



Impacting the future of the enterprise technology ecosystem

## z Systems - Beyond the Bumps

Session 18463

Monday, February 29 - 4:30 – 5:30 pm

Room 225C

Paul R. Robichaux, NewEra Software, Inc.



#SHAREorg



SHARE is an independent volunteer-run information technology association  
that provides education, professional networking and industry influence.

- One of the primary missions of those charged with the responsibility to enhance and sustain the operational availability and integrity of the z Enterprise and its z Systems is to maintain their currency in both overall IT Server Market Trends and changes that specifically impact the z/OS environment. Such individual currency helps organizations adapt their IT strategies in ways that best fit the needs of all IT users and aids them in their long term effort towards reducing the Total Cost of z Systems Ownership (zTCO).
- Over the last three years the presenter has focused his presentation on the difficult task IBM management has undertaken to reshape its organization, products and strategy into a viable foundation for future corporate growth. As IBM moves ever further into the cloud, it is clear that z Systems and z/OS will play a key role in this remarkable transition, but without question “it’s been a bumpy ride”. In this update the presenter will focus of the importance of maintaining a viable mainframe base, global dependency and free cash flow, the emerging areas of “Platform Growth” - Cloud, Mobile, Social, Analytics, and Security - and the competitive headwinds that each will certainly encounter.
- Paul R. Robichaux is CEO and co-founder of NewEra Software, Inc. He served as the Chief Financial Officer of Boole and Babbage for the ten years immediately preceding his co-founding of NewEra in 1990. He holds a BS in Accounting and a Masters in Business Administration from a Louisiana State University and is a Certified Public Accountant.
- The corporate mission of NewEra Software is to provide software solutions that help users avoid non-compliance, make corrections when needed and in doing so, continuously improve z/OS integrity.

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# z Systems - Beyond the Bumps!

*Hello! My name is Paul.*

*I'm a Mainframer  
and*

*Very proud of it!*

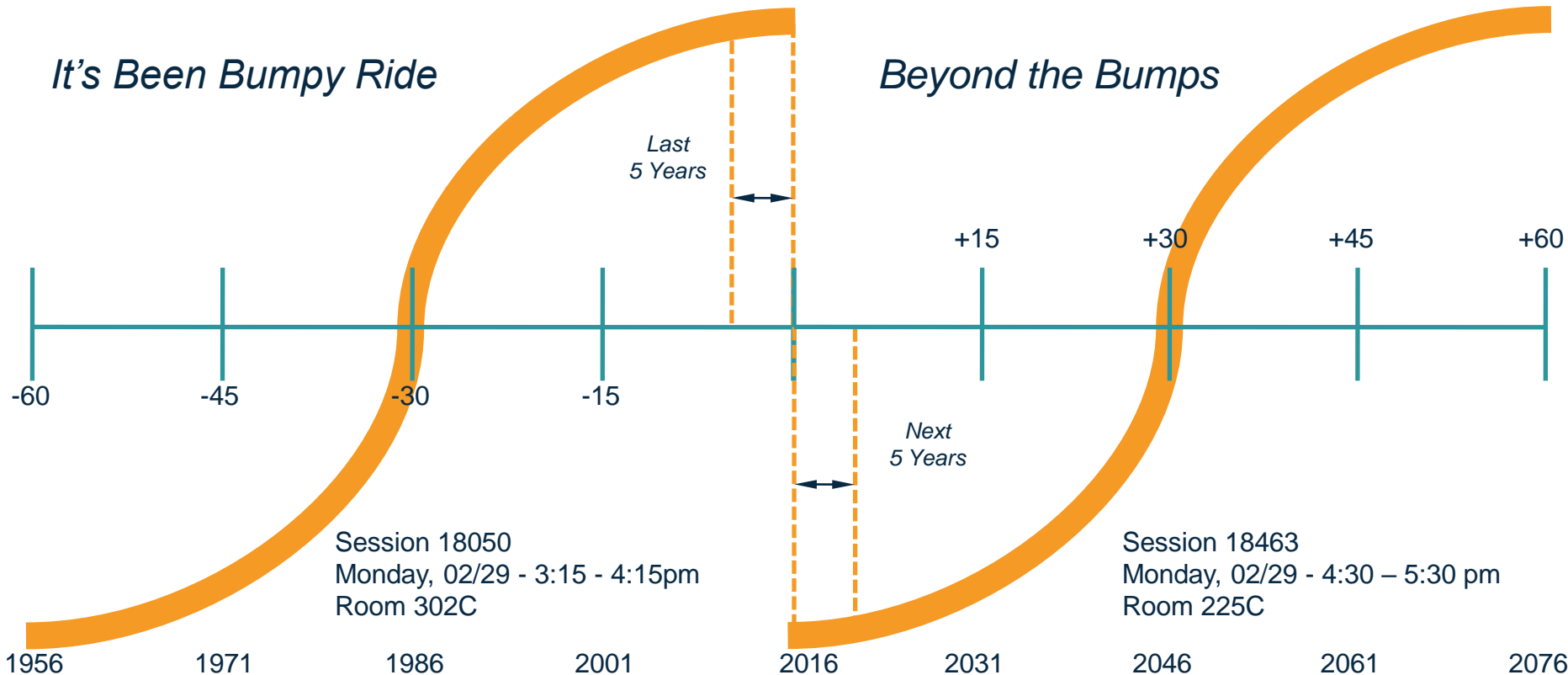
*I like to think of myself as  
a citizen  
in the z Community!*



# z Systems - It's been a bumpy ride!

*It's Been Bumpy Ride*

*Beyond the Bumps*



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[Mainframe Photo Album](#)

# z Systems - Beyond the Bumps!

J.C.R. Licklider & John McCarthy - “In the Sixties”



...had the idea that everyone on the globe should be interconnected and accessing programs and data at any site, from anywhere...

...had the idea of computation being delivered as a public utility, similar to the service bureaus...

Though conceived and developing, “Cloud Computing” had to wait 40 yrs for:

- *Virtualization Technology*
- *Universal High Speed Networks*
- *Software Interoperability*
- *Killer Applications - Perhaps Artificial Intelligence (AI)*

# z Systems - Beyond the Bumps!

Moving from “Think” to “Outthink” - The Cognitive Age



Engagements Platform Systems of Record

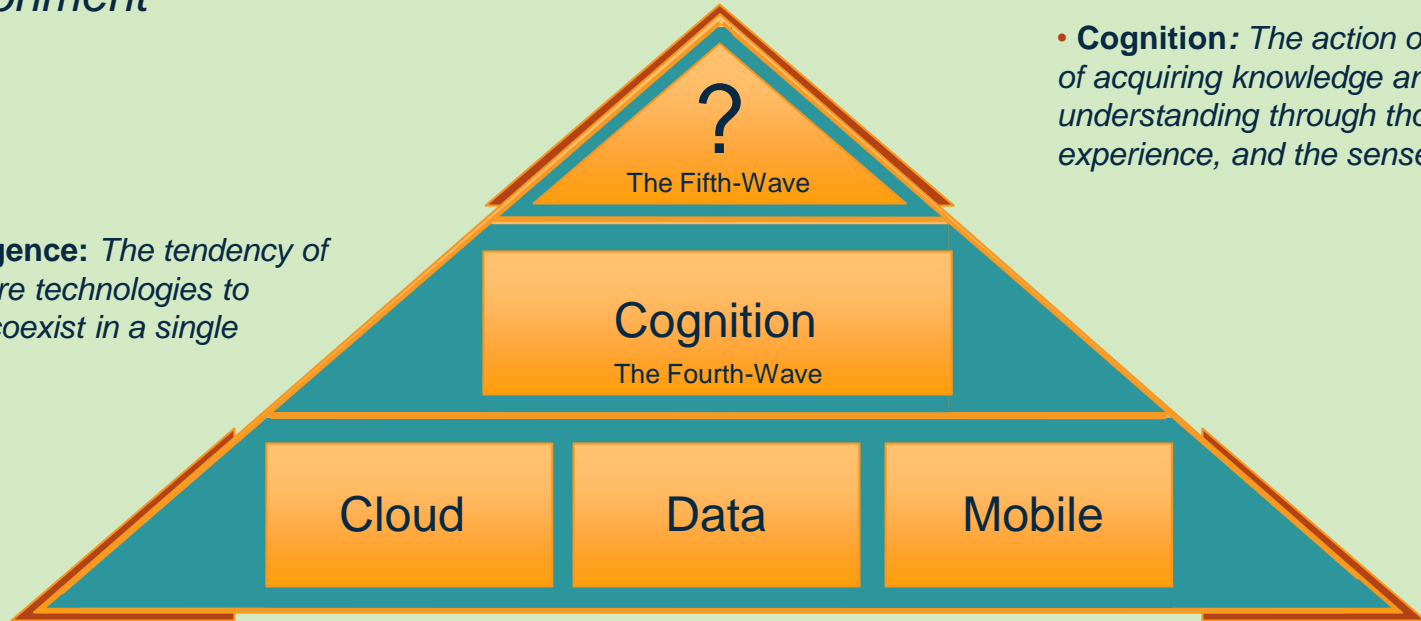
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## IT Environment

- **Convergence:** *The tendency of two or more technologies to combine/coexist in a single system.*



- **Cognition:** *The action or process of acquiring knowledge and understanding through thought, experience, and the senses.*

