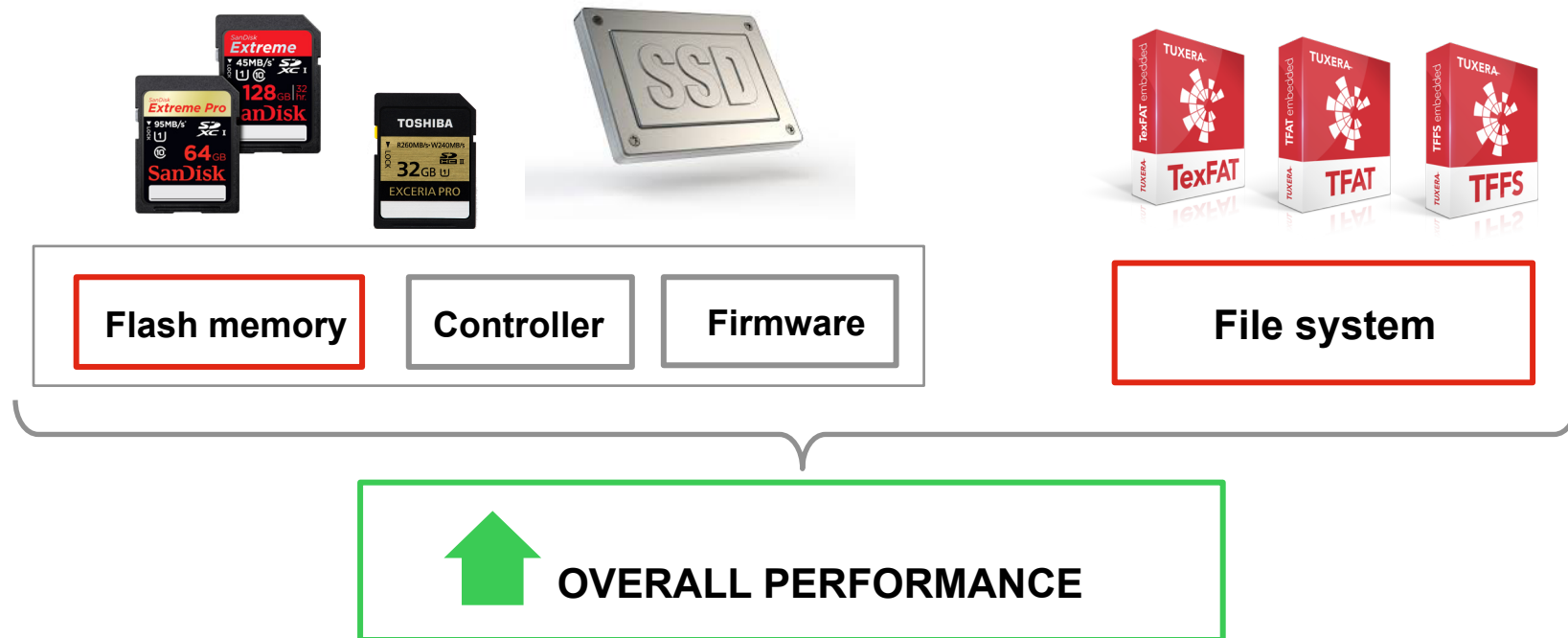




How File System Choice Affects Flash Performance



MIKKO VÄLIMÄKI
CEO, Tuxera Inc.

WHAT AFFECTS FLASH PERFORMANCE?





WHAT CAN BE ACHIEVED WITH FLASH-OPTIMIZATION?

CAMERA
Video Recording Speed **35%**
FASTER

A black rectangular icon with a red circle on the left and the word "REC" in white on the right.

MOBILE
Battery Life **15-20%**
LONGER

A black battery icon with three white vertical bars inside, representing a full charge.

