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UEFI & EDK II Training

Open Source UEFI Platforms

tianocore.org

LESSON OBJECTIVE

- Chart the organization of the Tianocore.org repositories
- Recognize the various Open Source UEFI Platforms

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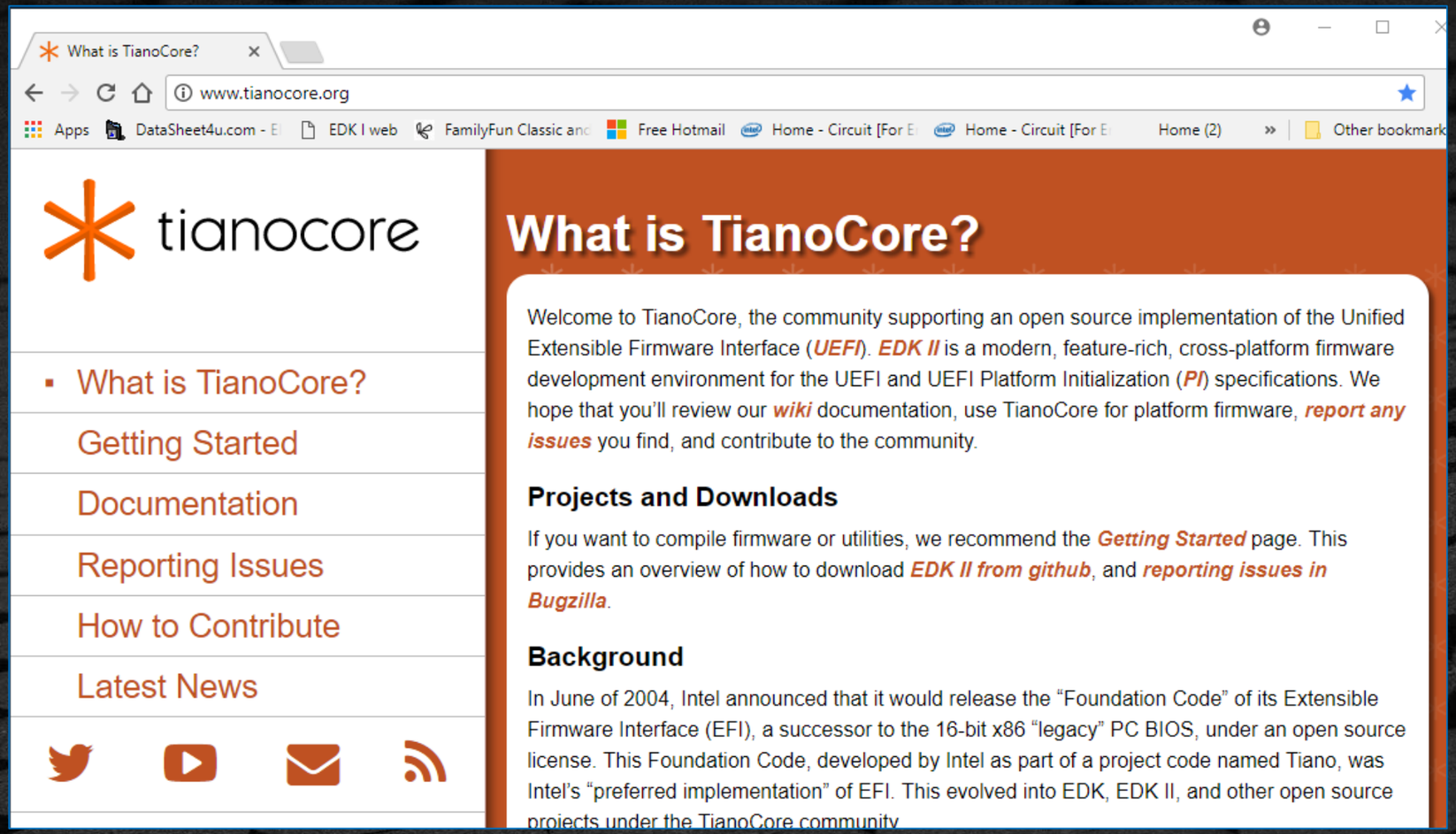

Platforms *Emulator*, *OVMF*, *ArmVirt*, *MdePkgHardware platforms*: *MinnowBoard Max/Turbot*, *Up Squared*, and *Intel® Galileo Gen 2*.

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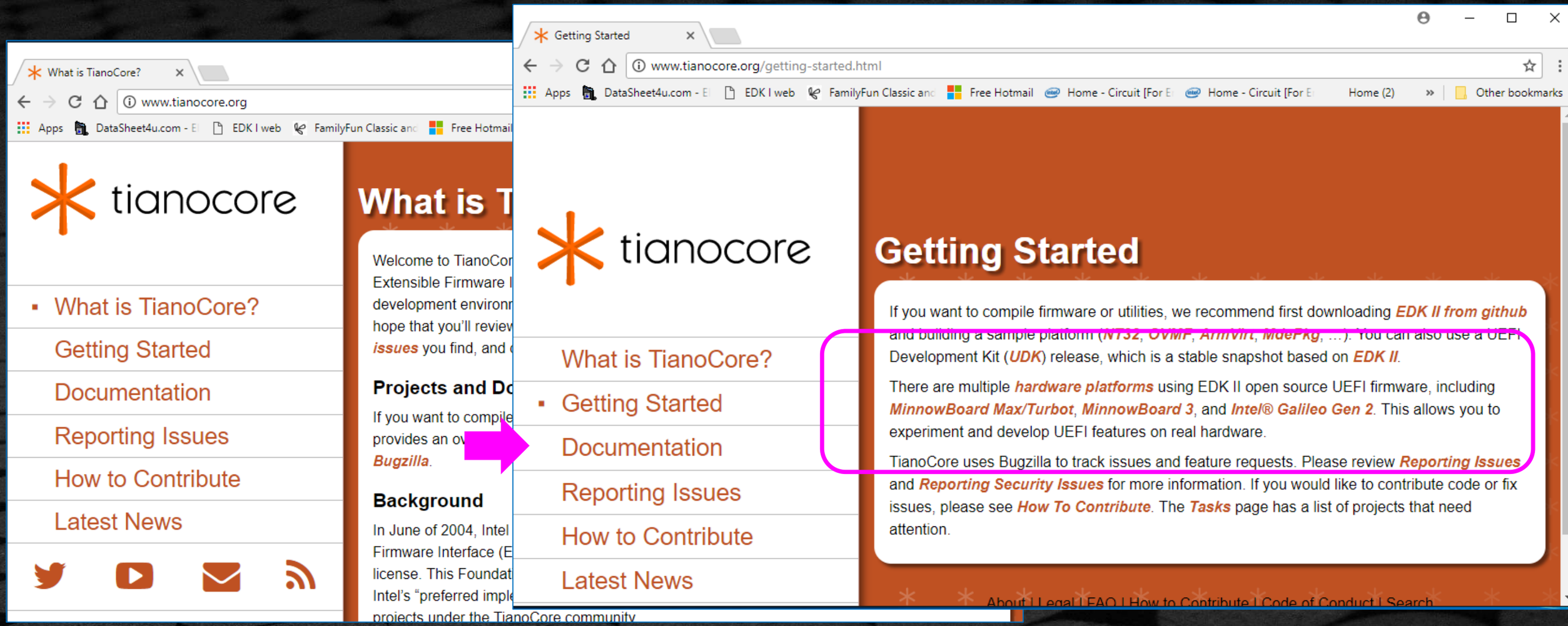

