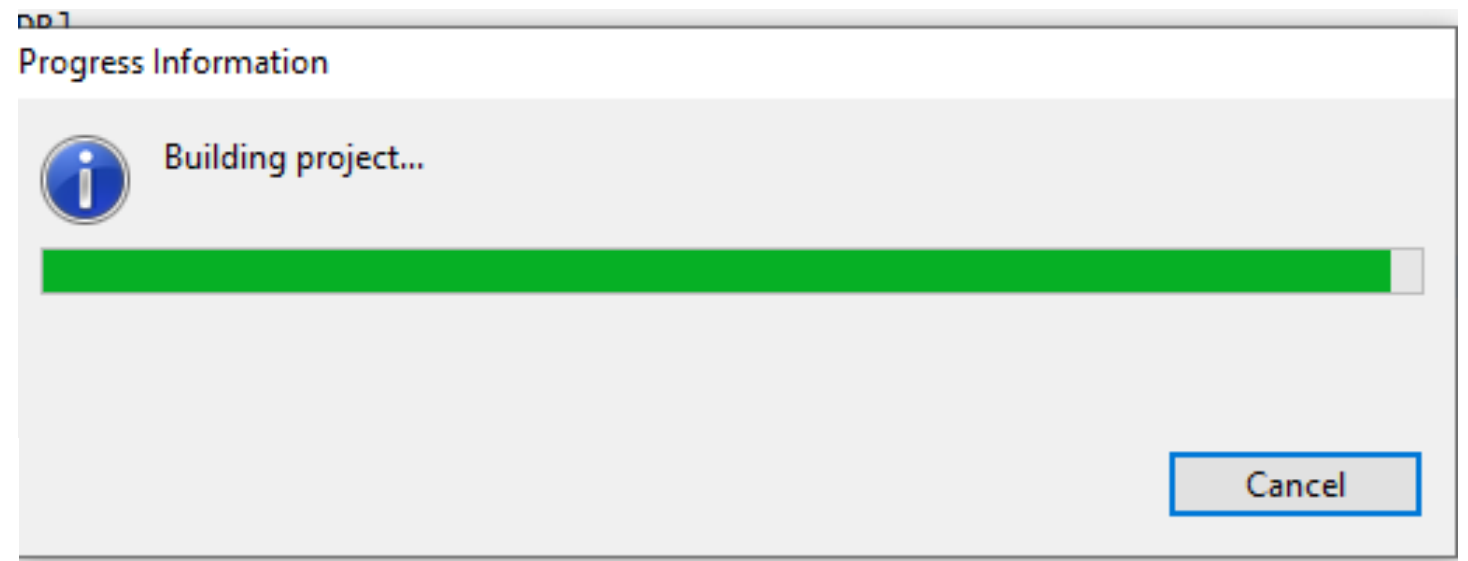
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Wir wählen STM32 Cortex-M
C/C++ Application



