

# Delkin Devices, Inc.



The advertisement features a central collage. At the top, a large, jagged blue iceberg floats in a body of water under a cloudy sky. Below this, a variety of Delkin storage products are displayed, including: a 312GB 2.5" SATA drive, a 16GB 1" SATA drive, a 128GB 1" SATA drive, two 8GB SD cards, a CompactFlash card, a MicroSD card, and a circuit board. The bottom half of the collage shows a rugged, mountainous desert landscape under a clear sky.

**Extreme Memory Solutions  
For Extreme Environments**

**DELKIN DEVICES.**

Rugged Controlled Storage.

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# Delkin Devices

Company Overview

Industrial Memory Market

Product Overview & Roadmaps

The Delkin Advantage

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# Company Overview

# Delkin Overview

- Private company founded in 1986
- USA-based manufacturer of industrial flash memory solutions
- Consistently ranked among top 25 manufacturers in Southern California
- ISO 9001:2008 certified



Delkin USA, Poway, CA

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# Delkin Overview

- Sales, distribution and manufacturing in Mexico, China, Korea and USA
- Sales and distribution in Europe
- Largest US distributor is AVNET
- Licensing, royalty, industry association and manufacturing agreements in place to build SD, CF, MMC+, microSD and other storage products.
- Direct relationships and allocation with all major NAND manufacturers



Delkin Europe, West Midlands, UK

# Manufacturing Capabilities

- Four SMT lines in Poway, CA
- Three lines are Samsung CP-45 High Speed Pick & Place machines
- Manufacturing & test operate on 6/10 schedule, with flexibility to add shifts as dictated by demand

