미국 소프트웨어 개발자로서의 20년

ON MY 7 RESEARCH & DEVELOPMENT YEARS AT INTEL

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INTEL SSG/DPD

DISCLAIMER

- The facts and data cited here may not be up-to-date nor accurate.

- The opinion expressed in the presentation is the speaker's own and reflects none of his employer's and/or his colleagues'.

BRIEF INTRODUCTION

- Joined Intel in 2007

- SSG DPD TCAR @ Champaign, IL, USA

- Intel® Threading Building Blocks (https://www.threadingbuildingblocks.org/)

- Intel Transactional Synchronization Extension Emulator (available as part of Intel® Software Development Emulator https://software.intel.com/en-us/articles/intel-software-development-emulator/)

- Intel SPMD Program Compiler (aka ISPC) (https://ispc.github.io/)

MANAGEMENT

- Intel: Brian Krzanich (CEO), Renee James (President)

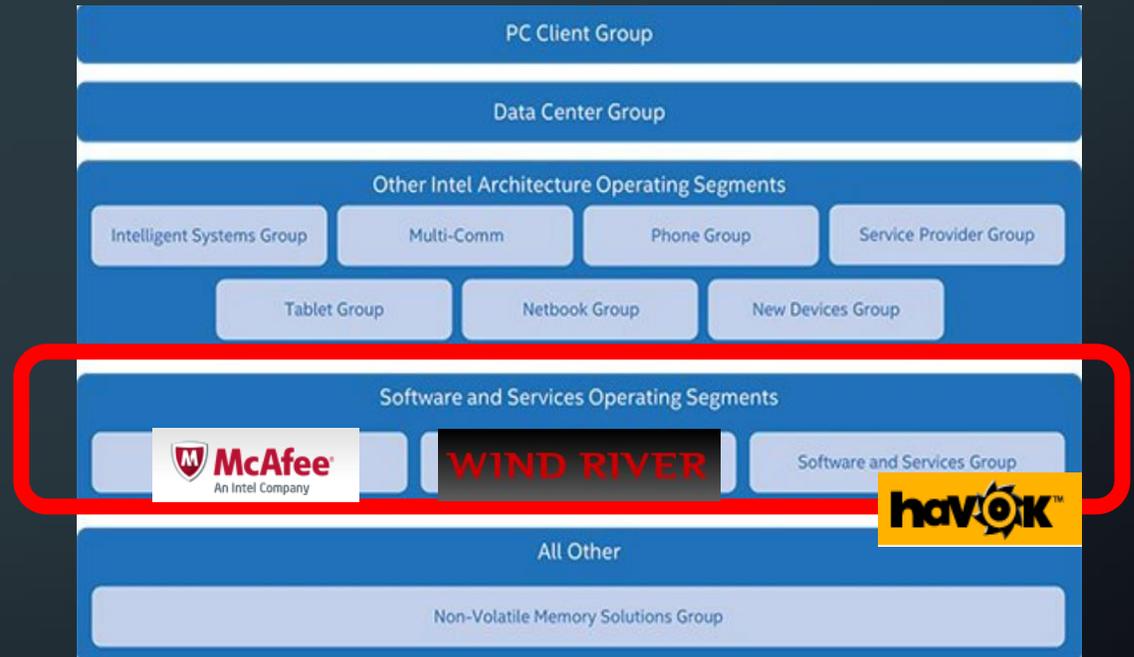- Software and Services Group: Doug Fisher

- Developer Product Division: Bill Savage

WHAT DOES SSG DO?

