



OSIsoft®
**REGIONAL
SEMINARS** 2012
The **Power** of **Data**



The Power of Data

Presented by **Dave Roberts**
@OSIsoftDRoberts



Today's rapidly growing flood of big data represents immense opportunity for forward-thinking marketers. But to fully leverage the potential that exists within these massive streams of structured and unstructured data, organizations must quickly optimize ad delivery, evaluate campaign results, improve site selection and retarget ads. This is where the IBM NeLozza® Factor comes into play, enabling a fluid analysis of complex data capable of unleashing a torrent of innovative, next-level ideas and results.

DRIVING MARKETING EFFECTIVENESS BY MANAGING

THE FLOOD OF

BIG DATA?

Obama the warrior
Misgoverning
The economic
Genetically m
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US\$2
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4.8
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294

IBM

data delug
AND P
TO HANDLE
FICIAL REPORT

BIG DATA = BIG OPPORTUN

data management

REALITY VALUE IS IN THE DATA

INNOVATION PERFORMANCE RESULTS

TAMING BIG DATA

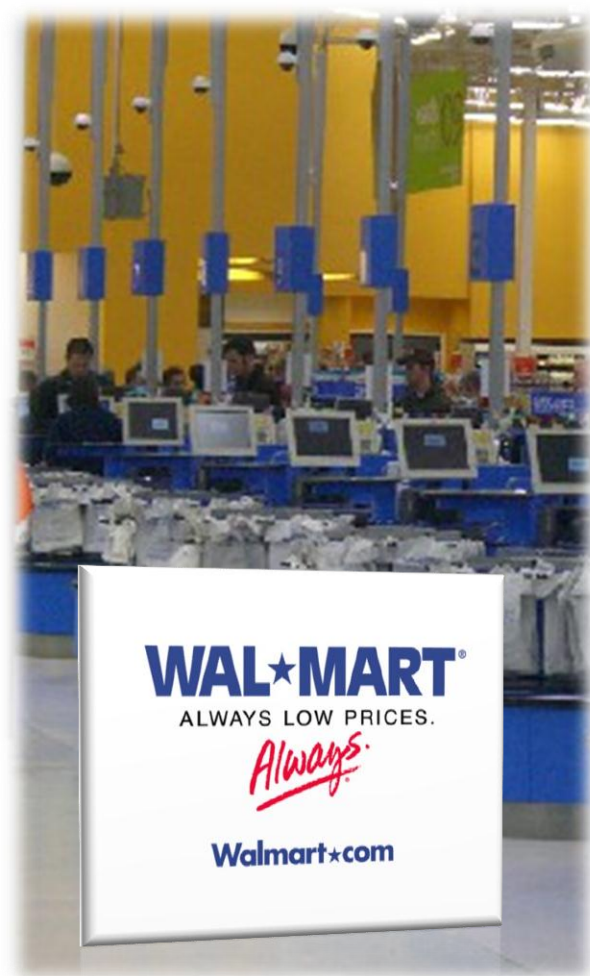
Get a handle on the next (big) thing

TURNING BIG FOR THE PEOPLE
Data can get bigger in the Service

WATSON'S HELPERS
The road to the cloud

SEED THE CLOUDS
How to deliver solutions as a service







VISA: 300 Million Transactions / Day



WAL★MART®

ALWAYS LOW PRICES.

Always.

Walmart★com

VISA





Why do it - whats it all about?

- Process Data is a Huge Untapped Asset
- The only definitive record of Plant Performance
- Trending is not enough - we are only human!
- Key issues surround the **combination** of plant variables.



