

**Welcome To The 53<sup>th</sup>  
HPC User Forum  
Meeting  
July 2014**



# Important Dates For Your Calendar

## FUTURE HPC USER FORUM MEETINGS:

### 2014 Meetings:

- July 16, at Riken in Kobe Japan
- September 15 to 17, Seattle, Washington
- October 28 to 29, 2014 in Stuttgart Germany at HLRS

### 2015 Meetings:

- April 13 to 15, Norfolk, Virginia

# HPC User Forum Mission

**To Improve The Health Of The  
High Performance Computing Industry  
Through Open Discussions, Information-  
sharing And Initiatives Involving  
HPC Users In Industry, Government And  
Academia  
Along With HPC Vendors  
And Other Interested Parties**

# Steering Committee Members

- James Kasdorf, Pittsburgh Supercomputing Center, Chairman
- Rupak Biswas, NASA Ames, Vice Chairman
- Earl Joseph, IDC, Executive Director
- Swamy Akasapu, General Motors
- Vijay Agarwala, Penn State University
- Alex Akkerman, Ford Motor Company
- Doug Ball, The Boeing Company
- Jeff Broughton, NERSC/Lawrence Berkeley National Lab
- Paul Buerger, Avetec
- Chris Catherasoo, Caltech
- Jack Collins, National Cancer Institute
- Steve Conway, IDC Research Vice President
- Steve Finn, Cherokee Information Services
- Merle Giles, NSCA/University of Illinois
- Keith Gray, British Petroleum
- Doug Kothe, Oak Ridge National Laboratory
- Jysoo Lee, National Institute of Supercomputing and Networking
- Paul Muzio, City University of New York
- Michael Resch, HLRS, University of Stuttgart
- Vince Scarafino, Industry Expert
- Suzy Tichenor, Oak Ridge National Laboratory

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## FORUM ATTENDEES



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Chairman, Pittsburgh  
Supercomputing Center

**Rupak Biswas**  
NASA Ames  
Vice Chairman

**Earl Joseph**

**Steve Conway**  
IDC Research Vice President

**Steve Finn**  
Cherokee Information Services

**Merle Giles**  
NCSA/University of Illinois

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**A New Program:  
A Japan And Asian  
Technical Advisory Panel**



**Go To:**

**<http://www.idc.com/HPCpanel>**

**The technical advisory panel helps us and the HPC community better understand specific key trends and events**

**Please try it today!**

- **Each “Pulse” only takes 4 to 5 minutes**

**You will receive:**

- **A certificate showing your panel membership**
- **Summary results of the studies**

# IDC HPC Market Update





# IDC's HPC Team



- **Earl Joseph**  
IDC HPC research studies, HPC User Forum
- **Steve Conway**  
Strategic consulting, HPC User Forum, market trends, Big Data
- **Chirag DeKate**  
HPC QView, new technology trends, Big Data, innovation awards program
- **New: Bob Sorensen**  
Strategic research projects, government studies and international analysis
- **Lloyd Cohen**  
HPC data and workstations
- **Mike Thorp and Kurt Gantrish**  
Government account support and special projects
- **Charlie Hayes**  
Government HPC issues, DOE and special studies
- **Mary Rolph**  
HPC User Forum conference planning and logistics

# Top Trends in HPC

## **2013 declined overall – by \$800 million**

- For a total of \$10.3 billion
- Mainly due to a few very large systems sales in 2012, that weren't repeated in 2013
- We are in the process of updating our forecasts forecasting – we expect healthy growth in 2014 to 2018

