



# Thoughts on Paper:

## Connecting the Supply/Value Chain

Presented by **Jim Black**  
**OSISoft**  
**Industry Principal- Forest Products Sector**

# Agenda

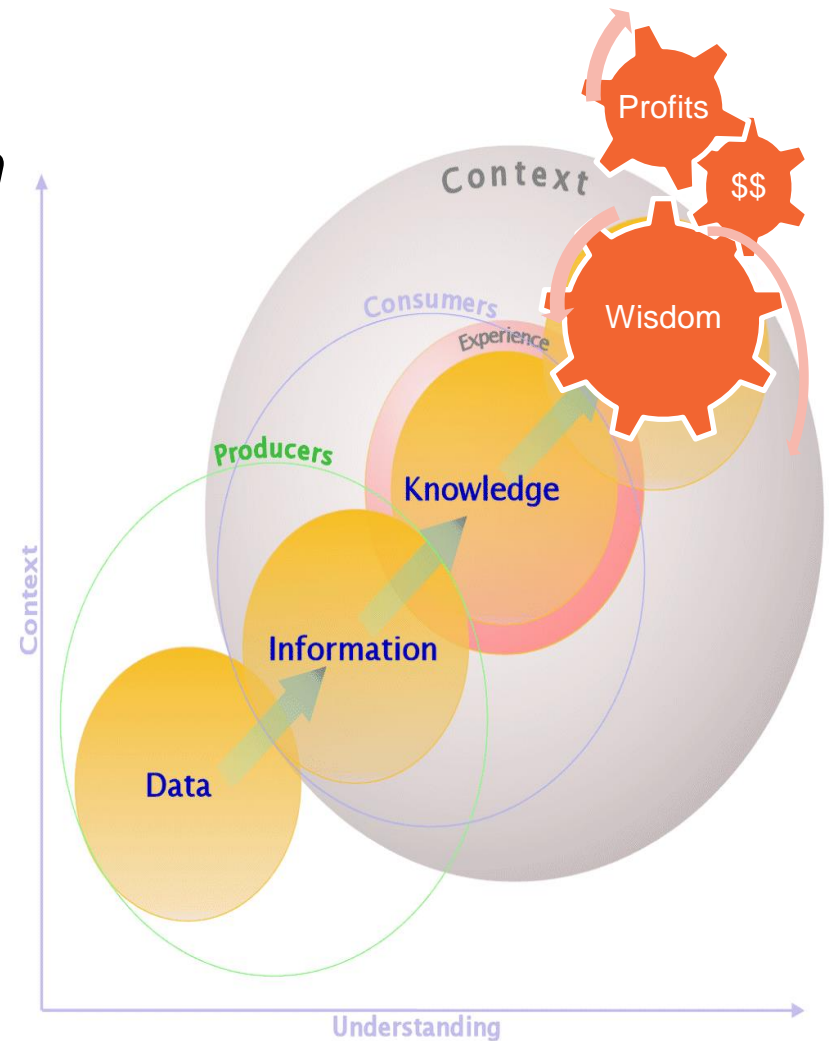
- *Definitions...*
  - Data vs. Information vs. Knowledge
  - Supply Chain vs. Value Chain
- *Analysts and Supply Chains*
- *Creating a more Adaptable Supply Chain*
  - From Mill-wide to Enterprise-wide...one asset at a time!
  - Example of Asset Centric Analytics at work- analyze sheet breaks!

# Convert Data -> Information -> Knowledge!

*Expand the **interplay** of data producers and information consumers...*

*Collaborate around analyzing **data**...in the **context** of solving a problem...*

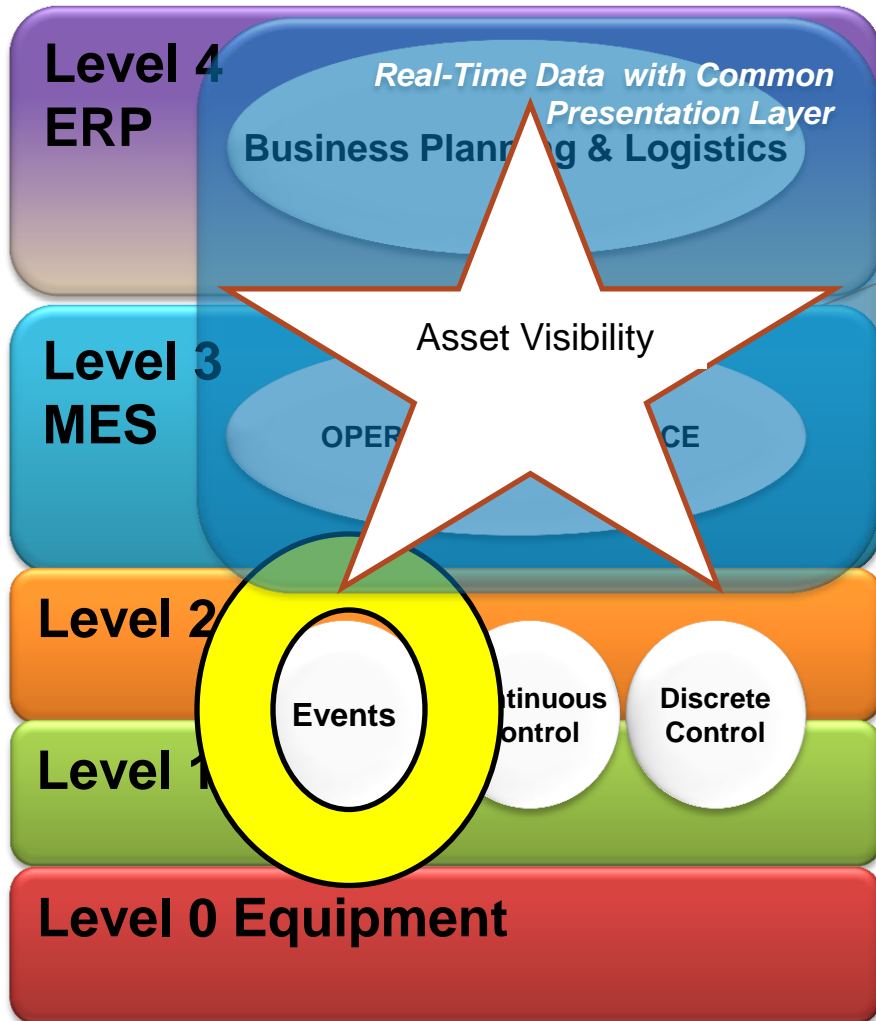
*Expands the knowledge base about **managing assets**!*



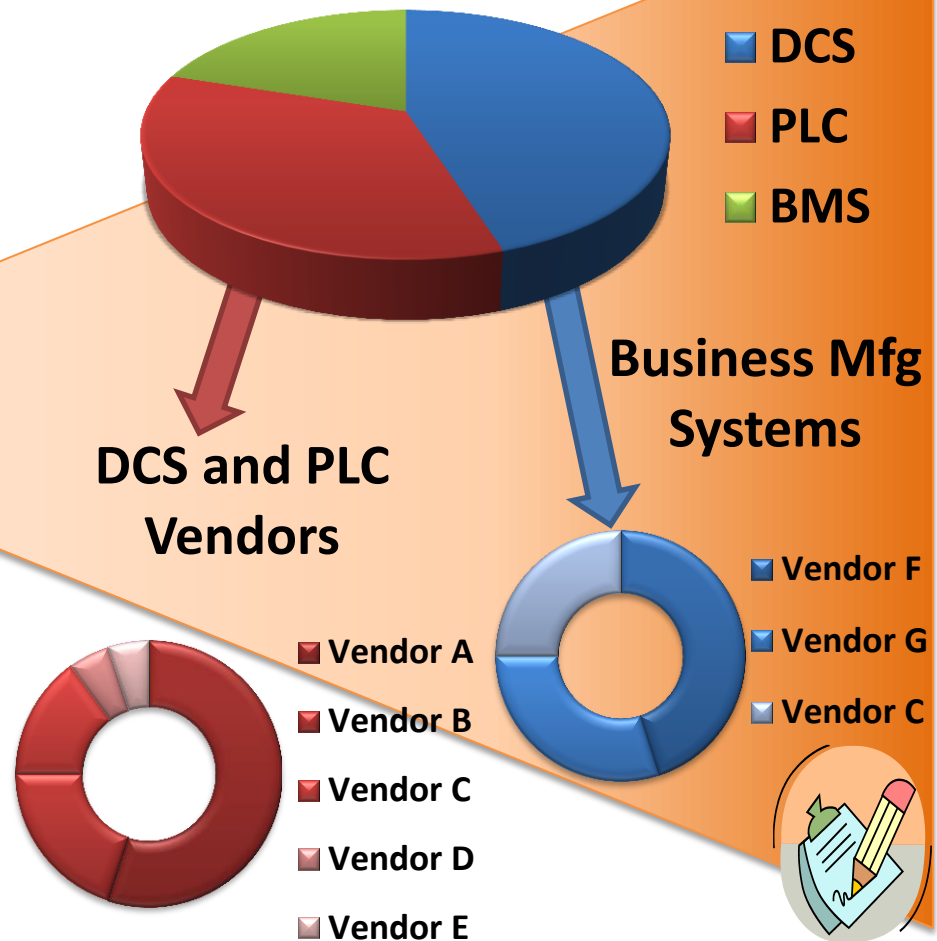
<http://www.itisbi.org/wp-content/uploads/2012/05/Data-Information-Knowledge-Wisdom.gif>

