

# MA35D1 Development Environment

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# | Agenda

- Target Platform Introduction
- Board Support Package

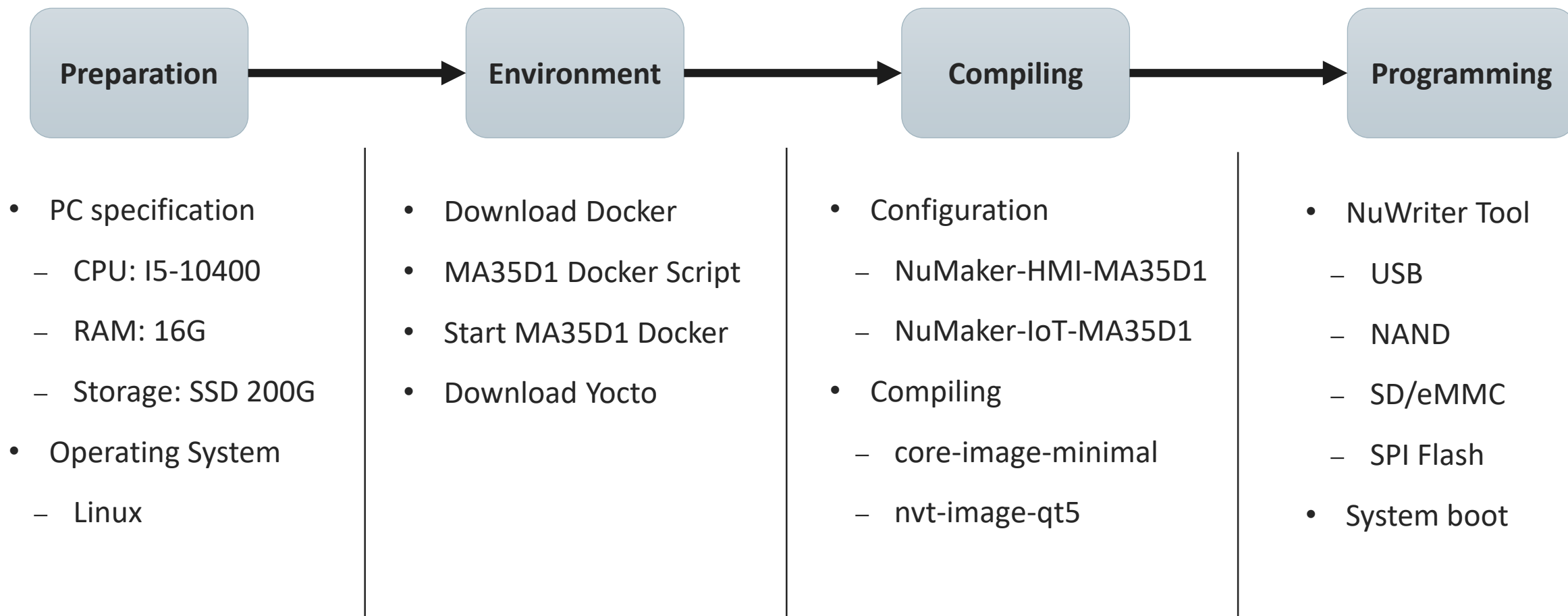
The Nuvoton logo is positioned in the upper right quadrant of the slide. It consists of a large red circle containing the text "Joy of innovation" in a small, white, sans-serif font, with "nuvoTon" in a larger, bold, white, sans-serif font below it. To the left of this circle is a smaller, solid orange circle. The background of the slide is a photograph of a modern, multi-story building with a curved, glass facade that reflects the sky. The building is set against a clear blue sky. In the foreground, there are some trees and a paved area with a few people walking.