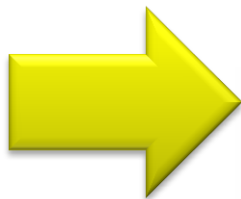
Unlock the Value in Process Data

Making Money with Statistics & Datamining

David Stockill
Shell Global Solutions International
12th April 2001

Shell Global Solutions

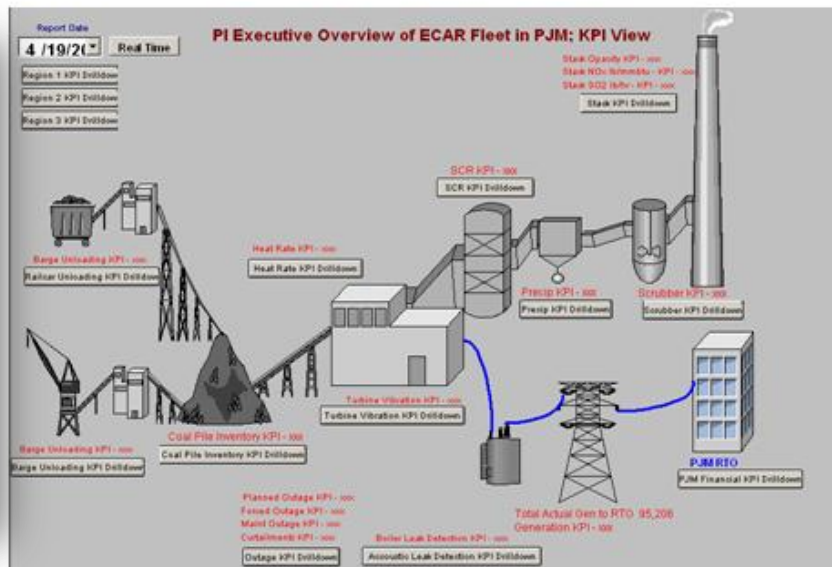
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The Challenge Provide Those That Need The Data The Big Picture

PI Helps Control Production Costs

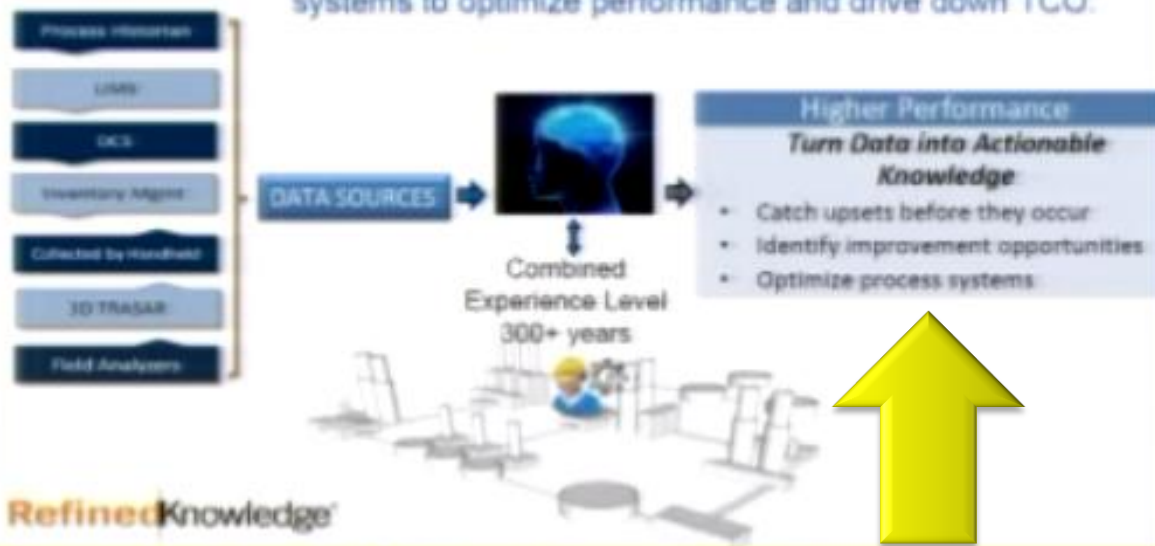
Controllable Cost	Units	Actual	Target	Design	Deviation from Target (Btu/Kwh)	Cost (\$/Shift)	Total (\$/Shift)
Main Steam Pressu	PSIG	1,985	2,000	2,000	-15	\$6.48	\$ 0
Main Steam Temperat	F	976	962	1,050	114	\$32.04	\$ 2
1st RH Steam Temperat	F	976	940	1,050	110	\$59.76	\$ 3
1st Reheat Temperatur	lb/hr	1,079	0	0	1,079	\$1.86	\$ 0
Excess Ai	%	21.4	19.8	14.0	7.4	\$20.86	\$ 1
Exit Gas Temperatur	F	359.4	329.7	305	54.7	\$150.12	\$17
Steam Coil Air Heaters	kib/hr						
Condense	in. of HG	1.13	0.92	0.77	0.21	\$64.98	\$ 8
HP Feedwater Heate	Btu/Kwh	5.2	0	0	5.2	\$8.61	\$ 1
LP Feedwater Heaters	Btu/Kwh						
Auxiliary Pow	Mw	14.33	16.08	15.41	-1.75	\$186.90	\$ 13
Total Operator Controllable C						\$25.79	\$ 6





NALCO

Refined Knowledge provides visibility into water and process systems to optimize performance and drive down TCO.



Refined Knowledge

OSIsoft. USERS CONFERENCE 2012

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WAL★MART®

ALWAYS LOW PRICES.

Always.



