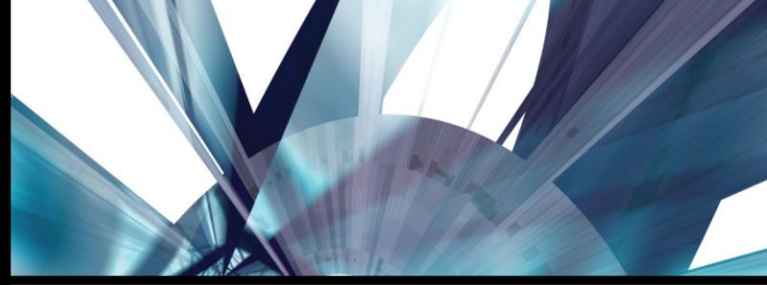
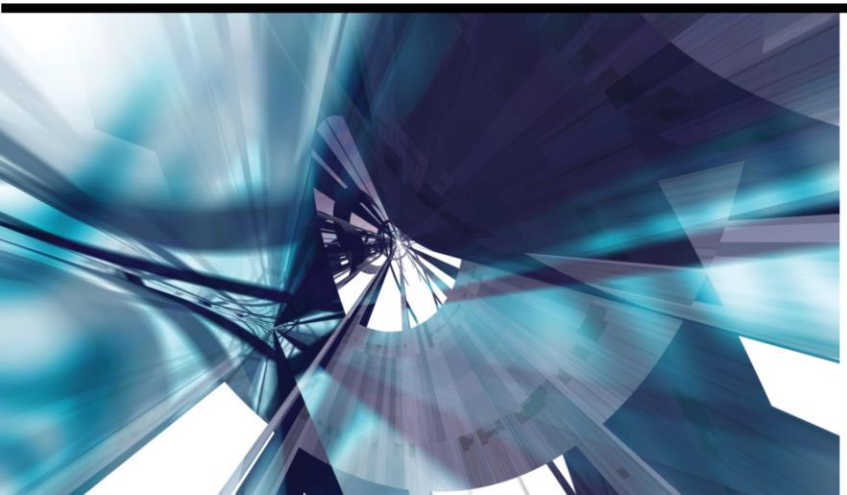
PEOPLE I PROPERTY I REPUTATION