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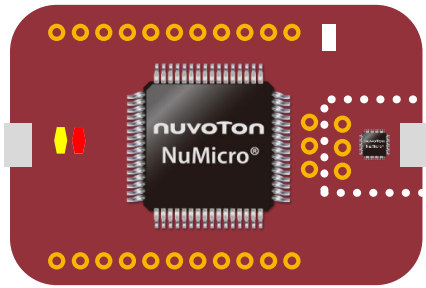
# Target Platform Introduction

# Quick Start Building

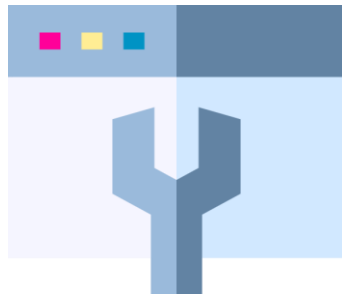
[MA35D1 Quick Start Rev1.00.pptx](#)



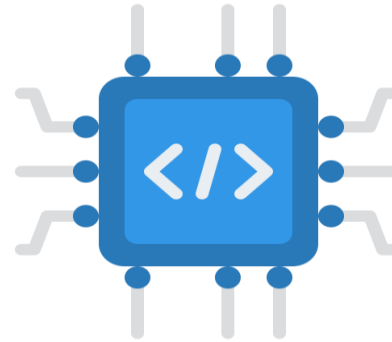
# MA35D1 Development Environment Overview



**Evaluation Board  
(NuMaker)**



**Software Tool  
(NuTool)**



**Board Support  
Package**



**M4 Real Time  
Processor**

General		Programming	General	Operating System	Compiling Tool	Security	General	Example Code	Compiling & Debugger
NuMaker-HMI-MA35D1-S1 NuMaker-IoT-MA35D1-A1		NuWriter NAND Writer SD Writer	PinConfigure Memory Configure	Linux RT-Thread	Yocto Project Buildroot OpenWRT Env (RT-Thread) Docker	ARM-Trusted- Firmware OP-TEE Trusted Secure Island	Peripheral Drivers Reference Guide Sample Code U-Boot	Designed with NuMicro Family	Nu-Link2-Pro Keil MDK



# Board Support Package

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# | Open Nuvoton – Git Resources for MA35D1

[MA35D1\\_linux-5.4.y](#)

[MA35D1\\_u-boot-v2020.07](#)

[MA35D1\\_arm-trusted-firmware-v2.3](#)

[MA35D1\\_Yocto-v3.1.3](#)

[MA35D1\\_Buildroot](#)

[MA35D1\\_RTP\\_BSP](#)

[MA35D1\\_optee\\_os-v3.9.0](#)

[MA35D1\\_NuWriter](#)

[MA35D1\\_Docker\\_Script](#)

The screenshot shows the GitHub repository page for OpenNuvoton / MA35D1\_Yocto-v3.1.3. The repository is public and has 2 forks and 0 stars. The main branch is master. The repository contains a folder named meta-ma35d1 and two files: README.md and init-build-env. The README.md file is selected, showing the text "The following boards were test in this release".

OpenNuvoton / MA35D1\_Yocto-v3.1.3 Public

Notifications Fork 2 Star 0

<> Code Issues Pull requests Actions Projects Wiki Security Insights

master 1 branch 2 tags Go to file Code

chung1218 Update libjpeg-turbo patch e0cacd5 8 days ago 61 commits

meta-ma35d1	Update libjpeg-turbo patch	8 days ago
README.md	Migrate to MA35D1 mass production version	last month
init-build-env	Enable optee-os by default	6 months ago

