# The Move to M.2

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Enterprise Product Marketing

SanDisk® Corporation

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# Forward-Looking Statements

During our meeting today we will make forward-looking statements.

Any statement that refers to expectations, projections or other characterizations of future events or circumstances is a forward-looking statement, including those relating to market position, market growth, product sales, industry trends, supply chain, future memory technology, production capacity, production costs, technology transitions and future products. This presentation also contains forward-looking statements attributed to third parties, which reflect their projections as of the date of issuance.

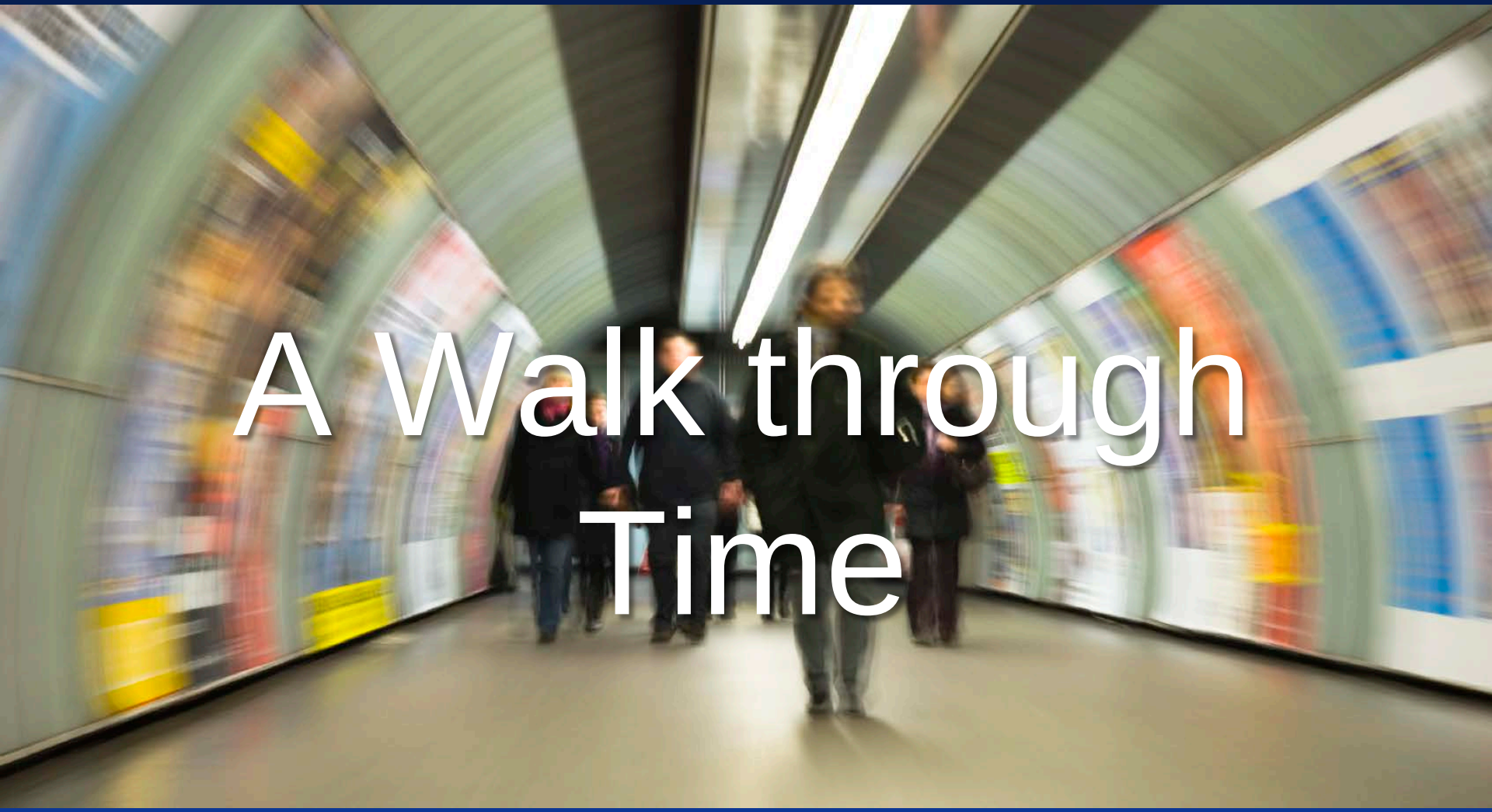
Actual results may differ materially from those expressed in these forward-looking statements due to a number of risks and uncertainties, including the factors detailed under the caption “Risk Factors” and elsewhere in the documents we file from time to time with the SEC, including our annual and quarterly reports.