# Mill-wide + Data About Assets + Events = 'Enterprise-wide'...

## Enterprise-wide Control

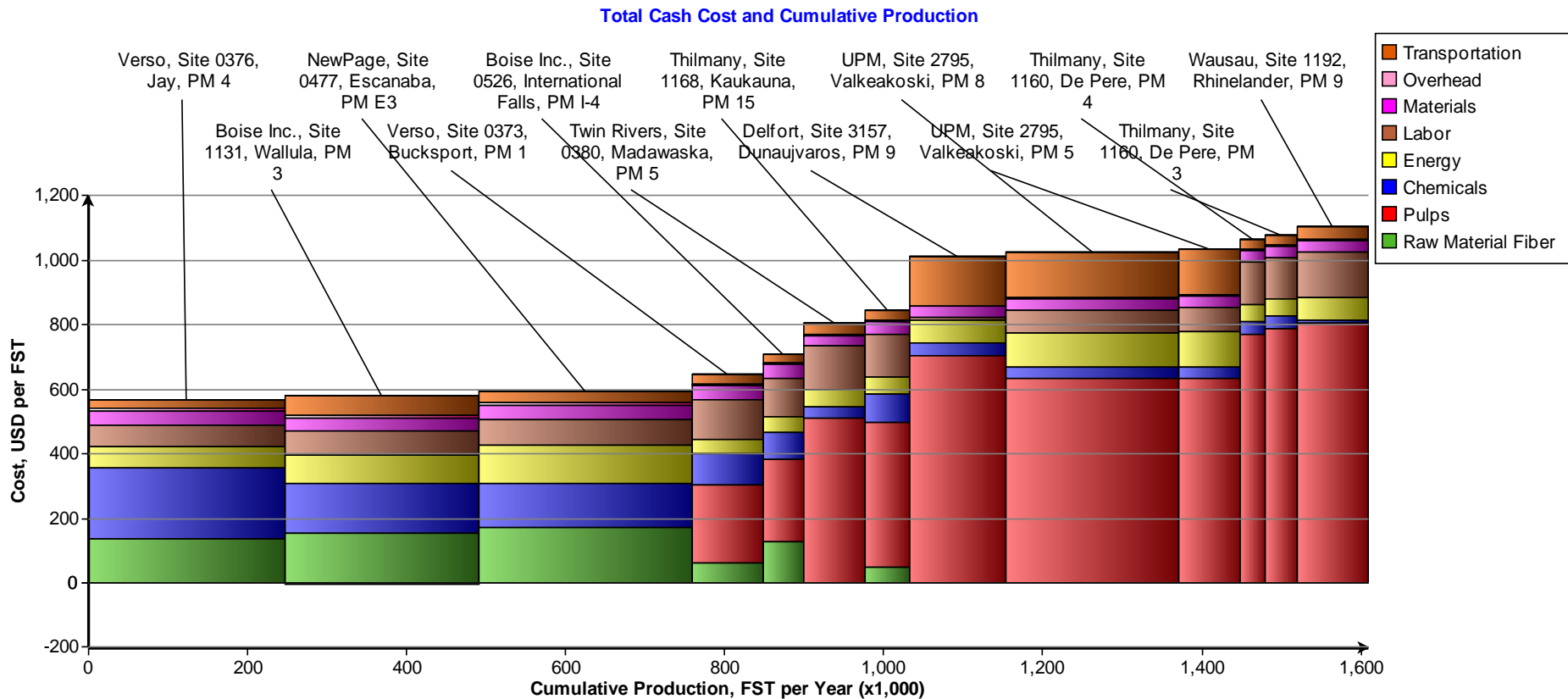


## Mill-wide Control



# WHY Focus on Assets?

*We benchmark ourselves on asset based metrics!*

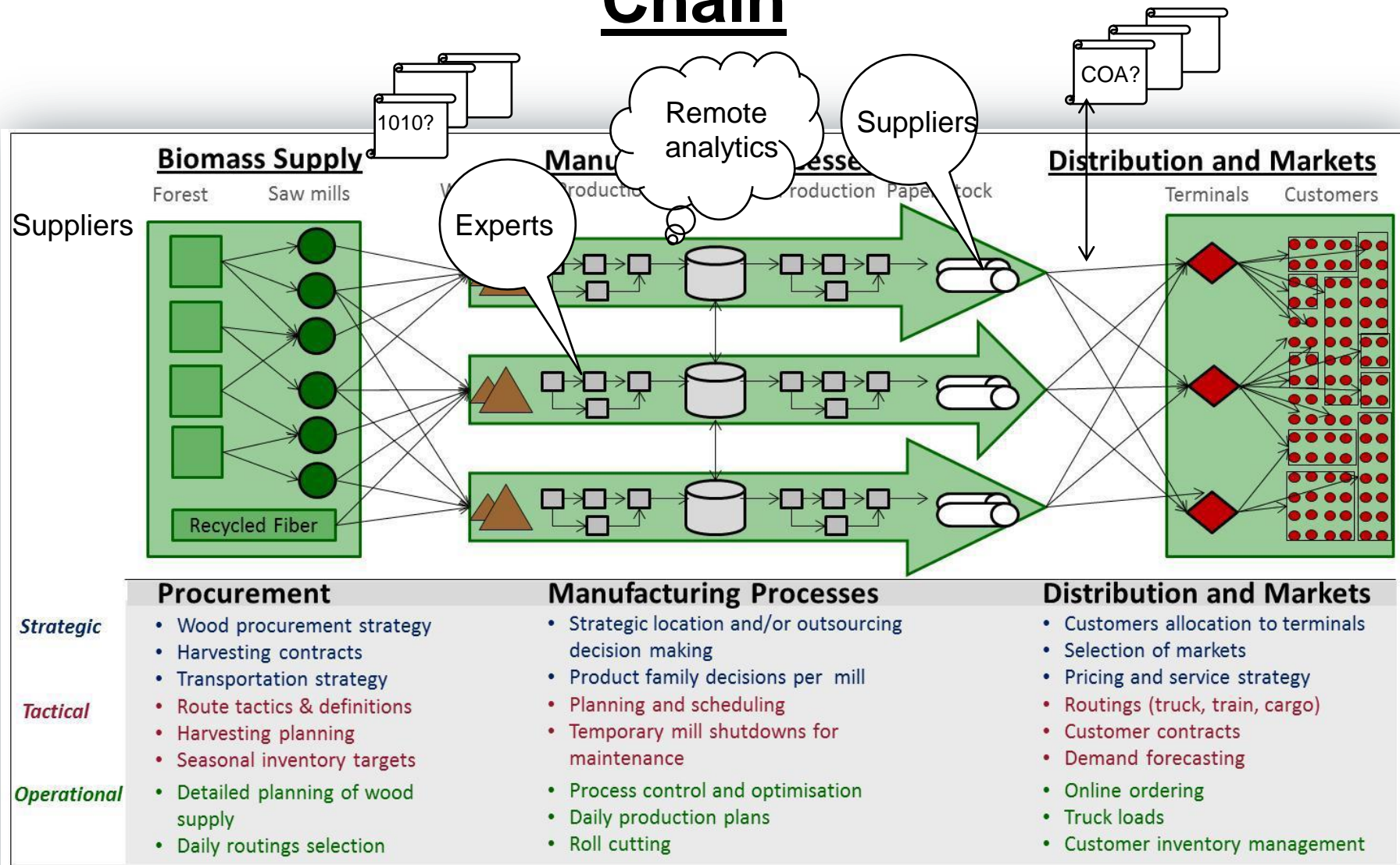


© 2006-2011 Fisher International, Inc.  
Source: FisherSolve™

# Why Focus on Assets...Opportunities Abound!

- Decrease Energy Usage: 2-8%
  - Energy cost at \$70/bbl, 1000 TPD, \$500/ton, Kraft process  
6% decrease - **\$1M/yr**
- Increase Production- Reduce Lost Time (visibility): 1-5%
  - At 1000 TPD and \$500/Ton using 3.5% increase - 1 yr savings  
= **+\$6M /yr**
- Increased Yield: Decreased Material Consumption: 2-4%
  - For 1000 TPD mill and RM = 40% of total costs - **\$2M/yr**
- Decrease Chemical Usage: 1-4%
  - Chemical usage assumed 10% fixed cost using 3% decrease =  
**\$500K/yr**
- Improve Operational Efficiency: Reduce Emergency Maintenance 10-15%
  - Assume a \$2/ton reduction in maintenance costs: **\$730K/yr**

# A Physical + Virtual Change in Value = Supply Chain



<http://www.ksh.ca/2012PDF/11272012eng.pdf>



# Analysts Infer Our Supply Chains are Obsolete

- Product Life Cycles have shorten....12 to 46% leaving integrated supply chains vulnerable to requirements of flexibility<sup>(1)</sup>
  - *In Pulp and Paper we see this in the form of smaller grade runs*
- Research suggests innovation is occurring in companies that have reimagined their supply chain...as the knowledge gained is delivering results<sup>(2)</sup>



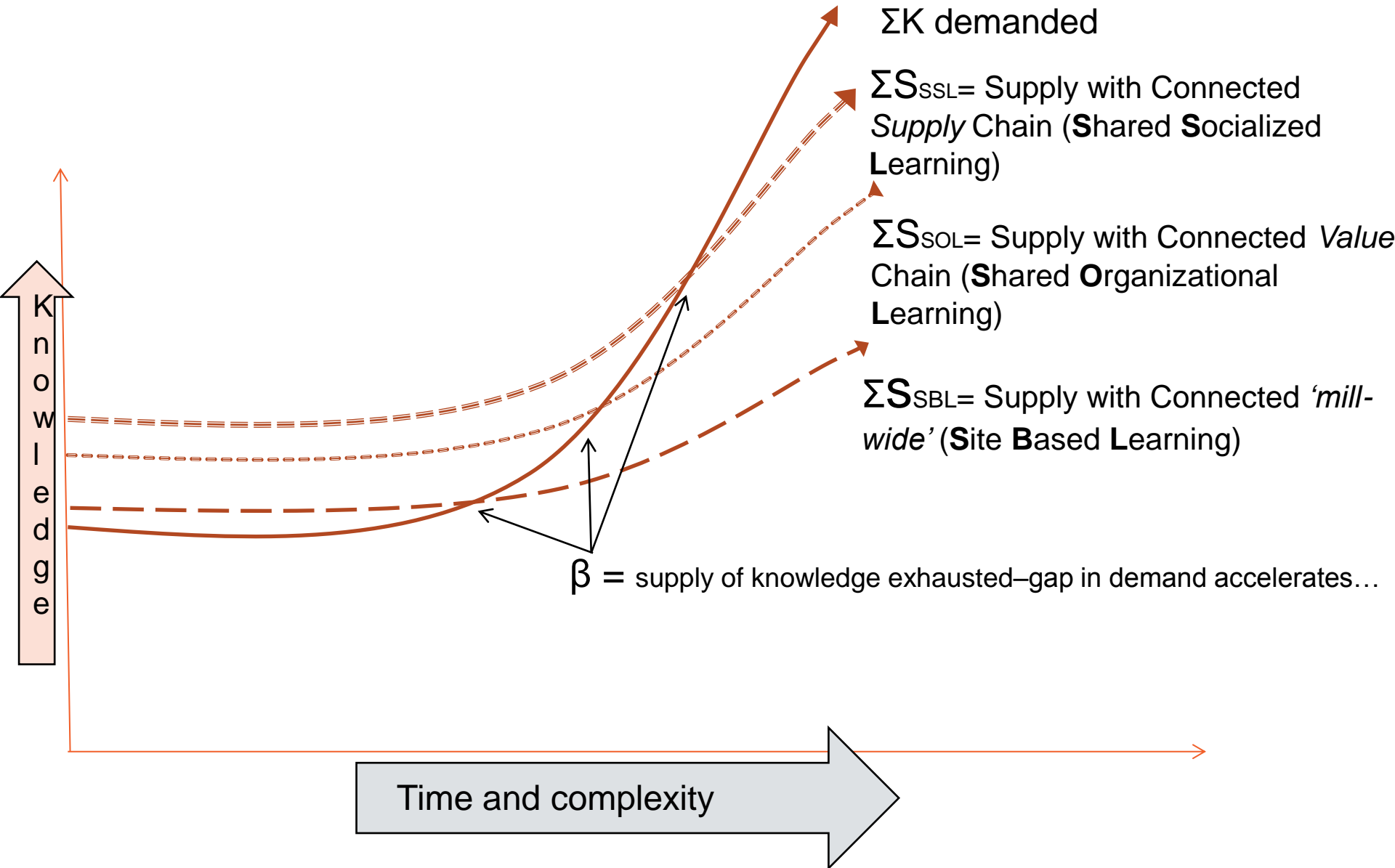
# Forbes and Supply Chains...

