Turning Data into Knowledge – Intel's Perspective

SOS17 Conference

Jekyll Island, Georgia

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Technical Computing Group
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Intel's Vision

This Decade We Will Create and Extend Computing Technology to Connect and Enrich the Lives of Every Person On Earth
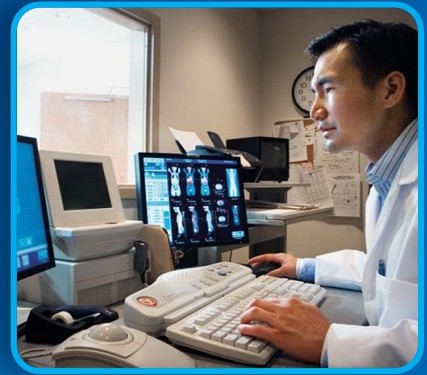
REDEFINING WHAT'S POSSIBLE – TOGETHER.

The Datacenter Virtuous Cycle

DEVICES

... and so on

SERVICES

CLOUD

DEVICES

REDEFINING WHAT'S POSSIBLE – TOGETHER.

The Forces Driving The Cycle

Intelligent Devices

19B
Connected devices by 2016[1]

Cloud

$200B
Cloud services In 2016[2]

HPC

2X
Annual growth in supercomputing FLOPS[3]

Big Data

300M
Facebook* photos per day, 35% of the world's photographs[4]

1 Source: Cisco° Visual Networking Index (VNI) Forecast (2011-2016)
2 Source: Gartner Worldwide IT Spending Forecast, 2Q12 Update
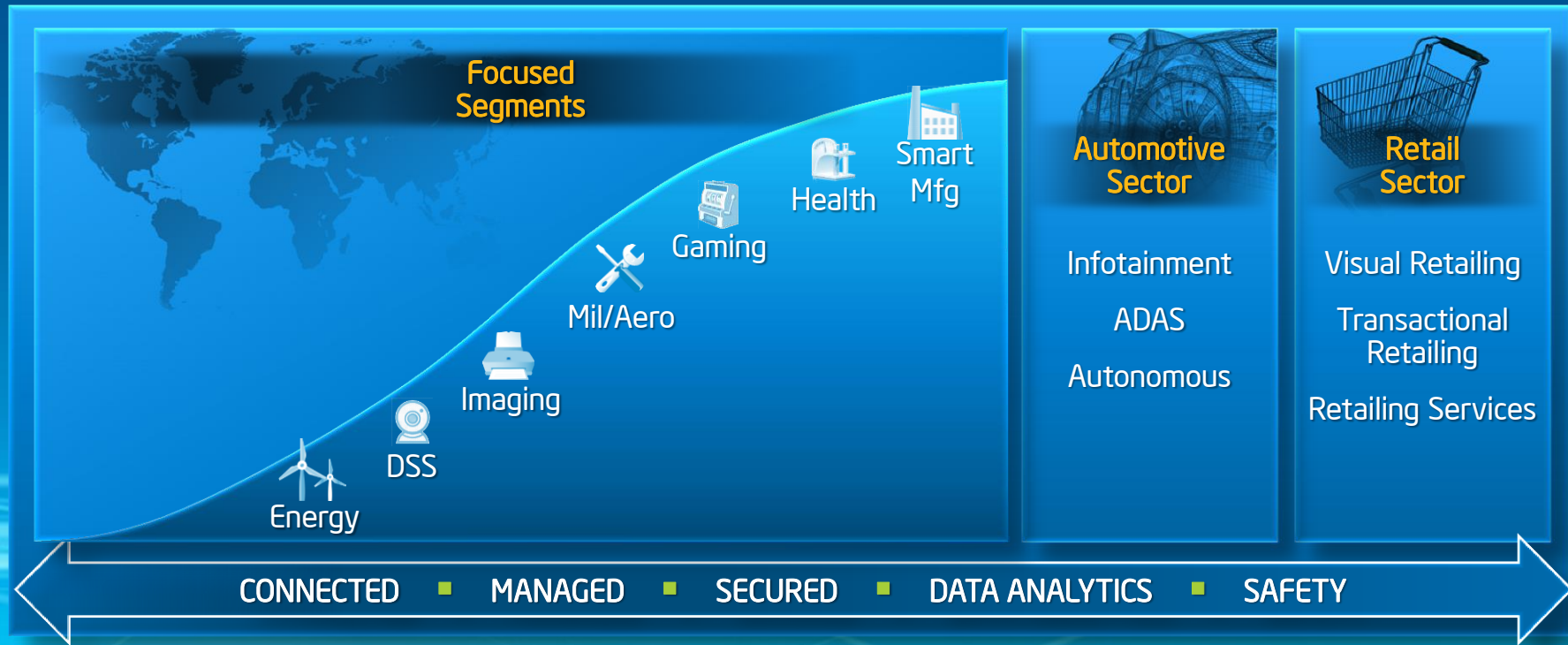3 Source: Top 500 list: Top 10 change from November 2007 to November 2012
4 Source: Facebook public statements