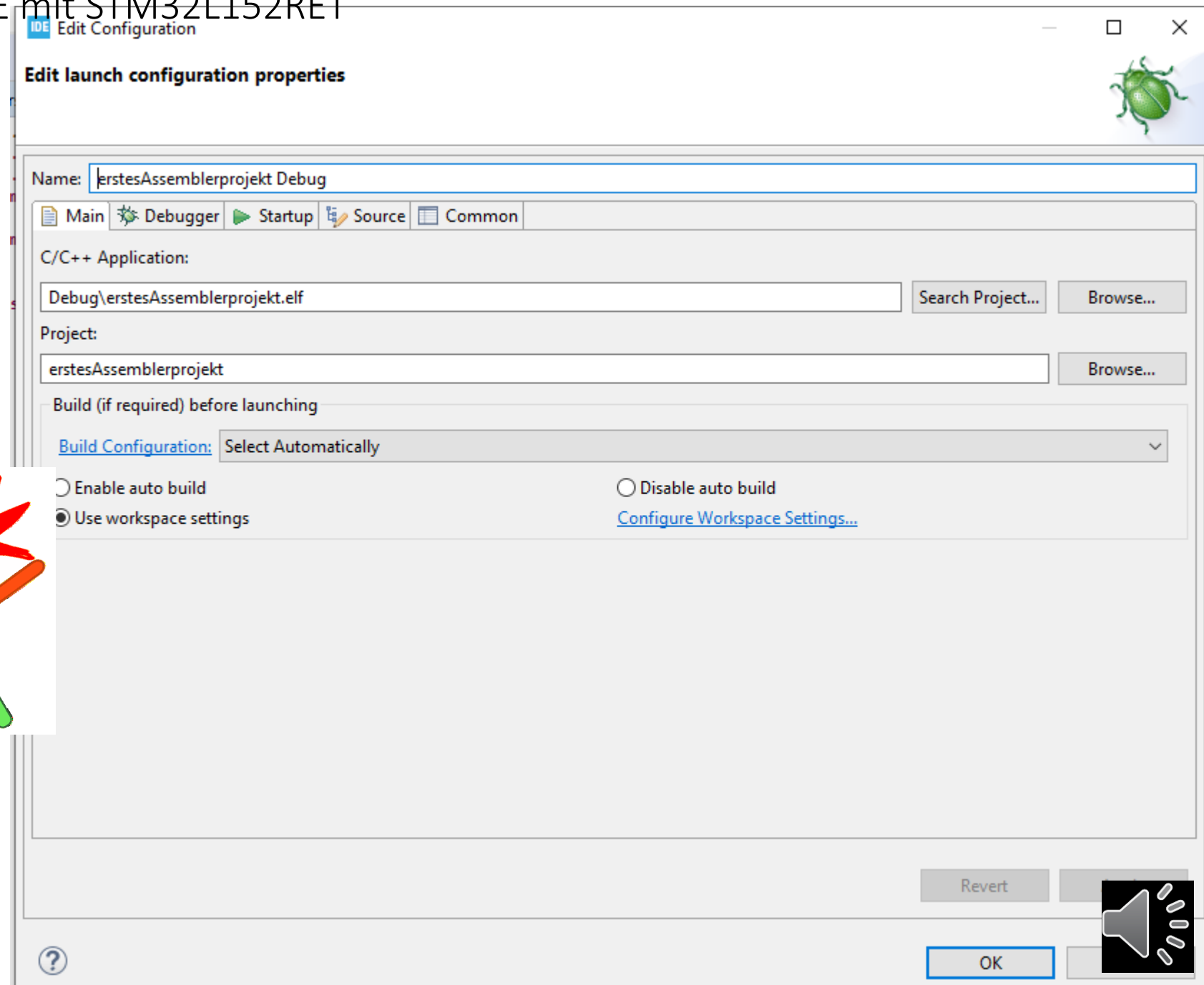
Getting Started STM32CubeIDE mit STM32L152RET

