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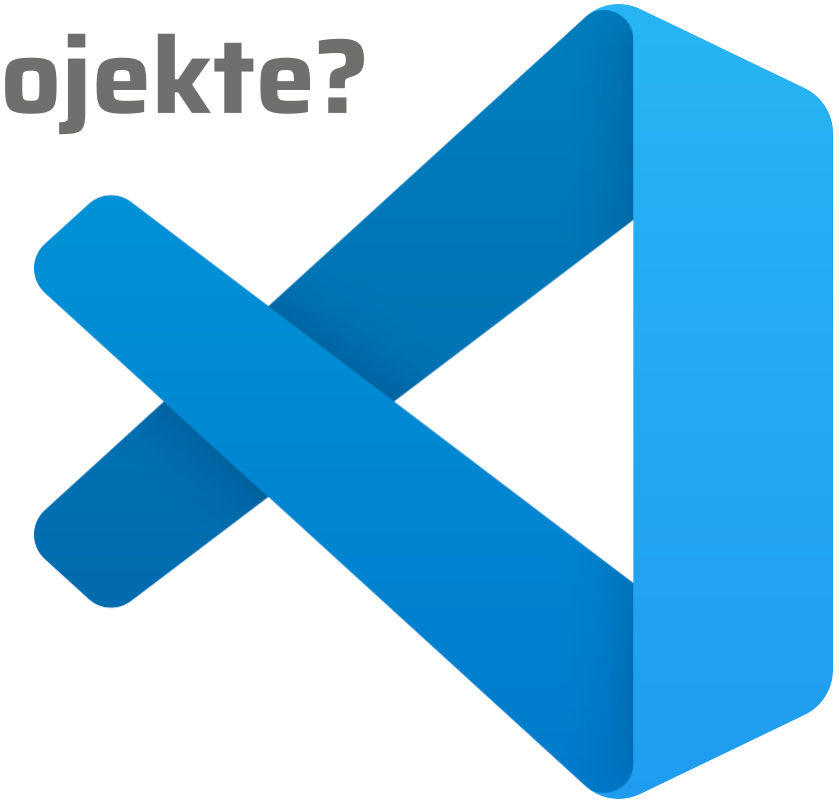
Visual Studio Code für Embedded Projekte?