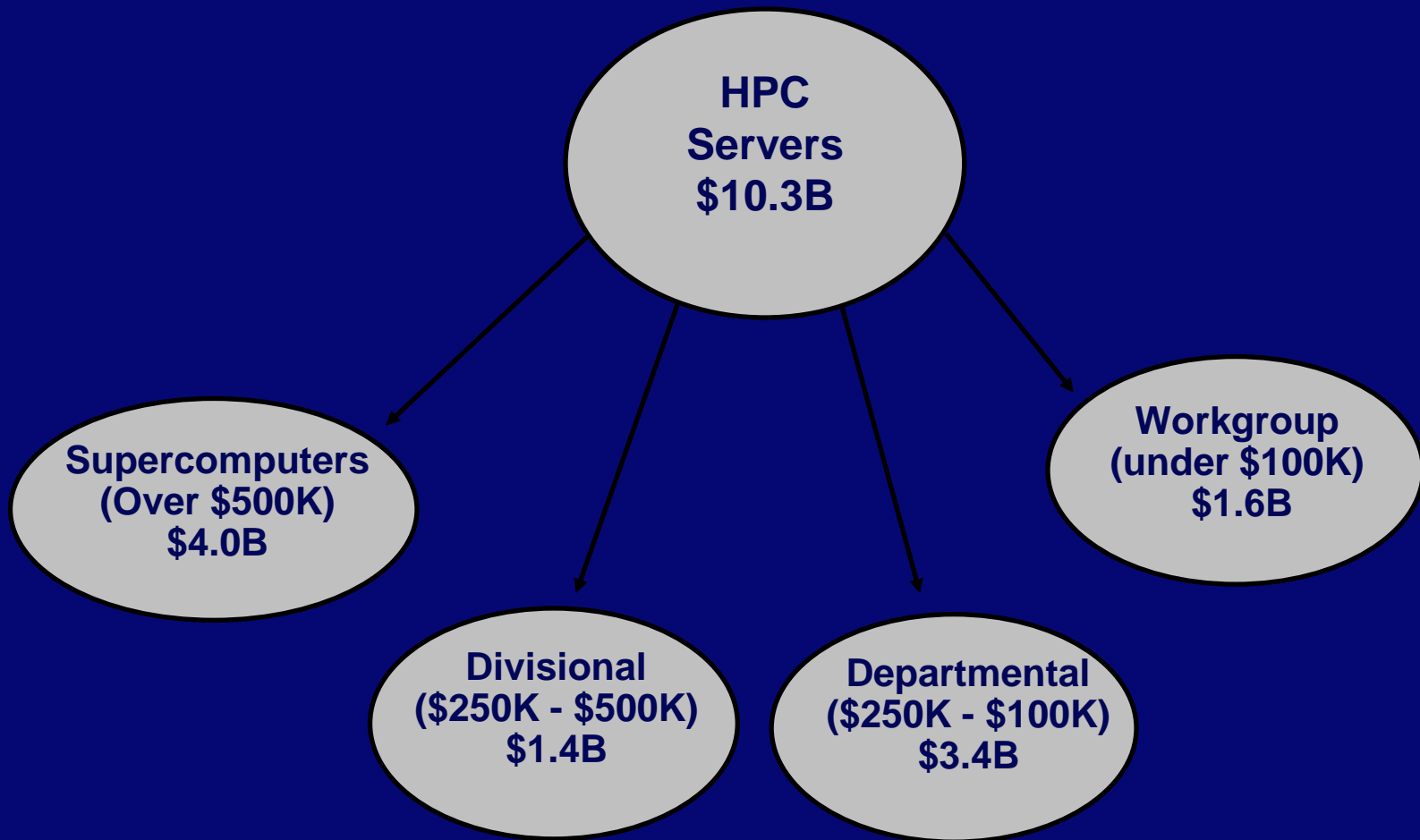
## **Software issues continue to grow**

**The worldwide Petascale Race is in full speed**

**GPUs and accelerators are hot new technologies**

**Big data combined with HPC is creating new solutions in new areas**

# IDC HPC Competitive Segments: 2013



# 2013 HPC Revenue Results

	2011	2012	2013
cs1-Supercomputer	4,370,194	5,654,960	3,994,740
cs2-Divisional	1,236,684	1,216,187	1,355,097
cs3-Departmental	3,467,271	2,979,230	3,363,263
cs4-Workgroup	1,225,910	1,247,366	1,585,666
Total	10,300,058	11,097,743	10,298,766

# 2013 HPC Revenue Results: By Vendor

Mftr	2011	2012	2013
IBM	3,362,098	3,551,723	2,856,334
HP	3,307,427	3,419,554	3,343,758
Dell	1,493,289	1,493,172	1,478,322
Cray	155,620	353,800	436,741
SGI	225,741	274,693	310,581
Fujitsu	120,351	686,657	127,988
NEC	84,141	64,112	72,901
Dawning	102,923	115,359	200,497
Bull	327,536	60,494	77,322
Other	847,140	966,531	1,394,321
	10,300,058	11,097,743	10,298,766

# 2013 HPC Results: Processors Shipped

	2011	2012	2013
cs1-Supercomputer	1,326,046	1,635,494	1,112,154
cs2-Divisional	412,784	426,099	443,452
cs3-Departmental	1,179,347	1,048,614	1,211,342
cs4-Workgroup	250,198	324,473	499,243
Processors	3,168,375	3,434,680	3,266,191

# 2013 HPC Results: Cores Shipped

CPU Type	2011	2012	2013
EPIC	152,420	74,156	9,309
RISC	1,126,142	1,956,455	1,093,706
RISC-BG	73,951	3,124,465	236,706
x86-64	21,077,350	24,612,643	27,287,873
Mix			170,240
Grand Total	22,429,862	29,767,720	28,797,835

# HPC Forecasts

- Forecasting a 7.4% yearly growth from 2013 to 2018
- 2018 should reach \$14.7 billion

