z Systems - It’s Been a Bumpy Ride

Paul R. Robichaux
Thursday, August 13, 2015
10:00 AM - 11:00 AM, Dolphin, Europe 2
Session 17788
Abstract and Speaker

• 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).

• This presentation, an update to one presented at SHARE in San Francisco and the IBM zUniversity in New Orleans in 2012/13, will provide fresh insight into the “Ups and Downs” experienced by hardware, software and business service providers as they manage the shift to “Hyper-Scale”, increasing Cloud-based Systems of Record, all in an effort to satisfy the apparent, insatiable demand for service that is resulting from the never ending introduction of global systems that intend to engage users at every possible commercial and/or social entry point.

• 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.
Hello! My name is Paul.
I am a Mainframer
and
Very proud of it!

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

z Land as I see it!
“IBM and the Seven Dwarfs”
z Systems - It’s Been a Bumpy Ride

Front-End ⟷ Somewhere in Between ⟷ Back-End

BANK

Healthcare

Utilities

Retail

Transportation

z Land as I see it!

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zEnterprise Management - Yesterday, the Cloud was the New Normal!

"IBM and the Three Bears"

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These Countries Have The Fastest Internet Speeds
Average internet connection speed in Q2 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Speed in Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>24.6</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>15.7</td>
</tr>
<tr>
<td>Switzerland</td>
<td>14.9</td>
</tr>
<tr>
<td>Japan</td>
<td>14.9</td>
</tr>
<tr>
<td>Netherlands</td>
<td>14.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>13.6</td>
</tr>
<tr>
<td>Latvia</td>
<td>13.5</td>
</tr>
<tr>
<td>Ireland</td>
<td>12.6</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>12.6</td>
</tr>
<tr>
<td>Romania</td>
<td>11.8</td>
</tr>
<tr>
<td>United States</td>
<td>11.4</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

The Predicted Wearables Boom Is All About The Wrist
Worldwide wearable device shipment forecast (in million units)

<table>
<thead>
<tr>
<th>Wearable Type</th>
<th>2014</th>
<th>2015</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wristwear</td>
<td>101.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular</td>
<td>17.7</td>
<td>0.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Clothing</td>
<td>40.7</td>
<td>0.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Eyewear</td>
<td>1.6</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Earwear</td>
<td>6.7</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Other</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

1 in 4 Teens Are Online Almost Constantly
% of teenagers in the U.S. who use the internet with the following frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost constantly</td>
<td>56%</td>
</tr>
<tr>
<td>Several times a day</td>
<td>24%</td>
</tr>
<tr>
<td>About once a day</td>
<td>12%</td>
</tr>
<tr>
<td>Several times a week</td>
<td>5%</td>
</tr>
<tr>
<td>Once a week</td>
<td>1%</td>
</tr>
<tr>
<td>Less often</td>
<td>2%</td>
</tr>
</tbody>
</table>

The Internet Is Gradually Replacing Traditional Media
Change in time consumers spend with selected media per day between 2010 and 2014

<table>
<thead>
<tr>
<th>Media Type</th>
<th>2010</th>
<th>2014</th>
<th>2014 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>109.5</td>
<td>375.8</td>
<td>+83.7%</td>
</tr>
<tr>
<td>TV</td>
<td>402.2</td>
<td>402.2</td>
<td>0%</td>
</tr>
<tr>
<td>Print Newspapers</td>
<td>-6.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print Magazines</td>
<td>-19.0%</td>
<td></td>
<td></td>
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</tbody>
</table>

z Land as I see it!  Source: The Statistics Portal

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zEnterprise Management - Today, Disruption is Everywhere; Nothing is Normal!

Freeform

Structured

Two

Data Types

How Big Is Data?

2005 - 12 : 2,000 X

By 2020 : 14 X/Yr

"IBM and the Seven or Eight or more Orcas"

z Land as I see it!

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Front-End ↔ Somewhere in Between ↔ Back-End

Engagements ↔ Think Platform ↔ Systems of Record

z Land as I see it!