REDEFINING WHAT'S POSSIBLE – TOGETHER.

#1. Intelligent Devices - New Era of Computing
Enabling an Industry of Pervasive Computing

Focused Segments

- Energy
- DSS
- Imaging
- Mil/Aero
- Gaming
- Health
- Smart Mfg

Automotive Sector

- Infotainment
- ADAS
- Autonomous

Retail Sector

- Visual Retailing
- Transactional Retailing
- Retailing Services

CONNECTED ▪ MANAGED ▪ SECURED ▪ DATA ANALYTICS ▪ SAFETY

REDEFINING WHAT'S POSSIBLE – TOGETHER.

The Age of Intelligent Systems
Transforming the Customer and Vendor Experience

1960s

1980s

TODAY

HD Camera 1080p

LCD touch enabled 46"

Connected
Gaming
Gifting
Social Media
Video
Commercials
Nutritional
Info
Smartphone
aware

REDEFINING WHAT'S POSSIBLE – TOGETHER.

Data Science

*Data science combines elements from many fields:

- Math
- Statistics
- Data Engineering
- Pattern Recognition and Learning
- Advanced Computing
- Visualization
- Uncertainty Modeling
- Data Warehousing
- High performance computing

It is nearly within our grasp to compute on <u>all</u> human generated information

Source: Gus Hunt, CTO of the CIA,
http://www.businessinsider.com/cia-presentation-on-big-data-2013-3

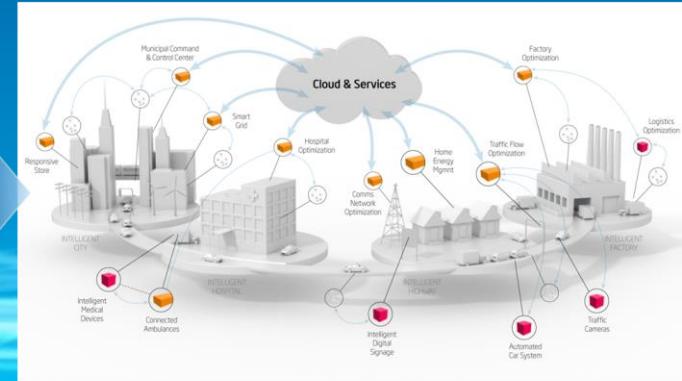# Intelligent Systems Framework 1.x:

Set of interoperable solutions that address connecting, managing, and securing devices in a consistent and scalable manner
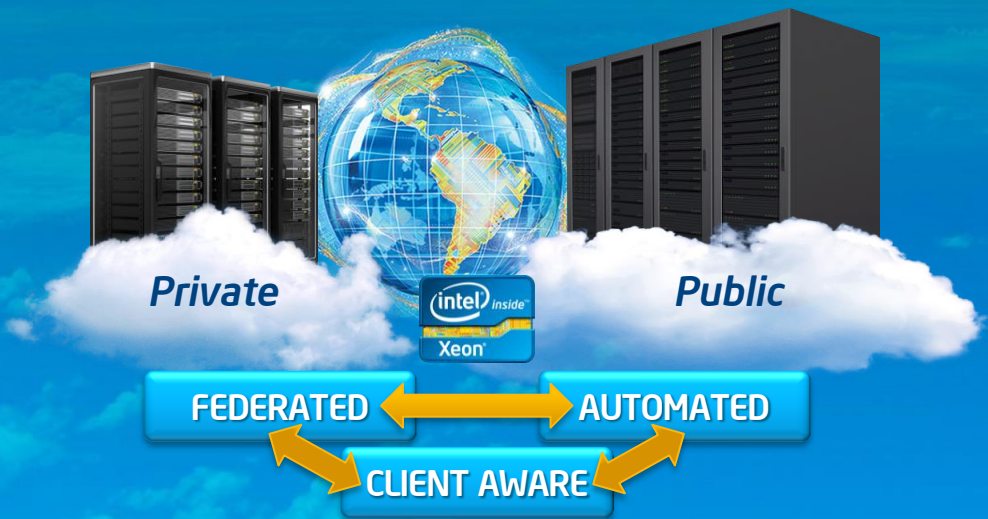
Intelligent Systems Framework1.x

