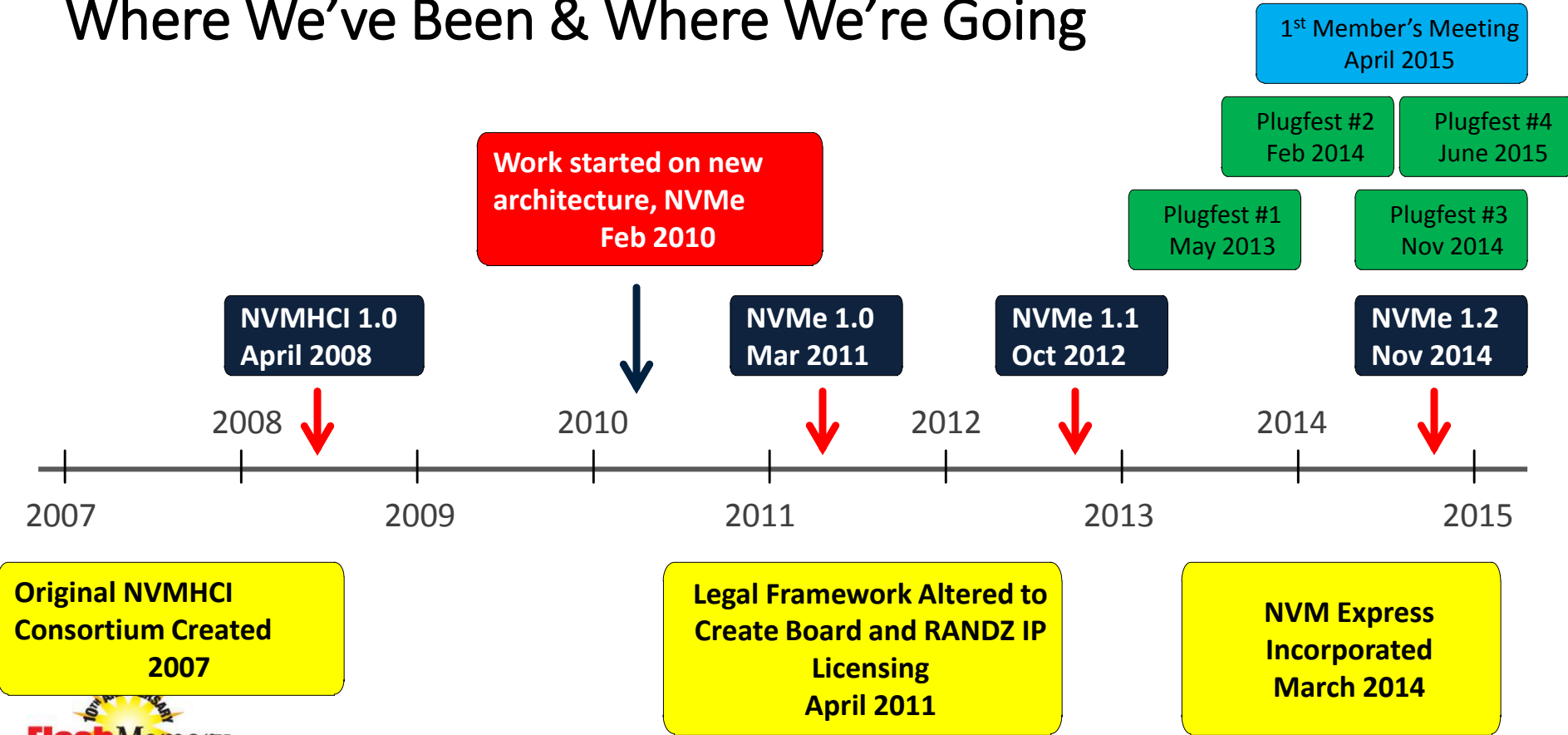# NVMe

Where We Are
Where We Came From
Where We're Going
And what you're going to hear today!

Don H Walker

July 25, 2015

Where We've Been & Where We're Going

1st Member's Meeting
April 2015

Plugfest #2
Feb 2014

Plugfest #4
June 2015

Work started on new architecture, NVMe
Feb 2010

Plugfest #1
May 2013

Plugfest #3
Nov 2014

NVMHCI 1.0
April 2008

NVMe 1.0
Mar 2011

NVMe 1.1
Oct 2012

NVMe 1.2
Nov 2014

2008   2010   2012   2014

2007   2009   2011   2013   2015

Original NVMHCI Consortium Created 2007

Legal Framework Altered to Create Board and RANDZ IP Licensing April 2011

NVM Express Incorporated March 2014

Where We Are Today

- Governance and Legal Structure
  - Delaware Non-profit Corporation since 2014
    - Corporate Officers and Board-of-Directors
    - Governed by a set of By-Laws and Corporate Charter

- Members and Membership Growth
  - Currently have 89 members
  - 104 members at the end of 2013
  - 76 members at the end of 2014

- Technical groups and Efforts
  - Management Interface TWG – Started 2014
  - Working on NVMe Fabrics
  - NVMe-T11 MOU signed
  - NVMe-TCG Liaison Agreement underway
  - Technical proposals around client and even consumer related applications
  - Benchmarking tools

- Budget

  - We have ~ $200K yearly income

Board Of Directors

Governed by an elected board of 13 directors from member companies

- Cisco
- Dell
- EMC
- HGST
- Intel
- Micron
- Microsoft

- NetApp
- Oracle
- PMC-Sierra
- Samsung
- SanDisk
- Seagate

NVMe Ecosystem – Going Native!

- NVMe Drivers Available on Windows*, Linux*, Solaris*, VMware*, UEFI

- Many are native / in-box drivers

- Wide Selection of Protocol Analyzers

SerialTek

VIAVI

vmware®
ESXi 5.5 & 6.0

suse
SLES 11 SP3
SLES 12

Windows 8
Compatible

Windows
Server 2012 R2
Certified

Windows 7

ubuntu®
13 | 14

redhat
6.5 | 7.0

- Agilent
- Teledyne LeCroy
- Others

10th ANNIVERSARY
FlashMemory
SUMMIT

5 **nvm** EXPRESS™

The Future is Bright

- NVMe products are accelerating in 2015 and 2016!

- 2nd NVMe Members Meeting next year

- Management Interface 1.0 coming in Q3

- NVMe over Fabrics specification in Q4

- More innovation for revision 1.3

"There's not much else to say. NVMe seems to have achieved its goal of making PCIe drives as painless as their SATA peers…"

Digital Trends, 4/2/15

Its Real!

Go To
WWW.NVMExpress.org/Products

or

Google "NVMe Products"

Staying True to Our Principals and Ideals

Feature		Benefit
Parallelism and Scalability	⚡	Leading IOP and Throughput Performance in all Configurations
Resource Allocation & Partitioning	⚡	Allows You to Put the Power Where it Matters Most
Optimized Queuing Layer	⚡	No Locks and minimized un-cacheable Register reads/writes
Efficient command Set	⚡	No Bloated and Unnecessary Commands to Slow I/O

NVM Express is architected for performance!

The Track

- Management Interface

- Fabrics

- Security

- Ecosystem

- Real World use cases

- Mobile Platforms

- Future Directions