

CI/CD for ECU FW Development



Servus!!



Team Lead Accu &
E 2025 Season

Computer Science
Student TU
Dresden

Tim Bitteker

22 yo, 3rd season FS

Foto: ©FSG : Kohler



Outline



1. Motivation
2. Previous Workflow
3. Pipeline Overview
4. Pipeline in Action
5. Results
6. Outlook



Motivation



use existing
can auto
gen manually



spend 2
weeks straight
developing
pipeline to
save a few minutes



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Previous Workflow



DBC Change

Commit to DBC Git Repo

Write New Code

Read new message from DBC

Implement on affected nodes

Test and Publish

Unit Test

Integration Test

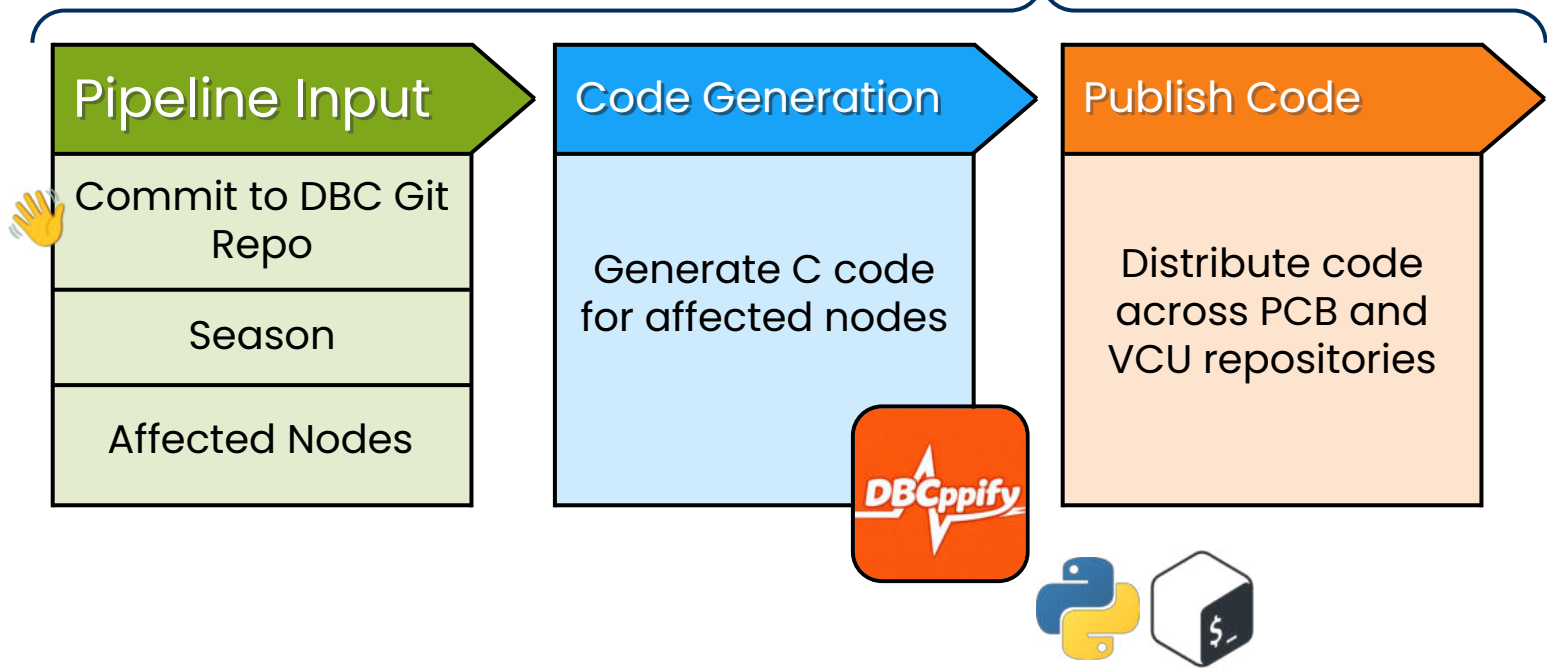
Commit Code

PCB features were unused because CAN implementation was missing on the VCU





Pipeline Overview pt. 1

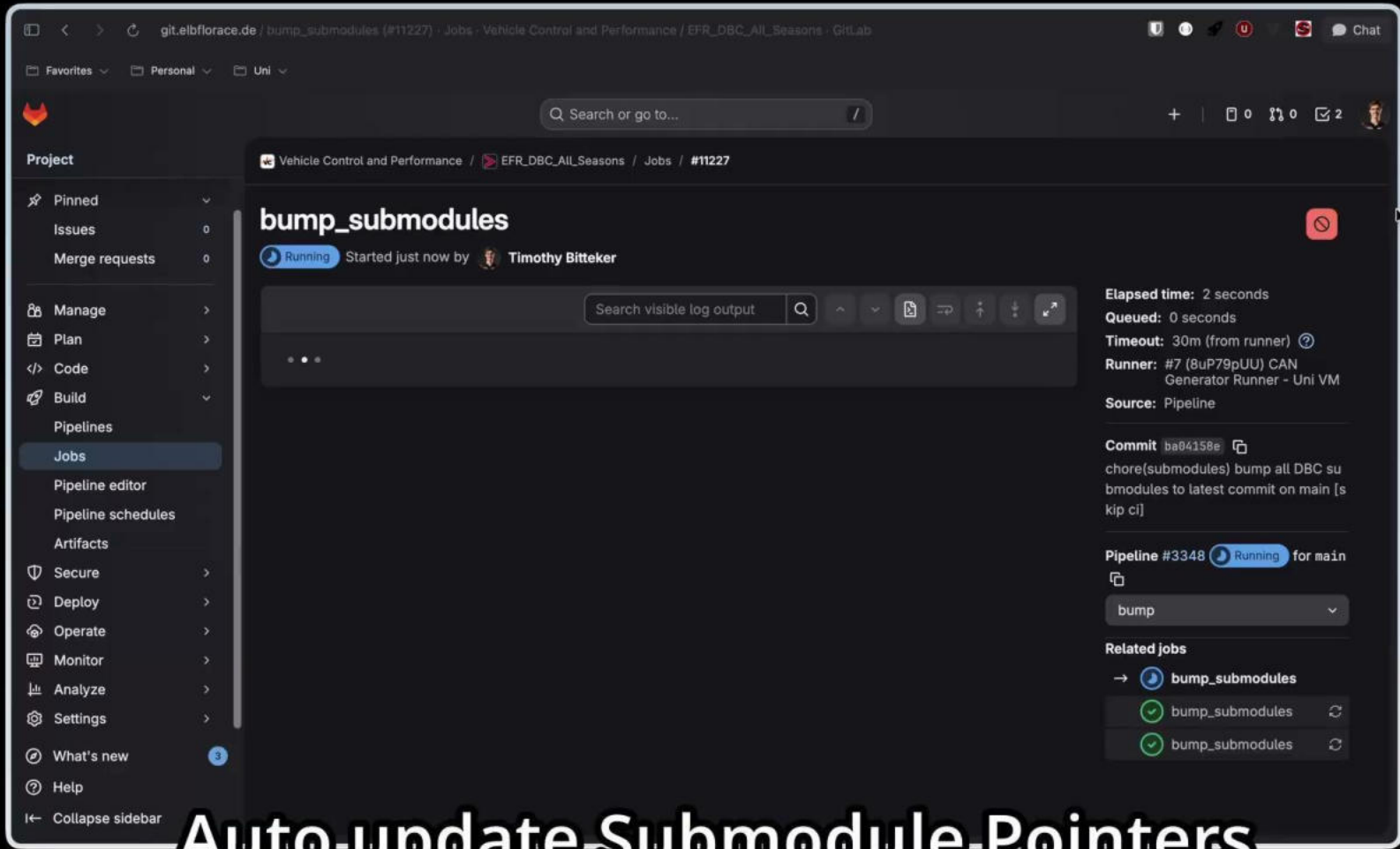




can-dbc-efr18 — zsh — 200x58

```
(base) timbitteker@Tims-MacBook-Air can-dbc-efr18 % g
```

Commit DBC change



Auto-update-Submodule-Pointers

git.elbforace.de / Pipelines - Vehicle Control and Performance / DBCppify - GitLab

Search or go to...