- Consistent framework for Connectivity, Security and Manageability

- Flexible recipes utilizing scalable, off-the-shelf elements

- Enables vertical specialization

- Shifts investment from interoperability to extracting value from data

Embedded Devices → **Intelligent Systems**

The Cloud Transformation to Hybrid
Example: Savvis' Global Cloud Services for Private to Public Cloud Federation
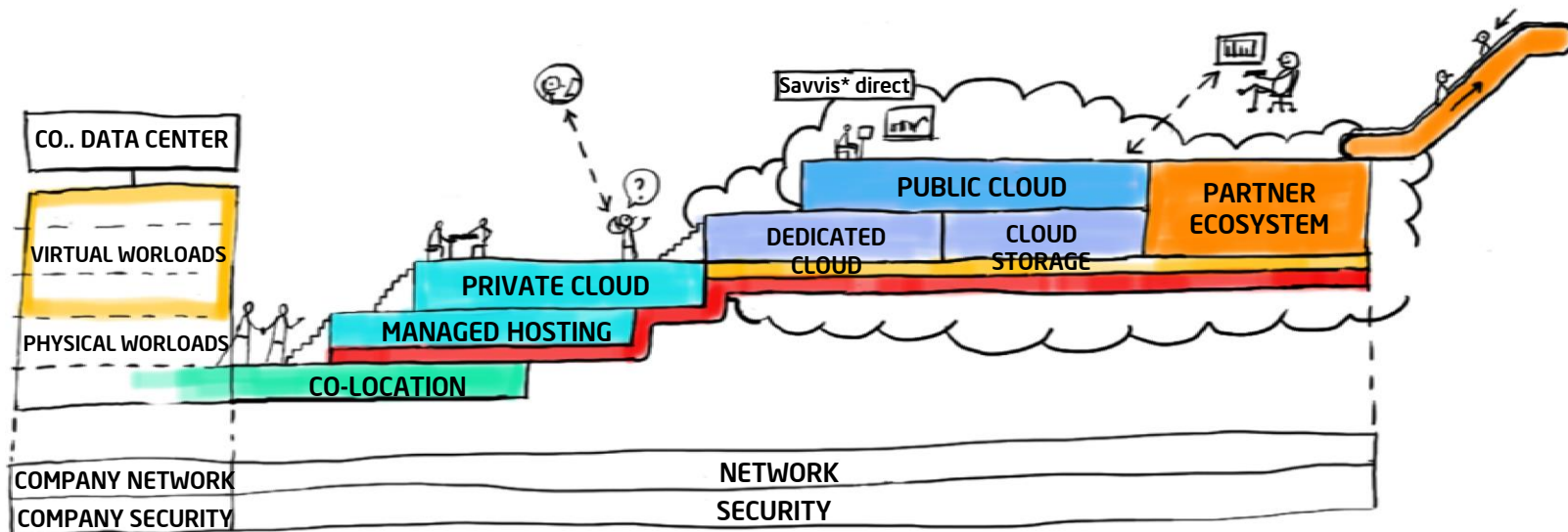
Intel & McAfee: Securing the Cloud

In Next 5 Years, Make Cloud Security Equal to or Better Than Traditional Best In Class Enterprise Security