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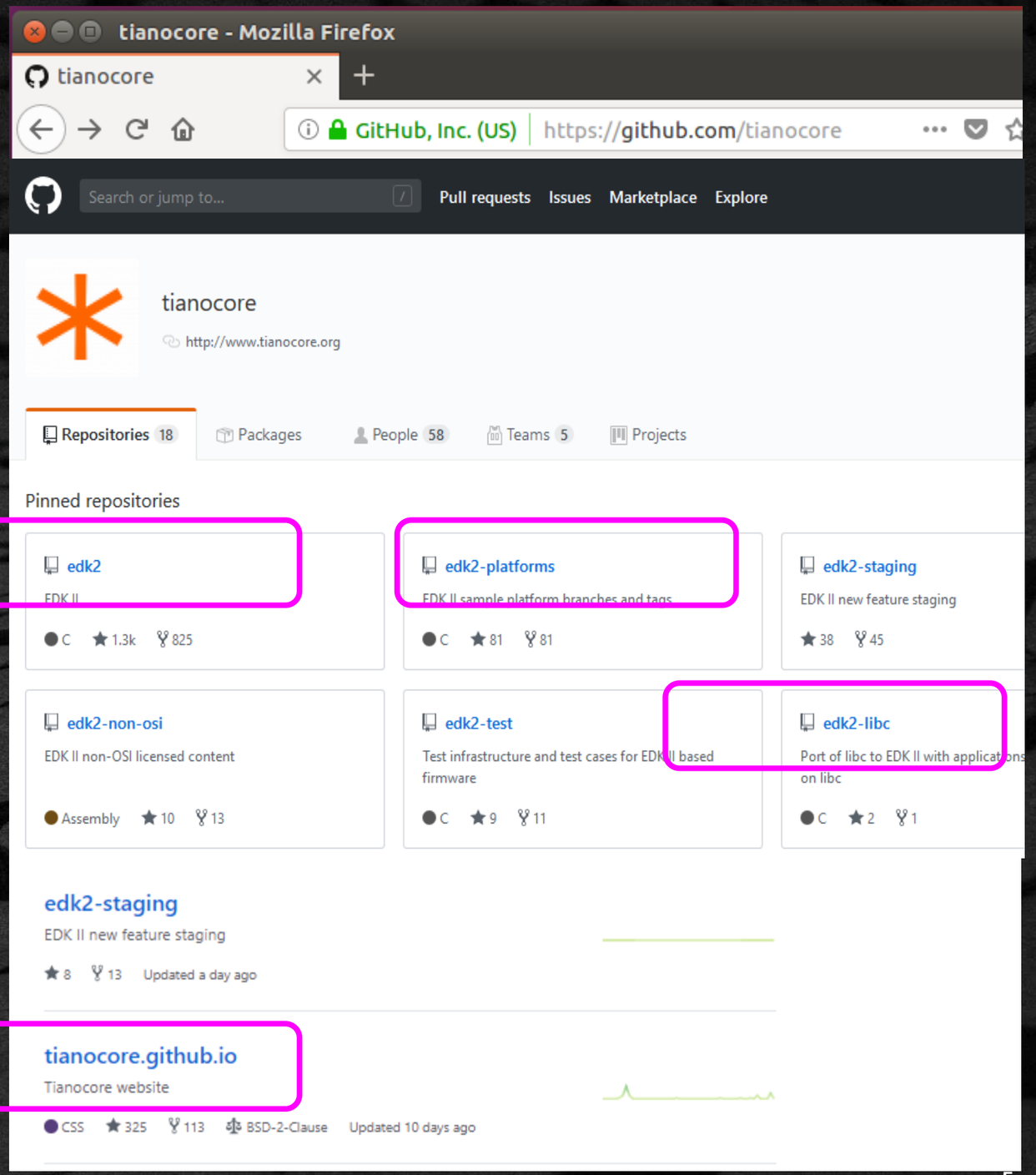
GitHub

Github/tianocore

Concept of Repositories

- Main development - `edk2`
- Online Info & Help (Wiki pages) `tianocore.github.io`
- Other platforms `edk2-platforms`
- “C” library for Apps - `edk2-libc`

- To download use “`git clone`” then “`git checkout`”



