IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

LUCIO DEVELOPMENT LLC,	§	
	§	
Plaintiff,	§	Case No: 1:19-cv-662
	§	
vs.	§	PATENT CASE
	§	
NUVOTON TECHNOLOGY CORPORATION AMERICA,	§	
	§	
Defendant.	§	
	§	

COMPLAINT

Plaintiff Lucio Development LLC ("Plaintiff" or "Lucio") files this Complaint against Nuvoton Technology Corporation America ("Defendant" or "Nuvoton") for infringement of United States Patent No. 7,069,546 (hereinafter "the '546 Patent").

PARTIES AND JURISDICTION

1. This is an action for patent infringement under Title 35 of the United States Code. Plaintiff is seeking injunctive relief as well as damages.

2. Jurisdiction is proper in this Court pursuant to 28 U.S.C. §§ 1331 (Federal Question) and 1338(a) (Patents) because this is a civil action for patent infringement arising under the United States patent statutes.

3. Plaintiff is a Texas limited liability company with its office address at 555 Republic Dr., Suite 200, Plano, Texas 75074.

4. On information and belief, Defendant is a Delaware corporation with its principal place of business at 2727 N. First St., San Jose, CA 95134. On information and belief, Defendant may be served with process through its registered agent Corporation Service

Company d/b/a CSC, 2710 Gateway Oaks Dr., Suite 150N, Sacramento, CA 95833.

5. This Court has personal jurisdiction over Defendant because Defendant has committed, and continues to commit, acts of infringement in this District, has conducted business in this District, and/or has engaged in continuous and systematic activities in this District.

6. On information and belief, Defendant's instrumentalities that are alleged herein to infringe were and continue to be used, imported, offered for sale, and/or sold in this District.

VENUE

7. Venue is proper in this District pursuant to 28 U.S.C. §1400(b) because acts of infringement are occurring in this District and Defendant has a regular and established place of business in this District at 13625 Pond Springs Rd., # 101, Austin, TX 78729.

COUNT I
(INFRINGEMENT OF UNITED STATES PATENT NO. 7,069,546)

8. Plaintiff incorporates paragraphs 1 through 7 herein by reference.

9. This cause of action arises under the patent laws of the United States and, in particular, under 35 U.S.C. §§ 271, *et seq*.

10. Plaintiff is the owner by assignment of the '546 Patent with sole rights to enforce the '546 Patent and sue infringers.

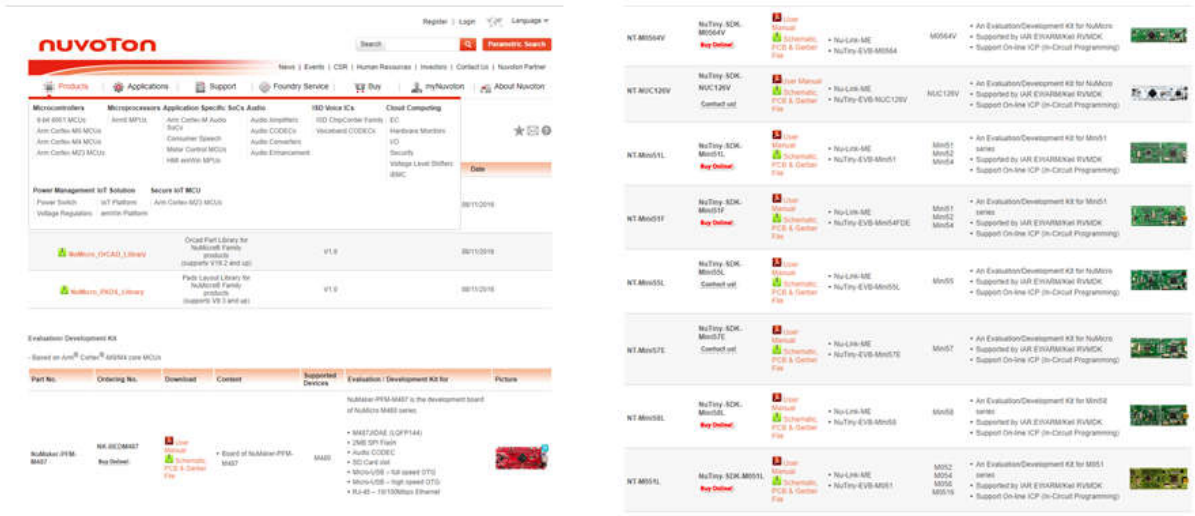
11. A copy of the '546 Patent, titled "Generic Framework for Embedded Software Development," is attached hereto as Exhibit A.

12. The '546 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

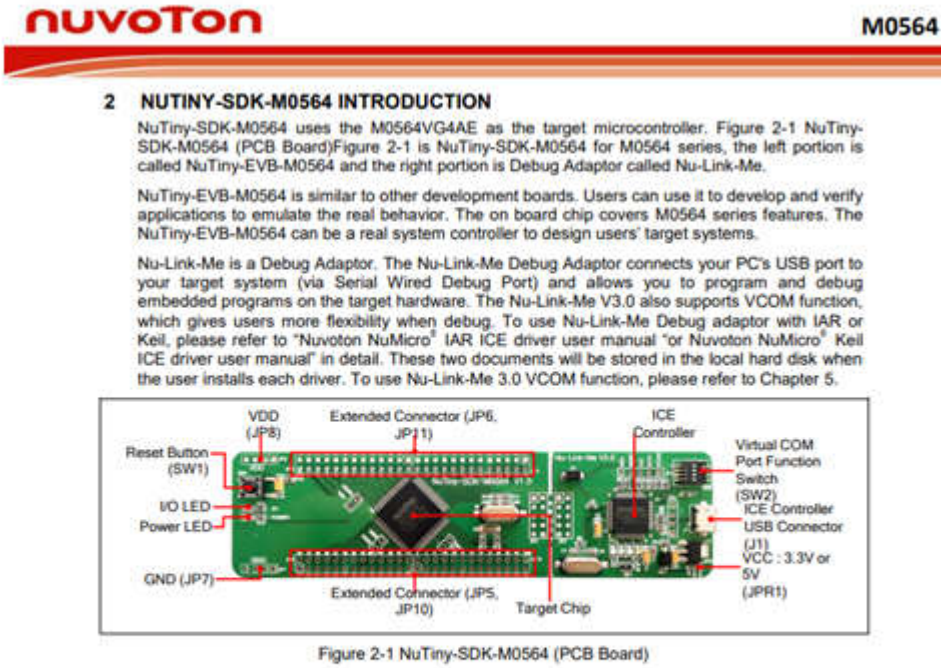
13. On information and belief, Defendant has infringed and continues to infringe one or more claims, including at least Claim 1, of the '546 Patent by making, using, importing,

selling, and/or offering for sale a software platform for embedded software development, which is covered by at least Claim 1 of the '546 Patent. Defendant has infringed and continues to infringe the '546 Patent directly in violation of 35 U.S.C. § 271.

14. Defendant, sells, offers to sell, and/or uses embedded software development packages including, without limitation, the Evaluation/Development kit (such as Nu Micro Family Nu-Tiny-SDK-M0564), and any similar products ("Product"), which infringe at least Claim 1 of the '546 Patent. The Product practices a method for producing embedded software. For example, Defendant provides the Evaluation/Development kit (such as Nu Micro Family Nu-Tiny-SDK-M0564) which integrates with ARM Keil MDK (Microcontroller Development Kit) Nuvoton Edition to generate C, C++ and encapsulated C++ code for embedded processors (such as Arm Cortex-M0/M23/ M4 and/or 8051 MCUs (Microcontroller Units)). Nuvoton and/or its customers specifically use Evaluation/Development kit (such as Nu Micro Family Nu-Tiny-SDK-M0564) based on Arm Cortex-M0/M4 core MCUs (Microcontroller Units) which integrates with ARM Keil MDK (Microcontroller Development Kit) Nuvoton Edition to produce embedded software. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.