AUTOMOTIVE
Data Reliability **100%**
SAFE

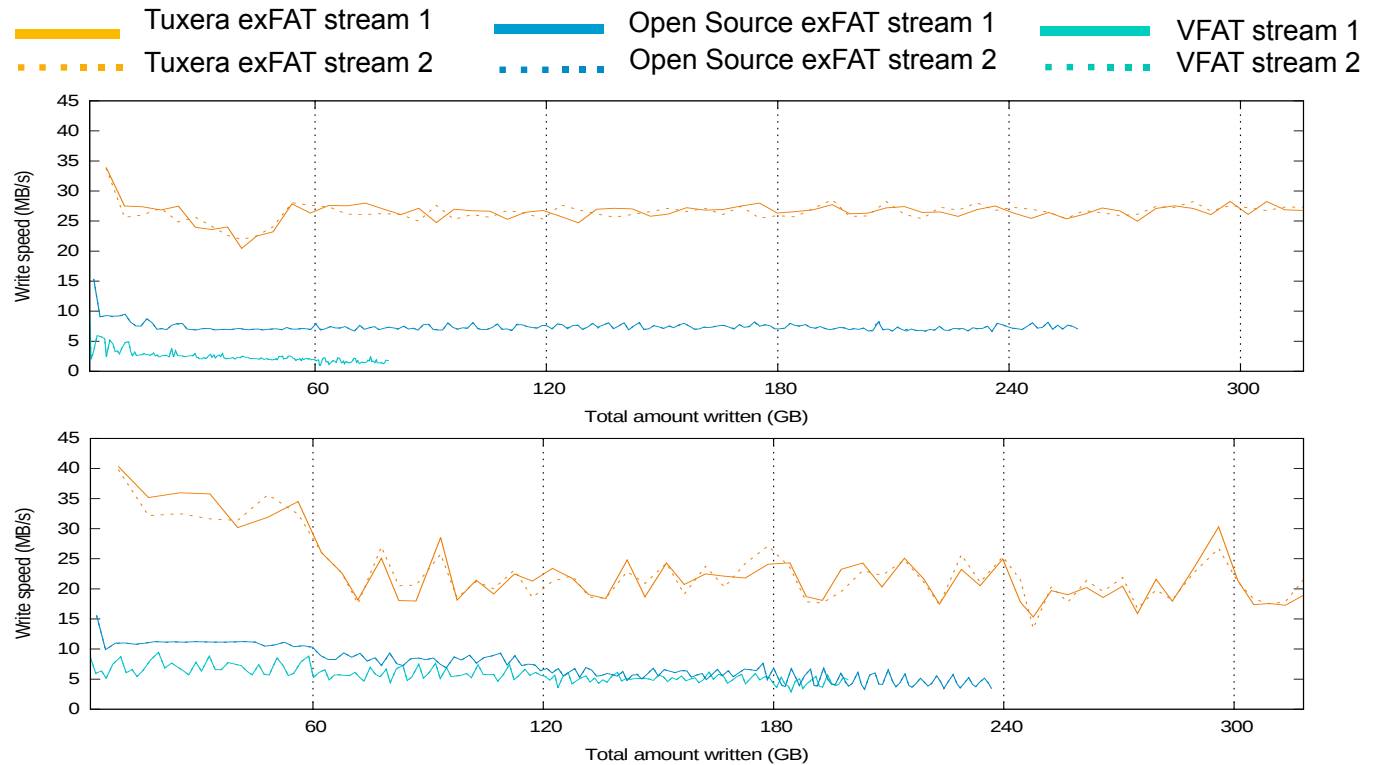
Example: Tuxera FAT/exFAT typical embedded benchmarks on ARM against popular open source implementations.



FLASH-OPTIMIZED FILE SYSTEMS BRING THE MAJOR PERFORMANCE DIFFERENCE

Manufacturer A
UHS-I Speed Class 10
In-house firmware
Price (amazon.com): \$30

Manufacturer B
UHS-I Speed Class 10
In-house firmware
Price (amazon.com): \$45



Flash Memory Summit 2015
Santa Clara, CA

Test case: writing two data streams on an SD card over and over and measuring performance. Tests with open source exFAT and VFAT were terminated after 5 hours before they could write over the card 5 times. VFAT did not finish 2 overwrites. Tests run with fio on x86 based PC hardware.



TUXERA FAIL-SAFE TECHNOLOGY DEMO

August 11-13th
SD Association Booth
number 119

TUXERA FILE SYSTEM TECHNOLOGY

Ultimate reliability in most demanding situations

Development Board

- Ambarella S2 A2 RH SoC
- Dual-core ARM CPU
- 629MB RAM
- IP Security Camera applications
- TFAT kernel driver

Laptop (display)

Development Board

- Ambarella S2 A2 RH SoC
- Dual-core ARM CPU
- 629MB RAM
- IP Security Camera applications
- VFAT kernel driver

USB Hub

- Belkin
- Simulate unplug (power failure)

HDD

- Toshiba
- USB3.0
- 500GB

Create files & directories

Create files & directories

Notes

- Demonstrating Tuxera file system reliability advantage over open-source alternatives
- Comparison between Tuxera FAT and open-source VFAT
- Each development board creates files and directories on an external HDD
- A USB hub is used to simulate unplugging of the HDD in the middle of write operations
- As a result in about 9 out of 10 times VFAT volume will get corrupted and switch to read-only mode
- There is no corruption of the TFAT volume
- The laptop aggregates and displays the test results

TUXERA YOUR DATA, WHERE YOU WANT IT