# ASSET PROTECTION

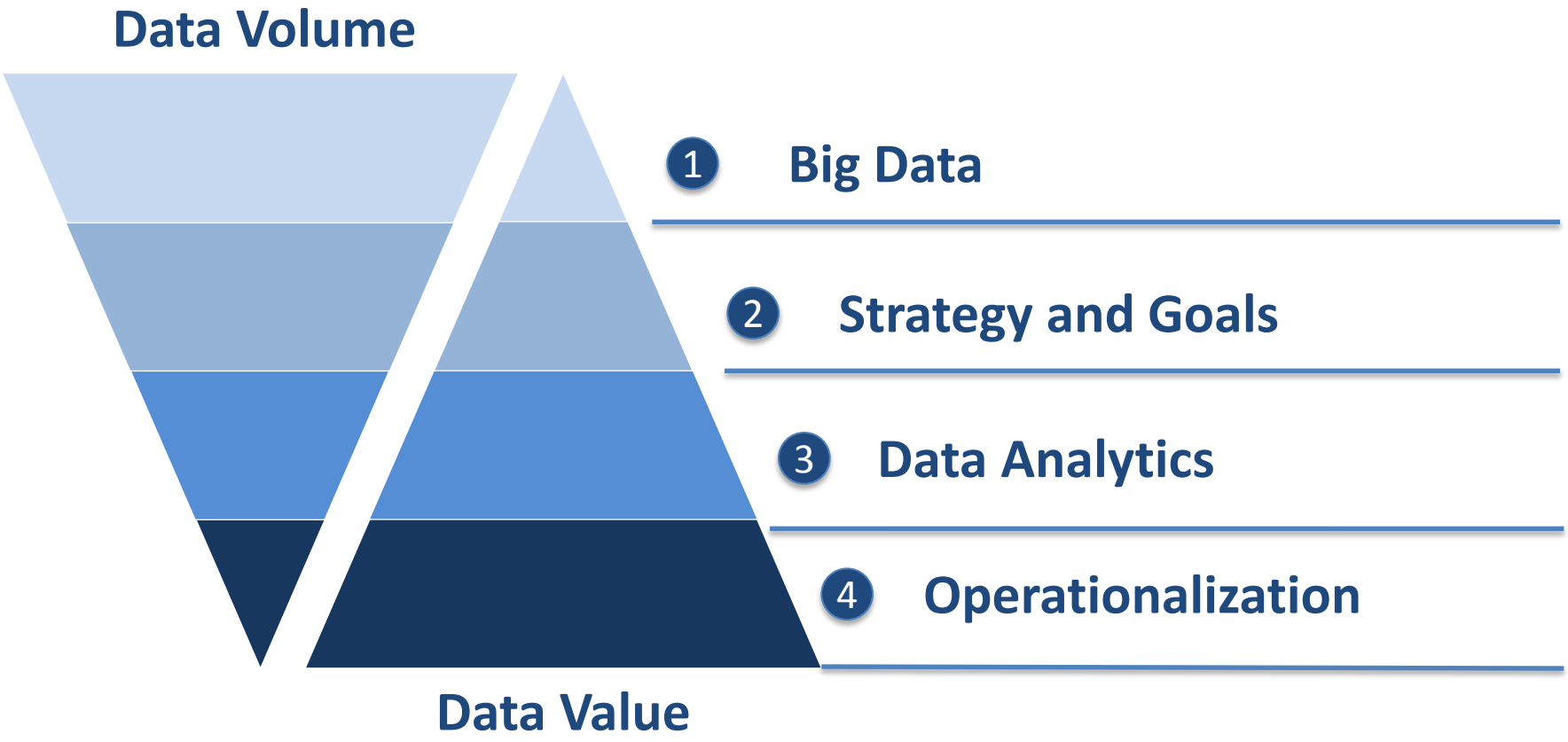


FMI

THE VOICE OF FOOD RETAIL

# Loss Prevention and Data Analytics: Are you where you need to be?

# Are you where you need to be?

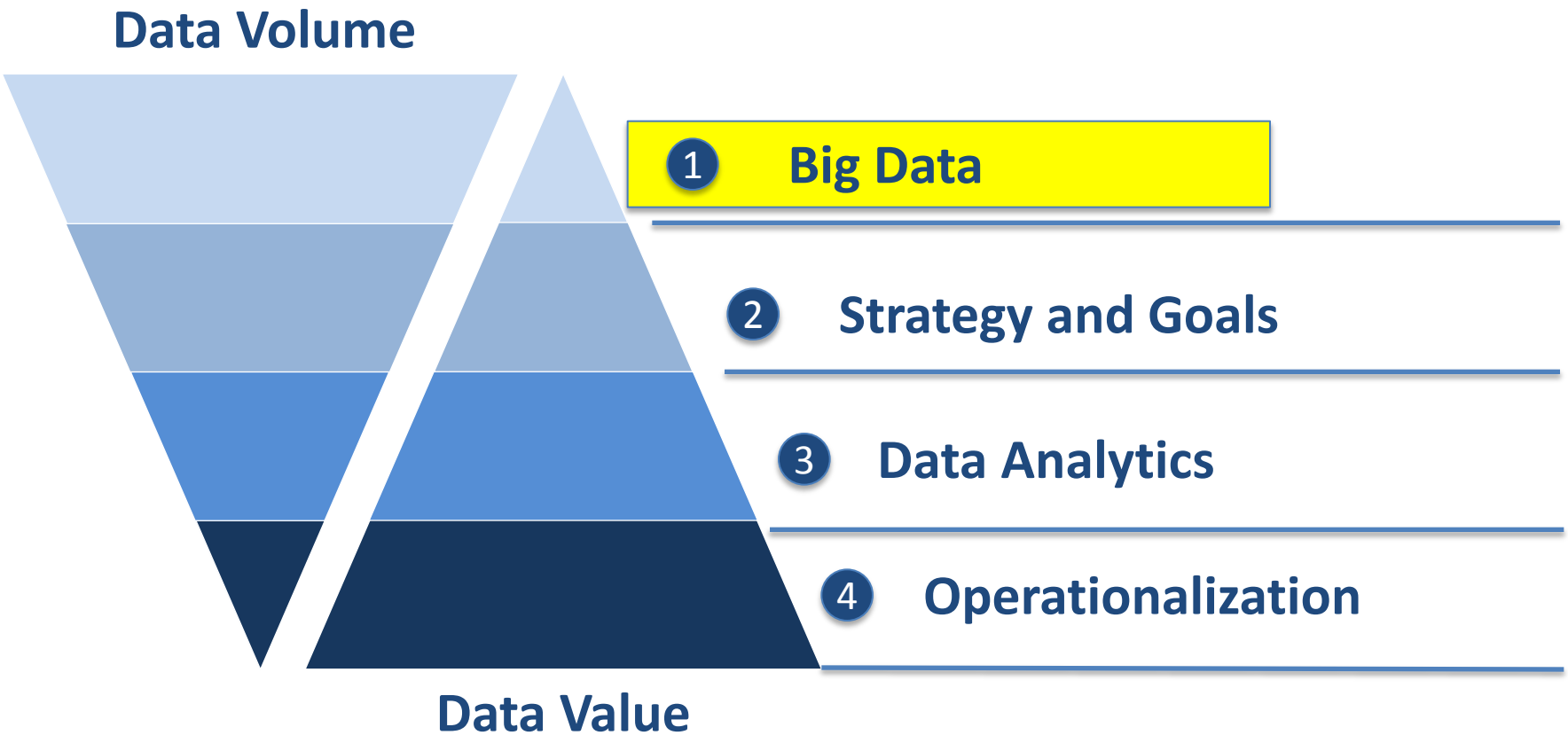


# Are you where you need to be?

What challenges are you facing?

- What is driving my losses
- Ideation
  - Who do you involve in developing your analytics?
  - Where is the data?
  - Does my analytics model correlate to processes and goals?
  - What steps can I take to improve?
- Are your goals linked to company goals?
- Do your metrics use a common language?
- Are your metrics reactive or proactive?

# Data: Volume vs. Value



C-level leaders are grappling with how to balance Art and Science in their decision making processes

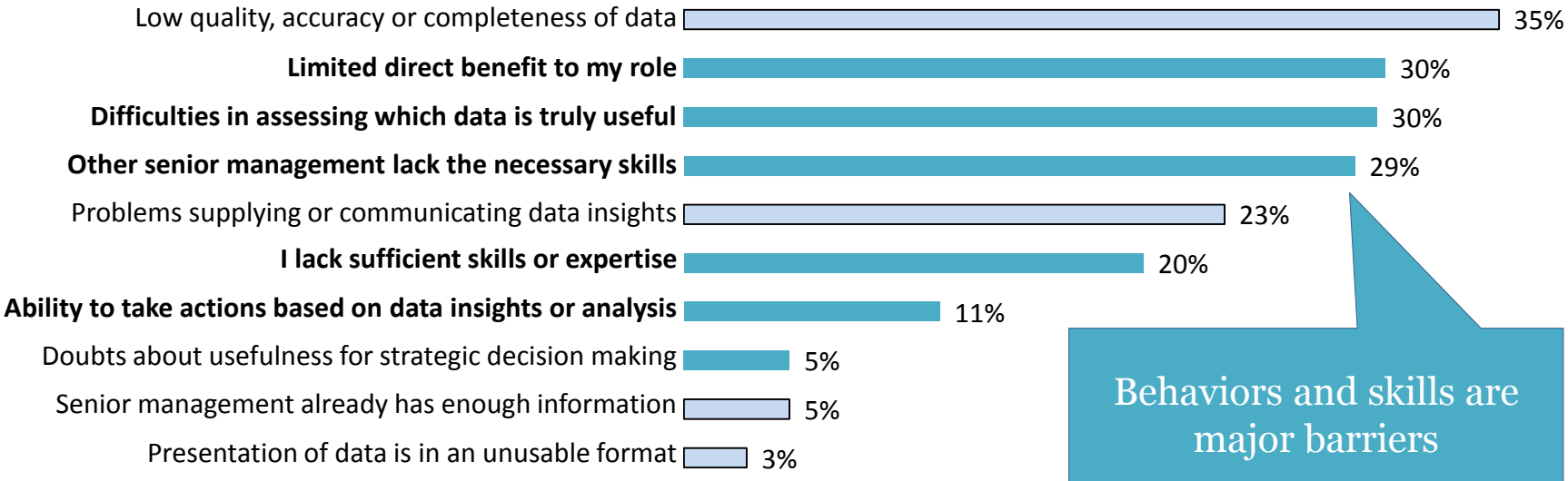

- Predictive modeling
- Machine learning
- Text and video analytics
- Simulation and scenario planning
- Recommendation engines

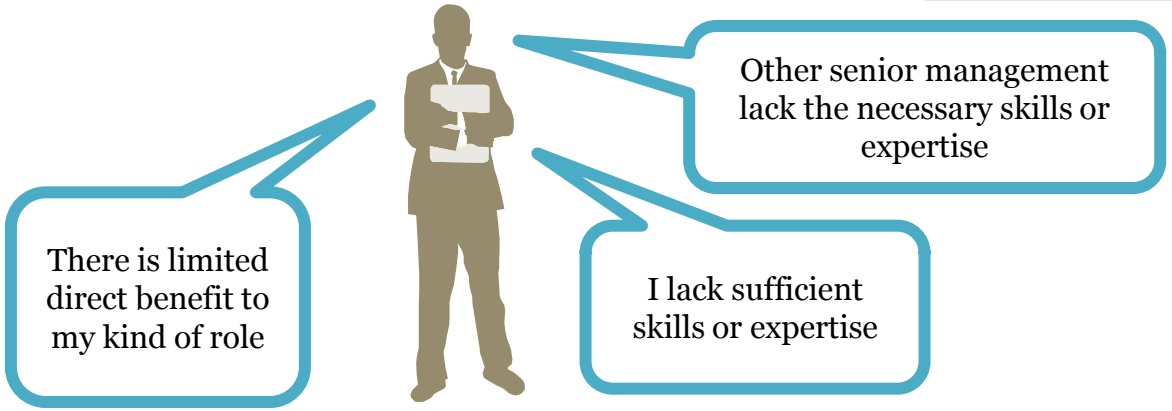
- Personal experience
- Advice from others
- Trusted sources of information
- Intuition

***Only 38%*** *of respondents placed the* ***most reliance on "data and analytics" oriented inputs*** *in their last decision* *(Source: PwC's Global Data & Analytics Survey 2014)*