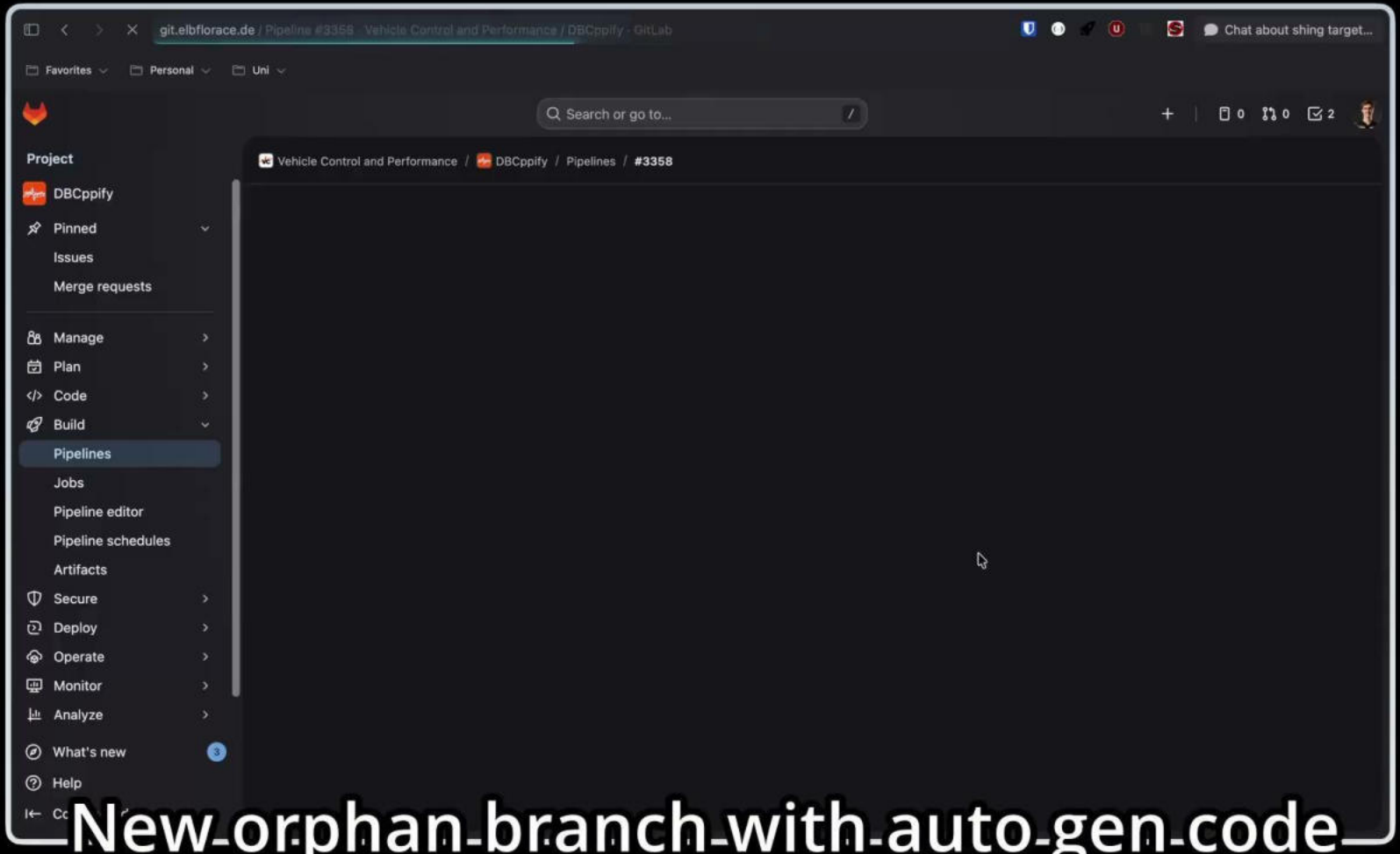
Vehicle Control and Performance / DBCppify / Pipelines

All 86 Finished Branches Tags View analytics Clear runner caches New pipeline

Filter pipelines Show Pipeline ID

Status	Pipeline	Created by	Stages	Actions
Skipped	chore(submodules) bump efr_dbc_a... #3354 main a6ed661b latest branch	[Avatar]		Download
Passed 00:01:15 2 minutes ago	chore(submodules) bump efr_dbc_a... #3353 main 079a1769 trigger token branch	[Avatar]	2 green checkmarks	Download
Skipped	chore(submodules) bump efr_dbc_a... #3339 main 079a1769 branch	[Avatar]		Download
Failed 00:01:34 16 hours ago	Add IMU to non generatable nodes L... #3338 main e1c9f3ba trigger token branch	[Avatar]	1 green, 1 red checkmark	Refresh Download
Skipped	chore(submodules) bump efr_dbc_a... #3330 main a399ce92 branch	[Avatar]		Download