README.md

The following boards were test in this release

About MA35D1 Yocto

Readme

0 stars

9 watching

2 forks

Releases

2 tags

Packages

# I MA35D1 Board Support Package

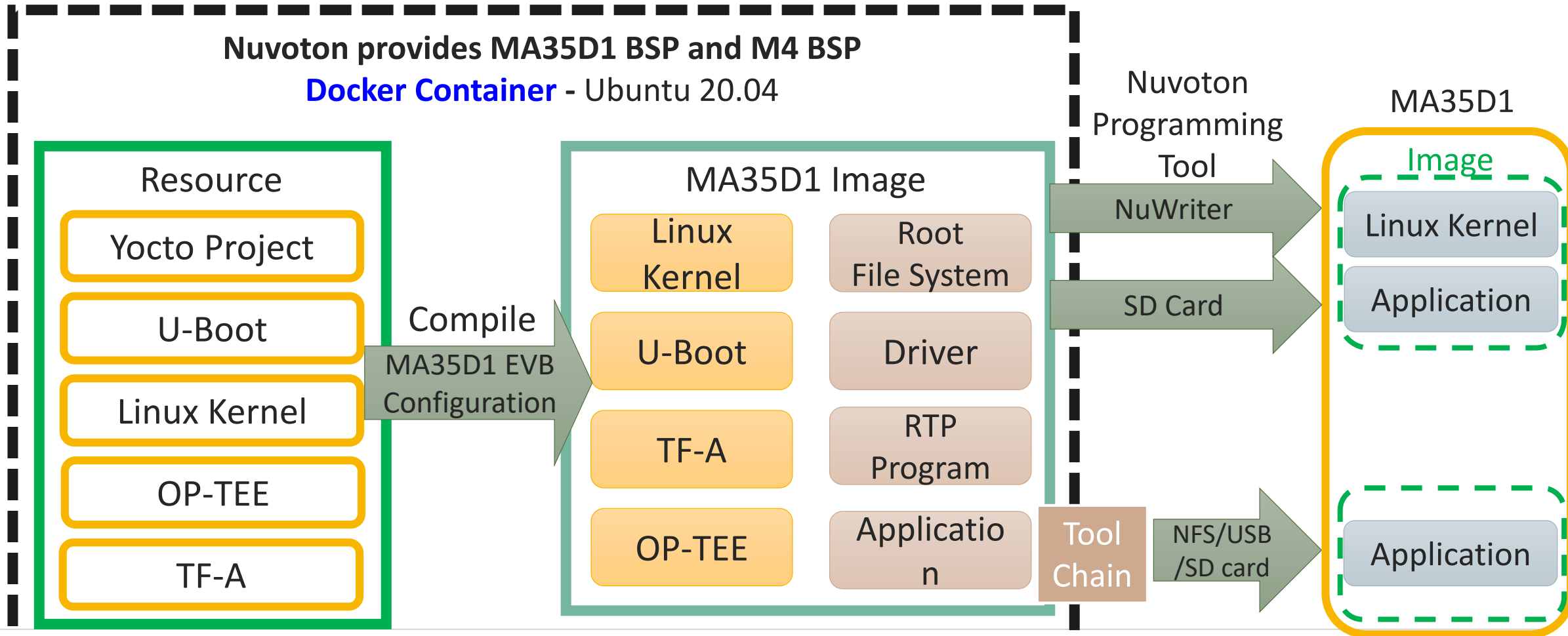
This BSP supports not only Linux but also RT-Thread operating system for MA35D1. The peripheral drivers are also included in the BSP allowing applications to access them

Component	Description
Yocto	Version 3.1.3 (Dunfell). A Linux Foundation collaborative open source project to create the Linux distributions
Buildroot	Buildroot is a simple, efficient and easy-to-use tool to generate embedded Linux systems through cross-compilation
Linux	Version 5.4. An open source operating system based on GPLv2 license
U-Boot	Version 2020.07. An open source bootloader based on GPLv2+ license
OP-TEE	Version 3.9.0. An open source trusted execution environment
TF-A	Version 2.3. A BSD-3-Clause license reference implementation of secure world software
M4 BSP	CMSIS library 4.5.0 and standard driver for RTP BareMetal/FreeRTOS firmware development
NuWriter	A GUI and command line tool supports firmware update and OTP programming for MA35D1