# "Behavioral", "skill-related" and "data quality" are sited as barriers to data-driven decision making

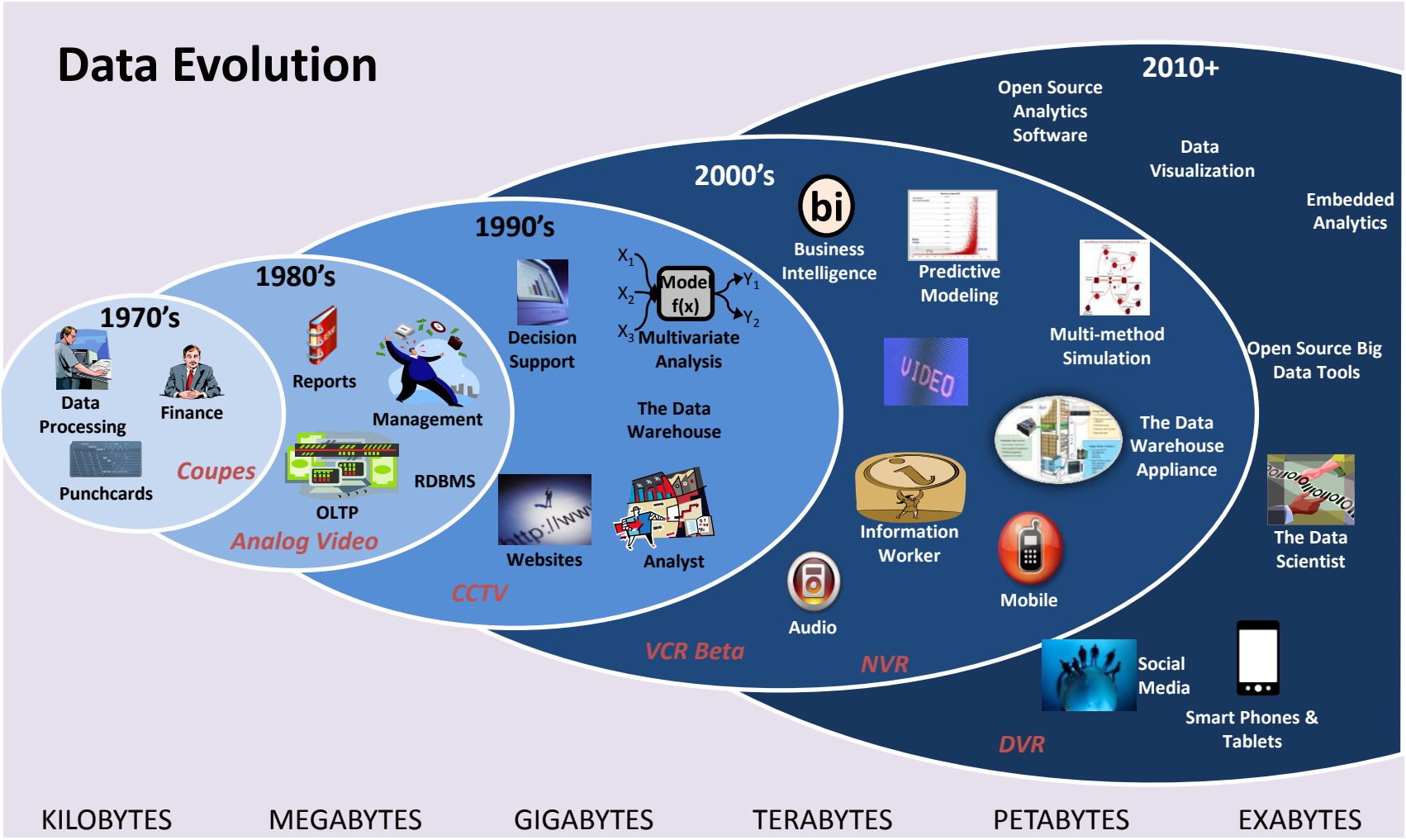
## Barriers to integrating more data and analytics in decision-making




PwC's Global Data & Analytics Survey 2014; Q18. What do you consider to be the biggest barriers or issues that prevent you from making greater use of data and data analysis