1. Enabling (Atom, Core, MIC, Edison, SoFIA)
2. Products and Services
   - Intel® Parallel Studio,
   - Embedded (WindRiver),
   - Security (McAfree), Gaming middleware (Havok)
3. Software Infrastructure
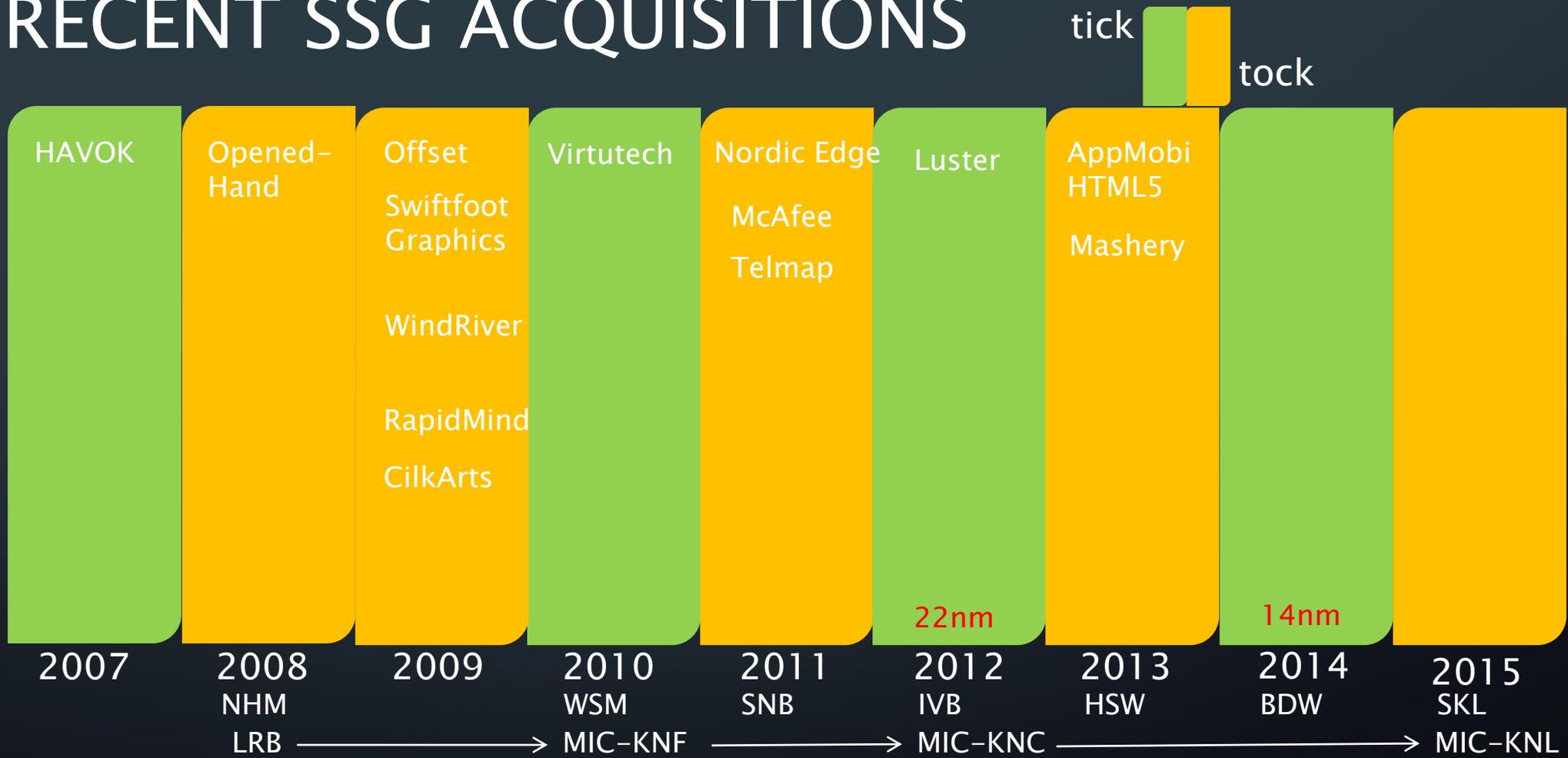   - Linux Kernel, Android, Tizen, HTML5
   - IoT