Source: http://www.nuvoton.com/hq/support/tool-and-software/development-tool-hardware/development-kit/?__locale=en



nuvoTon M0564

2 NUTINY-SDK-M0564 INTRODUCTION

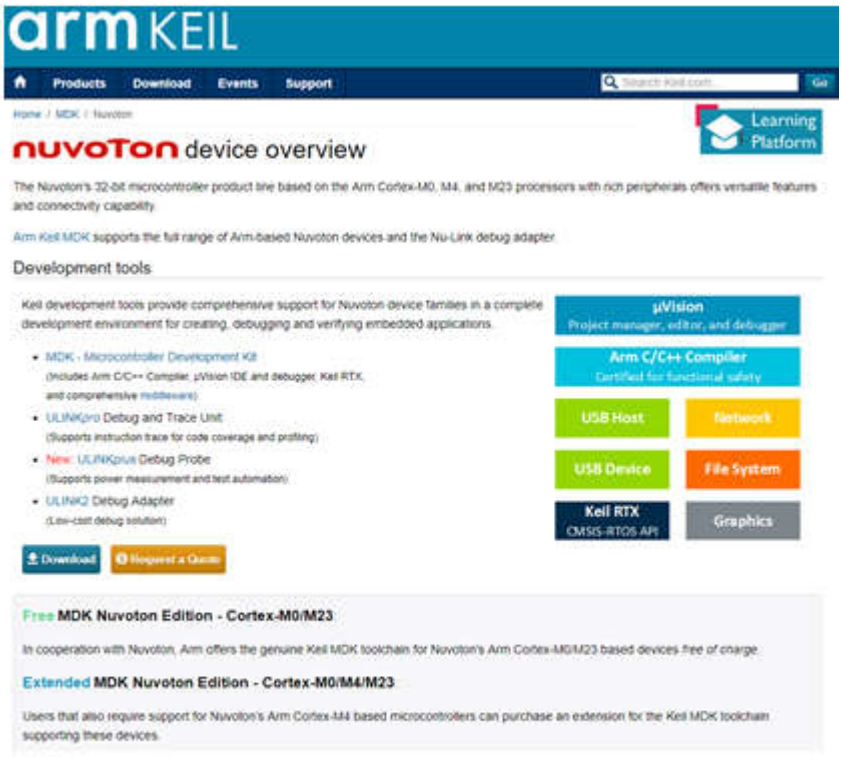
NuTiny-SDK-M0564 uses the M0564VG4AE as the target microcontroller. Figure 2-1 NuTiny-SDK-M0564 (PCB Board)Figure 2-1 is NuTiny-SDK-M0564 for M0564 series, the left portion is called NuTiny-EVB-M0564 and the right portion is Debug Adaptor called Nu-Link-Me.

NuTiny-EVB-M0564 is similar to other development boards. Users can use it to develop and verify applications to emulate the real behavior. The on board chip covers M0564 series features. The NuTiny-EVB-M0564 can be a real system controller to design users' target systems.

Nu-Link-Me is a Debug Adaptor. The Nu-Link-Me Debug Adaptor connects your PC's USB port to your target system (via Serial Wired Debug Port) and allows you to program and debug embedded programs on the target hardware. The Nu-Link-Me V3.0 also supports VCOM function, which gives users more flexibility when debug. To use Nu-Link-Me Debug adaptor with IAR or Keil, please refer to "Nuvoton NuMicro® IAR ICE driver user manual "or Nuvoton NuMicro® Keil ICE driver user manual" in detail. These two documents will be stored in the local hard disk when the user installs each driver. To use Nu-Link-Me 3.0 VCOM function, please refer to Chapter 5.

Figure 2-1 NuTiny-SDK-M0564 (PCB Board)

Source: https://www.nuvoton.com/resource-files/UM_NuTiny-SDK-M0564_EN_V1.00.pdf, page 5

