

TianoCore – UEFI Open Source Community

Brian Richardson

Intel Corporation, Technical Evangelist

TianoCore, Community Evangelist

Agenda

- Introduction
- Recent changes
- Plans for the future
- Why is firmware so important?

Introduction

TianoCore - UEFI Open Source Community



Supporting EDK II, a
BSD open source
UEFI implementation

Mission

- Improve contribution
- Increase code quality
- Provide regular updates
- More end-to-end solutions

Vision

- A more active EDK II developer community
- Decisions based on community feedback

Improving on BIOS concepts

The Good

- Abstraction for the OS/app layer
- Expansion cards carry their firmware drivers (Option ROM)
- Ubiquitous

The Bad

- x86 16-bit model
 - Not extensible
 - Not standardized
 - Not open
- } * tianocore



“We have a
solution ...
why don't we
just patch it?”

Depiction of the speaker's five years
as an x86 assembly programmer





Standards Matter

Latest Specifications

Unified Extensible Firmware Interface (UEFI) v2.6

Advanced Configuration & Power Interface
(ACPI) v6.1

UEFI Platform Initialization (PI) v1.4

UEFI PI Packaging v1.1

UEFI Shell v2.2

Recent changes

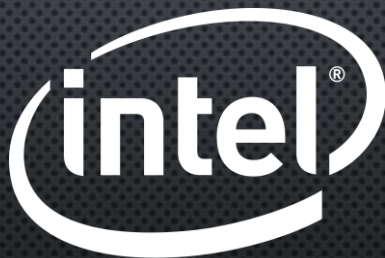
TianoCore - UEFI Open Source Community

Governance

Andrew
Fish



Michael
Kinney







Leif
Lindholm







Transition to git







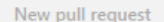


 tianocore / edk2


 Watch 119  Star 304  Fork 255






 Code  Pull requests 0  Pulse  Graphs

EDK II <http://www.tianocore.org/edk2/>

 19,943 commits  8 branches  0 releases  105 contributors

Branch: master   Find file  Clone or download

 leiflindholm OptionRomPkg: .dsc fixes for ARM/AARCH64 and USB drivers ... Latest commit acc3a37 5 days ago

 AppPkg	AppPkg/.../Python: Clean up and document how to escape the -# option.	8 months ago
 ArmPkg	ArmPkg/ArmGicLib: use correct loop variable	6 hours ago
 ArmPlatformPkg	ArmPlatformPkg/NorFlashDxe: use strictly aligned CopyMem()	9 hours ago
 ArmVirtPkg	ArmVirtPkg: restrict mapping attributes of normal memory to EFI_MEMOR...	2 days ago
 BaseTools	BaseTools/EfiRom: supply missing machine type lookup strings	13 hours ago

Staging branch workflow

- <https://github.com/tianocore/edk2-staging>
 - Branch maintainers sync to edk2/master
 - Use edk2 review to submit branch to master
- Main branch is focused on product quality

UEFI FAT license

- Very big deal for Linux, ovmf & aavmf
- As of March 2016, Microsoft removed the 'use clause' from UEFI FAT sources
- FatPkg/FatBinPkg now under 2-clause BSD with no field of use restriction

LLVM/Clang & GCC

- EDK II now enables link time optimization (LTO) for LLVM Clang 3.8 & GCC 5.3
 - Good example of community collaboration
- Enables a platform for code analysis tools
 - Ex: <http://clang-analyzer.llvm.org/>
- Validated on Linux

Binary Sizes vs VS2015

	GCC5	CLANG38
PEIFV	26%	-15%
DXEFV	4%	-4%
FvMainCompact	2%	0%

EDK II OVMF
x64

	GCC5	CLANG38
FVRECOVERY	5%	6%
FVMAIN	5%	16%
FvMainCompact	9%	15%

Intel® Galileo
IA32

bugzilla.tianocore.org

- For core/platform issues & requests
- Security issues follow a special process

<https://github.com/tianocore/tianocore.github.io/wiki/Reporting-Security-Issues>

1. Never use e-mail to discuss a security issue
2. Use Bugzilla (“Tianocore Security Issues”)
3. *Never use e-mail to discuss a security issue*