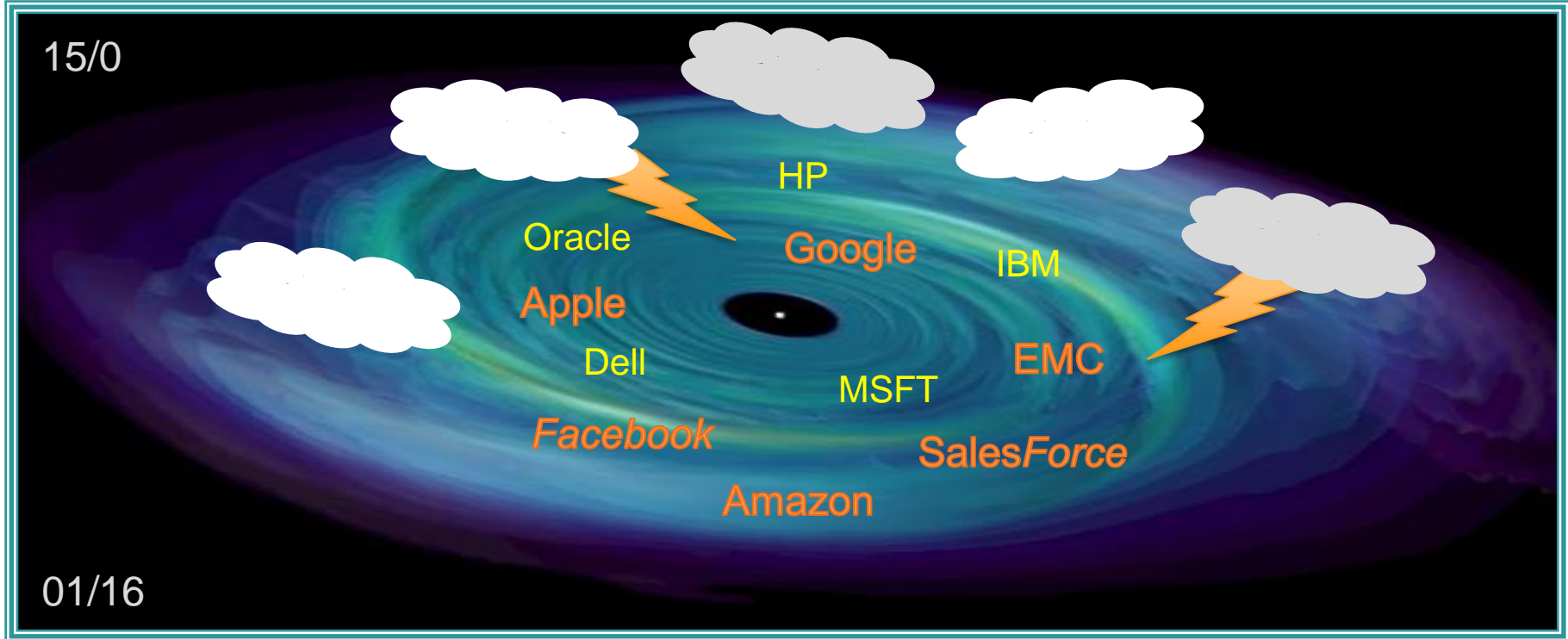
- **Security/Integrity:** The state of being free from danger./The state of moral uprightness.

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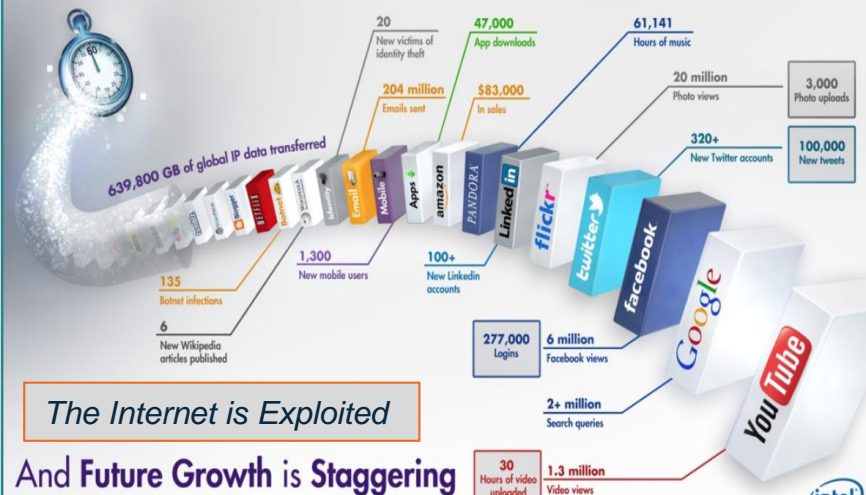


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## Social Connectedness Exploded!



## What Happens in an Internet Minute?



## The Internet is Exploited

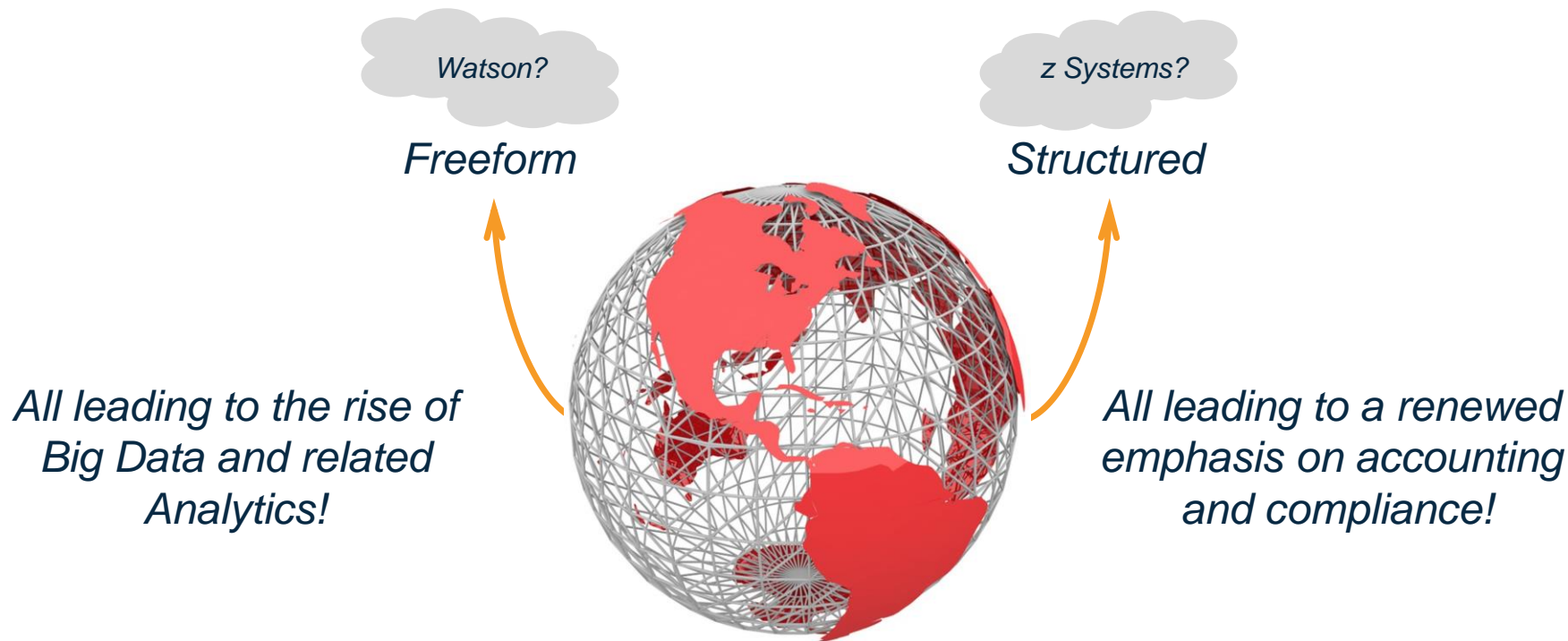
## And Future Growth is Staggering



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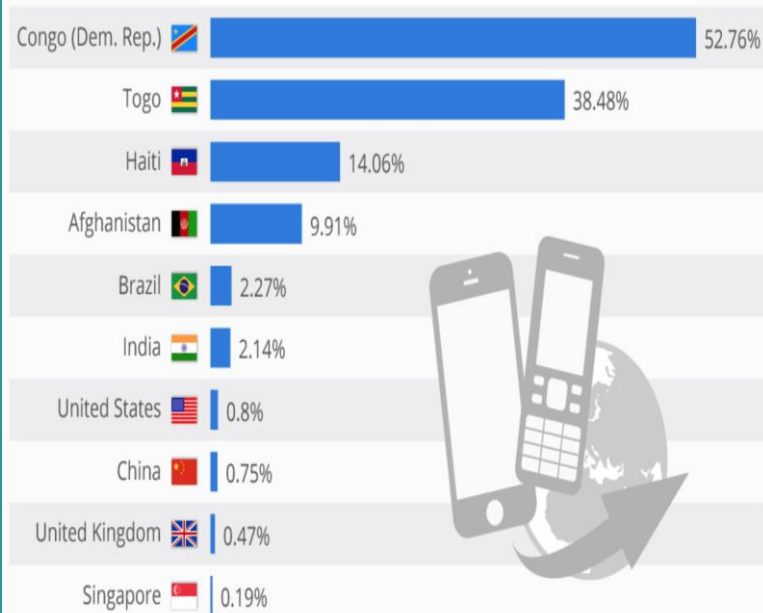
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# z Systems - It's been a bumpy ride!

## The Real Cost of Owning a Mobile Phone

Monthly cost of operating a mobile phone as a % of GNI per capita in selected countries\*



Over ½ the world is still not connected.