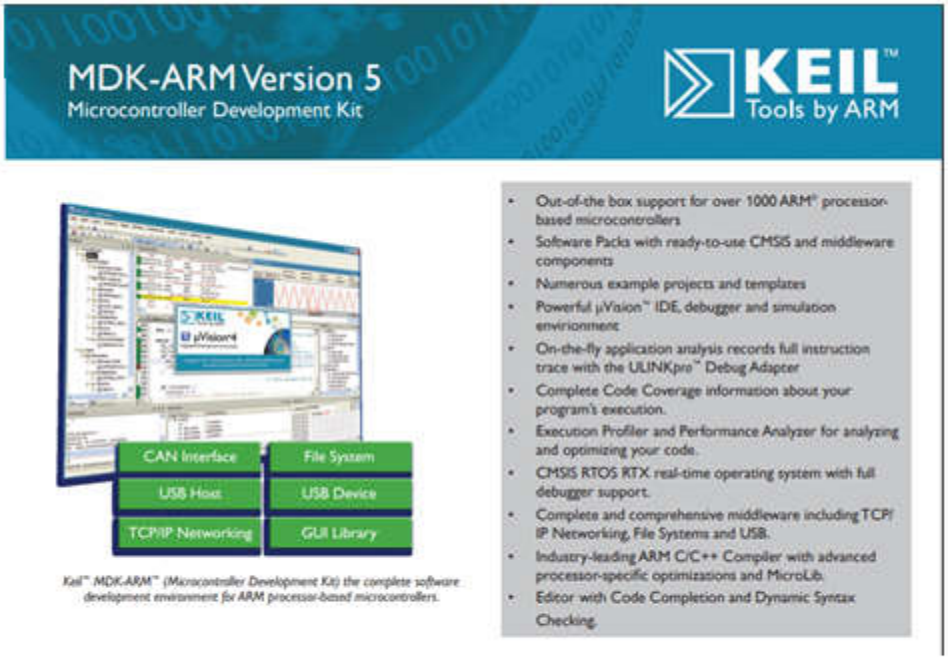


Source: http://www2.keil.com/nuvoton

- Based on 8051 core MCUs

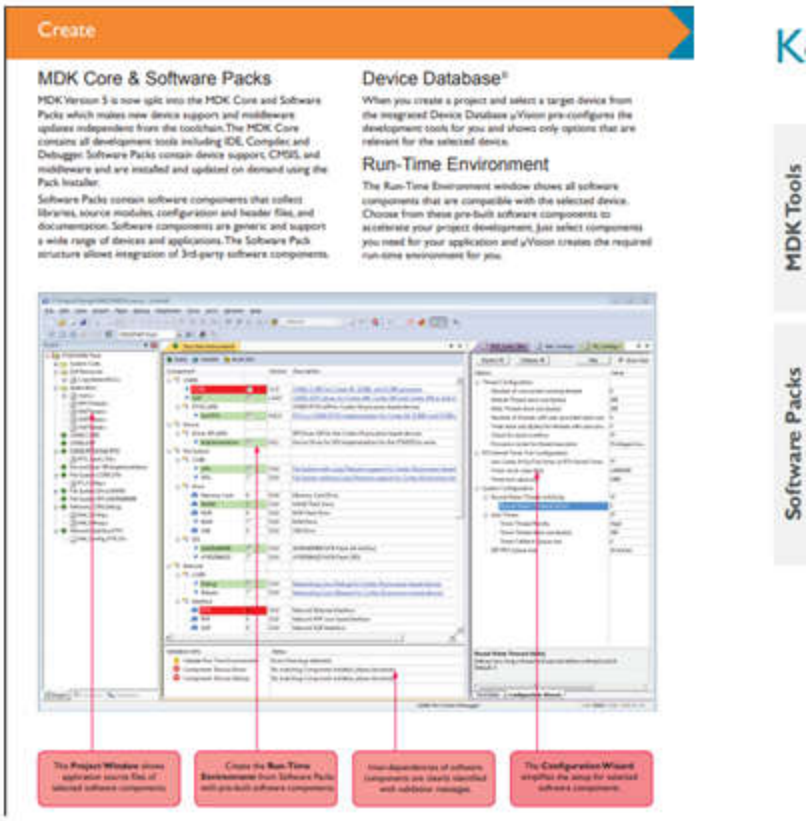
Ordering No.	Download	Content	Supported Devices	Evaluation / Development Kit for	Picture
NT-N76E003 Buy Online!	User Manual Schematic, PCB & Gerber File	• Nu-Link-ME • NuTiny-EVB-N76E003	N76E003	• An evaluation/development Kit for Nuvoton 8051 • IAR EW8051 or Keil C51 (evaluation version) can be download from website • Support ICP (In-Circuit Programming)	
NT-N76E616 Buy Online!	User Manual Schematic, PCB & Gerber File	• Nu-Link-ME • NuTiny-EVB-N76E616	N76E616	• An evaluation/development Kit for Nuvoton 8051 • IAR EW8051 or Keil C51 (evaluation version) can be download from website • Support ICP (In-Circuit Programming)	
NT-N76E885 Buy Online!	User Manual Schematic, PCB & Gerber File	• Nu-Link-ME • NuTiny-EVB-N76E885	N76E885	• An evaluation/development Kit for Nuvoton 8051 • IAR EW8051 or Keil C51 (evaluation version) can be download from website • Support ICP (In-Circuit Programming)	
NT-N79E715 Buy Online!	User Manual	• Nu-Link-51 • NuTiny-EVB-N79E85J	N79E715	• An evaluation/development Kit for Nuvoton 8051 • IAR EW8051 or Keil C51 (evaluation version) can be download from website • Support ICP (In-Circuit Programming)	

Source: http://www.nuvoton.com/hq/support/tool-and-software/development-tool-hardware/development-kit/?__locale=en

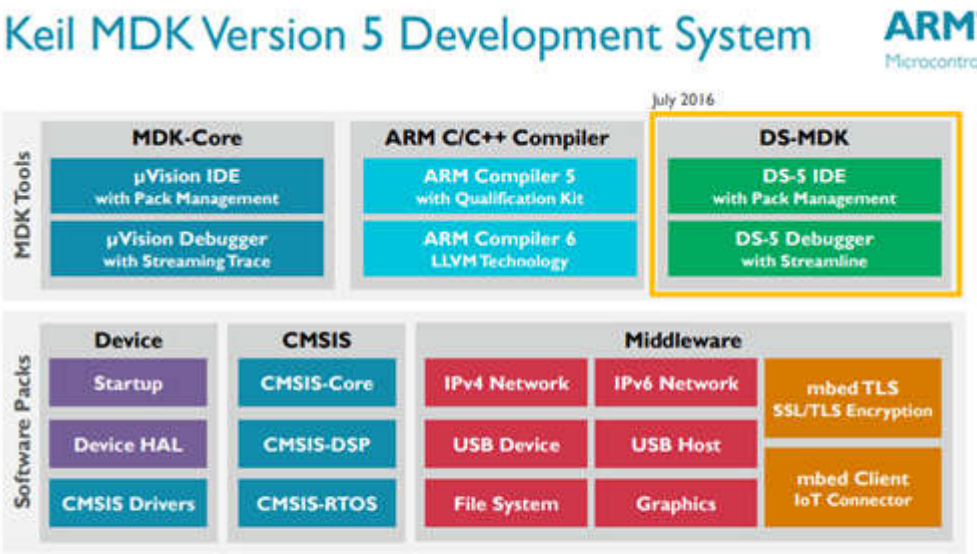


Source: http://www.keil.com/product/brochures/mdk.pdf, page 1

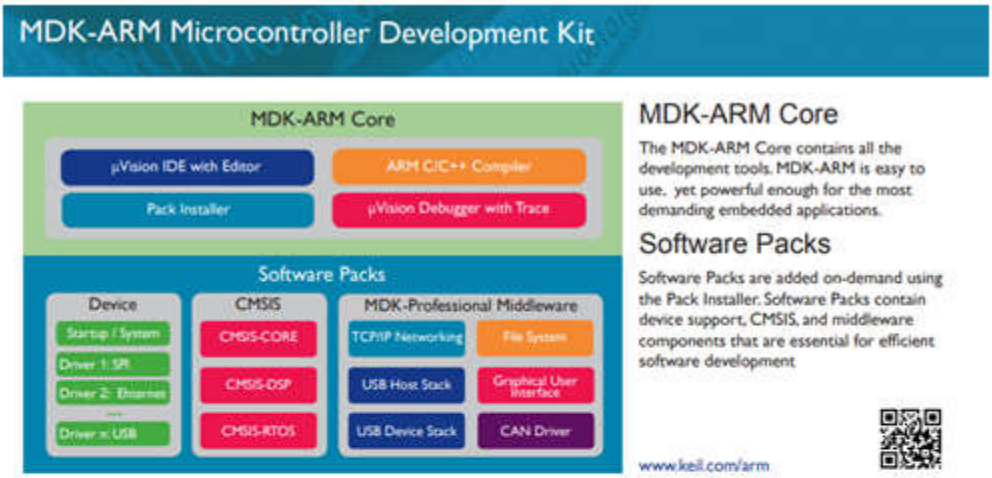
15. The Product practices providing one or more generic application handler programs. Each program has code for performing generic functions common to multiple hardware modules used in a communication system. For example, the ARM Keil MDK (Microcontroller Development Kit) Nuvoton Edition includes generic application handler programs including drivers, libraries, and Abstraction Layers (such as Hardware Abstraction Layer (HAL)) that provide multiple generic Application Programming Interfaces (APIs). The generic code provides common and generic functions to multiple hardware modules (such as Nu Micro Family Nu-Tiny-SDK-M0564) used in a communication system. Further, for ARM Cortex-M processor, ARM Keil MDK generates C code using Cortex Microcontroller Software Interface Standard (CMSIS) Library that provides Hardware Abstraction layer (HAL). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.