Ein Überblick über
Möglichkeiten und Grenzen

Daniel Penning, embeff GmbH

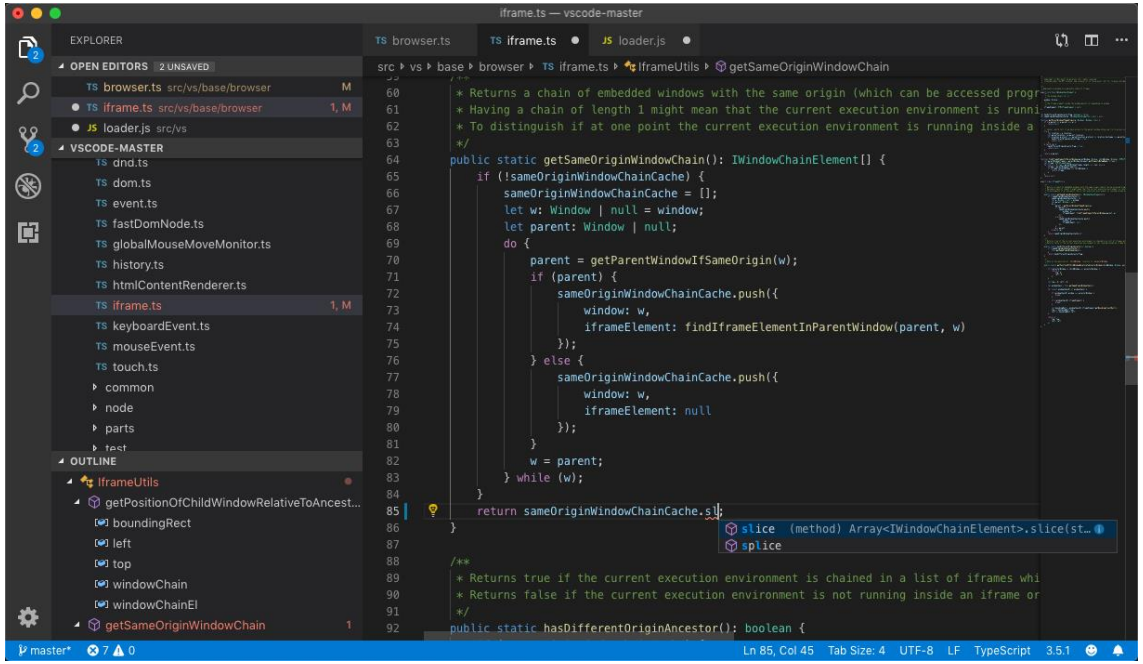
Die Software

*Visual Studio Code (kurz **VS Code**) ist ein kostenloser Quelltext-Editor von Microsoft. Visual Studio Code ist plattformübergreifend für die Betriebssysteme Windows, macOS und Linux verfügbar.*

Visual Studio Code (...) ermöglicht u. a. Syntaxhervorhebung, Code-Faltung, Debugging, Autovervollständigung und Versionsverwaltung.

- Proprietär (Microsoft Software License)
- Basiert auf “Code OSS” mit MIT Lizenz
- VS Code = Distribution von Code OSS
  - Microsoft Marketplace

- Extensions erweitern Kernfunktionalität
- Durch enorme Flexibilität breit einsetzbar



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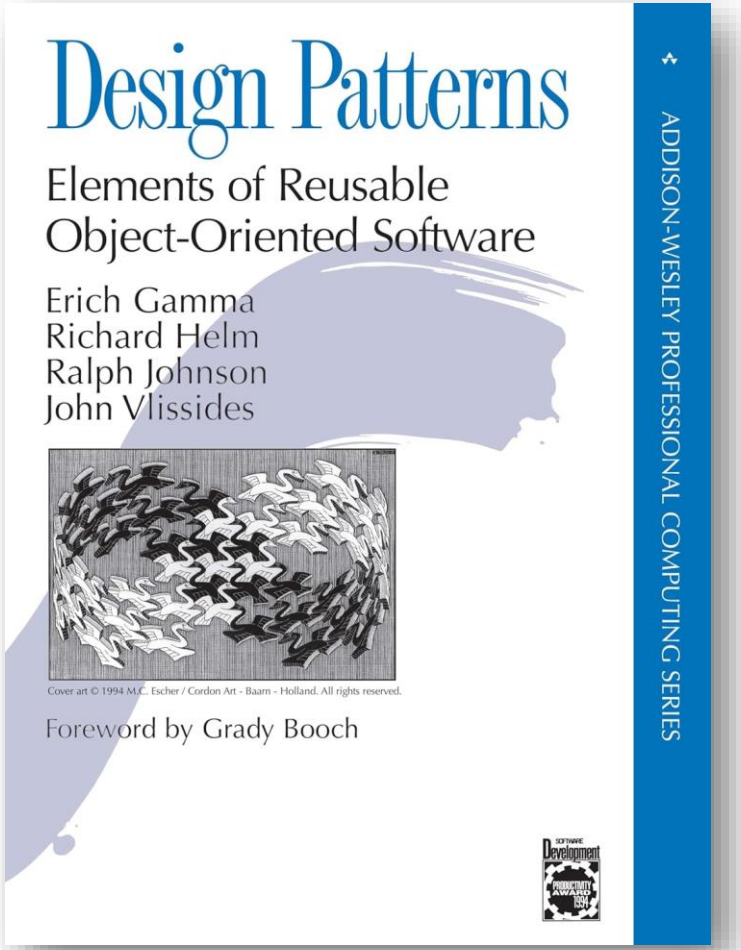
Hintergrund

- April 2016: Erstes Release
  - *“We started VS Code (initially called “Monaco”) with the goal of building a world-class code editor for web development that runs in the browser.”*
  - In Typescript geschrieben
  - Initiiert und geleitet von Erich Gamma