Customers, Partners, and Collaborator (no specific order):
Adobe**, Google**, Microsoft**, Samsung**, LG**, Citrix**, Oracle**, VMware**, DreamWorks**, Reuters Financial**, Novell**, and SAP**

** Other names and brands may be claimed as the property of others.

RECENT SSG ACQUISITIONS

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tock

2007	2008	2009	2010	2011	2012	2013	2014	2015
HAVOK	Opened-Hand	Offset Swiftfoot Graphics WindRiver RapidMind CilkArts	Virtutech	Nordic Edge McAfee Telmap	Luster	AppMobi HTML5 Mashery		
					22nm		14nm	
	NHM	WSM	SNB	IVB	HSW	BDW	SKL	

LRB ———————→ MIC-KNF ————→ MIC-KNC ———————→ MIC-KNL

WELL KNOWN DPD PRODUCTS

- Parallel Studio
  - Composer
    - Compiler (icc, ifort)
    - TBB (http://threadingbuildingblocks.org/), Cilk(http://cilkplus.org/) OpenMP(http://www.openmprtl.org/)
    - MKL,
    - IPP,
    - Debugger
  - vTune Amplifier
  - Inspector (Memory Checker, Thread Checker)
  - Parallel Advisor
- SDE/XED (http://software.intel.com/en-us/articles/intel-software-development-emulator)
- PIN (http://software.intel.com/en-us/articles/pin-a-dynamic-binary-instrumentation-tool)
- Intel® Energy Profiler (aka SoC Watch)
- OpenCL
- MPI
- HTML5

MAJOR DPD SITES AROUND THE WORLD

AROUND URBANA–CHAMPAIGN

AROUND URBANA–CHAMPAIGN (PAST)

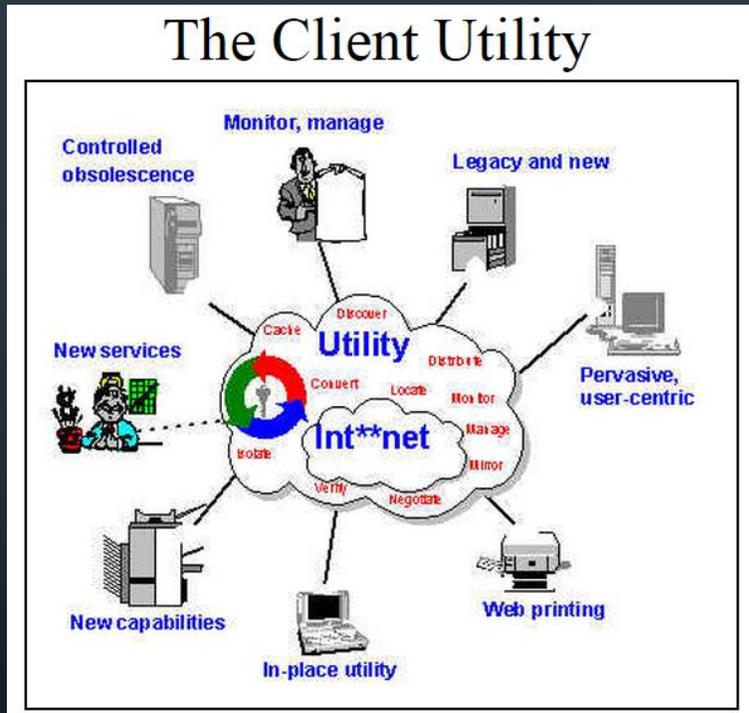# @UIUC: BECKMAN INSTITUTE, NCSA, SIEBEL CENTER, BLUE WATERS

A FEW FAMILIAR NAMES RELATED TO UIUC
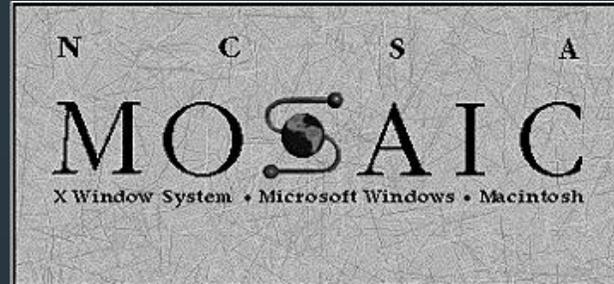
http://www.businessinsider.com/uiuc-amazing-tech-visionaries-who-went-to-school-there-2014-12#marc-andreessen--netscape-andreessen-horowitz-1

