

# ARM Development Primer



## Call to ARM(s)

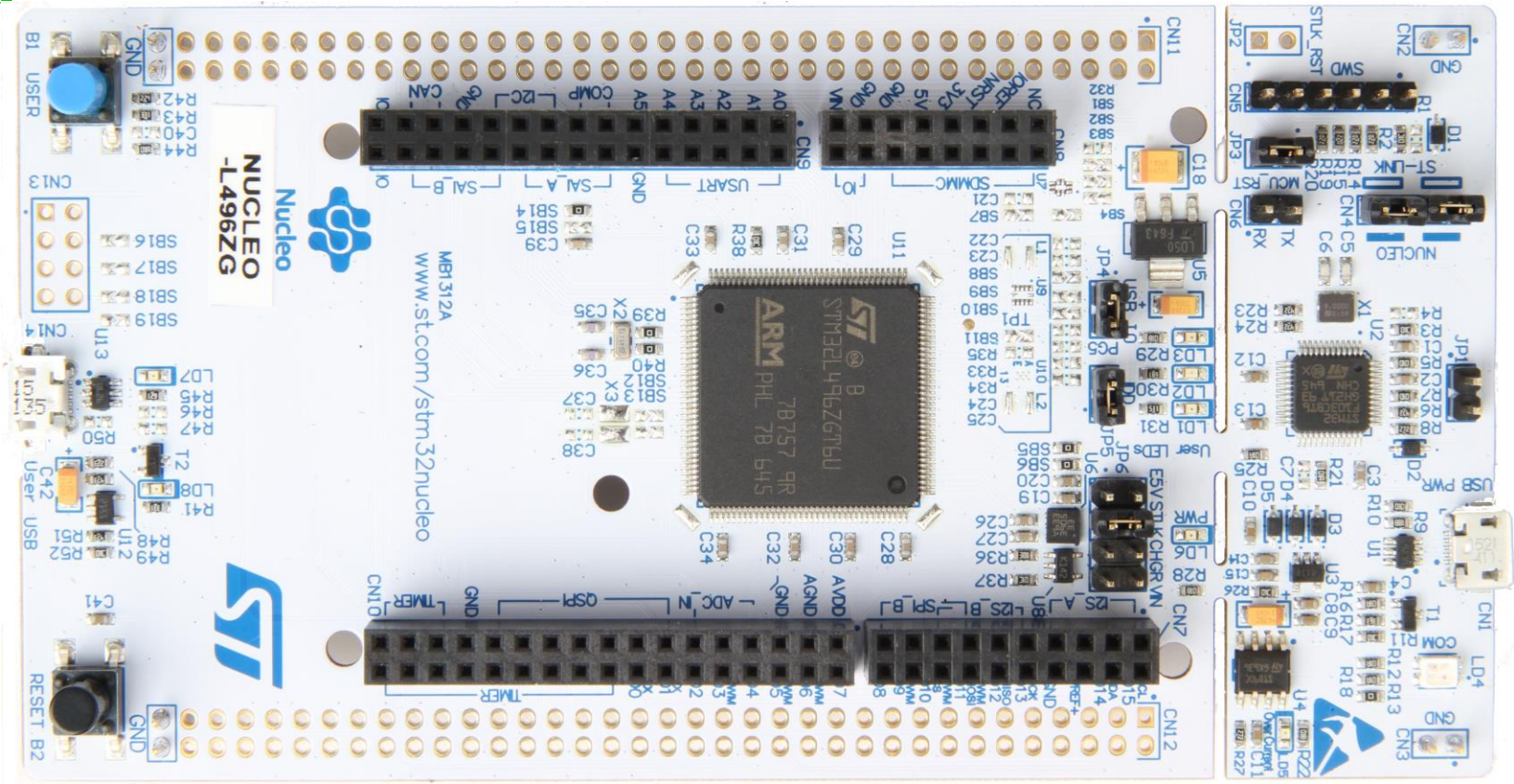
November 13, 2017

FRED EADY

# ARM Development Primer

# AGENDA

- STMicroelectronics Tools
- Microchip/Atmel Tools
- Day 1's Done



Presented by:



# ARM Development Primer

## STMicroelectronics Tools – Keil Support

The screenshot shows the Keil Pack Installer application. The 'Devices' tab is selected, displaying a list of manufacturers and the number of devices supported. A 'Pack Installer' dialog box is open in the foreground, providing a welcome message and instructions on how to use the tool.

**Pack Installer - C:\Keil\_v5\ARM\PACK**

File Packs Window Help

Device: **Devices** Boards

Search: X

Device	Summary
All Devices	4399 Devices
ABOV Semiconductor	10 Devices
Active-Semi	4 Devices
Ambiq Micro	6 Devices
Analog Devices	12 Devices
ARM	46 Devices
Atmel	335 Devices
Cypress	425 Devices
GigaDevice	99 Devices
HDSC	24 Devices
Holtek	100 Devices
Infineon	166 Devices
Lapis Semiconductor	2 Devices
Maxim	4 Devices
MediaTek	2 Devices
Microsemi	6 Devices
MindMotion	2 Devices
Nordic Semiconductor	13 Devices
Nuvoton	481 Devices
NXP	721 Devices
Renesas	4 Devices
Silicon Labs	444 Devices
SONIX	50 Devices
STMicroelectronics	998 Devices
Texas Instruments	347 Devices
Toshiba	91 Devices
Zilog	7 Devices

**Pack Installer**

Welcome to the Keil Pack Installer

Pack Installer is a utility for managing Software Packs on the local computer and provides the following windows:

- Devices** : List supported devices. Select a device to show related Packs and examples.
- Boards** : List supported boards. Select a board to show related Packs and examples.
- Packs** : List and manage Software Packs. Install a Pack for access within  $\mu$ Vision.
- Examples** : List example projects. Copy projects and launch  $\mu$ Vision for testing examples.

Pack Installer connects to [www.keil.com/pack](http://www.keil.com/pack) to obtain the published Software Packs. To install a local Software Pack use **File - Import...** from the menu.