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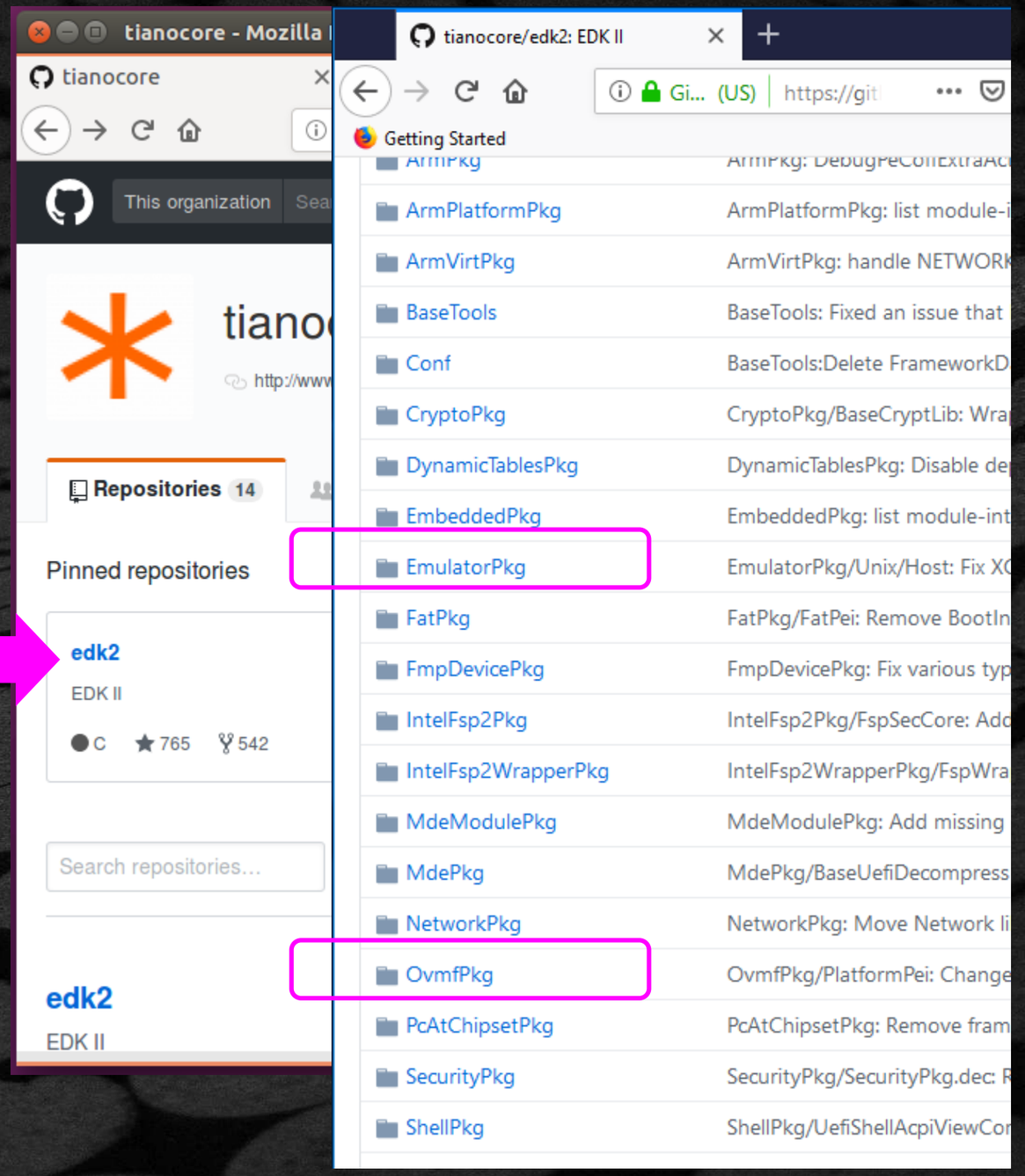
GitHub Tianocore.org

edk2 – Platforms on edk2- “**CORE**”