*‘...supply chain structures should be adaptable and agile so that they can quickly adjust and respond to market and economic conditions.’*

***“The cornerstone of IT-based resilience is data and information sharing. Business continuity is maintained through access to real-time data, followed by rapid dissemination of data-driven supply chain fixes.”***

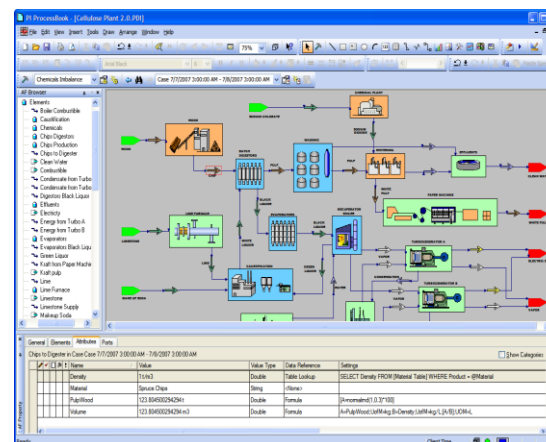
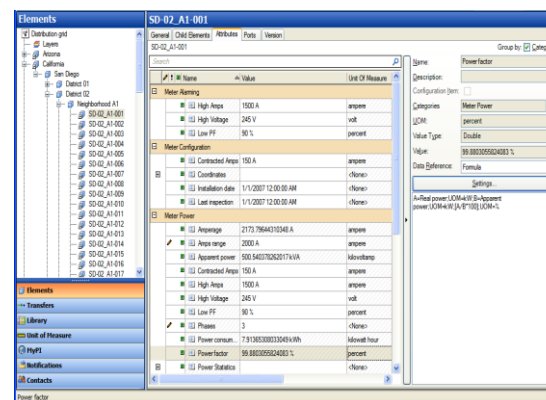
<http://www.forbes.com/sites/steveculp/2013/02/15/supply-chain-disruption-a-major-threat-to-business>

# Our Challenge!! Use Information to Innovate!



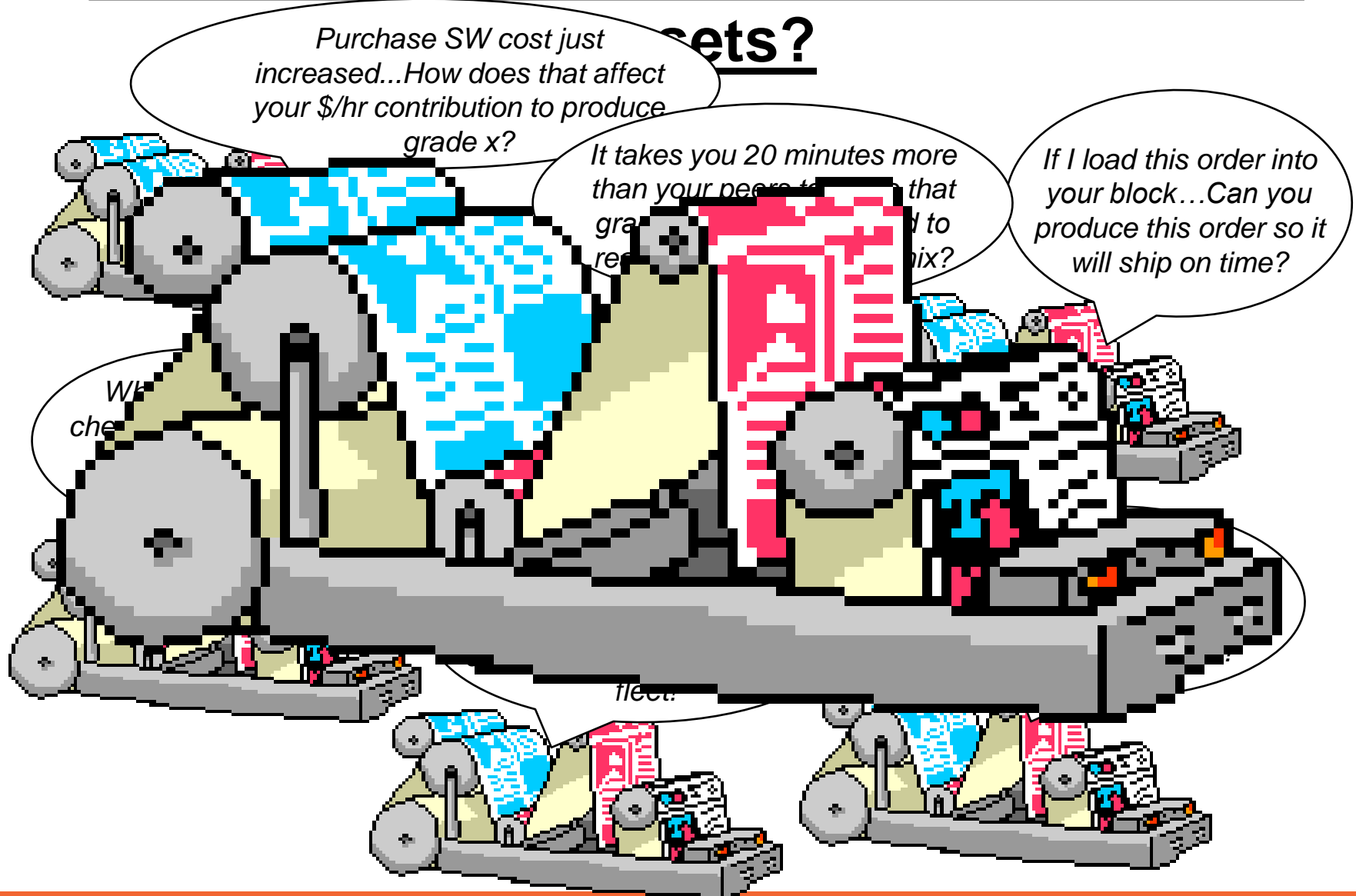
# Access Data, Develop Information, Create Insights on Assets

- Assets and Process Definitions across the enterprise
- Serve as an information/asset model or integrate with existing Enterprise Asset Model (EAM)
- Templates standardization and reusability
- Support for generic calculations, displays and reports definition for reuse through templates
- Extensive searching and modeling capabilities to support different business views
- Provide end user with relevant context to data for ease of accessibility and diagnosis

