UNLOCKING BUSINESS VALUE

Triple Play

Leveraging data requires leadership, value & strategy

Peter Aiken, Ph.D.

datablueprint.com

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Peter Aiken, Ph.D.

- I've been doing this a long time
- My work is recognized as useful
- Associate Professor of IS (vcu.edu)
- Founder, Data Blueprint (datablueprint.com
- DAMA International (dama.org)
- 10 books and dozens of articles
- Experienced w/ 500+ data management practices worldwide
- Multi-year immersions
  - US DoD (DISA/Army/Marines/DLA)
  - Nokia
  - Deutsche Bank
  - Wells Fargo
  - Walmart
  - …

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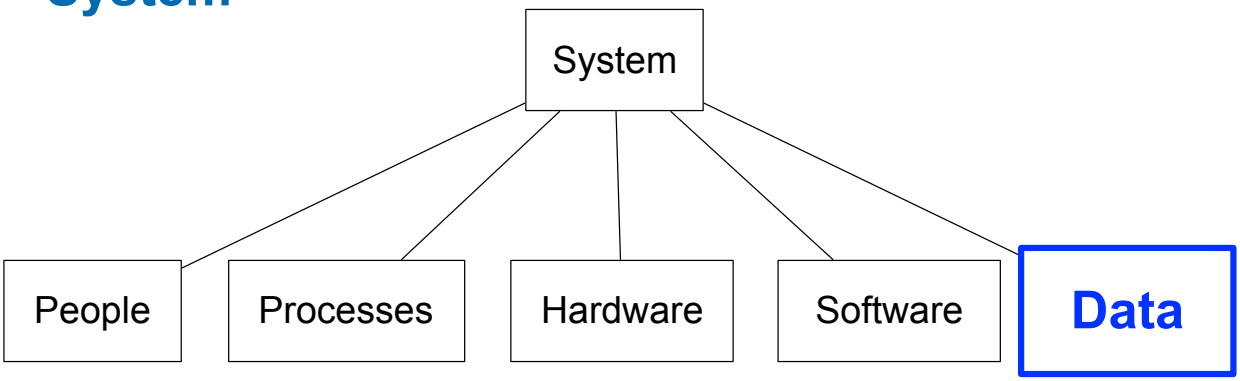
System



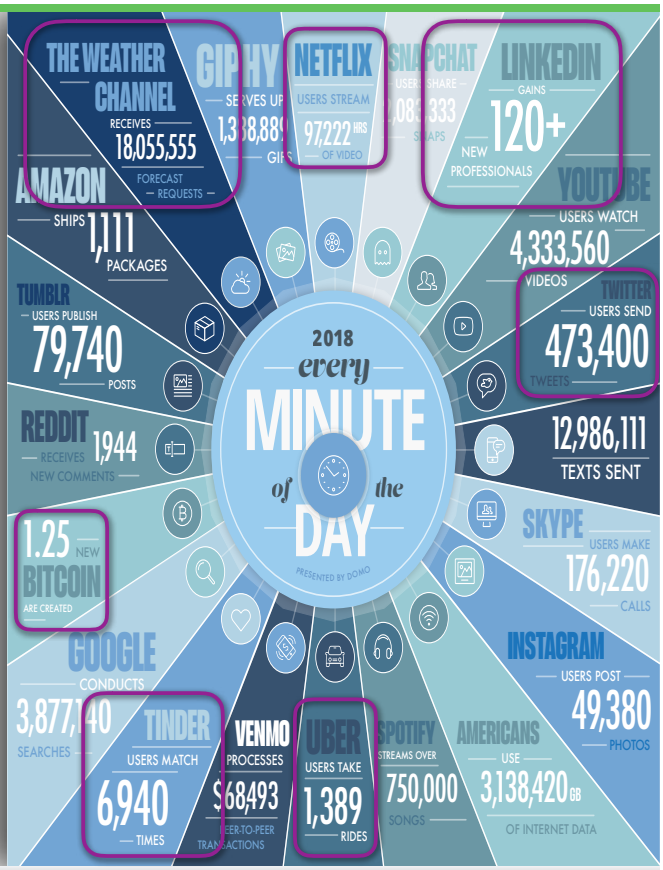
- A set of detailed methods, procedures, and routines established or formulated to carry out a specific activity, perform a duty, or solve a problem.
- An organized, purposeful structure regarded as a whole and consisting of interrelated and interdependent elements (components, entities, factors, members, parts, etc.). These elements continually influence one another (directly or indirectly) to maintain their activity and the existence of the system, in order to achieve the goal of the system.

http://www.businessdictionary.com/definition/system.html#ixzz23T7LyAjJ

How much Data, by the minute!

For the entirety of 2018, every minute of every day:

- 18 million weather forecast requests
- Netflix streams almost 100,000 hours of video
- LinkedIn adds 120+ individuals
- 1,300 Uber rides
- (almost) a half million tweets
- 7,000 Tinder matches
- 1.25 new cryptocurrencies are created
- …

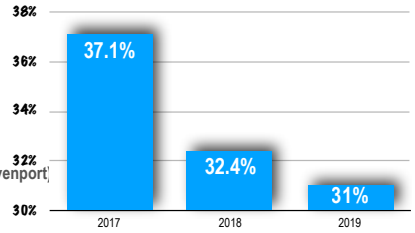


https://www.domo.com/learn/data-never-sleeps-6

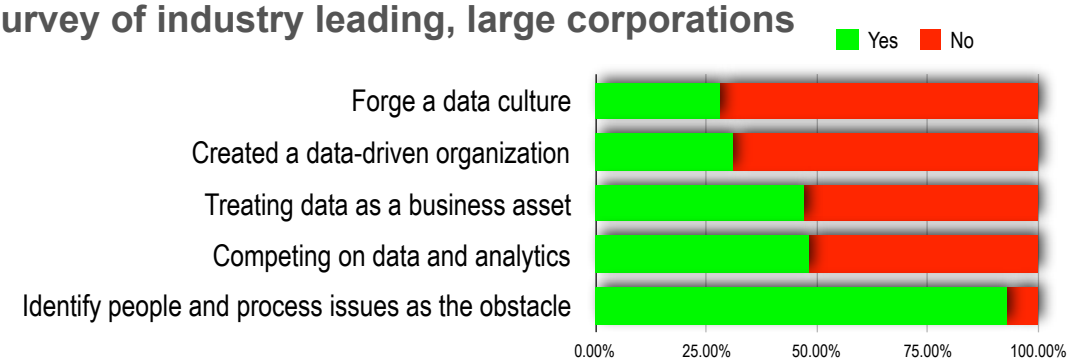
As articulated by Micheline Casey

Companies Are Failing In Their Efforts To Become Data Driven

- In spite of increasing (big data/AI) investments, % of firms self-identifying as data-driven is declining Source: Harvard Business Review, Feb 5, 2019 (Randy Bean and Thomas Davenport)



- Survey of industry leading, large corporations

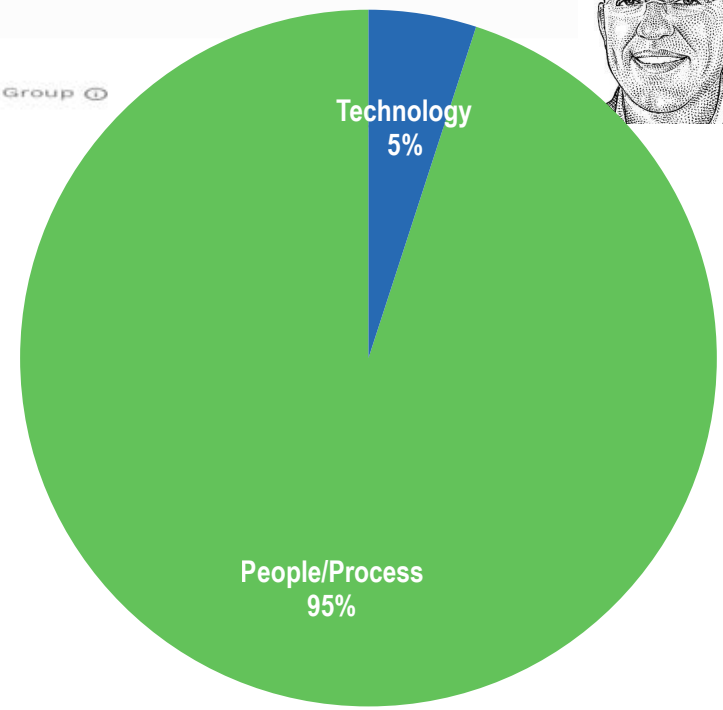


- Firms must become much more serious and creative about addressing the human side of data if they truly expect to derive meaningful business benefits Source: 2018 Big Data & AI Executive Survey (NewVantage Partners)

What We Learned From Top Execs About Their Big Data And AI Initiatives

Randy Bean Contributor
CIO Network Contributor Group
Enterprise & Cloud

- Culture's impact
  - 5% of challenges relate to technology
  - 95% to people & process



https://www.forbes.com/sites/ciocentral/2019/01/02/what-we-learned-from-top-execs-about-their-big-data-and-ai-initiatives/

Separating the Wheat from the Chaff

- Data that is better organized increases in value
- Poor data management practices are costing organizations money/time/effort
- 80% of organizational data is **ROT**
  - **R**edundant
    Incomplete
  - **O**bsolete
  - **T**rivial

Data Assets Win!

Asset: A resource controlled by the organization as a result of past events or transactions and from which future economic benefits are expected to flow [Wikipedia]

- Today, data is the most powerful, yet underutilized and poorly managed organizational asset
- Data is your
  - Sole
  - Non-depletable
  - Non-degrading
  - Durable
  - Strategic
- Asset
  - Data is the new oil!
  - Data is the new (s)oil!
  - Data is the new bacon!
- As such, data deserves:
  - It's own strategy
  - Attention on par with similar organizational assets
  - Professional ministration to make up for past neglect

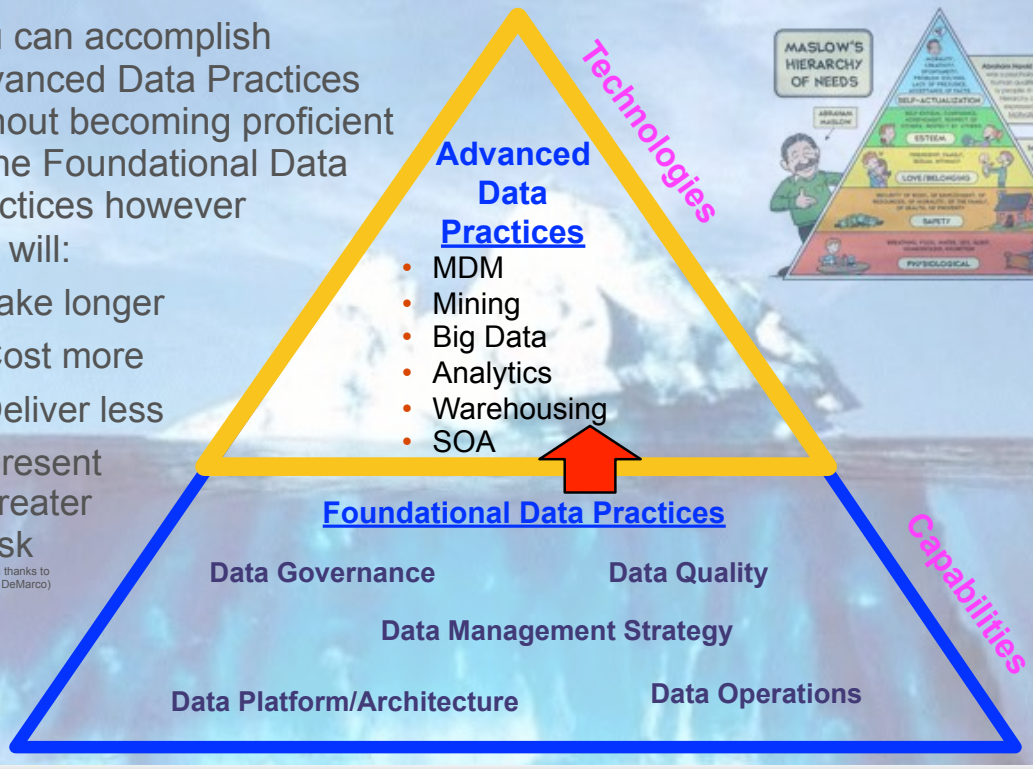
	Data Assets	Financial Assets	Real Estate Assets	Inventory Assets
Non-depletable	Available for subsequent use	Can be used up		Can be used up
Non-degrading	√	√	Can degrade over time	Can degrade over time
Durable	Non-taxed		√	√
Strategic Asset	√	√	√	√