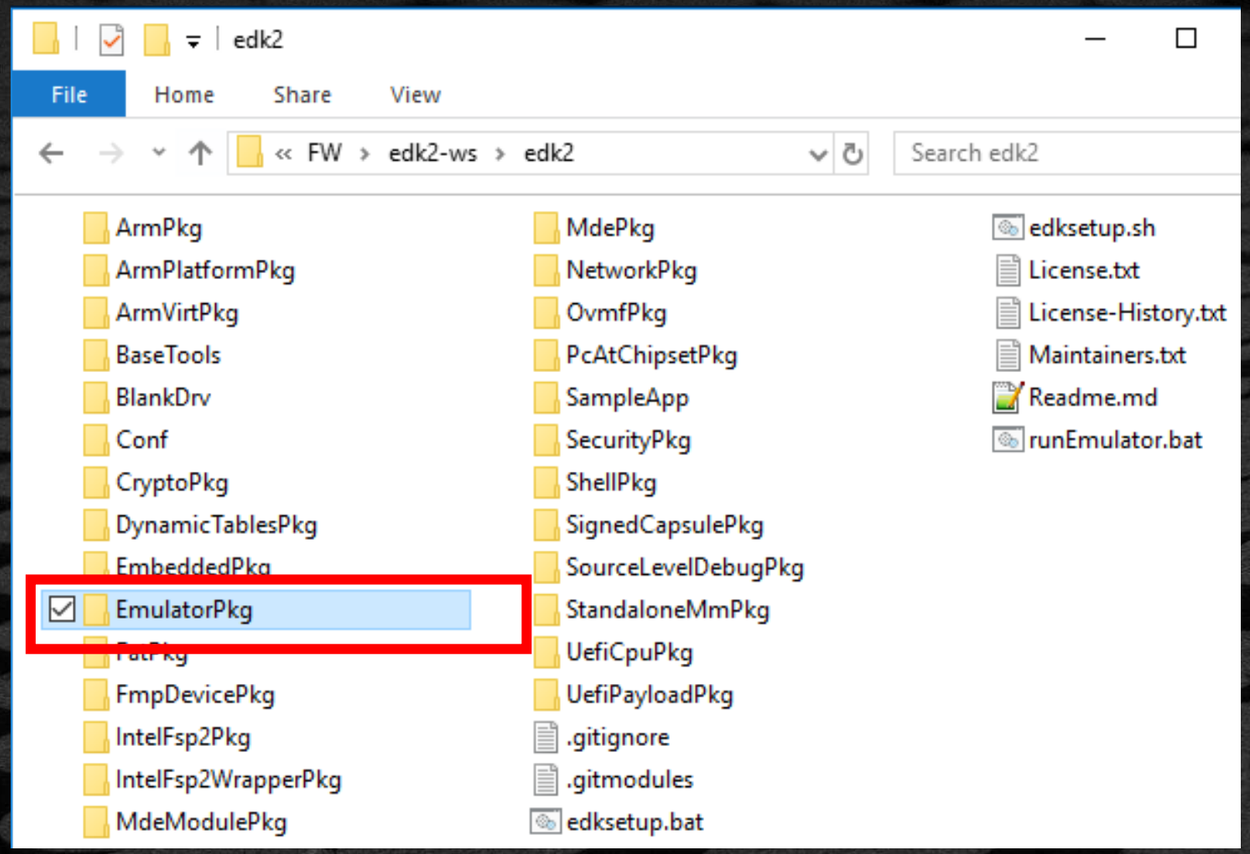
EmulatorPkg

OvmfPkg

See *Readme.md* files



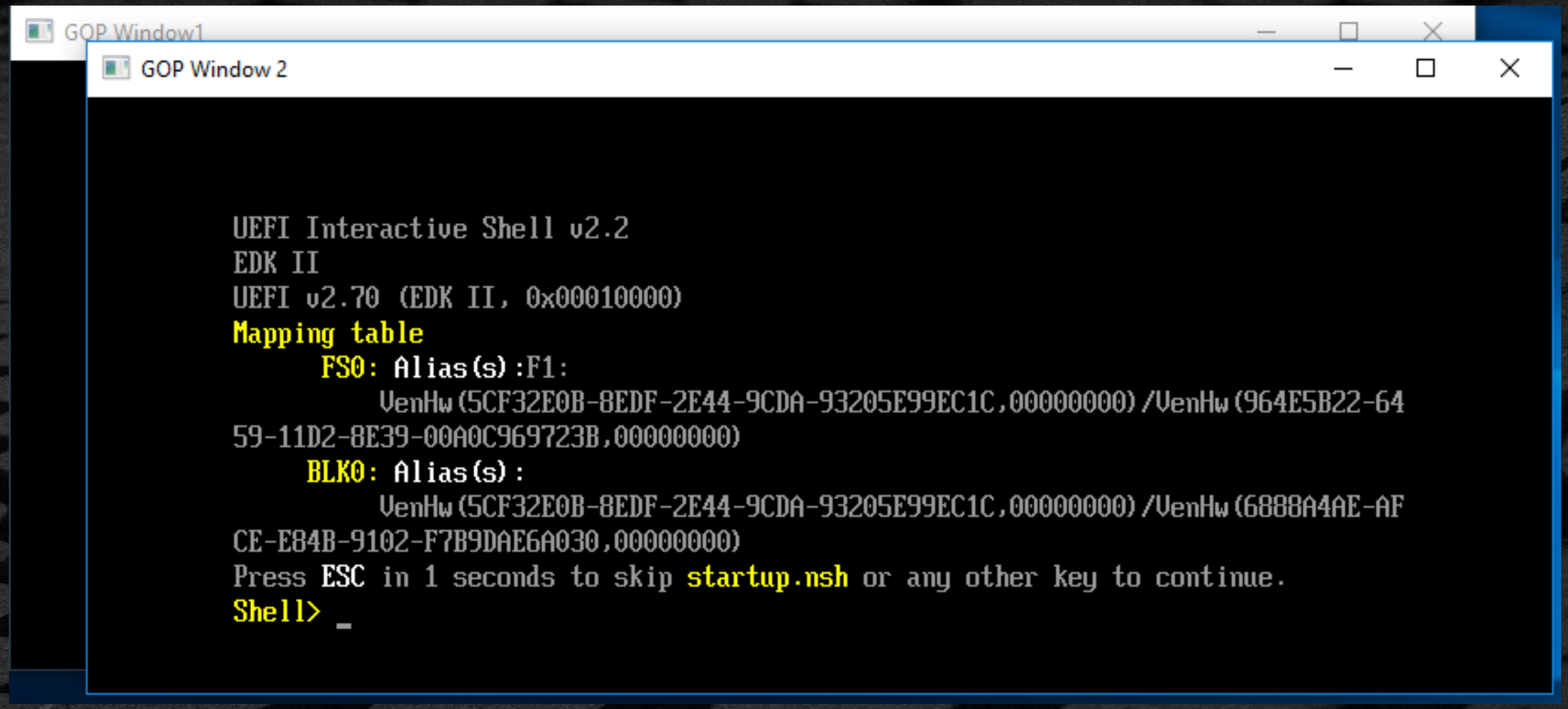
Emulation Directory Structure



EmulatorPkg files

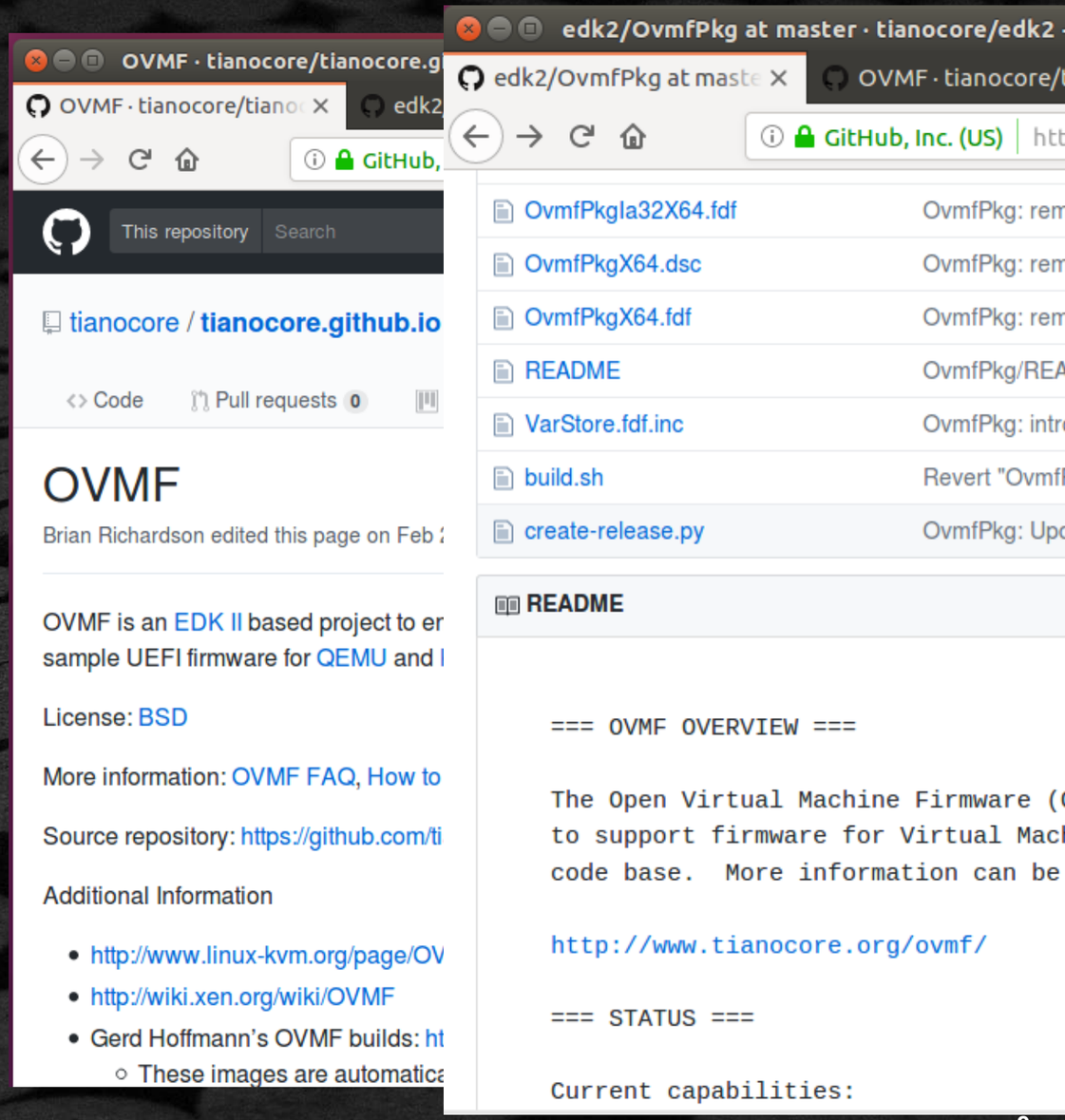
- ✓ EmulatorPkg.dsc
- ✓ EmulatorPkg.dec
- ✓ EmulatorPkg.fdf

