



Altair

Innovation Intelligence®



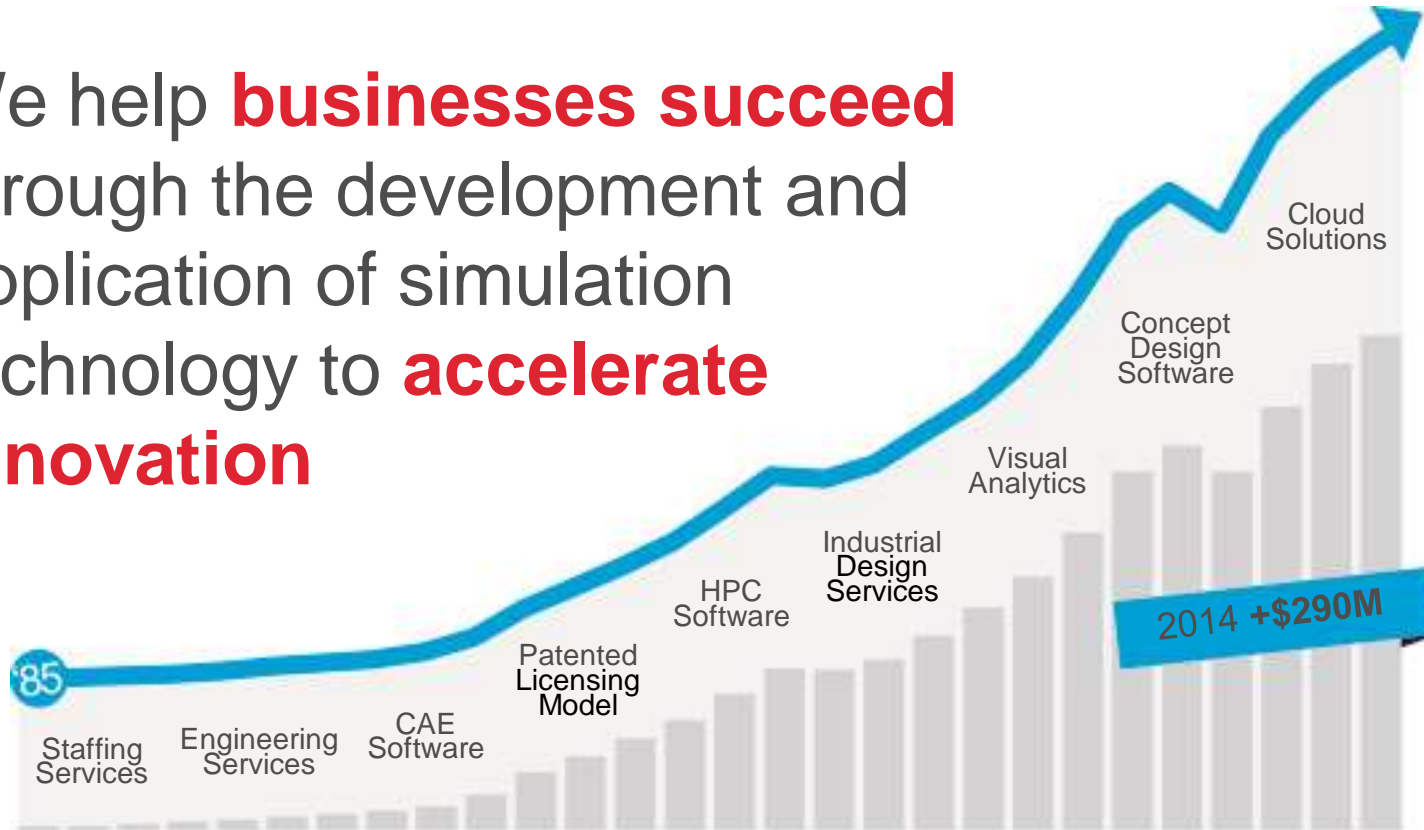
Altair Update: The Solution Partner

Kirk Monroe, Sr. Business Development Manager - HPC

April 13, 2015



We help **businesses succeed** through the development and application of simulation technology to **accelerate innovation**



45+ offices in **23** countries on **6** continents with over **2,300** engineers, scientists, developers, designers and creative thinkers

We Work with Some of the Best



Automotive	Aerospace	Heavy Equipment	Government	Life/Earth Sciences	Consumer Goods	Energy