PCB-CAN-code-is-generated



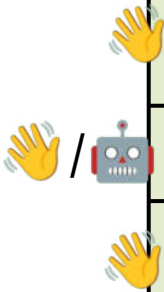
New-orphan-branch-with-auto-gen-code

Pipeline Overview pt. 2



Merge & Release

- Developer merges new files
- Unit test node
- Create release



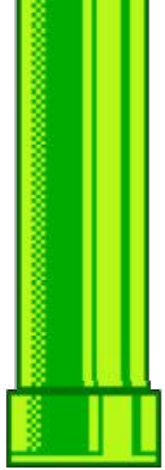
Compile Code

- Compile node code online
- Version compiled code



Wireless Update

- Send compiled binary to car via LTE or WiFi
- Flash nodes via CAN bus



git.elbflorace.de / Electronics / EFR18ed06 / bmc-efr18 - Q&Lab

Search or go to...

Project

- bmc-efr18
- Pinned
- Issues
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Electronics / EFR18ed06 / bmc-efr18 / Repository

You pushed to dev 57 seconds ago

Create merge request

dev bmc-efr18

bmc-efr18

update code for new bmc and new can messages
Timothy Blitteker authored 1 minute ago

8ea01b23 History

Name	Last commit	Last update
.metadata	working... changed default values for temp and vo...	1 year ago
Core	update code for new bmc and new can messages	1 minute ago
Drivers	changed pins to efr17 bmc	1 year ago
FATFS	trying to resolve driver error and updates to spi tr...	1 year ago
Middlewares/Third_Party/FatFs/src	added FATFS to project	1 year ago
.cproject	rename project in project files	1 hour ago
.gitattributes	auto gen from loc and add gitattributes file	44 minutes ago
.aitianore	Update .aitianore	1 year ago

Dev has merged and creates new release

git.elbflorace.de / Vehicle Control and Performance / STM32-Headless-Build · GitLab

Vehicle Control and Performance / STM32-Headless-Build

STM32-Headless-Build

main stm32-headless-build

revert last commit
Timothy Bitteker authored 1 hour ago

Name	Last commit	Last update
Pipelines		
Jobs	revert last commit	1 hour ago
Pipeline editor	add docu	1 day ago
Pipeline schedules	add rule to only trigger from upstr...	1 day ago
Artifacts		
Dockerfile	make entrypoint.sh executable in ...	5 days ago
README.md	add formating and general info	1 day ago
entrypoint.sh	Merge both test branches to singL...	5 days ago