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Critical Success Factors:

- Total Cost of Ownership
- System Performance
- The User’s Trust

Failure Results in Disintermediation:

“Disintermediation occurs when a buyer, having connected with the seller, circumvents the platform and talks to the seller, eventually doing her deal directly with that seller. As a result, the platform owner is then unlikely to get her revenue share. This may be considered a new form of disintermediation.”

More about Disintermediation

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Very Disruptive!

Execution against Financial Dreams

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Execution against Financial Dreams

zEnterprise Management - Economic Performance – Key Players - The IBM Story

At Least $20 Operating EPS

Execution against Financial Dreams

zEnterprise Management - Economic Drivers – Total Cost of Ownership

- 60% Server Hardware
- 30% Server Management
- 20% Other Operating Costs

Critical Success Factors
- Tools
- Space
- Power

Percentage of TCO:
- 1996: 0%
- 2013: 100%

1 Source: Dr. John Shedletsky – IBM Technical World – San Francisco – April, 2012
## Execution against Financial Dreams

<table>
<thead>
<tr>
<th>HP (30)</th>
<th>Dell (15)</th>
<th>Oracle (6)</th>
<th>IBM (30)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="down" alt="" /> Down 10% in 2011 and 23% in most recent quarter. Lenovo a Threat?</td>
<td><img src="up" alt="" /> Still growing but pace has slowed. Large enterprise revenues up 5%.</td>
<td><img src="up" alt="" /> Hardware is shrinking, plan to give up on unprofitable businesses.</td>
<td><img src="up" alt="" /> High-end leader, business very profitable. Growth is modest.</td>
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1. SHARE 08/12 - Financial Times – Friday, June 1, 2012 and (xx)Percentage Market Share – Q3 2011 - IDC
2. SHARE 02/13 - SJMN 12/19/2012 and Business Insider 11/2012 and http://seekingalpha.com/article/302020 & 821141

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Execution against Financial Dreams

Market Capitalization: Common Share Price X Common Shares Outstanding

As of Q1 2013

We Were $221b

A Ranking Amongst Cohorts

145b in Cash!

All Amounts in US$
Execution against Financial Dreams

Global Market Factors - Head Winds:
- Slowing Growth - CEO Uncertainty
- Falling Margins - Hardware Price Increase
- Share gains for low-cost providers
- Questionable Macroeconomic Trends

Near-Term Factors:
- HP - Cleanup the Acquisition Mess
- Dell - Work with Hedge Funds, go Private
- Oracle - Acquire SaaS Clouds - Eloqua
- IBM - Stay the Course, Invest in Tools

Source - Financial Times – Friday, June 1, 2012 and (xx)Percentage Market Share – Q3 2011 - IDC
Source - SJMN 12/19/2012 and Business Insider 11/2012 and http://seekingalpha.com/article/302020 & 821141
Execution against Financial Dreams

Relative Stock Market Performance - 8/2012 - 4/26/13

1 www.nasdaq.com – Relative Performance – IBM, HPQ, ORCL, DELL

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### Execution against Financial Dreams

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Market Capitalization: Common Share Price X Common Shares Outstanding

Change in Position Q1 2013 to Q2 2015

Values represent advances or declines in relative cohort positioning

Positioning Changes
Execution against Financial Dreams

Market Capitalization: Common Share Price X Common Shares Outstanding

As of Q2 2015

Factoid - The US Government has approximately $50b on hand

We Are Here

$170b

A Ranking Amongst Cohorts

$190b in Cash!

$9b in Cash!

All Amounts in US$
Execution against Financial Dreams

Market Capitalization: Common Share Price X Common Shares Outstanding

Change in Fortunes Q1 2013 to Q2 2015

All Amounts in US$

Total Gain in Valuations

635b

Gained Position

74b

Lost Position

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IBM delivers $12.5 billion a year in free cash flow. There’s isn't any solvency risk.
Execution against Financial Dreams

Total R and D Expenditures 2015 (TTM) and Change in Expenditures

Change in Fortunes 2011 to 2015 (TTM)

- Total Change in R and D: 10.1b
- Total Change in R and D: 1.6b

TTM 2015

Change

NR
Execution against Financial Dreams

Relative Stock Market Performance June/12 - July/15

Q2 2015

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Adapting to Predicted Realities
Adapting to Predicted Realities

Everybody knows Moore's Law is DOA


“...halving of the dimensions and doubling of speed of chips every 18 months--will run out of steam very soon - for certain in 10 years?”