We undertake no obligation to update these forward-looking statements, which speak only as of the date hereof or as of the date of issuance by a third party, as the case may be.

# About SanDisk Corporation

- Designs, develops and manufactures flash memory storage solutions and software.
- Flash memory storage product portfolio include solid-state drives (SSDs), ULLtraDIMM Flash DIMM SSD, PCIe based flash storage solutions and caching software designed for Enterprise Datacenters, Hyperscale and Cloud Computing environments.

Flash Memory SUMMIT



# A Walk through Time

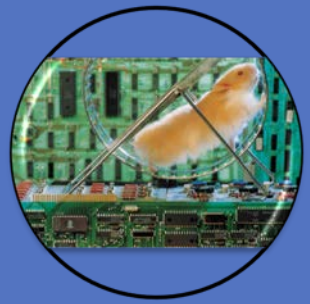
Santa Clara, CA
August 2014

SanDisk

# The IT Reality

Smaller

More Capacity



Greener

*Free?*

# Condor Airlines Flies with SanDisk Flash Storage Cards

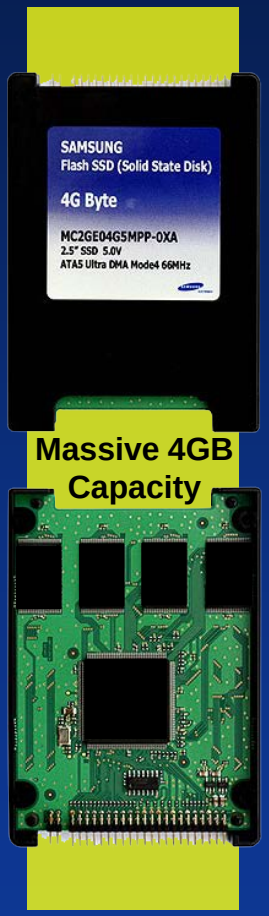
- SUNNYVALE, Calif.--(BUSINESS WIRE)--Feb. 4, 1997--SanDisk Corporation (NASDAQ:SNDK) announced today that it has equipped every pilot on Condor Flugdienst GmbH, a leading German airline, with a 20MB (megabyte) flash storage card.

- The solid-state (no moving parts) removable storage cards, much more rugged and reliable than standard rotating disk drives, are used in notebook computers that each pilot carries on board for every flight.



http://www.thefreelibrary.com/Condor Airlines Flies with SanDisk Flash Storage Cards.-a019086952

# The Race to Smaller/Bigger




- 2006--one of the first SSD's available
- High speed NAND flash cache for notebooks and PCs were introduced in conjunction with the Microsoft Windows Vista and leveraging Windows ReadyBoost
- By caching Hard Drive data using flash SSD and the Microsoft Windows Vista operating system, a typical user will see performance gains that will make working with their PC lightning fast