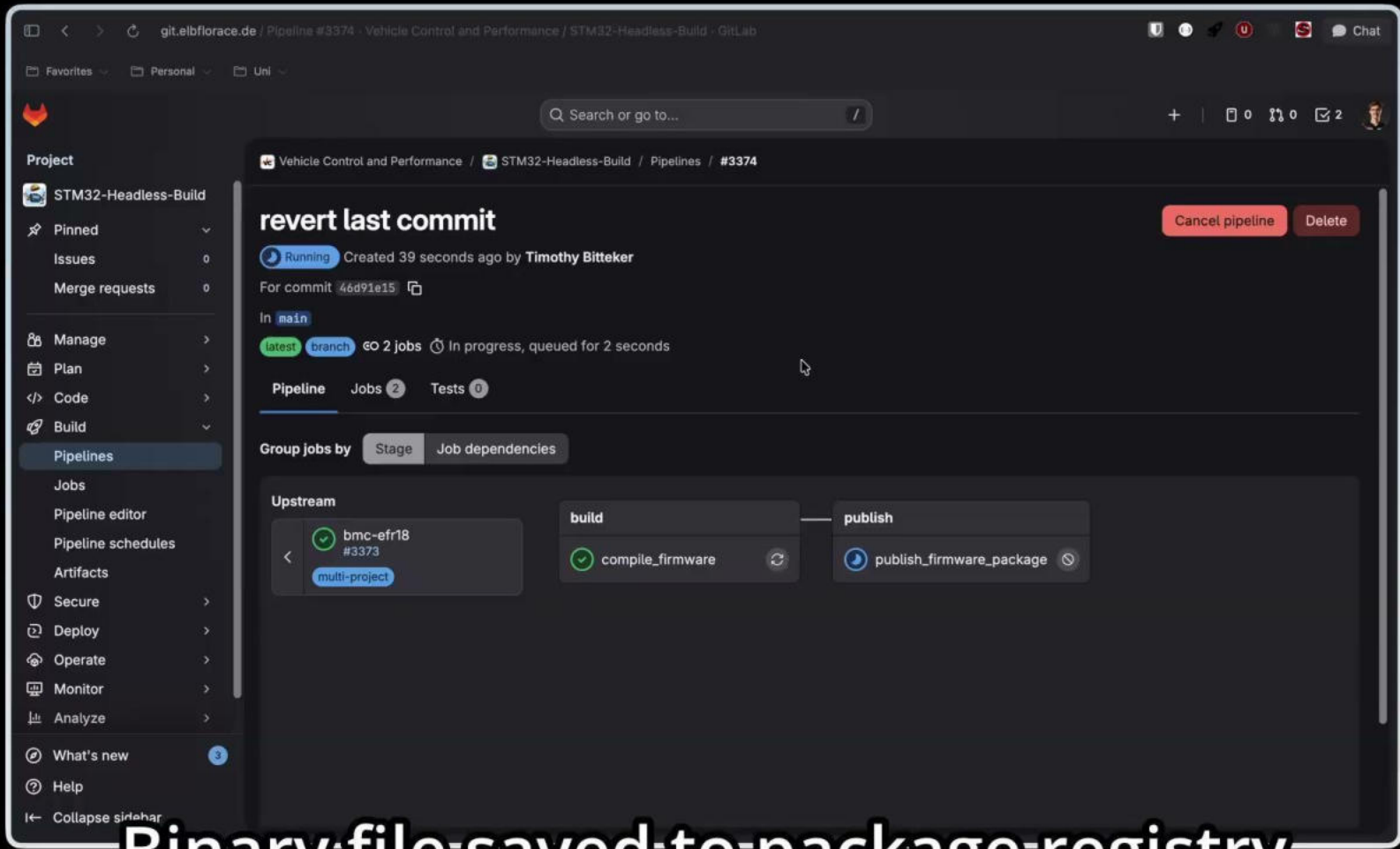
Project information

- 62 Commits
- 2 Branches
- 0 Tags
- 7.6 MiB Project Storage
- README
- CI/CD configuration
- + Add LICENSE
- + Add CHANGELOG
- + Add CONTRIBUTING
- + Add Kubernetes cluster
- + Configure Integrations