when making big decisions? Select up to two. Note: Responses add to more than 100%

Big Data is part of a broader data evolution which has impacted technology, information management and advanced analytics



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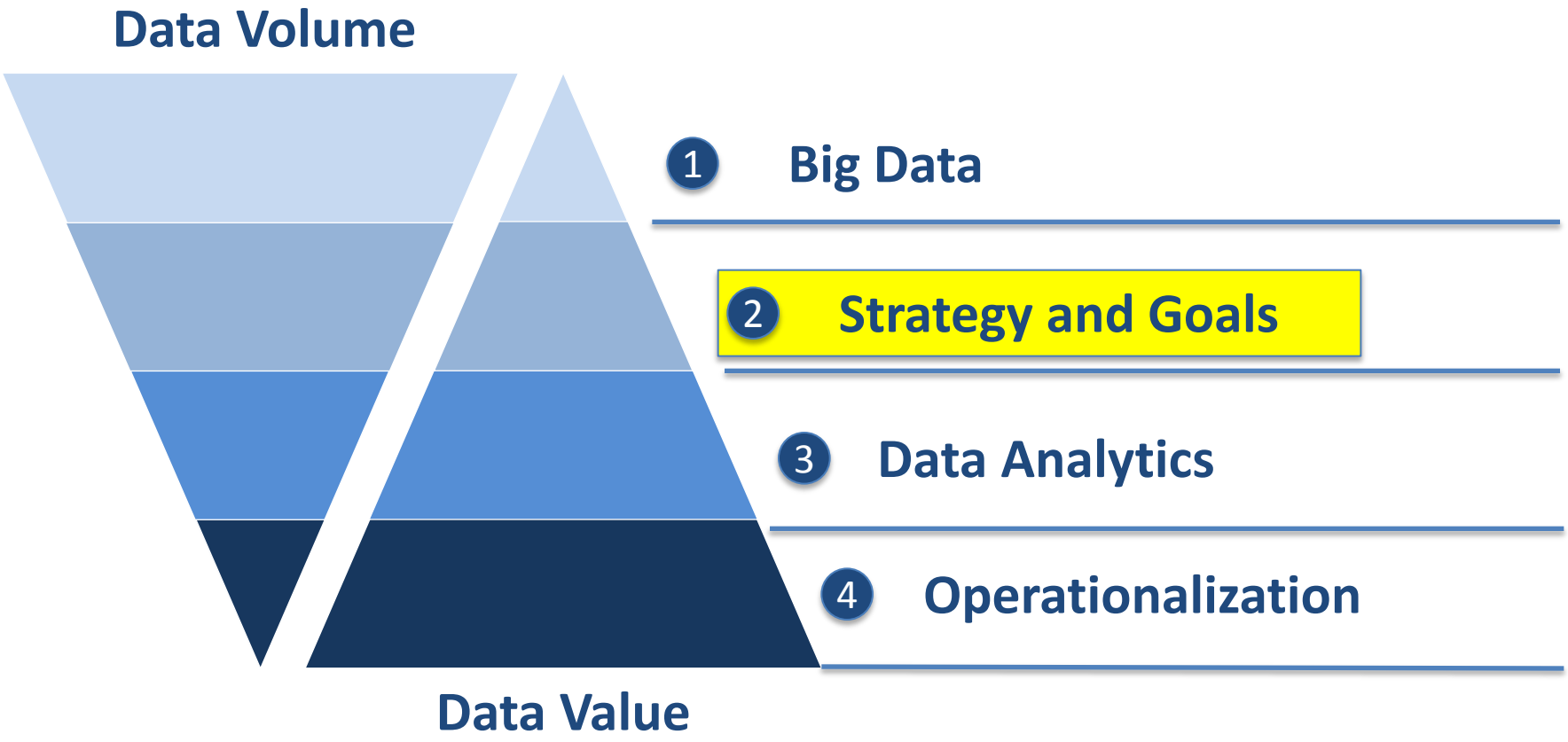
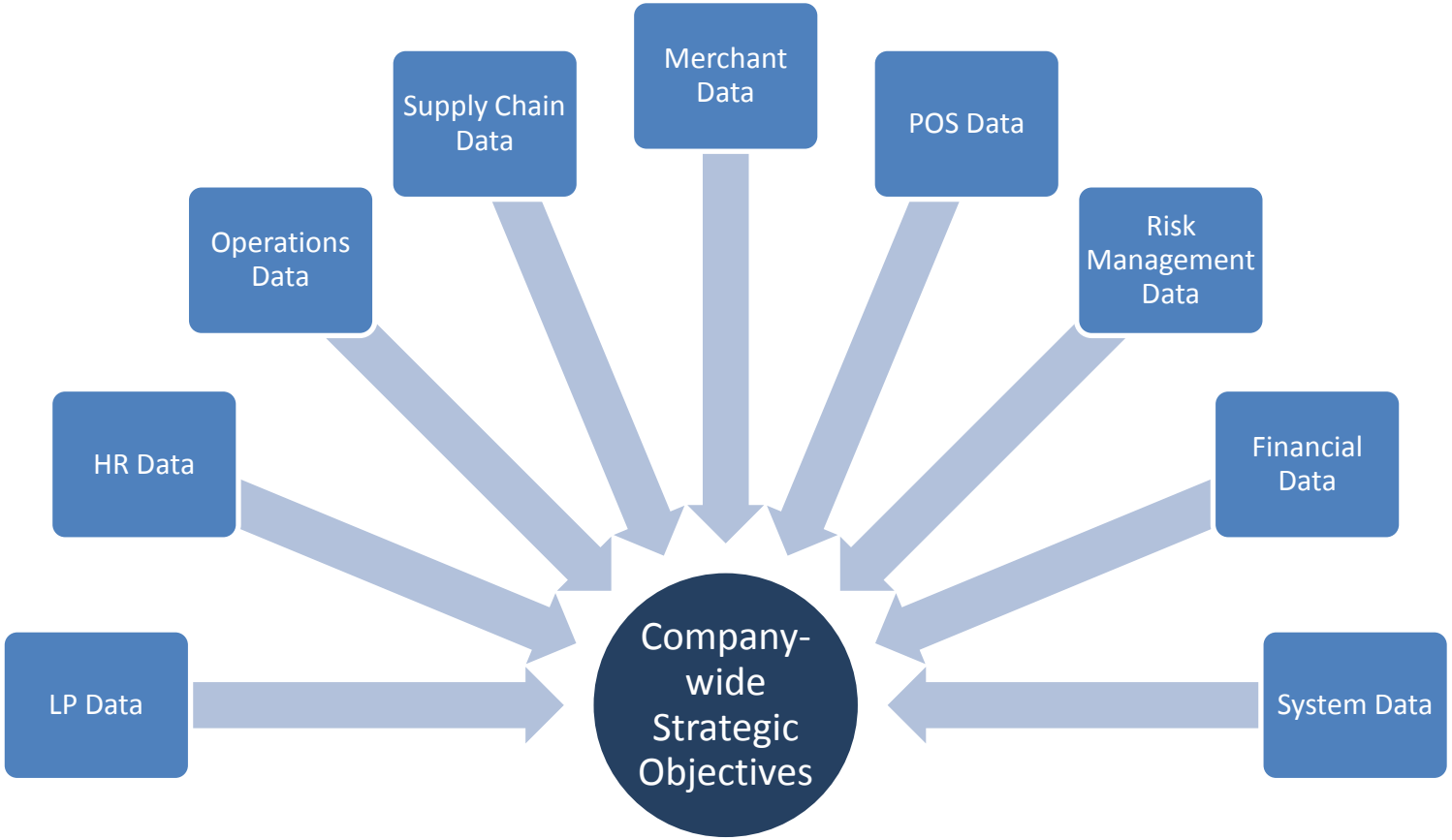
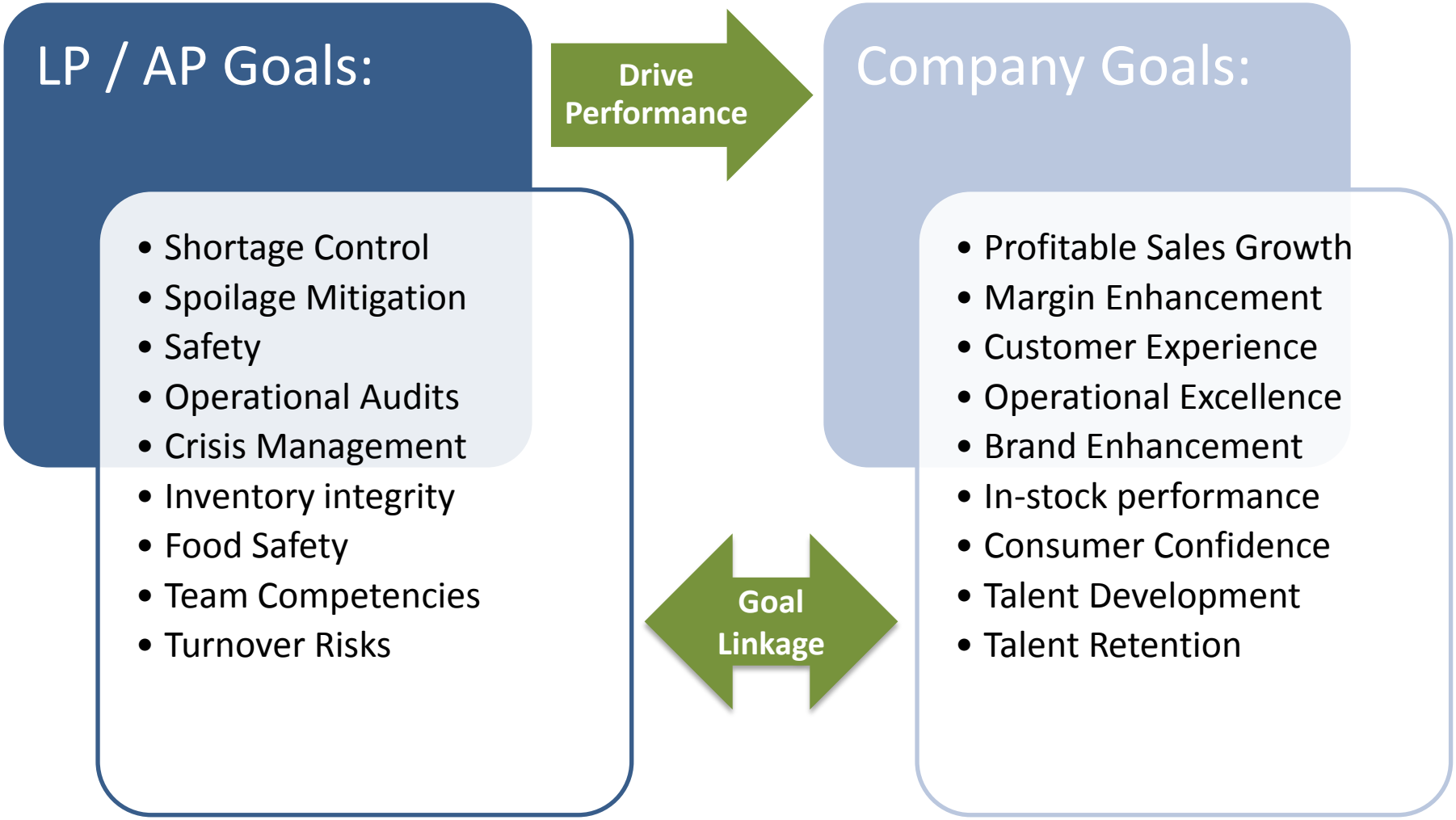