McAfee® — An Intel Company

Available Today

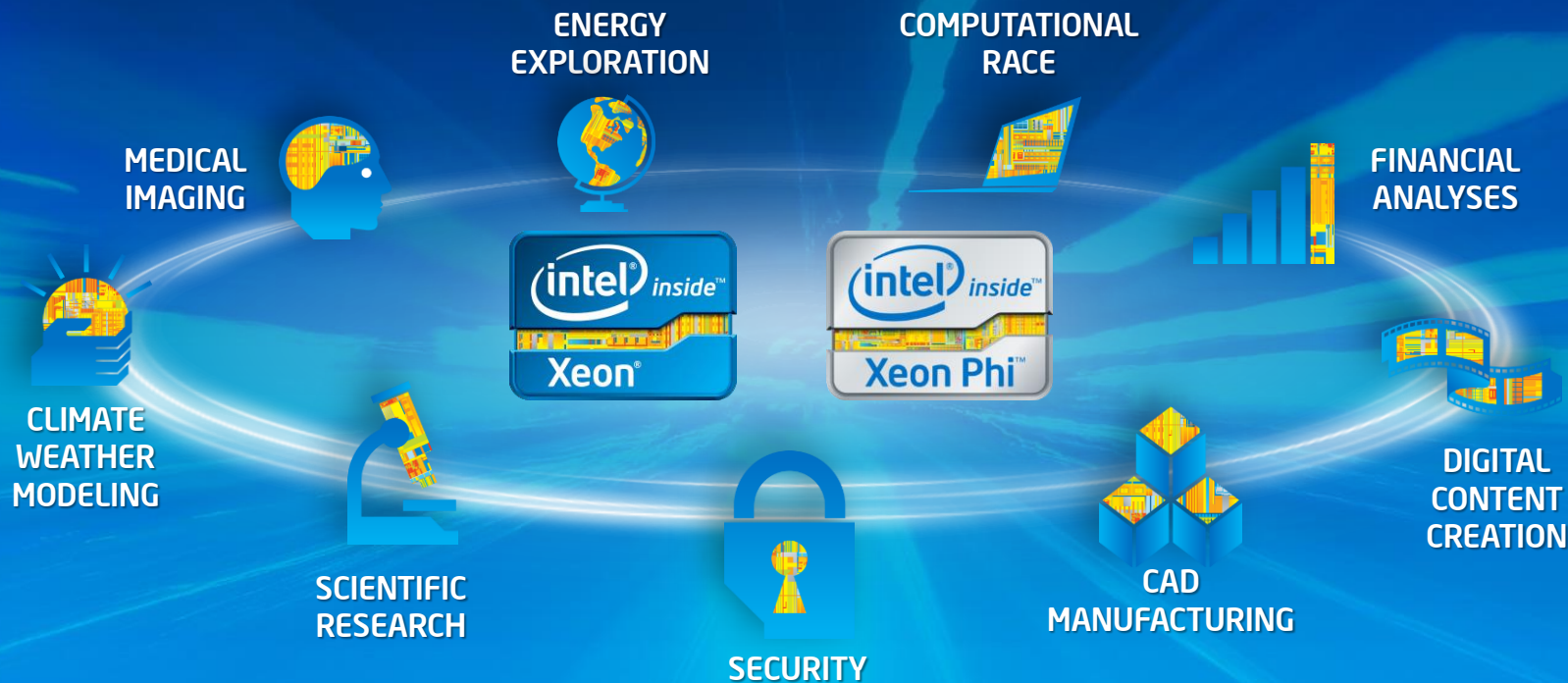|	
Secure Cloud Data Centers	*Intel VT & TXT, McAfee MOVE AV, McAfee ePO[1], Application Control*
Secure the Connections	*McAfee Cloud Security Platform*
Secure User & Intelligent Devices	*Intel Identity Protection Tech., McAfee Cloud Identity Manager, McAfee Deep Defender*
Industry Collaboration	Accelerate Broad Adoption of Security Standards for Cloud & Enable Broad Range of Open, Interoperable Security Solutions

Hardware-enhanced Security + Software & Services Key To Achieve Mission

www.intel.com/cloudsecurity   www.mcafee.com/datacenter

REDEFINING WHAT'S POSSIBLE – TOGETHER.