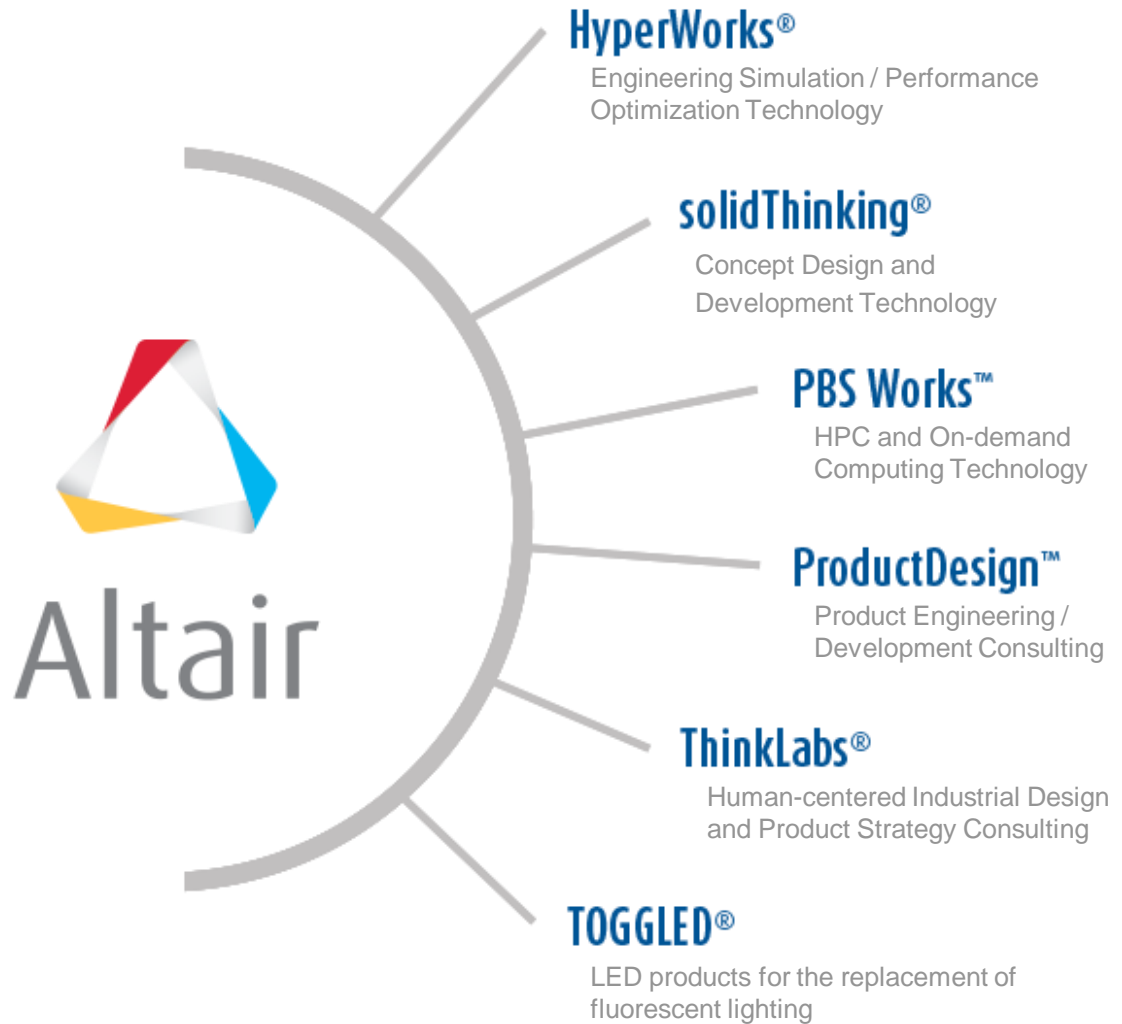
5,000+ customers worldwide



Through A Unique Blend of Software and Services



Altair's corporate structure is tightly aligned with its **brand family**



Altair Knows HPC



Altair is the only company that:

makes HPC tools...



develops HPC applications...



...and uses these to solve real problems



800 Altair engineers worldwide **use HPC every day** to address real-world challenges, develop custom solutions that help radically change the way organizations design products and make business decisions

PBS Works Suite – Altair Knows HPC



PBS Works is the trusted leader in high-performance computing (HPC) workload management, with integrated solutions for intelligent job scheduling, Web-based submission and analytics, and remote visualization.