Data Management Practices Hierarchy

You can accomplish Advanced Data Practices without becoming proficient in the Foundational Data Practices however this will:

- Take longer
- Cost more
- Deliver less
- Present greater risk

(with thanks to Tom DeMarco)



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My Author Page My Binders SIGN OUT: Dr. Peter Aiken

SEARCH

EXPERIENCE: Succeeding at Data Management—BigCo Attempts to Leverage Data

Full Text: PDF

Author: Peter Aiken Virginia Commonwealth University/Data Blueprint

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Triple Play - is the rare act making three outs during the same continuous play

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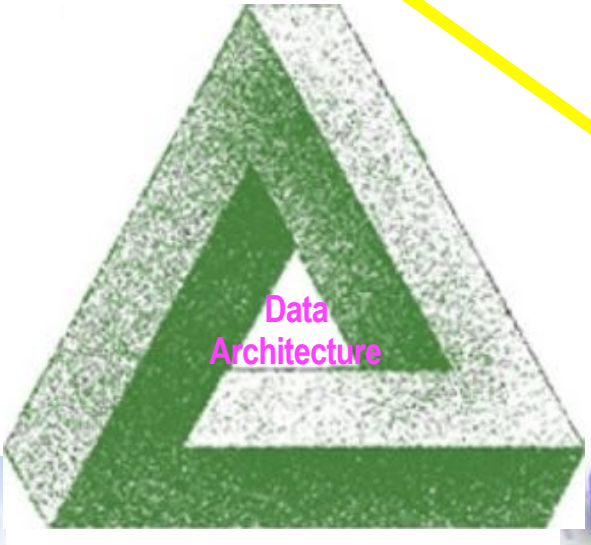
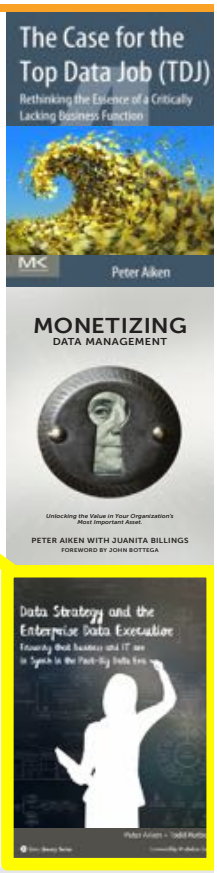
Triple Play: Leadership, Value & Strategy

Strategy



Leadership

Value



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DEPARTMENT OF DEFENSE
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CHIEF INFORMATION OFFICER

MAY 9 2003

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DIRECTOR, DEFENSE RESEARCH AND EVALUATION
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
DIRECTOR OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTOR, FORCE TRANSFORMATION
DIRECTOR, NET ASSESSMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: DoD Net-Centric Data Strategy

https://ctb.ku.edu/en/table-of-contents/structure/strategic-planning/develop-strategies/main

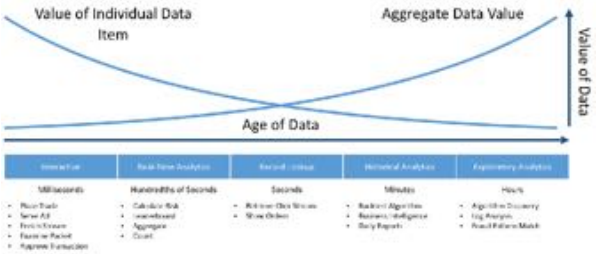
Reasons for a Data Strategy

Improve your organization's data → Improve the way your people use its data → Improve the way your data and your people support your organizational strategy

- Because data points to where valuable things are located
- Because data has intrinsic value by itself
- Because data has inherent combinatorial value

- Valuing Data
  - Use data to measure change
  - Use data to manage change
  - Use data to motivate change

- Creating a competitive advantage with data



What did Rolls Royce Learn from Formula 1

- Old model
  - Sell jet engines
- New model
  - Sell hours of thrust power
  - Power-by-the-hour
  - No payment for down time
  - Wing to wing
  - When was it invented?

Rolls-Royce celebrates 50th anniversary of Power-by-the-Hour

Strategy that winds up only on a shelf is not useful

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Mike Tyson

- "Everybody has a plan until they get punched in the face."
  - http://f--f.info/?p=23071

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General Dwight D. Eisenhower

Military Plan

Dwight Eisenhower

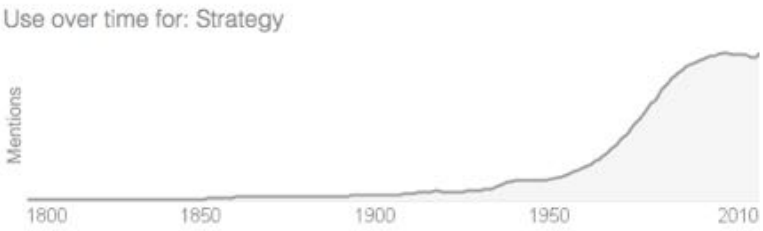
- “In preparing for battle I have always found that plans are useless, but planning is indispensable..”
  - https://quoteinvestigator.com/2017/11/18/planning/

https://www.cio.com/article/3088208/leadership-management/how-to-avoid-a-digital-strategy-failure.html

What is a Strategy?

strat·e·gy
/ˈstrəjē/
noun

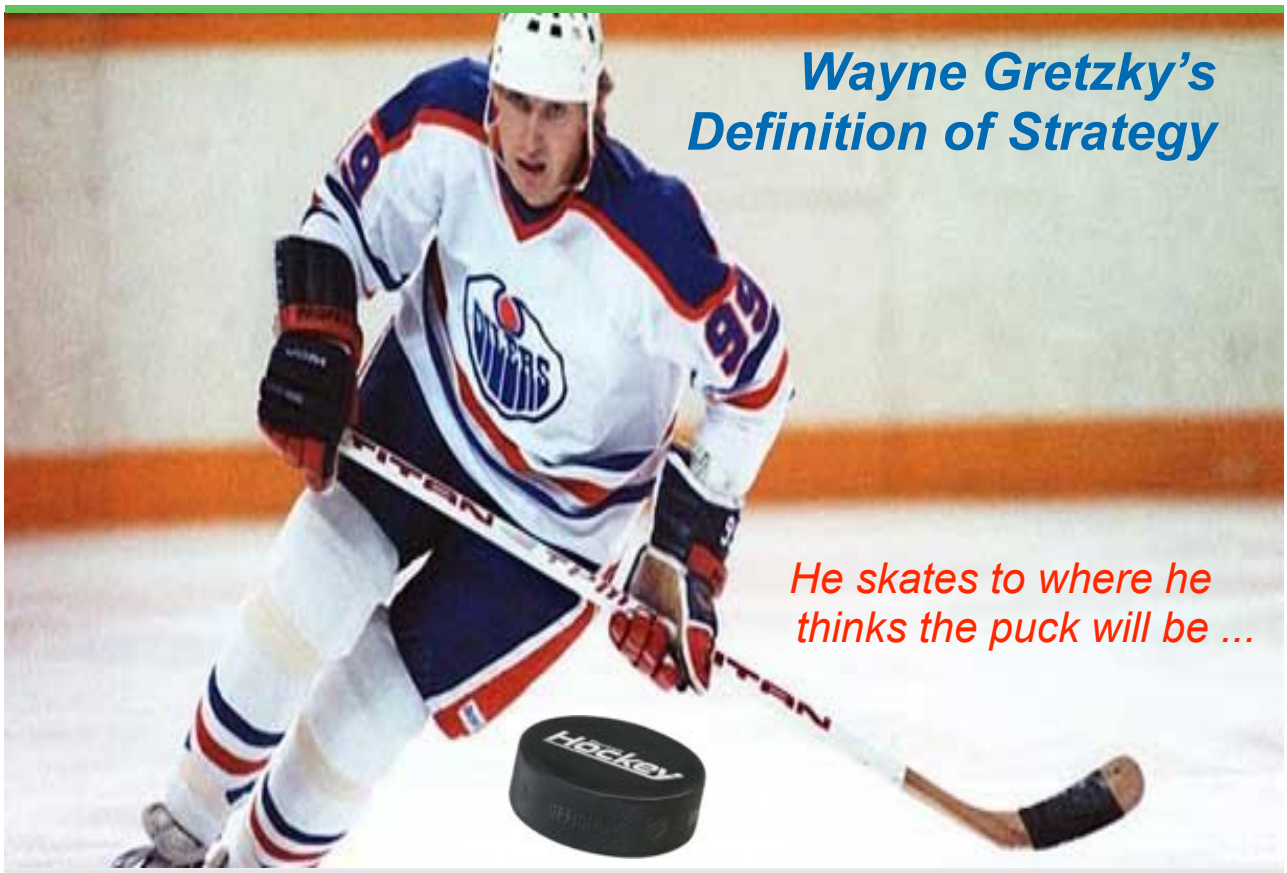
1. a plan of action or policy designed to achieve a major or overall aim.
   "time to develop a coherent economic strategy"
   synonyms: master plan, grand design, game plan, plan (of action), action plan, policy, program; More



- Current use derived from military
- "a pattern in a stream of decisions" [Henry Mintzberg]

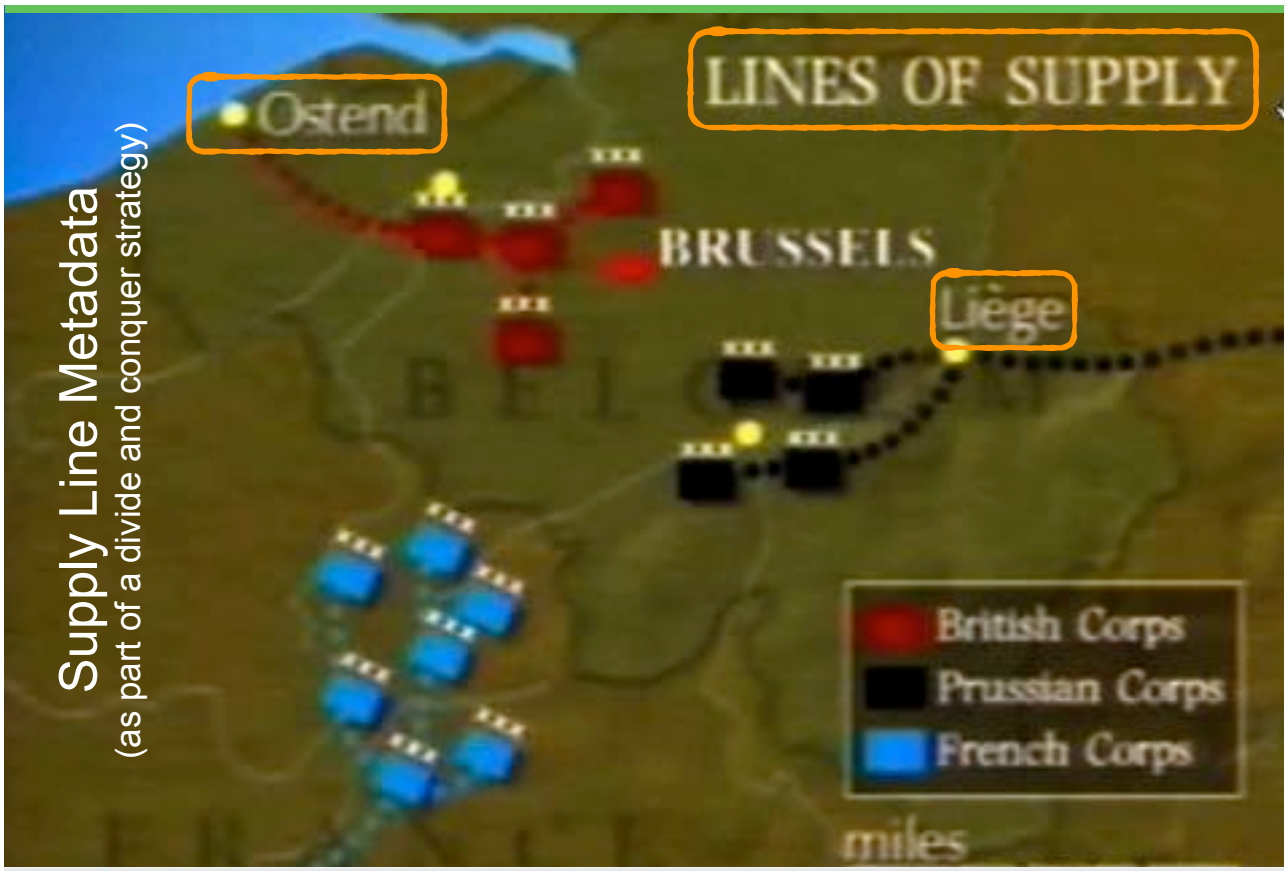
Former Walmart Business Strategy

Every Day Low Price



Strategy in Action: Napoleon faces a larger enemy

- Question?
  - How do I defeat the competition when their forces are bigger than mine?
- Answer:
  - Divide and conquer!
  - "a pattern in a stream of decisions"