☒ Show this dialog at startup

OK Help

Output

Refresh Pack descriptions

Update available for ARM::CMSIS (installed: 5.0.1, available: 5.1.1)

Update available for Keil::ARM\_Compiler (installed: 1.3.0, available: 1.3.3)

Update available for Keil::MDK-Middleware (installed: 7.4.0, available: 7.4.1)

Update available for NordicSemiconductor::nRF\_DeviceFamilyPack (installed: 8.14.1, available: 8.15.0)

Ready

ONLINE

# ARM Development Primer

## STMicroelectronics Tools – Keil Support

Packs

Examples

Pack	Action	Description
[-] Device Specific	2 Packs	STM32F030R8 selected
+ Keil::STM32F0xx_DFP	Install	STMicroelectronics STM32F0 Series Device Support and Examples
+ Keil::STM32NUCLEO_B...	Install	STMicroelectronics Nucleo Boards Support and Examples
[-] Generic	20 Packs	
+ ARM::AMP	Install	Software components for inter processor communication (Asymmetric Multi Processing AMP)
+ ARM::CMSIS	Up to date	CMSIS (Cortex Microcontroller Software Interface Standard)
+ ARM::CMSIS-Driver_Val...	Install	CMSIS-Driver Validation
+ ARM::CMSIS-FreeRTOS	Install	Bundle of FreeRTOS fr
+ ARM::CMSIS-RTOS_Val...	Install	CMSIS-RTOS Validatio
+ ARM::mbedClient	Install	ARM mbed Client for
+ ARM::mbedTLS	Install	ARM mbed Cryptogr
+ ARM::minar	Install	mbed OS Scheduler f
+ Huawei::LiteOS	Install	Huawei LiteOS kernel
+ Keil::ARM_Compiler	Up to date	Keil ARM Compiler ex
+ Keil::Jansson	Install	Jansson is a C library f
+ Keil::MDK-Middleware	Up to date	Middleware for Keil M
+ lwIP::lwIP	Install	lwIP is a light-weight
+ Micrium::RTOS	Install	Micrium software cor
+ RealTimeLogic::SharkS...	Install	SharkSSL-Lite is a sup
+ RealTimeLogic::SMQ	Install	Simple Message Que
+ redlogix:redBlocks-Si...	Install	C Target Library for th
+ rt-thread::rtthread	Install	rt-thread software cor
+ YOGITECH::fRSTL_AR...	Deprecated	!!! DEPRECATED Prodi
+ YOGITECH::fRSTL_ST...	Deprecated	!!! DEPRECATED Prodi

STMicroelectronics

998 Devices

STBlueNRG Series

1 Device

STBlueNRG-1 Series

1 Device

STBlueNRG-2 Series

1 Device

STM32F0 Series

73 Devices

STM32F030

7 Devices

STM32F030C6

ARM Cortex-M0, 48 MHz, 4 kB RAM, 32 kB ROM

STM32F030C8

ARM Cortex-M0, 48 MHz, 8 kB RAM, 64 kB ROM

STM32F030CC

ARM Cortex-M0, 48 MHz, 32 kB RAM, 256 kB ROM

STM32F030F4

ARM Cortex-M0, 48 MHz, 4 kB RAM, 16 kB ROM

STM32F030K6

ARM Cortex-M0, 48 MHz, 4 kB RAM, 32 kB ROM

STM32F030R8

ARM Cortex-M0, 48 MHz, 8 kB RAM, 64 kB ROM

STM32F030RC

ARM Cortex-M0, 48 MHz, 32 kB RAM, 256 kB ROM

STM32F031

9 Devices

STM32F038

5 Devices

STM32F042

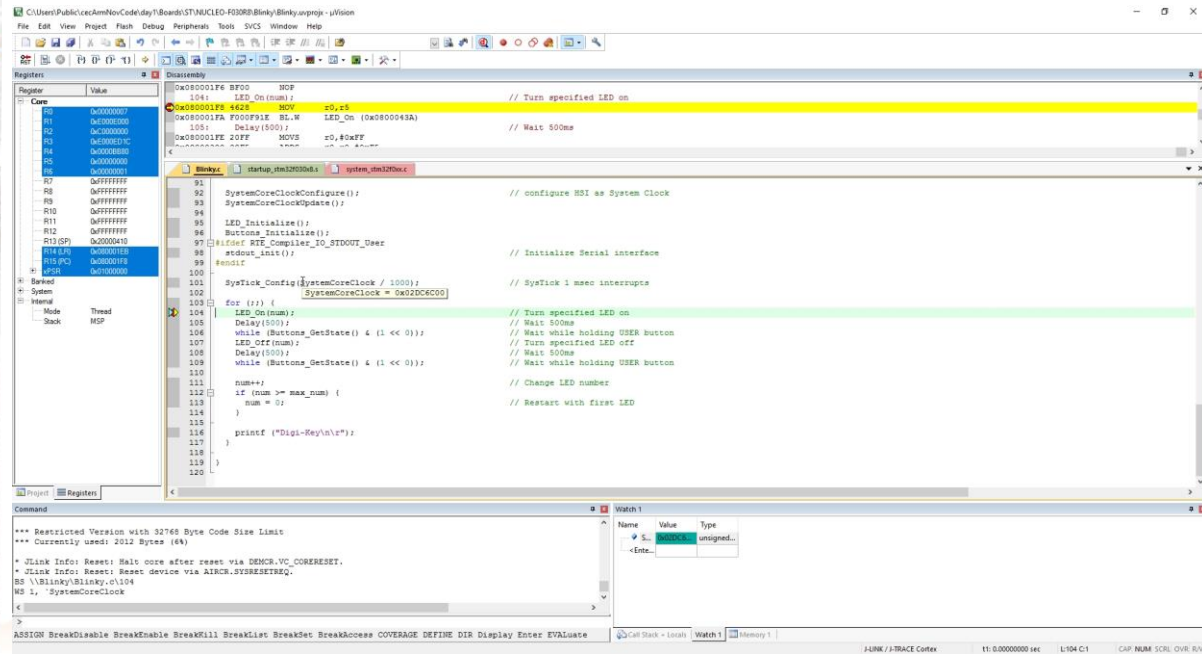
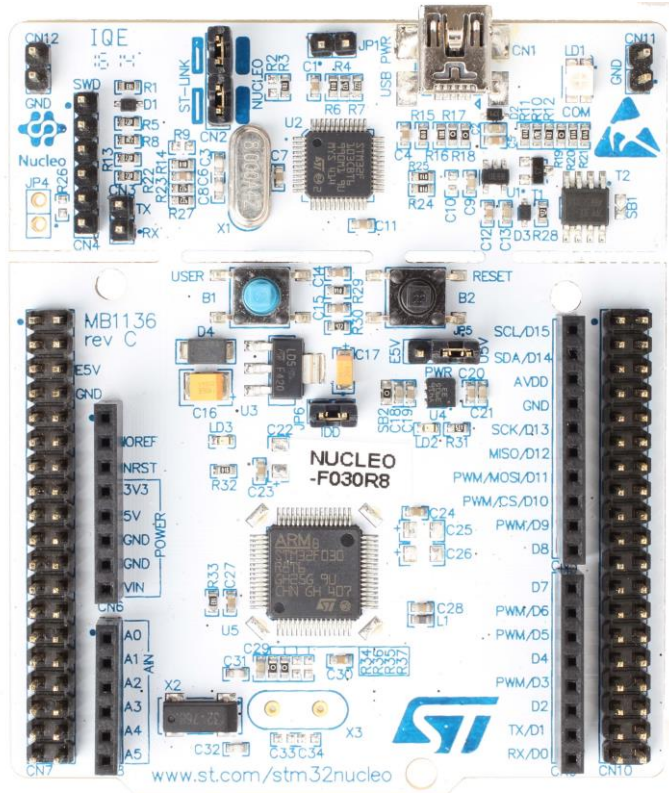
10 Devices