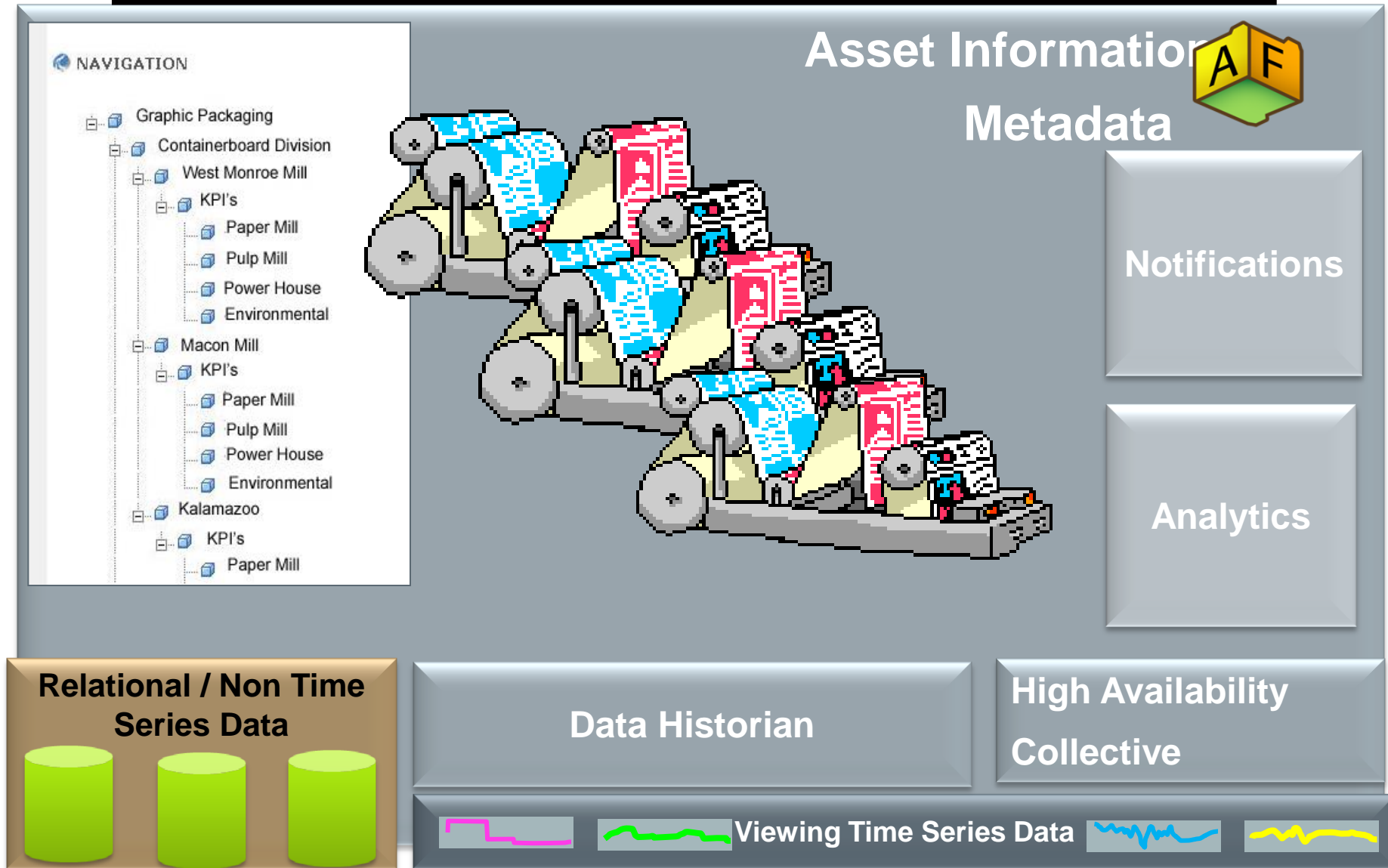


# STEP 1: Asset Visibility...

## What Questions Do You Want to Ask Your Assets?



# STEP 2: Define Data about Assets



# STEP 3: Manage Asset Performance...*Notifications*

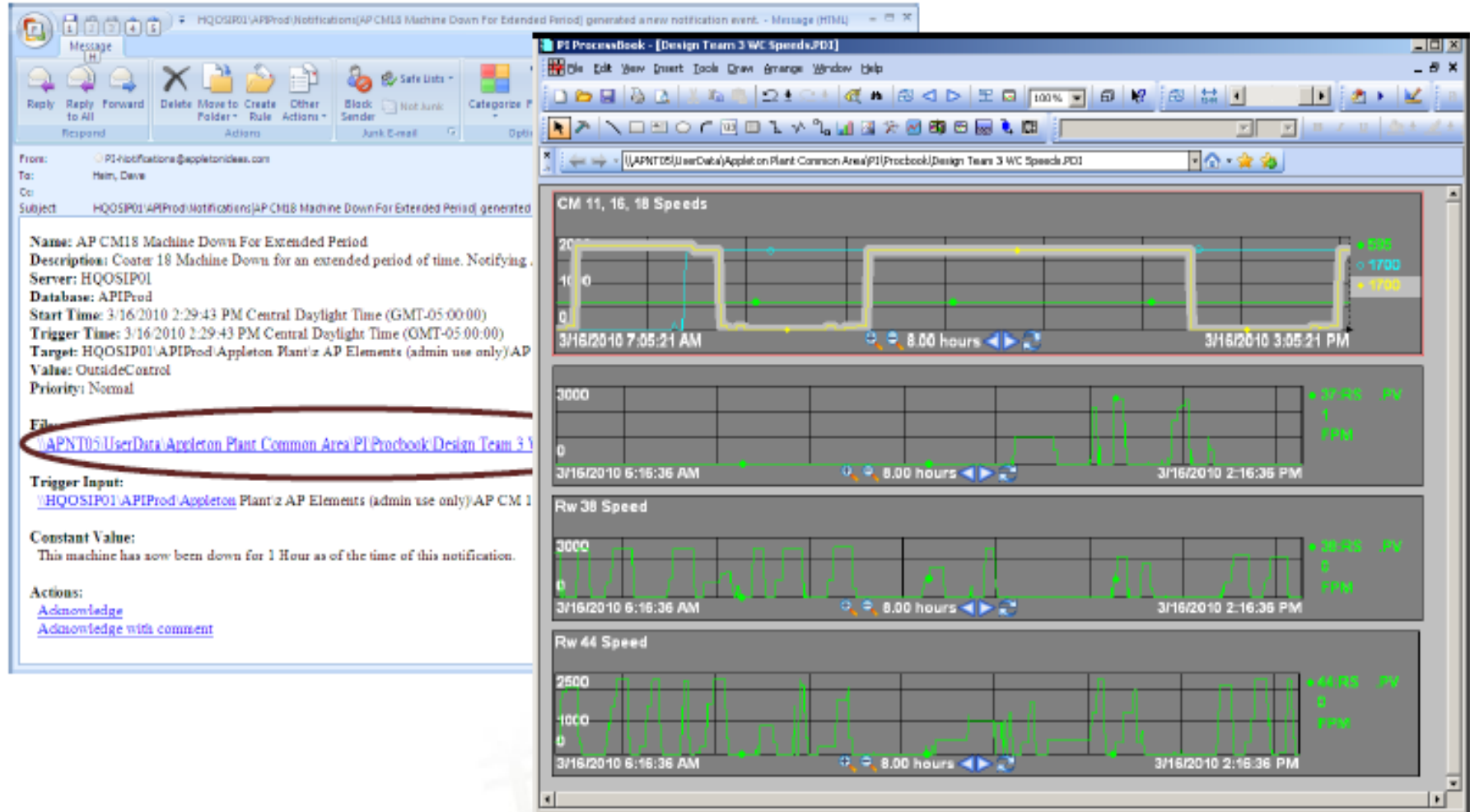
The screenshot displays the TransDistribCo - PI System Explorer interface. The main window is titled "TransDistribCo - PI System Explorer" and features a menu bar (File, Tools, View, Go, Help) and a toolbar with icons for Database, Query Date, Back, Check In, and Apply Template. The left sidebar contains a tree view with the following items: Notifications, Elements, Transfers, Library, Unit of Measure, MyPI, Notifications (highlighted), and Contacts. The main pane is titled "TR1123 Differential Oil Temperature" and has tabs for Overview, Trigger, Content, Subscriptions, and History. The "Overview" tab is active, showing a "Target" field with the path "\\HERTLERD610\\TransDistribCo\\Assets". Below the target field is a "Conditions" section with a "New Condition" button. A table lists the conditions:

Rule	Configuration	Time
AndConditions	<Click For Details>	900

Below the table is a "Time Rule" dropdown menu set to "Periodic". At the bottom, there is an "Options" section with a checkbox labeled "Notify only on change in status". A "Choose an attribute" dialog box is open on the right, showing a list of attributes for "TR1123". The attributes include: Asset ID, Bottom Oil Temperature, Carbon Dioxide, Carbon Monoxide, CO2 CO Ratio, Cooling Fan Motor Current, Cooling Fan State, Cooling Fan Status, Differential Oil Temperature, Ethane, Ethylene, Hydrogen, Load, LTC Motor Current, LTC Motor Status, LTC Oil Temperature, Maximum Differential Temperature, Methane, Oil Breakdown Threshold, Top Oil Temperature, Total Hydrocarbon, Total Oxygenates, and Winding Paper Degredation Threshold. The "Differential Oil Temperature" attribute is highlighted. The dialog box has "OK" and "Cancel" buttons at the bottom.

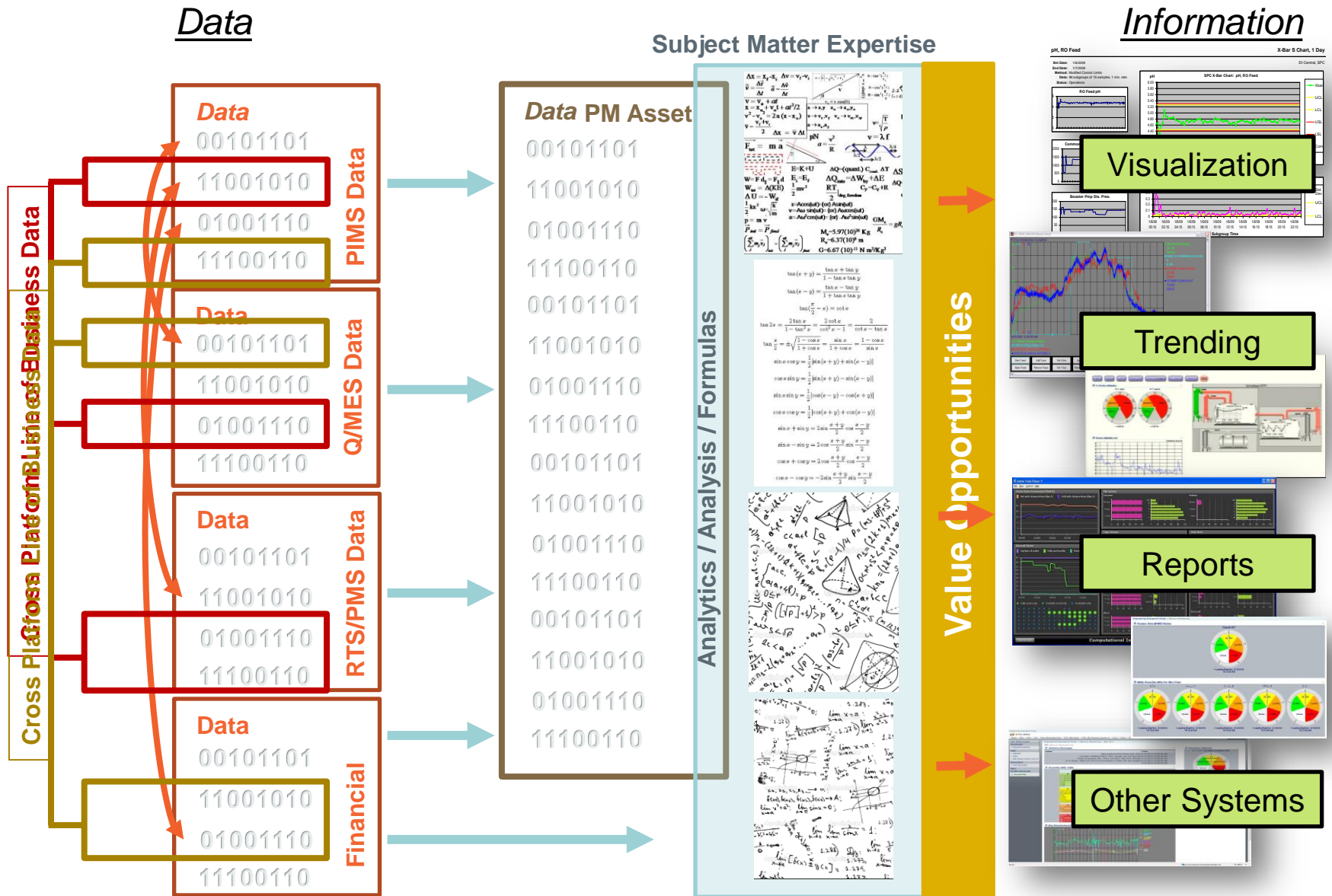
# Example-Notifications Increase Asset Uptime