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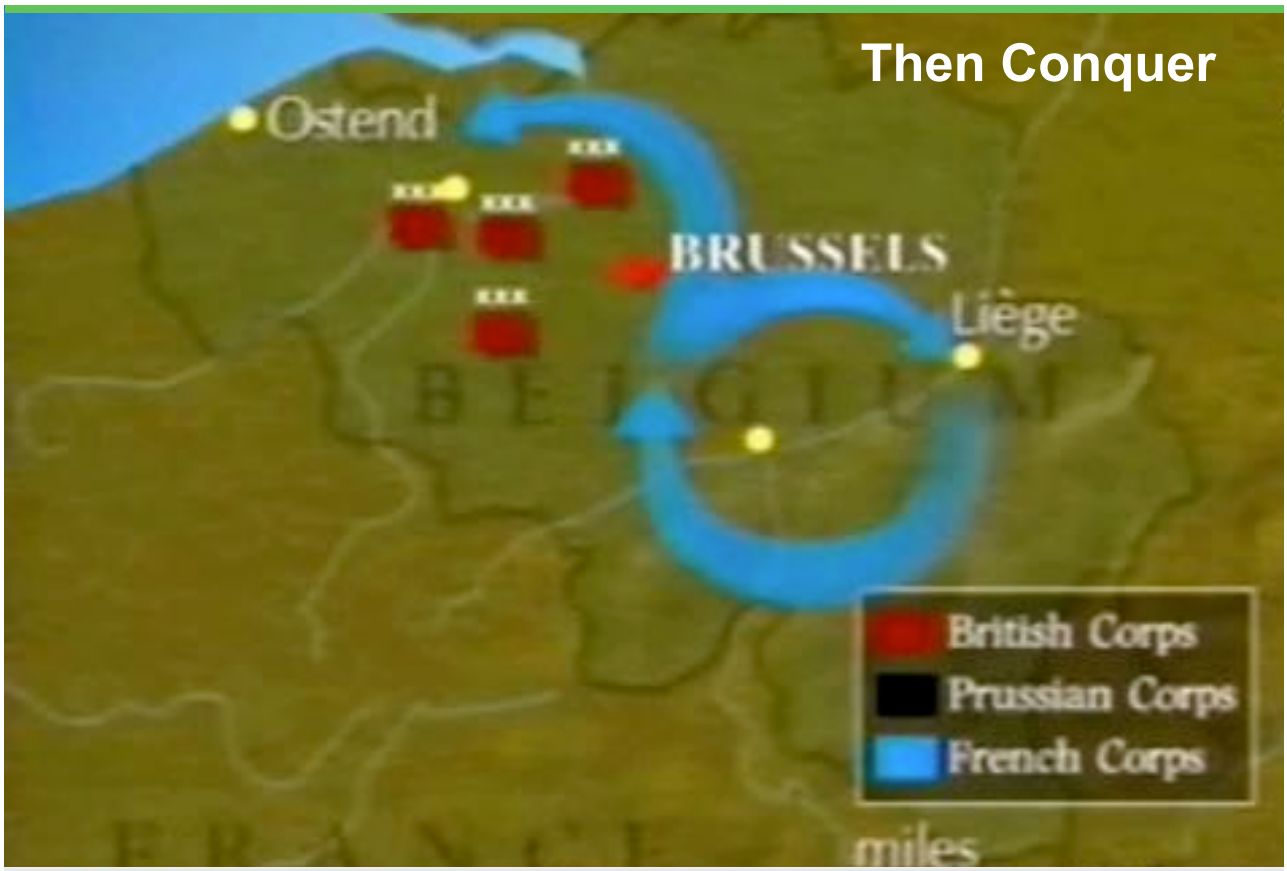


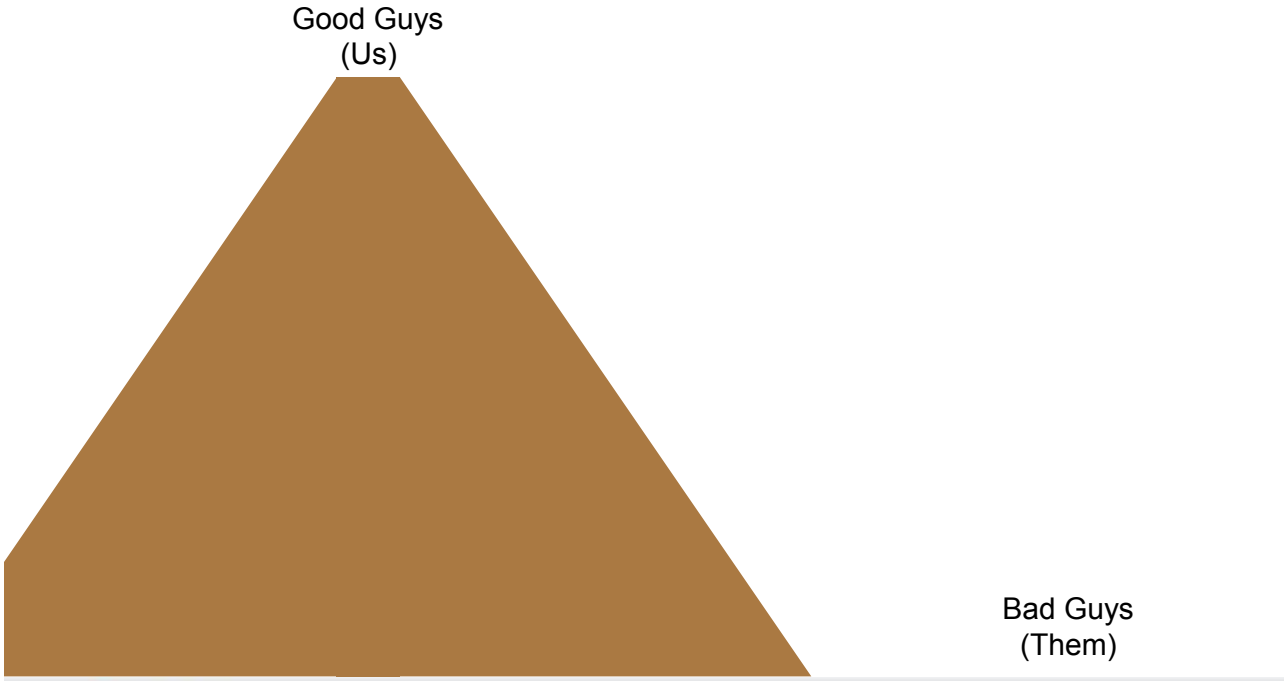
Complex Strategy

- First
  - Hit both armies hard at just the right spot

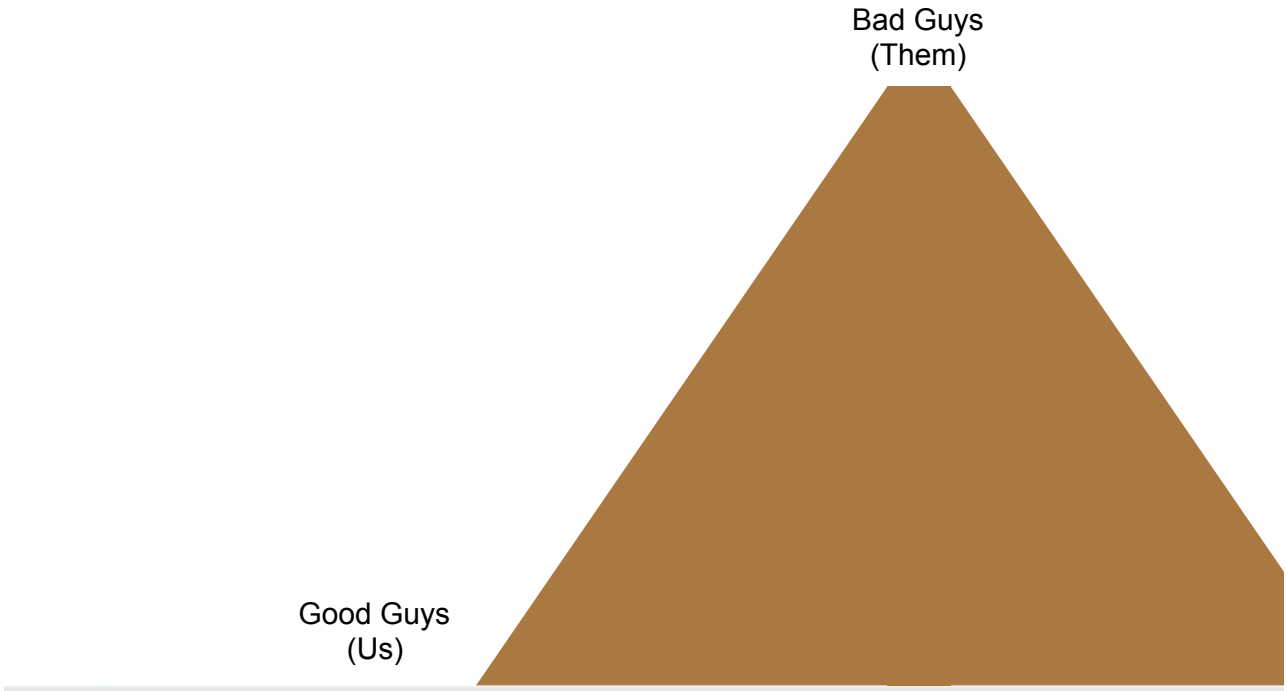
- Then
  - Turn right and defeat the Prussians

- Then
  - Turn left and defeat the British

Strategy Example 1

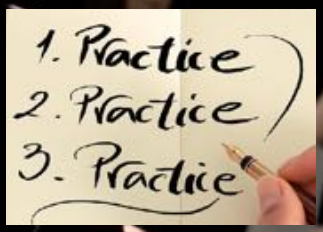


Strategy Example 2



A Musical Analogy

+



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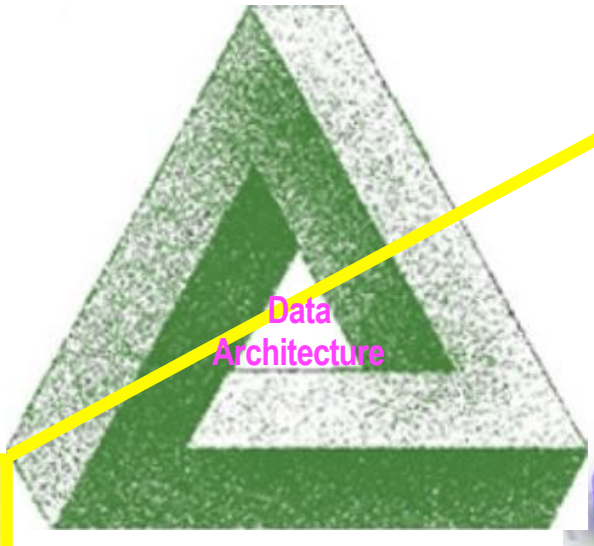
https://www.youtube.com/watch?v=4n1GT-VjjVs&frags=pl%2Cwn

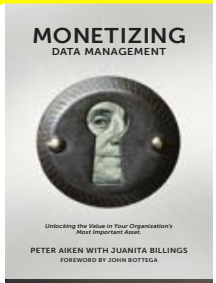
Triple Play: Leadership, Value & Strategy