DAYS @HP LABS AND E-SPEAK

http://www.hpl.hp.com/personal/Alan_Karp/cuarch/arch_overview_TR.html

12/9/2014

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THINGS I HAVE LEARNED DURING HP DAYS

- Met Alan Karp & Tom Rokicki
- Goal Oriented
  - Autonomous
  - Accountable

- Engineers are fungible

Luci Gutiérrez @ WSJ

12/9/2014   14

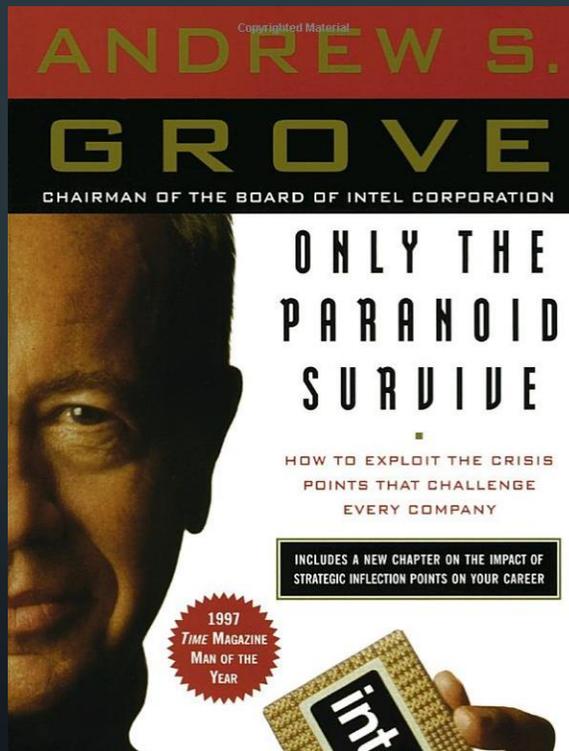# DAYS @MOTOROLA URBANA DEVELOPMENT CENTER

THINGS I HAVE LEARNED DURING UDC DAYS

- Heavy Investment on Development Infrastructure

- Test, test, test

- Developers are "Comrades"