VISA

**Companies that invest in the
value that data provides
will prosper.**



Google™

1998



1994



altavista™
SEARCH SOFTWARE

1995



1994



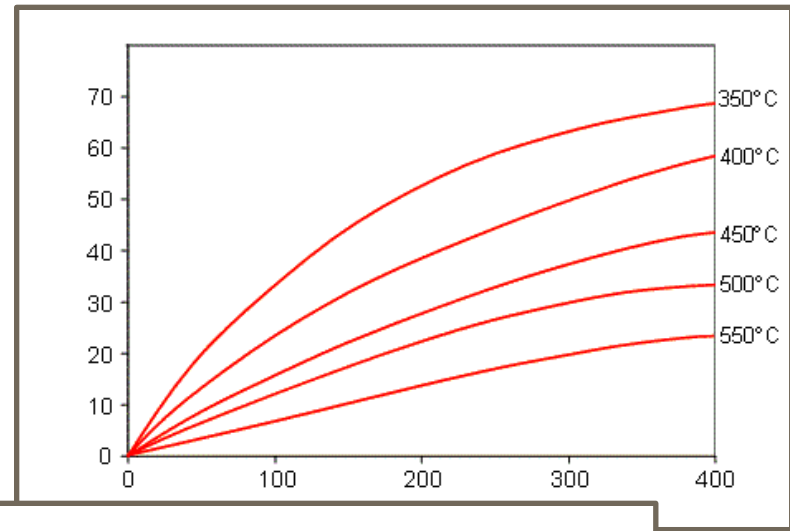
1995

YAHOO!®

1995

OSIsoft History

- Advanced control
- Asymptotic nirvana
- Business nirvana?

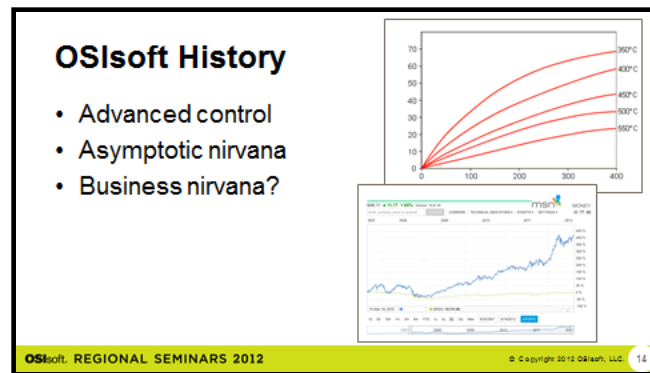


Business Success

- Advanced control: a metaphor for business success?
 - In market availability
 - Matching production to customer demand
 - Regulatory compliance

The Power of Data

- Advanced control is a use of data
- But, there are many other uses of the data
- Our customers liked the advanced control but they loved the data



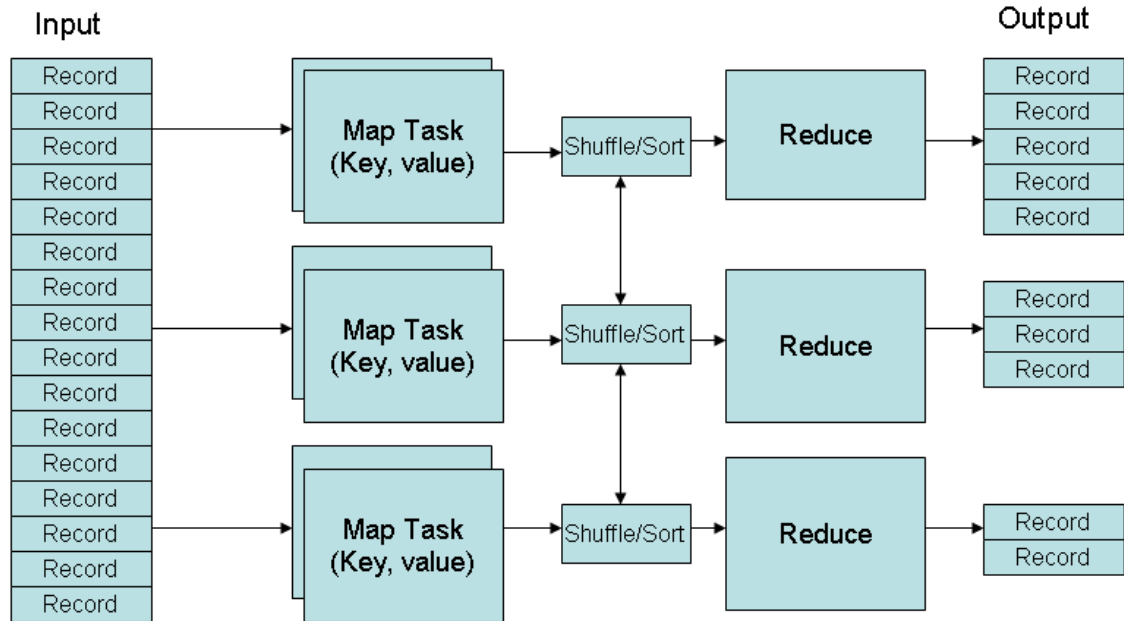
Google

- Why did they beat the earlier contenders?
 - Technology
 - Recognized there was more data than meets the eye