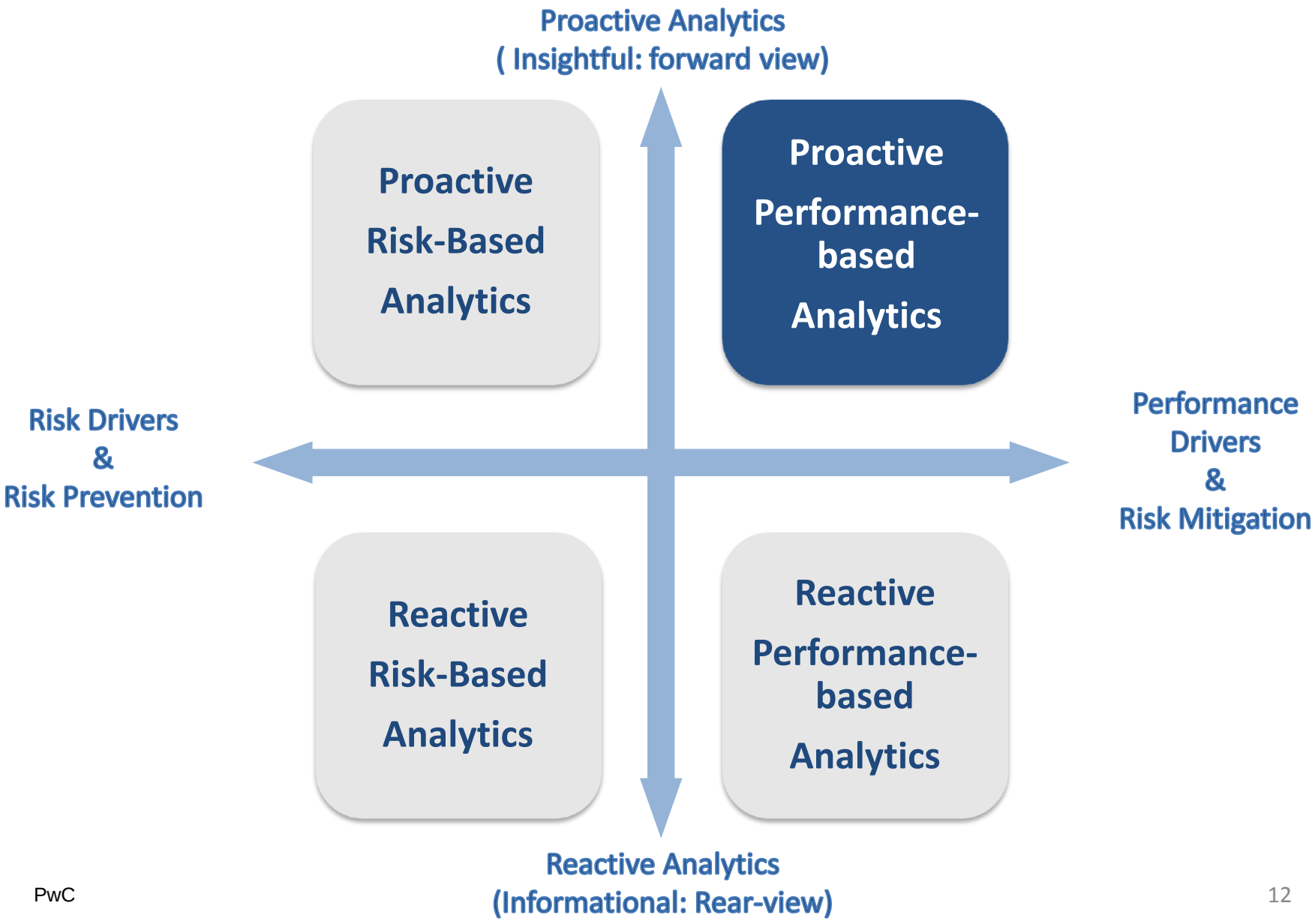
# Data Silo Conundrum

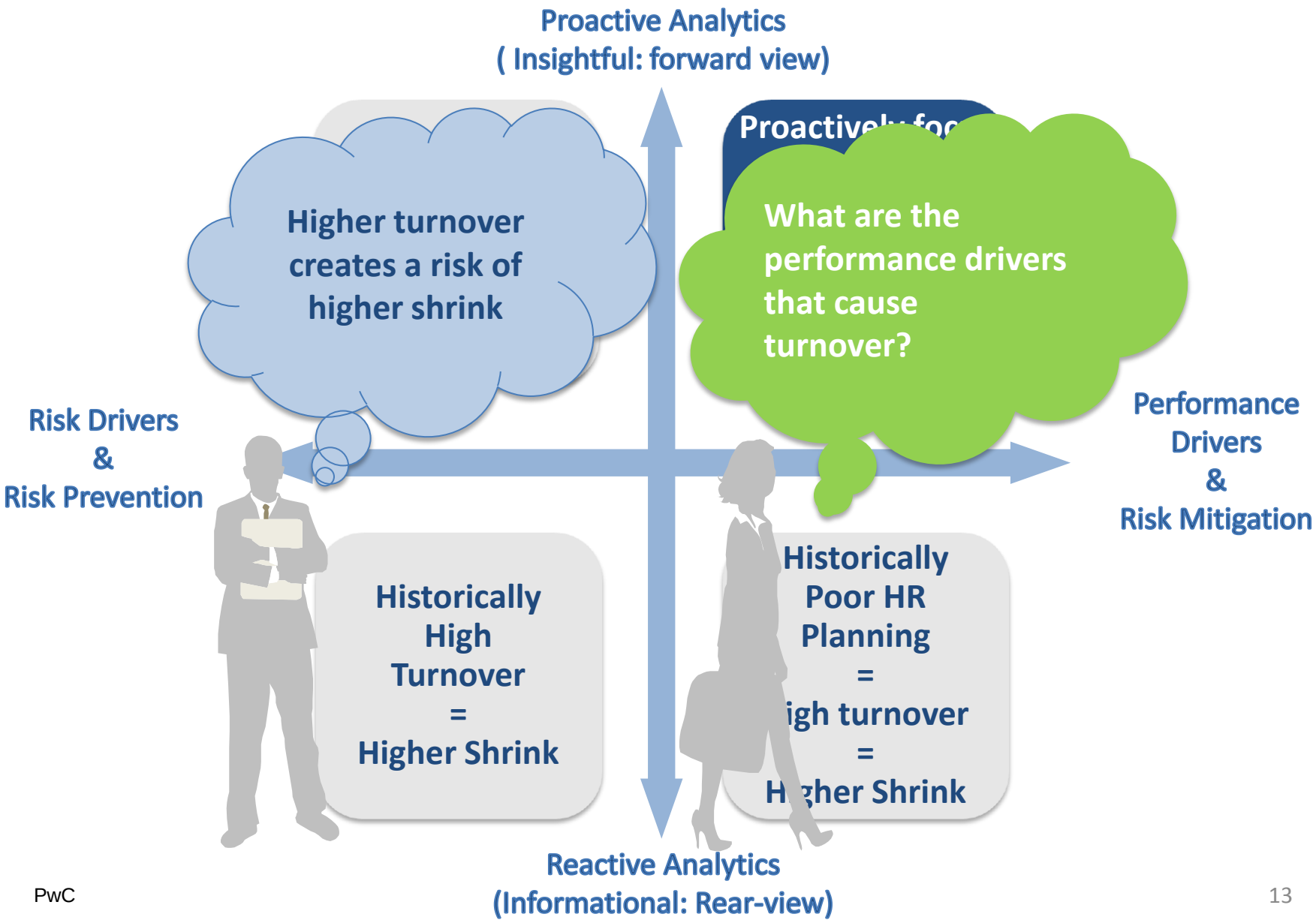
Data considered and aggregated for analysis should be determined by company-wide strategic objectives. Not doing so leads to "data silos" and one-off analyses.



# Linking Your Goals With Company Goals




Proactive Analytics
( Insightful: forward view)
Proactive
Risk-Based
Analytics
Proactive
Performance-
based
Analytics
Risk Drivers
&
Risk Prevention
Performance
Drivers
&
Risk Mitigation
Reactive
Risk-Based
Analytics
Reactive
Performance-
based
Analytics
Reactive Analytics
(Informational: Rear-view)


Proactive Analytics
( Insightful: forward view)
Higher turnover creates a risk of higher shrink
What are the performance drivers that cause turnover?
Risk Drivers
&
Risk Prevention
Performance
Drivers
&
Risk Mitigation
Historically
High
Turnover
=
Higher Shrink
Historically
Poor HR
Planning
=
igh turnover
=
gher Shrink
Reactive Analytics
(Informational: Rear-view)

# Linking Your Goals With Company Goals

## LP / AP Goals:

- Shortage
- Spoilag
- Safety
- Op
- Cr
- ventor
- od Safe
- m Comp
- nover Risks

**What are the performance drivers that cause turnover?**

- Job Competencies and role expectations
- Applicant Screening
- On-boarding and training
- Leadership & Performance Management
- Talent Development and Career Mapping
- Compensation and Benefits
- Full time / Part time ratio….