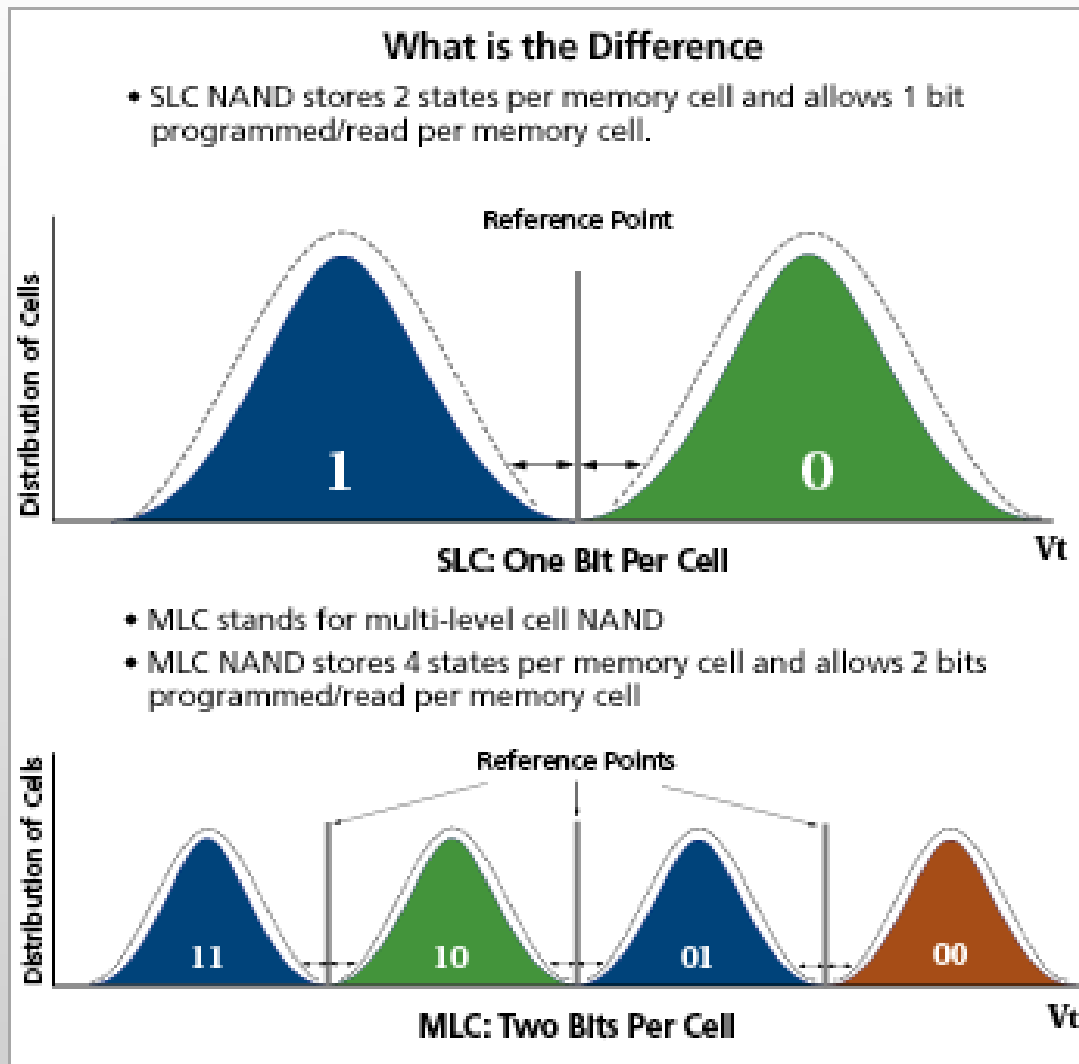


# Industrial Memory Market

# Industrial vs. Consumer Applications

	Industrial	Consumer
Development Cycle	Long (2+ years)	Short (1 year)
Product Life Cycle	Long (5+ years)	Short (1 - 2 years)
Run Rate	Low to Medium, Steady	High
Change Sensitivity	High	Low
Backward Compatibility Requirement	High	Medium

# SLC - MLC Comparison



# SLC – MLC Comparison

Characteristic	SLC	MLC
High Density		X
Low Cost per Bit		X
Endurance	X	
Operating Temperature Range	X	
Lower Power Consumption	X	
Write/Erase Speed	X	
Write/Erase Endurance	X	

# The Delkin Devices Focus

- Rugged, industrial-grade memory products in a broad range of proven form factors
- Applications requiring extended temperatures and enhanced shock & vibration tolerance
- Offering both SLC & MLC flash to allow best fit for each unique application
- Custom configurations, options & designs
- Controlled Bills of Materials guarantee consistent performance
- Built to order in the USA

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# Product Overview



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# Solid State Drives

