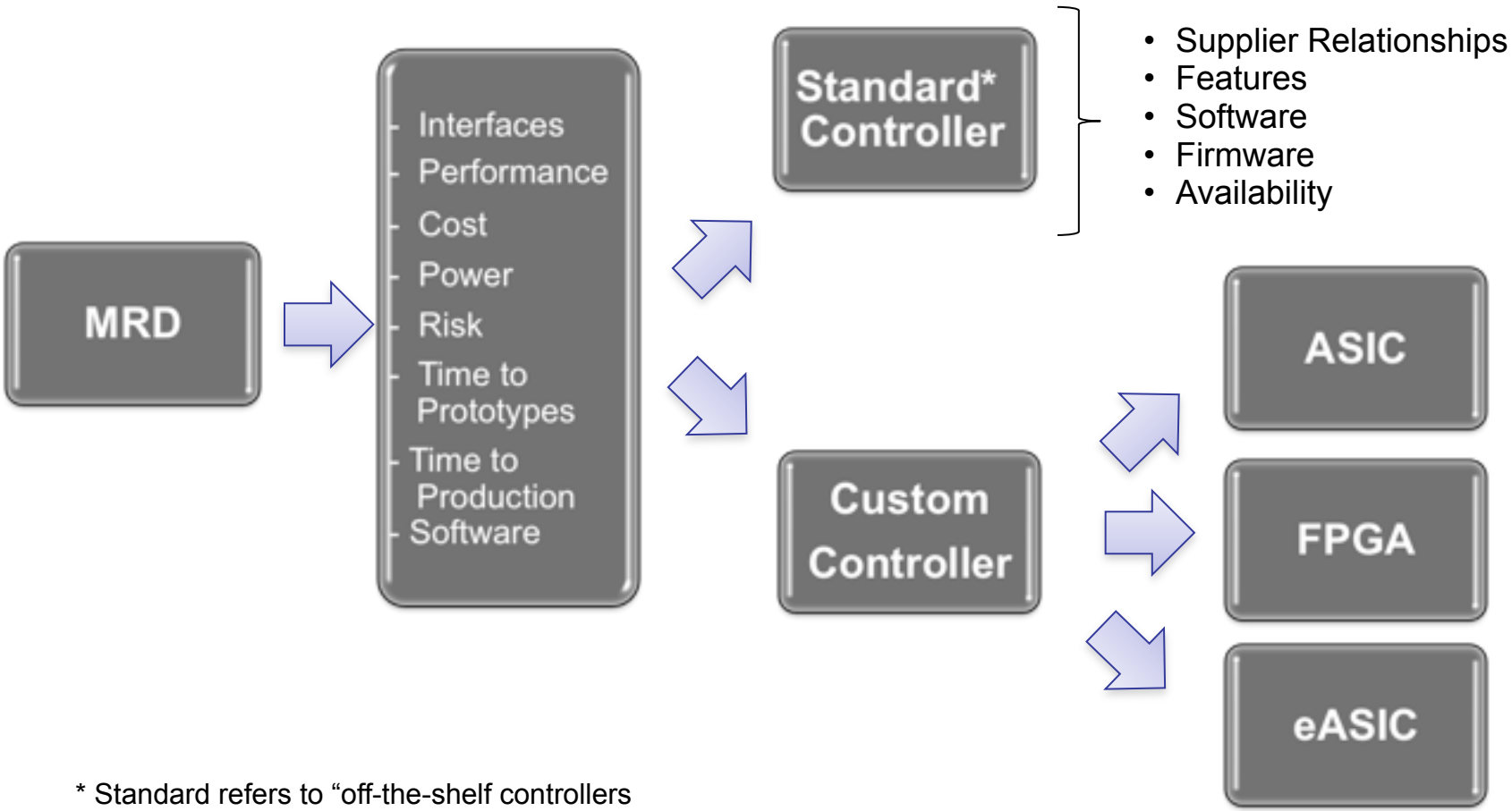
Navigating The Enterprise Controller Landscape

Narinder Lall - Product Marketing Director
eASIC Corporation

narinder@easic.com

Controller Decisions



* Standard refers to “off-the-shelf controllers

Use a Standard Controller?

1. Immediate Availability
2. Short time to production
3. You have no In-house custom FLASH management IP
4. You have no custom chip design expertise

1. “Me Too” SSD products
2. Hard to differentiate & create strategic value
3. Not in control of own destiny
4. May not be able to use the latest FLASH
5. What support will you get?
6. Will it be available tomorrow?

Which Standard Controller?