**How do I link turnover to company strategies and goals?**

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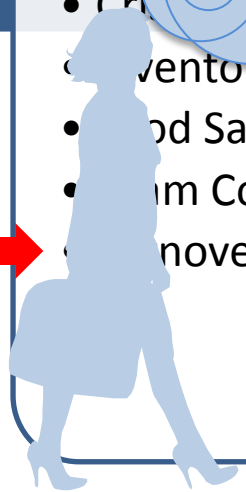
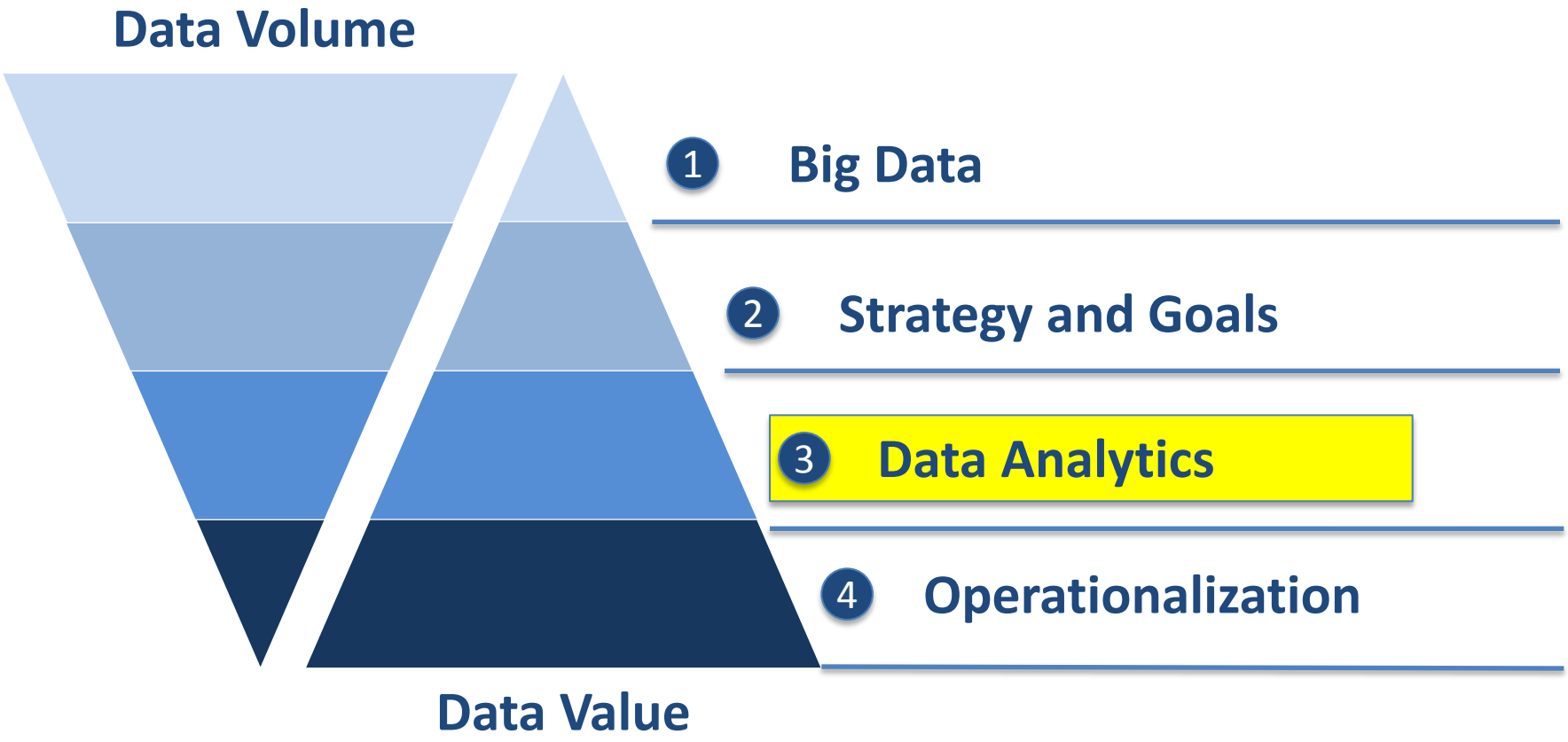


# Data: Volume vs. Value



# *Correlation vs Causation*

## *The "Redskin Rule"*

When the Redskins win their home game before the National Presidential election, the party of the incumbent President retains the presidency; when the Redskins lose, the opposition party wins

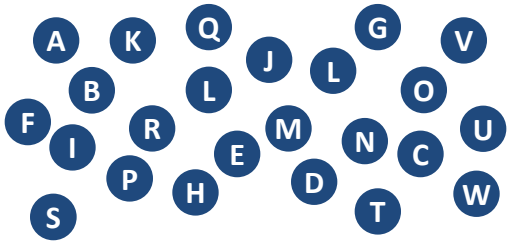
| Year | Presidential Election Result | Rule upheld? |
|---|---|---|
| 2012 | Obama defeats Romney | no |
| 2008 | Obama defeats McCain | yes |
| 2004 | Bush defeats Kerry | yes |
| 2000 | Bush defeats Gore | yes |
| 1996 | Clinton defeats Dole | yes |
| 1992 | Clinton defeats Bush | yes |
| 1988 | Bush defeats Dukakis | yes |
| 1984 | Reagan defeats Mondale | yes |
| 1980 | Reagan defeats Carter | yes |
| 1976 | Carter defeats Ford | yes |
| 1972 | Nixon defeats McGovern | yes |
| 1968 | Nixon defeats Humphrey | yes |
| 1964 | Johnson defeats Goldwater | yes |
| 1960 | Kennedy defeats Nixon | yes |
| 1956 | Eisenhower defeats Stevenson | yes |
| 1952 | Eisenhower defeats Stevenson | yes |
| 1948 | Truman defeats Dewey | yes |
| 1944 | Roosevelt defeats Dewey | yes |
| 1940 | Roosevelt defeats Willkie | yes |
| 1936 | Roosevelt defeats Landon | yes |
| 1932 | Roosevelt defeats Hoover | no |