## Configurations

1.8" & 2.5", drop in replacement for HDD

## Capacities

Iridium SLC: 8GB - 128GB

Palladium MLC: 8GB - 256GB

## Performance

Sustained Data Read : up to 250 MB/s

Sustained Data Write : 180 MB/s

## Benefits

Increased reliability and performance, low power consumption, MIL-STD 810 shock and vibration tolerance

## Applications

Rugged notebooks, portable devices, mobile computers, UAV, surveillance, servers, high altitude data logging and other applications that use hard disk (HDD) or optical drives



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# mSATA SSD

## Capacities

SLC: 1GB to 32GB

MLC: 1GB to 64GB

## Performance

Read Speeds Up to 230MB/s

Write Speeds Up to 170MB/s

## Benefits

87% smaller & 90% lighter than HDD

Low Power Consumption

Bootable

Solid State Reliability

## Applications

Handhelds, Gaming, POS terminals,

Single Board Computers, Transportation,

Data Logging, and other embedded applications



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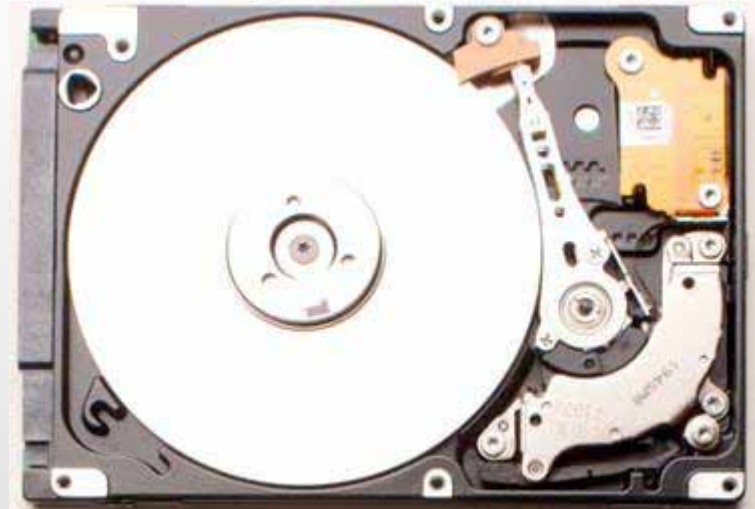
# HDD vs. SSD