Running Emulator with Windows



Open Virtual Machine Firmware (OVMF)

- Uses EDK II to support firmware in the OvmfPkg platform package
- Supports UEFI: Helps develop/debug drivers & applications
- QEMU VM; emulates IA32 (x86)/X64 (x86-64) based system
- Exit condition → UEFI Shell
- Tool Chain/OS Support
- Information Ovmf wiki, Tianocore.org



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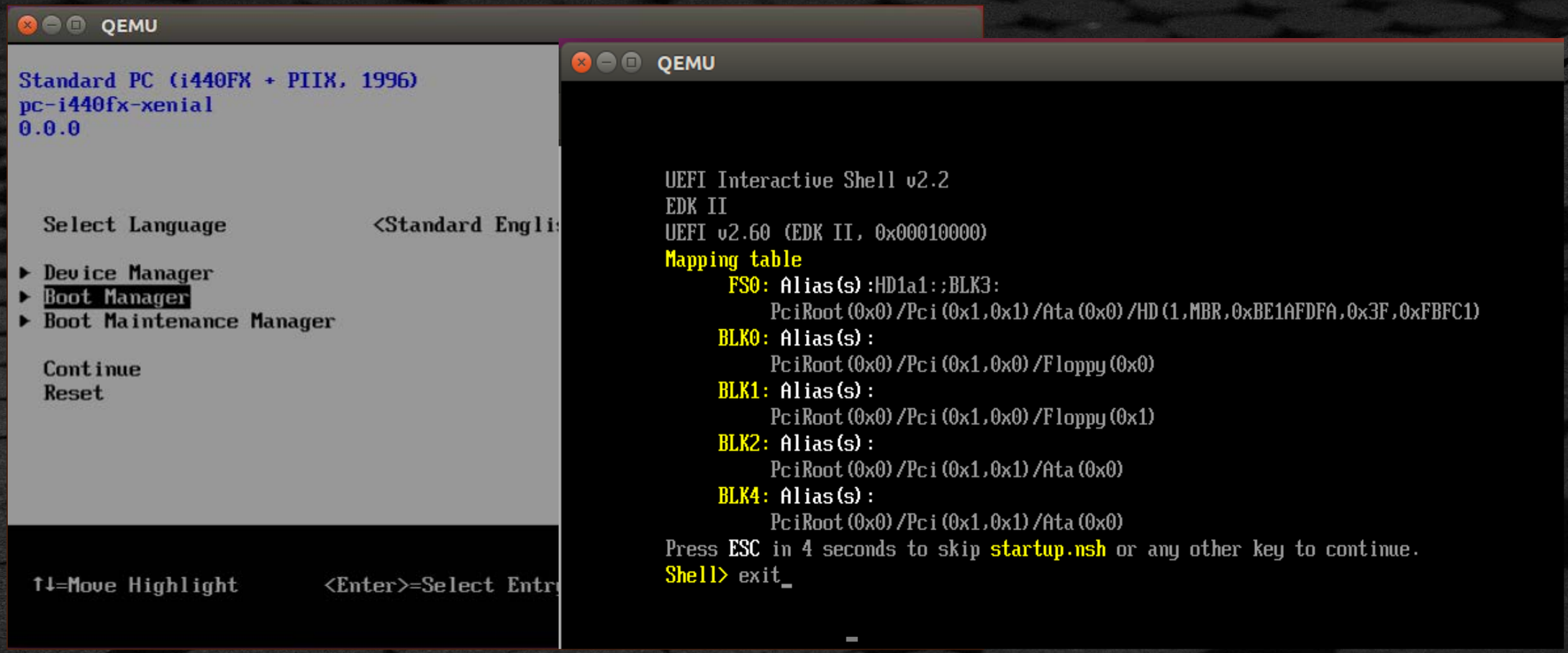
OVMF BIOS w/ QEMU