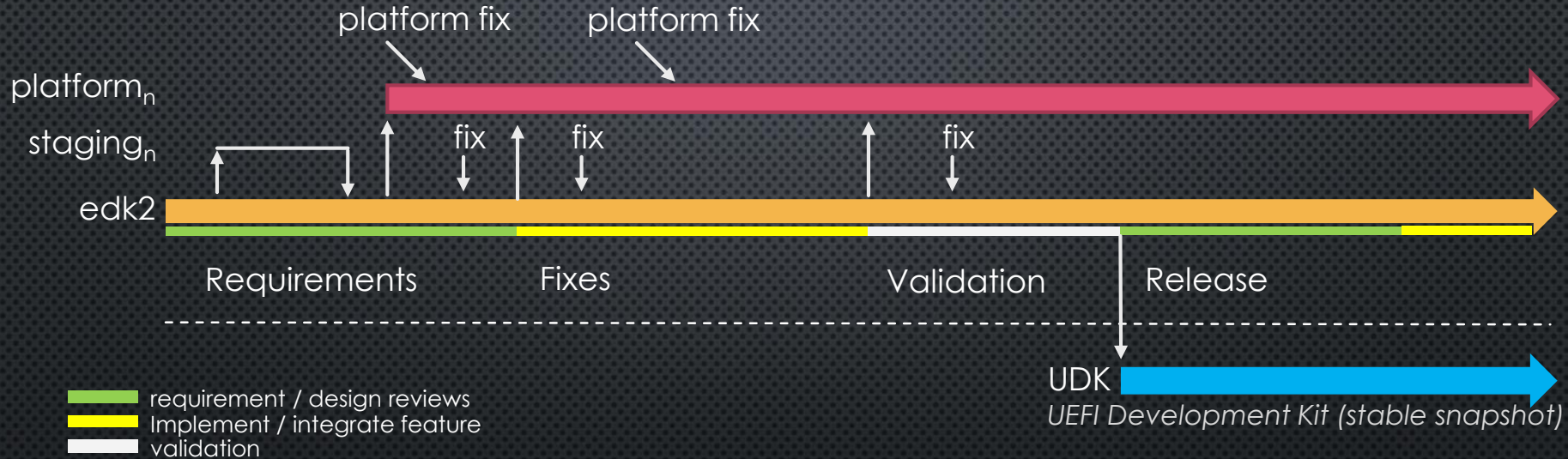
Plans for the future

TianoCore - UEFI Open Source Community

Plans for the future

- Improve website structure and content
- Add open test cases for edk2
- More emphasis on open platforms
- Releases on a regular cadence

Release Management



UDK2017 Highlights (Q1 2017)

UEFI 2.6 Features

- eMMC/SD Stack
- MemoryAttributesTable
- IPv6 HTTP Boot
- RamDisk
- URI Configuration