Source: http://www.keil.com/product/brochures/mdk.pdf, page 2

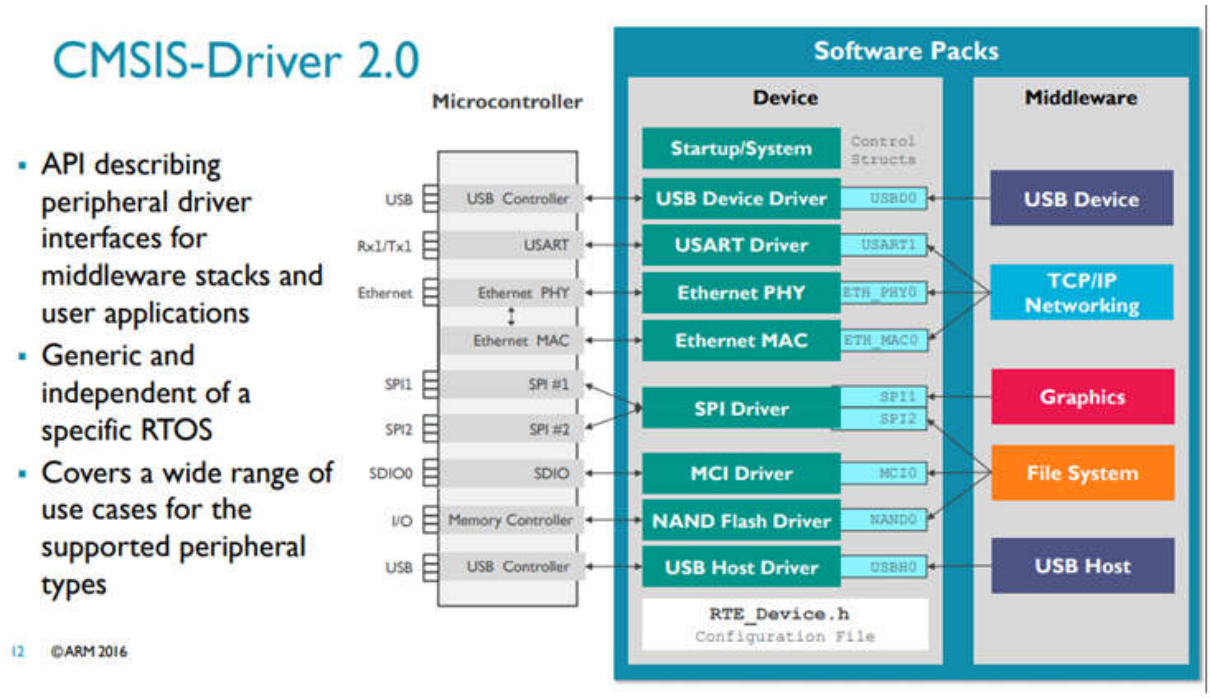


Source:
https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf,
page 2



MDK Product Selector:	MDK-Lite	MDK-Cortex-M	MDK-Standard	MDK-Professional
MDK-ARM Core Components				
µVision IDE with editor	✓	✓	✓	✓
µVision Debugger and Trace	32KB	✓	✓	✓
ARM C/C++ Compiler	32KB	✓	✓	✓
Pack Installer	✓	✓	✓	✓
ARM Processor Support:				
Cortex-M series processors	✓	✓	✓	✓
Cortex-R4, ARM7 & ARM9	✓		✓	✓
SecurCore			✓	✓
RTOS & Middleware Libraries:				
MDK-Professional Middleware				✓
CMSIS-RTOS RTX with source code	✓	✓	✓	✓
3rd Party RTOS Support	✓	✓	✓	✓

Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 6

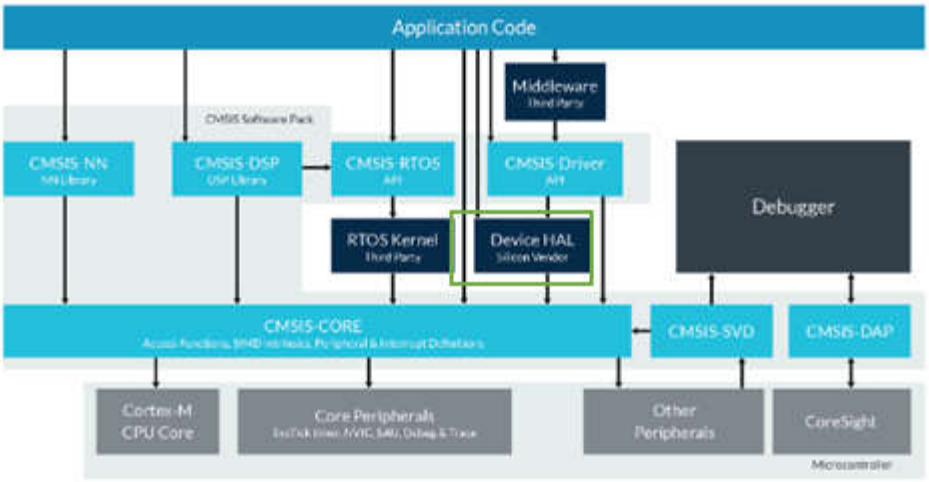


Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 12

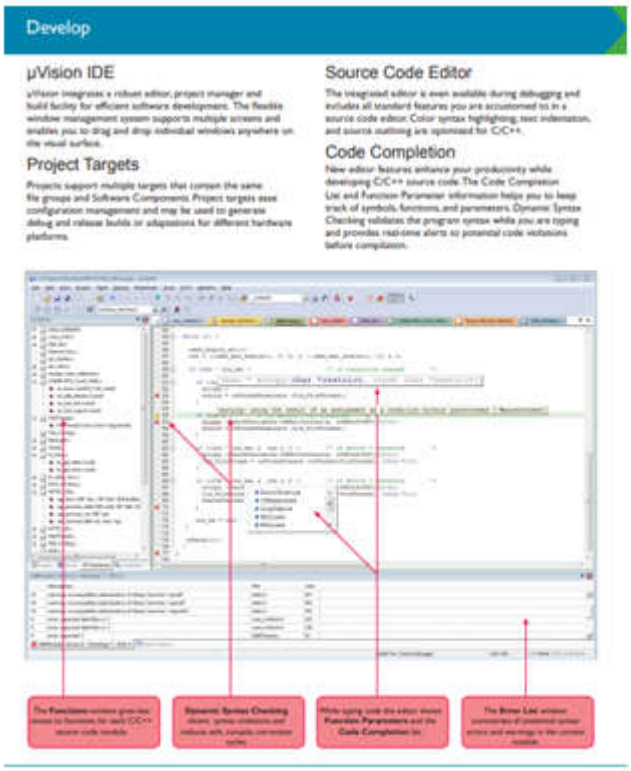
Overview

Starting from CMSIS-CORE, a vendor-independent hardware abstraction layer for Cortex-M processors, CMSIS has since expanded into areas such as software component management and reference debugger interfaces. Creation of software is a major cost factor in the embedded industry. Standardizing the software interfaces across all Cortex-M silicon vendor products, especially when creating new projects or migrating existing software to a new device, means significant cost reductions.

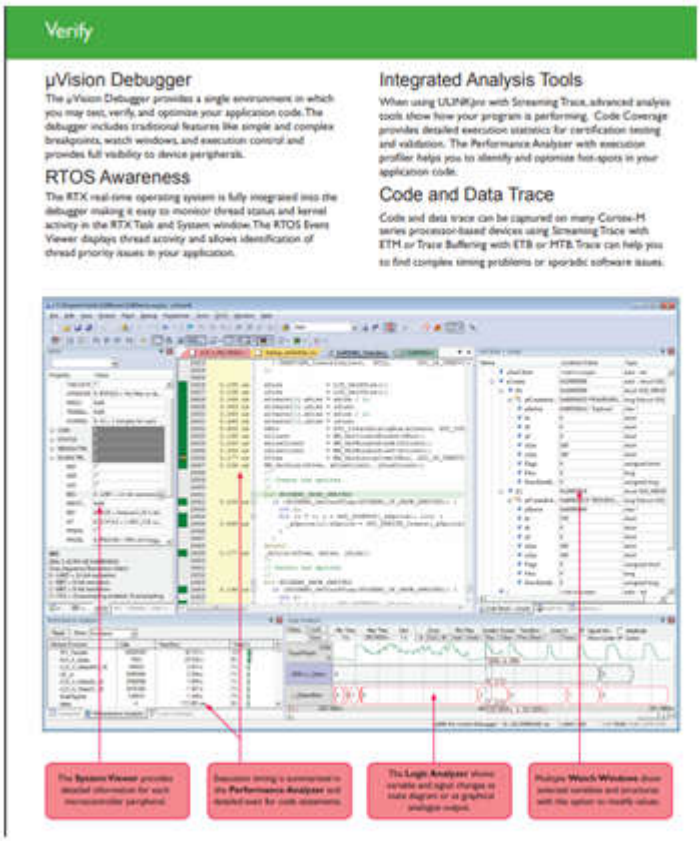
Source: https://developer.arm.com/embedded/cmsis



