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UFS 4.0: Driving the Future of Automotive Applications

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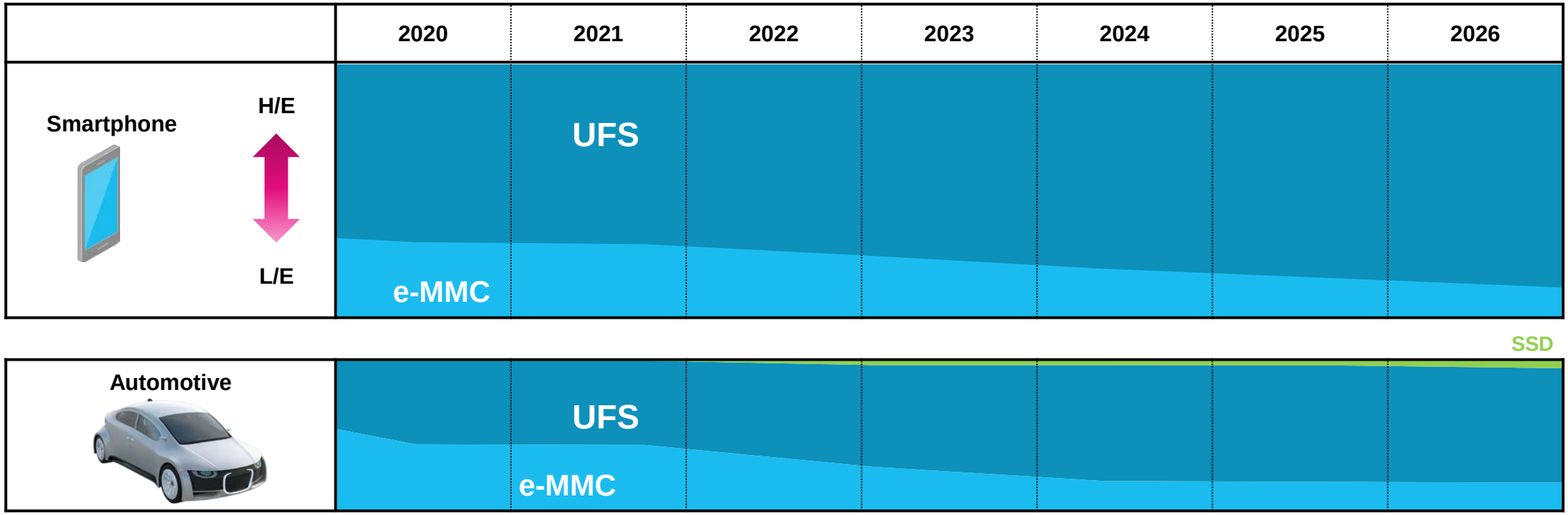
KIOXIA

Digitization of Automobiles

Automotive Storage Trend Follows Mobile



Notes:

- Universal Flash Storage (UFS) is a product category for a class of embedded memory products built to the JEDEC® UFS standard specification.
- e-MMC is a product category for a class of embedded memory products built to the JEDEC e-MMC Standard specification. Electrical component qualification requirements defined by the AEC (Automotive Electronics Council).