Das Projekt wird übersetzt



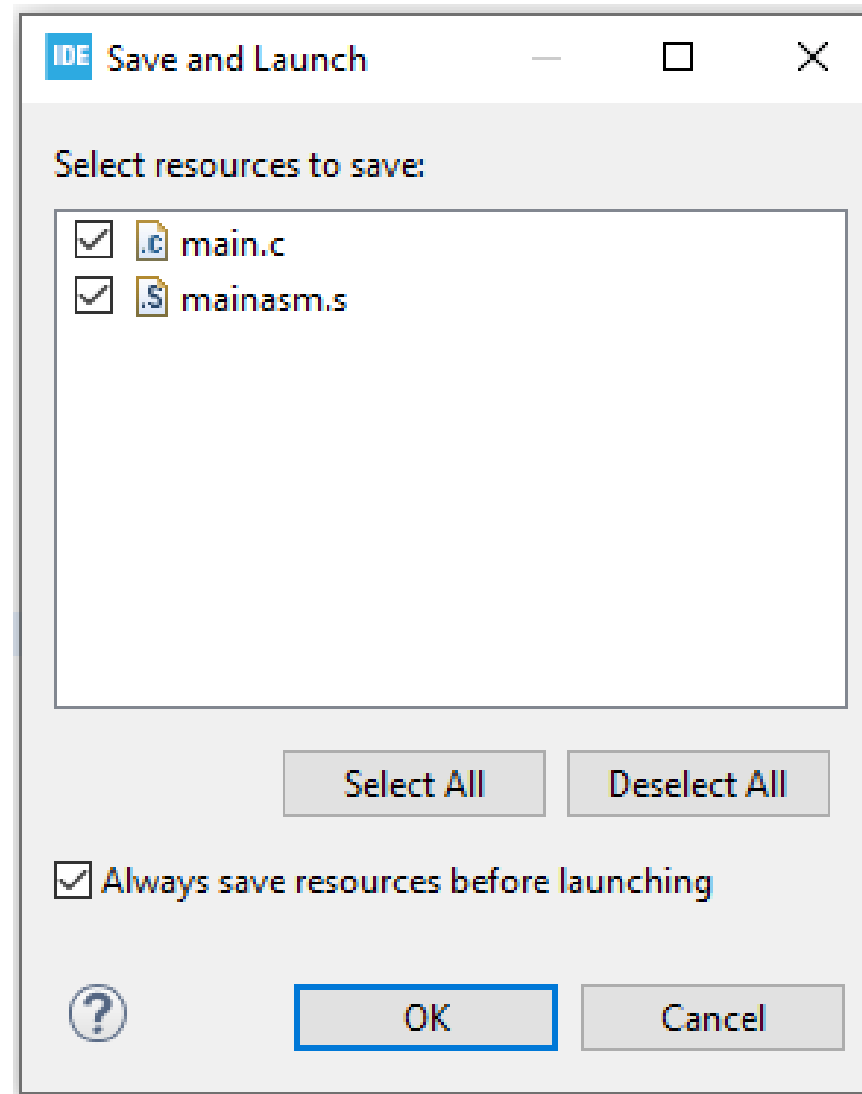
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Die launch configuration stimmt so, also weiter mit OK