# ARM Development Primer

## STMicronics Tools – Keil Support

Packs Examples		
<input checked="" type="checkbox"/> Show examples from installed Packs only		
Example	Action	Description
Blinky (NUCLEO-F030R8)	Copy	Blinky example
CMSIS-RTOS Blinky (STM32F030-Discovery)	Copy	CMSIS-RTOS based Blinky example
CMSIS-RTOS Blinky (NUCLEO-F030R8)	Copy	CMSIS-RTOS based Blinky example



# ARM Development Primer

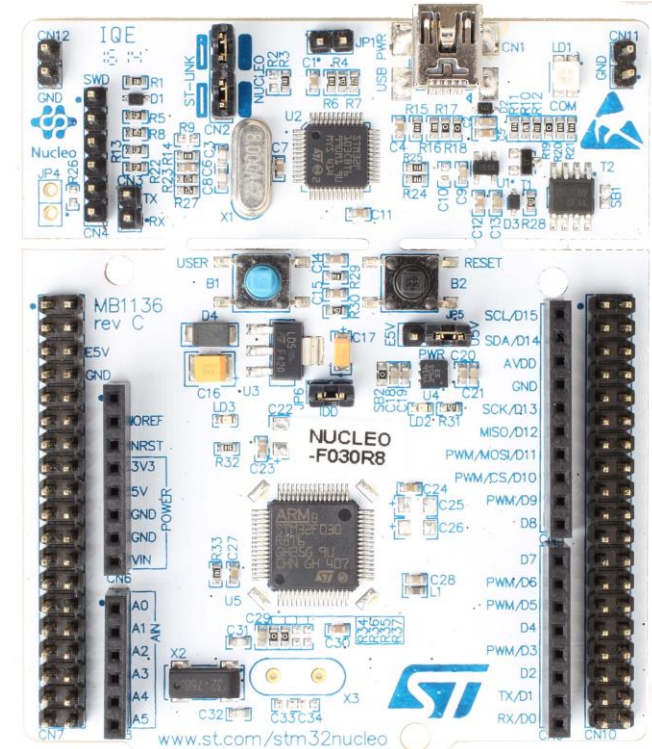
## STMicroelectronics Tools – Segger Support



The screenshot shows the Segger website's navigation bar with links for Products, Downloads, Purchase, Support, and About Us. Below this, a breadcrumb trail indicates the current page is J-Link > ST-LINK on-board. A list of features is displayed:

- Fully compatible with and same features as J-Link OB
- Wide range of IDEs are supported
- Virtual COM port (VCOM) support

Below the website screenshot, a photograph shows a black J-Link Pro adapter connected to a blue STMicroelectronics Nucleo board. The text "Converting ST-LINK On-Board Into a J-Link" is prominently displayed, followed by the statement: "SEGGER offers a firmware upgrading the ST-LINK on-board on the Nucleo and Discovery Boards."





# ARM Development Primer

## STMicroelectronics Tools – Segger Support

C:\Users\Fred\Downloads\STLinkReflash\_170807\STLinkReflash.exe

(c) 2016 SEGGER Microcontroller GmbH & Co. KG    www.segger.com  
STLinkReflash compiled Aug 7 2017 18:31:24

The following terms come from SEGGER Microcontroller GmbH & Co. KG ("SEGGER")  
You must agree to them in order to proceed.

=====

**\* IMPORTANT \***

This utility enables You to replace the firmware of an existing ST-LINK on-board with firmware from SEGGER that makes the ST-LINK on-board behave J-Link compatible. You do this replacement at Your own risk. Though extremely unlikely, You are aware that the replacement process may result in an unusable ST-LINK on-board. The utility and firmware from SEGGER are provided on an as-is basis and come without any warranty and without support.

You further agree to only use the firmware provided by SEGGER via this utility within the bounds of the license stated on the download page:  
<https://www.segger.com/jlink-st-link.html>

Except as expressly set forth in this agreement, the Agreement remains unchanged and continues in full force and effect.

=====

I hereby accept the terms provided by SEGGER.  
(A)ccept / (D)ecline  
Selection>



# ARM Development Primer

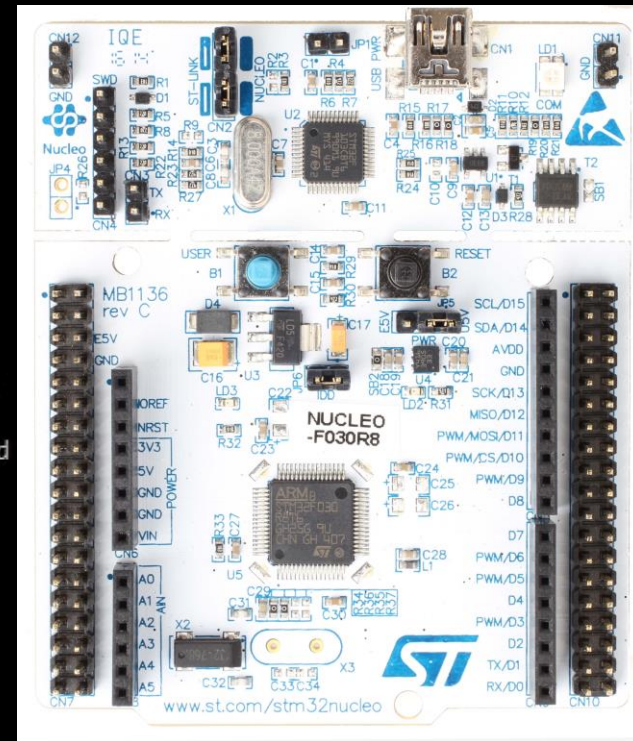
## STMicroelectronics Tools – Segger Support

```
C:\Users\Fred\Downloads\STLinkReflash_170807\STLinkReflash.exe

into an Evaluation Board License Agreement ("Agreement") with ST.
You may install the SEGGER J-Link software ("J-Link") onto Your ST
Evaluation Board only if You agree to this amendment ("Amendment")
of the Agreement.
STMICROELECTRONICS ("ST") hereby authorizes You to install
SEGGER J-Link software ("J-Link") onto Your ST Evaluation Board,
as an exception to the terms and conditions of the Agreement.
You acknowledge and agree that J-Link is provided solely by SEGGER,
and not by ST. You acknowledge and agree that ST does not endorse, recommend,
nor provide any assurance or warranty, whether express
or implied, in relation to J-Link or its use with Your ST Evaluation Board.
You acknowledge and agree that ST shall not be liable for any direct, indirect,
special, incidental or consequential damages resulting from Your use of J-Link,
even if advised of the possibility thereof.
This Amendment shall be governed, construed and enforced in accordance with the
laws of Switzerland.
Except as expressly set forth in this Amendment, the Agreement remains unchanged
and continues in full force and effect.

=====
I hereby accept the amendment to the Evaluation Board License Agreement
provided by STMICROELECTRONICS ("ST")(A)ccept / (D)ecline
Selection>a

[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>1_
```