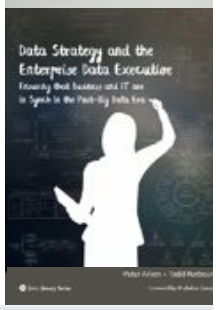
Strategy



Leadership

Value

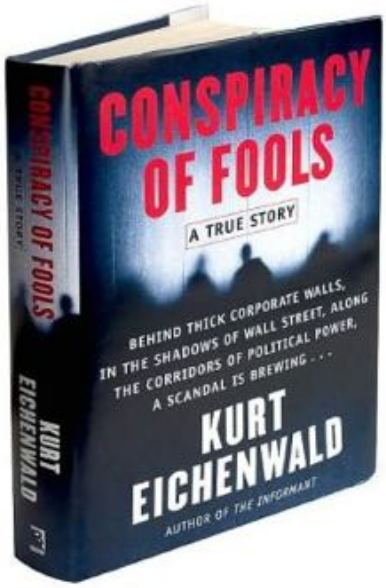




Enron

- Fortune named Enron "America's Most Innovative Company" for six consecutive years
- Suffered the largest Chapter 11 bankruptcy in history (up to that time)
- August 2001: $90.00 → $42.00 → $0.26
- Dynegy (several $ billion) attempted rescue
- Enron spends entire amount in 1 week
  - Any person can write a check at Enron for
  - Any amount of money for
  - Any purchase at
  - Any time ...
- Enron goes back to Dynegy for more $?
- Dynegy: What happened to the several $ billion I gave you last week?
- Enron:

http://en.wikipedia.org/wiki/Enron

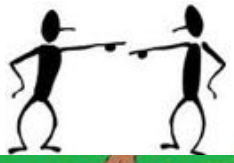


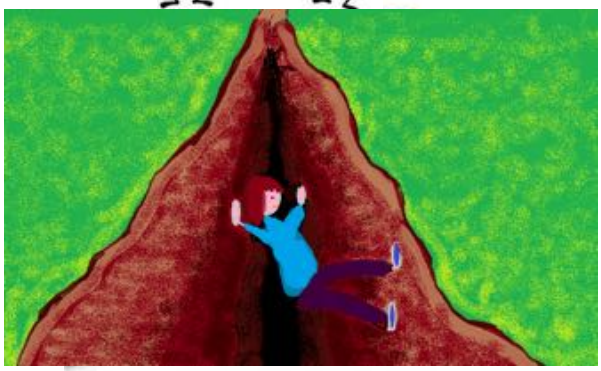
CFO Necessary Prerequisites/Qualifications

- CPA
- CMA
- Masters of Accountancy
- Other recognized degrees/certifications
- These are necessary but insufficient prerequisites/ qualifications

Confusion

- IT thinks data is a business problem
  - *"If they can connect to the server, then my job is done!"*
- The business thinks IT is managing data adequately
  - *"Who else would be taking care of it?"*



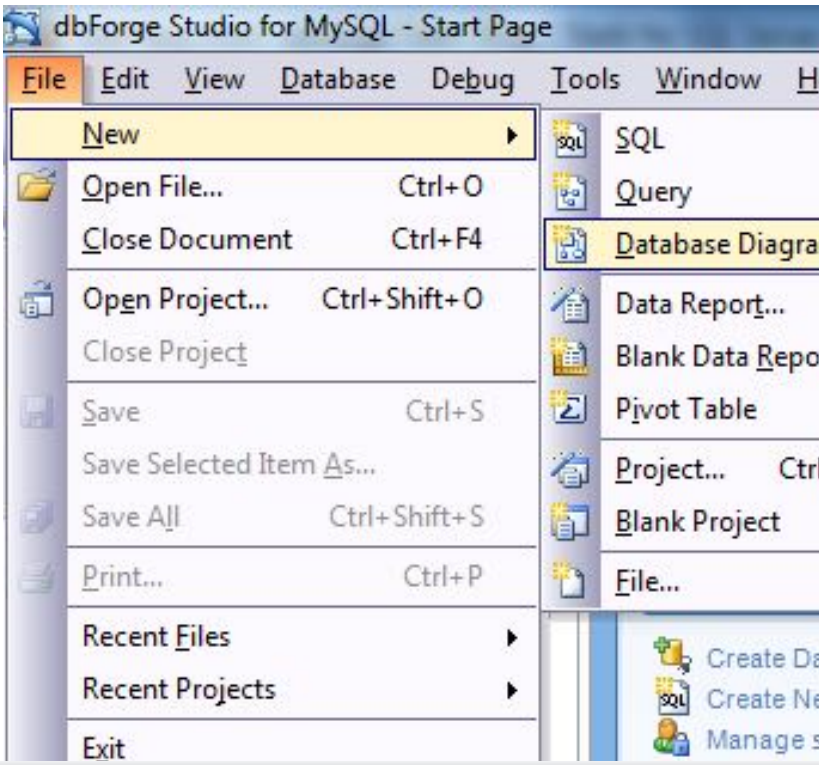


What do we teach knowledge workers about data?

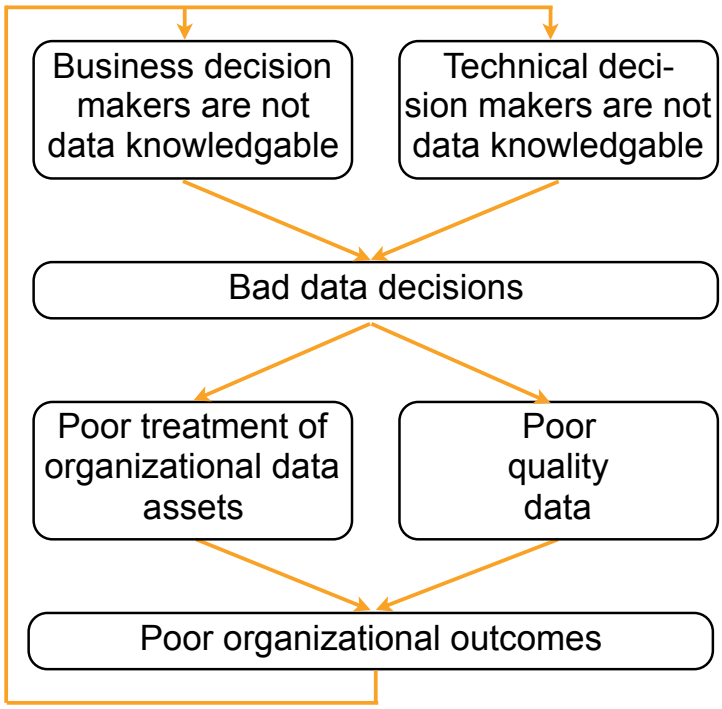
What percentage of the deal with it daily?

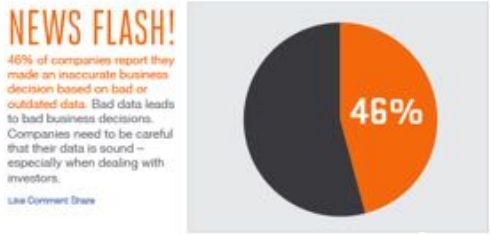
What do we teach IT professionals about data?

- 1 course
  - How to build a new database
- What impressions do IT professionals get from this education?
  - Data is a technical skill that is needed when developing new databases

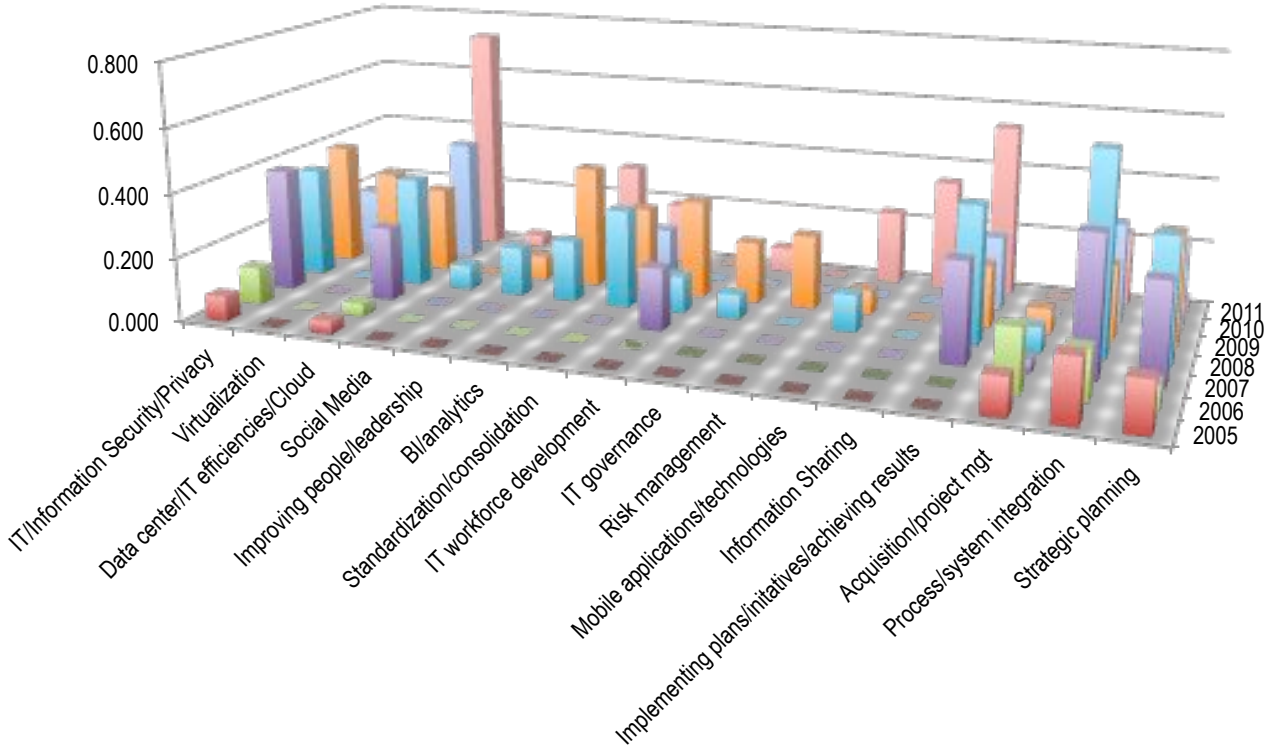


Bad Data Decisions Spiral





Top Five CIO Concerns 2005-2011

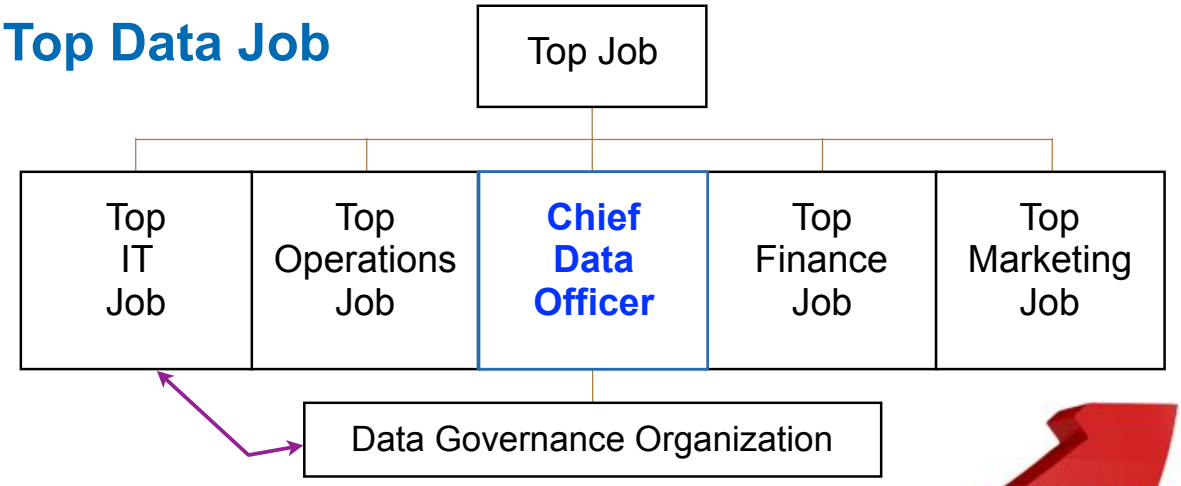


A Singular Focus

- Chief
  - The head or leader of an organized body of people; the person highest in authority: the chief of police
- Chief Financial Officer (CFO) ← *does not balance books*
  - Individual possessing the knowledge, skills, and abilities to be both the final authority and decision-maker in organizational financial matters
- Chief Risk Officer (CRO) ← *does not test software*
  - Individual possessing the knowledge, skills, and abilities makes decisions and implements risk management
- Chief Medical Officer (CMO) ← *does not perform surgery*
  - Responsible for organizational medical matters. The organization, and the public, has similar expectations for any of chief officer – especially after the Sarbanes-Oxley bill.