## Paper Machine Scheduling and Emergency Planning





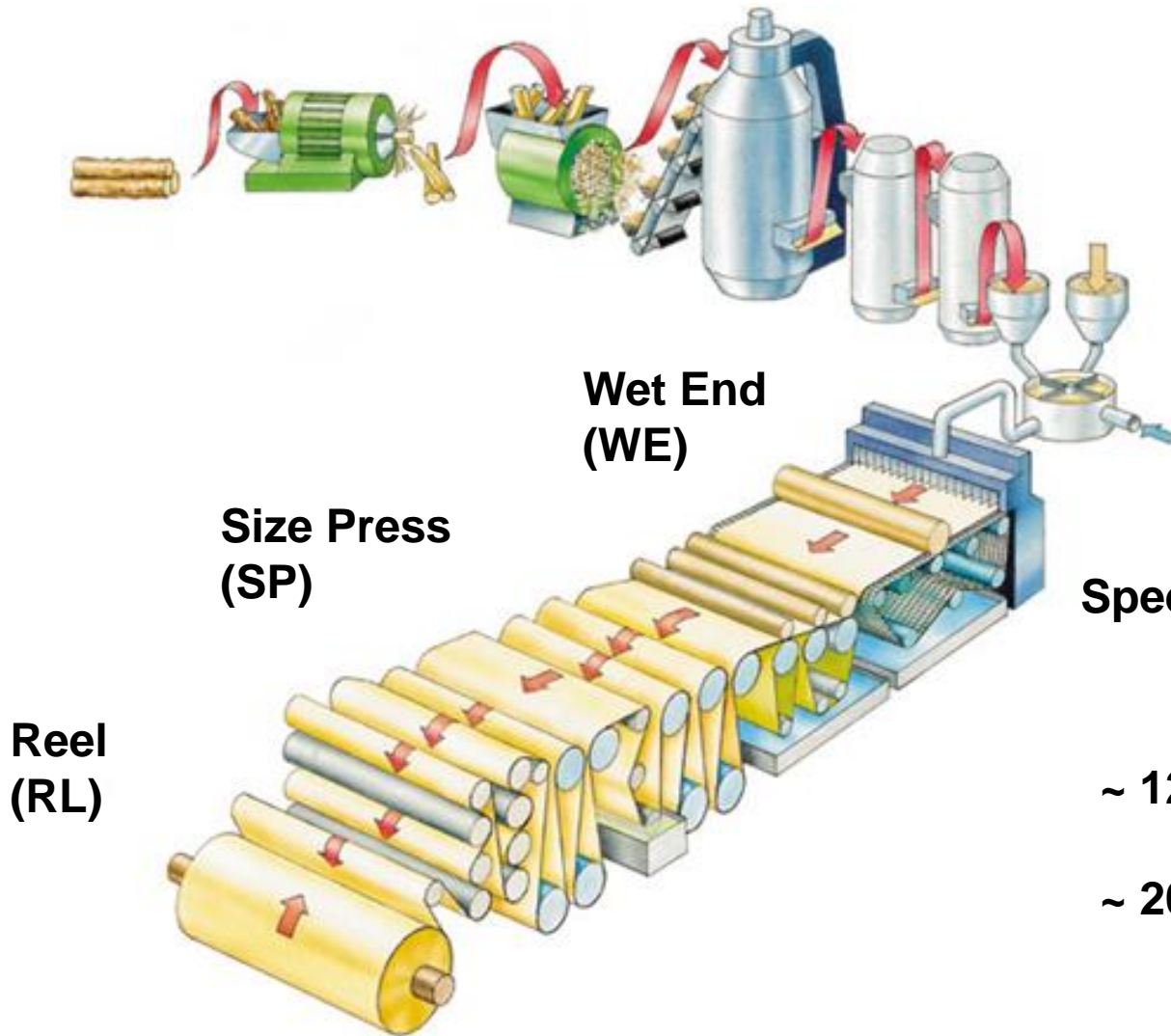
## TODAY'S BEST PRACTICE-Use Asset Centric Views and Place Data into Context



# Use Cases

- AF/EF as a data model
  - Microsoft PowerPivot/Power View (Sheet Breaks)
  - KPIs and Dashboards
  - Data Mining (decision trees, cluster analysis etc.)
  - ProcessBook & DataLink
  - Business Integration

# Sheet Breaks



**Speed: 3400 linear feet/min  
~ 35 mph**

**~ 1200 breaks in 2012**

**~ 20 to 30 minutes/break**

# Sheet break analysis

- What is the distribution of the sheet breaks?
- Where do the most sheet breaks occur?
- Show me by month, by day of week, by hour etc.
- AM shift vs. PM shift?

- **Good Moments**

**72 hour period where I've 2 or less sheet breaks/day in SP+WE**

**How many Good Moments did we have? When?**

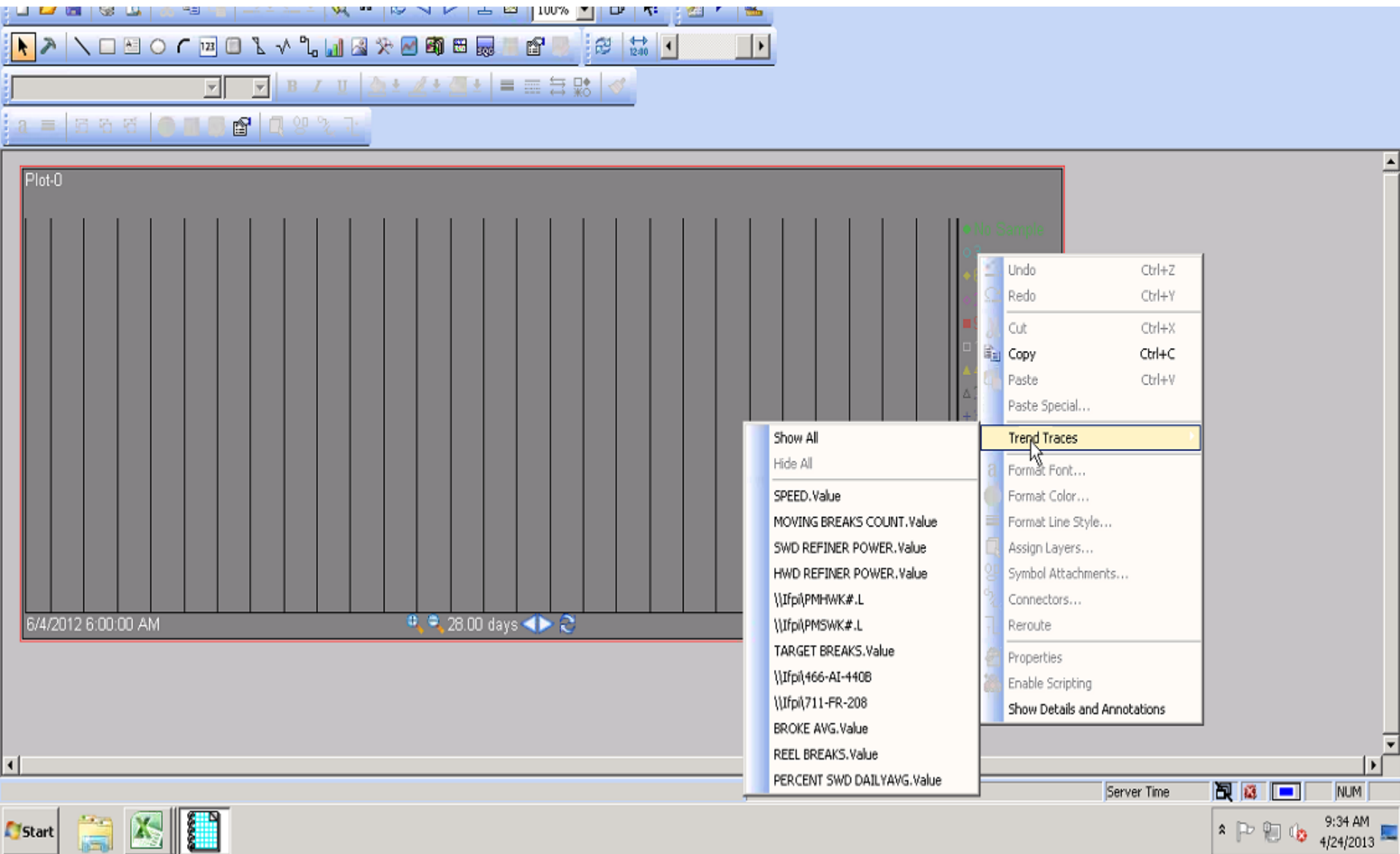
**What's the Good vs. not-so-Good fingerprint (operating variables)?**

**Can I use the findings from Good moments to guide my operations?**

# PAST "BEST" PRACTICE

## EX: Analysis of Sheet Breaks on PM 6

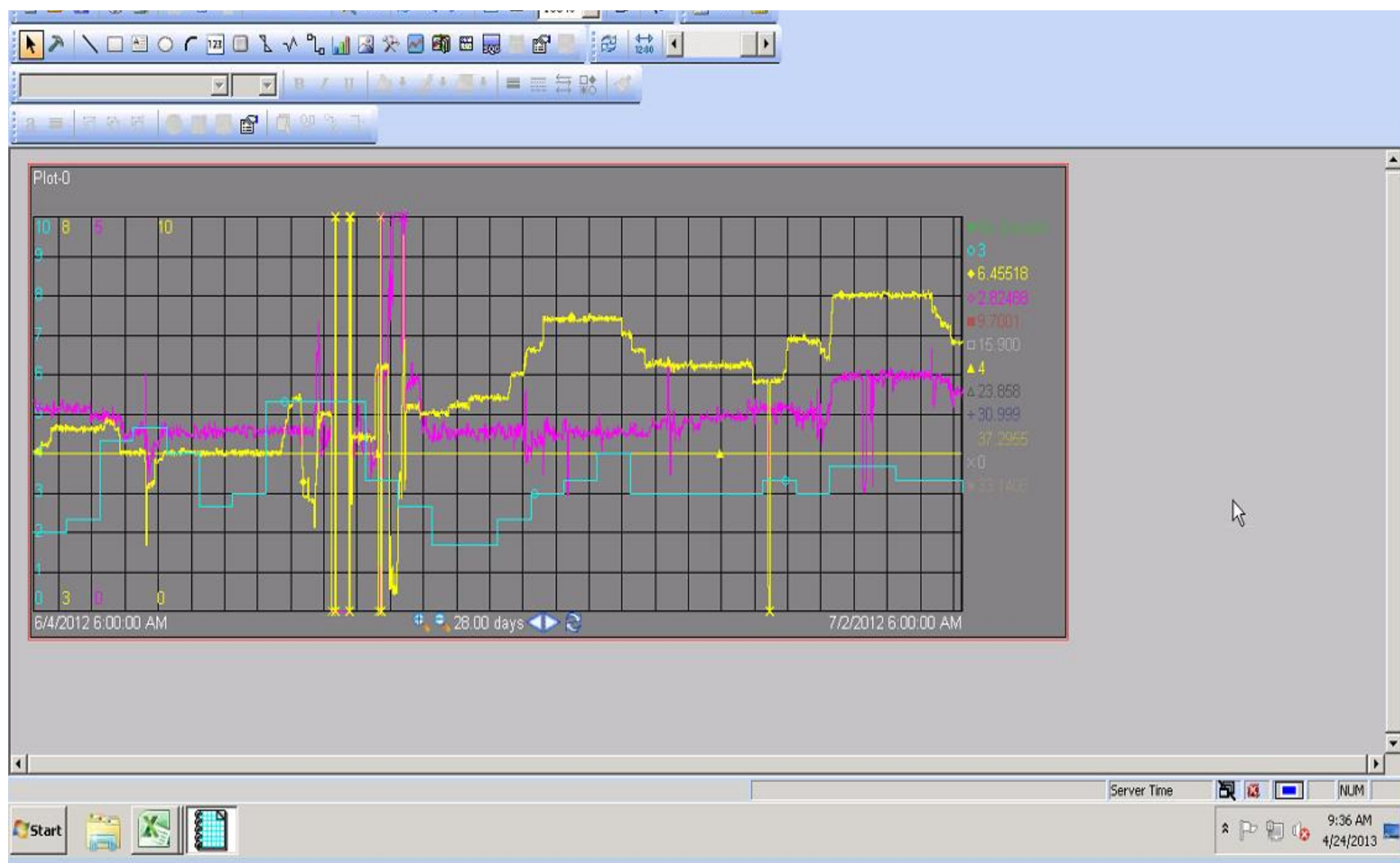
### Step 1- ID Data...