## Validating & Quantifying Drivers of Impact

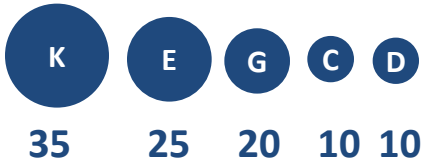
## Decomposing Total Impact

## Estimating Future Impact

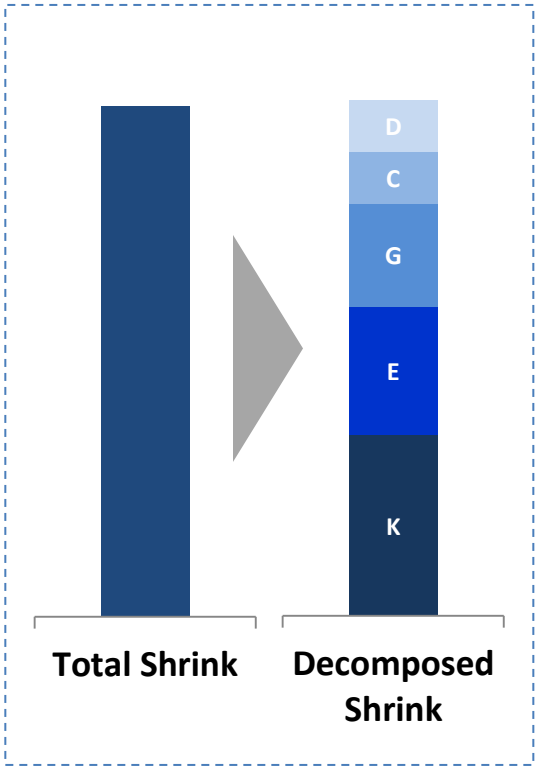
*Input Variables*

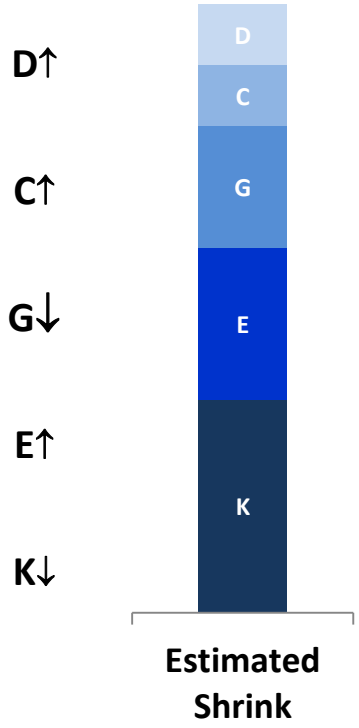



***Models / Algorithms***




*Statistically Significant Variable and Weightings*

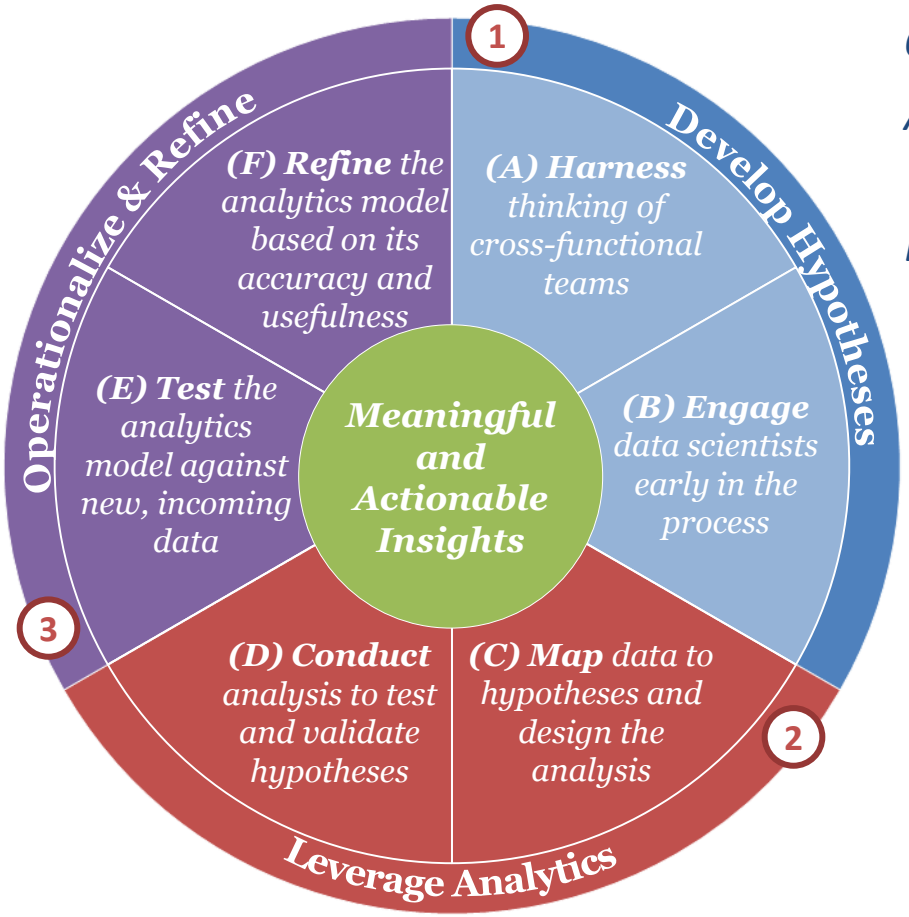


**Questions addressed:**

E. *How accurate and useful is my analytics model?*

F. *How can I improve upon the accuracy and usefulness of the model?*




**Questions addressed:**

A. *What could be driving results?*

B. *Where is the relevant data? Does it exist?*

**Questions addressed:**

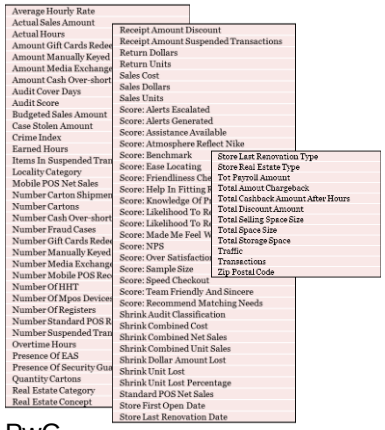
C. *What is the most relevant analytics model or methodology?*

D. *Which hypotheses are valid? Where are there quick hits?*

# Example: Shrink Predictive Model Development

## Develop Hypotheses

- Included LP, Inventory Control Merchandising, Operations, Finance, Store Management, Supply Chain, Logistics, IT, Analytics
- Hypotheses included crime rates, store type, manager tenure, category mix, NPS, inventory levels, unit integrity
- Aligned hypotheses 82 different data elements plus 60 derived variables; pulled from many different systems




## Leverage Analytics

- The analytics team leveraged modeling techniques to boil down the data into 8 driving factors
- Some were expected, such as presence of a security guard and % cash over/short
- Some were unexpected, such as renovations and sell through rate

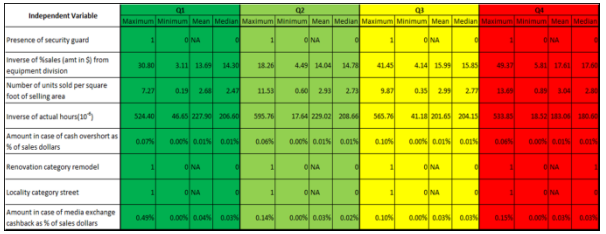
| Variable Name | Definition | Effect on Store shrinkage category based on increase in variable* |
|---|---|---|
| **Presence of security guard** | Whether security guard is present or not | 0.91 |
| **% of amount of equipment division sales by sales amount** | Derived variable calculated as: 1/(Equipment division sales (monthly average) / Sales amount (monthly average)) | 0.78 |
| **Units sold per square foot of selling area** | Derived variable calculated as: Units sold / Selling area (Monthly average) | 0.75 |
| **Actual hours** | Derived variable calculated as : 1/(actual hours (monthly average)) | 0.40 |
| **% of amount of cash over or short by sales amount** | The cash over or short (monthly average) expressed as percentage of sales (monthly average) | 0.29 |
| **Renovation category of store – remodel** | Stores where renovation category is "Remodel" | 0.23 |
| **Locality category of store – street** | Store s where locality category value is "Street" | 0.23 |
| **% of amount of media exchange cash back by sales amount** | Derived variable calculated as: % of amount of media exchange cash back (monthly average)/ Sales amount (monthly average) | 0.22 |

## Operationalize & Refine

- The model was used to apply risk ratings to individual stores to help structure future preventative strategies

| Store Number | Presence of Security Guard | Renovation Category Remodel | Locality Category Street | Fiscal Year 2013 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shrink Model Score | Shrink Category | Inverse Equipment Sales % | Inverse Actual Hours ($10^{-6}$) | % Cash Over-short | % Amount Media Exchange Cashback | Units by Selling Space Size |
| 2 | 0 | 1 | 0 | 0% | Q1 | 16.14 | 223.83 | 0.01% | 0.04% | 2.18 |
| 3 | 0 | 0 | 0 | 25% | Q4 | 19.83 | 140.046 | 0.02% | 0.02% | 2.97 |
| 4 | 0 | 0 | 0 | 12% | Q3 | 19.93 | 223.735 | 0.01% | 0.02% | 2.79 |
| 5 | 0 | 1 | 0 | 6% | Q2 | 14.01 | 180.81 | 0.00% | 0.01% | 2.79 |
| 6 | 0 | 0 | 0 | 3% | Q1 | 16.57 | 150.876 | 0.00% | 0.00% | 3.34 |
| 7 | 0 | 0 | 0 | 3% | Q1 | 15.93 | 346.164 | 0.01% | 0.01% | 2.05 |
| 8 | 0 | 1 | 0 | 6% | Q2 | 14.16 | 204.573 | 0.00% | 0.02% | 2.63 |
| 9 | 0 | 0 | 0 | 20% | Q4 | 17.32 | 286.3 | 0.02% | 0.11% | 2.64 |
| 14 | 0 | 1 | 0 | 8% | Q3 | 15.12 | 150.349 | 0.00% | 0.03% | 3.22 |
| 15 | 0 | 1 | 0 | 27% | Q4 | 17.32 | 264.448 | 0.02% | 0.03% | 2.26 |
| 16 | 0 | 0 | 0 | 3% | Q1 | 15.94 | 134.082 | 0.00% | 0.01% | 3.60 |
| 17 | 0 | 1 | 1 | 32% | Q4 | 14.64 | 103.917 | 0.01% | 0.04% | 3.76 |
| 19 | 0 | 1 | 1 | 0% | Q1 | 7.99 | 32.794 | 0.00% | 0.00% | 11.53 |
| 21 | 0 | 0 | 0 | 40% | Q4 | 25.40 | 171.809 | 0.01% | 0.02% | 3.08 |
| 22 | 0 | 1 | 0 | 9% | Q3 | 15.41 | 238.38 | 0.01% | 0.01% | 2.84 |
| 23 | 0 | 1 | 0 | 33% | Q4 | 23.76 | 237.831 | 0.01% | 0.01% | 3.46 |
| 24 | 0 | 1 | 0 | 48% | Q4 | 27.05 | 110.078 | 0.03% | 0.01% | 5.52 |

- The model also identified key thresholds for each main driver of shrink to assist in the ongoing monitoring efforts