“Only a very few high-end chip makers today can even afford the exorbitant cost of next-generation research and design, much less the fabrication facilities needed to build them.”

Two wolves: one good one bad; Which one do you feed?
Adapting to Predicted Realities

Everybody knows We’ve Hit the Wall

Relative MIP Cost

- zFlash Express®
- IBM PCIe Cryptographic Coprocessor®
- zEnterprise Data Compression (zEDC) Express®

<table>
<thead>
<tr>
<th>Model</th>
<th>MIPs</th>
<th>Percentage Decrease – Base Q4/2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100% Q4/2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70% Q1/2008</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43% Q3/2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33% Q3/2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30% Q4/2015</td>
</tr>
<tr>
<td>Model</td>
<td>MIPs</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>2094-754</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2097-764</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2817-780</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2827-7A1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2084-xxx</td>
<td></td>
</tr>
</tbody>
</table>

The Wall

Next Two/Three Years?

Six ½ Years

Source: http://www.tech-news.com/publib/pl2084.html | pl2094 | pl2097 | pl2817 | pl2827
Adapting to Predicted Realities

Everybody knows “IoT” is Coming Soon!

http://time.com/539/the-next-big-thing-for-tech-the-internet-of-everything/

“…IoT is expected to generate large amounts of data from a diverse set of devices and locations, thereby increasing the need to better data indexing, storage and processing.”

“…estimated at $5.0 Trillion it will have a dramatic impact on everything from city planning, first responders, military, health and other…”

What is The Internet of Things (IoT)?
Adapting to Predicted Realities

Everybody Knows Customers Won’t Wait

The Queue = 1 / (1 - Utilization)

How Long they Wait = The Queue X The Service Rate

The Theory of Queues
10/2014 - IBM/GlobalFoundries make a deal!


“The Emirate of Abu Dhabi is the owner of GlobalFoundries through its subsidiary Advanced Technology Investment Company (ATIC).”

“IBM says that its previously announced $3 billion investment in next-gen semiconductor research and development, over the next five years won’t be affected by the deal.”

Transaction closed June, 2015

Who is GlobalFoundaries?
Adapting to Predicted Realities

Surprise! Moore’s Law? Not dead just yet!

According to IBM, the alliance with GlobalFoundries, Samsung and others achieved a scaling improvement of nearly 50% over the currently most advanced technology, as well as introducing silicon germanium (SiGe) channel transistors and extreme ultraviolet (EUV) lithography integration.

IBM believes that the techniques and scaling could result in a 50% power-to-performance improvement in next generation mainframe and systems that power big data, cloud and mobile computing.

It is ironic that IBM had to pay GlobalFoundries $1.5 billion to take ownership of its chip-making facilities in upstate New York. The transfer completed just last week. GlobalFoundries now owns chip-making plants in East Fishkill, N.Y., and Burlington, Vt., along with 16,000 patents, IBM’s former chip customers and a 10-year contract to supply Big Blue with chips.
Adapting to Predicted Realities

5/2015 - Avago’s $37 B Broadcom Deal

The Deal and the Details

“…the largest deal ever in the $300 billion semiconductor business. The combined company will have the most diversified communications platform in the semiconductor industry…”

“…deal creates new competitive challenges for Qualcomm and may force the world's largest mobile chip maker to radically rethink its own strategy.”

Who is Avago?
Adapting to Predicted Realities

6/2015 - Intel’s $16.7 Billion Altera Deal

The Deal and the Details

“...Intel has been looking for growth beyond the struggling personal-computer market, which has been declining since it peaked in 2011…”

“...the combination is expected to enable new classes of products that meet customer needs in the data center and Internet of Things market segments...”

Who is Altera?
Adapting to Predicted Realities

4/2011 - The Open Compute Project

http://www.opencompute.org

“(OCP), one of the most important tech projects Facebook has ever created. OCP began in 2012 as a radically new way to build and buy computer hardware. It creates free and "open source" designs where anyone can contribute to the designs and use them for free, ordering them from a contract manufacturer.”