Boots to UEFI Shell

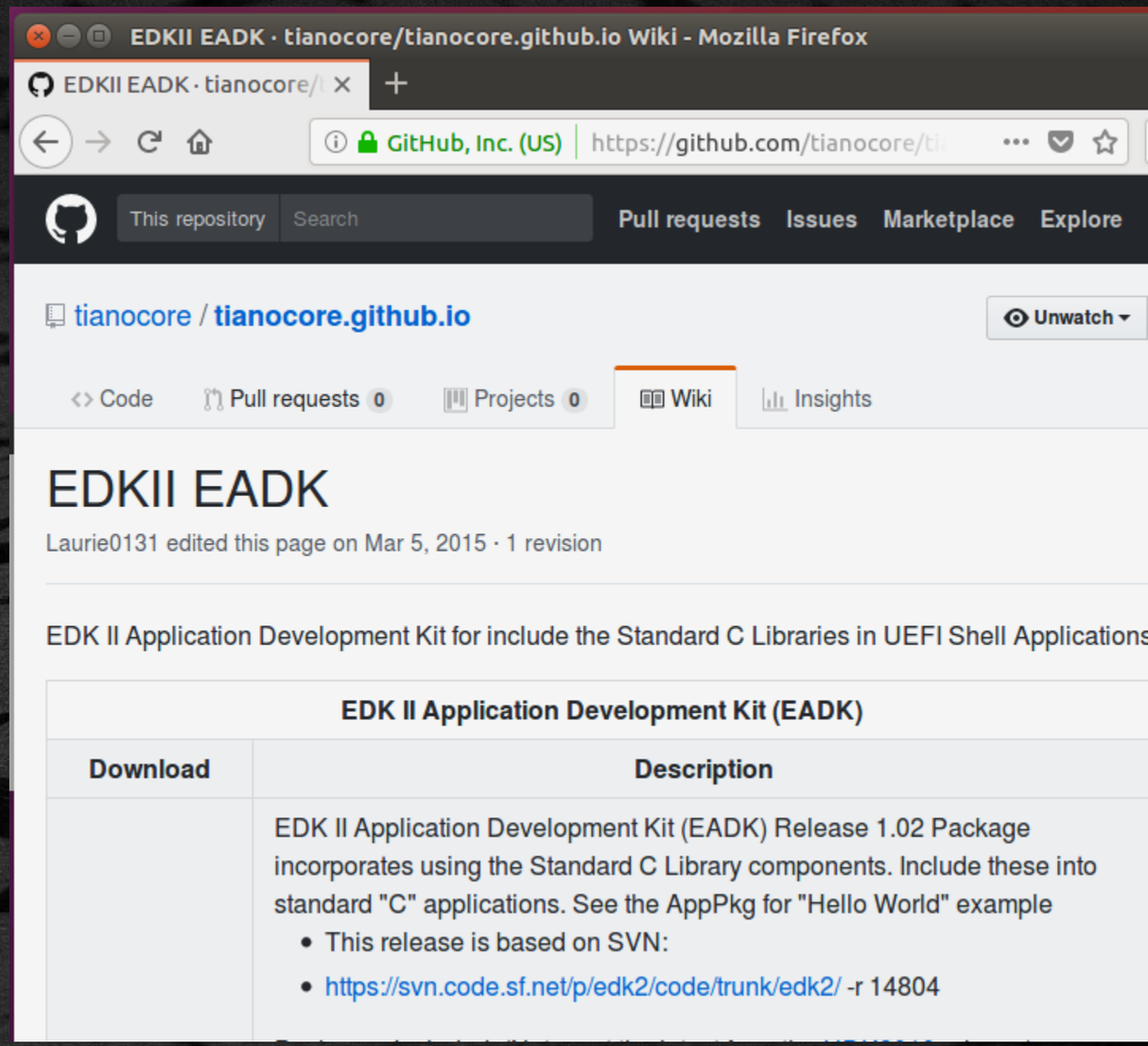


EDK II EADK

EDK II Application Development Kit includes the Standard “C” Libraries in UEFI Shell Applications

Link: wiki EADK

Github: edk2-libc



EDK II EADK COMPONENTS

EDK II Application Development Kit includes the Standard C Libraries in UEFI Shell Applications

- Components
  - Utilities (Python 2.7.2, & 2.7.10 etc.)
  - C Library
  - BSD Socket Library
  - Network Socket Library – Ipv4 / Ipv6
- Packages `/AppPkg`
  `/StdLib`

EDK II EADK – STANDARD ANSI C LIBRARY

FreeBSD Port ANSI/POSIX compliant

System I/O	- open(), read(), write(), close(), stat()
Standard I/O	- fopen(), printf(), gets(), getchar(),. . .
String/Char	- strcmp(), isascii(), atoi(), . . .
Memory	- malloc(), free(), realloc(),. . .
Time/Date	- time(), asctime(), ctime(), . . .
Math	- sqrt(), pow(), sin(), log(), . . .

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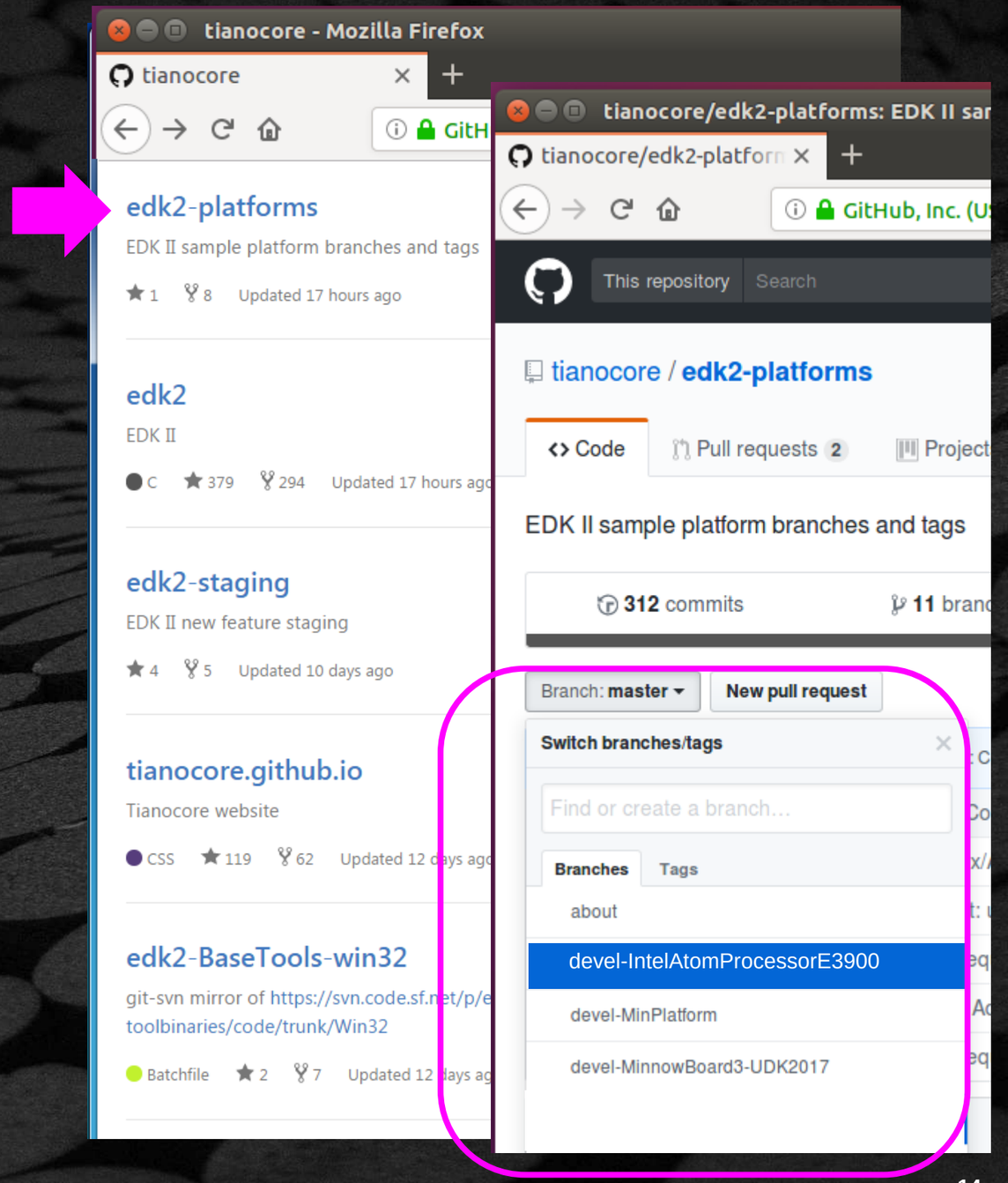
Platforms Tianocore.org