# ARM Development Primer

## STMicroelectronics Tools – Segger Support

```
C:\Users\Fred\Downloads\STLinkReflash_170807\STLinkReflash.exe

or implied, in relation to J-Link or its use with Your ST Evaluation Board.
You acknowledge and agree that ST shall not be liable for any direct, indirect,
special, incidental or consequential damages resulting from Your use of J-Link,
even if advised of the possibility thereof.
This Amendment shall be governed, construed and enforced in accordance with the
laws of Switzerland.
Except as expressly set forth in this Amendment, the Agreement remains unchanged
and continues in full force and effect.

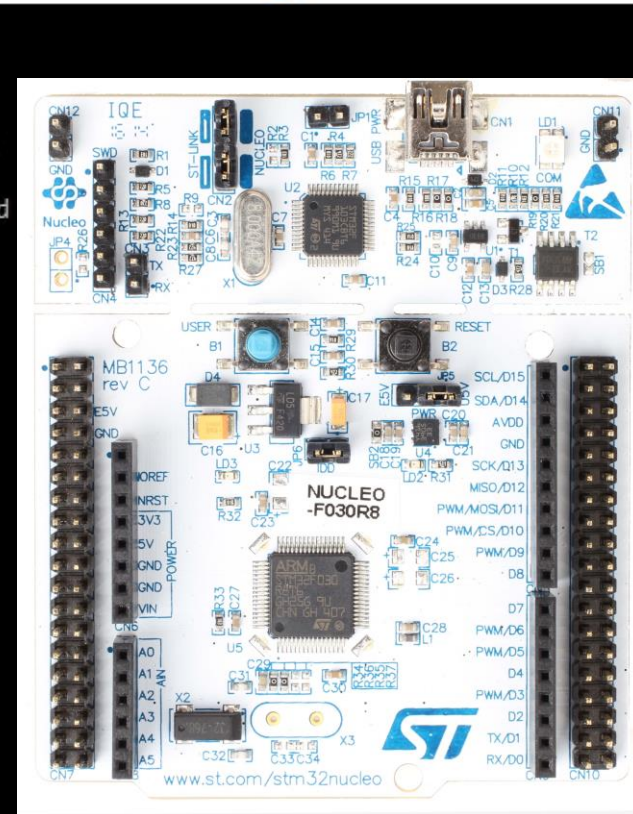
=====

I hereby accept the amendment to the Evaluation Board License Agreement
provided by STMICROELECTRONICS ("ST")(A)ccept / (D)ecline
Selection>a

[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>1

Preparing for FW update (can take up to 10 seconds)...O.K.
Identifying ST-LINK variant...O.K.: ST-LINK/V2-1
Performing firmware update...O.K.