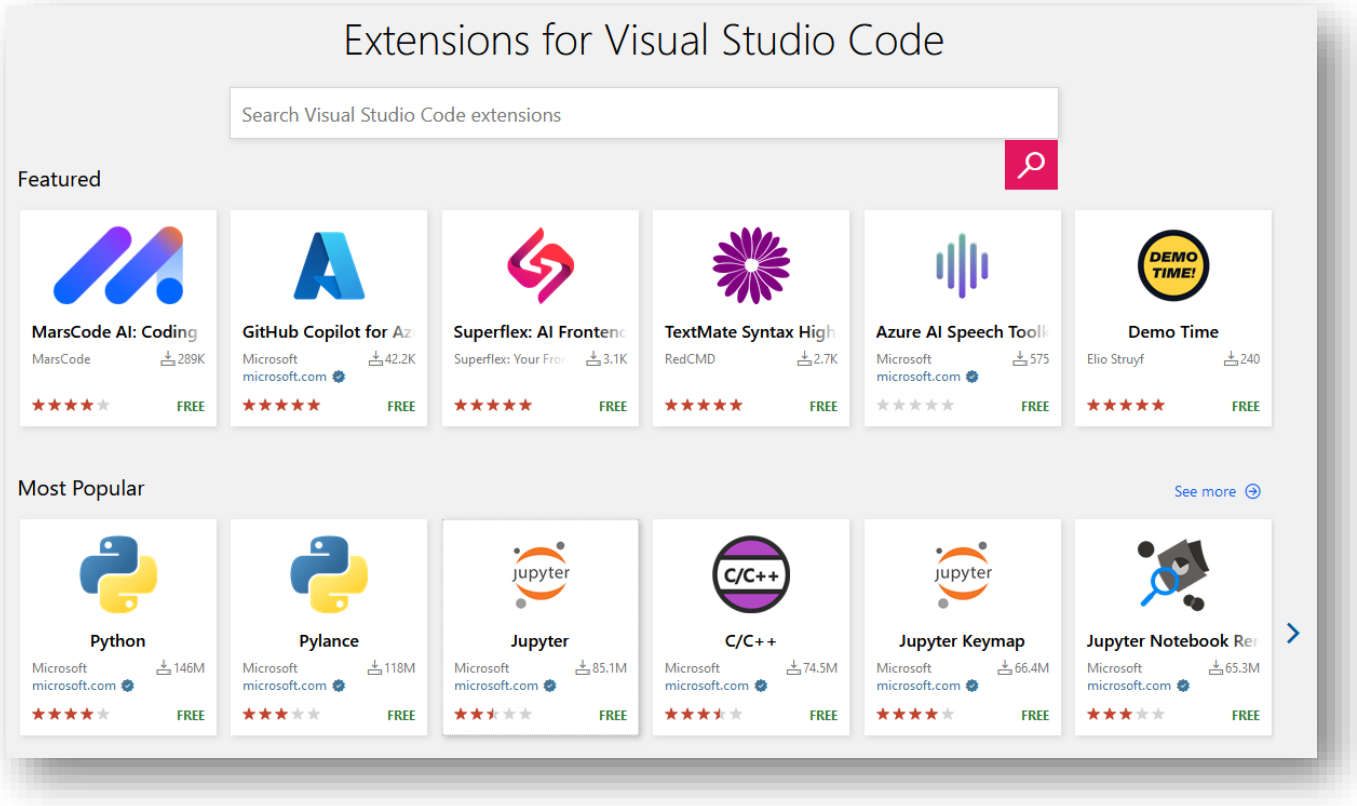


- 2023: 14 Millionen aktive User*

* Quelle: https://visualstudiomagazine.com/articles/2023/03/09/vs-code-profiles.aspx

Extensions

- 60,000 Extensions im Marketplace
- 3,3 Milliarden Installationen
- ⌀ 40 Extensions pro Nutzer



- Untersuchung: 1283 Extensions enthalten direkt/indirekt böshafte Software [2]

