Software-Enabled Flash™

TSC Meeting April 14th, 2022

THE LINUX FOUNDATION

Software-Enabled Flash Project - TSC Meeting Agenda – April 14, 2022

1. **Welcome [5 min]**
2. **Introduction and timeline [20 min]**
3. **Getting involved: [10 min]**
4. **Open discussion [15 min]**
5. **Tentative date for next TSC meeting**

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- Full code text
  - https://lfprojects.org/policies/code-of-conduct/

Flash needs to be Software Defined

Software-Enabled Flash™

Software-Defined flash storage innovation

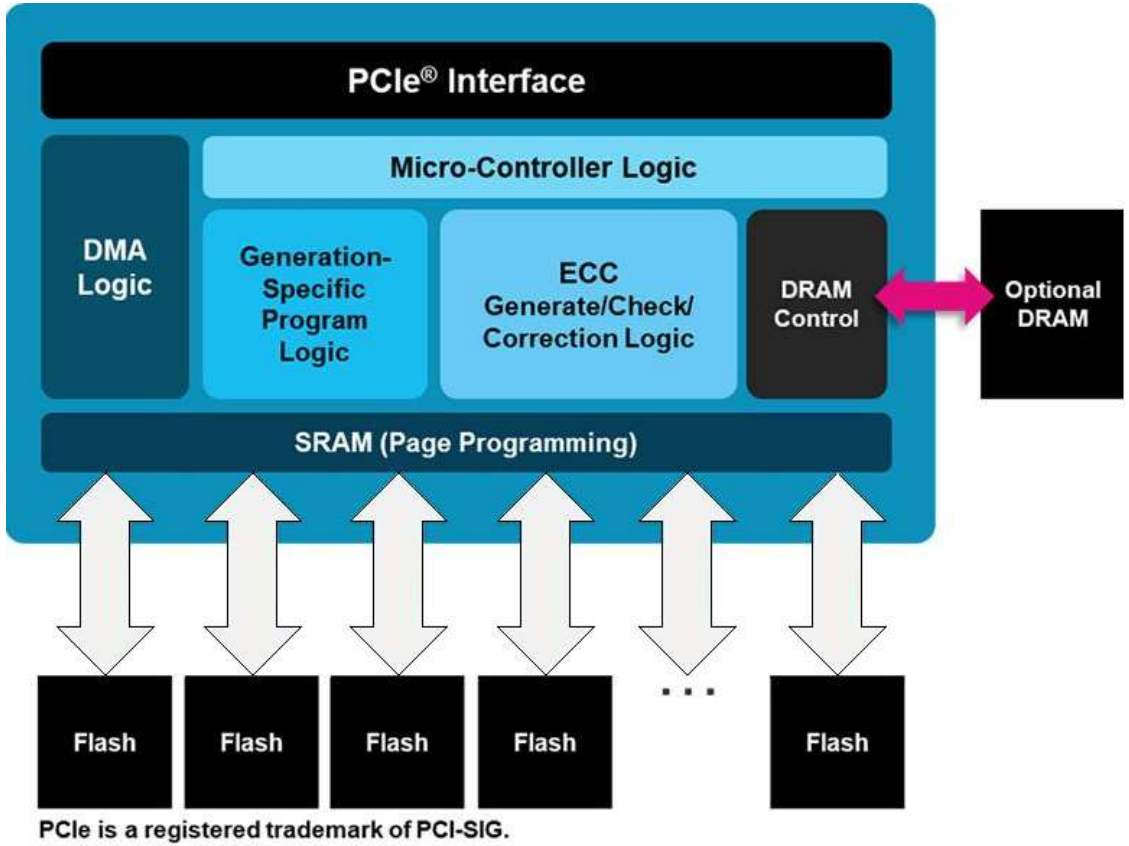
- Shed the legacy HDD device paradigm
- Define protocols through a software API
- Adapt and customize flash to your storage requirements
- Easily change protocols with a simple driver change
- Develop customized implementations internally

A powerful way forward for flash.

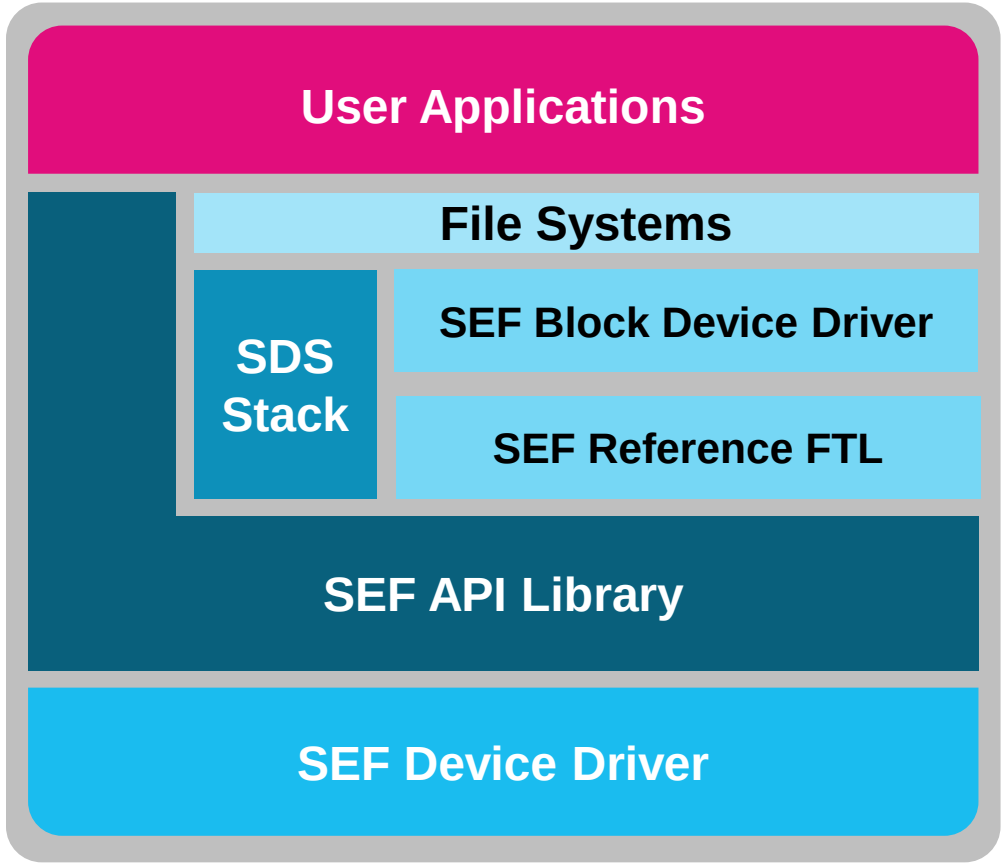
Hardware Engineered for Software Defined Flash