[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>_
```



# ARM Development Primer

## STMicroelectronics Tools – Segger Support

```
C:\Users\Fred\Downloads\STLinkReflash_170807\STLinkReflash.exe

provided by STMICROELECTRONICS ("ST")(A)ccept / (D)ecline
Selection>a

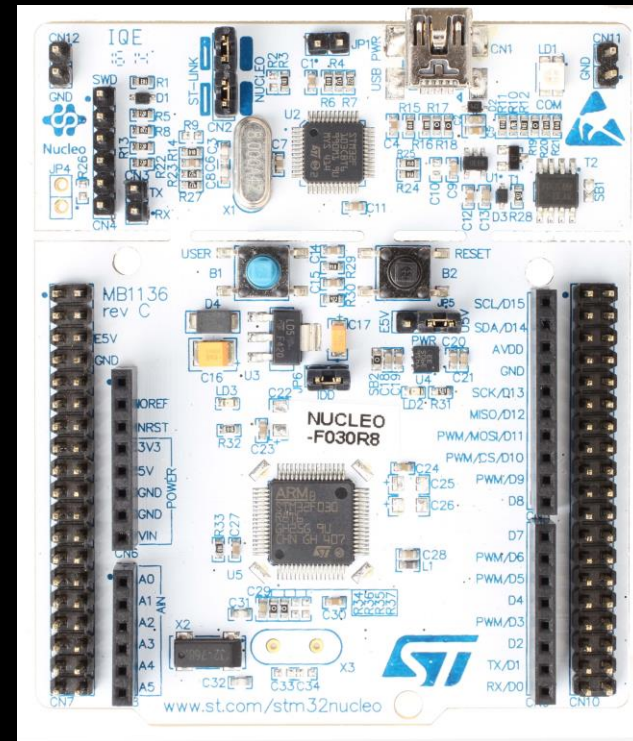
[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>1

Preparing for FW update (can take up to 10 seconds)...O.K.
Identifying ST-LINK variant...O.K.: ST-LINK/V2-1
Performing firmware update...O.K.

[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>2

Switching to ST-Link bootloader...O.K.
Waiting for ST-LINK BTL to enumerate (can take 2 seconds)...O.K.
Preparing for FW update (can take up to 10 seconds)...O.K.
Identifying ST-LINK variant...O.K.: ST-LINK/V2-1
Performing firmware update...O.K.

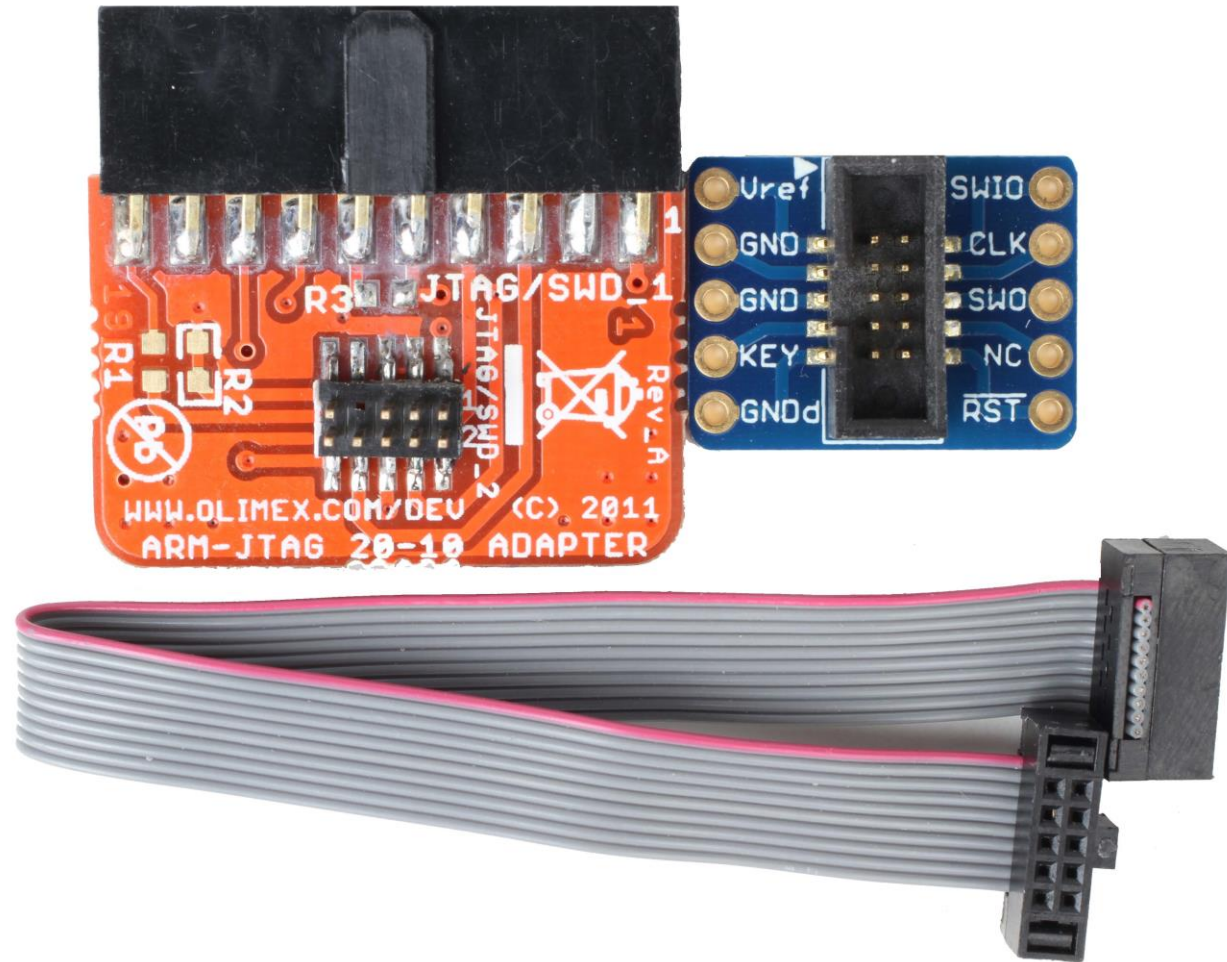
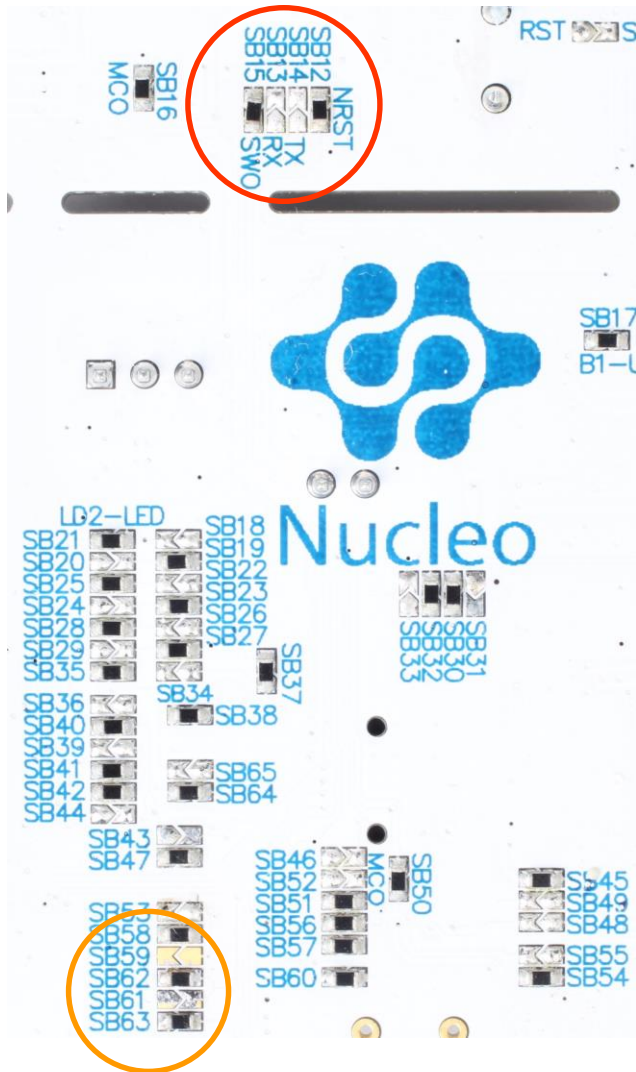
[0] Quit
[1] Upgrade to J-Link
[2] Update J-Link firmware
[3] Restore ST-Link
Selection>
```