*“Some 4 Billion people, the majority of the world’s population, lack access to the internet and are therefore excluded from the digital economy.”*

The World Bank, 12/2015

*1 billion in India, 700 million in China, 200 million in Indonesia  
Facebook, Alibaba, Alphabet*

*Facebook’s limited Internet service, “Free Basic”, on mobile devices band in India. Government cites strong influence over what Internet users would see.*

[More about Walled Gardens](#)

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[GNI = Per Capita Gross National Income](#)

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## Johnson Controls and Tyco Team Up: Getting Ready for the New Economy!

Technology is converging - including heating and air-conditioning systems, fire protection and security technology.

Following this transformational transaction the combined company will tie together complementary businesses — as the home-products industry transitions toward a new world defined by smart, connected products known as the "Internet of Things."

After the automotive business spins off, the new Johnson Controls will get 70% of its revenue from physical products and 30% from services.

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*[More about this Merger](#)*

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72.5m Sold WW in 2015 - 1.2m Deaths.

Are you too busy texting to drive safely?

*What if it could be easier and safer for everyone to get around?*

*Coming soon a constellation of cameras and laser or ultrasonic sensors will determine where foreign objects are, what speed they are going, and whether “Your Car” should accelerate, slow down or exit the highway.*

*Aging or visually impaired loved ones wouldn't have to give up their independence. Time spent commuting could be time spent doing what you want to do.*

*Deaths from traffic accidents could be reduced dramatically - 94% of accidents in the U.S. involve human error.*

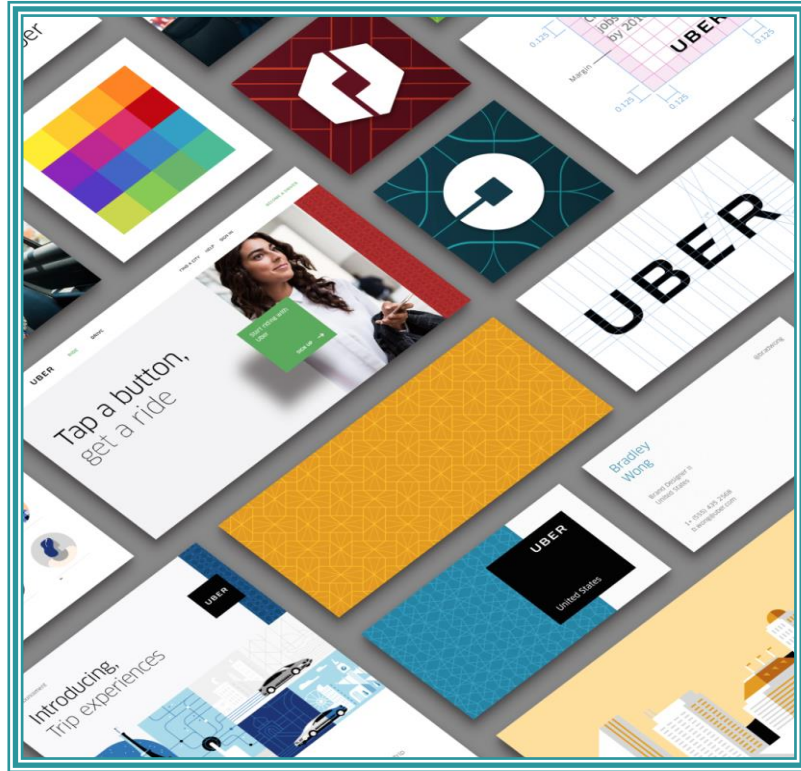
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[More About Google Car](#)



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Today - Time will wait for no business:

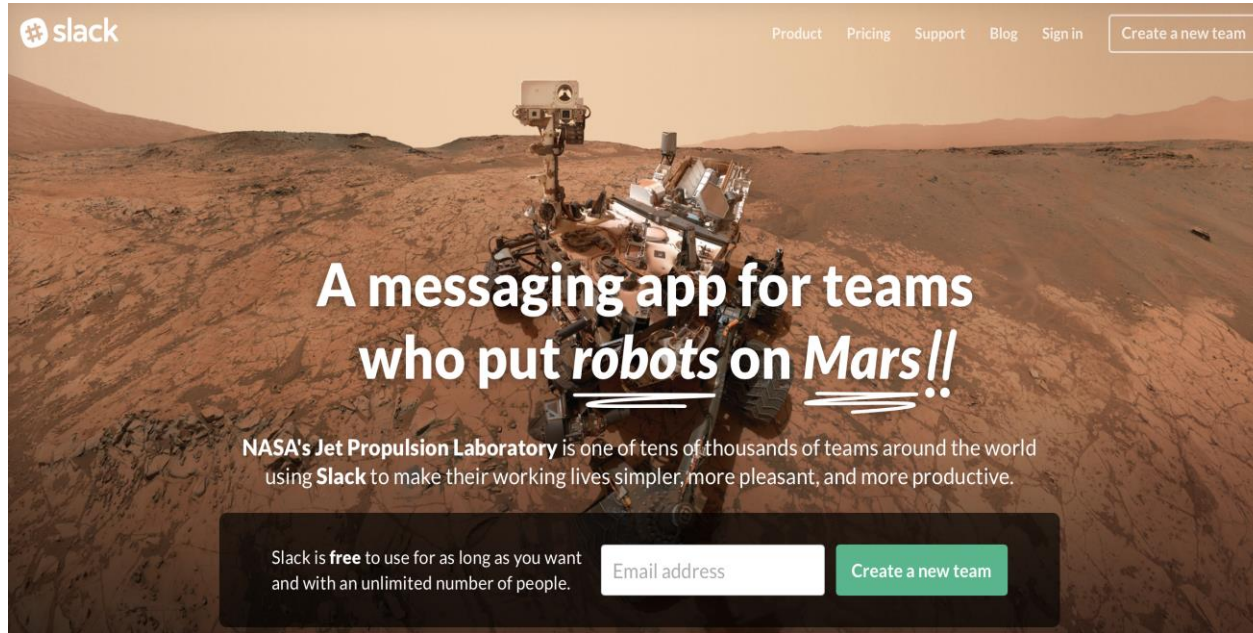
- Observation about ERP Systems:  
*Organizational processes are not perfect! If true, then how do things get done when problems surface? Answer, Tribal Leader/Knowledge fills in the gaps - generally, managers!*
- Impact on New Age/Shared Economy Companies:  
*They cannot survive these "Old School Luxuries".*
- Example:  
*Uber/Lyft/SideCar must make new employee/drivers productive within hours. The typical employee/driver might last 6 weeks before the process is repeated - over and over again.*
- Conclusion:  
*Can New Age/Shared processes be imperfect? Answer, No!*

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[More about UBER](#)

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The image shows the Slack website's hero section. At the top left is the Slack logo. To the right are links for Product, Pricing, Support, Blog, and Sign in, along with a 'Create a new team' button. The background is a high-resolution image of the Mars rover Curiosity on the red planet's surface. Overlaid on this image is the text: 'A messaging app for teams who put robots on Mars!!'. Below this, a smaller line of text states: 'NASA's Jet Propulsion Laboratory is one of tens of thousands of teams around the world using Slack to make their working lives simpler, more pleasant, and more productive.' At the bottom, there is a dark banner with the text: 'Slack is free to use for as long as you want and with an unlimited number of people.' To the right of this text is an input field for 'Email address' and a green 'Create a new team' button.

## CHANNELS

# accounts

# general

# marketing

# mobile

# media-team

*“No More Email” - Build Your Own Channel - It's Free!*

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[More about Slack](#)



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## *Avoid Platform Disintermediation:*

*Disintermediation occurs when a user/buyer, having connected with the named provider/seller, becomes dissatisfied with the product/service offer by the provider/seller and decides to circumvent the provider/seller platform eventually transacting with a perceived better provider/seller of an alternative but similar product/service.*

[More about Disintermediation](#)

*This should be considered the “Number One” Critical Success Factor in the emerging \$5.0 Trillion Internet of Everything Economy.*

[What is The Internet of Things \(IoT\)?](#)

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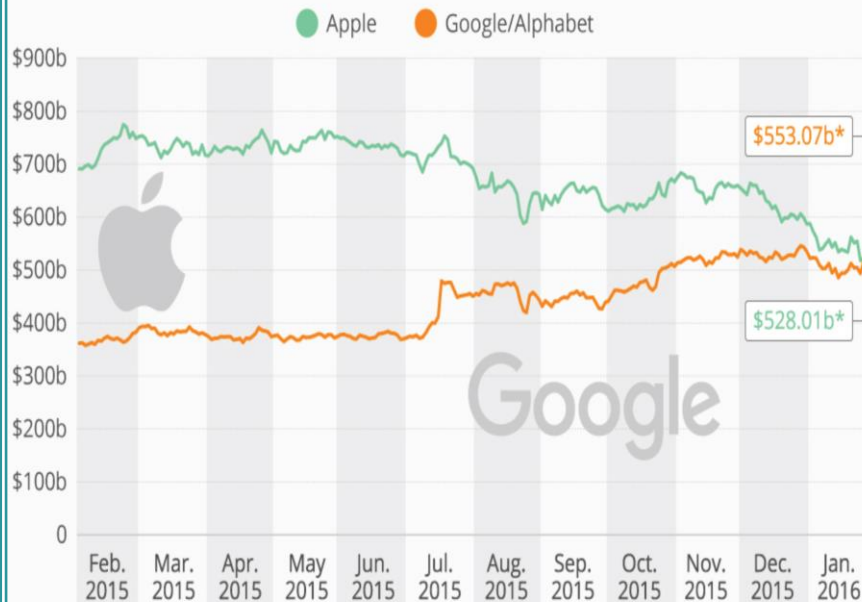
## Is Twitter an Acquisition Target?