edk2-platforms – Platforms

- devel-IntelAtomProcessorE3900
  – Leaf Hill, Up Squared (Apollo Lake)
- Vlv2TbltDevicePkg
  – BayTrail-I
- MinPlatformPkg – (w/ FSP)
  - KabylakeOpenBoardPkg
  - WhiskeyLakeOpenBoardPkg
- How to build
  See *Readme.md* files



Slim BootLoader (SBL) Project

Fast & Secure Open source boot solution for IoT

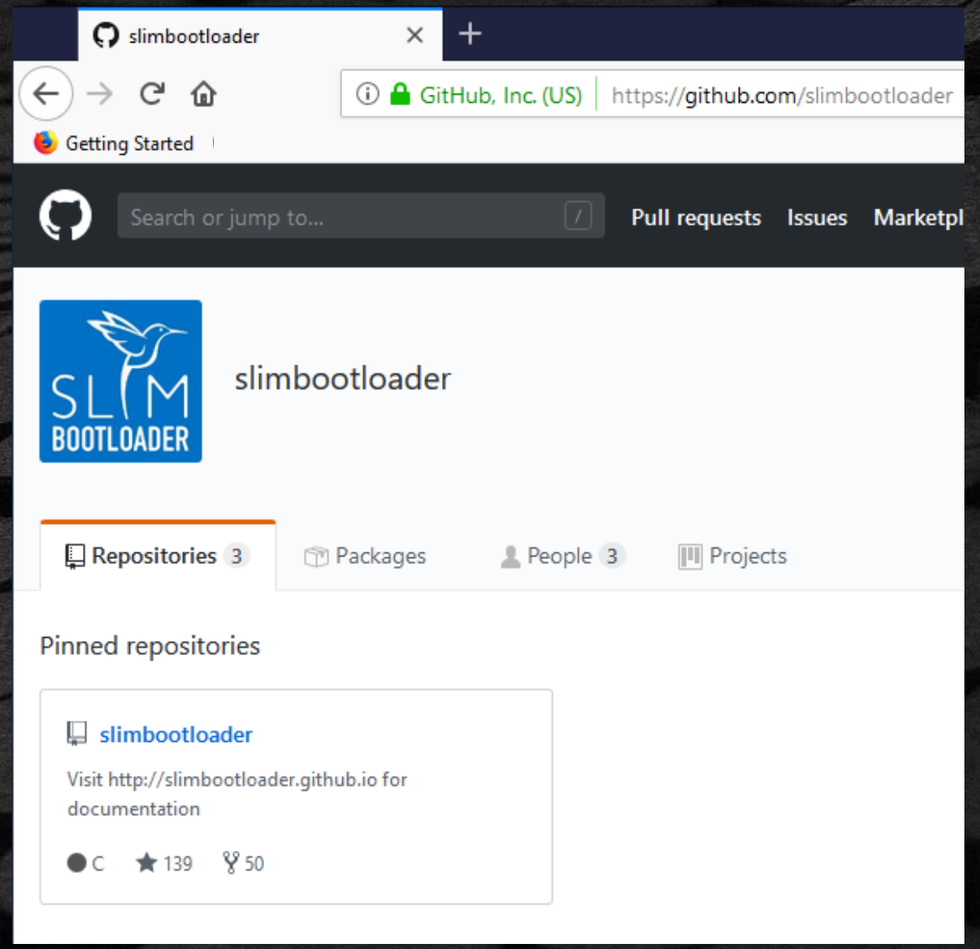
Use Cases

Github: https://github.com/slimbootloader

Supported Hardware:

- QEMU
- UP2 Board
- Apollo Lake CRB
- Whisky Lake CRB
- Coffee Lake Refresh CRB
- UP Xtreme Board