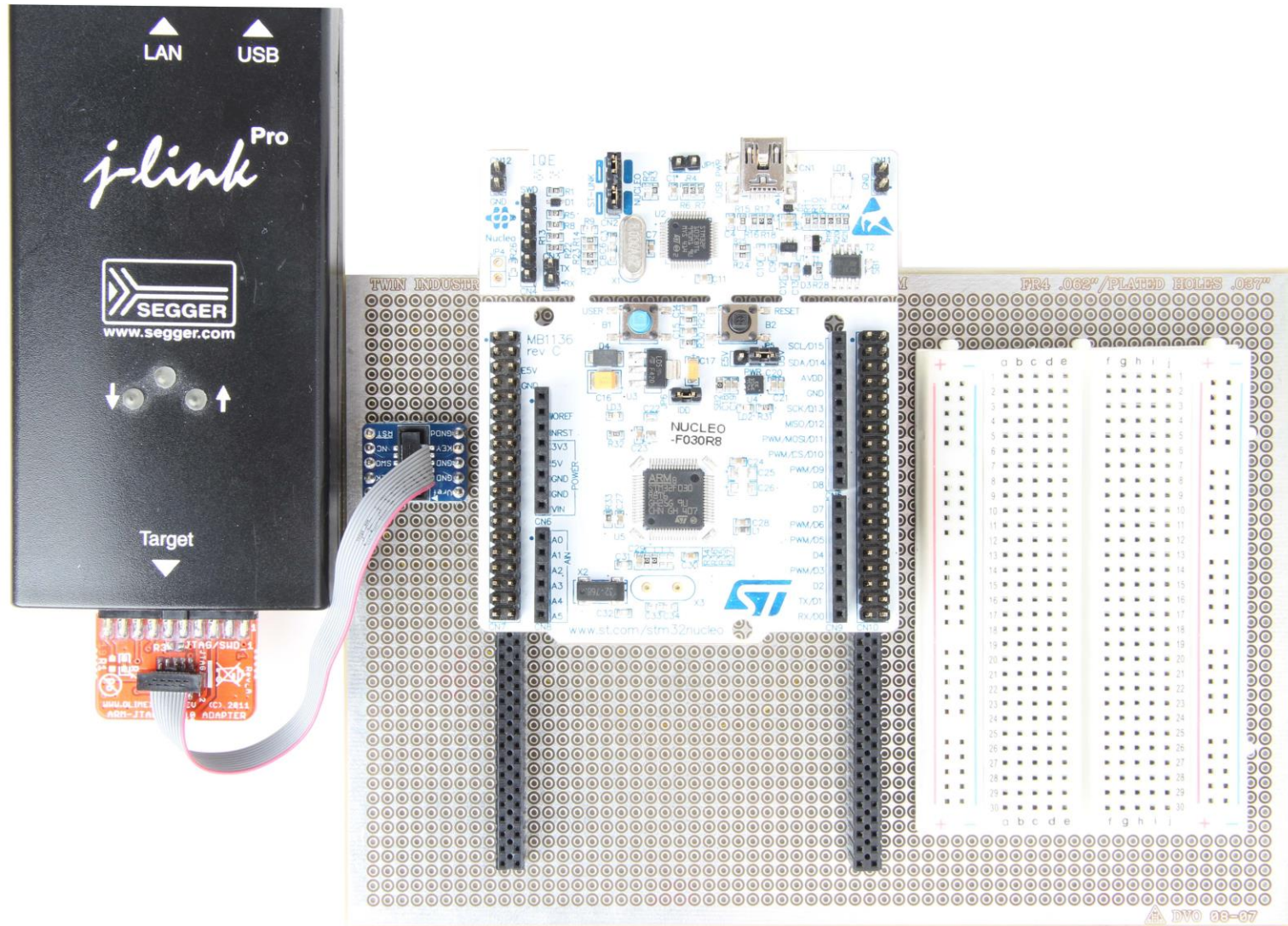
# ARM Development Primer

## STMicroelectronics Tools – Segger Support



# ARM Development Primer

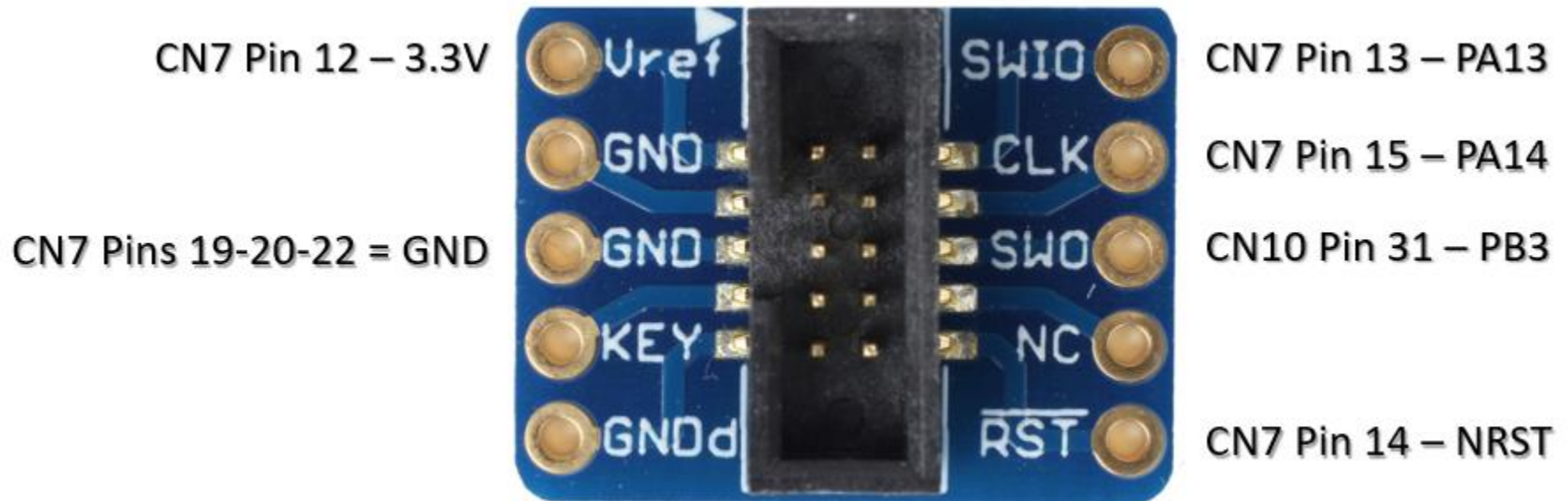
## STMicroelectronics Tools – Segger Support





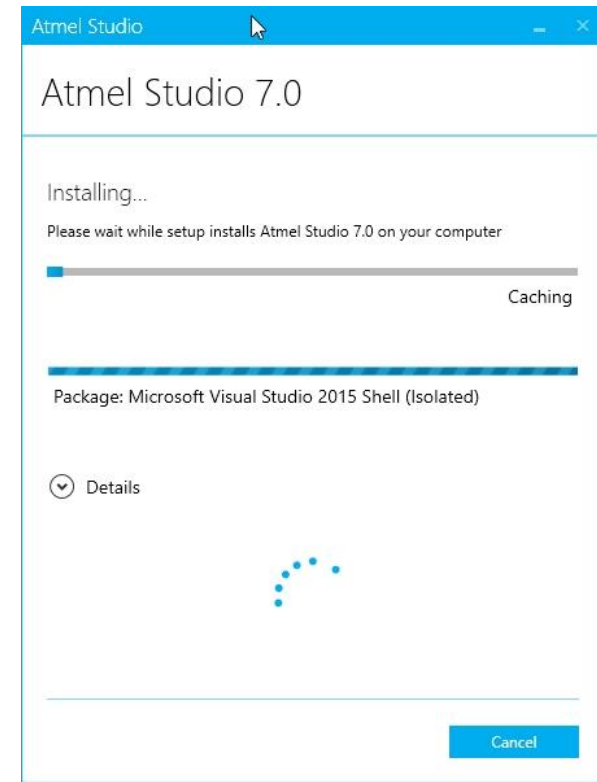
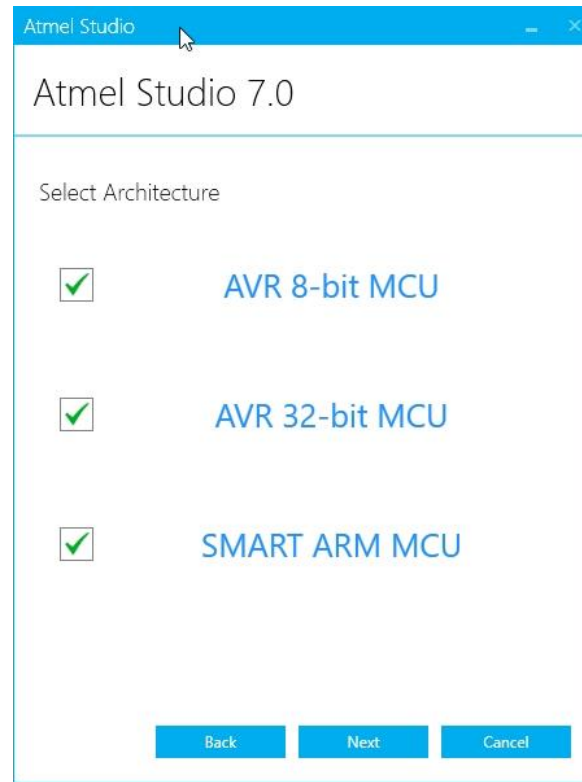
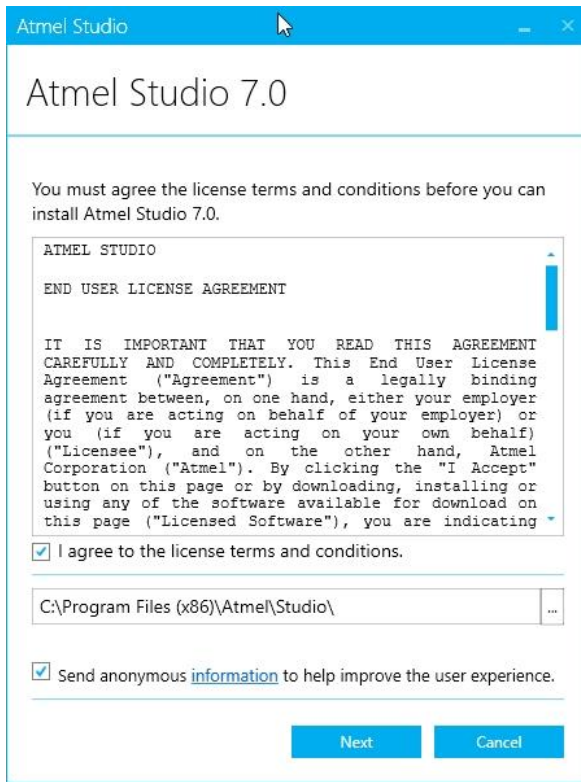
# ARM Development Primer