Map-Reduce



- Technology
- Acts on data
- Solves a specific class of problems



Match "Big Data Technologies" to Your Requirements

Some technologies for your toolbox (and there are many more ...):

Technology	Use
Column-store DBMSes	For analytic data marts and "near line"; use in-memory for high performance applications
Complex event processing	For real-time analytics and alerting on high velocity or high volume data streams; filter, aggregate data to reduce storage
In-memory analytics	For fast query and calculation performance against large volumes of data

Real time data and event infrastructure

alternatives	batch approach is acceptable
Semantic Web	For mining content, including social media
Text analytics	For deriving information from text sources, <i>through, for example, summarization, sentiment analysis, explication, and classification</i>
Visualization tools	For user presentation of complex or fast-changing analytic results

***Managing and using big data is about more
than Hadoop and MapReduce ...***

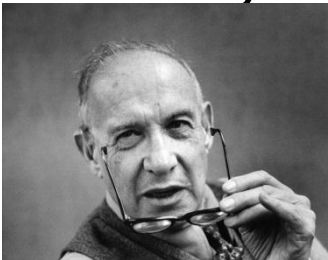
Gartner.

You Can't Buy a Big-Data Solution

- Key is executive level commitment
- This is about business transformation leveraging fundamental types of data:
 - Manufacturing/Process
 - Business
 - Customer
 - Social
- Technology is an evolving enabler

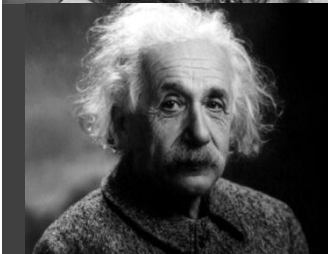
Keys to Unlocking the Power of Data

- Understanding the problems at hand--what are you trying to solve. What questions are you trying to answer?



“The important and difficult job is never to find the right answers, it is to find the right question.”

Peter Drucker, *The Practice of Management*

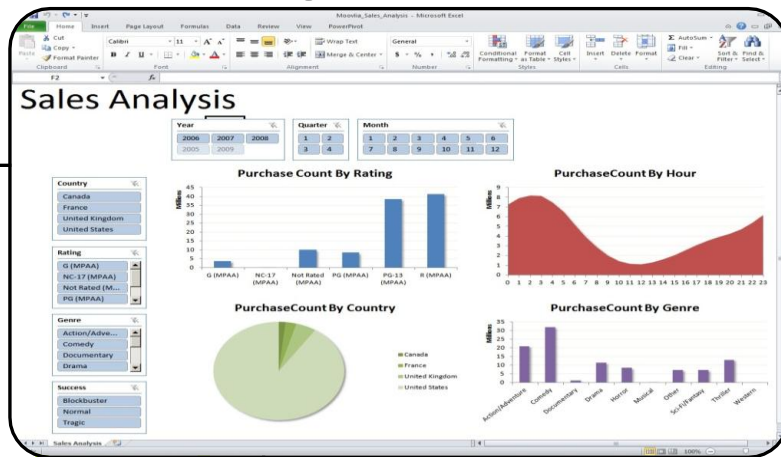
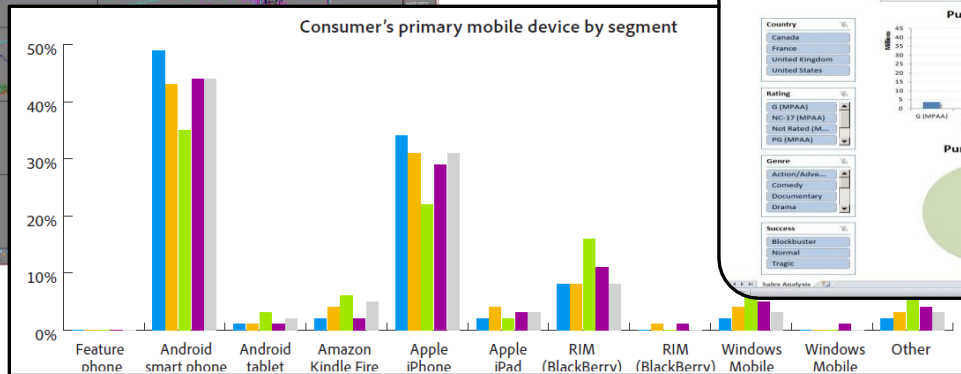
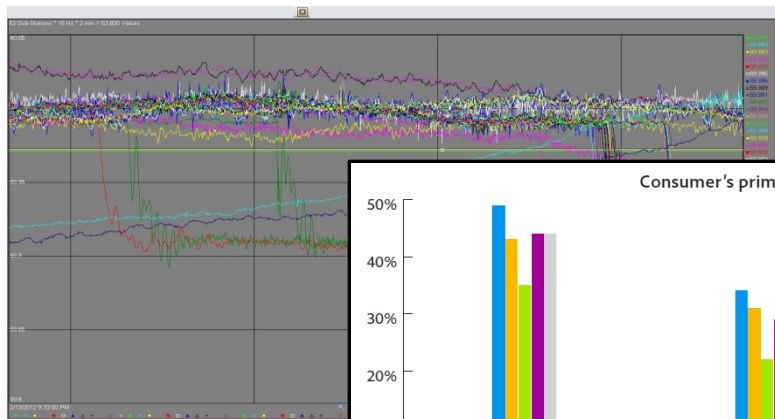