LSI SandForce

MARVELL

densbits

IDT

Design Own Custom Controller?

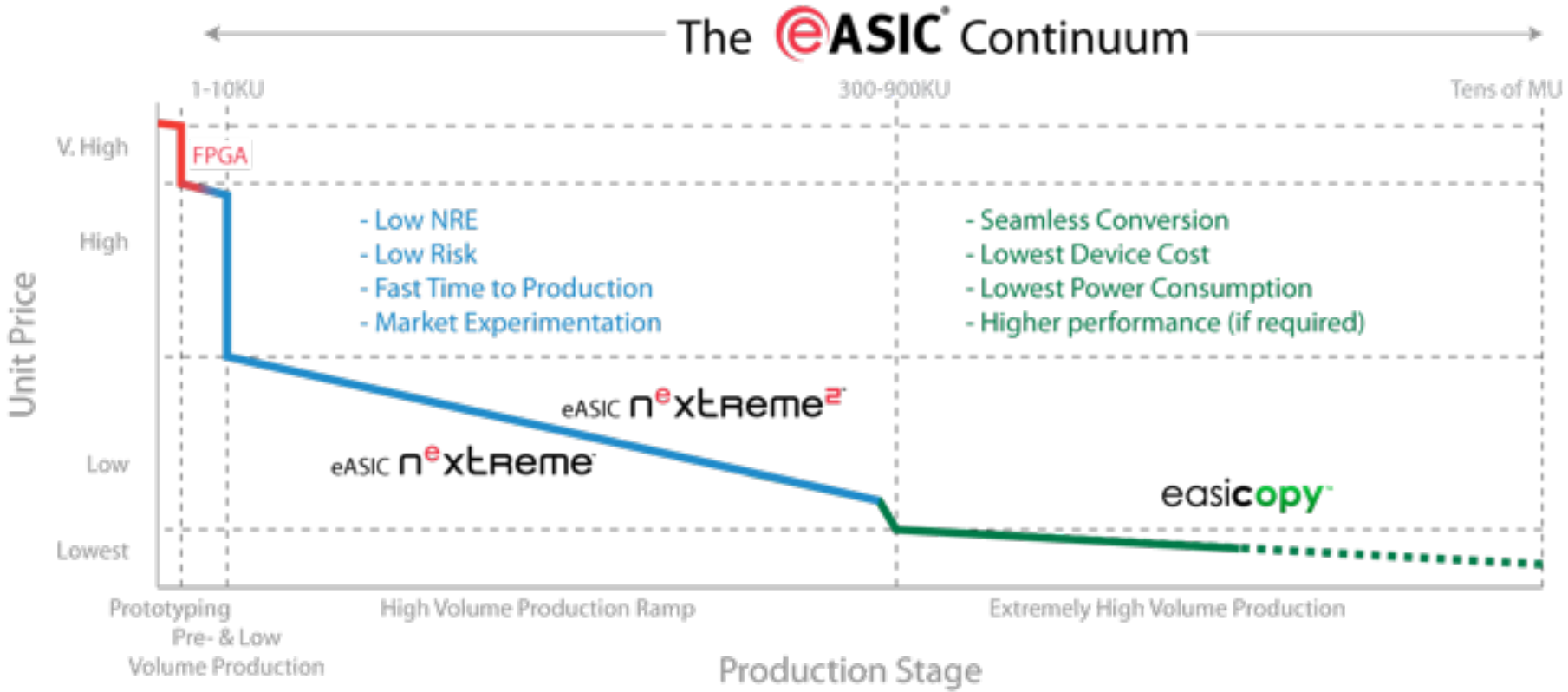
1. Use the latest FLASH
2. Leverage knowledge of "system" to optimize FLASH management
3. Implement the latest/best-in-class IP
   - LDPC, PCIe/SATAe , compression
4. Differentiate - Create strategic value
5. Control pace of new SSD introduction

1. Need custom chip design expertise
2. Longer time to production
3. Can be expensive (e.g. ASIC)
4. Return-on-Investment?