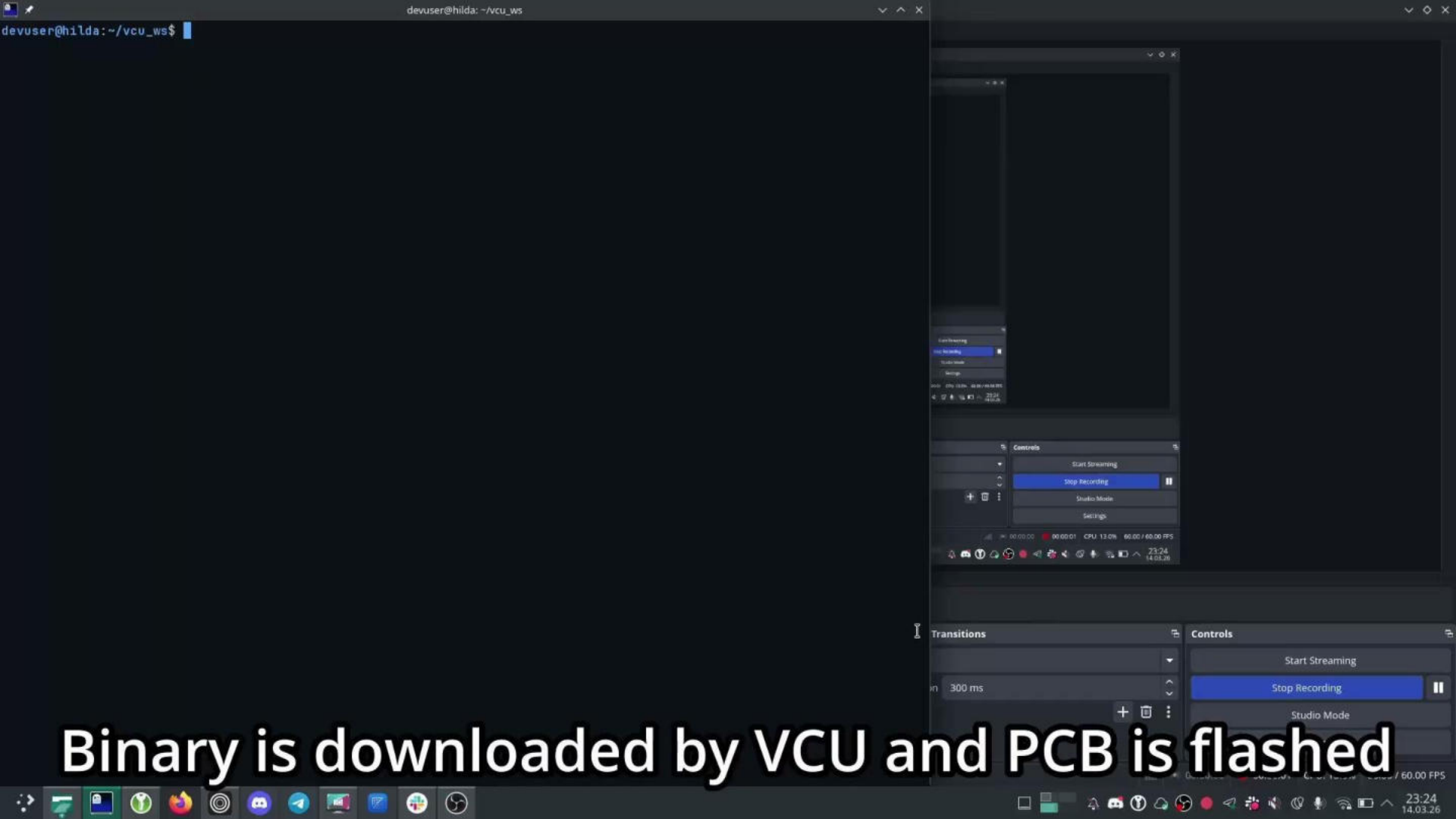
Created on
March 04, 2026

What's new
Help
Collapse sidebar

Compile-release-code



Binary-file-saved-to-package-registry



Binary is downloaded by VCU and PCB is flashed

Effects



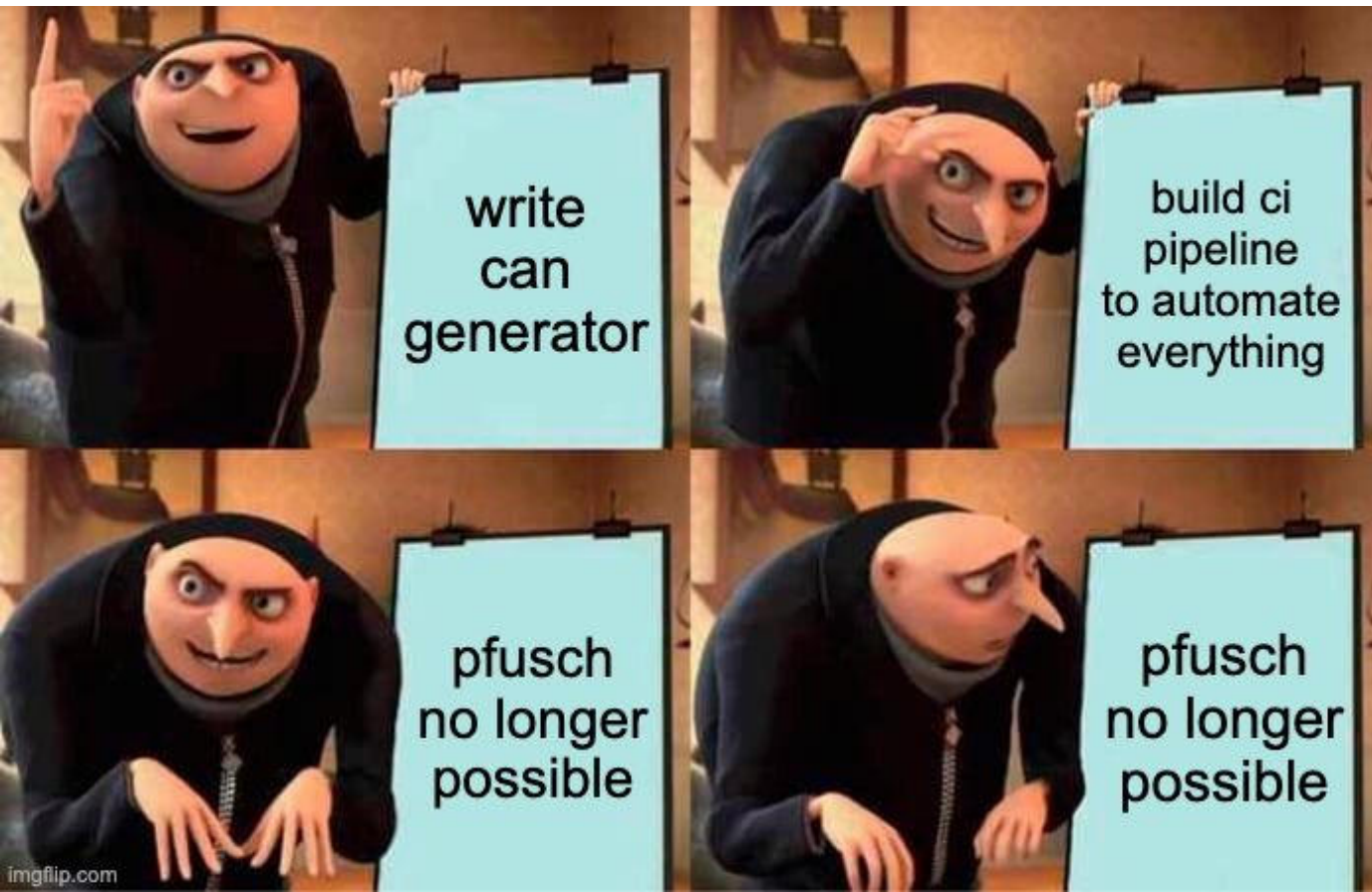
- No manual CAN implementation on PCB and VCU
- Fewer errors, more time for new features
- Developers always have access to the latest CAN version
- VCU and boards are always on the same CAN version



Effects



imgflip.com