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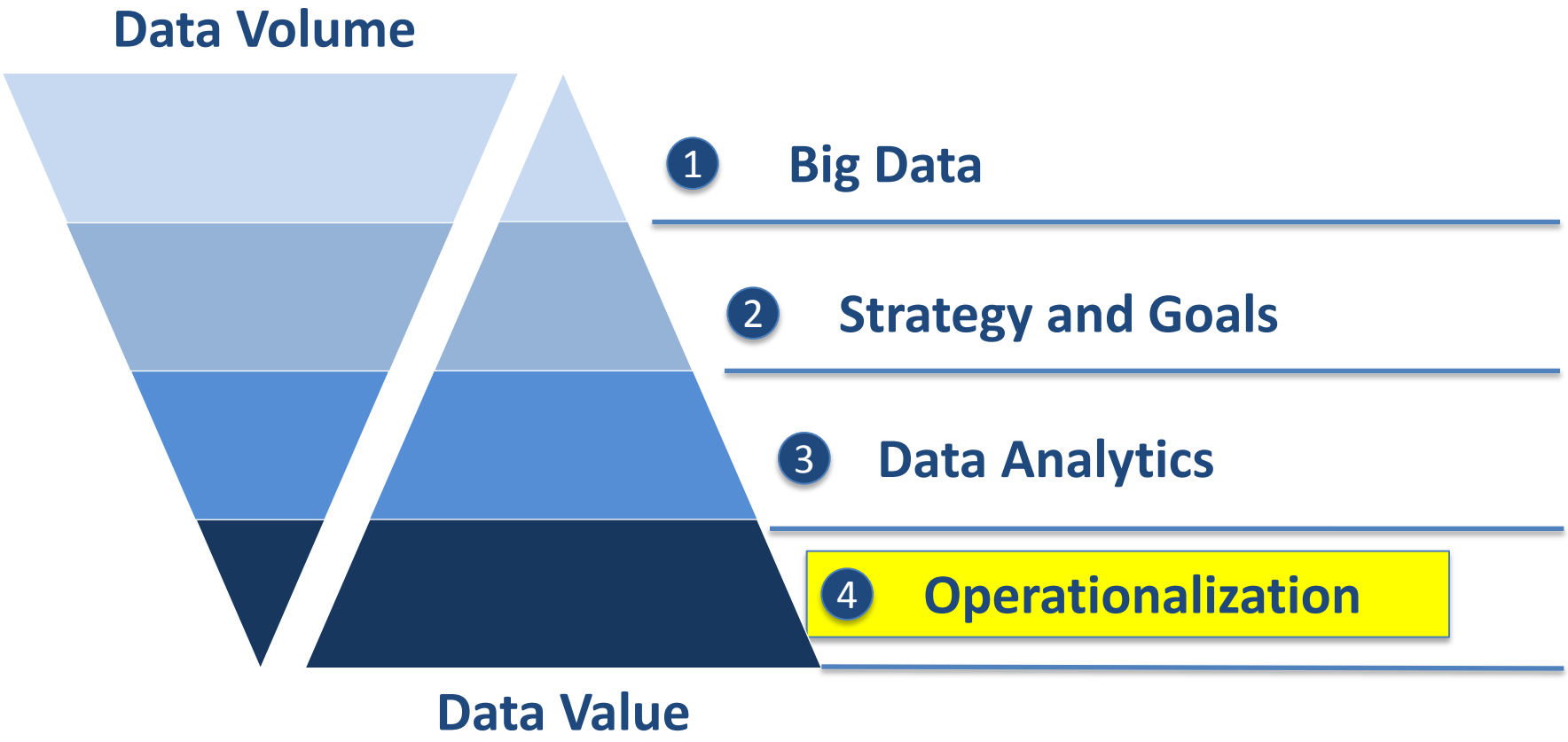
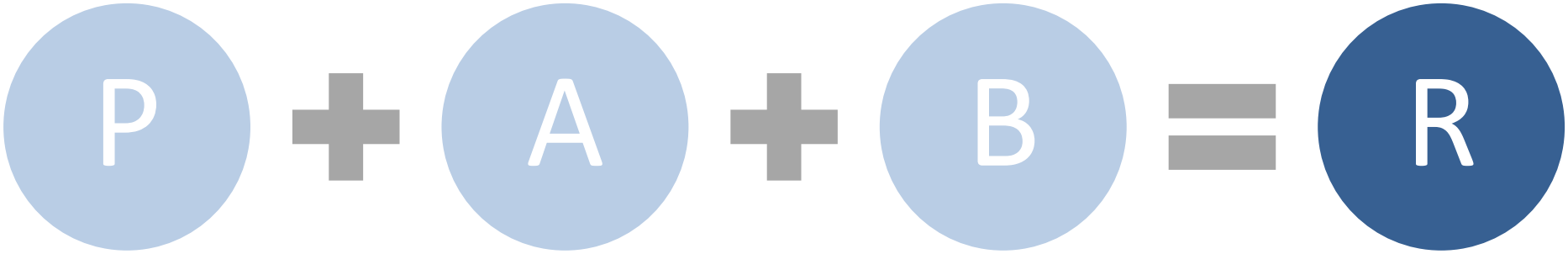
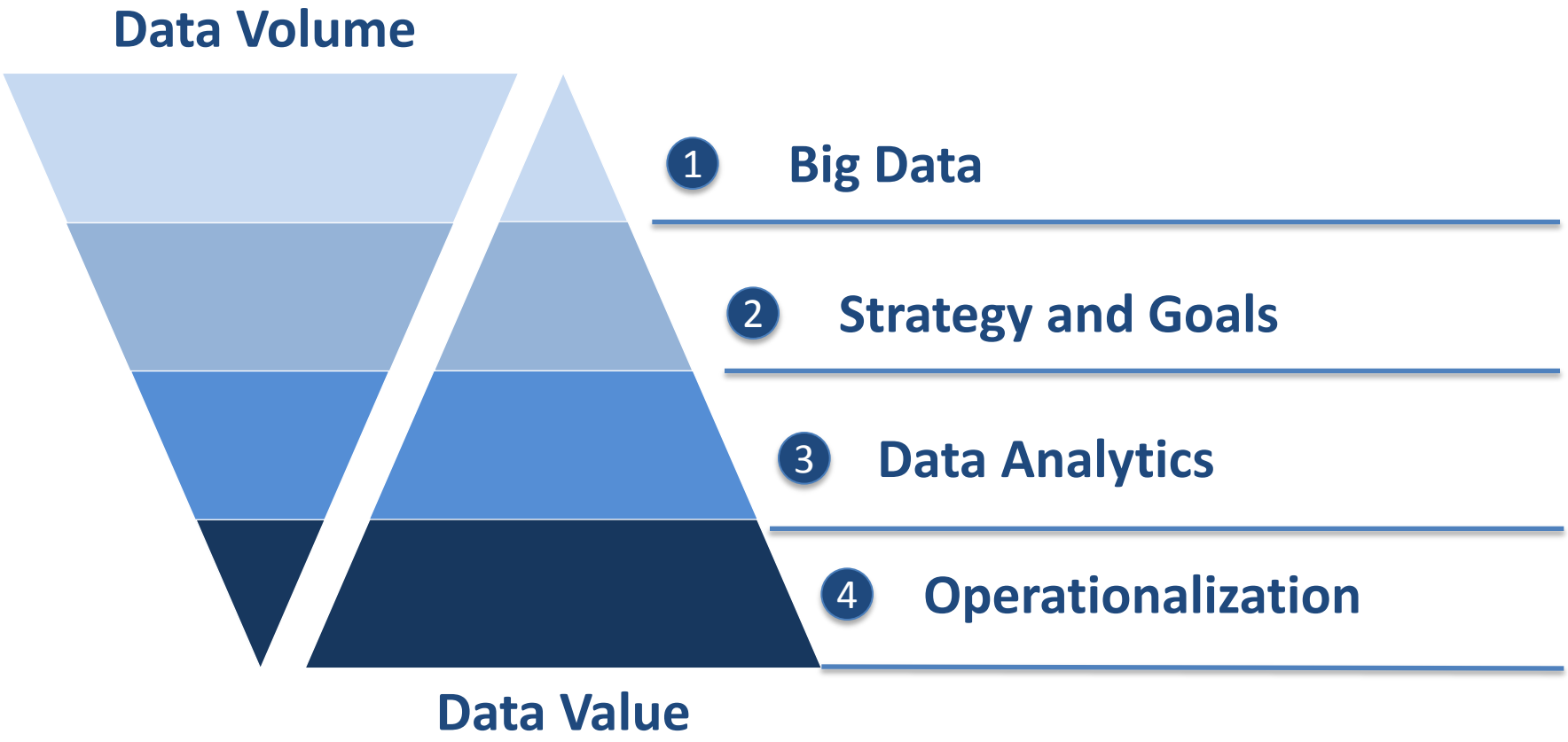


# Results Equation

## Processes + Analytics + Behaviors = Results



# Are you where you need to be?



# Are you where you need to be?

- Past the “Redskin” Rule
- How is your team balancing the art and science of decision making?
- Have you moved from reactive to proactive?
- How mobile is your data?
- Have you tied your goals and metrics into the broader company goals and metrics?

# PwC's Loss Prevention, Strategy and Analytics Service

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# Thank you!