Twitter's stock price since the company's IPO in November 2013



## Google Dethrones Apple as Most Valuable Company

Market capitalization (in billion U.S. dollars)



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## Meet Moola:

### *The Mainframe Cash Cow!*

Business jargon for a business venture that generates a steady return of profits that far exceed the outlay of cash required to acquire or start it.

Many businesses attempt to create or acquire such ventures, since they can be used to boost a company's overall income and to support less profitable endeavors.

Q4/2015 - Revenues from z Systems mainframe server products increased 16 percent compared with the year-ago period (up 21 percent adjusting for currency). Total delivery of z Systems computing power, as measured in MIPS (millions of instructions per second), increased 28 percent.

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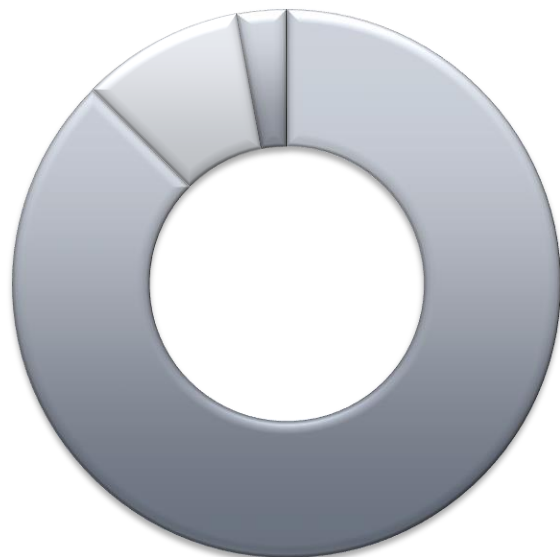
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[More About Q4 and 2015](#)

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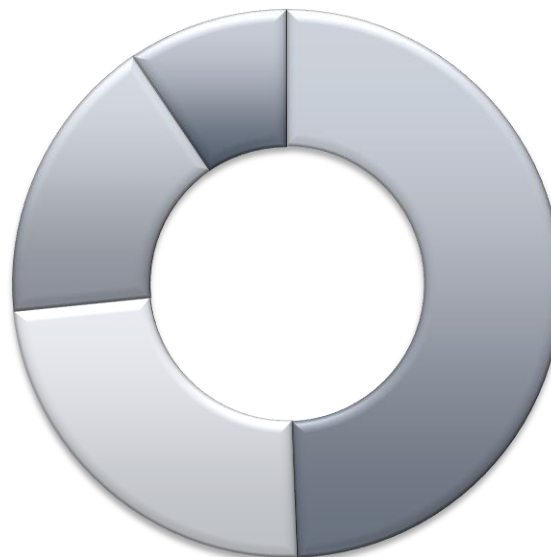
Accounting for the \$120,000,000,000.00 spent during the last 5 Fiscal Years!

*Where it came from:*



- 87.5% - Operations
- 9.6% - Borrowing
- 2.9% - Cash Delta

*What it was used for:*



- 50% - BuyBack
- 24% - R&D
- 17% - Dividend
- 9% - Acquisition

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Description	2015		2014		2013		2012		2011	
Free Cash Flow*	<u>\$13.1</u>	100.0%	<u>\$12.4</u>	100.0%	<u>\$16.1</u>	100.0%	<u>\$18.0</u>	100.0%	<u>\$17.0</u>	100.0%
Acquisitions	3.3	25.2	.6	4.8	2.8	17.4	3.1	17.2	1.8	10.5
Divestitures	.4	-	+ 2.4	-	---	-	---	-	---	-
Dividends	4.9	37.4	4.3	34.7	4.1	25.5	3.8	21.1	3.5	20.5
Share Buyback	4.6	35.1	13.7	110.5	14.1	87.6	12.2	67.8	14.8	87.0
Other Stuff	.2	-	+ 1.2	-	+ 4.6	-	.4	-	+ 4.4	-
Net Cash Flow	<u>- .3</u>		<u>- 2.6</u>		<u>- .3</u>		<u>- 1.5</u>		<u>1.3</u>	
R and D	<u>5.2</u>	27.9	<u>5.4</u>	26.4	<u>5.7</u>	25.8	<u>6.3</u>	24.4	<u>6.3</u>	28.6
Long Term Debt	<u>33.4</u>	2.5/1	<u>35.0</u>	2.8/1	<u>32.8</u>	2.0/1	<u>24.1</u>	1.3/1	<u>22.9</u>	1.3/1

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\* Operating Cash - Capital Expenditures

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## Top Institutional Holders - Represent 30% of all holdings

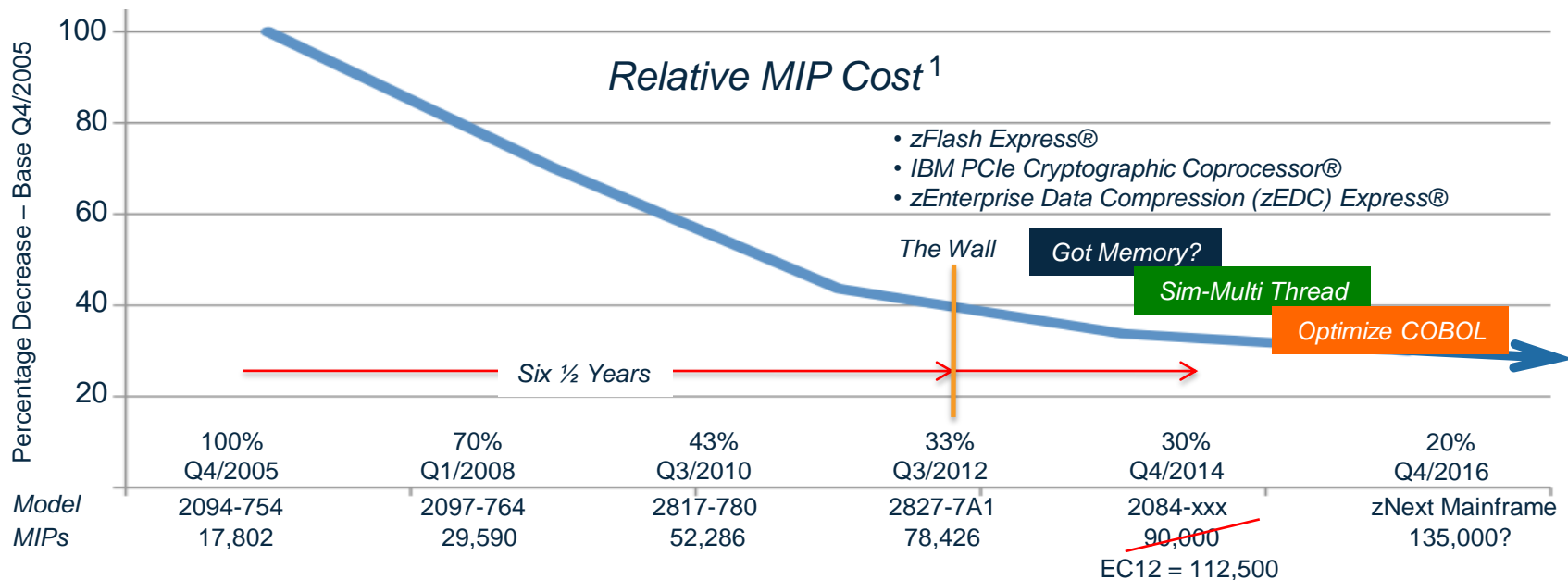
Holder	Shares	% Out	Value*	Reported
Berkshire Hathaway, Inc	81,033,450	8.35	11,747,419,327	Sep 30, 2015
Vanguard Group, Inc. (The)	58,796,441	6.06	8,091,565,916	Dec 31, 2015
State Street Corporation	48,704,493	5.02	7,060,690,398	Sep 30, 2015
BlackRock Institutional Trust Company, N.A.	23,359,978	2.41	3,386,496,034	Sep 30, 2015
State Farm Mutual Automobile Insurance Co	16,651,892	1.72	2,414,024,799	Sep 30, 2015
FMR, LLC	14,863,445	1.53	2,154,753,636	Sep 30, 2015
Bank of New York Mellon Corporation	13,007,362	1.34	1,885,677,282	Sep 30, 2015
Northern Trust Corporation	12,026,653	1.24	1,743,503,897	Sep 30, 2015
BlackRock Fund Advisors	11,553,531	1.19	1,674,915,400	Sep 30, 2015
Norges Bank Investment Management	8,394,197	0.87	1,346,764,983	Dec 31, 2014

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[\*More about Shareholders\*](#)

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<sup>1</sup> Source: <http://www.tech-news.com/publib/pl2084.html> | pl2094 | pl2097 | pl2817 | pl2827

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## It's here! The IBM LinuxONE Rockhopper™

Meet the entry-level Linux server with unprecedented performance, security and resiliency.

Get the full story and more

IBM LinuxONE™ is a Linux and open source superhero made for the app economy.

Combining the best of enterprise Linux and open source, LinuxONE is the most efficient, powerful, secure Linux platform.