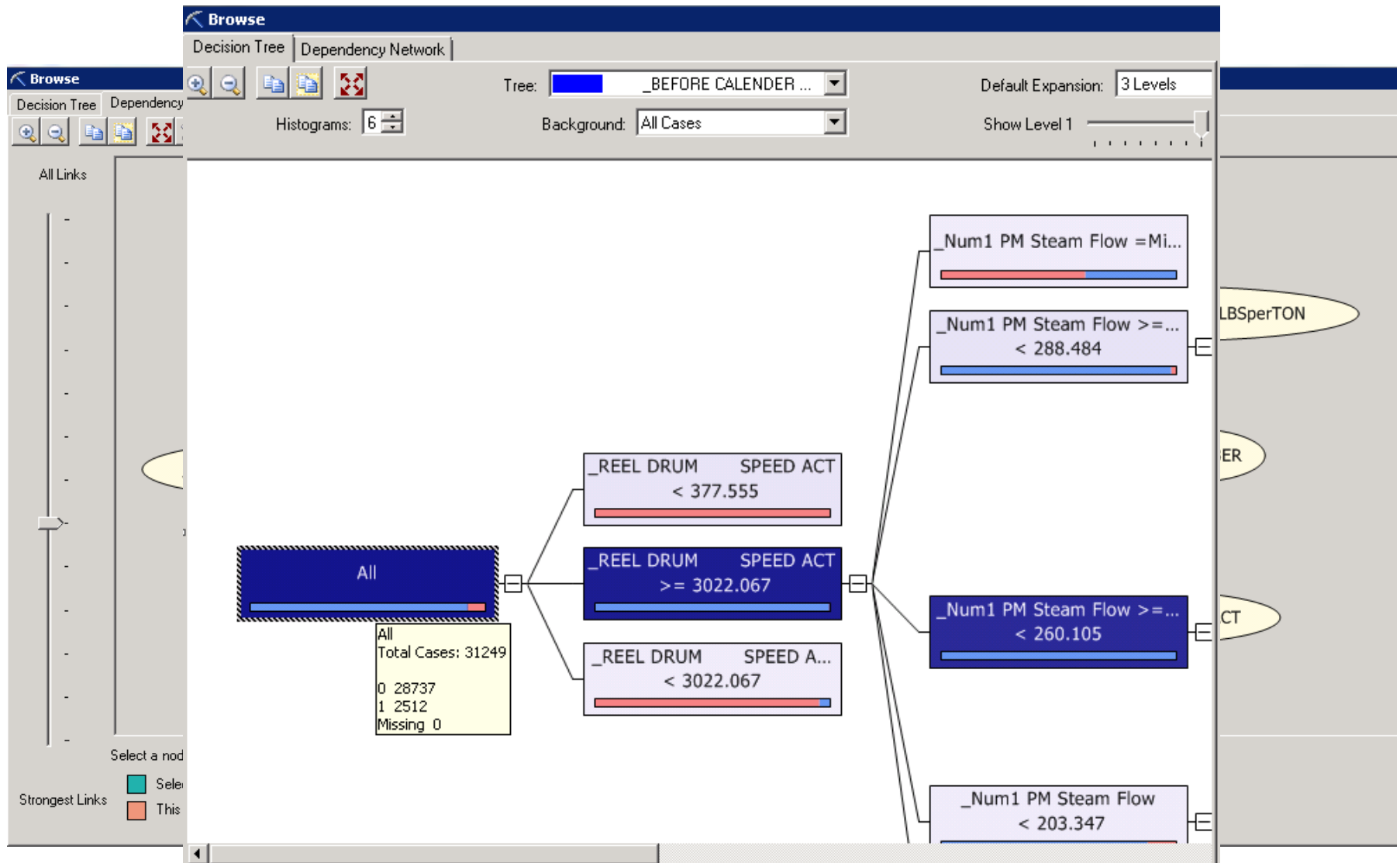
# PAST "BEST" PRACTICE

## EX: Analysis of Sheet Breaks PM 6

### Step 2- Look for Cause and Effect..



# Data Mining and Data Modeling





# AF templates

Library

MyAFDB

- Categories
  - Analysis Categories
  - Attribute Categories

Library

MyAFDB

- Categories
  - Analysis Categories
  - Attribute Categories
  - Element Categories
  - Reference Type Categories
  - Table Categories
- Templates
  - Element
    - KPI
    - KPI
    - Mac
    - She
    - Tag

Elements

- Event Frames

SheetBreaks

General Attribute Templates Ports

Filter

TagStats

General Attribute Templates Ports

Filter

Name: PctDelta  
Description:  
Configuration Item: ☐  
Categories:

Group by: ☐ C

Elements

Elements

- BI Model
  - Ash\_21
  - BreakEyes
  - HWD\_Ref\_Pwr\_2.2
  - MachineSpeed
  - Pct\_SWD\_28
  - SheetBreaks
  - Speed\_3600
  - SWD\_Ref\_Pwr\_6
- Stat Model
  - KPI tags
  - KPI tags2012

Pct\_SWD\_28

General Child Elements Attributes Ports Version

Filter

Name	Value
Avg_24Hr	30.4253368
Base	28
PctCV_24Hr	7.51654673
PctDelta	8.661918
SD_24Hr	2.28693461