Demo 1 – Embedded Entwicklung mit VS Code

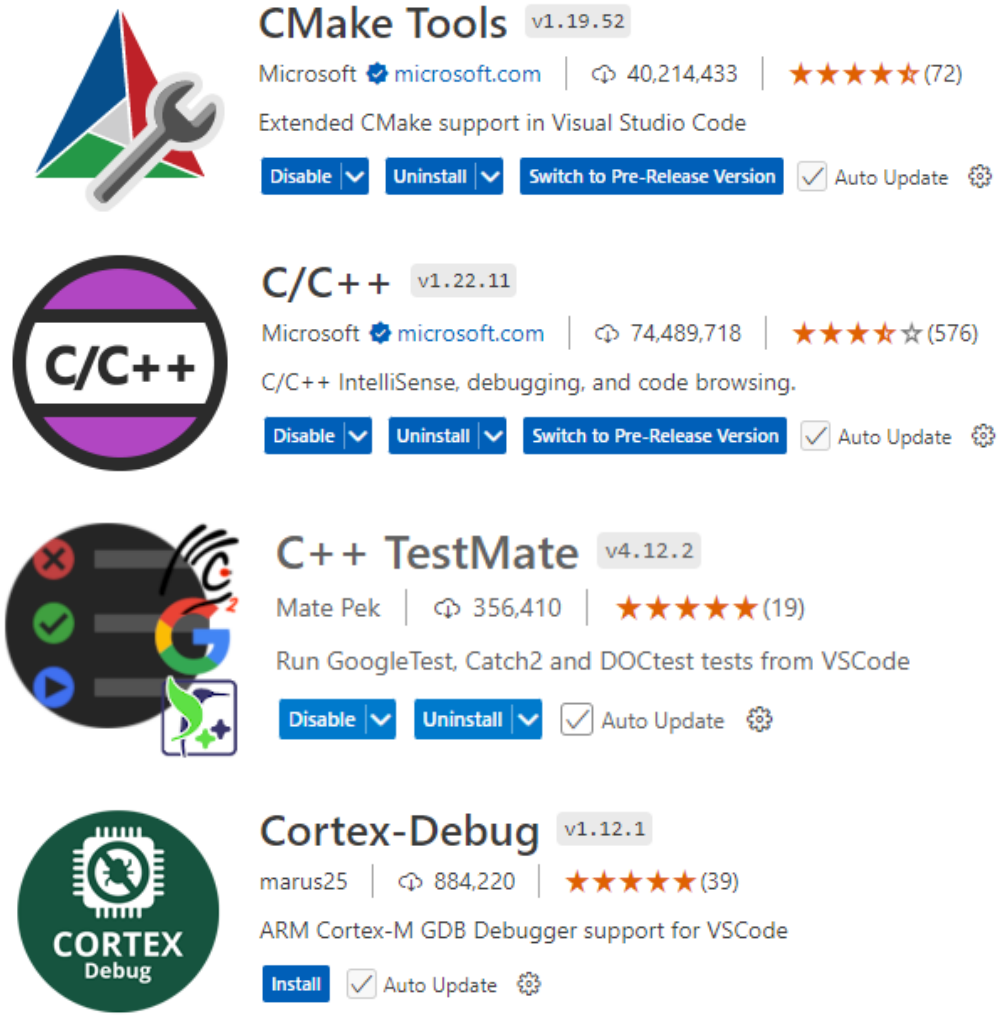
1. IDE und Projekt-Philosophie
2. C/C++ und CMake Build
3. Debugging für Arm Cortex-M
4. Unit Testing und Test Runner

Embedded Entwicklung mit VS Code

- Code Completion für C/C++ Umgebungen
  - `.vscode/cmake-kits.json` definiert Umgebungen
  - CMake Meta-Datei für Code Completion generieren

    ```
    set(CMAKE_EXPORT_COMPILE_COMMANDS ON)
    ```

  - `.vscode/c_cpp_properties.json` zeigt auf Meta-Datei
- Debugging
  - `.vscode/launch.json` definiert Debugziele

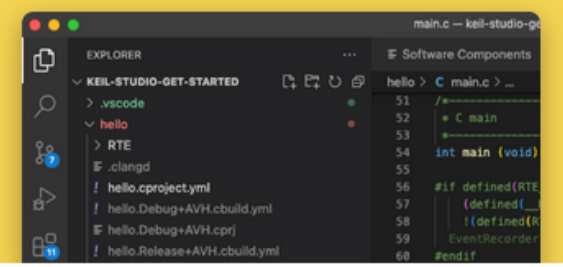


Was macht... Arm?