1 Integrating McAfee ePolicy Orchestrator (ePO) with Intel TXT requires custom integration work

#3. HPC – Future Breakthroughs Start Here

ENERGY EXPLORATION

COMPUTATIONAL RACE

MEDICAL IMAGING

FINANCIAL ANALYSES

intel inside™
Xeon®

intel inside™
Xeon Phi™

CLIMATE WEATHER MODELING

DIGITAL CONTENT CREATION

SCIENTIFIC RESEARCH

CAD MANUFACTURING

SECURITY

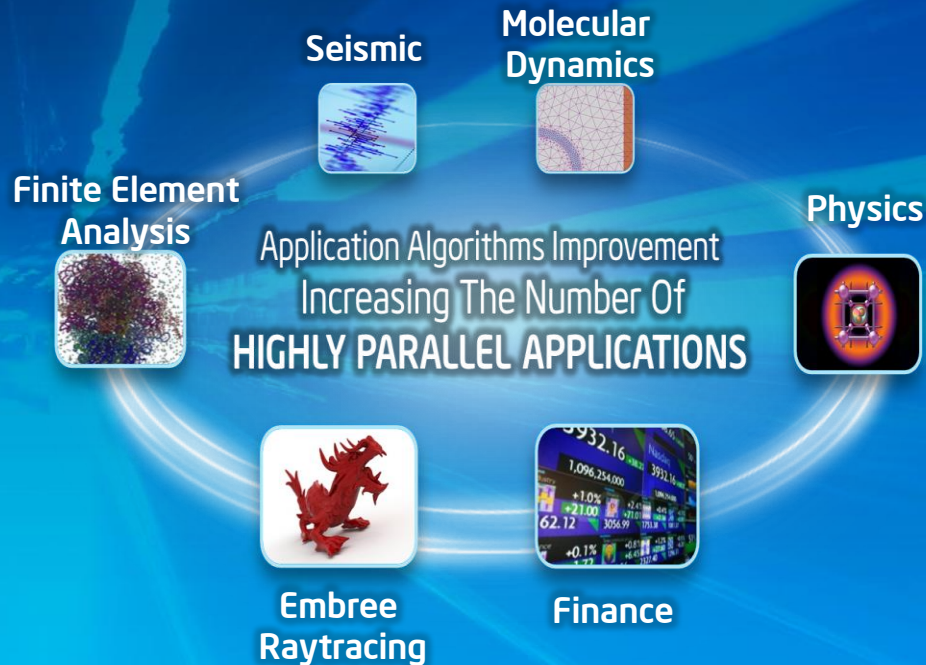*To Compete You Must Compute.*

HPC: Greater Processing Required for Highly Parallel Applications
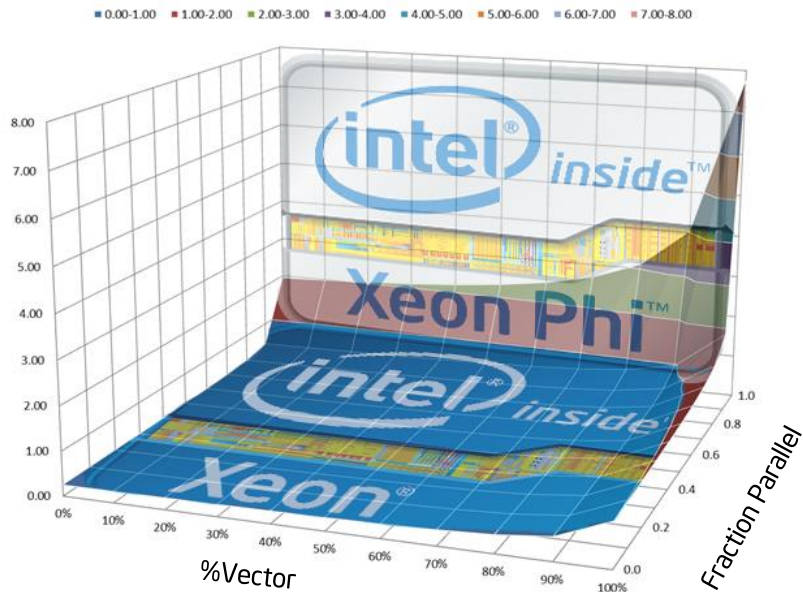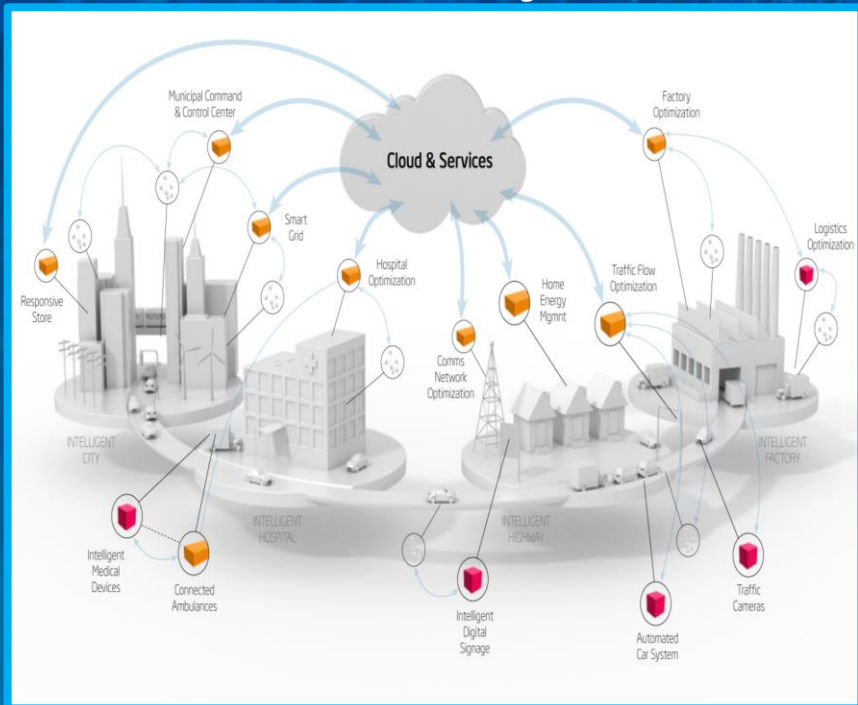

* Theoretical acceleration of a highly parallel processor over a Intel® Xeon® parallel processor (<1Intel® Xeon® faster)

Seismic