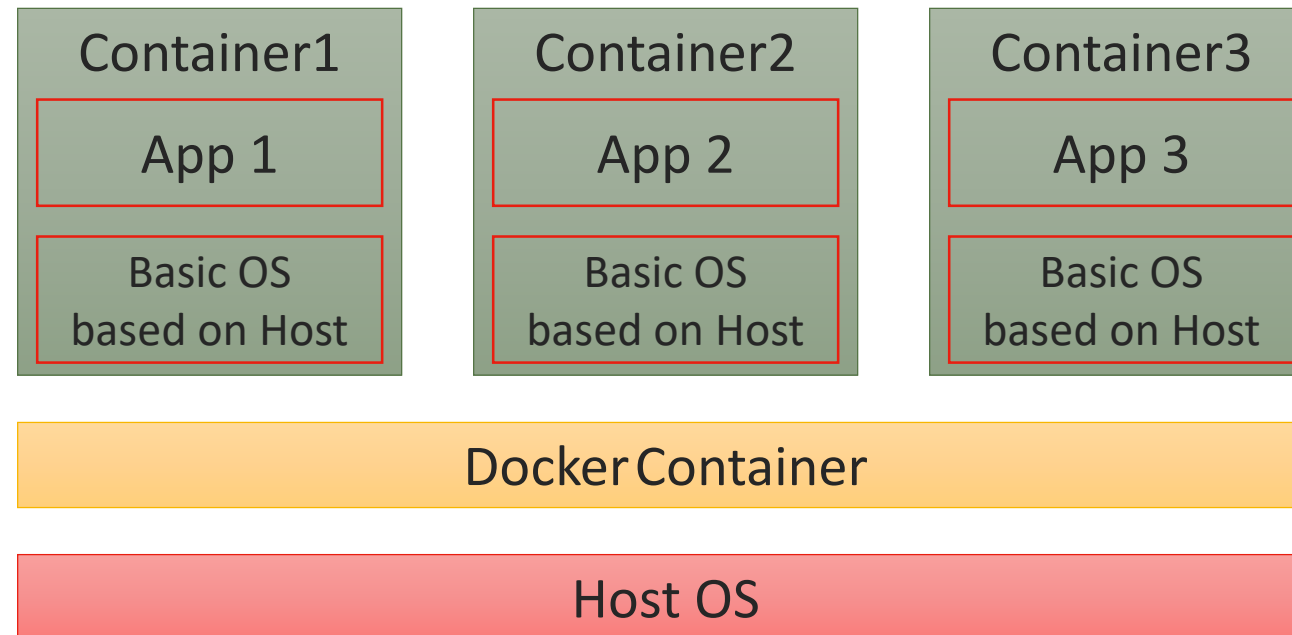
# MA35D1 Development Scheme

## Development Environment

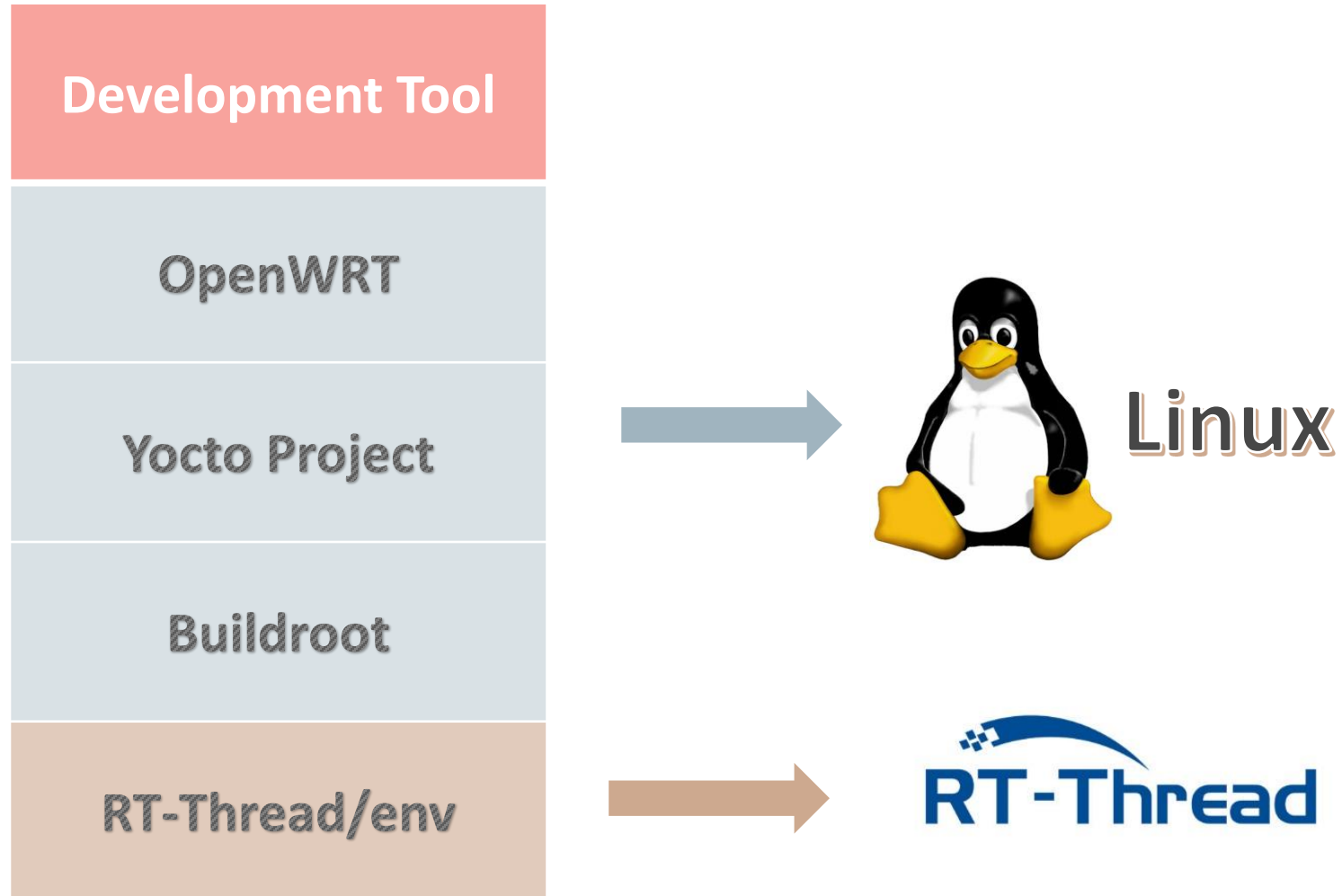


# | Yocto Development Environment - Docker

- Docker can pack up code and its dependencies as a container
- Every container is independent and based on Host OS so they won't affect each other and run faster than virtual machine