Get the Tools

Professional tools for any platform, with license options for commercial and non-commercial use.

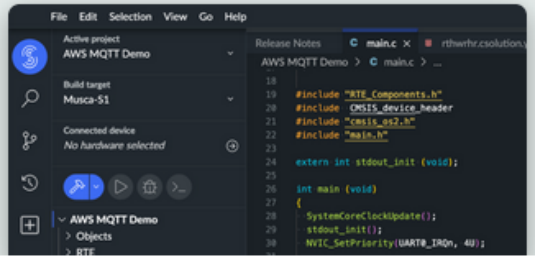
All tools are free to use for non-commercial projects under the Community Edition license. For commercial use you'll need an Essential or Professional Edition license. Compare Keil MDK Editions.



Keil Studio for **VS Code**

With full support of CMSIS workflows and an integrated debugger, the VS Code pack includes extensions to create, build, and test embedded applications.

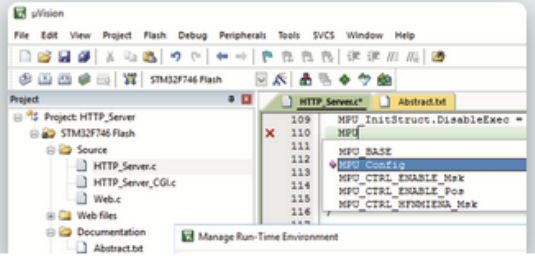
Install Extension Pack



Keil Studio **Cloud**

Quickly evaluate software and hardware with a ready-to-use cloud-native development environment that requires no installation.

Open Keil Studio Cloud

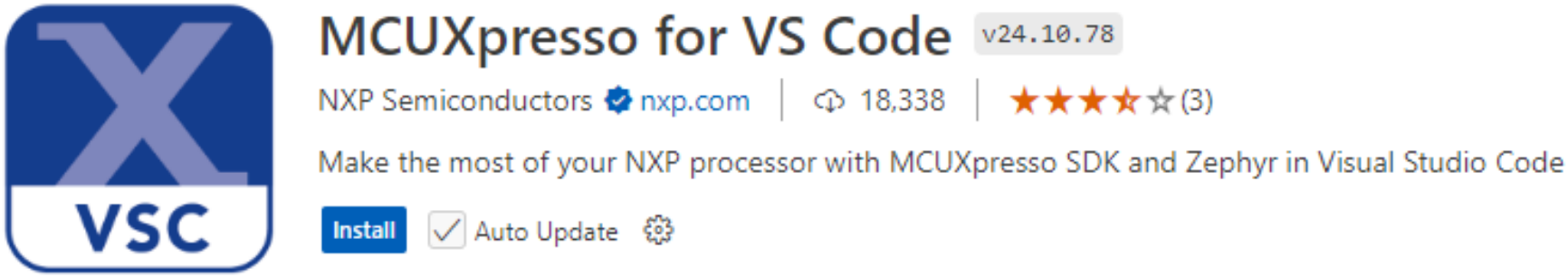


Keil µVision

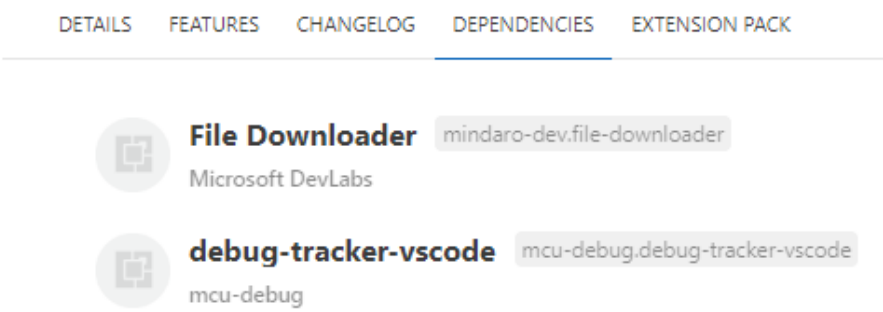
Our legacy IDE that is proven in use by hundreds of thousands of developers. Available for Windows hosts only.