DEVELOPMENT CULTURE @ INTEL THRU MY LENS

ONLY THE PARANOID SURVIVE

DUAL LADDER FOR CAREER DEVELOPMENT

- Not unique to Intel
- Quite flexible – switch between managerial and individual contributor roles
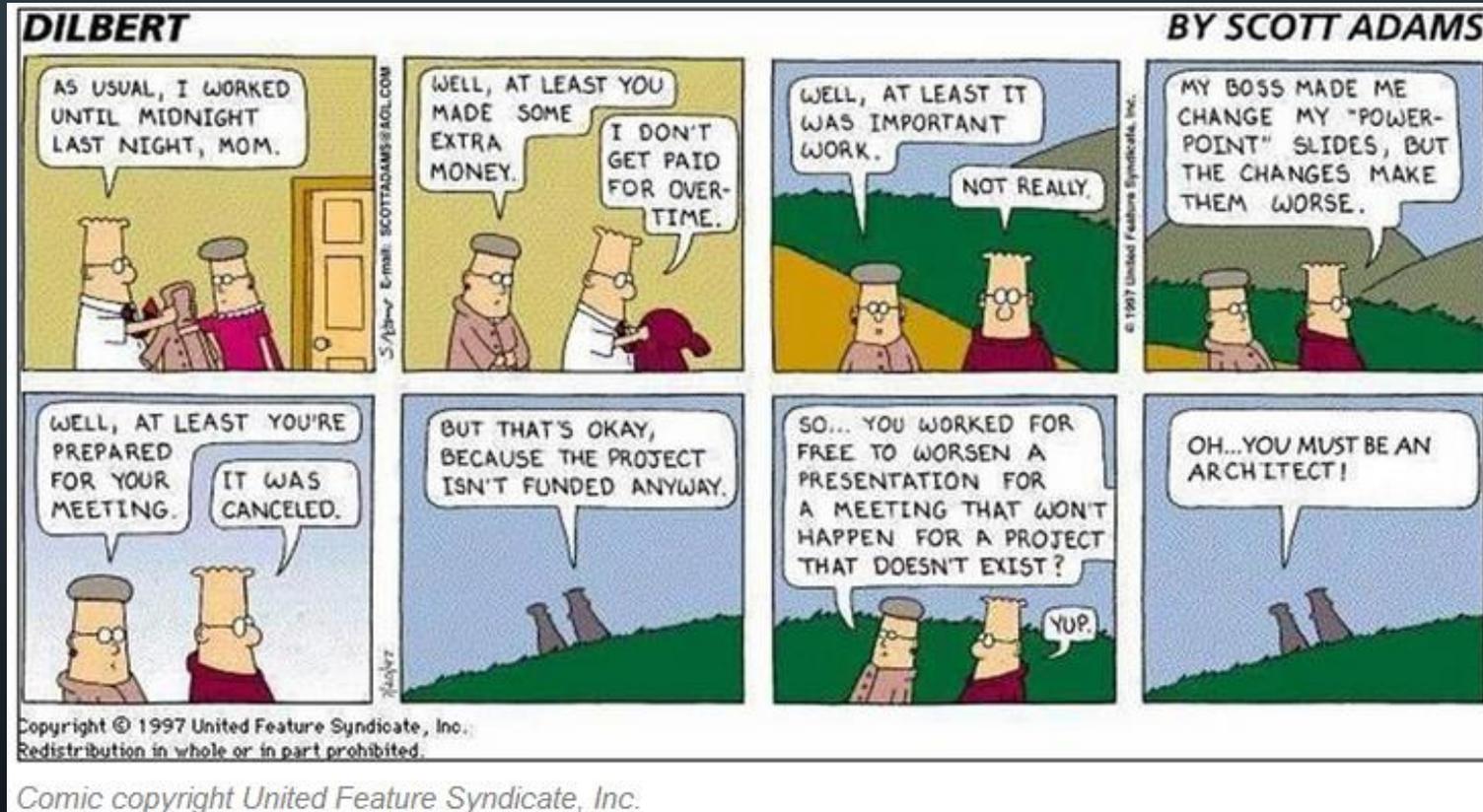
CUSTOMER ORIENTED

http://dilbert.com/strips/comic/2010-09-15/

ARCHITECTS PLAY CRITICAL ROLES

CONSTRUCTIVE CONFRONTATION

"All you need in this life is ignorance and confidence, and then success is sure."

-- Mark Twain

ZERO BASED BUDGETTING

http://dilbert.com/strips/comic/2009-06-22/

http://dilbert.com/strips/comic/2012-11-29?Page=3

AND A COUPLE MORE…

- Need-to-know
  - Protect Intellectual Property
  - Compartmentation
- Do more with less
  - Not "**Ephemeralization**" by R. Buckminster Fuller
  - **Way of Resource Control**
- **Shift-Left**

CLOSING QUOTES

developers
- "The ~~scientists~~ of today think deeply instead of clearly. One must be sane to think clearly, but one can think deeply and be quite insane."
  — Nikola Tesla

- Science is but a perversion of itself unless it has as its ultimate goal the betterment of humanity.
  — Nikola Tesla

- "It is the responsibility of intellectuals to speak the truth and expose lies."
  — Noam Chomsky

QUESTIONS ?