# Sheet breaks analysis

Sum of BreaksWEA Sum of BreaksSPA Sum of BreaksRLA

800

Element

Ash\_21

HWD\_Ref\_Pwr\_2.2

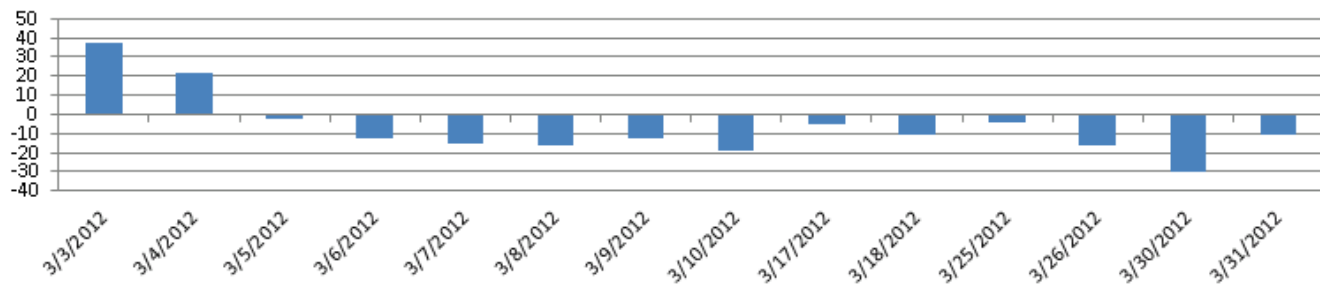
Pct\_SWD\_28

Speed\_3600

SWD\_Ref\_Pwr\_6

Sum of PctDelta

Pct\_SWD\_28

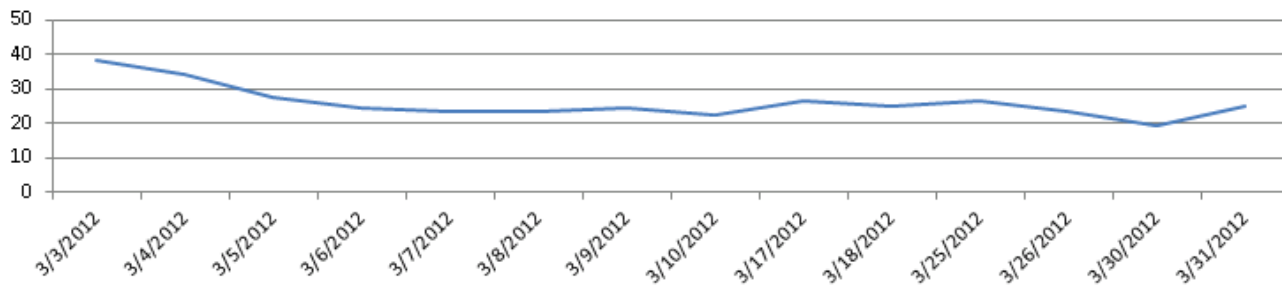


Date

Element  
Pct\_SWD\_28

Sum of Avg\_24Hr

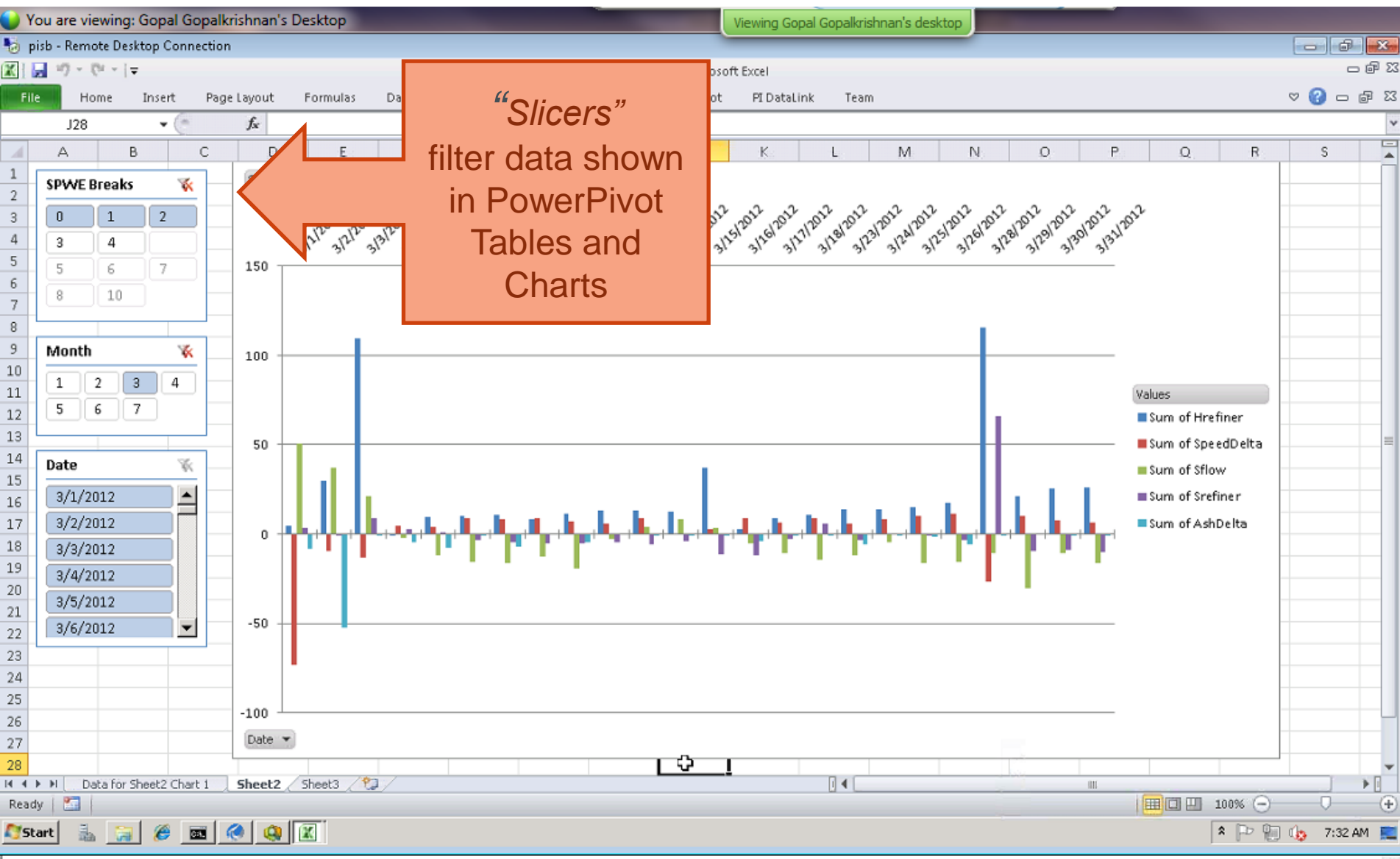
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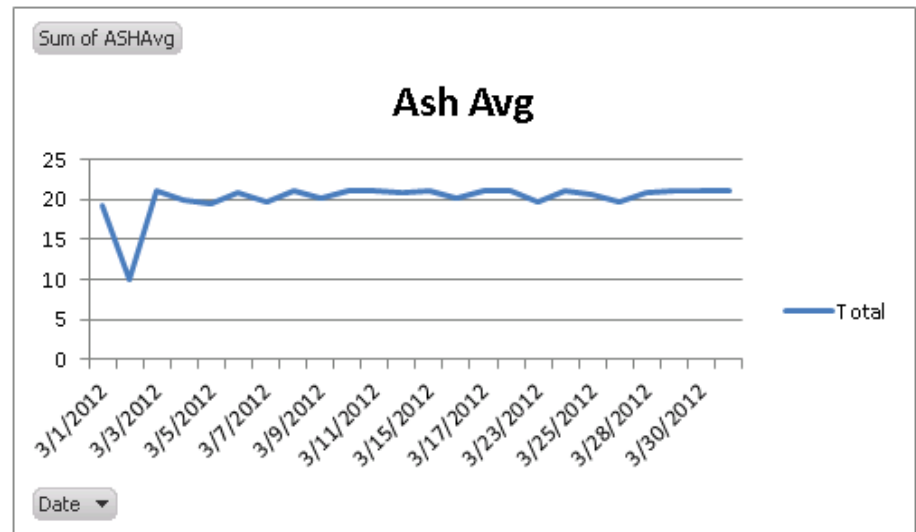
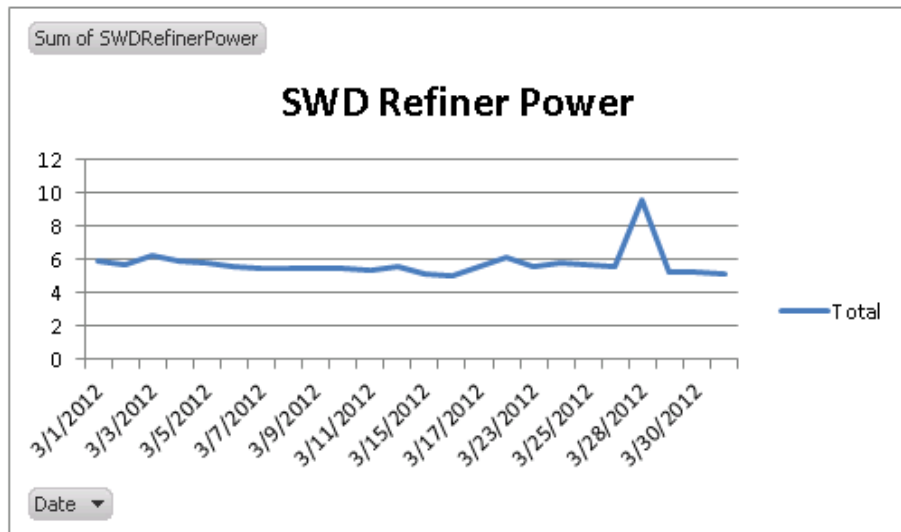
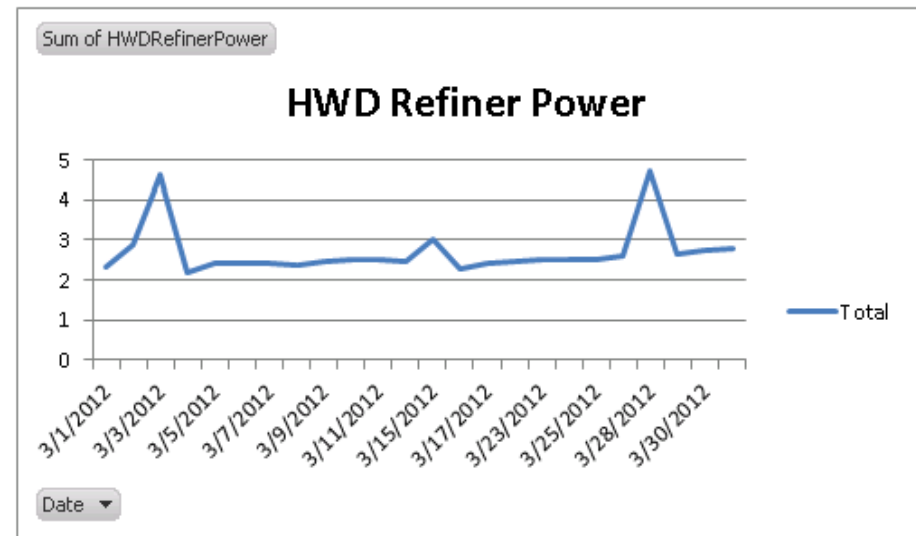
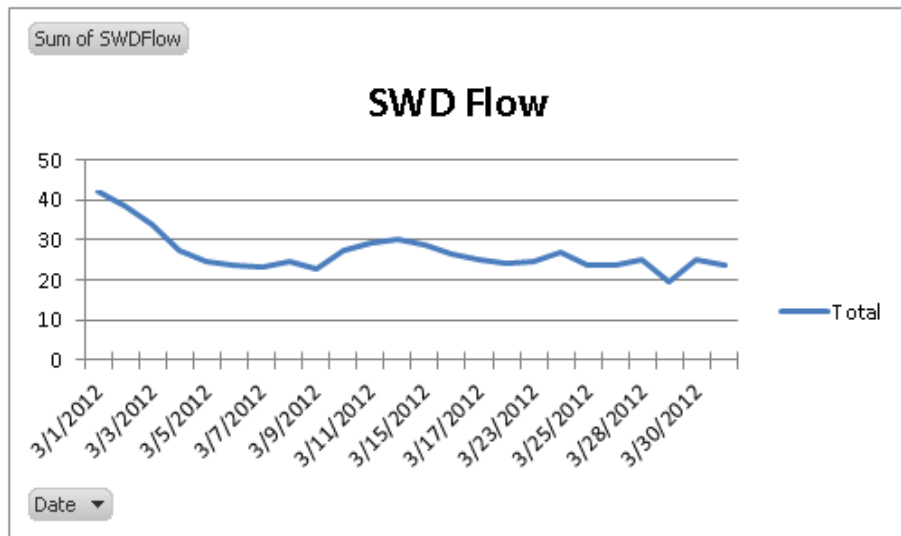
Date

Element  
Pct\_SWD\_28

# March was a 'good' month



# What Characterized PM 6 Runnability in March



# Saw Mill – Lumber

**BDF= board-feet**

**Month** 

3

**Date** 


3/16/2013

3/17/2013

3/18/2013

**Site** 

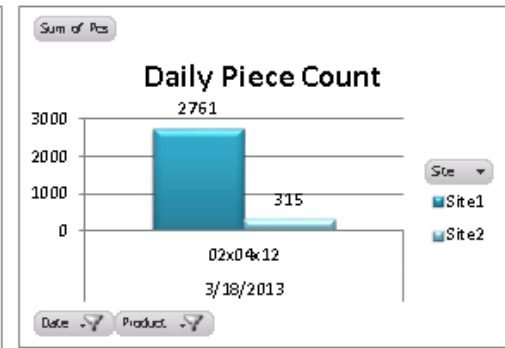
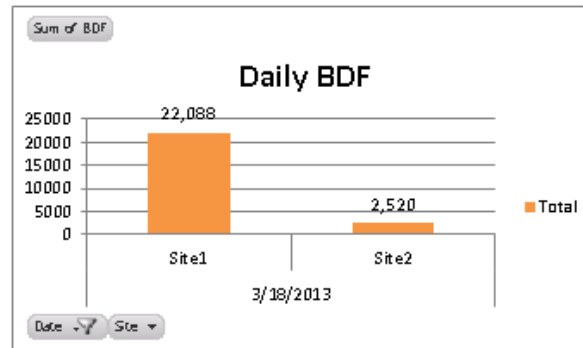
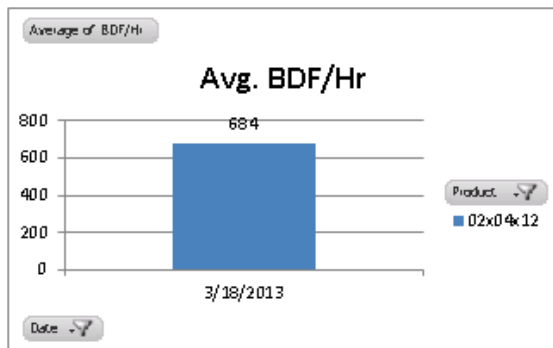
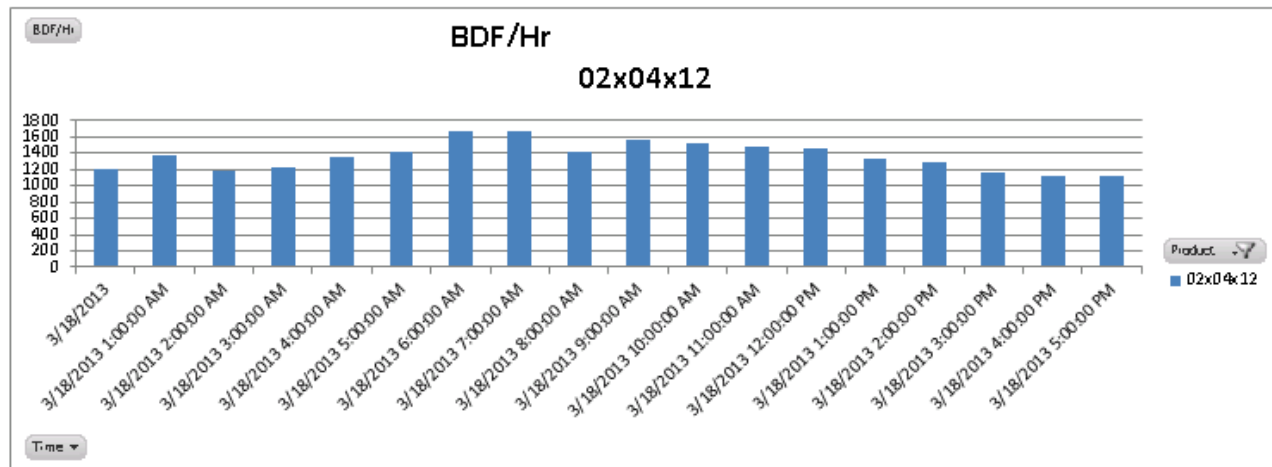
Site1 Site2