Download Keil µVision

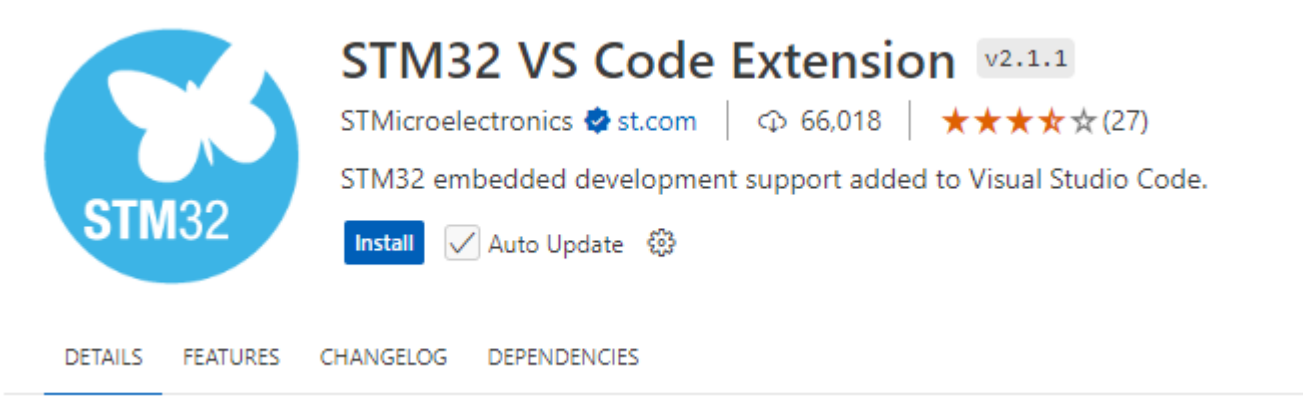
Was macht… NXP?