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[\*More about LinuxONE\*](#)

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## IBM Ranked #1 Hybrid Cloud Provider

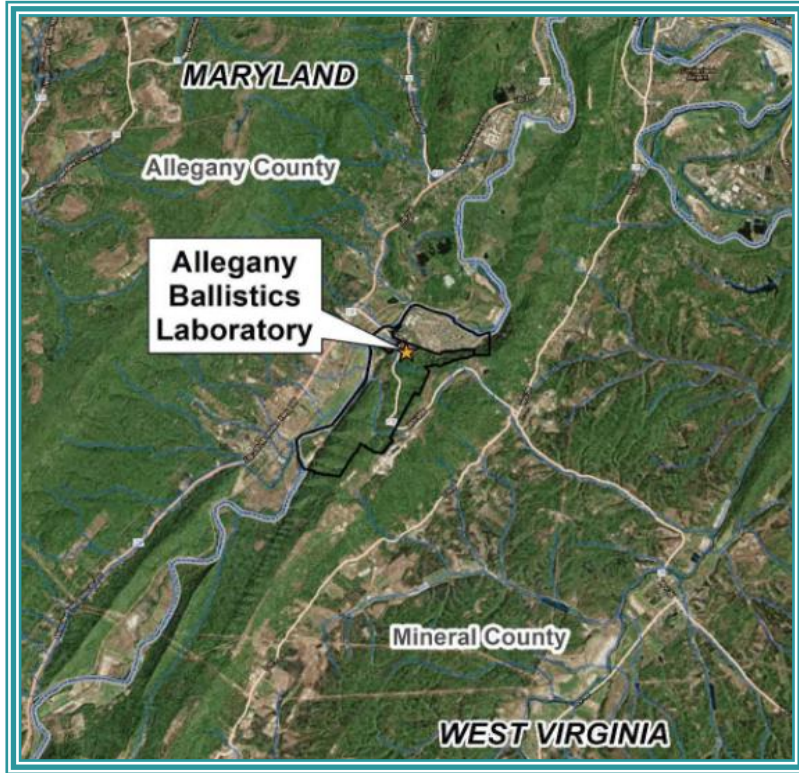
Use of hybrid and private clouds continues to pickup momentum because:

- *They give organizations greater control of their data,*
- *Improved application performance and efficiencies,*
- *Enhanced collaboration while helping*
- *Centralize IT management.*

As a result, businesses not only reduce costs but achieve greater efficiencies.

IBM has been aiding clients in their migration to hybrid cloud solutions for years.

# z Systems - Beyond the Bumps!



Security is still Job ONE!:

## *DISA Authorizes IBM Cloud Services.*

*The Defense Information Systems Agency (DISA) has authorized IBM to deliver IBM Cloud services at the highest security levels – known as Impact Level 5 – for Controlled Unclassified Information as defined by the Department of Defense (DoD), paving the way for DoD agencies seeking to take advantage of the innovations cloud can offer and manage sensitive data.*

*IBM is the first cloud provider with a direct connection to the DoD's internal network known as the Nonsecure Internet Protocol Router Network (NIPRNet). The authorization granted by DISA will enable other DoD agencies the opportunity ultimately to streamline their authorizations by leveraging the thorough process DISA followed.*

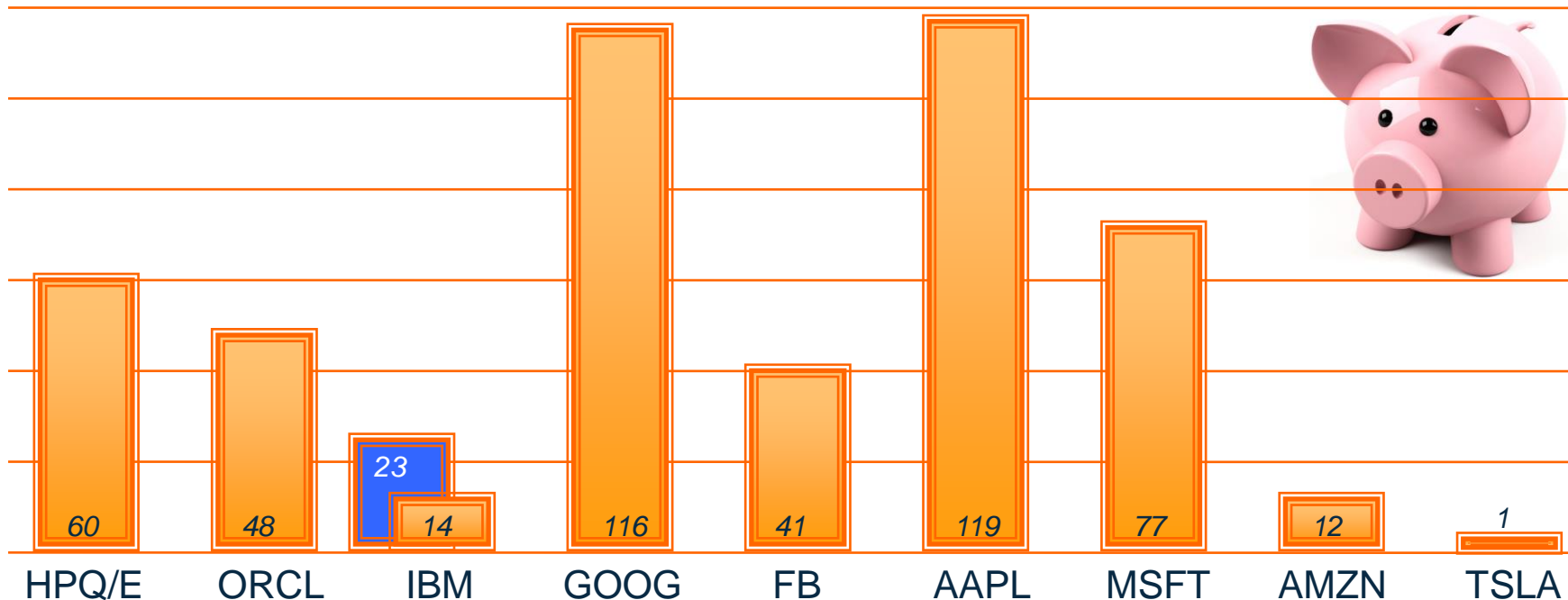
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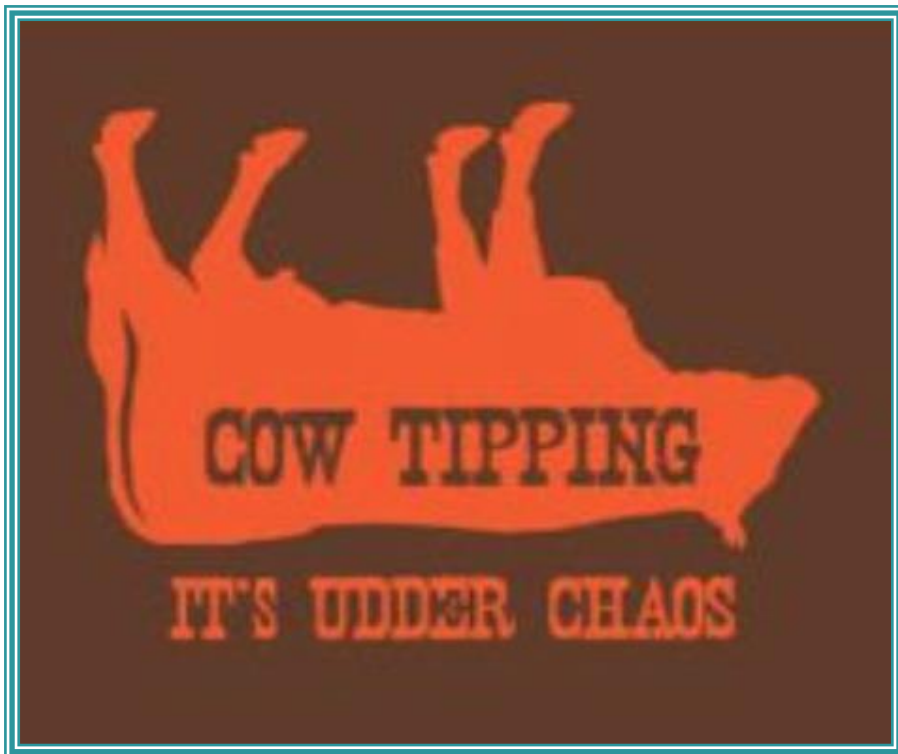
SHAREHOLDERS EQUITY - BILLIONS - LAST REPORTED



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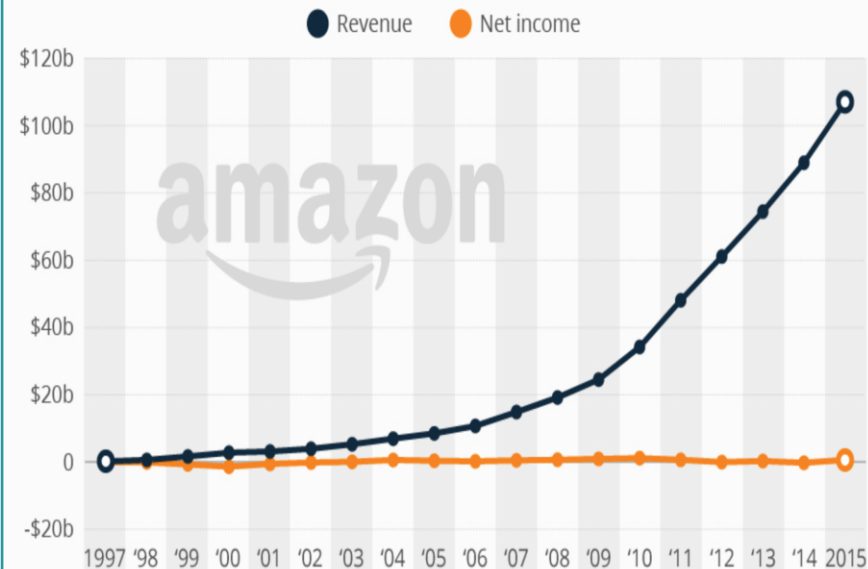
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## Amazon's Relentless Focus on Long-Term Growth

Amazon's revenue and net income from 1997 through 2015 (in billion U.S. dollars)



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“The only thing that can stop IBM is its customers’ ability to understand and exploit its technology!”