[dictionary.com]

Top Data Job



- Dedicated solely to data asset leveraging
- Unconstrained by an IT project mindset
- Reporting to the business
- *90 Percent of Large Global Organizations Will Have Appointed Chief Data Officers By 2019*
  (Gartner website accessed January 26, 2016 http://www.gartner.com/newsroom/id/3190117?)

CDO Agenda

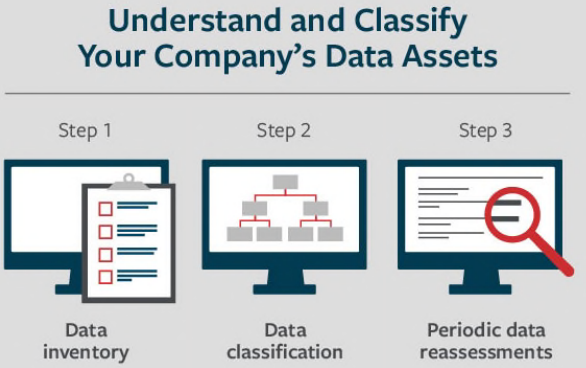
Goal: better manage data as an organizational asset in support of the organizational mission!

- Develop the first version of an organizational data strategy
- **Inventory data assets-> decrease 80% data ROT** (redundant, obsolete, trivial)
- Monetize your organization's data

Data Inventory

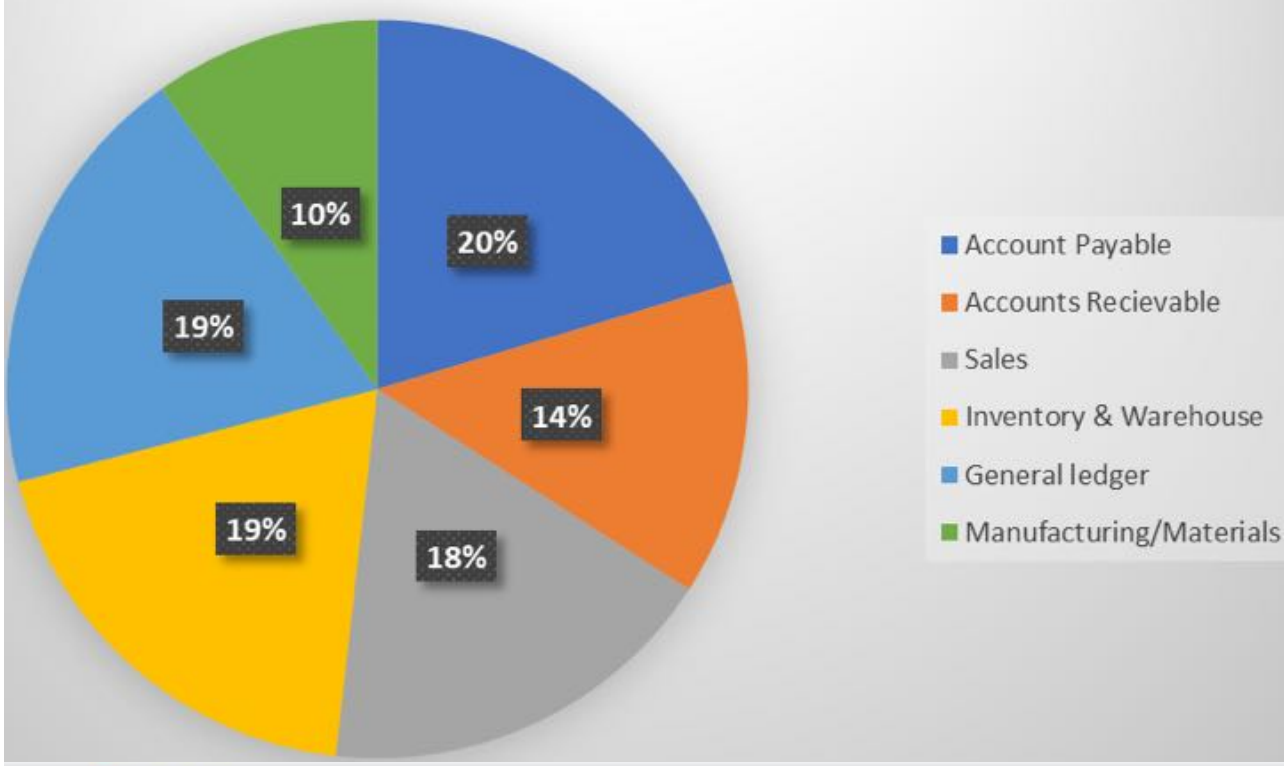
- When will it be done?
  - Sounds like a task or a project
  - Data is not a project
  - No organization has ever completed a data inventory!
- Reframe the question
  1. How rapidly can we achieve the required capabilities?
  2. What sort of preexisting classification frameworks can be used to jumpstart?
  3. Often does each classification require reassessment?

https://www.everteam.com/en/building-your-data-inventory/



https://www.travelers.com/resources/cyber-security/data-assessment-inventory-and-classification

Data usage overlap



What is Data Governance?

Managing Data with Guidance

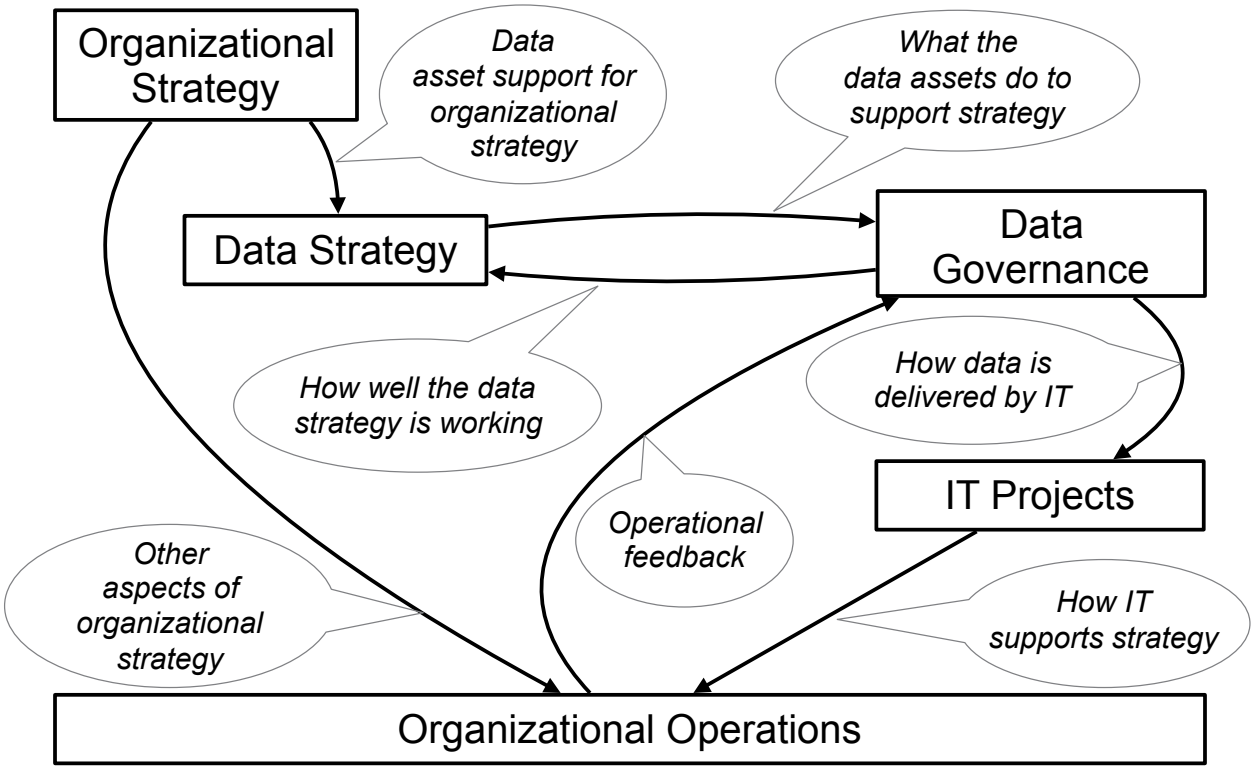
What is Data Governance?

Managing Data Decisions with Guidance

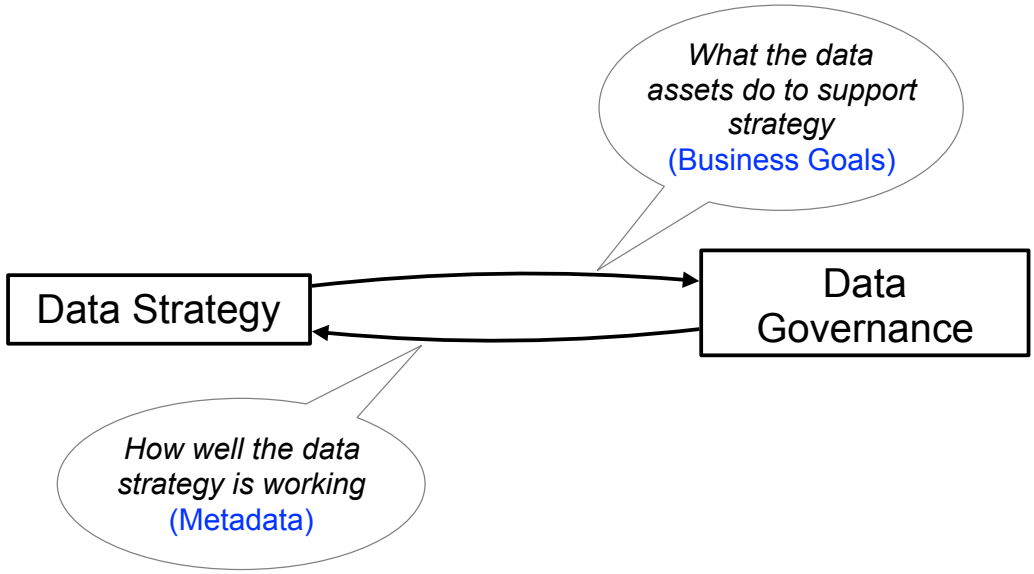
Ask anyone ...

- Would you want your sole, non-depletable, non-degrading, durable asset managed <u>without</u> guidance?

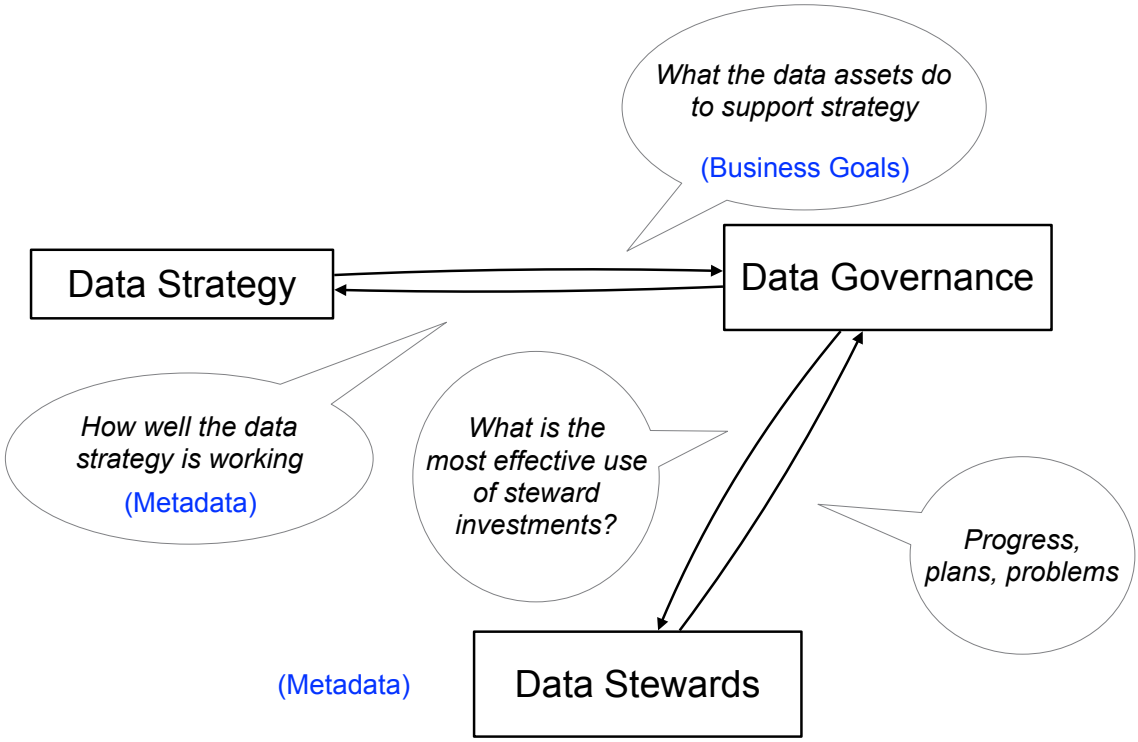
Data Strategy and Data Governance in Context