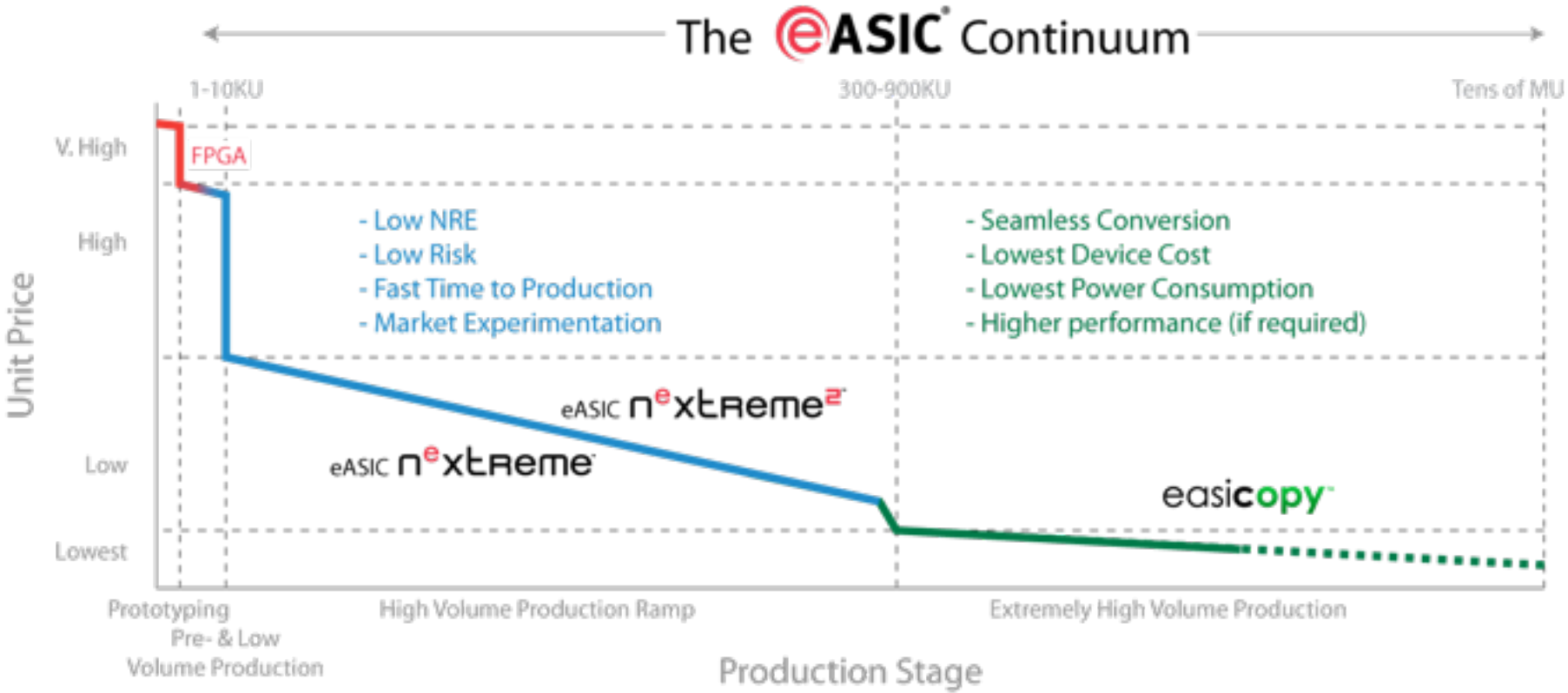
Custom Controller Platforms

	FPGA	eASIC	Cell-based ASIC
Customization	Many SRAMs used to configure chip	ONE MASK LAYER to configure entire chip	ALL MASK LAYERS to configure chip
Design & Test Structures	• ALREADY IN-BUILT e.g. Logic, Memory, DFT • User configures/connects these structures & verifies design		Structures are created, connected & verified for every design
What This Means	✓ Low Tens $K NRE ✓ Fast design time ✓ Fast time-to-market ✓ Low risk • <300MHz Performance • Highest device cost • Highest power • CRAM SEU	✓ 500MHz Performance ✓ Lowest cost of ownership - Low hundreds $K NRE - Low device cost - Fast design time - Fast time-to-production ✓ Low power ✓ Low risk	✓ >500MHz Performance ✓ Lowest device cost ✓ Lowest power • $Millions NRE • Long design time • Long time to production • High risk

Custom Controller Strategies



Custom Controller Strategies



1 FPGA Prototype → Quickly Convert to eASIC & Production Ramp

2 Prototype with eASIC Production Ramp with eASIC → Convert to ASIC. Very High Production Ramp

eASIC FLASH Controller Platforms

- ✓ High Performance e.g. 500MHz LDPC, PCIe 3.0, ONFI 3
- ✓ Low Power Consumption Up to 80% Lower than FPGA
- ✓ Low Design Risk Simple Design
- ✓ Low NRE Cost Few Hundreds $K
- ✓ Time to Production 6+ Months Faster Than ASIC
- ✓ Production Volume To 1MU (Higher with ASIC Migration)