*Buck Rogers, IBM VP Marketing  
1984 - Executive Briefing  
OMNI Hotel, Miami FI  
More or Less*

← That was then, this is now! →

*Cloud, Data, Mobil, Social, Security*



# z Systems - Beyond the Bumps!



All Very Disruptive!

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## IBM ditches employee review system:

*The new one was crafted with employees!*

The old system which included “Stack Ranking” was popularized in the 90’s and adopted by organizations like G.E., Microsoft and Yahoo! It’s now more popular to just ditch it and in doing so eliminate the politics and angst of old fashioned performance reviews.

Employees disliked it as it pits them against each other.

The new system “Checkpoint” will include shorter-term goals, feedback at least every quarter and employee reviews based on: business results, impact on client success, innovation, personal responsibility to others, and individual skills.

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[More about Checkpoint](#)

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IBM Interactive Experience

Home | Think

WORK ABOUT PEOPLE **THINK** CONTACT

**Creating a Market Place of One!**

**Get To The Future Faster**

We have some ideas to share  
about technology and trends in your industry

IBM's digital practice is the major drivers of it's business model in mobile, cloud and analytics.

*[IBM Interactive Experience Named Largest Global Digital \(Ad\) Agency](#)*

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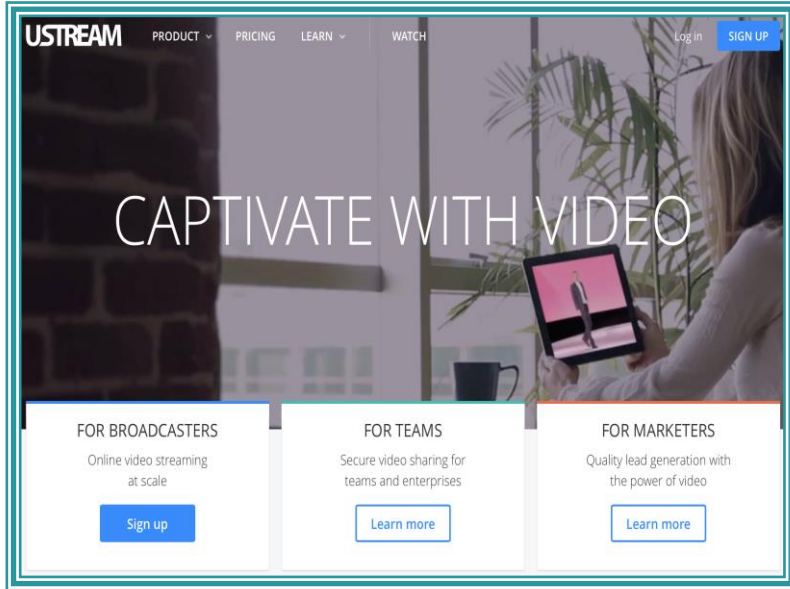
## IBM Marketing Cloud with Universal Behavior Exchange

*More about UBX - <https://www.ibm.com/commerce/us-en/universal-behavior-exchange/>*

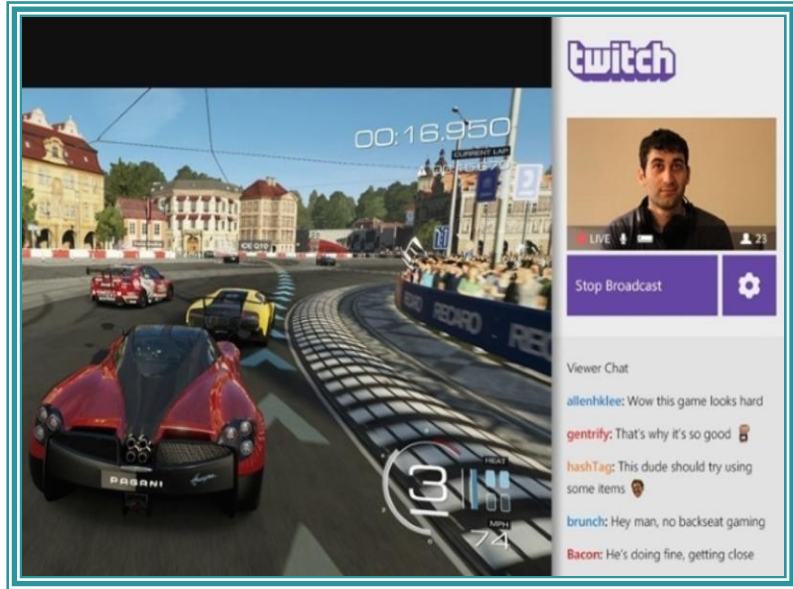
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**Ustream**, which counts NASA, Samsung Electronics Co Ltd , Facebook Inc, Nike Inc and Discovery Channel among its customers, offers both live and on-demand cloud video services to about 80 million viewers per month.  
IBM - January, 2016 - \$130 Million - Cloud Group.



**Twitch** is a service that allows gamers to stream their video game play for others to watch online. It connects with Xbox, PlayStation, PCs, and mobile gaming platforms. 55 million visitors/month. fourth-largest source for U.S. Internet traffic.  
Amazon - September, 2015 - \$1.0 Billion - Game Group.

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# z Systems - Beyond the Bumps!

*February 2, 2016:*

*Buys Germany's Aperto*

*To Build Out Its Digital Agency Business.*

Aperto will become a part of IBM Interactive Experience ("IBM iX") — one of a number of services that IBM has been building out as part of its new wave of enterprise business.

[More about Aperto](#)

*January 29, 2016:*

*Acquires Resource/Ammirati*

*To Address Surging Demand for the Next Great Customer Experience.*

Resource/Ammirati staff will be able to use IBM's two-dozen global design studios and Watson capabilities to bring analytics to their existing customer base.

[More about Resource/Ammirati](#)



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Another day, another acquisition!

## *Enhancing the Digital Business Segment!*

Between this buyout of exc.io and two other planned acquisitions of Resource/Ammirati and Aperto, 800 designers will be added to the already 1,100 such specialists on the payroll. A substantial increase in design expertise.

The customer experience has become the new priority of modern business strategy. exc.io's distinct expertise raises the bar in digital marketing and commerce.

The IBM ix Business Unit now employs over 10,000.

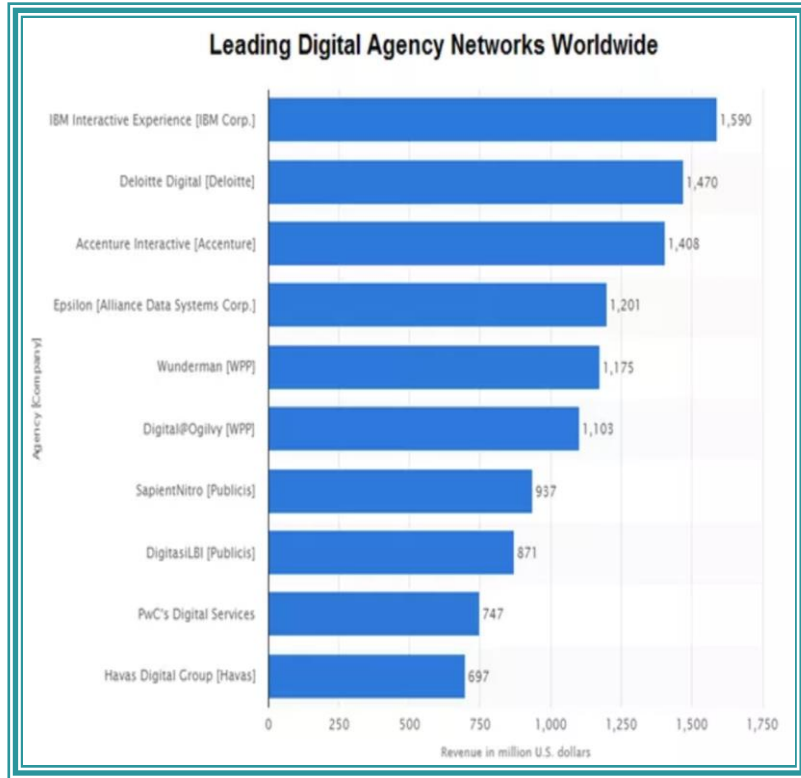
IBM rival Accenture has also been on a buying spree, with two buyouts disclosed in December alone.

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[More about the exc.io Model](#)

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## Reimage the Future of your Customers:

- IBM - 1.590b  
Undertaking digital transformations, rethinking what customers value most and creating operating models that take advantage of what's newly possible for competitive differentiation
- Deloitte Digital - 1.470b  
Brings together all the creative and technology capabilities, business acumen, and industry insight needed to help transform our clients' businesses.
- Accenture Interactive- 1.408b  
Complete, end-to-end digital solutions, helping leading brands delight customers with innovative and personalized omni-channel experiences.
- PwC Digital Service - .745b  
From designers to user-experience, mobile to complex strategies, we are a community around the world who work to create integrated, end-to-end digital solutions.