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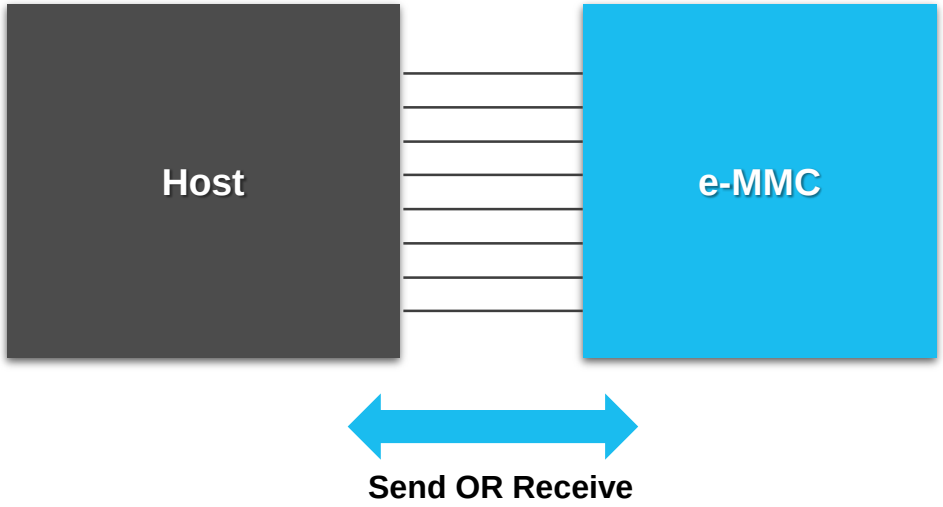
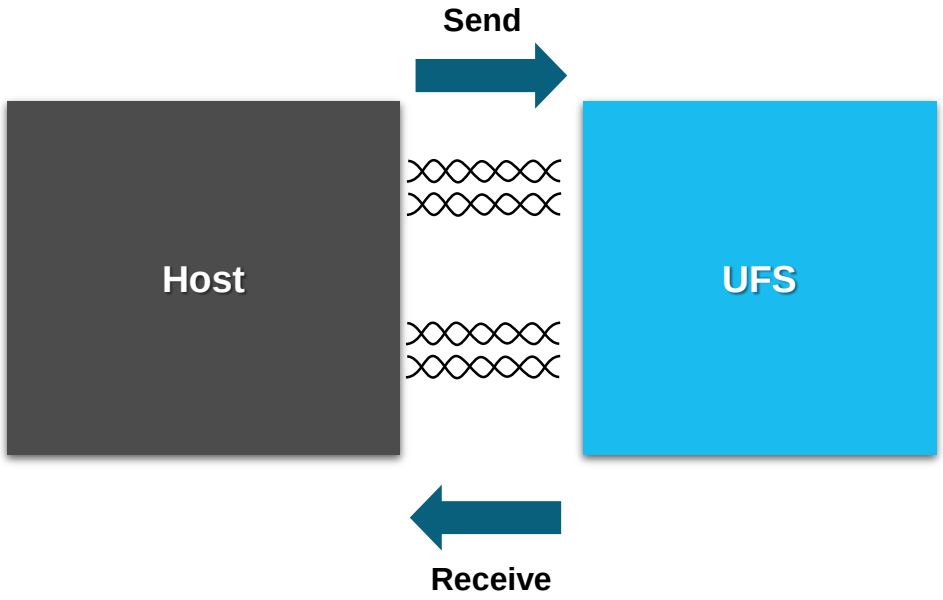
Why UFS?



Parallel (x8) Interface
Half Duplex

Max. Speed 400 MB/s*



Serial Interface
Full Duplex

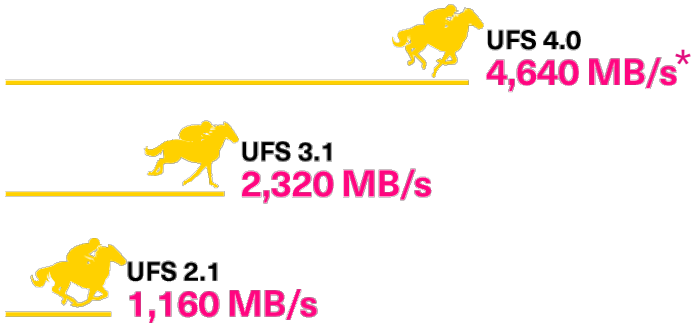
Max. Speed:
2320 MB/s (UFS 3.1)
4640 MB/s (UFS 4.0)