Flash-centric controller focused on delivering optimal control for modern applications.

- **Multiple vendors can deliver device hardware optimized for their unique flash using the API**
- **Flash generations are abstracted to simplify TTM for each new generation of flash**



Software built for Open Source Collaboration



Open source API and SDK providing vendor independent, application focused functionality.

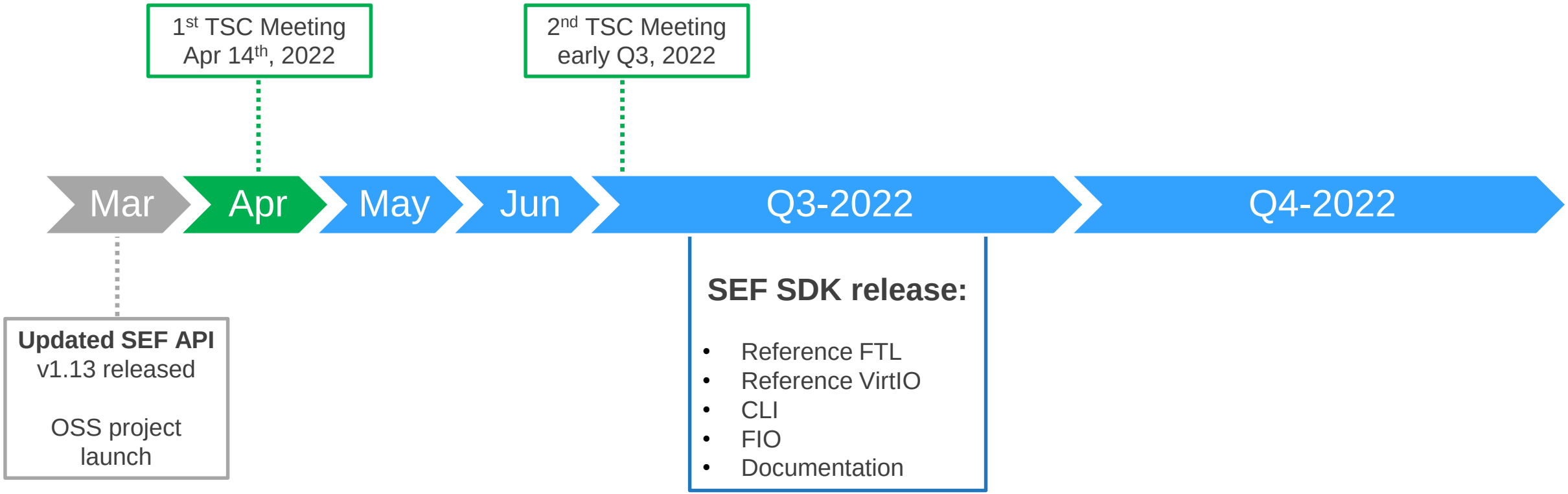
- User control over data placement
- Workload / tenant data isolation
- Latency outcome control
- Multiple drive protocols in software

What is in the SDK

- **SEF SW Development Kit**
  - **SEF Library**
  - **SEF reference FTL**
  - **SEF CLI**
  - **SEF FIO**
  - **SEF QEMU Block driver + ZNS**
  - **NVMe Driver / IO_URING enhancements**
- **Documentation**
  - **SEF API specification**
  - **SDK document**
  - **SEF command set specification**

SDK enables developers to evaluate and test Software-Enabled Flash™ without writing a single line of code

Project Timeline



Governance Model for Software-Enabled Flash

Collaboration Resources

- **GitHub**
  - https://github.com/SoftwareEnabledFlash/
  - https://github.com/SoftwareEnabledFlash/TSC/
- **Online API Docs**
  - https://softwareenabledflash.github.io/SEF-API/
- **Mailing List**
  - https://lists.softwareenabledflash.org/g/sef-dev/join

https://softwareenabledflash.org

Possible Application Ports

- RocksDB
- File Systems (EXT4? ZFS?)
- MySQL (MyRocks?)
- ???

Potential Hardware Extensions

- Computational Storage Extensions
  - In-accelerator SEF?
- On-device RAID
- Peer to Peer RAID-acceleration
- ???

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