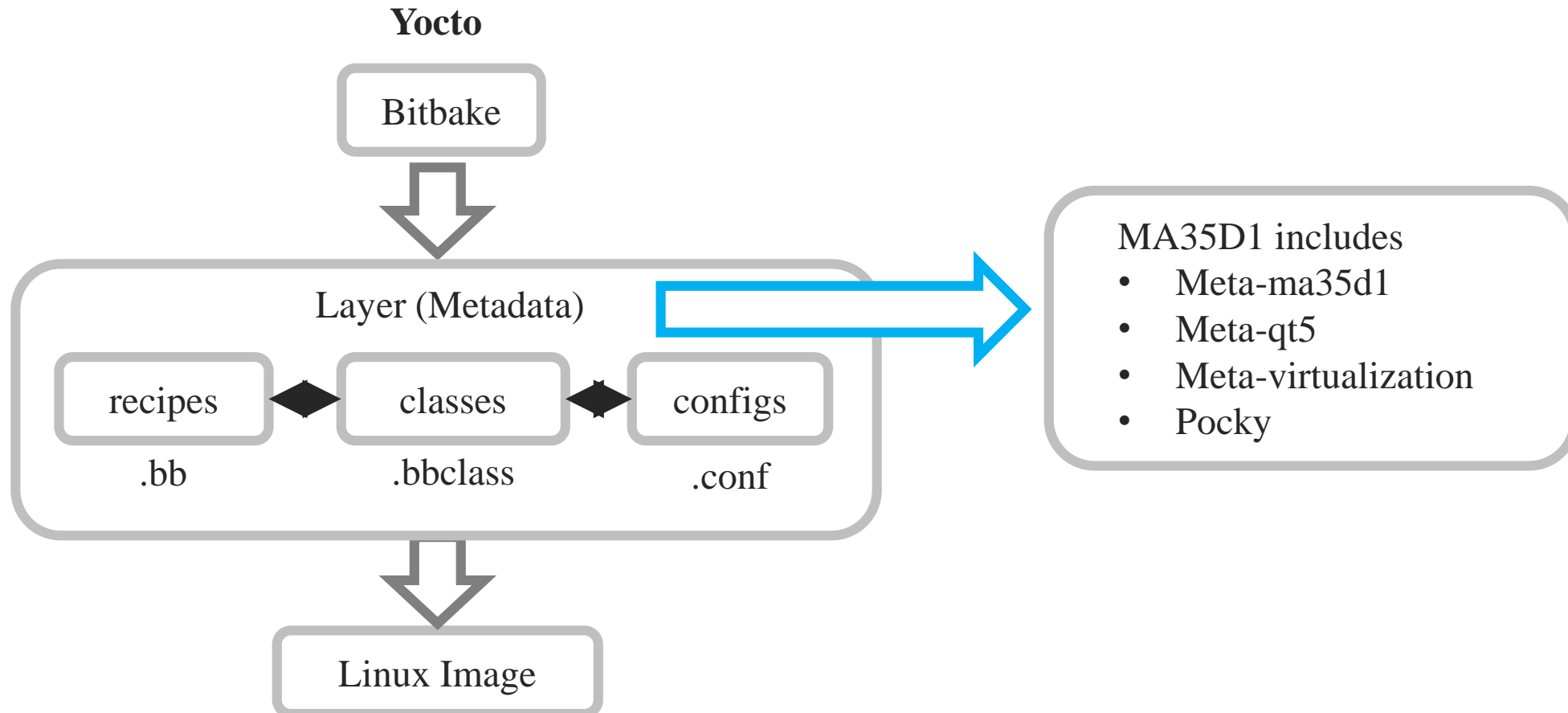


# | MA35D1 Kernel Development Tools



# | MA35D1 Linux Development Tools - Yocto

- The Yocto Project is an open source collaboration project that helps developers create custom Linux-based systems regardless of the hardware architecture.