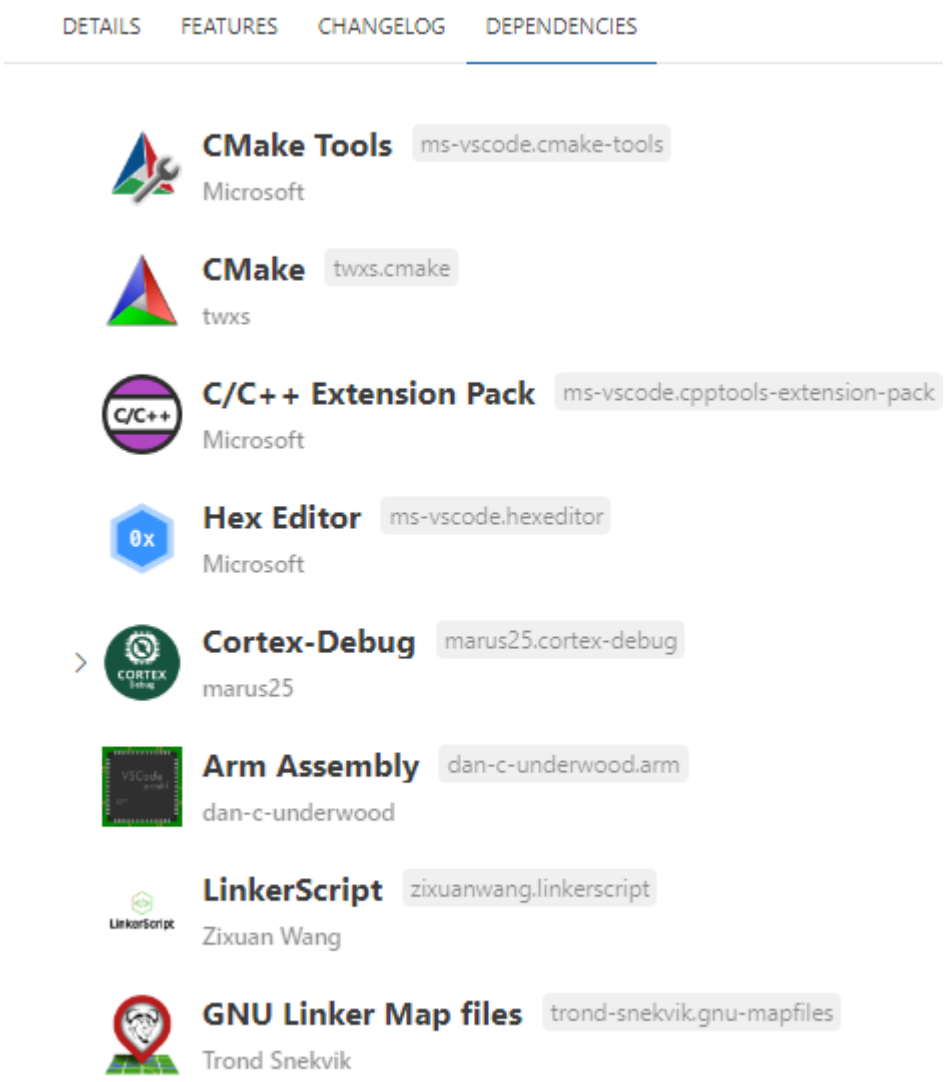


- *„The NXP's MCUXpresso for VS Code extension makes NXP devices (based on ARM Cortex-M cores) easy to use right from Microsoft Visual Studio Code environment."*
- Augenscheinlich viel interne Wiederverwendung
  - Single/multi core [ARM Cortex-M] debug support relying on own debug adapter based on the popular Cortex-Debug solution.



Was macht... STM?





- *"STM32 embedded development support added to Visual Studio Code. A new view container for the STM32VS Code extension is included in the activity bar, which provides a list of features that can be accessed with a single click."*
- Benötigt STM32CubeCLT, sinnvoll STM32CubeMX
- Nutzt direkt andere Erweiterungen

Demo 2: Praxis-Erfahrungen Anbindung Testgerät

1. VS Code im Browser [3]
2. RobotFramework und Test Runner
3. VS Code fernsteuern
4. Paralleles Debugging
5. Ausblick

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Extensions für den Projektalltag

Git Graph

mhutchie | 9,839,169 installs | ★★★★★ (619) | Free

View a Git Graph of your repository, and perform Git actions from the graph.

Install | Trouble Installing?

Draw.io Integration

Henning Dieterichs | 2,573,926 installs | ★★★★★ (145) | Free

This unofficial extension integrates Draw.io into VS Code.

Install | Trouble Installing?

Python

Microsoft microsoft.com | 145,792,575 installs | ★★★★☆ (603) | Free

Python language support with extension access points for IntelliSense (Pylance), Debugging (Python Debugger), linting, formatting, refactoring, unit tests, and more.

Install | Trouble Installing?

TODO Highlight

Wayou Liu | 5,012,551 installs | ★★★★½ (113) | Free

highlight TODOs, FIXMEs, and any keywords, annotations...

Install | Trouble Installing?

GitHub Copilot

GitHub github.com | 22,685,851 installs | ★★★½☆ (1103) | Free Trial

Your AI pair programmer

Install | Trouble Installing?

Danke für die Aufmerksamkeit!

Empfohlene Links

[1] Einfach starten

https://code.visualstudio.com/

[2] Schadhafte Software durch Extensions

https://medium.com/@amitassaraf/2-6-exposing-malicious-extensions-shocking-statistics-from-the-vs-code-marketplace-cf88b7a7f38f

[3] ExecutionPlatform Demo mit VS Code

https://embeff.com

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Fazit

- VS Code ist eine echte (breit einsetzbare) IDE
- Limitierung bei spezifischen Embedded-Tasks (Tracing, ...)
- Open Source Charakter für kommerzielle Nutzung hilfreich (Ideen umsetzen)
- Hohe Traktion garantiert zeitnahe Anpassungen
- Meine Empfehlung: Mit VS Code entwicklen und falls nötig 3-rd Party Debugger einsetzen

Folien
https://github.com/embeff/talks

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