* Megabytes per second

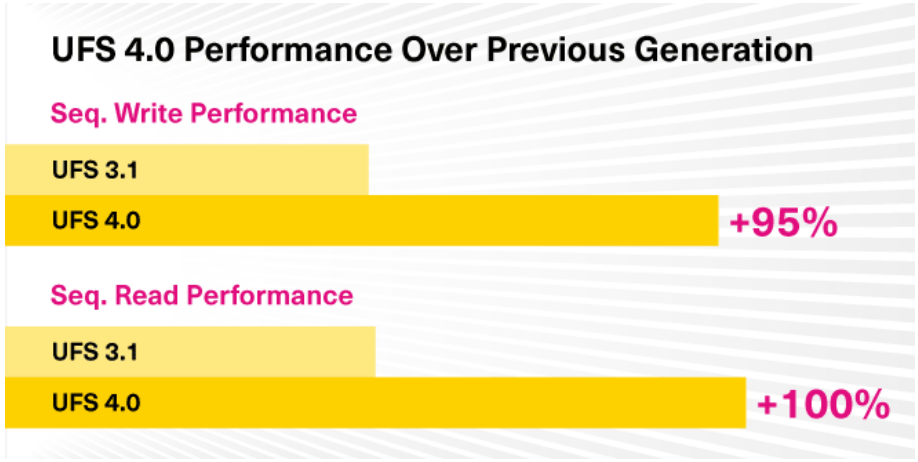
What about UFS 4.0?