Liked by: Microsoft, Intel, Goldman Sachs, Rackspace and others.

http://www.businessinsider.com/facebook-just-fired-a-huge-shot-at-cisco-2014-6 - ixzz3bNKjSy3Z
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Embracing Market Trends
Embracing Market Trends

7/2013 - IBM Acquires SoftLayer Technology!


“...will enable IBM to deliver a marrying of the security, privacy and reliability of private clouds with the economy and speed of a public cloud.”

“...joins the more than a dozen strategic cloud acquisitions IBM has made since 2007, all of which are designed to accelerate its cloud initiatives...”

Who is SoftLayer?
Embracing Market Trends

Different Chips but it’s the Same Game!

And it will continue for sometime to come

Recent Examples
Feb/14 - Cloudant:
$1B PaaS - DevOps - Bluemix
June/15 - BlueBox:
Will offer as cloud service.
Denotes shift away from on-premise solution targets.
June/15 - Portico:
Quickly build, test and deploy IBM Digital Experience Cloud
June/15 - Databricks:
$300M - More

IBM Transformative Mergers and Acquisitions

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7/29/2015
6/2015 - Major Commitment to Apache®Spark

*Most Significant Open Source Project of the Next Decade*

“...Spark basically replaces older methods (Google MapReduce and Apache Storm) of working with the big data stored in Hadoop...”

**More Than Money:**
- Embed in Analytic Platforms
- Offer as Cloud Service - Bluemix
- 3,500 to Develop Applications
- Donate ‘IBM SystemML’
- Train/Educate 1 Million to Use
- Opened SF Technical Center

**Spark In-Memory Processing. What is it?**
Embracing Market Trends

7/2015 Partnership and Cooperation!

Big-tech incumbent International Business Machines Corp. and Silicon Valley darling Box Inc. are teaming up to boost each other’s sales opportunities in corporate settings.

Teaming with Box

Apple has announced a strategic partnership with IBM that will see the enterprise giant transfer over 150 of their enterprise and IT apps and tools to Apple platforms natively, and will also have IBM selling Apple iPhones and iPads to its business clients all over the world.

Teaming with Apple
Is it working? Will it work?

Big Tent! Could you Make Room for Us?

OpenStack Community

- IBM is listed as the company most likely to win Cloud business (18 percent), followed by Microsoft (11 percent) and Amazon Web Services (6 percent).

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Winning with Illusions

Keys Under the Doormat

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Winning with Illusions

Are Consumers Satisfied with Security?

“Consumers have zero privacy so just get over it.”

Scott McNealy, 1999

“If you have something that you don’t want anyone to know, maybe you shouldn’t be doing it in the first place.”

Eric Schmidt, Recently

“Consumer attitudes are changing as they share more and more information on line.”

Mark Zuckerberg, Recently

San Jose Mercury News May 21, 2015
Winning with Illusions

Connecting the Dots - Can you spot and name these trends?

Breach Reports

User Trust & Confidence

Is there a Tipping Point? See Malcolm Gadwell
Winning with Illusions

Or with Facts. Why Banks want Mainframes!
Winning with Illusions

Apple on the Upper East Side of New York

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Is it Working? Will it work?

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Is it working? Will it work?

The Pivot to Cloud Fast; Results Slow!

13th

In April, IBM announced its 12th consecutive quarter of declining revenue, with sales of $19.6 billion coming in 12% lower than the year before.

Growth in its cloud services and analytics tools aren’t enough to offset the declines the company is facing elsewhere. 46 Cloud Data Centers to be in place by EOY 2015, half based overseas.

Any lift IBM could receive from its recent slew of acquisitions and “BFF” partnerships is unlikely to have significant impact on its revenue anytime soon.
Is it working? Will it work?

What is SaaS?

IBM Interactive Experience Named Largest Global Digital (Ad) Agency
Is it working? Will it work?

All About the Hybrid Cloud
Path to the z13 Cloud

Something Old is New Again. Believe!
Is it working? Will it work?

Front-End ↔ Somewhere in Between ↔ Back-End

Engagements ↔ Think Platform ↔ Systems of Record

Think Platform!

What most are Missing!

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zEnterprise Management - Some Things Old, New Again - Partnerships!

z Land as I see it!

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Evaluations Please!