Documentation: Slim Bootloader Project



Intel® FSP Repository

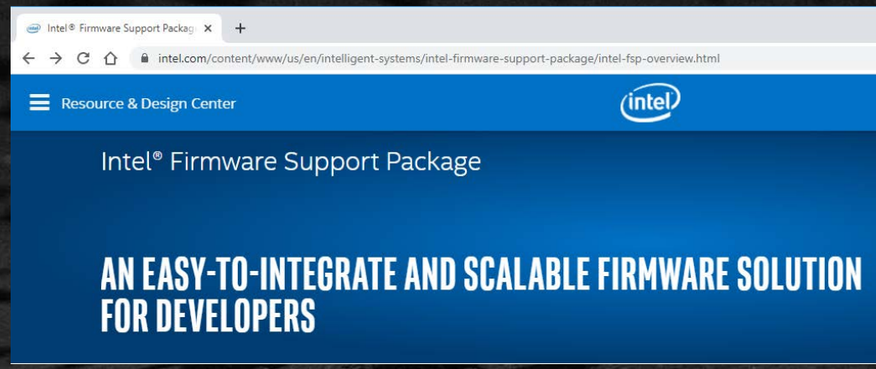
Intel Developer Zone Overview

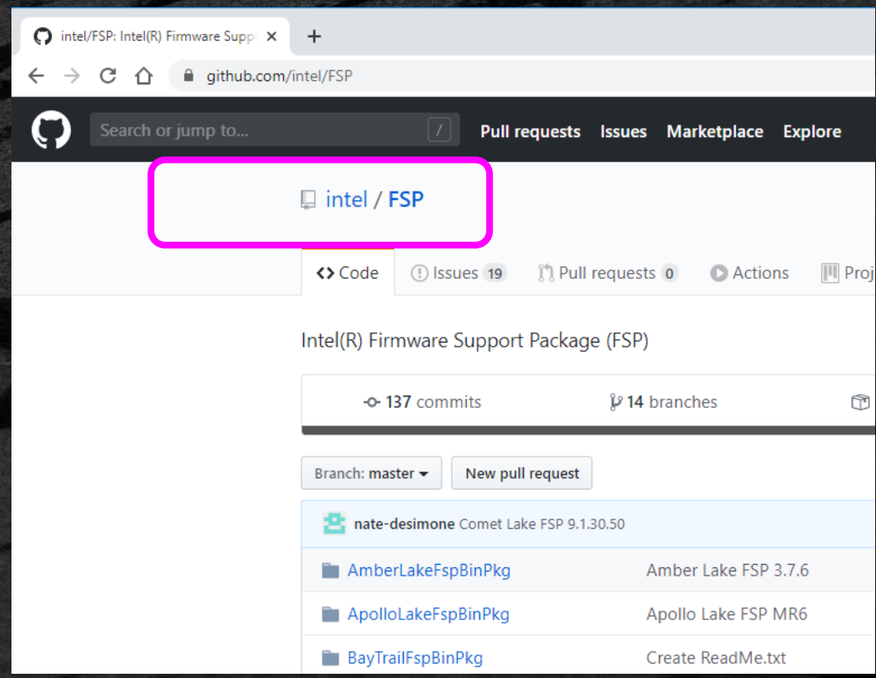
Repository of Intel FSP binaries posted by Intel on github:

Includes documentation on how to integrate with various platforms: https://github.com/intel/FSP

Wiki: https://github.com/intel/FSP/wiki

- current specifications





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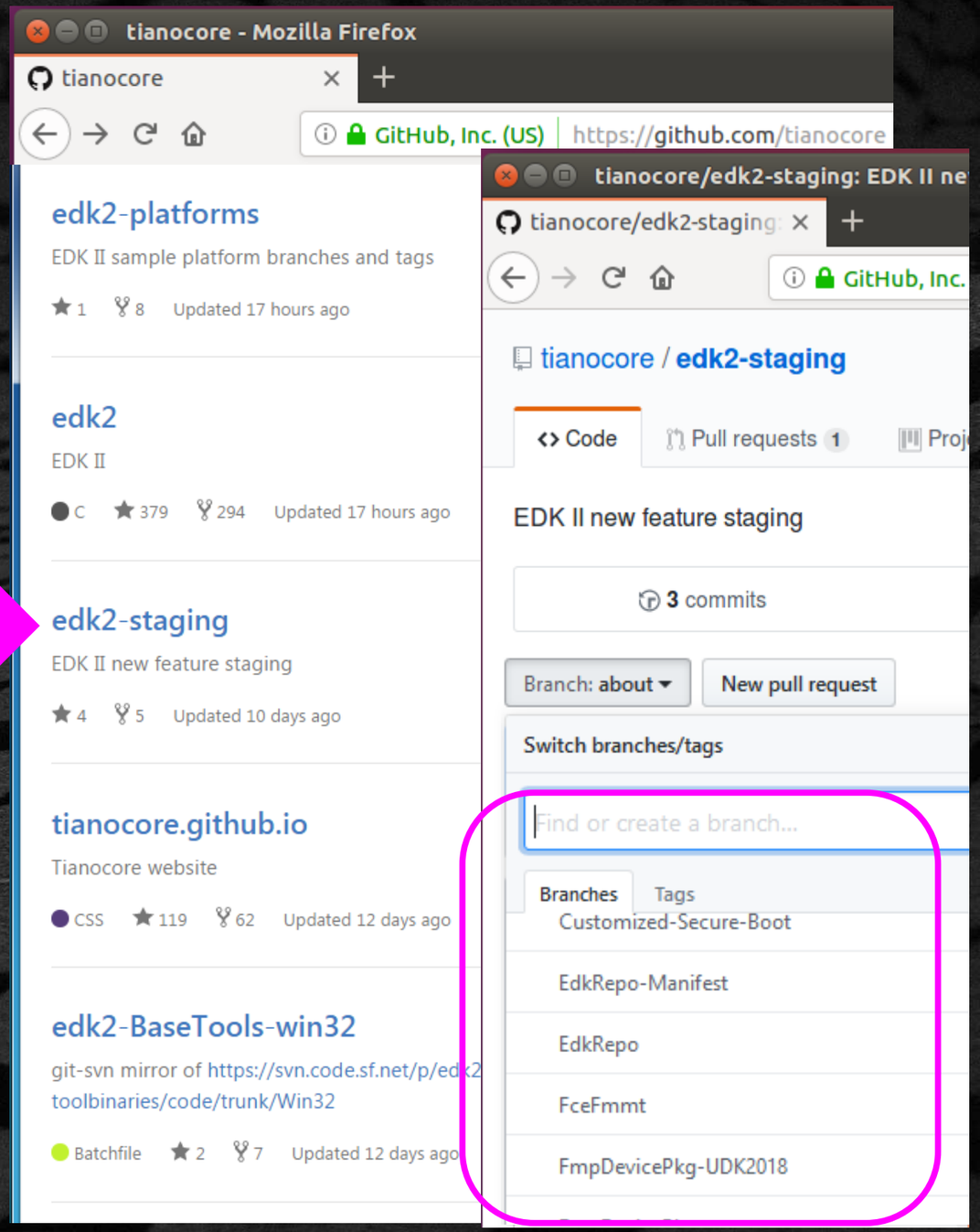
Implementations not yet Ready for EDK II Main edk2-staging

Projects on branches

- Host-based FW analysis (HBFA)
- edk2-host-test
- FceFmmt (FW Utils)
- UEFI_PCI_ENHANCE-2
- EdkRepo
- Cpu/6-level
- HTTPS-TLS
- RICS-V
- . . .

- See *Readme.md* files



SUMMARY

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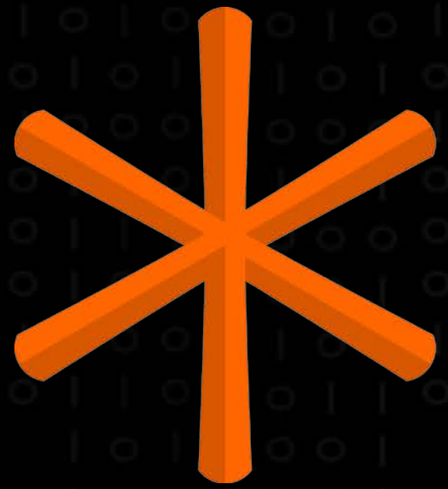

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Intel® Quark SoC X1000 Platform
Project EDK II

- Uses EDK II to support firmware
- QuarkPlatformPkg
  -Intel® Galileo Gen2
- How to Build: Quark Readme.md