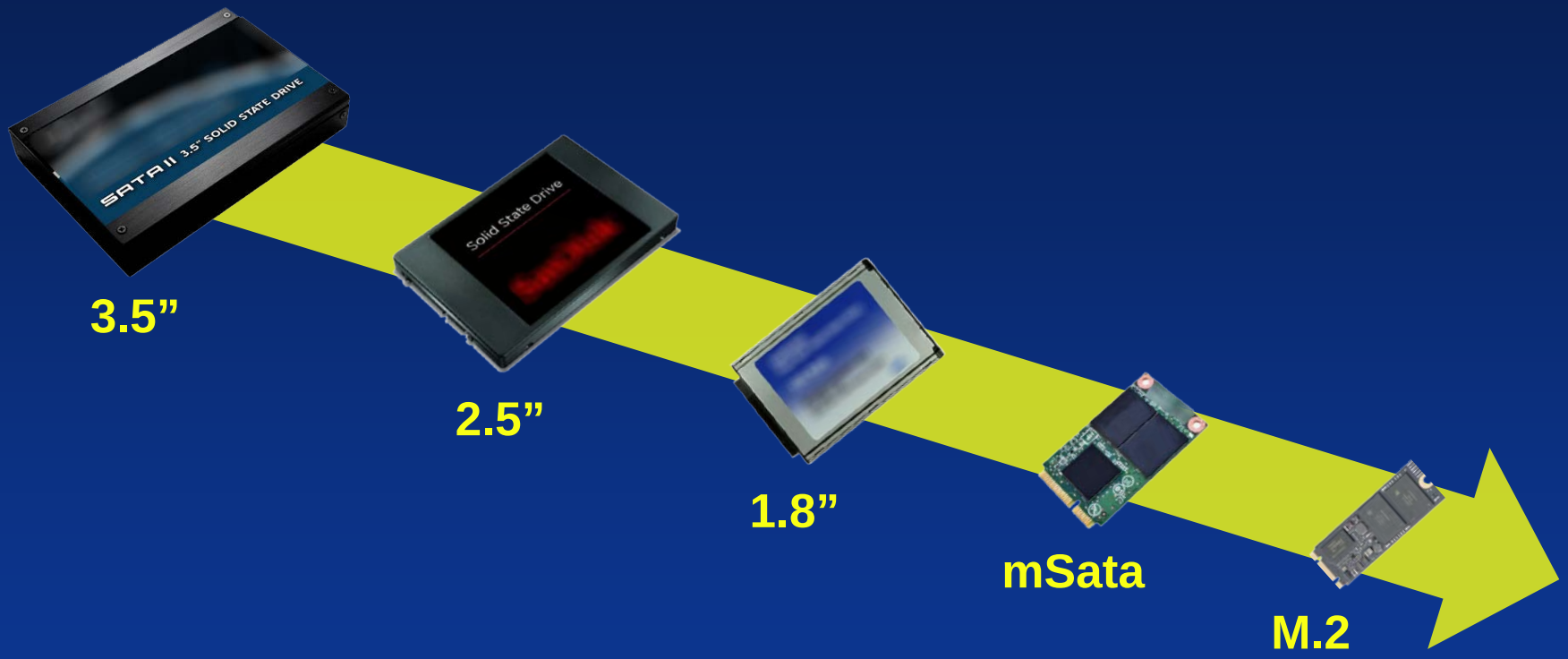


Source: http://phys.org/news73147145.html

# The Rise of M.2

- What is M.2?
  - It is not a Tom Cruise Movie
  - It is not a Winery
  - It is not a Sony Cell Phone
  - And finally is not a awesome watch *(I must have…)*

# A Trend towards Smaller

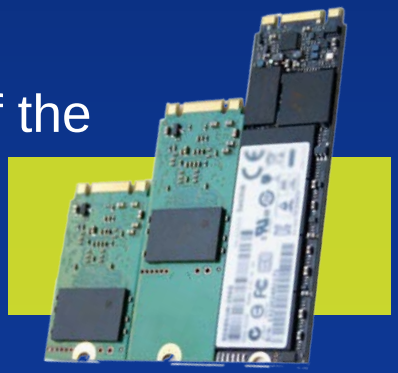


# Why?

- Invented by Intel
- Provides Improved Flexibility of Deployment
  - A single one can be used in you favorite Ultrabook
    - But not my MacBook Pro ☹
  - Hundreds can be used to provide cost effective high capacity storage in the datacenter
- Enables expanded cost and capacity options
  - Different board size options allow a wider rand of deployments that mSATA
- Adds USB 3.0 Support

# Benefits over mSATA (Mini-Sata)

- It is newer ☺
  - Not limited by legacy layout limitations
  - Built on SATA Express not PCI Express
  - Adds a USB 3.0 port support
- Past/Future support
  - Can be designed to supports legacy (AHCI) and new NVMe interfaces
- Higher Density
  - M.2 has been designed to maximize usage of the card space while minimizing the footprint.
  - M.2 devices can provide double the storage capacity within the footprints of mSATA SSD devices.