## HDD Weaknesses

- Physical Media Damage
- Electronic Failure
- Media Corruption
- Internal Mechanical Failure
- Susceptible to Shock & Vibration
- Intermittent Failure

## SSD Advantages

- Extreme Shock and Vibration Tolerance
- Mechanical Reliability - No Moving Parts
- Faster Access Time
- Green
- SureFire Erase (SFE)
- Lower Power Consumption
- Silent Operation



# CompactFlash

## Capacities

SLC: 32MB to 16GB

MLC: 1GB to 64GB

## Performance

Read Speeds Up to 91MB/s

Write Speeds Up to 82MB/s

## Benefits

Low Power Consumption

Bootable

Solid State Reliability

Supports PIO, UDMA and DMA modes

## Applications

Auto Test Equipment, Handhelds, Gaming,

POS terminals, Single Board Computers,

Transportation and Data Logging



Capacity	SLC	MLC
32MB	X	
64MB	X	
128MB	X	
256MB	X	
512MB	X	
1GB	X	X
2GB	X	X
4GB	X	X
8GB	X	X
16GB	X	X
32GB		X
64GB		X

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# Secure Digital

## Capacities

SLC: 128MB to 16GB

MLC: 1GB to 32GB

## Performance

Read Speeds Up to 24MB/s

Write Speeds Up to 17MB/s

## Benefits

Low Power Consumption

Supports SPI & SD Bus Modes

Solid State Reliability

## Applications

Handhelds, Medical, Gaming, Automotive,

Data Logging and Industrial Controls



Capacity	SLC	MLC
128MB	X	
256MB	X	
512MB	X	
1GB	X	X
2GB	X	X
4GB	X	X
8GB	X	X
16GB	X	X
32GB		X

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# microSD

## Capacities

SLC: 128MB to 8GB

MLC: 2GB to 32GB

## Performance

Read Speeds Up to 17MB/s

Write Speeds Up to 12MB/s

## Benefits

Low Power Consumption

Supports SPI & SD Bus Modes

Solid State Reliability

## Applications

Handhelds, Medical, Gaming, Automotive,  