# Yocto Project - Recipes

<https://layers.openembedded.org/layerindex/branch/master/recipes/>

openssl

search

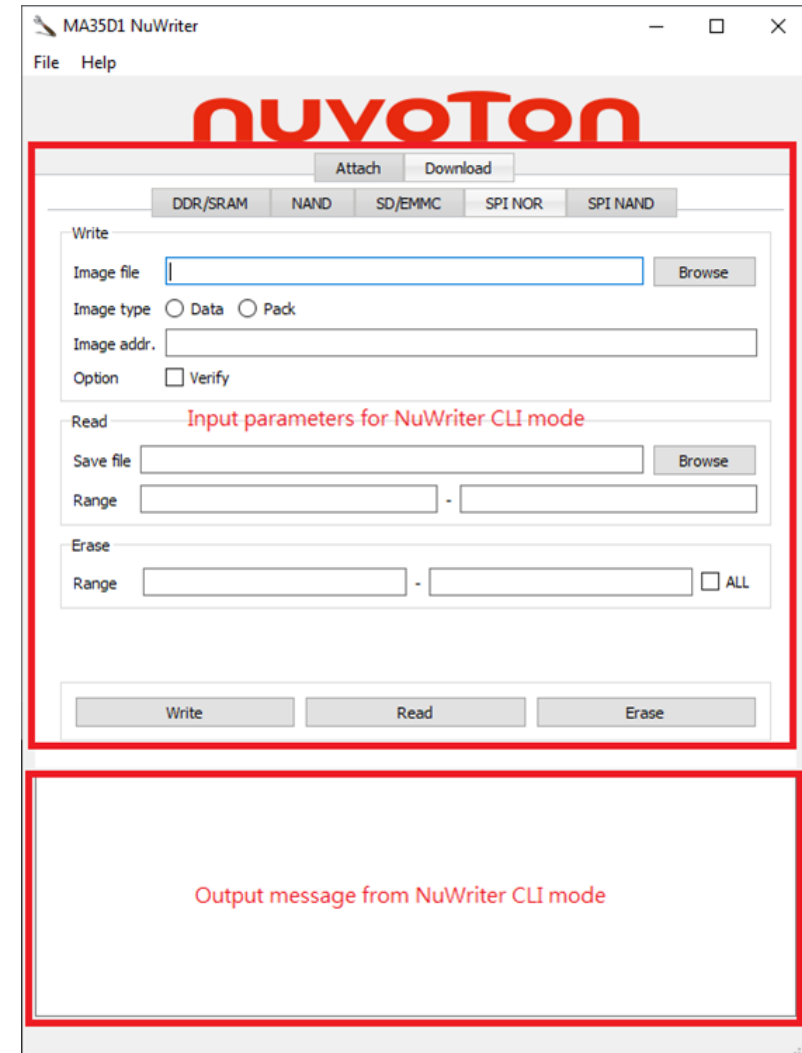
 help

Recipe name	Version	Description	Layer
openssl	3.0.5	Secure Socket Layer	openembedded-core
openssl	1.0.1h	Secure Socket Layer	meta-webos
openssl	1.1.1d	Secure Socket Layer	meta-debian
openssl	1.0.2u	Secure Socket Layer	meta-openssl102
chicken-egg-openssl	1.7.0	Bindings to the OpenSSL SSL/TLS library	meta-chicken
libcrypt-openssl-guess-perl	0.15	Guess OpenSSL include path	meta-perl
libcrypt-openssl-random-perl	0.15	Crypt::OpenSSL::Random - OpenSSL/LibreSSL pseudo-random number generator access	meta-perl
libcrypt-openssl-rsa-perl	0.33	Crypt OpenSSL RSA cpan module	meta-perl
openssl-fips	2.0.16	OpenSSL FIPS Object Module v2.0	meta-openssl102-fips
openssl-fips-example	2.0.16	OpenSSL FIPS Object Module v2.0 Example	meta-openssl102-fips

# MA35D1 Programming Tool - NuWriter

## Program Image to MA35D1

- The NuWriter is a programming tool for the MA35D1. The NuWriter application and firmware code are open sourced, and users can add new features or develop new user interfaces per user's application.
- USB host (mass storage) is also supported in mass production version
- The MA35D1 supports the following four system boot-up conditions:
  1. Boot from USB
  2. Boot from SD/eMMC
  3. Boot from NAND
  4. Boot from SPI Flash

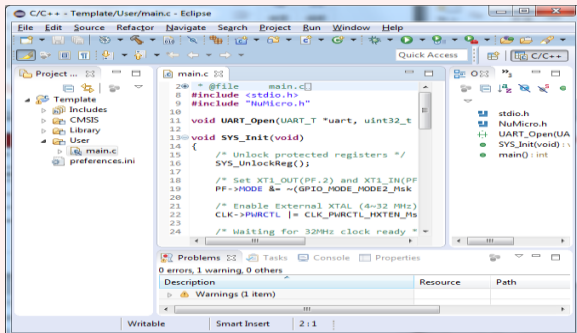




# MA35D1 – M4 RTP Overview

Keil MDK  
Nuvoton Edition

Apply to  
**NuMicro® MA35D1 M4 RTP**





- Supports
- Erase/program/verify chips
  - Easy registers access of chips
  - Hardware/Software breakpoints
  - Data breakpoints
  - Various configurations for connection