Source: https://developer.arm.com/embedded/cmsis



Source: http://www.keil.com/product/brochures/mdk.pdf, page 3

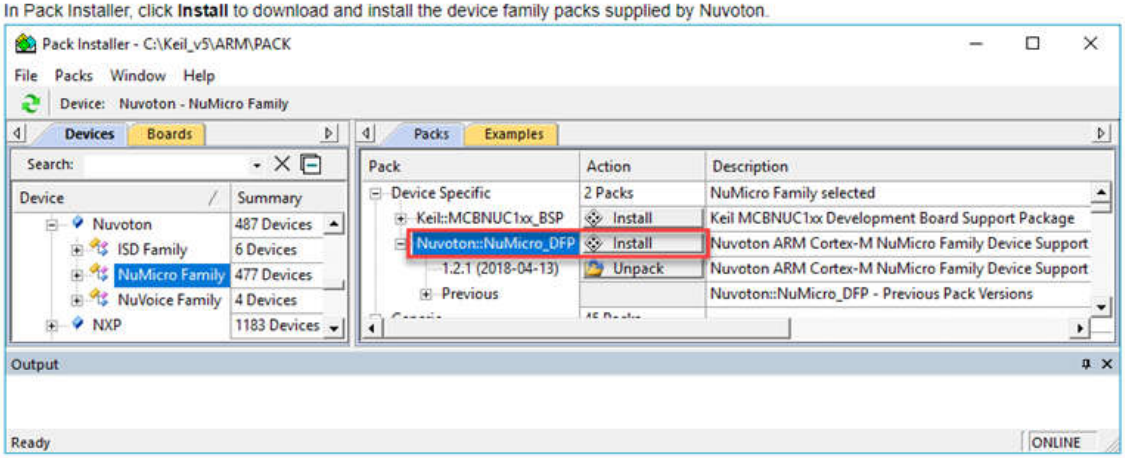


Source: http://www.keil.com/product/brochures/mdk.pdf, page 4

16. The Product practices generating specific application handler code to associate the generic application functions with specific functions of a device driver for at least one of the types of the hardware modules. For example, in addition to the Hardware Abstraction Layer (HAL), ARM Keil MDK (Microcontroller Development Kit) Nuvoton Edition also include processor-specific application handler code that are specific to particular microcontrollers (such as Arm Cortex-M0/M23/ M4 microcontrollers) and/or evaluation/Development kit (such as Nu Micro Family Nu-Tiny-SDK-M0564) based on Arm Cortex-M0/M4 core and/or 8051 MCUs (Microcontroller Units). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

Installation

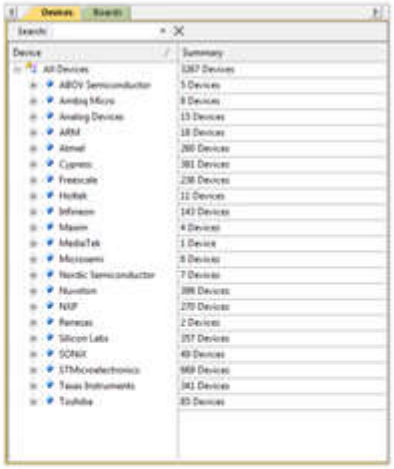
1. Download Arm Keil MDK.
2. Run the downloaded MDK5xx.exe installer.
3. Select your installation location (default is C:\Keil_v5). If you have existing MDK installations that you want to keep, select a new folder.
4. In Pack Installer, click **Install** to download and install the device family packs supplied by Nuvoton.



Source: http://www2.keil.com/nuvoton/M0-M23

Device Support

- Support for more than 3200 devices using Device Family Packs
  - System and startup code, device header files
  - SVD files
  - Flash algorithms
- Development board information
- Example projects
- User code templates



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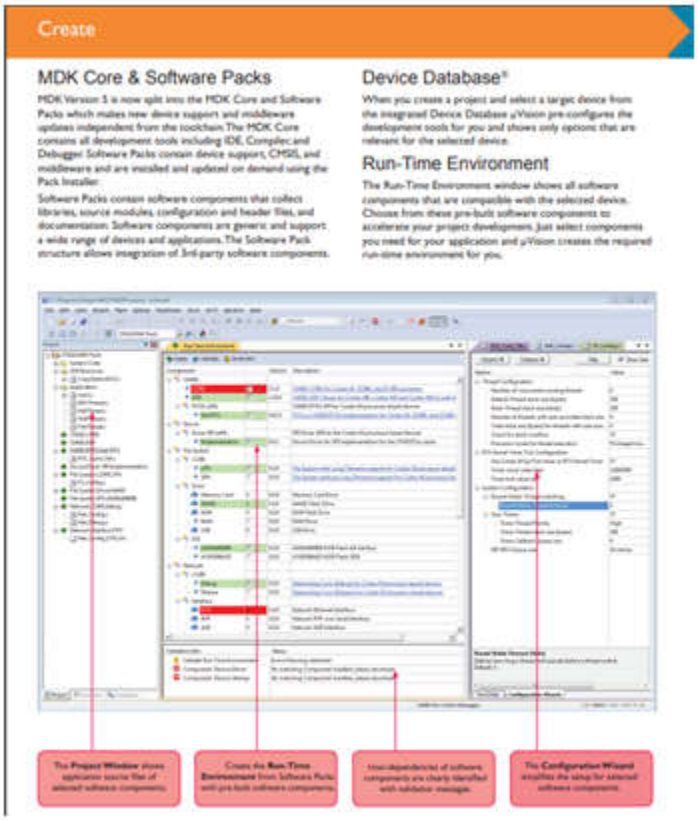
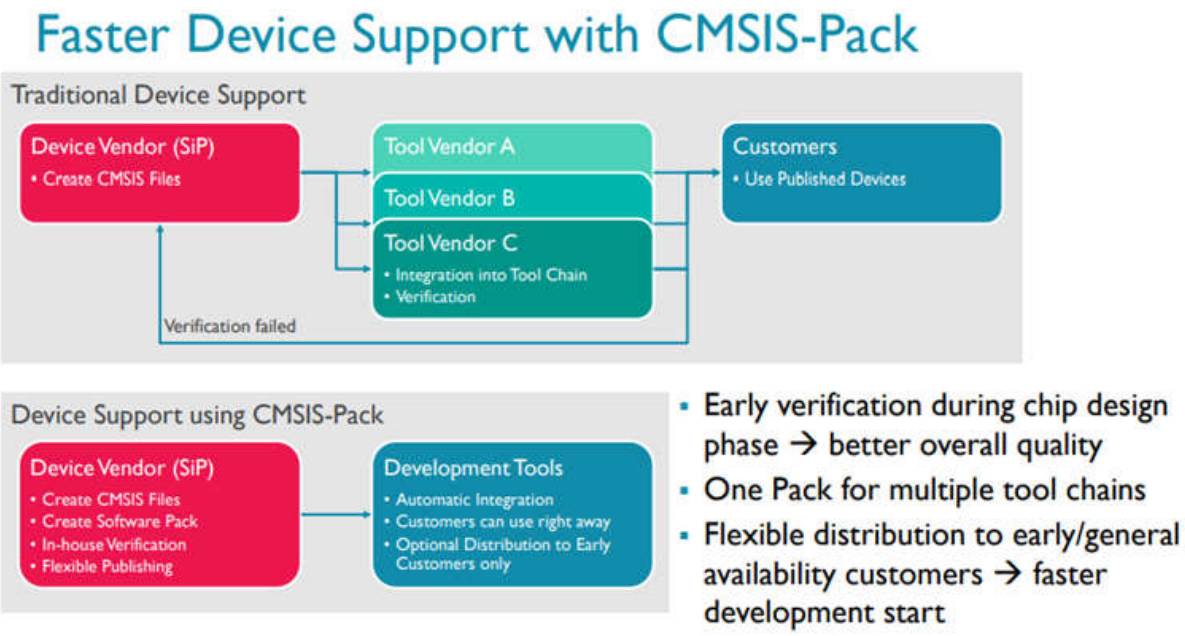
page 31