“The formulation of a problem is often more important than its solution.”

Albert Einstein

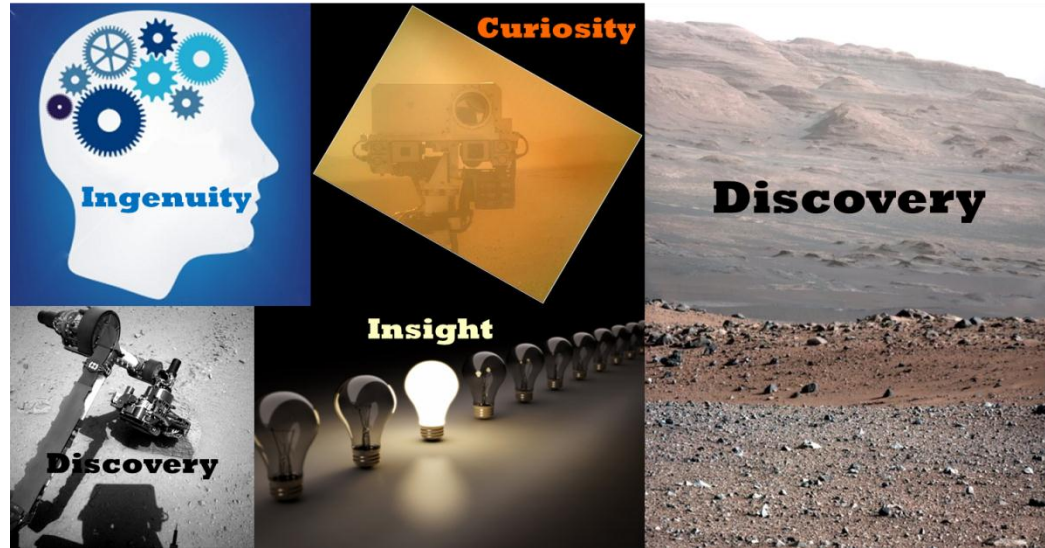
Keys to Unlocking the Power of Data

- All the data. Think beyond the obvious and especially data that may not last long.



Keys to Unlocking the Power of Data

- Ingenuity, insight and discovery to have some ideas that can be answered with proper data analysis.



Keys to Unlocking the Power of Data

- The technology and skills to do the analyses



OSIsoft®



What's New?

- Availability of lots of data from many sources; and growing
 - Machine and devices
 - Business
 - WWW
 - Social
- Technology to process, store, access and analyze the data

Big Data

“Datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze”

Dobbs, Richard; Bugin, Jacques; Hung Byers, Angela; Roxburgh, Charles; Manyika, James; Global Institute, McKinsey; Brown, Brad; Chui, Michael (2011-05-13). Big data: The next frontier for innovation, competition, and productivity (Kindle Locations 95-96). McKinsey Global Institute.

Characteristics

Volume



Velocity



Variety



Valuable



Variety

Apple and the Environment

YAHOO! CONTRIBUTOR NETWORK

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Overview Energy Efficiency Reports Progress

JULY 13, 2012



A letter from Bob Mansfield

Senior Vice President of Hardware Engineering

We've recently heard from many loyal Apple customers who were disappointed to learn that we had removed our products from the EPEAT rating system. I recognize that this was a mistake. Starting today, all eligible Apple products are back on EPEAT.

It's important to know that our commitment to protecting the environment has never changed, and today it is as strong as ever. Apple makes the most environmentally responsible products in our industry. In fact, our engineering teams have worked incredibly hard over the years to make our products even more environmentally friendly, and much of our progress has come in areas not yet

...EPEAT Gold certification before Apple voluntarily relinquished it.