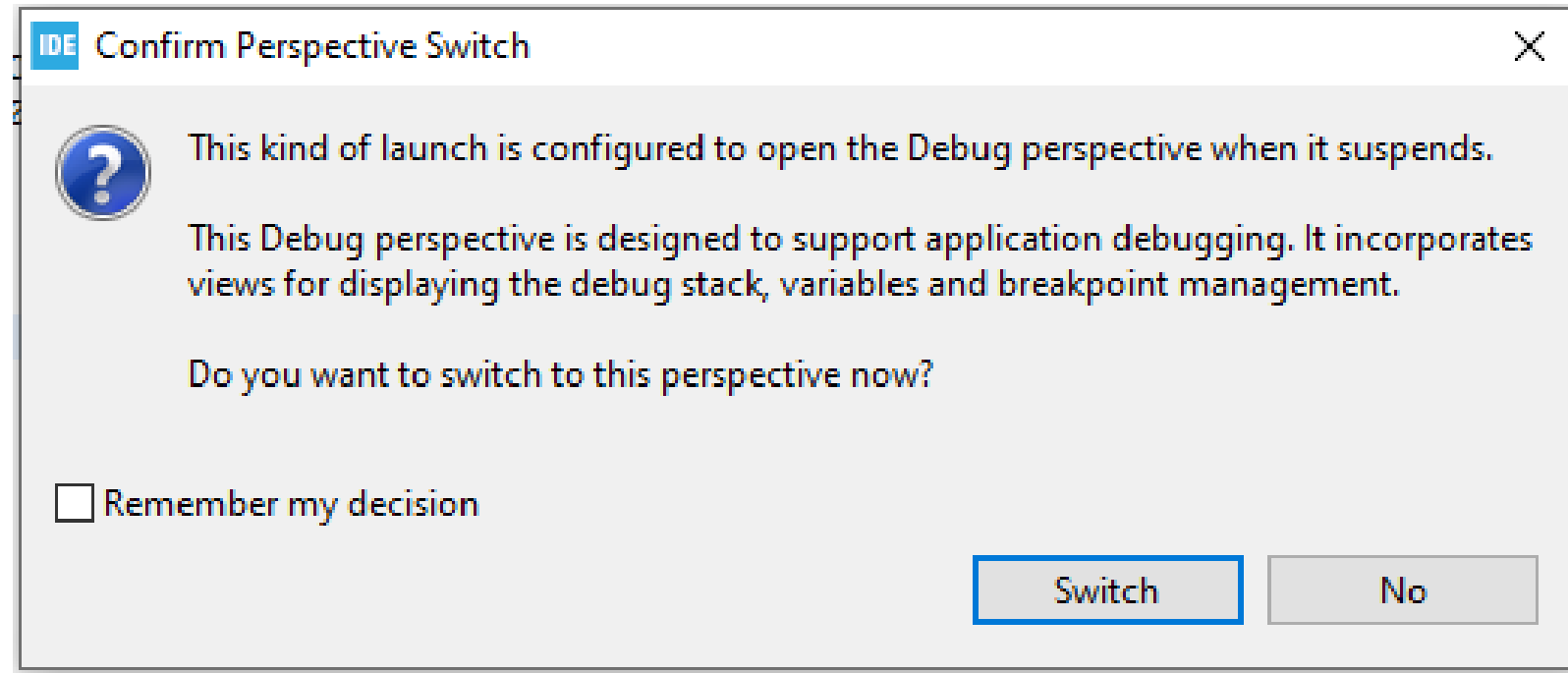


Getting Started STM32CubeIDE mit STM32L152RET

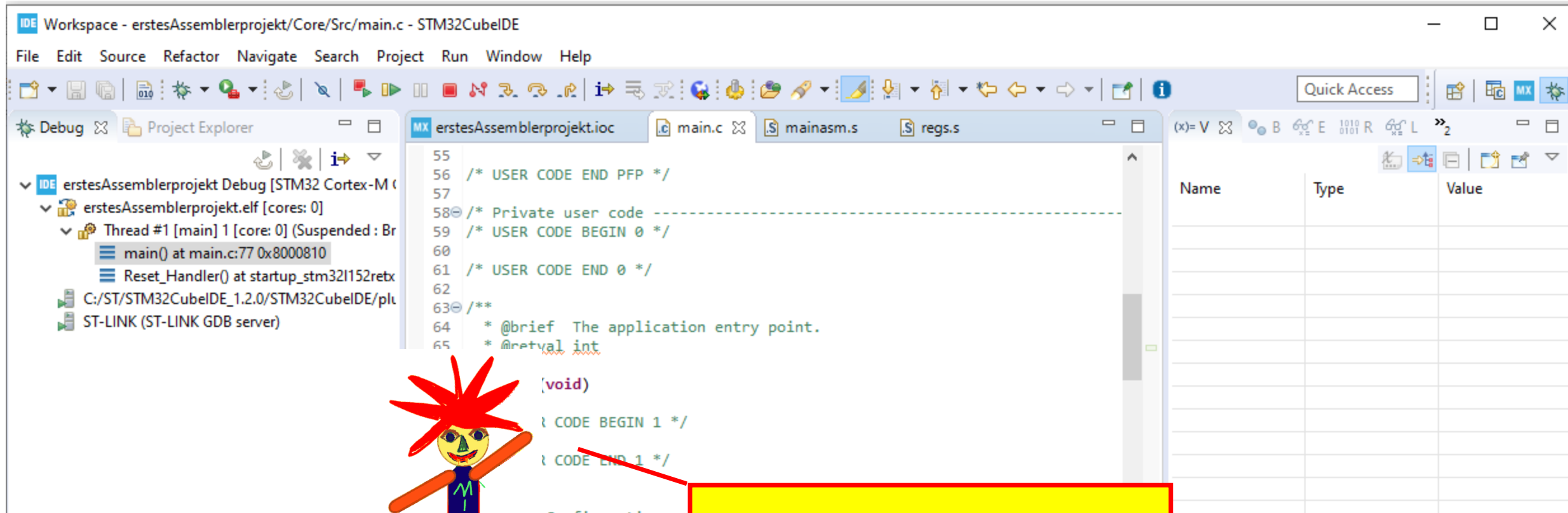
Alle Files speichern: OK