# M.2 Use Cases

- Next Generation SSDs for Laptops
  - More capacity in less space
- Next Generation SSDs for Ultrabooks
  - Helps enable smaller and smaller Ultrabooks
- High Performance Gaming Systems
- HyperScale and Cloud
  - Can provide new more cost effective flash storage option for Cloud and HyperScale data centers

# Conclusions

- M.2 is the next generation cost effective SSDs storage
- It builds on mSATA but is not limited by mSATA's legacy architecture
- It can be used in everything from the latest Ultrabook to the a server in the cloud
- Its unique architecture enables a much broader range of deployments

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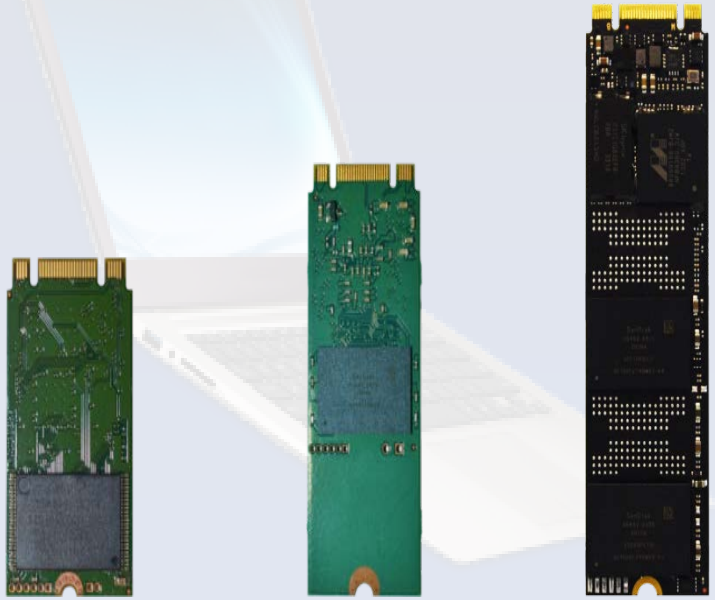
# M.2 Form Factor Innovation

- Low power consumption
- Thin and light form factor providing flexibility in design
- Ideal for Ultrabooks™ requiring high performance
- Available in single-sided or double-sided versions
- Designed to maximize the usage of the card space while minimizing the footprint

SanDisk strives to be the industry leader in form factor innovation, allowing motherboard and PC OEMs to create cutting edge products.



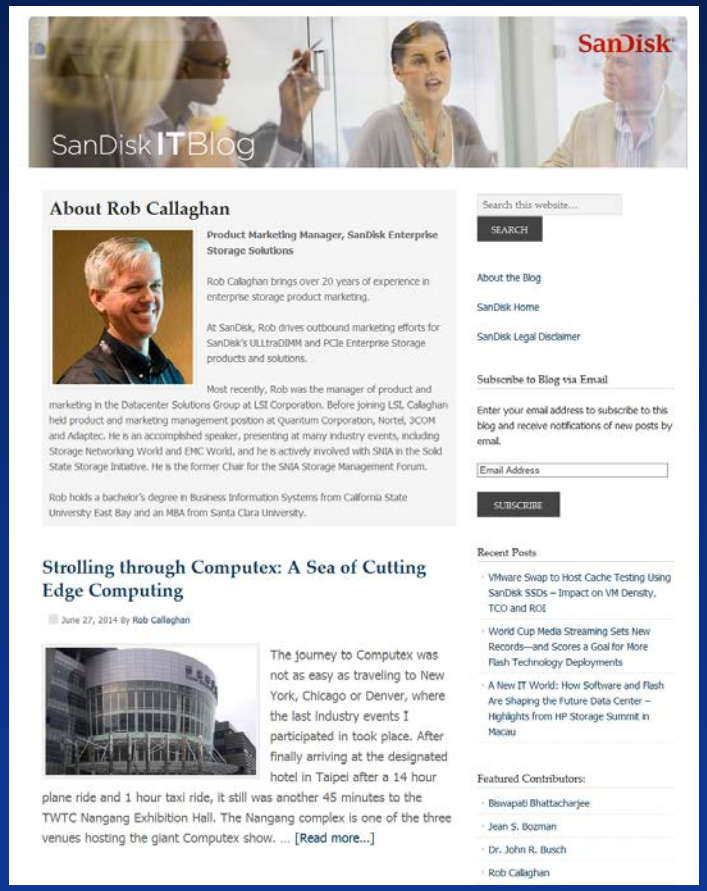
M.2 2242 2280 | M.2 2260 | M.2

# Thank You!

Keep up to date with the latest on technology trends and news from SanDisk at ITBlog.SanDisk.com

rob.callaghan@sandisk.com

SanDisk Booth 204




Santa Clara, CA
August 2014

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