**Product** 

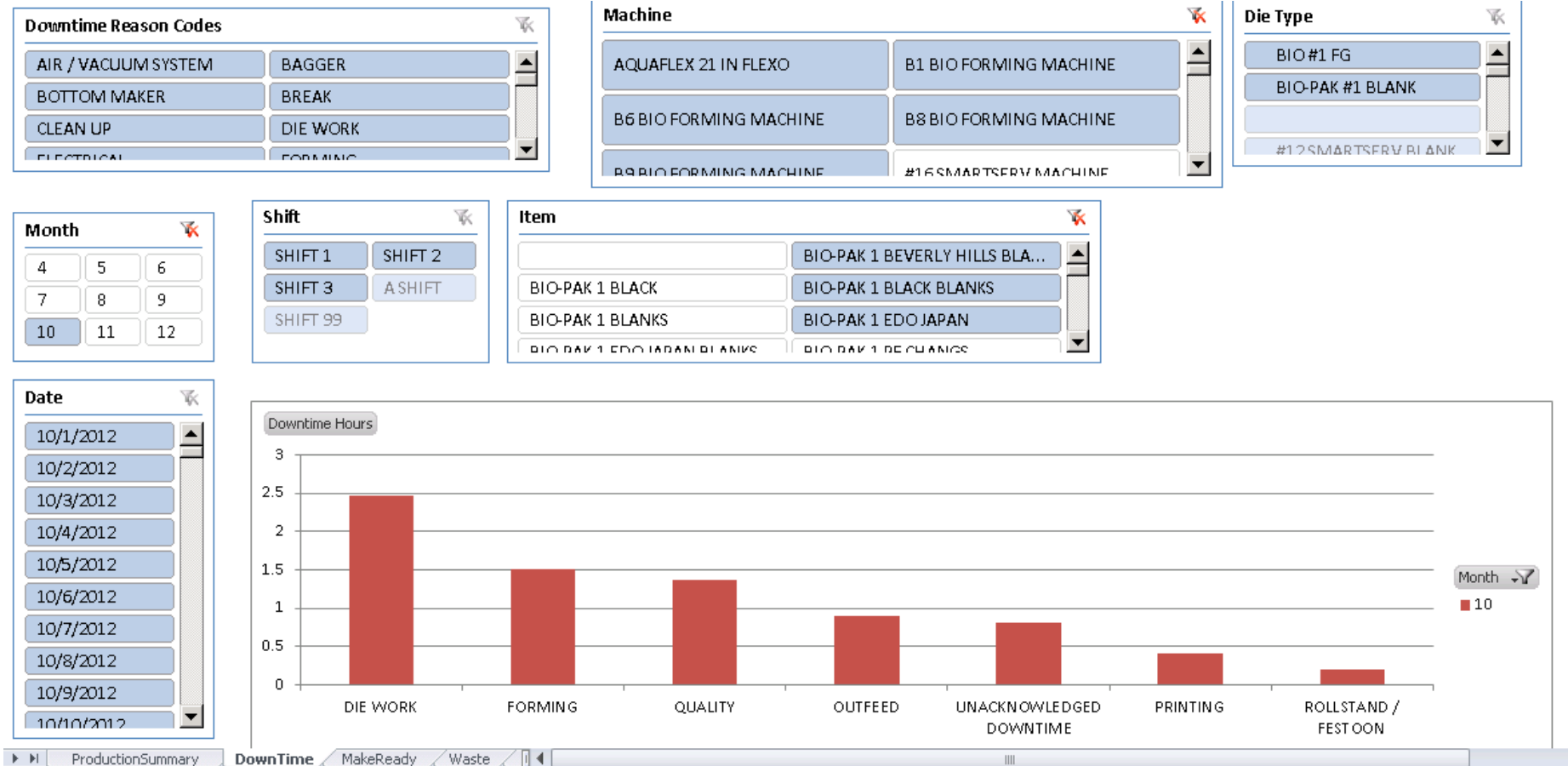
02x04x10

02x04x12

02x04x16



# Converting Plants - Discrete Manufacturing



# THINK BIG...A Decision Support Architecture that ADAPTS...

- Rethink the transformation of data to information... align data with assets...start with visibility of assets...
- Rationalize the role of real time data as it supports existing applications...is there a 'better way' to assess performance?
- Measure assets performance throughout the value chain...leverage increased visibility and begin asking questions related to the performance of the asset...and use multidimensional tools to expect the assets to answer!
- Treat data as an enterprise asset...data is NOT the domain of the site or the individual... it is an asset of the ENTERPRISE...transparency of data leads to collaboration, this compresses the knowledge gap and increases innovation...and innovation will differentiate the survivors from those that will thrive



## Start small ...ID some key Opportunities...

### AF Workshop to Move You to Asset Based PI

- ...OSI will **coach** you through the use of the integrated asset based PI tools
- ...OSI will help you **focus** on a specific problem or subsystem,
- ...OSI will show you a **methodology** to re-use what you have in an AF platform...adopt PI displays, reports, and analyses that have broader application in your organization
- ...OSI will help you establish **discipline** and increase **collaboration**.

**A new way to learn a new way to use PI.**

# START NOW...Asset Visibility on a Real time Infrastructure...

## Value of the Connected Supply Chain

### Value of Asset Visibility

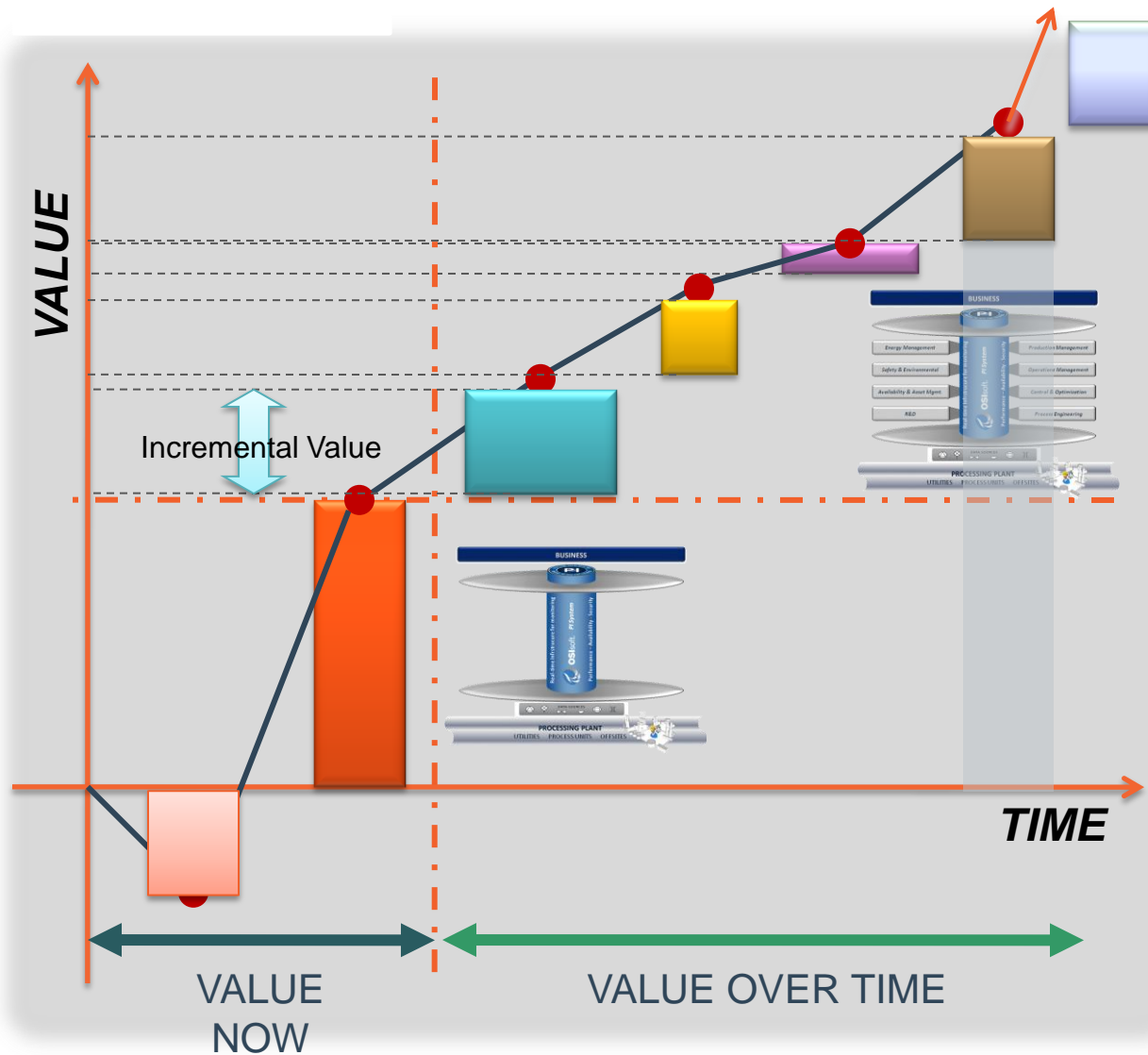
#### Value of PIMS

- Aggregate Data from Control Systems
- Monitor, Measure and Analyze Unit Ops
- Visualization by end user
- Integrate Data with Point Solutions (MVA..)

- Aggregate Data Site-wide
- Analyze Process Performance Site-wide
- Develop/Manage via SOP's
- Manufacturing Intelligence based on a Single Version of the TRUTH

- Moves all eyes on **Asset Performance**
- Lowers Cost of Curiosity across fleets of assets and across lines of Businesses
- Allows support by vendors/experts
- Innovate within your Value Discipline
- Benchmark at the Level of the Enterprise

# Think BIG ...You can start small...But **START NOW**



## Benefits

- ← *Connected Supply Chain*
- ← *Manufacturing Intelligence*
- ← *Connected Value Chain 'Millwide'*
- ← *Asset Performance*
- ← *Asset Visibility*
- ← *PI NOW..Real time data...Enterprise-wide*
- ← *PI then...Real Time Data ...millwide...*
- ← *Initial Investment*



**THANK**

**YOU**

# Jim Black

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