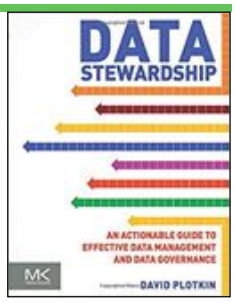
Data Strategy & Data Governance



Data Governance & Data Stewards



Data Steward



(list adapted from Plotkin, 2014)

- **Business data steward**
  - Manage from the perspective of business elements (i.e. business definitions and data quality)
- **Technical data steward**
  - Focus on the use of data by systems and models (i.e. code operation)
- **Project data steward**
  - Gather definitions, quality rules and issues for referral to business/technical stewards
- **Domain data steward**
  - Manage data/metadata required across multiple business areas (i.e. customer data)
- **Operational data steward**
  - Directly input data or instruct those who do; aid business stewards identifying root cause and addressing issues
- **Metadata Data Steward**
  - Manage metadata as an asset
- **Legacy Data Steward**
  - Manage legacy data as an asset
- **Data steward auditor**
  - Ensures compliance with data guidance
- **Data steward manager**
  - Planning, organizing, leading and controlling

Steward , Data

- *one who actively directs* the use of organizational data assets in support of specific mission objectives

Merriam-Webster

Data Steward Bumper Stickers

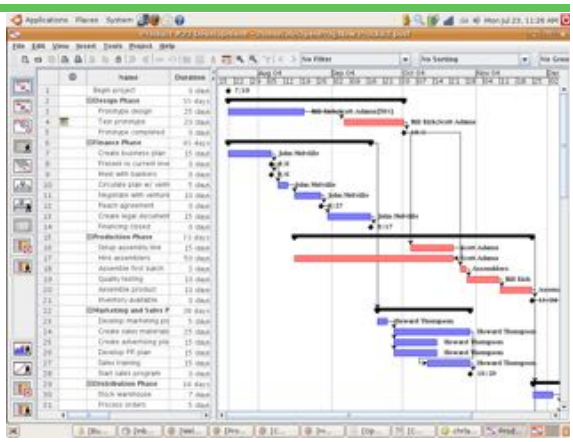
Differences between Programs and Projects

- Programs are Ongoing, Projects End
  - Managing a program involves long term strategic planning and continuous process improvement is not required of a project
- Programs are Tied to the Financial Calendar
  - Program managers are often responsible for delivering results tied to the organization's financial calendar
- Program Management is Governance Intensive
  - Programs are governed by a senior board that provides direction, oversight, and control while projects tend to be less governance-intensive
- Programs Have Greater Scope of Financial Management
  - Projects typically have a straight-forward budget and project financial management is focused on spending to budget while program planning, management and control is significantly more complex
- Program Change Management is an Executive Leadership Capability
  - Projects employ a formal change management process while at the program level, change management requires executive leadership skills and program change is driven more by an organization's strategy and is subject to market conditions and changing business goals

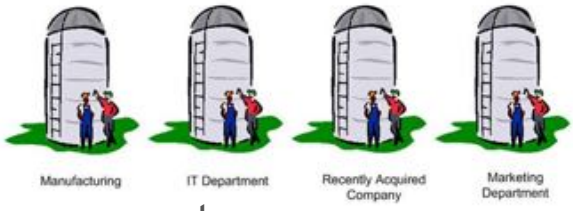
Your data program must last at least as long as your HR program!

Adapted from http://top.idownloadnew.com/program_vs_project and http://management.simplicable.com/management/new/program-management-vs-project-management

Data is not a Project

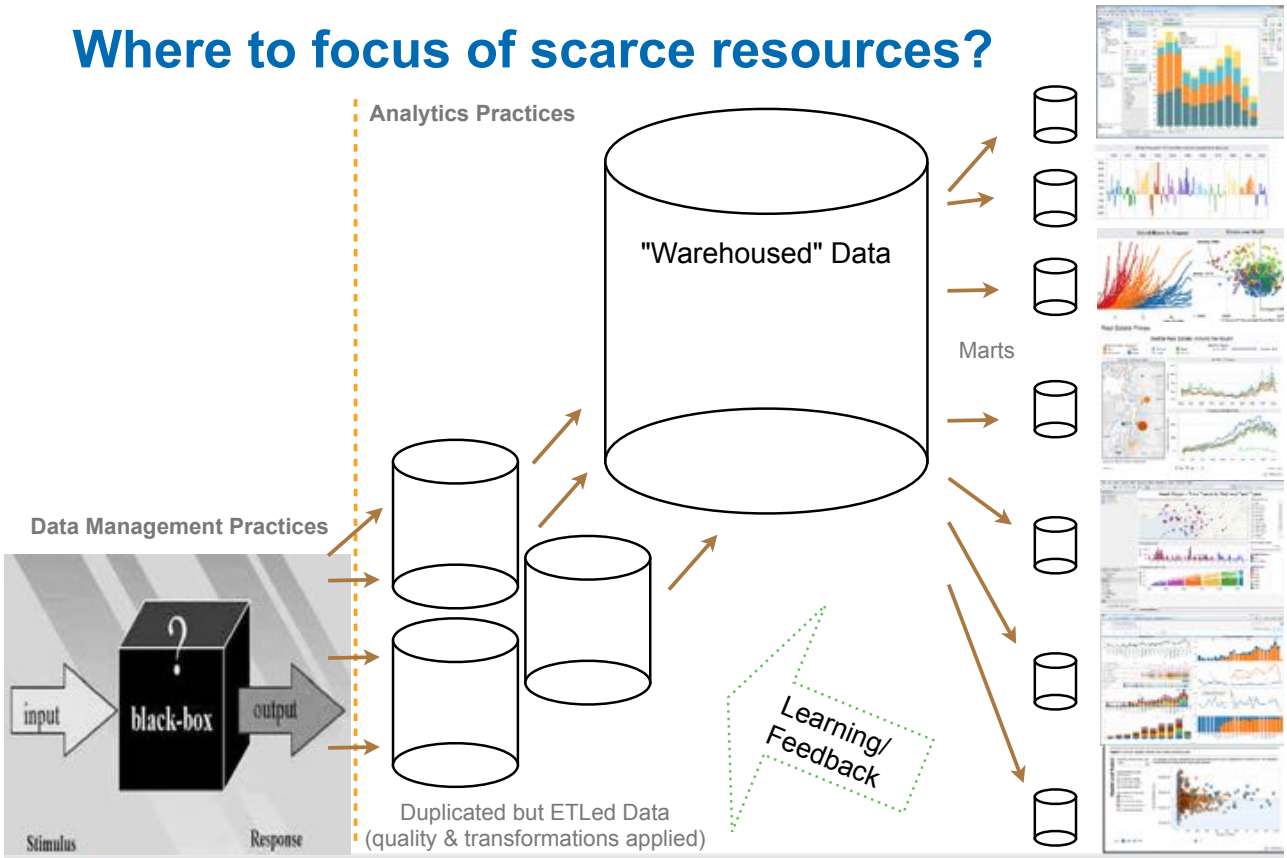


- Durable asset
  - An asset that has a usable life more than one year
- Reasonable project deliverables
  - 90 day increments
  - Data evolution is measured in years
- Data
  - Evolves - it is not created
  - Significantly more stable



- Readymade data architectural components
  - Prerequisite to agile development
- Only alternative is to create additional data siloes!

Where to focus of scarce resources?



CDO Agenda

Goal: better manage data as an organizational asset in support of the organizational mission!

- Develop the first version of an organizational data strategy
- Inventory data assets-> decrease 80% data ROT (redundant, obsolete, trivial)
- **Monetize your organization's data**

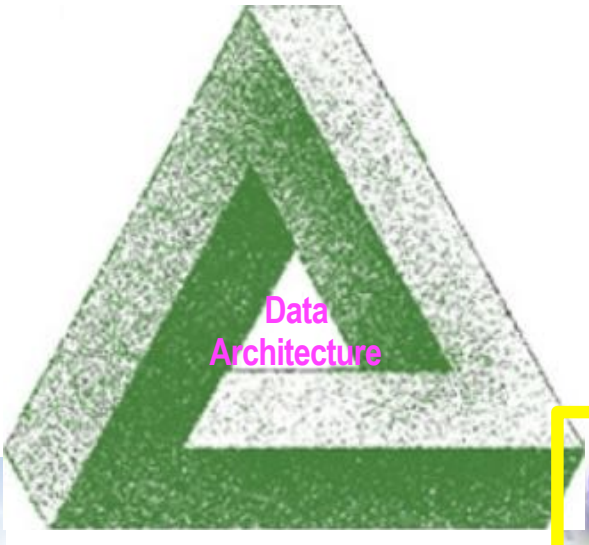
Chief Electrification Officer

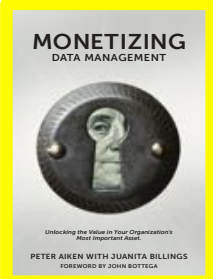
Not all roles are needed always!

- Chief Electrification Officer – responsible for electrical generating and distribution systems. The title was used mainly in developed countries from the 1880s to 1940s during the electrification of industry, but is still used in some developing countries.

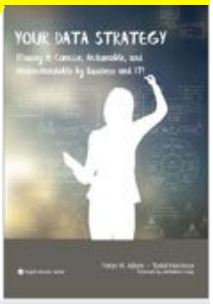
Triple Play: Leadership, Value & Strategy