Data Logging and Radios



Capacity	SLC	MLC
128MB	X	
256MB	X	
512MB	X	
1GB	X	
2GB	X	X
4GB	X	X
8GB	X	X
16GB		X
32GB		X

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# Embedded USB

## Capacities

SLC: 128MB to 8GB

MLC: 1GB to 16GB

## Performance

Read Speeds Up to 30.5MB/s

Write Speeds Up to 19.5MB/s

## Benefits

Low Power Consumption

Bootable Supports Linux and Windows OS

Solid State Reliability

Multiple Connector Options

## Applications

Kiosks, Handhelds, Gaming, Networking

Blade Servers, POS Terminals



Capacity	SLC	MLC
128MB	X	
256MB	X	
512MB	X	
1GB	X	X
2GB	X	X
4GB	X	X
8GB	X	X
16GB		X

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# Removable USB

## Capacities

SLC: 128MB to 8GB

MLC: 2GB to 64GB

## Performance

Read Speeds Up to 30.5MB/s

Write Speeds Up to 19.5MB/s

## Benefits

Low Power Consumption

Bootable Supports Linux and Windows OS

Solid State Reliability

## Applications

Voting Systems, Gaming, Kiosks,

Data Transfer, Software Upgrades



Capacity	SLC	MLC
128MB	X	
256MB	X	
512MB	X	
1GB	X	
2GB	X	X
4GB	X	X
8GB	X	X
16GB		X
32GB		X
64GB		X

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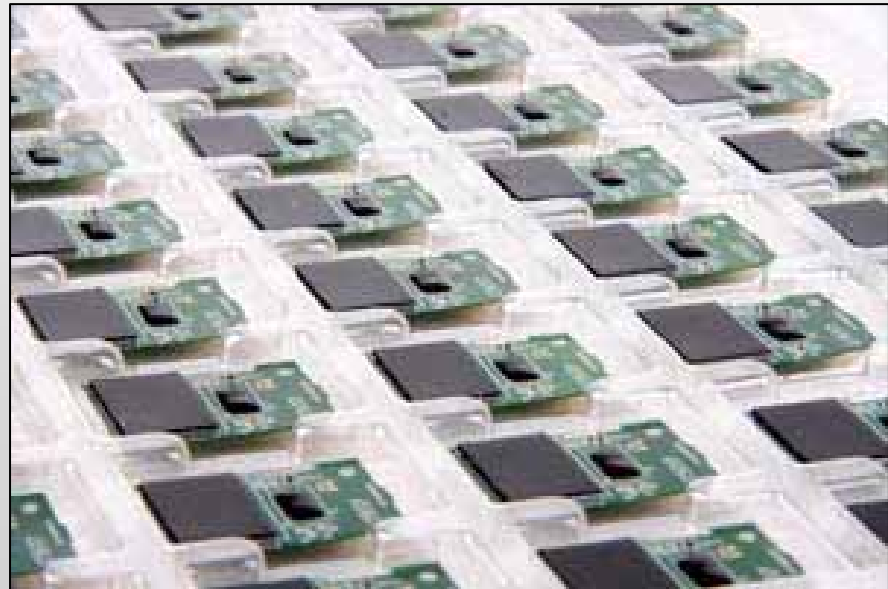
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# Tekta™ Infusion

A proprietary conformal coating process utilized to protect product contents from the most extreme environmental elements.

Underwater submersion  
Humidity & rain  
Extreme shock  
Dust, mud, dirt  
High impact  
Fungus & corrosion  
Rugged vibration  
Rust and more



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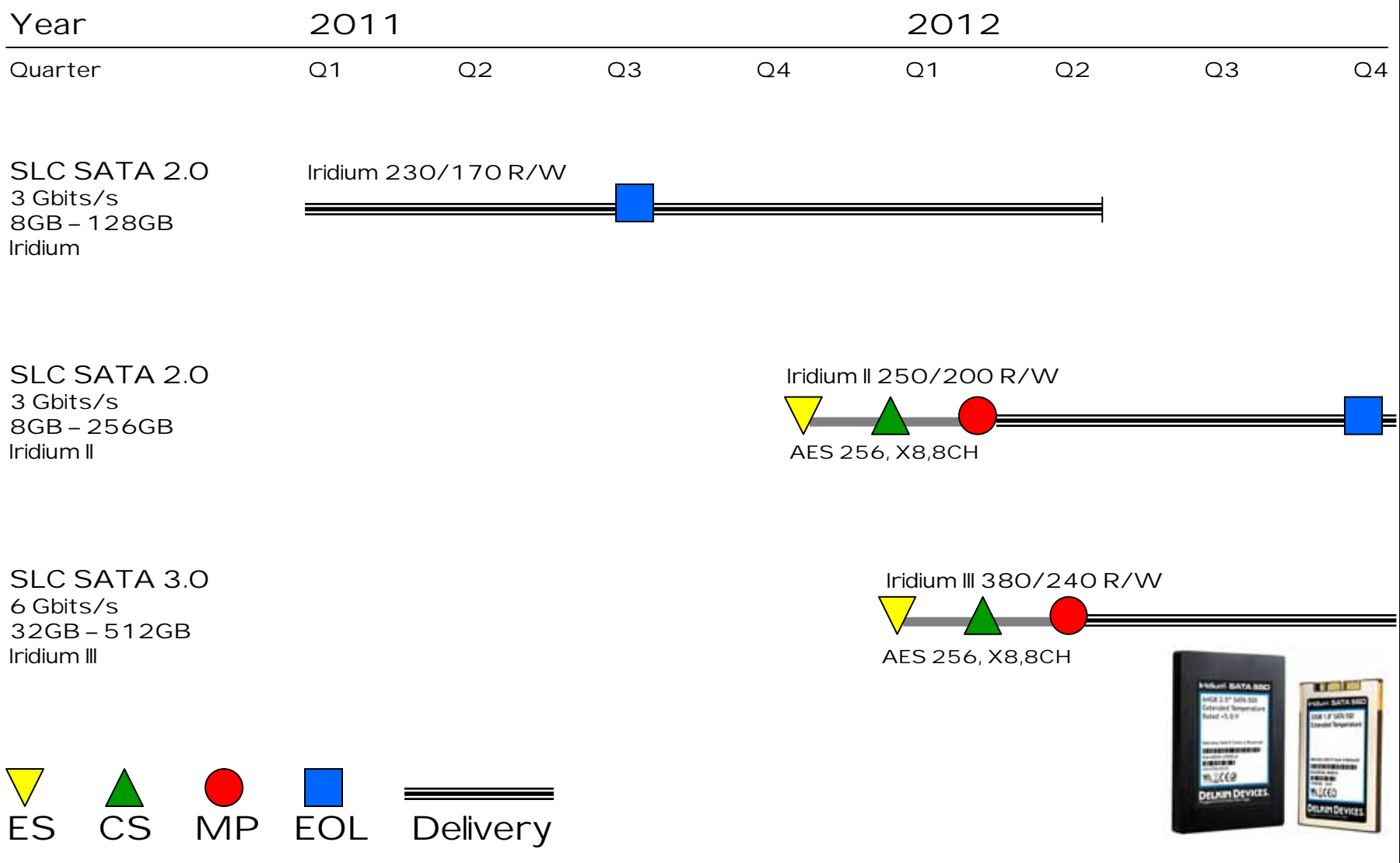
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# Customization