Molecular Dynamics

Finite Element Analysis

Physics

Application Algorithms Improvement
Increasing The Number Of
HIGHLY PARALLEL APPLICATIONS

Embree Raytracing

Finance

#4. Big Data – Making Sense of One Petabyte

Smart City

Healthcare

Therapies tailored to a persons genome
Decoding the human genome:
- **From 10 years to hours**
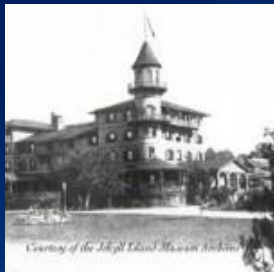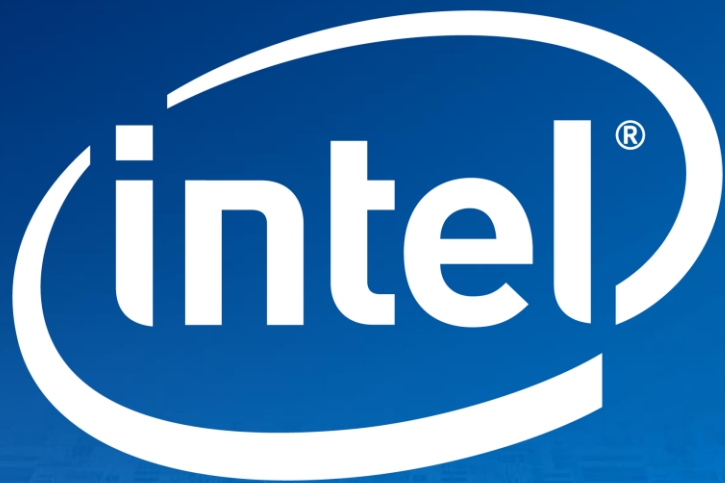- **On track to hit <$1000 per person**

Telecom

Explosive growth, 30 Tb/month billing data
Radical overhaul of customer service:
- **Self service, real time access**
- **30x performance increase**

The Major Trend - Intersection of Big Data & HPC

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