Eclipse wechselt in die
Debug-Perspektive
Switch



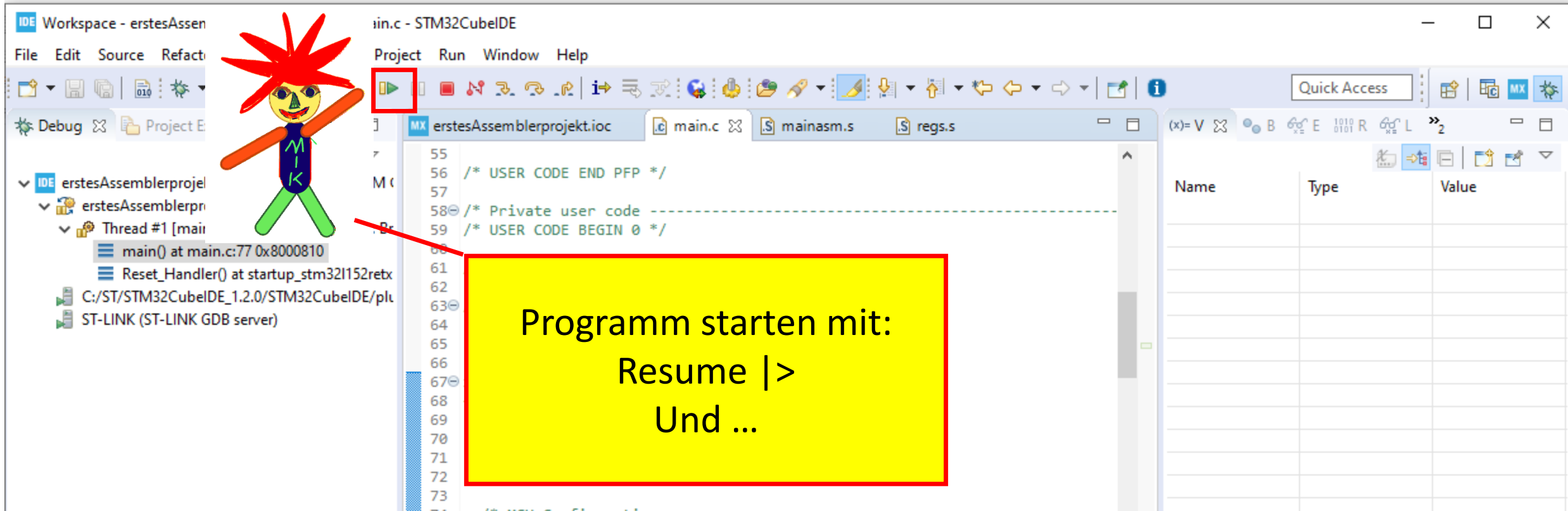
Getting Started STM32CubeIDE mit STM32L152RET