Certification; Still "Eco-

Yahoo! Contributor Network – Mon, Jul 9, 2012

JULY 9, 2012

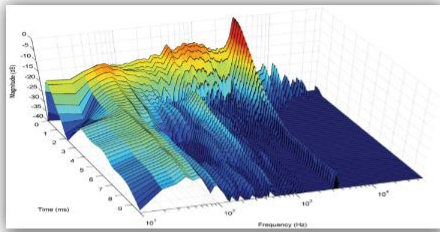
...hectman, Apple asked the standards group EPEAT to
...d monitors. EPEAT gives electronics a "gold," "silver,"
...w many toxic chemicals are used to make them, and
...ducts, [like the iMac desktop computer](#), had achieved

Data Infrastructure

- As important as other infrastructure
 - Communication
 - Energy
 - Water
 - Transportation
- Most efficient way to deliver services needed by many



PI SERVER 2012



Syncro Phasors

4.8K data streams, 120Hz

3 years online

Unique Events: 55 Trillion

Estimated Data: 430TB

430TB



Data Center

100K cells, 2M breakers

10 years online

Unique Events: 105 Trillion

Estimated Data: 840TB

840TB



Automated Metering

20M meters, 5-min reads

7 years online

Unique Events: 177 Trillion

Estimated Data: 1,410TB

1,410
TB



Fleet Monitoring

1K assets, 1M points

10 years online

Unique Events: 6,307 Tr

Estimated Data: 50,460TB

50,460
TB

PI Server 2012

	2010 R3	2012
Max Point Count	2×10^6	20×10^6
Max Data In Rate	100,000 ev/sec	1×10^6 ev/sec
Max Data Out Rate	5×10^6 ev/sec	10×10^6 ev/sec
Online Archives	5,000 archives	50,000 archives
Real-time Updates	200,000 sign-ups	10×10^6 sign-ups
Point Changes	10 points/sec	2,000 points/sec
Startup Time	20 minutes	10 minutes

“Big Data”

- IBM Smart Grid
 - 350,000,000,000 events annually
 - Breaks down to 11,000 events per second
- PI 2012?
 - 1million events per second – IN
 - 10million events per secont - OUT