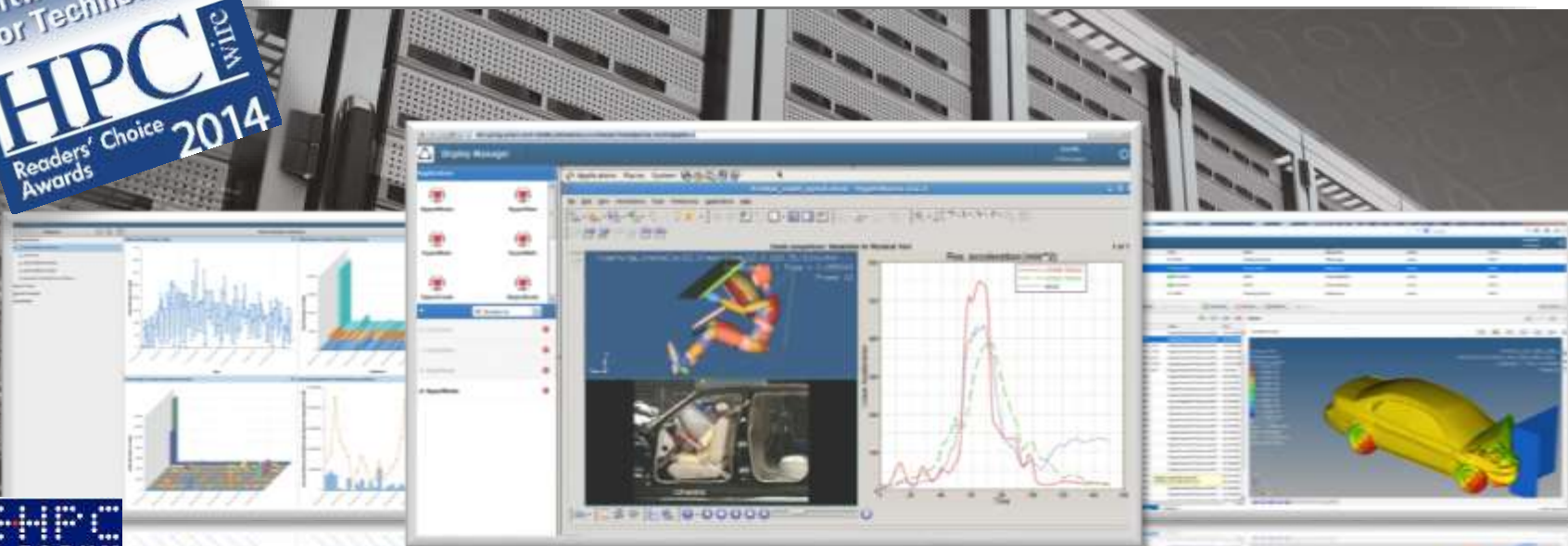
Workload Management / Scheduling

Green Provisioning™

EAL3+ security

GPU/co-processor scheduling

Integrated management portals



PBS Works Suite Helps Organizations to:

- Increase Productivity
- Meet HPC Goals
- Reduce Expenses



Compute Manager

RUN | MONITOR | MANAGE



Display Manager

VISUALIZE | ACCESS | COLLABORATE

Easy to Use

Hard to Break

Do More (with less)

Keep Track and Plan

Open Architecture



PBS Professional

SCHEDULE | PRIORITIZE | SCALE



PBS Analytics

VIEW | OPTIMIZE | FORECAST

EAL3+ Security & Cross-domain Solutions (aka MLS)



PBS Professional is the First and Only Workload Management Solution to Achieve Common Criteria EAL3+ Certification

Commercial

Hardened

Certified Secure



MLS support with SELinux

Altair provide[s] a consumable interface for cross-domain supercomputing, supporting multi-level security and unifying underlying security controls with workload management..

– Red Hat, SELinux

RHEL MLS Configurations are Intelligence Community Directive (ICD) 503 certified and used in operations

PBS 13.0: Architected for Exascale



PBS 13.0

Supports up to 100 jobs per second!

Tested to 50k hosts / millions of cores

1,000,000+ jobs per day

CGROUPS: Eliminates resource contention

Fast, reliable start-up of huge MPI jobs

Comprehensive health check framework

Altair is Building Clouds...



Access to: HyperWorks on the Cloud

HyperWorks Unlimited



On-premises, CAE private cloud appliance, unlimited use of HyperWorks

HyperWorks On-Demand



Off-premises, CAE public cloud appliance using existing HyperWorks & PBS Works

Simulation Cloud Suite



Comprehensive software suite for simulation life cycle management

Powered by: PBS Works Suite

Case Study: Managing HPC Resources in MLS Environments

Lockheed Martin Improves Security Capabilities and Reduces HPC Cost with PBS Professional

- **Challenge:** Managing HPC Resources in MLS Environments
- **Solution:** PBS Professional with Cross-Domain Security Support for Red Hat Enterprise Linux
- **Result:** Cost Savings and Improved System-Wide Efficiency



“Ultimately, the cost savings to the government is huge. Savings are achieved through reduced hardware cost, reduced staffing requirements, reduced security maintenance and other cost, licensing fees, etc.

Joseph Swartz, Program Chief Scientist at Lockheed Martin

PING: Display Manager Testimonial

Challenge:

- Collaborate more efficiently on big design files across globally dispersed teams

Solution:

- PBS Works with Display Manager: Remote Visualization for HPC applications and data

Highlights:

- Dramatically reduce turnaround times – make same-day design improvements instead of waiting days
- Develop better products faster with instant feedback on design performance
- Simple to install and use
- Outstanding Altair support



PING is synonymous with innovation, quality and service in the world of golf..

“Display Manager is our most significant functionality update since the move to HPC itself. In most cases we are saving a full day of time or more. We get instant feedback, make the change and have enough time to view the results of those changes the same day. Before the upgrade we wouldn’t get those results until mid to late morning the next day, and wouldn’t get the updated structure until end of the next day. Display Manager has greatly improved the speed and efficiency of our process.” – Eric Morales, Engineer and Design Analyst, PING, Inc.

“In this new age, it’s clear that **whoever outcomputes will outcompete**. For U.S. companies, and for the U.S. itself, it is the critical time to do both.”

– Forbes



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