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[More About Digital Agency](#)



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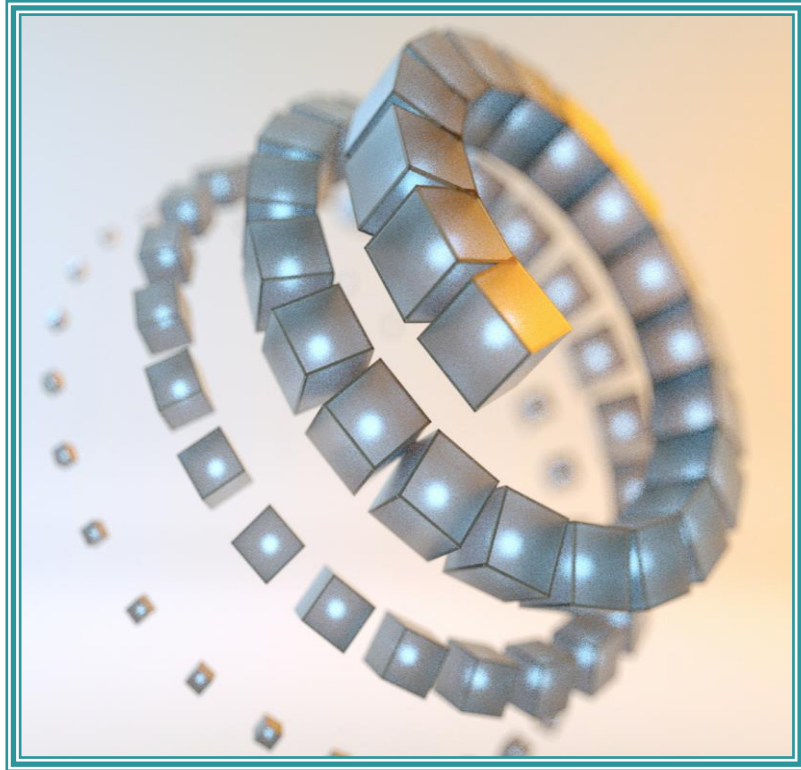
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## IBM Teams with Japan Exchange Group:

### Agreement to test blockchain technology!

Blockchain, first popularized by bitcoin, is one of the emerging technologies that is being closely watched by financial communities throughout the world. It has the potential to enable securities trading organizations to significantly reduce the cost, complexity and speed of trading and settlement processes.

This is a new generation of transactional applications that establishes trust, accountability and transparency while streamlining business processes. Its two main concepts are: A business network, where members exchange items of value through a Hyperledger, which each member possesses and whose content is always in sync with the others.

[More about Blockchain](#)

[Why BitCoin?](#)

# z Systems - Beyond the Bumps!

**Timothy Sipples**

To: IBM-MAIN@LISTSERV.UA.EDU

Introducing Open Blockchain for IBM z Systems

February 17, 2016 11:49 PM

[Details](#)

I haven't seen anybody mention Open Blockchain public ledger technologies on IBM z Systems yet in this forum, so I'd just like to draw your attention to them and raise some awareness in this community. Here is some background reading:

<http://www.ibm.com/blockchain/z.html>

[http://www.ibmsystemsmag.com/mainframe/trends/IBM-Announcements/z-Systems\\_LinuxONE\\_Blockchain/](http://www.ibmsystemsmag.com/mainframe/trends/IBM-Announcements/z-Systems_LinuxONE_Blockchain/)

Here's a YouTube video illustrating some use cases:

<https://youtu.be/EqZr4LPQIWk>

Here's some more background on Blockchain technologies:

<http://www.ibm.com/blogs/think/2015/12/17/how-blockchain-will-transform-business-and-society/>

And here is Tuesday's official IBM press release:

<http://www.ibm.com/press/us/en/pressrelease/49029.wss>

There's much more to come, I'm sure, but you can get started now.

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[More about Timothy Sipples](#)

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IBM X-Force

A threat intelligence sharing platform:

A kind of social network for IT defenders!

One of the biggest problems in cybersecurity is hackers collaborating, sharing data and software. Investigating what these so-called crimeware hackers are auctioning on the “dark web” helps X-Force analysts keep abreast of the latest cyber threats. Openly sharing it for “free” is very much a part of the IBM security business strategy.

Why give away precious data on attackers at no cost? Simple: IBM: aims to commoditize threat intelligence. By giving that intel away, the company hopes to become the foundation on which the information security industry relies. Then the company can use that leverage to sell other services. The bet is that IBM’s analysis, not its endless reams of raw data, will be the moneymaker.

[More about x-Force Exchange](#)

[More about Intel Security](#)

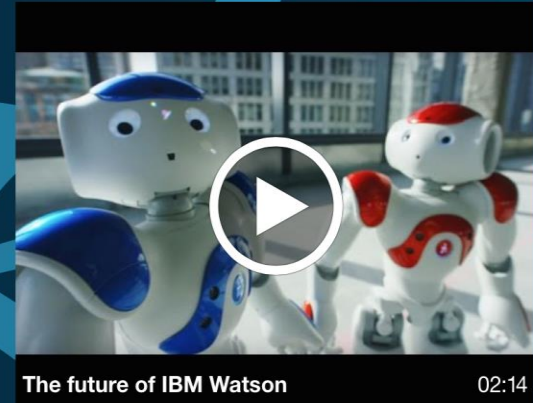
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## Meet Watson

The platform for cognitive business

What is Watson?

Watch now (02:14)





# z Systems - Beyond the Bumps!



## Another New Use for Watson:

### *Enhancing the AI Business Segment!*

Announced 10/2015 a definitive agreement to acquire (For \$2.0 Billion) most of the assets of the Weather Company, including:

- Weather.com website,
- Weather data collection points,
- Consumer and business applications and
- Staff of over 900 people.

Should close in Q1/2016.

The Weather Channel, a cable television outlet, was not part of the deal, but it will license weather forecast data back from IBM.

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*nytimes.com - 10/28/2015*



# z Systems - Beyond the Bumps!



## Medtronics Teams with IBM Health Cloud.

Don't worry this won't hurt!

*What if it were easier, less costly and safer for everyone to get medical care? For example:*

*Existing monitoring methods, such as checking your glucose levels using a drop of blood, are effective, but they only tell you the blood sugar levels at that exact moment.*

*At the 2016 CES in Las Vegas, IBM Watson and Medtronic talked about an app they've been working on to predict instances of low blood sugar in diabetics before they happen.*

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[More on IBM Health Cloud](#)

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## Mars and IBM Team Up:

Just what Chipotle would have ordered!

Data scientists are pioneering a robust new way to prevent the kind of food contamination that kills thousands of Americans every year.

The goal—at once futuristic and a little icky—is to track food across the sprawling, global supply chain by sequencing the DNA of the microorganisms that live on it.

According to researchers conditions as diverse as soil and processing methods all influence a food's microbiome, making the collective DNA a unique record of its path to your plate.

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[More on your next Beef Burrito](#)

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## Under Armour and IBM Team Up:

### Comprehensive fitness tracking programs!

Record is a new health and fitness tracking app designed by Under Armour and IBM. At first glance, it may sound just like every other fitness app on the market—promising to deliver customized workout plans and evaluate progress as the user goes along.

The game changer is the way it tracks food intake.

So far, no firm has been able to streamline the problem of logging nutrition data, but the team says it has the answer. Watson's Visual Recognition and Discovery technology will make the app capable of recognizing food simply by seeing a picture of it.

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[More about UA Record](#)

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## Artificial Intelligence (AI):

*The age of thinking machines is upon us.*

Machine learning (ML) is the capability of computers to learn without being explicitly programmed. Although the broad ideas around ML are well formulated, the field continues to rapidly gain interest due to the the vast proliferation of digital data and the ready availability of computing power to digest it all.

Secondly, SystemML provides automatic optimization according to data and cluster characteristics to ensure both efficiency and scalability.

SystemML runs in MapReduce or Spark environments.

More about ML - <https://developer.ibm.com/open/systemml/>

Google - [TensorFlow](#)

Facebook - [Big Sur](#)

Nvidia - [Deep Learning](#)

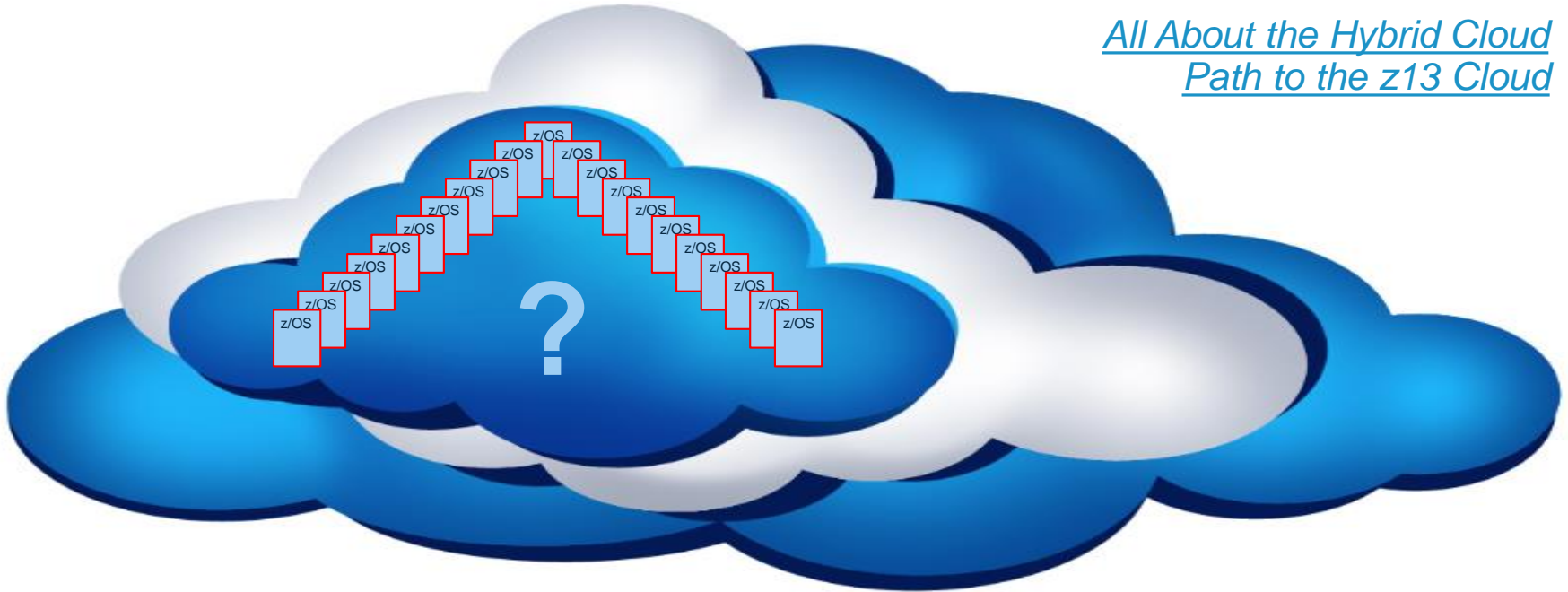
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All About the Hybrid Cloud  
Path to the z13 Cloud