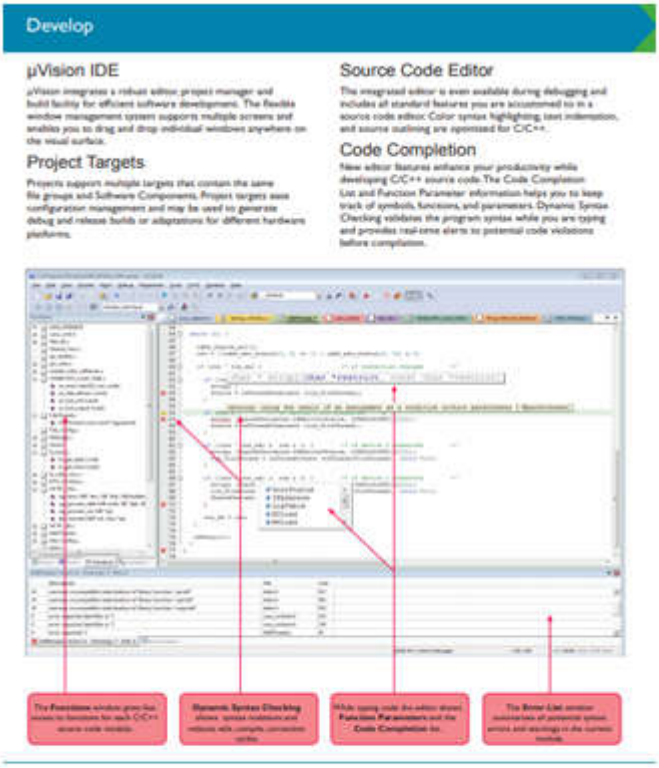


Source: http://www.keil.com/product/brochures/mdk.pdf, page 2

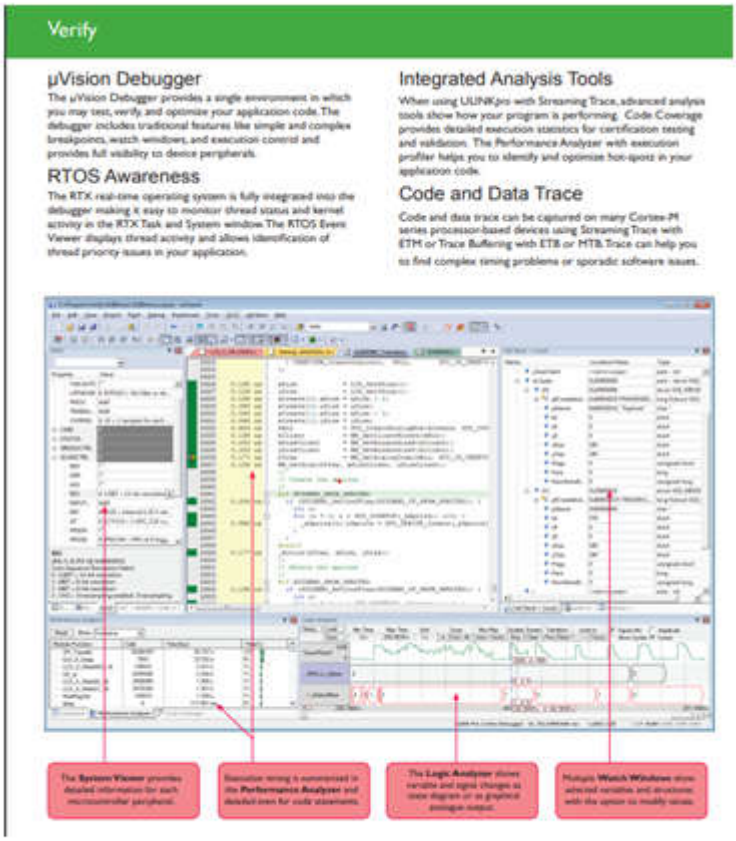


Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 15

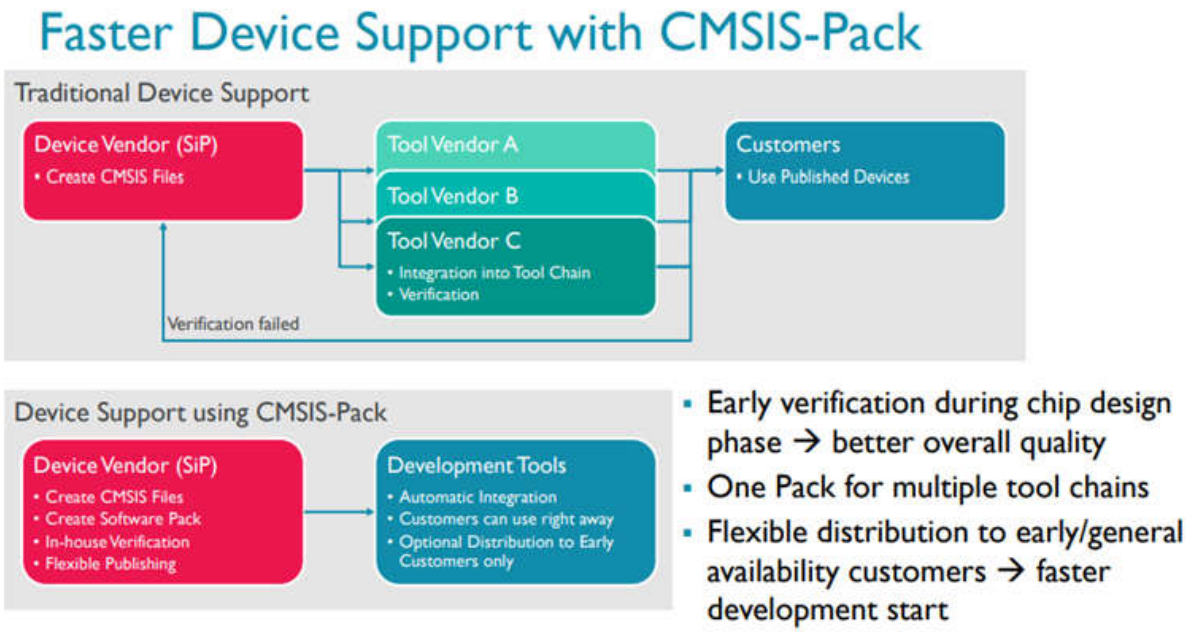
17. The Product practices defining a specific element in the specific application handler code to be handled by one of the generic application functions for the at least one of the types of the hardware modules, and registering one of the specific functions of the device driver for use in handing the defined specific element. For example, the ARM Keil MDK generates system-specific application handler code by defining a specific element such as data structures and functions that are handled by one or more generic application functions in the Hardware Abstraction Layer (HAL). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.



Source: http://www.keil.com/product/brochures/mdk.pdf, page 3



Source: http://www.keil.com/product/brochures/mdk.pdf, page 4



Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 15

MDK-Professional Middleware Components

Middleware Pack

Today's microcontroller devices offer a wide range of communication interfaces to meet any embedded design requirement. However, implementing these interfaces presents software developers with real challenges. Middleware components are essential for developers to make efficient use of the device capabilities.