Team Effort



- Lead Developer: Tim Bitteker
- Original DBCppify Developers
 - ◆ Pascal Petzold
 - ◆ Vincent Weinrich
 - ◆ Alice König
- Docker Integration
 - ◆ Marvin Jacob
 - ◆ Jonas Buschbeck
 - ◆ Max Meier
- Open BLT Integration
 - ◆ Jim Preußner (PCB)
 - ◆ Jonas Buschbeck (PCB)
 - ◆ Marvin Jacob (VCU)



Connect!



Connect with me

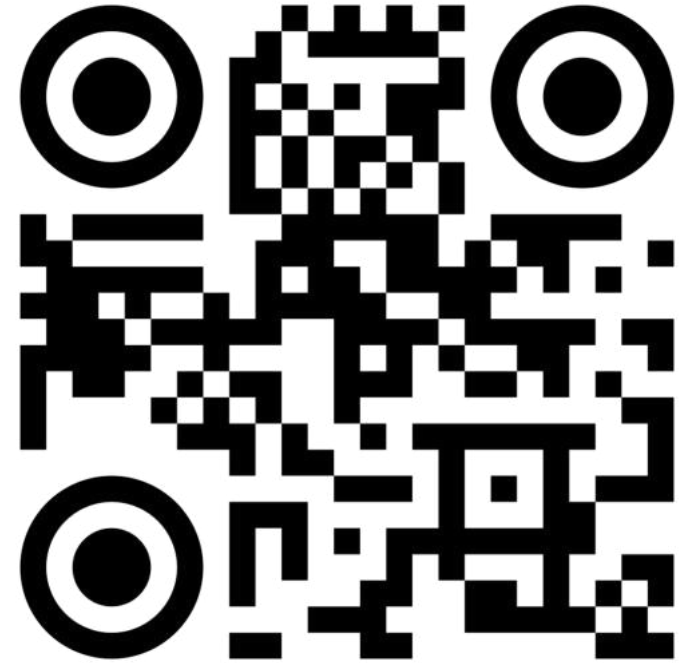


Foto: ©FSG : Kohler





Questions?

Feedback ->



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