<b>Worldwide Total Technical Computer Market</b>			
	2013	2018	CAGR 13-18
<b>Supercomputer</b>	3,994,740	5,661,830	7.2%
<b>Divisional</b>	1,355,097	1,845,090	6.4%
<b>Departmental</b>	3,363,263	4,657,390	6.7%
<b>Workgroup</b>	1,585,666	2,545,416	9.9%
<b>Total</b>	10,298,766	14,709,726	7.4%
Source: IDC 2014			



# HPC Forecasts: By Industry/Applications

WW High-Performance Systems Revenue by Applications			
	2013	2018	CAGR 13-18
Bio-Sciences	1,069,859	1,310,353	4.1%
CAE	1,152,021	1,641,455	7.3%
Chemical Engineering	177,160	209,919	3.5%
DCC & Distribution	598,732	828,941	6.7%
Economics/Financial	336,075	511,045	8.7%
EDA / IT / ISV	664,968	1,046,436	9.5%
Geosciences	749,417	1,093,349	7.8%
Mechanical Design	60,255	60,985	0.2%
Defense	1,007,821	1,483,323	8.0%
Government Lab	2,048,220	3,168,705	9.1%
University/Academic	1,894,374	2,623,655	6.7%
Weather	444,143	595,667	6.0%
Other	95,721	135,894	7.3%
<b>Total Revenue</b>	<b>10,298,766</b>	<b>14,709,726</b>	<b>7.4%</b>
Source: IDC 2014	-	-	

# The Broader HPC Market

## Revenues by the Broader HPC Market Areas

	2013	2018	CAGR 13-18
<b>Server</b>	10,298,766	14,709,726	7.4%
<b>Storage</b>	3,841,141	5,898,600	9.0%
<b>Middleware</b>	1,122,052	1,587,179	7.2%
<b>Applications</b>	3,305,216	4,854,210	8.0%
<b>Service</b>	1,690,499	2,235,878	5.8%
<b>Total Revenue</b>	20,257,674	29,285,594	7.6%

Source: IDC 2014

# Conclusions

## **HPC is still expect to be a strong growth market**

- Growing recognition of HPC's strategic value is helping to drive high-end sales
- Low-end buyers are back into a growth mode

## **HPC vendor market share positions will likely shifted greatly in 2014 and 2015**

## **Recognition of HPC's strategic/economic value will drive the exascale race, with 100PF systems in 2H 2014/2015**

- 20/30MW exascale systems will wait till 2022-2024

## **The formative HPDA market will expand opportunities for vendors**

# Questions?

Please email:  
[hpc@idc.com](mailto:hpc@idc.com)

Or check out:  
[www.hpcuserforum.com](http://www.hpcuserforum.com)



# Morning Agenda

**Morning Session Leader: Paul Muzio**

**9:30am RIKEN Overview, Akira Ukawa, AICS**

**10:00am New Uses of HPC and Supercomputers (20 minute updates)**

**This session will focus on new or expanding areas for applying HPC technologies and systems to address important issues to society, industry and research.**

- Introduction by Steve Conway on a new use case examples coming from the merging of big data and HPCD aka HPDA**
- HPC Update, Kozo Fujii, JAXA**
- The Growth of HPC Industrial Partnerships in the U.S. and Europe, Merle Giles, National Center for Supercomputing Applications**
- 15 minute break**
- Big Data Assimilation for Revolutionizing Weather Prediction, Takemasa Miyoshi, RIKEN AICS**
- The Expansion of CFD in the Aerospace Industry, Doug Ball, Boeing**
- New Directions in Large Scale Computing and Big Data from a US National Perspective, Dimitri Kusnezov, US Department of Energy**

**12:30pm Lunch**

# Afternoon Agenda

## Afternoon Session Leader: Doug Ball

- 1:30pm Updates from HPC and Supercomputer Centers (20 minute updates)
- Earth Simulator and the New Center at JAMSTEC, Makoto Tsukakoshi, JAMSTEC
  - HPC Use in Korea, Jysoo Lee, National Institute of Supercomputing & Networking
  - **New Benchmark Directions, Robert Meisner, US Department of Energy**
  - Update on HPC in Poland, Marek Niezgodka, ICM/University of Warsaw
- 3:30pm Fujitsu Technology Update
- 3:45pm Break and Tour of the K Computer / Visitor's hall for K computer / Group Photo
- 4:30pm New and Disruptive Technologies: Brief Updates
- Vendors will briefly (5 minutes) present future technologies that could make major changes to the HPC market.
- Earl Joseph will summarize the April disruptive panel on quantum computing
  - Invited vendors: Fujitsu, NEC, DDN, Panasas, etc.
- 5:00pm Challenges towards Post-Peta/Exascale Computing at Information Technology Center, the University of Tokyo, Kengo Nakajima, the University of Tokyo
- 5:30pm **Designing for Urban Resiliency in an Era of Climate Change, Paul Muzio, City University of New York**
- 6:00pm Meeting Summary and Wrap Up
- 6:05pm Networking time and Time for 1-on-1 Meetings

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