Professional tool suite provided by arm, works with  
**NuMicro® Cortex-M based MCU**

**Includes the Arm C/C++ Compiler, and the µVision IDE and debugger**

## Debug Tool for Real Time Processor

Type Function	Nu-Link2-Pro	Nu-Link2-Me
		
Debugging	✓	✓
Online Programming	✓	✓
Offline Programming	✓	✓
VCOM Port	✓	✓
Bus Monitor	✓	
ETM	✓	
SWD I/O Voltage	1.8/2.5/3.3/5.0 V	1.8/3.3/5.0 V
Upgrade	UART/SPI/I <sup>2</sup> C/RS-485/CAN	UART

# | MA35D1 NuTool - PinConfigure

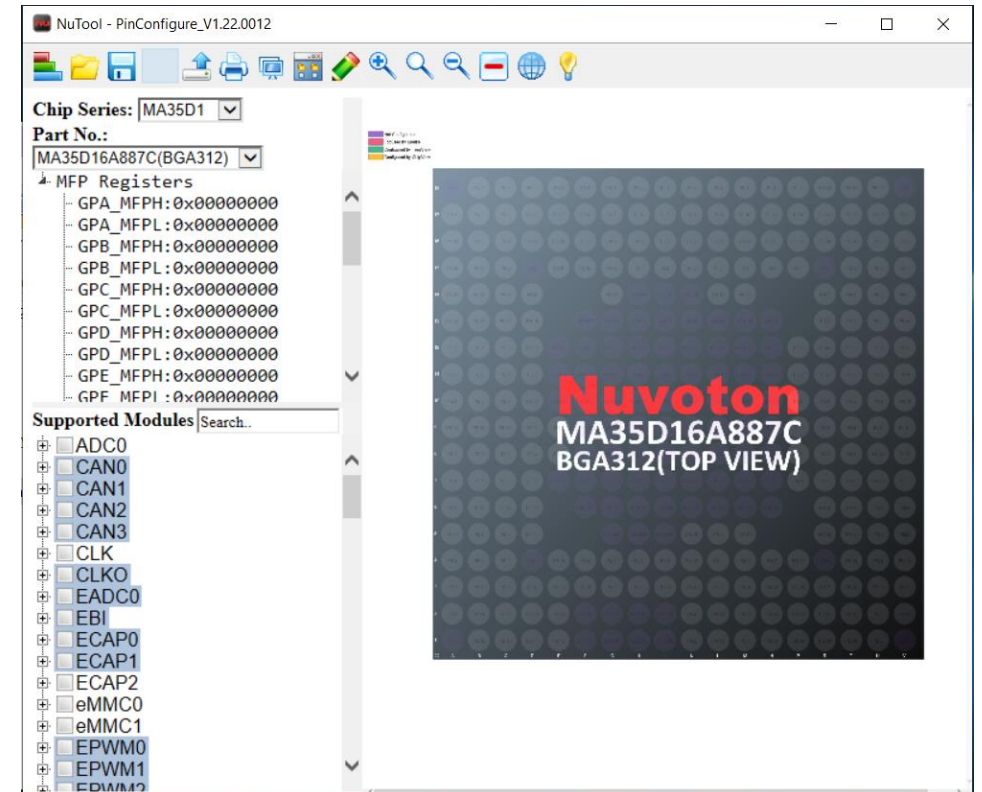
Configuring GPIO multi-functions of NuMicro® Family

Visualization  
Configuring by the  
TreeView

Register Editing  
Edit register value directly

Pin Configuration  
Configuring every  
individual pins

Auto Generation  
Generation  
Linux device tree



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谢谢

謝謝

Děkuji

Bedankt

Thank you

Kiitos

Merci

Danke

Grazie

ありがとう

감사합니다

Dziękujemy

Obrigado

Спасибо

Gracias

Teşekkür ederim

Cảm ơn