Strategy





Value



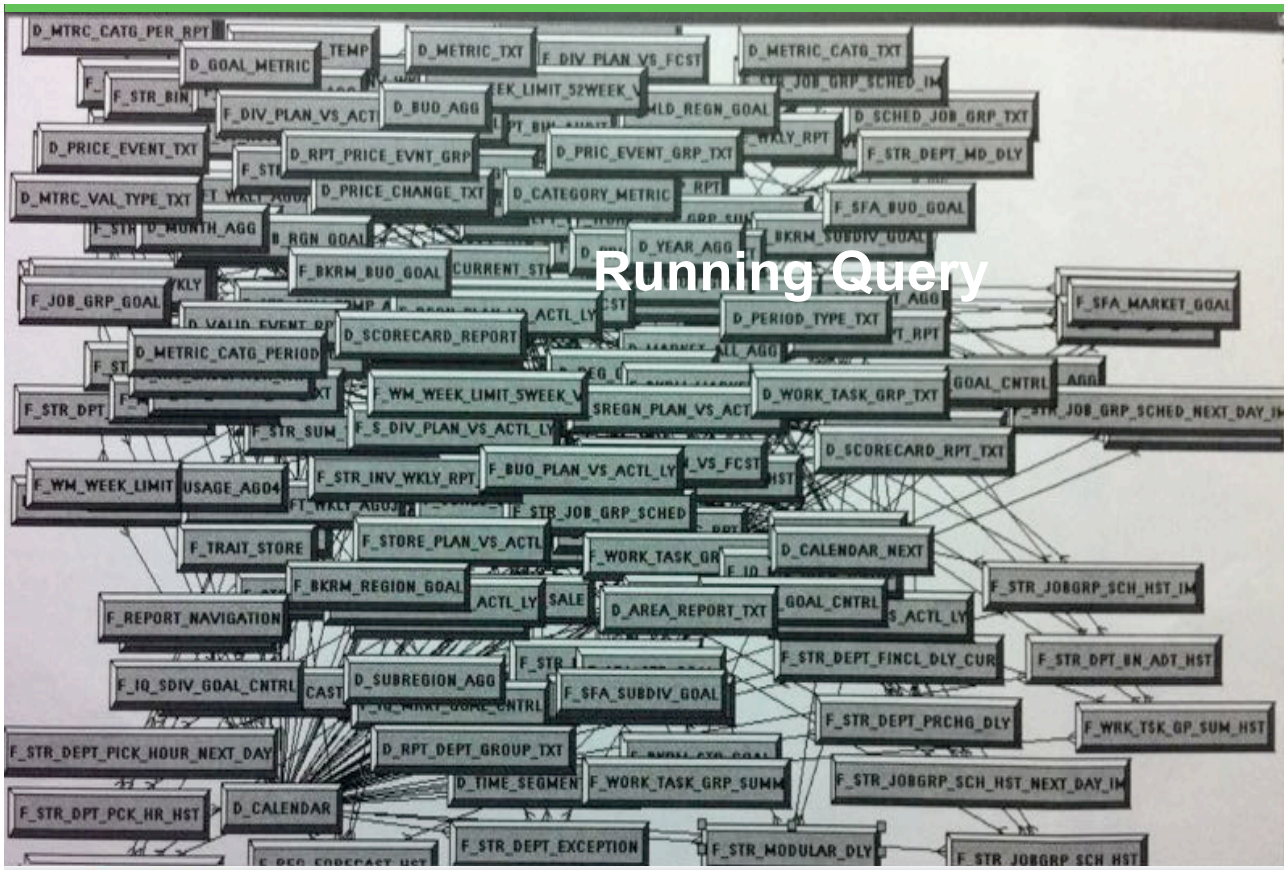
Leadership

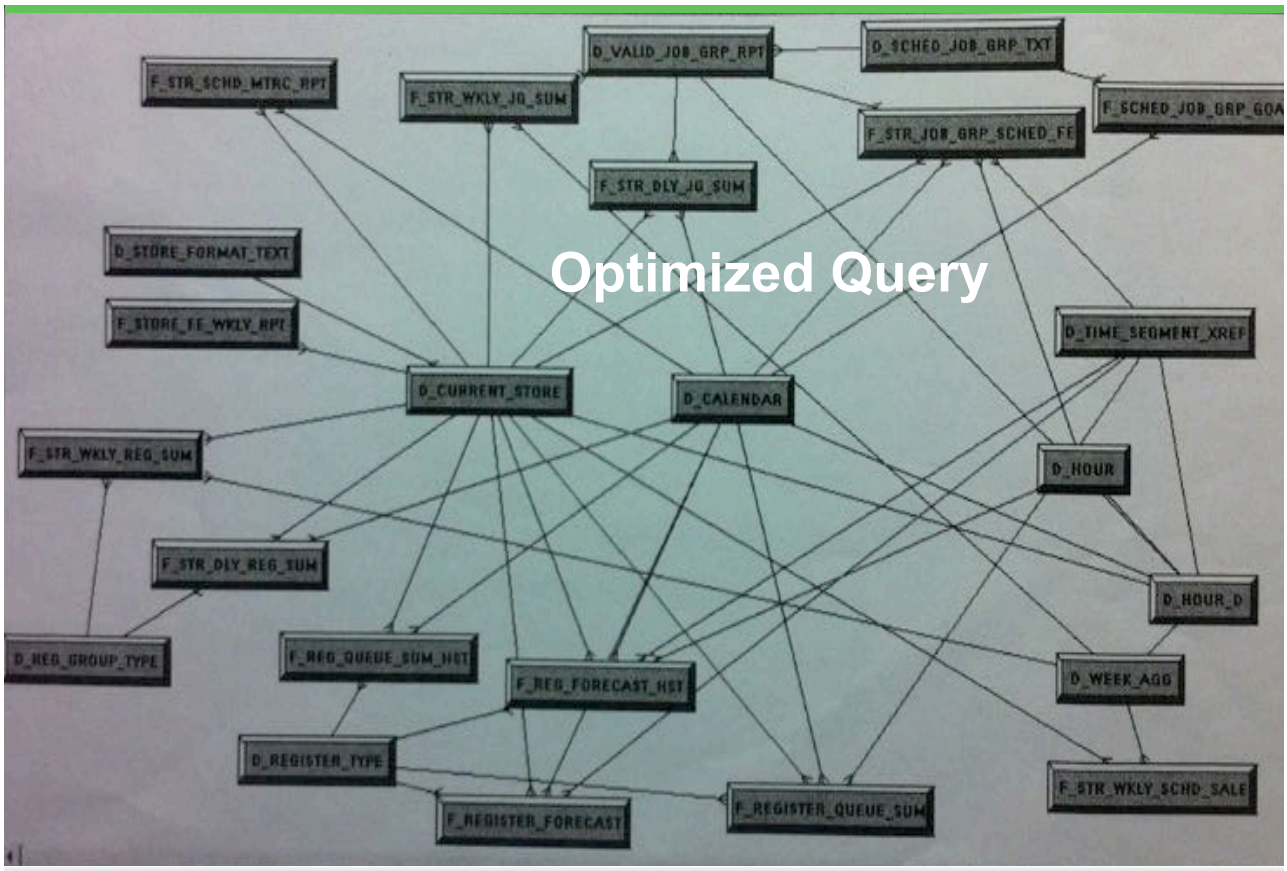
Tacoma Narrows Bridge/Gallopin' Gertie

- Slender, elegant and graceful
- World's 3rd longest suspension span
- Opened on July 1st, collapsed in a windstorm on November 7, 1940
- "The most dramatic failure in bridge engineering history"
- Changed forever how engineers design suspension bridges leading to safer spans today.

Data Footprints

- SQL Server
  - 47,000,000,000,000 bytes
  - Largest table 34 billion records 3.5 TBs
- Informix
  - 1,800,000,000 queries/day
  - 65,000,000 tables / 517,000 databases
- Teradata
  - 117 billion records
  - 23 TBs for one table
- DB2
  - 29,838,518,078 daily queries





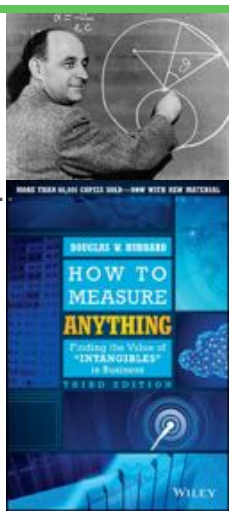
Repeat 100s, thousands, millions of times ...

Valuing Information

- $980-$4,900
  - Trojan program to steal online account information
- $490
  - Credit card number with PIN
- $78-294
  - Billing data, including account number, address, SSAN, home address, and birthdate
- $147
  - Driver's license
- $147
  - Birth certificate
- $98
  - Social security card
- $6-24
  - Credit card number with security code and expiration date
- $6
  - Paypal account logon and password

Source: Black Market Prices Spring 2007 from Trend Micro

Enrico Fermi (Nobel Prize Physics 1938)



- How many piano tuners in the city of Chicago?
  - Without using existing lists such as yellow pages, google ...
  - Current population of Chicago (3 million at the time)
  - Average number of people per household (2 or 3)
  - Share of households with regularly tuned pianos (1 in 3)
  - Required frequency of tuning (1/year)
  - How many pianos can a tuner tune daily? (4 or 5)
  - How many days/year are worked (250)
- Tuners in Chicago ≈ Population/people per household times % households with tuned pianos times tunings per year divided by (tunings per tuner per day times workdays/year)

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International Chemical Company Engine Testing

- $1billion (+) chemical company
- Develops/manufactures additives enhancing the performance of oils and fuels ...
- ... to enhance engine/ machine performance
  - Helps fuels burn cleaner
  - Engines run smoother
  - Machines last longer
- Tens of thousands of tests annually
  - Test costs range up to $250,000!

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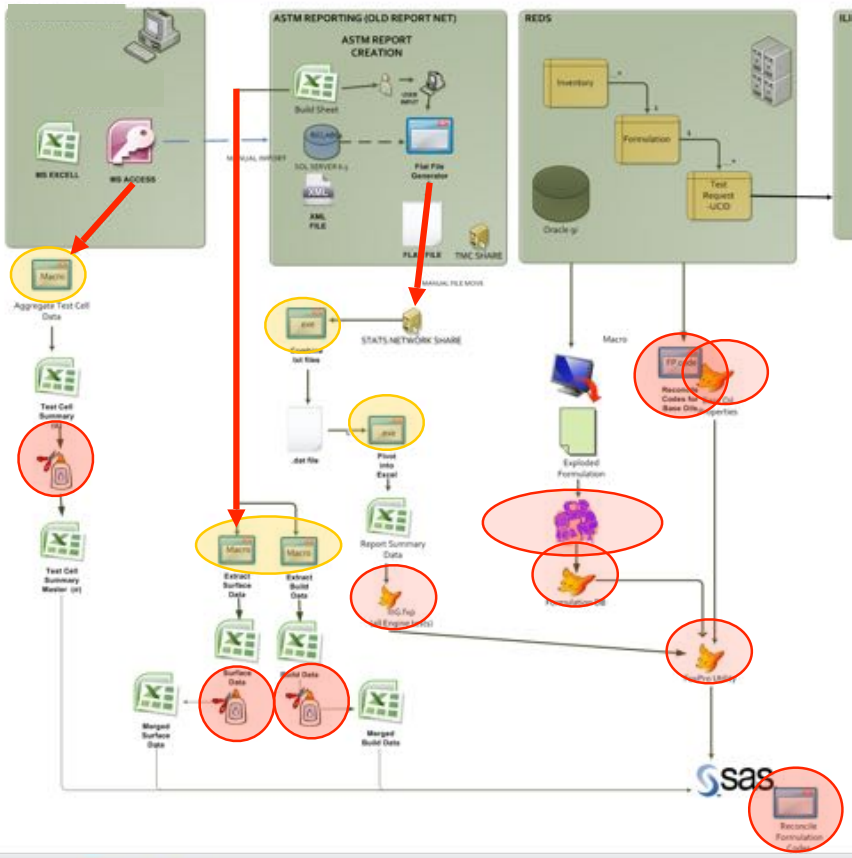
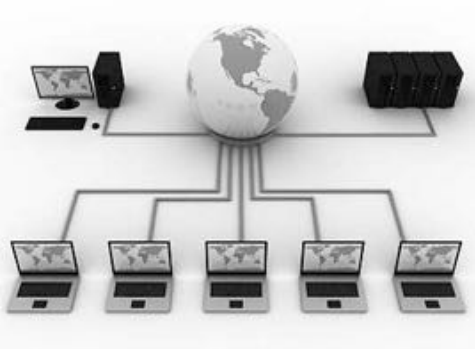


Improving Knowledge Worker Productivity

1. Manual transfer of digital data
2. Manual file movement/duplication
3. Manual data manipulation
4. Disparate synonym reconciliation
5. Tribal knowledge requirements
6. Non-sustainable technology

Data Integration Solution

- Integrated the existing systems to easily search on and find similar or identical tests
- Results:
  - Reduced expenses
  - Improved competitive edge and customer service
  - Time savings and improve operational capabilities
- According to our client's internal business case development, they expect to realize a $25 million gain each year thanks to this data integration



Improving Data Quality during System Migration

- Challenge
  - Millions of NSN/SKUs maintained in a catalog
  - Key and other data stored in clear text/comment fields
  - Original suggestion was manual approach to text extraction
  - Left the data structuring problem unsolved
- Solution
  - Proprietary, improvable text extraction process
  - Converted non-tabular data into tabular data
  - Saved a minimum of $5 million
  - Literally person centuries of work

Determining Diminishing Returns

Week #	Unmatched Items (% Total)	Ignorable Items (% Total)	Items Matched (% Total)
1	31.47%	1.34%	N/A
2	21.22%	6.97%	N/A
3	20.66%	7.49%	N/A
4	32.48%	11.99%	55.53%
…	…	…	…
14	9.02%	22.62%	68.36%
15	9.06%	22.62%	68.33%
16	9.53%	22.62%	67.85%
17	9.5%	22.62%	67.88%
18	7.46%	22.62%	69.92%

Quantitative Benefits

Time needed to review all NSNs once over the life of the project:	
NSNs	2,000,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	10,000,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
Work hours in a day	7.5
Work minutes in a day	450
Total Work minutes/year	108,000
Person years required to cleanse each NSN once prior to migration:	
Minutes needed	10,000,000
Minutes available person/year	108,000
Total Person-Years	92.6
Resource Cost to cleanse NSN's prior to migration:	
Avg Salary for SME year (not including overhead)	$60,000.00
Projected Years Required to Cleanse/Total DLA Person Year Saved	93
Total Cost to Cleanse/Total DLA Savings to Cleanse NSN's:	**$5.5 million**

Quantitative Benefits

Time needed to review all NSNs once over the life of the project:	
NSNs	150,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	750,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
Work hours in a day	7.5
Work minutes in a day	450
Total Work minutes/year	108,000
Person years required to cleanse each NSN once prior to migration:	
Minutes needed	750,000
Minutes available person/year	108,000
Total Person-Years	7
Resource Cost to cleanse NSN's prior to migration:	
Avg Salary for SME year (not including overhead)	$60,000.00
Projected Years Required to Cleanse/Total DLA Person Year Saved	7
Total Cost to Cleanse/Total DLA Savings to Cleanse NSN's:	$420,000