Big Data

- Volume ☒
- Velocity ☒
- Variety ☒

Insights For Any Data, Any Size, Anywhere



Insight



Time Series



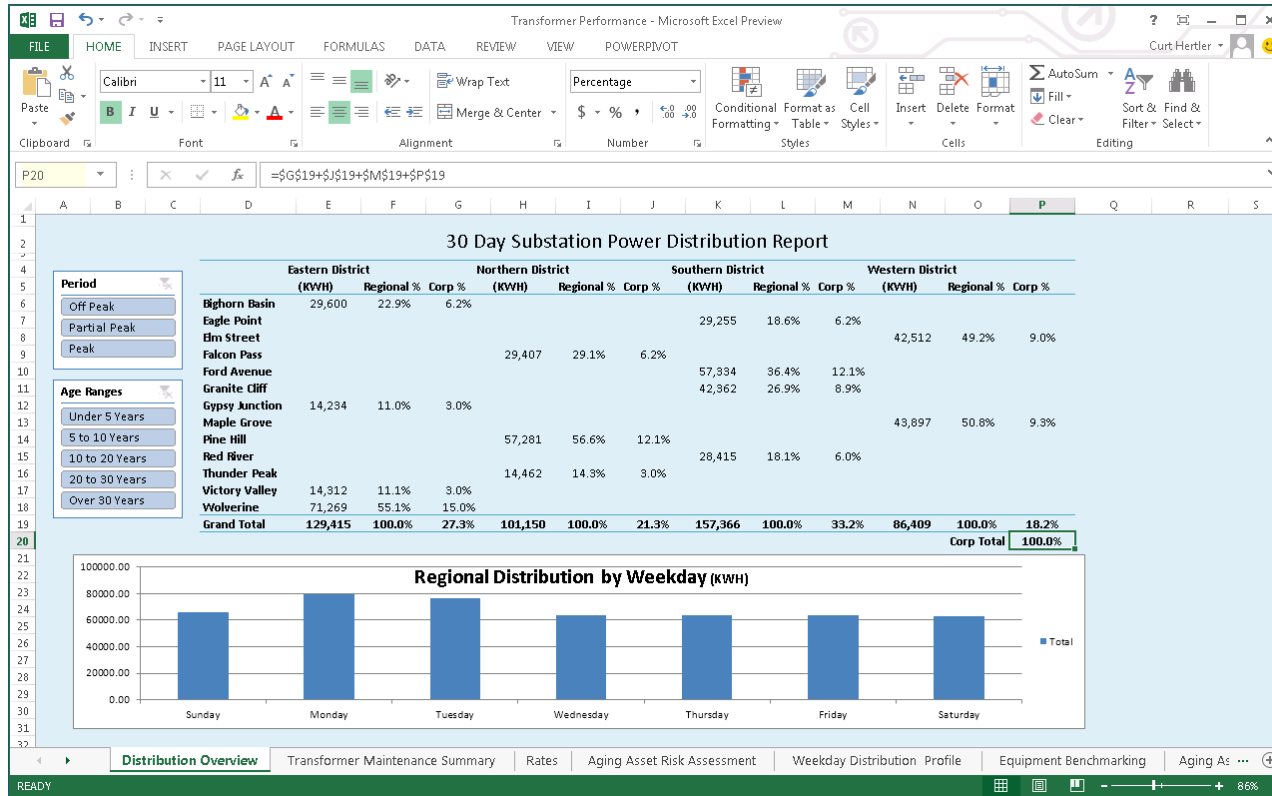
Relational



Unstructured

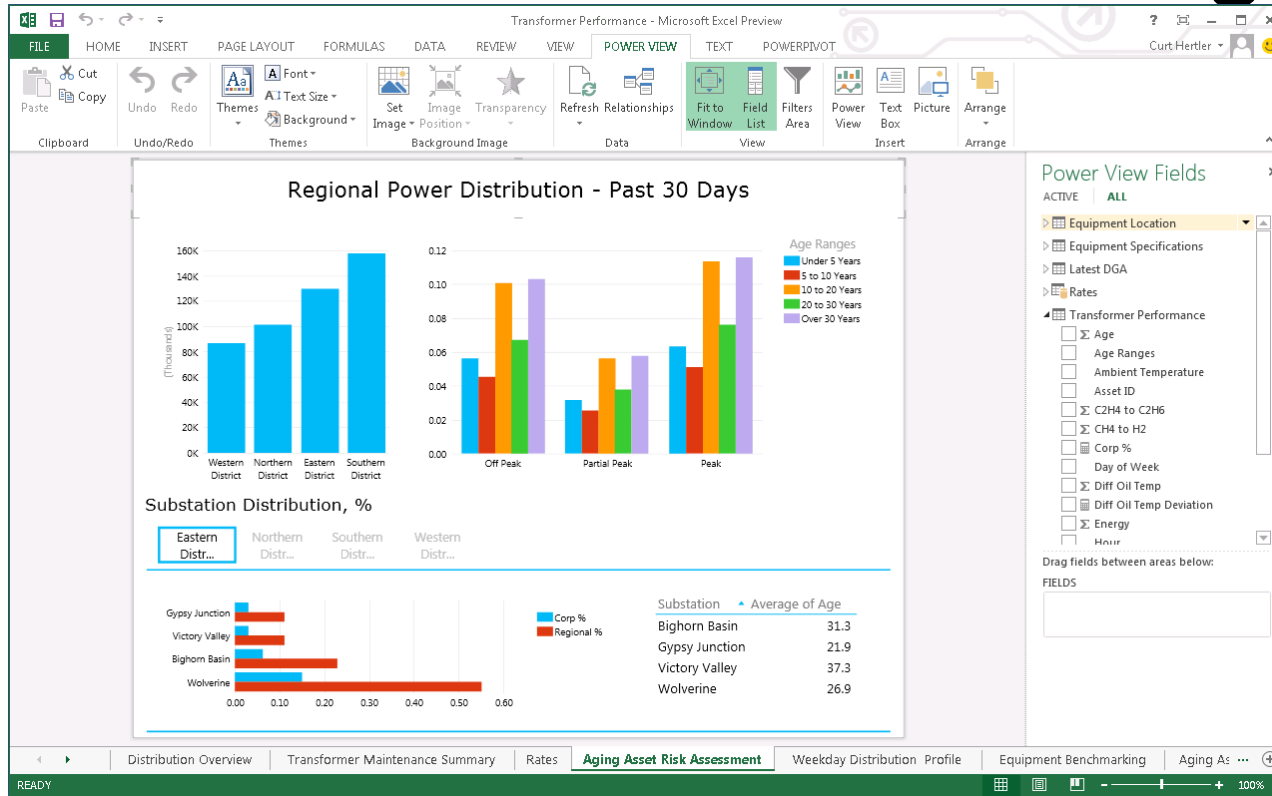


Microsoft Business Intelligence



PowerPivot

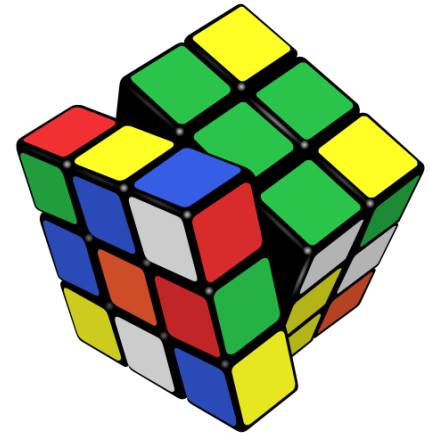
Microsoft Business Intelligence



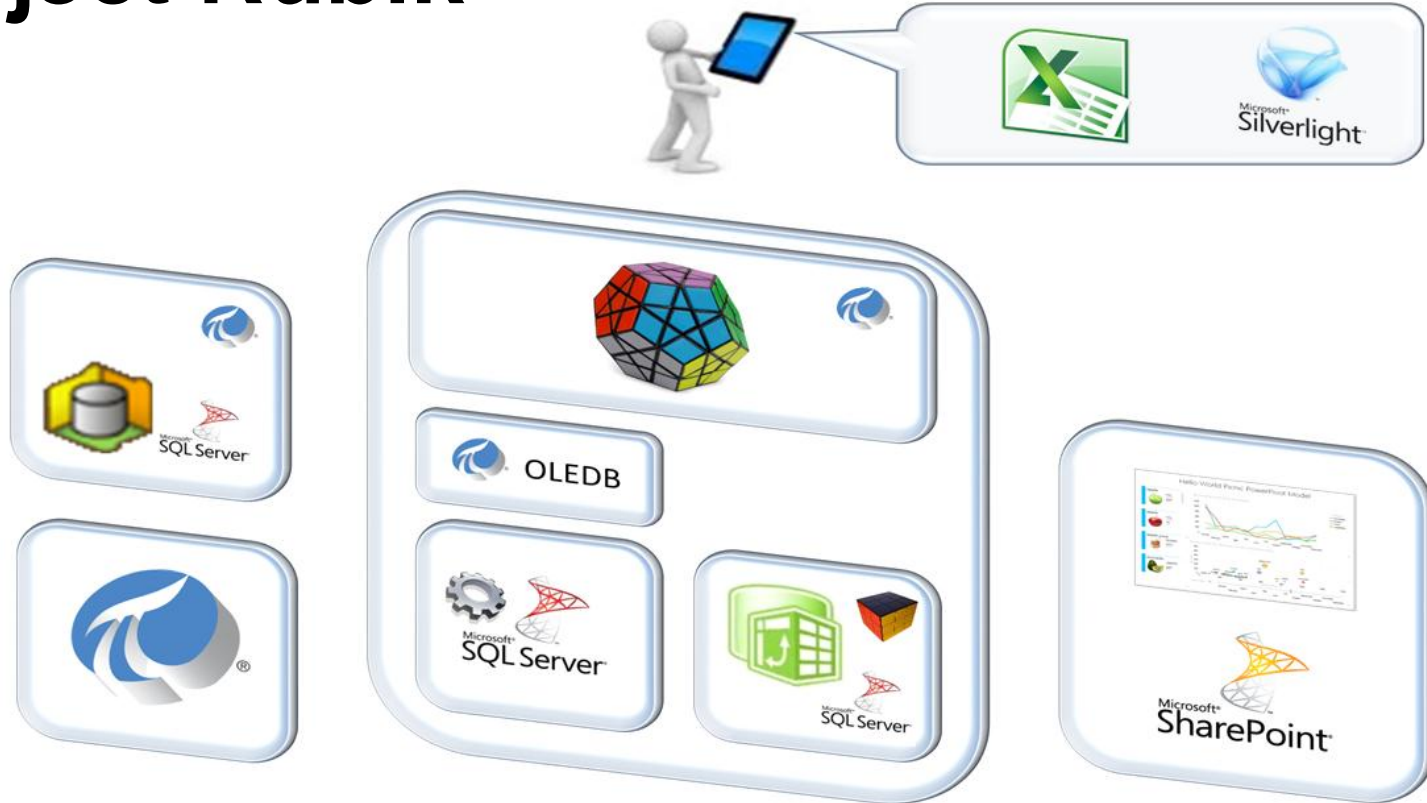
PowerView

Project Rubik

- Integrate PI System Data with Microsoft Business Intelligence
 - Configured models
 - Proper data aggregation



Project Rubik



The Power of Data

1. Understanding the problems at hand--what are you trying to solve; what questions are you trying to answer?
2. All the data. Think beyond the obvious and especially data that may not last long.
3. Ingenuity, insight and discovery; ideas that can be answered with proper data analyses.
4. The technology and skills to do the analyses



THANK YOU

Brought to you by  **OSIsoft.**