- Delkin offers a range of options and special features, such as:
  - Custom labels
  - Custom packaging
  - Pad printing of logos
  - Laser etching
  - Duplication, programming & image loading
  - Serialization
  - Custom testing
- Custom design services
  - Custom PCB design
  - Standard CPU, firmware, flash

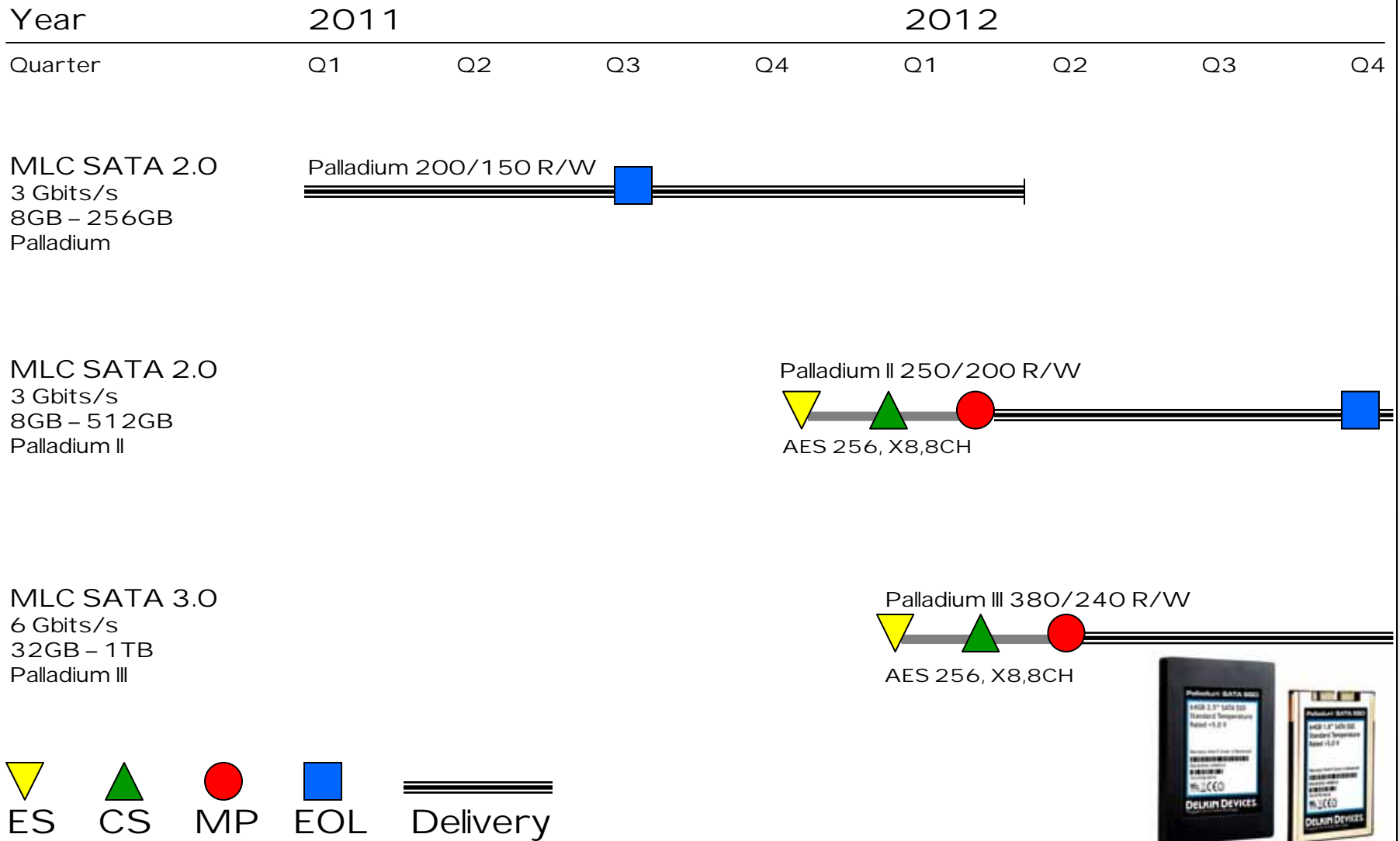
# Iridium SSD Road Map

Preliminary



# Palladium SSD Road Map

Preliminary



# SD / microSD Road Map

Preliminary

Year	2011				2012			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SD 512MB - 2GB (SLC) 512MB - 2GB (MLC)	SD							
SDHC 4GB - 8GB (SLC) 4GB - 32GB (MLC)	SDHC							
microSD 64MB - 8GB (SLC) 1GB - 32GB (MLC)	microSD							
SDHC (3.0) 4GB - 32GB (SLC) 4GB - 64GB (MLC) (Theoretical Max 2TB)								

ES  
 CS  
 MP  
 EOL  
 Delivery








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# CompactFlash Road Map

Preliminary

Year	2011				2012			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CF 32MB - 16GB (SLC) 2GB - 32GB (MLC)	CF							

 ES  
  CS  
  MP  
  EOL  
  Delivery



# The Delkin Advantage

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# The Delkin Advantage

- Products specialized for applications requiring extended temperatures and enhanced shock & vibration tolerance
- Products offered in both SLC & MLC flash to allow best fit for each unique use
- Tekta™ Infusion conformal coating process protects cards from extreme environmental conditions
- Custom configurations, options & designs available
- Controlled Bills of Materials guarantee consistent performance
- Industrial products built in USA

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# Industrial Memory Applications



ATM / Kiosk / Vending



Gaming



Medical



Military / In-flight



Industrial Computers



Automotive / Navigation / GPS

Inventory Control  
Office Automation  
Data Logging  
Internet Connectivity  
Industrial Control  
Wireless Communication  
Imaging

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The advertisement features a central collage of various Delkin storage products. On the left, there are three 2.5-inch SATA drives: a 312GB drive with an extended temperature range of -5.0V, a 16GB drive, and another 312GB drive. In the center, there are two 8GB SD cards and a CompactFlash card. On the right, there are two MicroSD cards and a circuit board. The background is split into two scenes: the top half shows a large, jagged iceberg floating in turquoise water under a blue sky with light clouds; the bottom half shows a rugged, rocky desert landscape with a single acacia tree in the foreground under a clear sky.

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