***Something Old is New Again. Virtualization!***

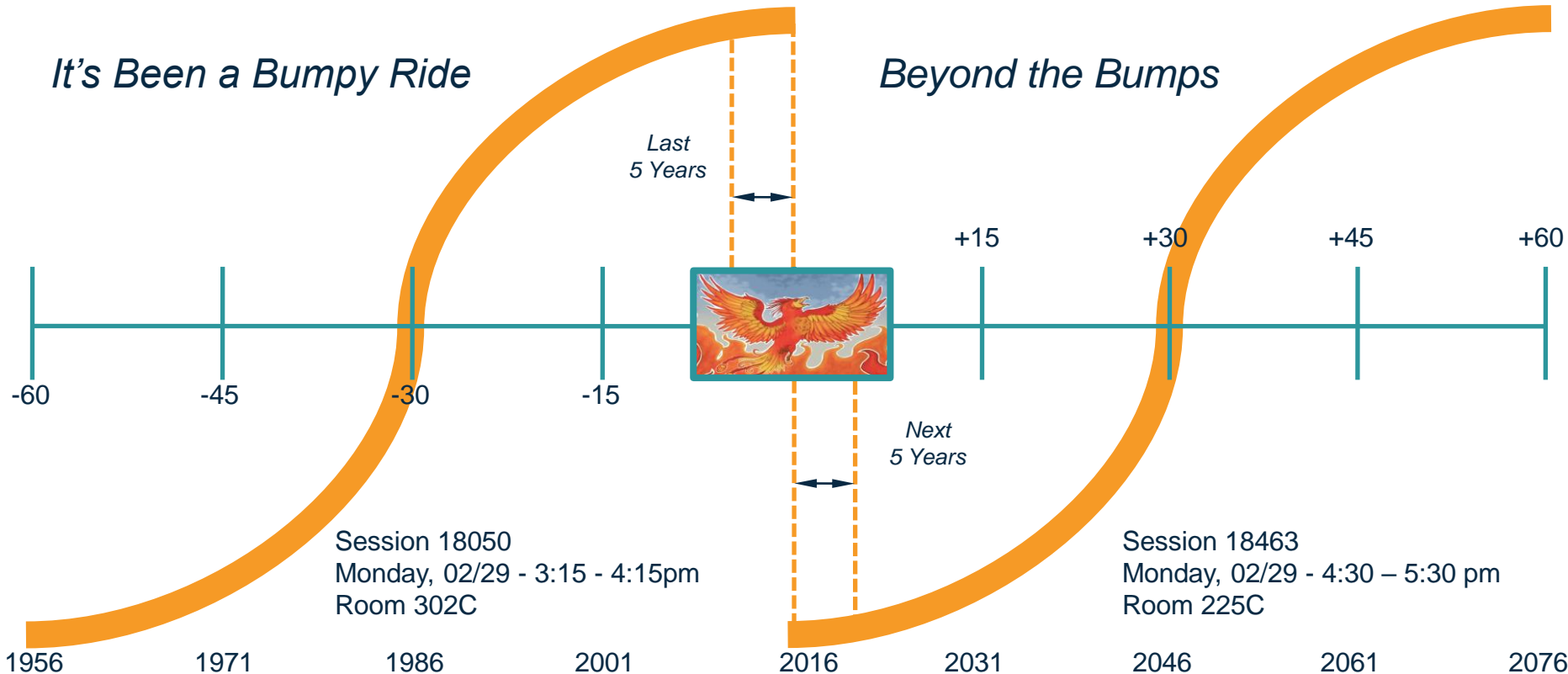
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*It's Been a Bumpy Ride*

*Beyond the Bumps*



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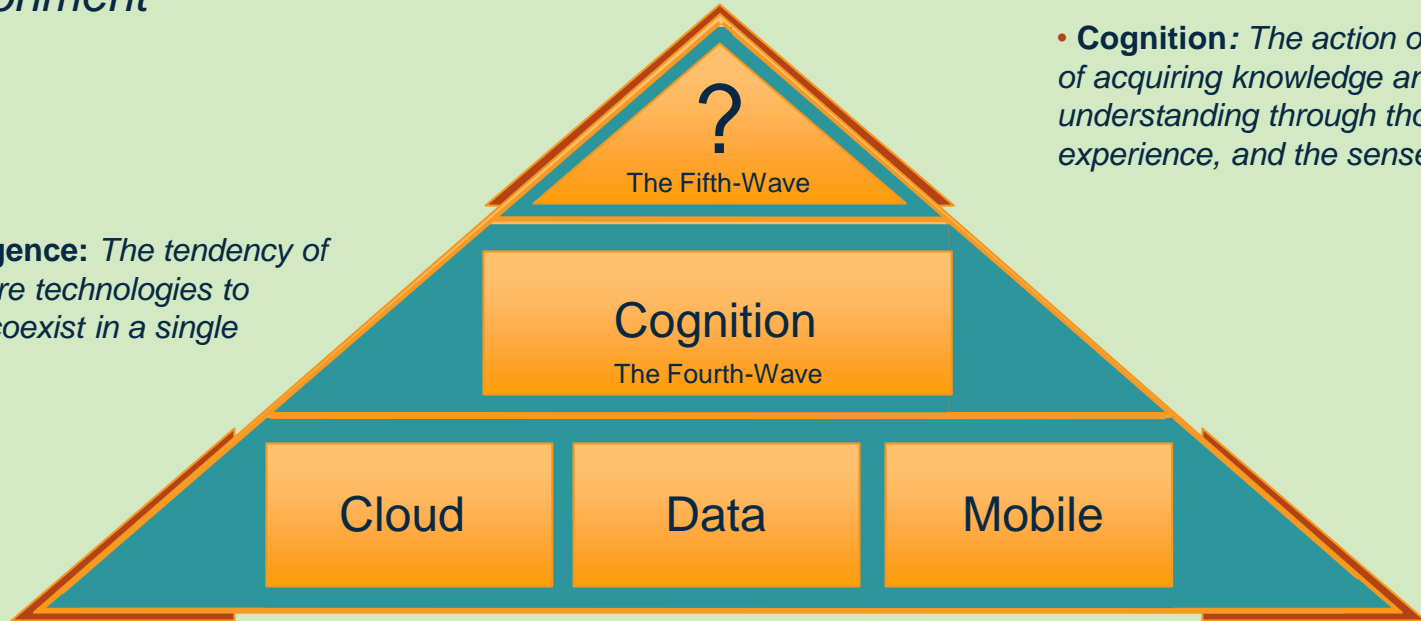
[Mainframe Photo Album](#)



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## IT Environment

- **Convergence:** *The tendency of two or more technologies to combine/coexist in a single system.*



- **Cognition:** *The action or process of acquiring knowledge and understanding through thought, experience, and the senses.*

- **Security/Integrity:** The state of being free from danger./The state of moral uprightness.

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The Singularity was popularized in 1993 by Vernor Vinge in *"The Coming Technological Singularity"*.

A state of accelerating returns which predicts an exponential increase in technologies like computers, genetics, nanotechnology, robotics and artificial intelligence all leading to a technological singularity in the year 2045, a point where progress is so rapid it outstrips humans' ability to comprehend it.

These advances will irreversibly transform people as they augment their minds and bodies with genetic alterations, nanotechnology, and artificial intelligence. Once the Singularity has been reached, machine intelligence will be infinitely more powerful than all human intelligence combined. Afterwards intelligence will radiate outward from the planet until it saturates the universe.

*Readings from inventor and futurist Ray Kurzweil:*

- *When Humans Transcend Biology* - 2005
- *The Age of Spiritual Machines* - 1999
- *The Age of Intelligent Machines* - 1990



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## Virtual Reality (VR):

*Children should be seen and not heard!*

*Experience an intimate story like never before - through the eyes of the characters. Follow a young couple who discover a new crowd-funded app that allows them to swap consciousnesses and feel what it's like to be in each other's body.*

<http://ocul.us/cinehackers>

*Most people don't even know what VR is, let alone how it works or that it's being sold broadly this year. To succeed, Samsung and Facebook need to teach customers what the technology is all about and why they should be early adopters.*

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[More about Oculus](#)

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Transcend

Reflect



Office of the Director of National Intelligence

IARPA

BE THE FUTURE

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[More about IARPA](#)

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## z Systems - Beyond the Bumps

Session 18463

Monday, February 29 - 4:30 – 5:30 pm

Room 225C

Paul R. Robichaux, NewEra Software, Inc.



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