UEFI PI 1.4a Errata

EDK II Implementation

- OpenSSL 1.0.2h
- Transition to NASM
- CPU MP init library

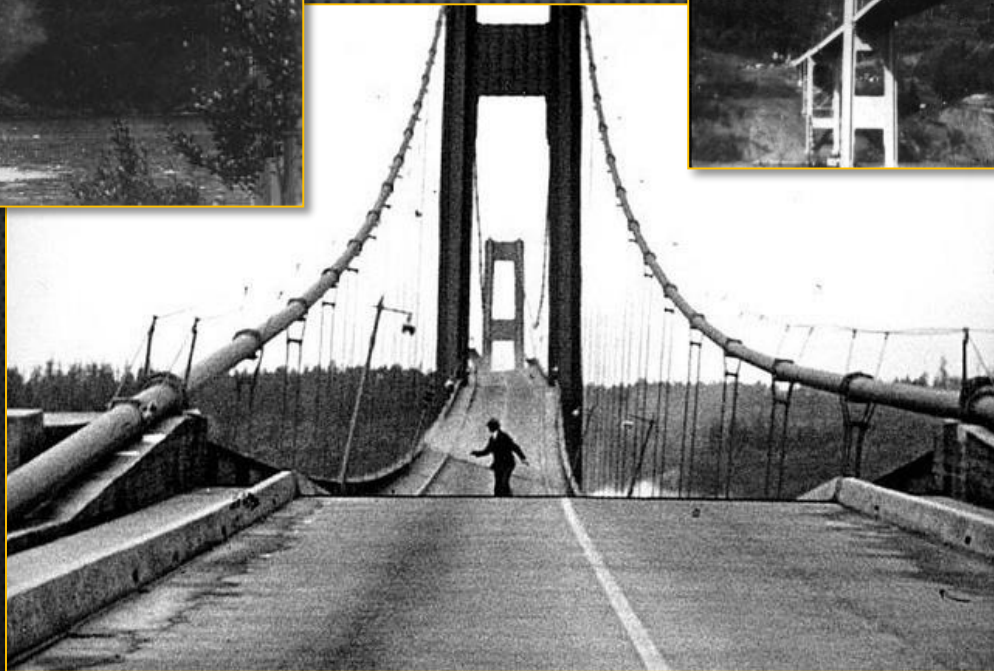
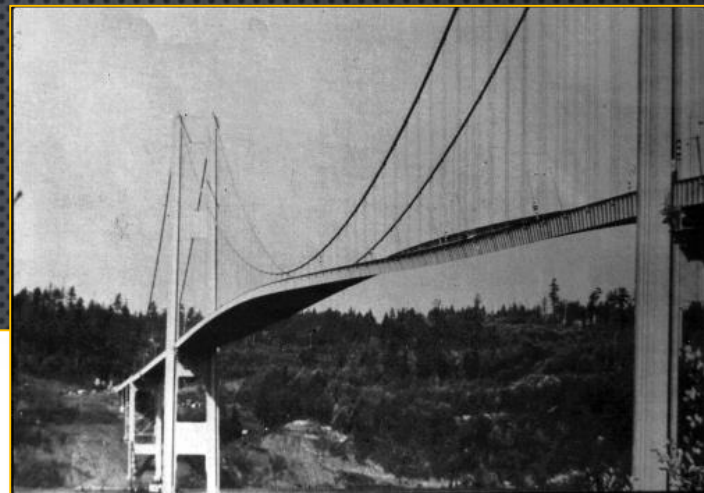
Why is firmware so important?

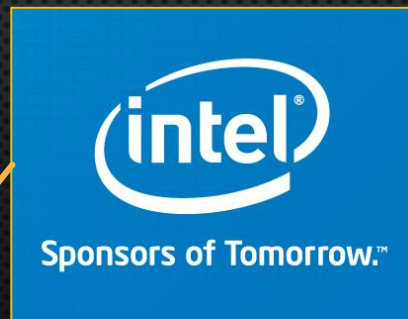
TianoCore - UEFI Open Source Community

It's not really about
building standards ...
It's about building
infrastructure

Tacoma Narrows Bridge











LINUX PLUMBERS CONFERENCE

November 1-4, 2016, Santa Fe, New Mexico, USA

ANIL DASH A BLOG ABOUT MAKING CULTURE

[ABOUT](#)[BEST OF](#)[MOST POPULAR](#)[MORE »](#)

Molly Sauter
@OddLetters



Follow

Seriously, "rock stars" are arrogant narcissists.
Plumbers keep us all from getting cholera.
Build functional infrastructure. Be a plumber.

RETWEETS

2,014

LIKES

3,055



1:36 PM - 17 Jun 2016



2K



3.1K



THE BLUE COLLAR CODER

Much of the conversation about the shortage of technology talent in the United States focuses on how we can encourage more young people to go to college to become Computer Science graduates. Those programs are admirable and should be encouraged, but I suggest we need to focus on some other key areas in order to encourage the sustainability of our tech industry:

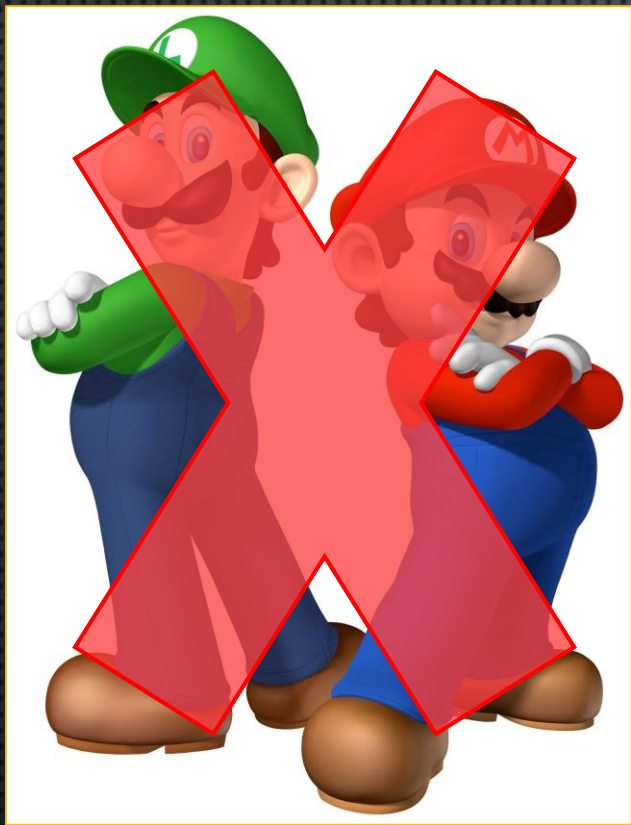
- Education which teaches mid-level programming as a skilled trade, suitable for apprenticeship and advancement in a way that parallels traditional trade skills like HVAC or welding
- Less of a focus on "the next Zuckerberg", in favor of encouraging solid middle-class tech jobs that may be entrepreneurial, but are primarily focused on creating and maintaining technology infrastructure in non-tech companies

“ FIRMWARE ISN'T SEXY.
IT'S PLUMBING. ”

Me (just now)







“

FIRMWARE ISN'T SEXY.
IT'S PLUMBING.

”

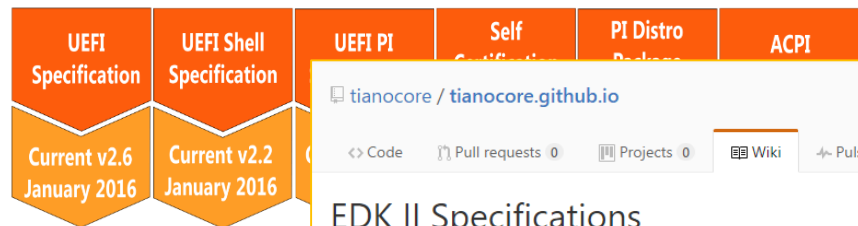
Like plumbing, firmware
works best as a solid,
standardized framework.

[Home](#)

SPECIFICATIONS AND TOOLS

UEFI SPECIFICATION AND TEST TOOL STATUS DIAGRAM

The following diagram shows the current statuses and revisions of the UEFI specifications and test tools.



[tianocore](#) / [tianocore.github.io](#)

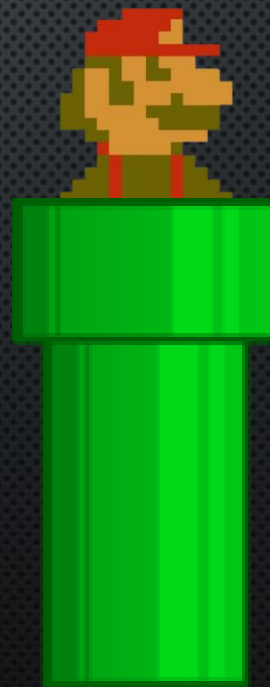
[Code](#) [Pull requests 0](#) [Projects 0](#) [Wiki](#) [Pulse](#) [Graphs](#)

EDK II Specifications

Laurie Jarlstrom edited this page a day ago · 23 revisions

EDK II Specifications

EDK II Specifications	
Specification Download	Description
FDF Draft PDF	EDK II FDF File Spec v1.27 DRAFT for Review- This document describes the EDK II Flash Description (FDF) file format. This format was designed to support new build requirements of building EDK and EDK II modules within the EDK II build infrastructure. The EDK II Build Infrastructure supports generation of current Unified EFI, Inc. (UEFI 2.6 and PI 1.4) compliant binary images. The FDF file is used to describe the content and



So ... In Summary ...

TianoCore - UEFI Open Source Community

So ... In Summary ...

1. TianoCore is making UEFI more open
2. We want your contributions to EDK II
3. It's OK to be a plumber *(most of the time)*





tianocore

www.tianocore.org
@tianocore