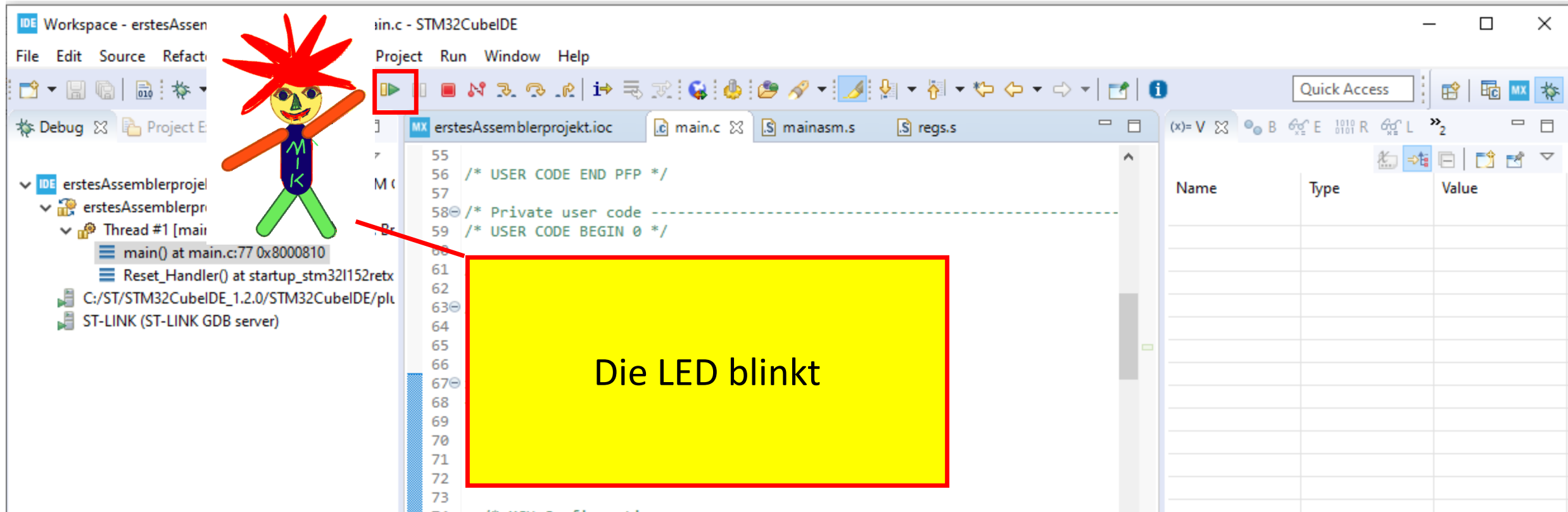
Die Debug-Perspektive



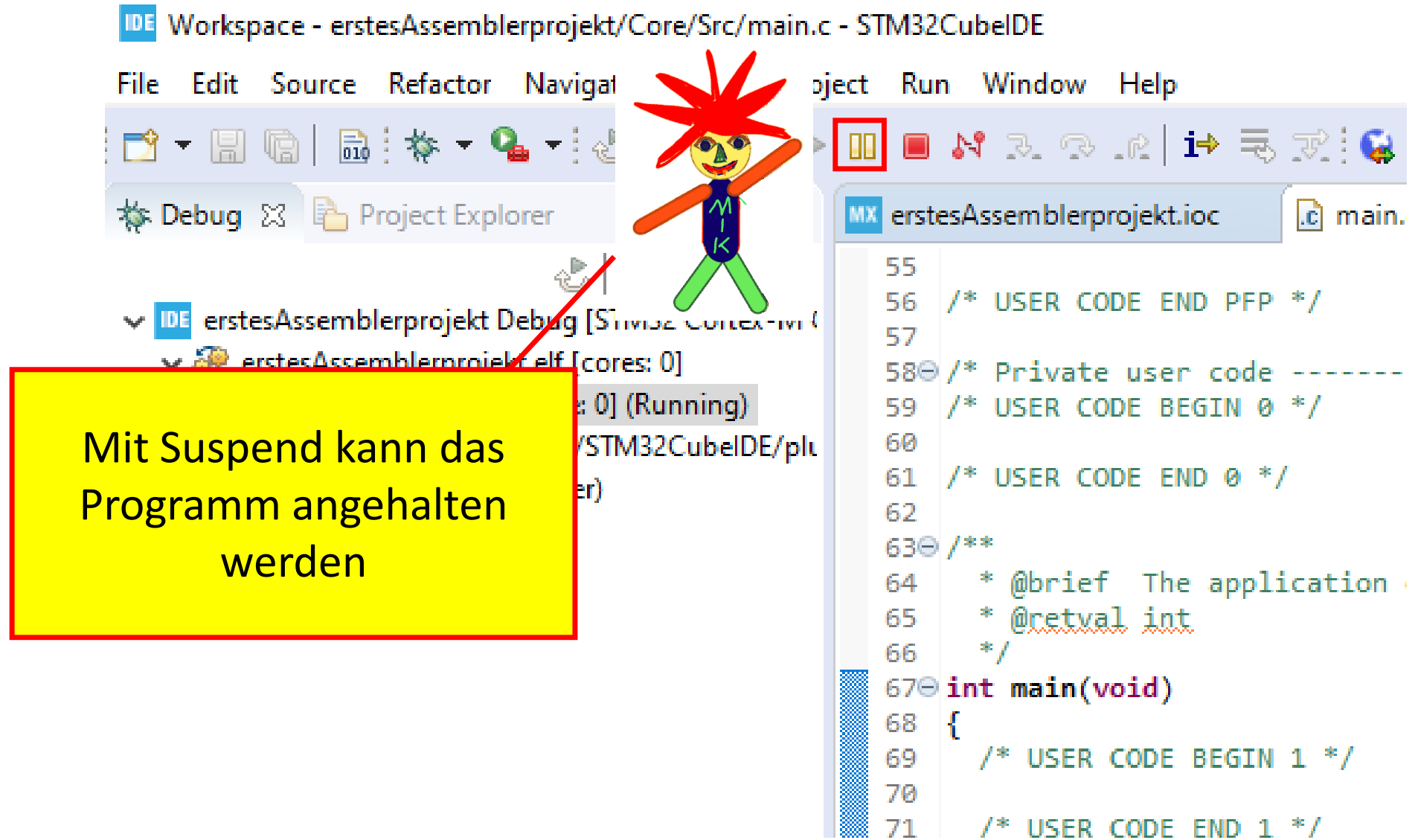
Getting Started STM32CubeIDE mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET



Getting Started STM32CubeIDE mit STM32L152RET



The screenshot shows the STM32CubeIDE interface. The title bar reads "Workspace - erstesAssemblerprojekt/Core/Src/main.c - STM32CubeIDE". The menu bar includes File, Edit, Source, Refactor, Navigat, object, Run, Window, and Help. The toolbar contains icons for file operations, a debug icon, and a suspend icon (two vertical bars) which is highlighted with a red rectangle. Below the toolbar is a "Debug" button and a "Project Explorer" button. The Project Explorer shows a tree view with "erstesAssemblerprojekt Debug [STM32CubeIDE/plu]" and "erstesAssemblerprojekt elf [cores: 0]". A yellow callout box with a red border contains the text: "Mit Suspend kann das Programm angehalten werden". The main editor displays the C code for "main.c", with line 67 highlighted. The code includes comments for user code and a function definition for "main".