## STMicroelectronics Tools – Segger Support



# ARM Development Primer

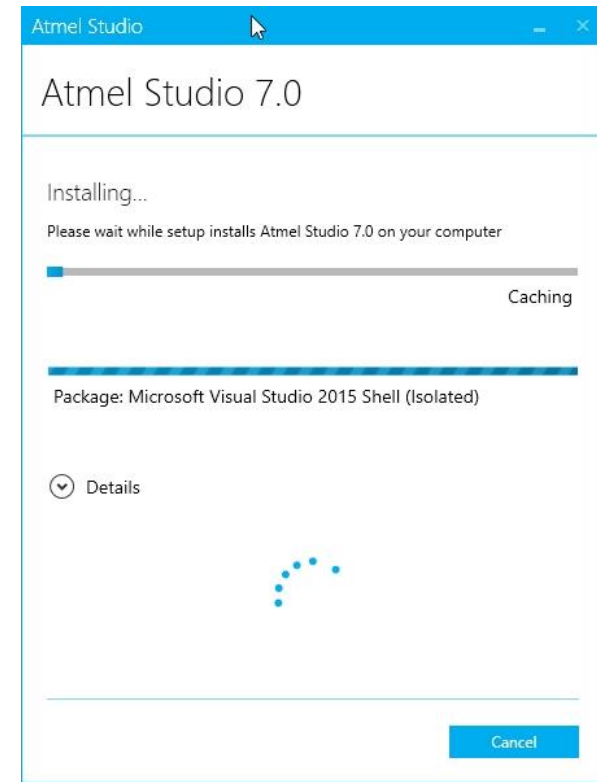
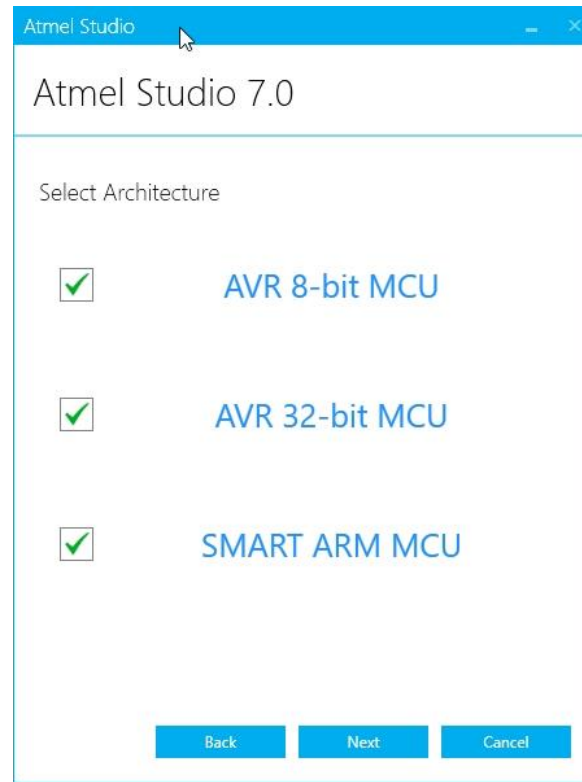
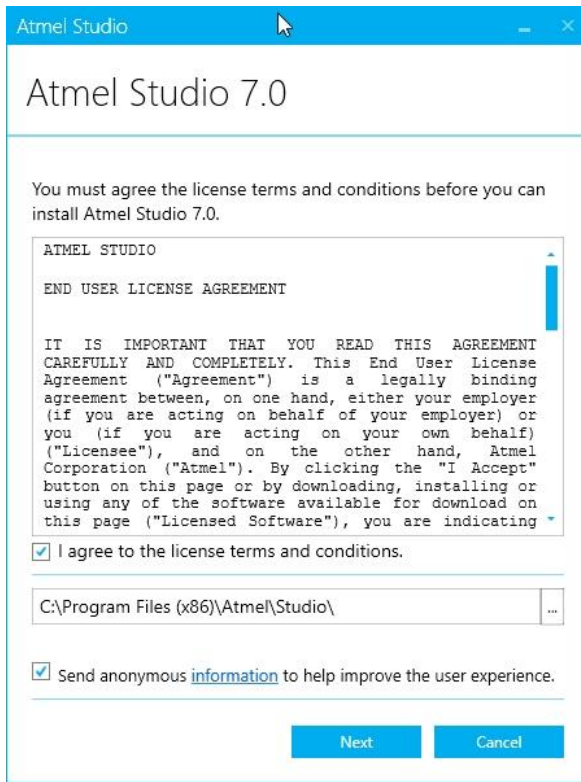
## Microchip/Atmel Tools – Atmel Studio 7