MDK-Professional includes a number of royalty-free, tightly coupled middleware components which enable developers to more easily implement complex communication interfaces in their applications. Middleware components include:

- Graphical User Interface
- USB Host and Device
- TCP Networking Suite
- Flash File System
- CAN Driver

www.keil.com/arm

All middleware components are specifically designed and optimized for ARM processor-based MCU devices. The libraries are seamlessly integrated with the µVision environment and offer a modular design with well documented APIs.

Graphical User Interface (GUI)

The GUI Library is a fully featured graphics suite that makes it possible to add graphical user interfaces to embedded applications. It supports a large number of displays and includes tools for rapid GUI creation.

- Supports monochrome, grayscale and color LCDs
- Drivers for many displays and display controllers included
- Window Manager for handling multiple windows
- Many widget-like buttons, checkboxes and icons available
- Skinning support for a custom look and feel
- Optimized for speed and size
- Wide range of examples for evaluation boards.

USB Device and Host

MDK-Professional provides USB Device and USB Host support for embedded systems.

The USB Device interface uses standard device driver classes that are available with all Windows PCs. No Windows host driver development is required. The USB Device interface uses a generic software layer using RTX Kernel features.

TCP/IP Networking Suite

The TCP/IP library is a full networking suite optimized for ARM and Cortex-M processor-based MCUs. It has a small code footprint, and delivers excellent performance.

The suite provides comprehensive support for transmission protocols such as TCP/IP and UDP, as well as application level services and clients including HTTP, Telnet, SMTP, SNMP, and FTP. It provides all the features required for modern networking communication in embedded systems.

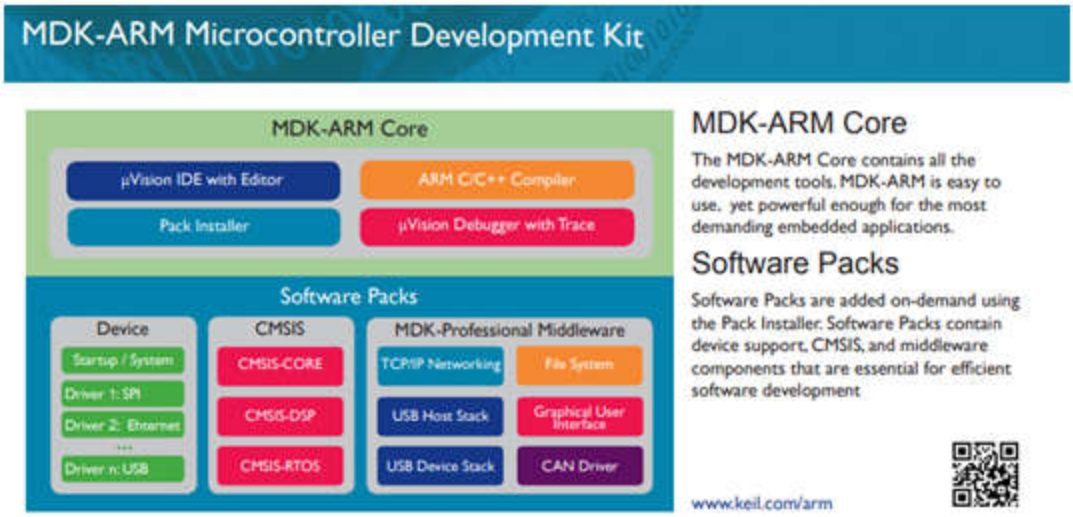
MDK Middleware components allow you to develop robust applications using a wide variety of communication protocols.

Flash File System

The Flash File System allows your embedded applications to create, save, read, and modify files in a wide range of standard storage devices. The Flash File System offers:

- Standard ANSI C File I/O application interface
- NOR and NAND Flash support
- RAM, ROM, and SD/MMC/SDHC Memory Cards
- FAT12, FAT16, and FAT32 formats
- SD/MMC card file-caching
- Reentrant and thread-safe operation
- Simultaneous access to multiple storage devices

Source: http://www.keil.com/product/brochures/mdk.pdf, page 5

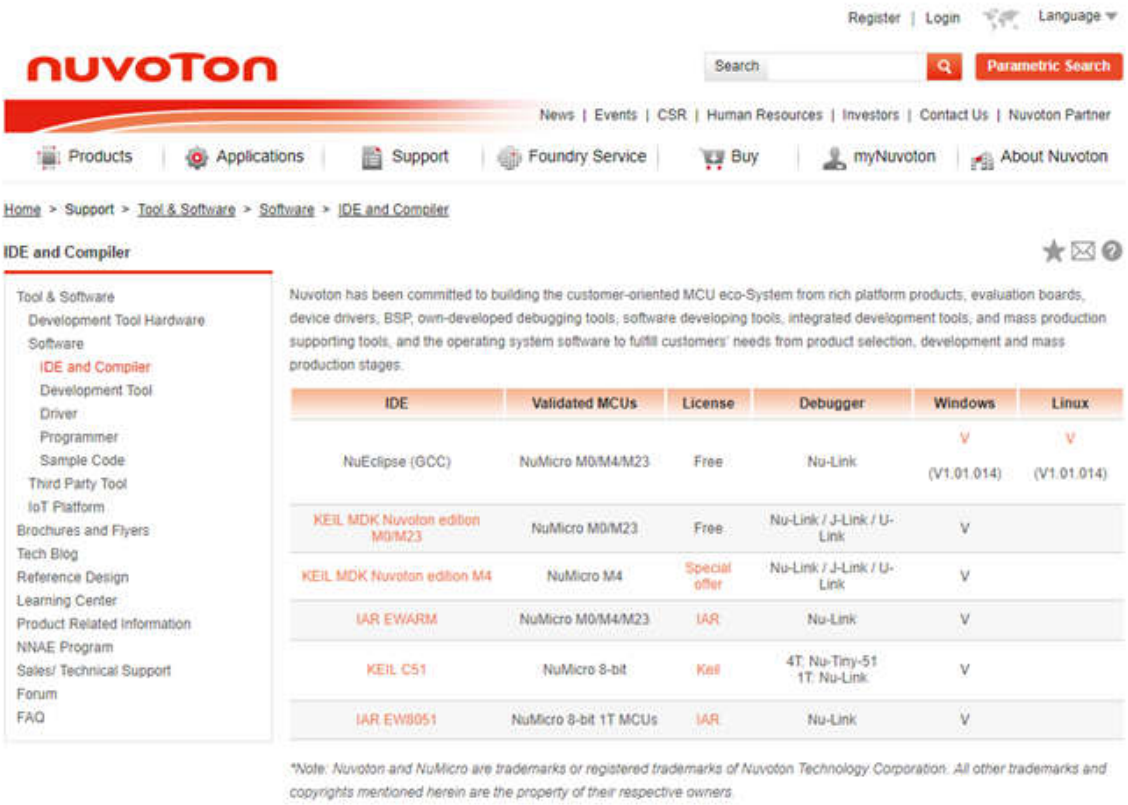


MDK Product Selector:	MDK-Lite	MDK-Cortex-M	MDK-Standard	MDK-Professional
MDK-ARM Core Components				
µVision IDE with editor	✓	✓	✓	✓
µVision Debugger and Trace	32KB	✓	✓	✓
ARM C/C++ Compiler	32KB	✓	✓	✓
Pack Installer	✓	✓	✓	✓
ARM Processor Support:				
Cortex-M series processors	✓	✓	✓	✓
Cortex-R4,ARM7 & ARM9	✓		✓	✓
SecurCore			✓	✓
RTOS & Middleware Libraries:				
MDK-Professional Middleware				✓
CMSIS-RTOS RTX with source code	✓	✓	✓	✓
3rd Party RTOS Support	✓	✓	✓	✓

Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 6

18. The Product practices compiling the generic application handler programs together with the specific application handler code to produce machine-readable code to be executed by an embedded processor in the at least one of the types of the hardware modules. For example, when a specific application is needed for a particular hardware, the generic functions and the specific functions are compiled together to yield a machine readable code. Nuvoton Technology and/or its customers compile the generic functions and the specific functions using ARM Keil MDK or any other IDE (such as Keil C51, NU Eclipse (GCC), IAR EWARM, IAR EW8051) supported by Nuvoton Technology. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in

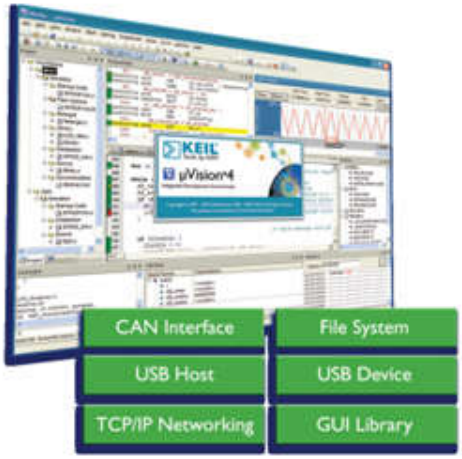
connection with other elements herein.



Source: https://www.nuvoton.com/hq/support/tool-and-software/software/IDE-Compiler/?__locale=en

MDK-ARM Version 5
Microcontroller Development Kit

KEIL™ Tools by ARM



Keil™ MDK-ARM™ (Microcontroller Development Kit) the complete software development environment for ARM processor-based microcontrollers.

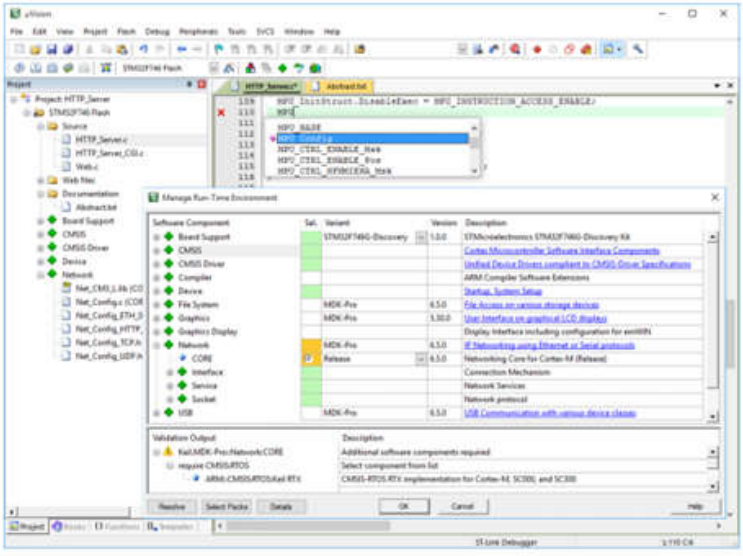
- Out-of-the box support for over 1000 ARM® processor-based microcontrollers
- Software Packs with ready-to-use CMSIS and middleware components
- Numerous example projects and templates
- Powerful µVision™ IDE, debugger and simulation environment
- On-the-fly application analysis records full instruction trace with the ULINKpro™ Debug Adapter
- Complete Code Coverage information about your program's execution.
- Execution Profiler and Performance Analyzer for analyzing and optimizing your code.
- CMSIS RTOS RTX real-time operating system with full debugger support.
- Complete and comprehensive middleware including TCP/IP Networking, File Systems and USB.
- Industry-leading ARM C/C++ Compiler with advanced processor-specific optimizations and MicroLib.
- Editor with Code Completion and Dynamic Syntax Checking.

Source: http://www.keil.com/product/brochures/mdk.pdf, page 1

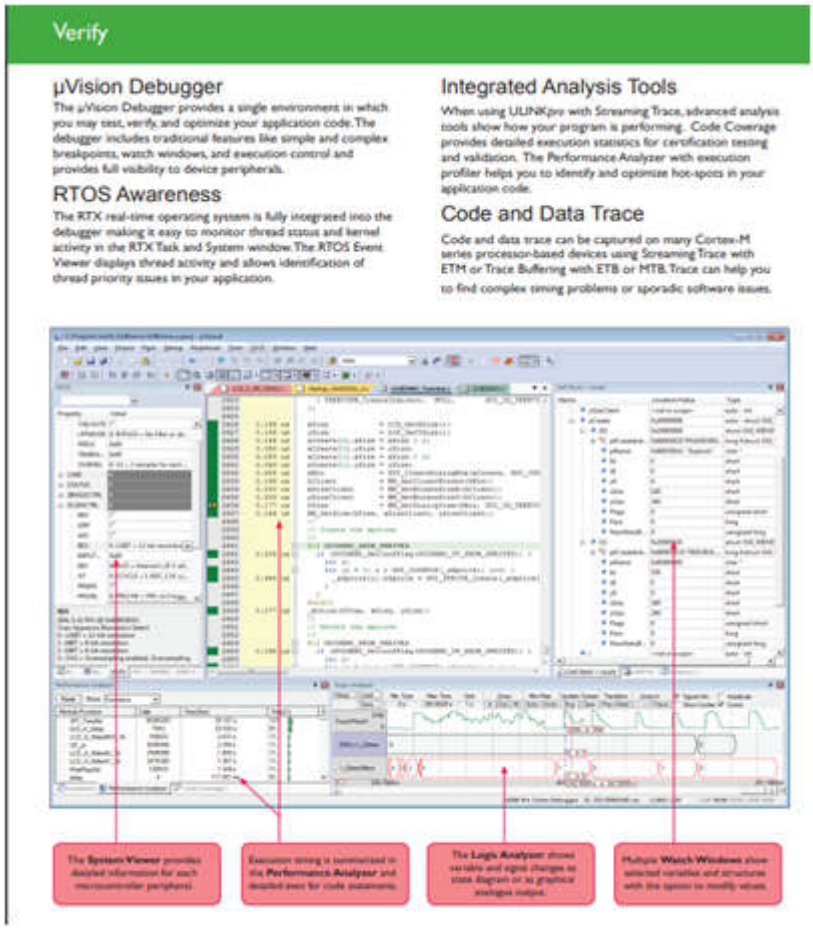
µVision IDE

- Project Management
- Source Code Editing
- Program Debugging
- Trace Viewing

- Well-known environment
- Optimized for MCU development



Source: https://www.arm.com/files/pdf/20160830_06_ARM_Keil_MDK_FTD.pdf, page 30



Source: http://www.keil.com/product/brochures/mdk.pdf, page 4

19. Defendant's actions complained of herein will continue unless Defendant is enjoined by this court.

20. Defendant's actions complained of herein are causing irreparable harm and monetary damage to Plaintiff and will continue to do so unless and until Defendant is enjoined and restrained by this Court.

21. Plaintiff is in compliance with 35 U.S.C. § 287.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff asks the Court to:

(a) Enter judgment for Plaintiff on this Complaint on all causes of action asserted

herein;

(b) Enter an Order enjoining Defendant, its agents, officers, servants, employees, attorneys, and all persons in active concert or participation with Defendant who receive notice of the order from further infringement of United States Patent No. 7,069,546 (or, in the alternative, awarding Plaintiff a running royalty from the time of judgment going forward);

(c) Award Plaintiff damages resulting from Defendant's infringement in accordance with 35 U.S.C. § 284;

(d) Award Plaintiff pre-judgment and post-judgment interest and costs; and

(e) Award Plaintiff such further relief to which the Court finds Plaintiff entitled under law or equity.

Dated: June 27, 2019

Respectfully submitted,

/s/ Jay Johnson

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EXHIBIT A