Workspace - erstesAssemblerprojekt/Core/Src/main.c - STM32CubeIDE

File Edit Source Refactor Navigat object Run Window Help

Debug Project Explorer

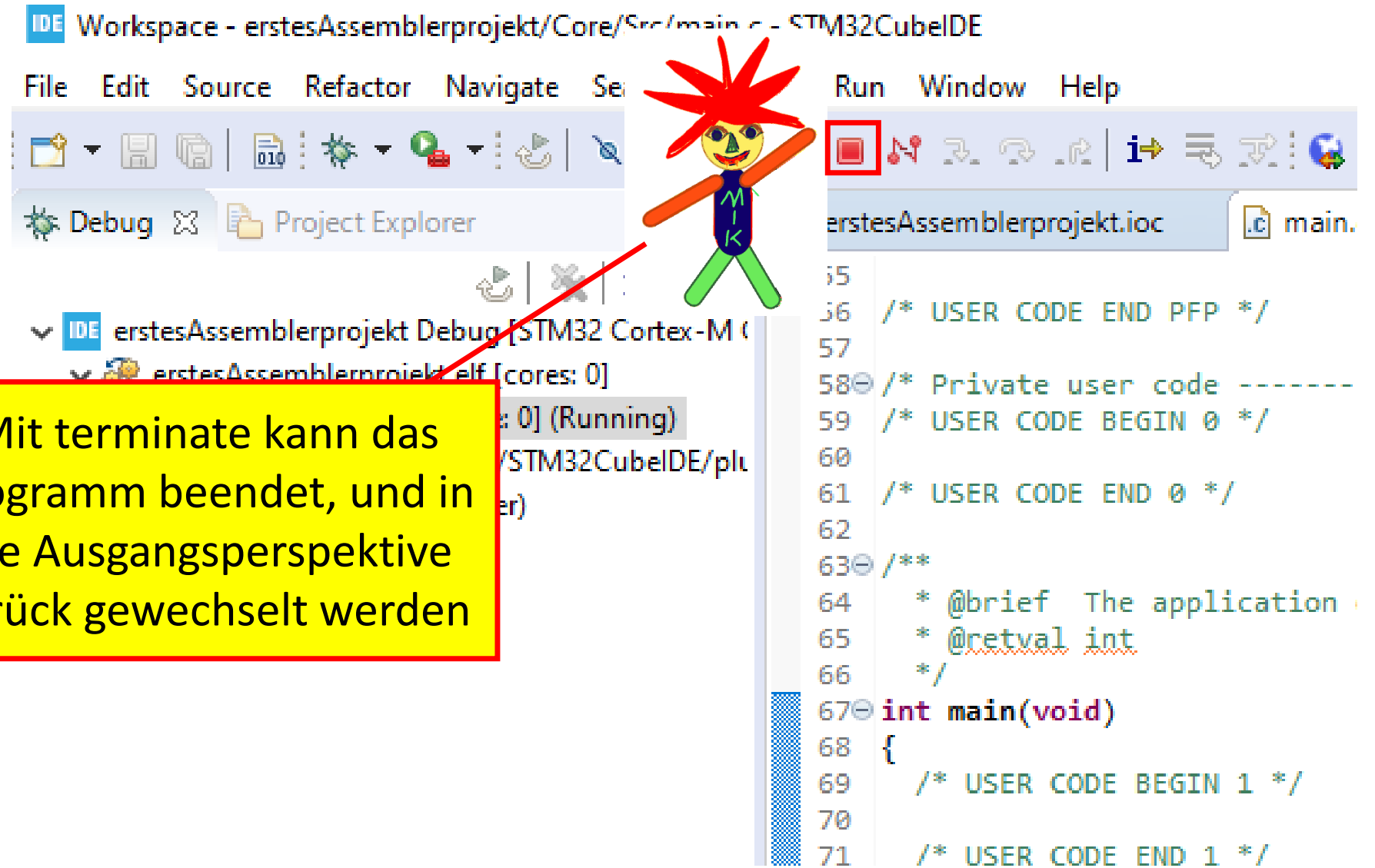
erstesAssemblerprojekt Debug [STM32CubeIDE/plu]
erstesAssemblerprojekt elf [cores: 0]

Mit Suspend kann das Programm angehalten werden

```
55  
56 /* USER CODE END PFP */  
57  
58 /* Private user code -----  
59 /* USER CODE BEGIN 0 */  
60  
61 /* USER CODE END 0 */  
62  
63 /**  
64  * @brief The application  
65  * @retval int  
66  */  
67 int main(void)  
68 {  
69     /* USER CODE BEGIN 1 */  
70  
71     /* USER CODE END 1 */
```



Getting Started STM32CubeIDE mit STM32L152RET



Mit terminate kann das Programm beendet, und in die Ausgangsperspektive zurück gewechselt werden