Key Attributes

- Faster Interface Speeds

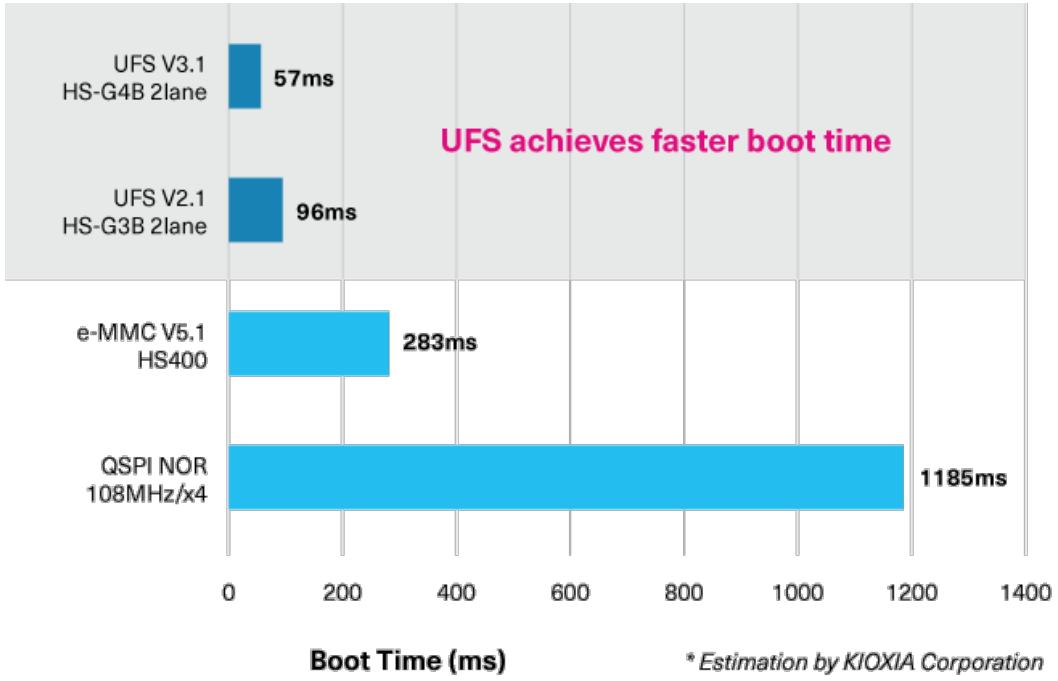


- Higher Read/Write Performance



Benefits in Automotive

- Faster Boot Up Times

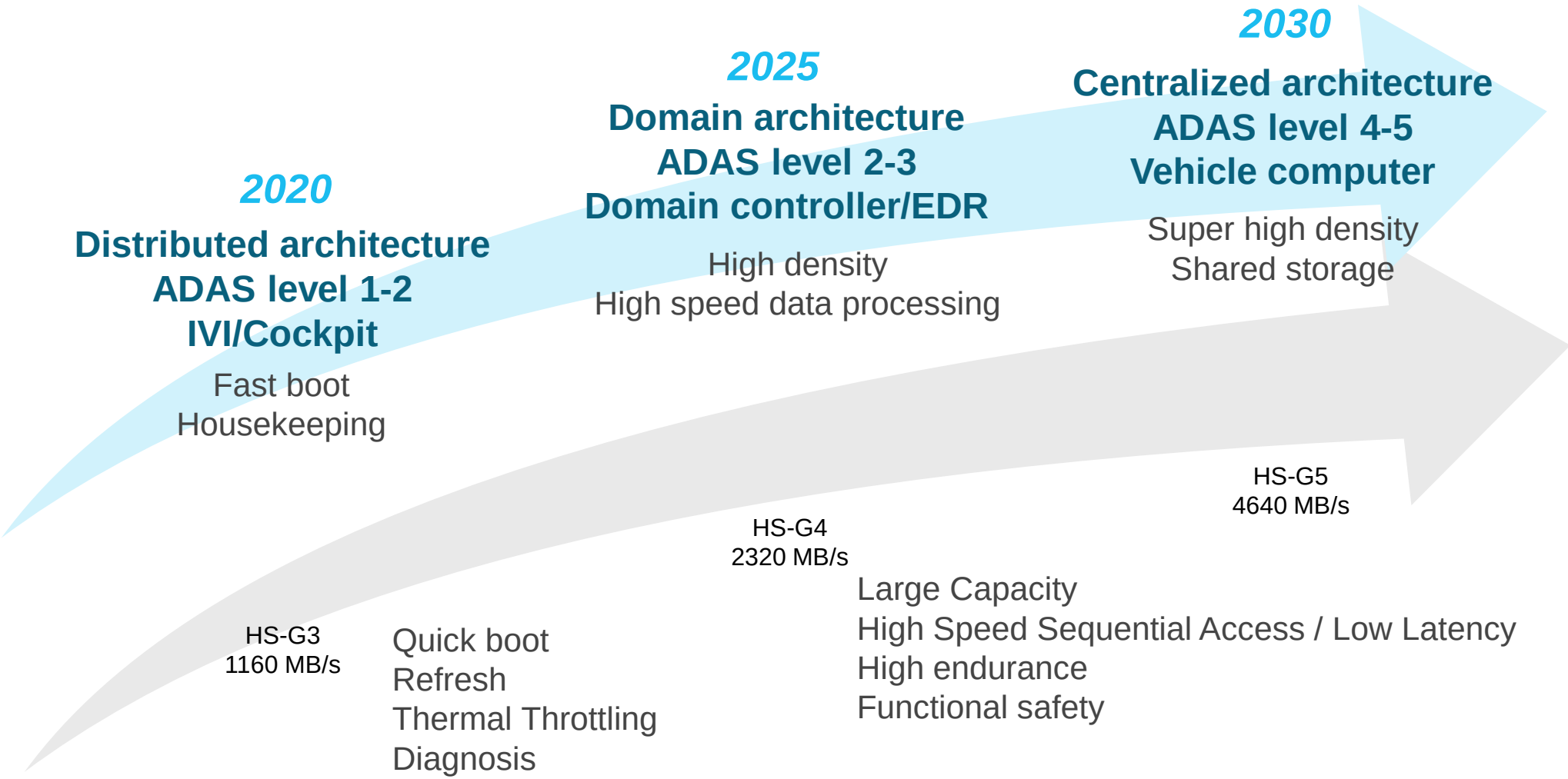


- Higher Capacities = More Data
- Faster Response to Driver Requests
- Efficient Power Consumption**

* Megabytes per second

** Introduced with UFS v3.1, Deep Sleep Power mode uses less power and extends battery life. This sleep mode achieves zero power consumption as if the device was powered off.

The Future of UFS Storage



Summary

- UFS was specifically defined by JEDEC® to be the high-performance replacement for e-MMC.
- Storage requirements for automotive applications continue to increase as ADAS and infotainment systems become more sophisticated. UFS is well-suited to support the high performance and density needs of these applications.
- UFS 4.0 expected to become the mainstream storage in automotive applications by 2025*. KIOXIA was the first company to introduce UFS in 2013** and will continue to drive advances in UFS and maintaining our leadership role in this technology.

- Estimation by KIOXIA Corporation and in accordance with independent forecast; UFS is projected to account for 85% of this demand by 2024, according to Forward Insights' market view update for the fourth quarter of 2020.

** KIOXIA Corporation survey, as of February 7, 2013.

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