# ARM Development Primer

## Microchip/Atmel Tools – Atmel Studio 7



# ARM Development Primer

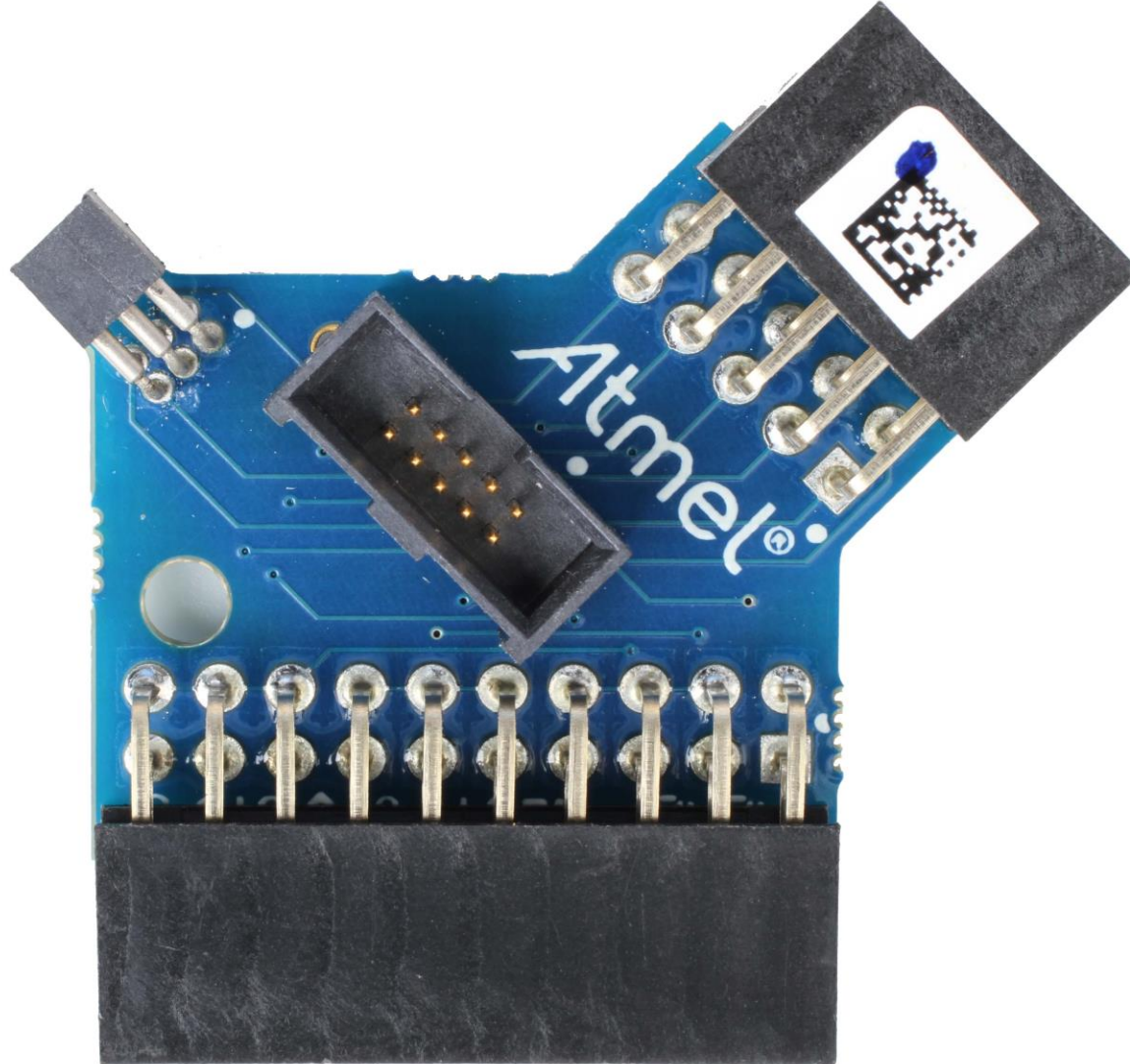
## Microchip/Atmel Tools – Atmel-ICE



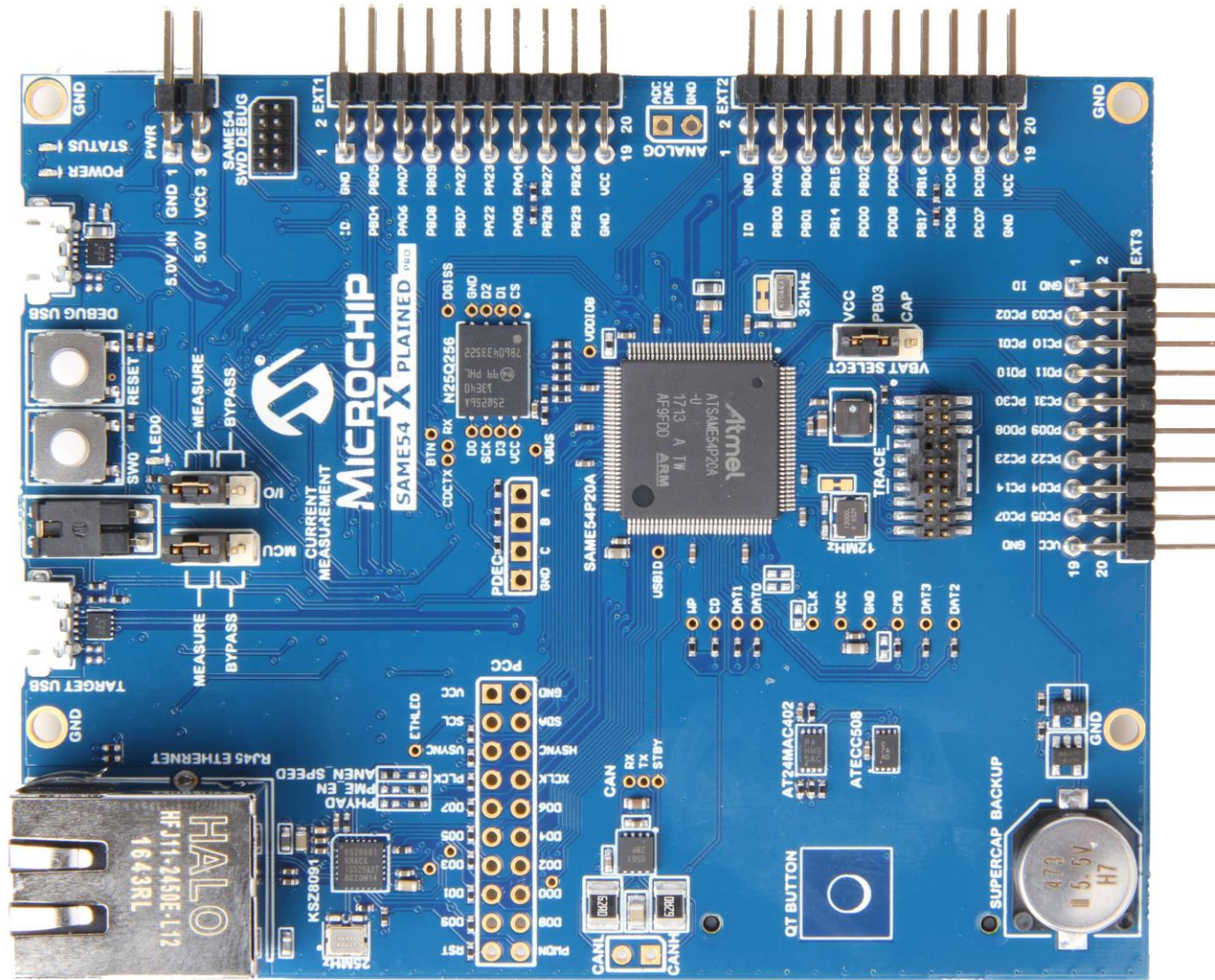


# ARM Development Primer

## Microchip/Atmel Tools – Atmel-ICE



# Microchip/Atmel Tools – SAME54 X PLAINED



Presented by:



# ARM Development Primer

## Day 1's Done

- We Walked Around Our STMicroelectronics Nucleo Development System
- We Took a Look at Our Atmel SAME54 Development System