Quantitative Benefits

Time needed to review all NSNs once over the life of the project:	
NSNs	2,000,000
Average time to review & cleanse (in minutes)	5
Total Time (in minutes)	10,000,000
Time available per resource over a one year period of time:	
Work weeks in a year	48
Work days in a week	5
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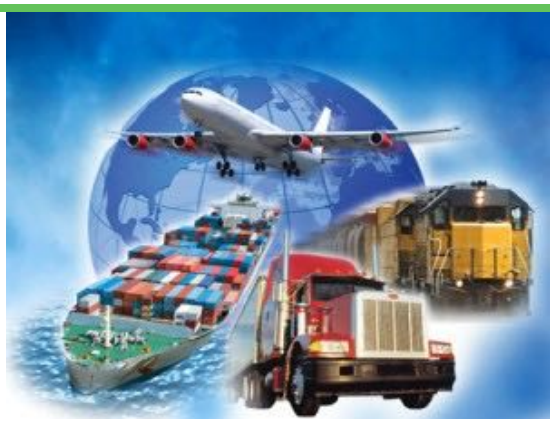
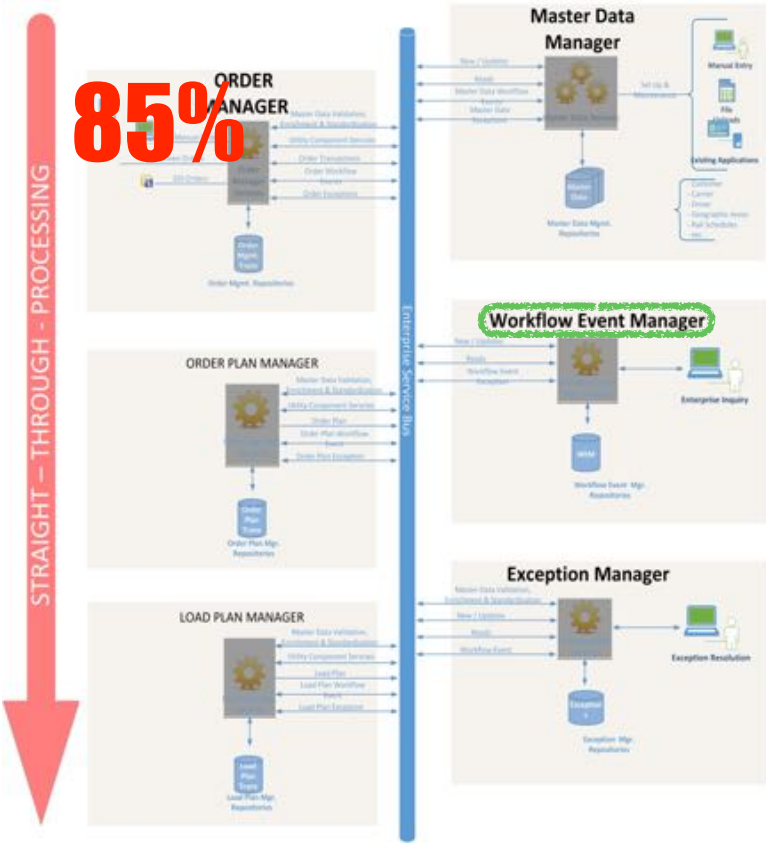
Logistics Company



- Fortune 450
- Room of 100 associates
- Manually correcting every item on every customer invoice
- Upon noting this to the responsible manager - the reply was:
  - *This is the best quarter*
  - *Of the best year*
  - *I've ever had*
  - *Perhaps I need to double the number in that room?*

Example : Data Integration and Platforms

- Straight Through Processing
  - Auto Everything
- Workflow Event Mgr
  - 360 View of the order
- Exception Manager
  - Alert and Notification system when human involvement is needed



Posted on Friday, January 15, 2010

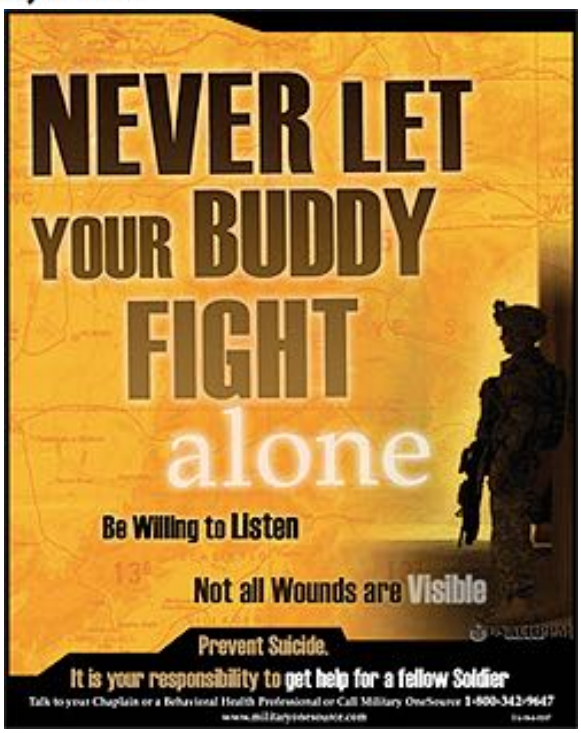
Despite prevention efforts, U.S. military suicides rise

By Halimah Abdullah | McClatchy Newspapers

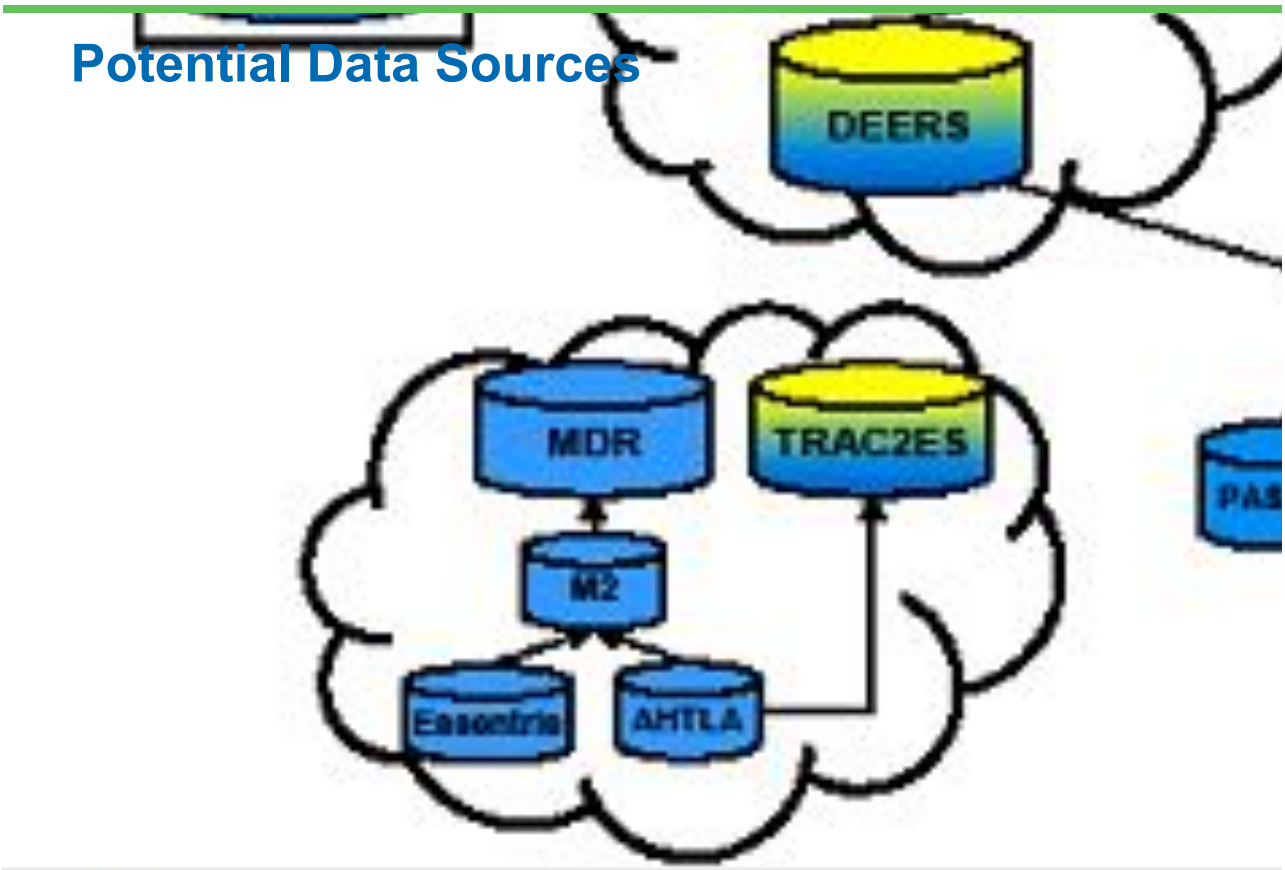
WASHINGTON — Eight years of war in Afghanistan and Iraq have etched indelible scars on the psyches of many of the nation's servicemen and women, and the U.S. military is losing a battle to stem an epidemic of suicides in its ranks.

Despite calls by top Pentagon officials for a sea change in attitudes about mental health, millions of dollars in new suicide prevention programming and thousands of hours spent helping soldiers suffering from what often are euphemistically dubbed "invisible wounds," the military is losing ground.

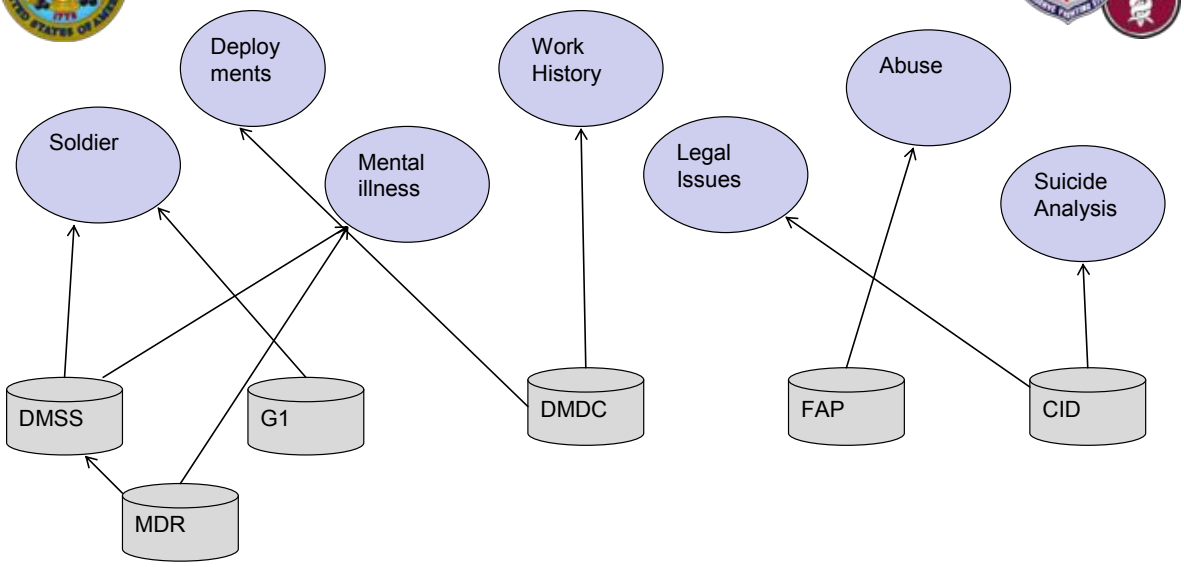
The Department of Defense Friday reported that there were 160 reported active-duty Army suicides in 2009, up from 140 in 2008. Of these, 114 have been confirmed, while the manner of death in the remaining 46 remains to be determined.



Potential Data Sources



Data Mapping



Data objects complete?

All sources identified?

Best source for each object?

How reconcile differences between sources?

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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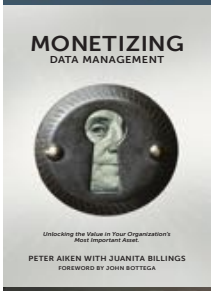
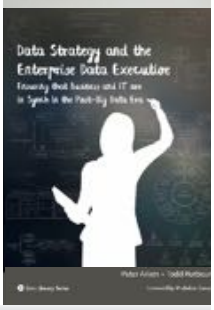
Senior Army Official

- Room full of Stewards
- A very heavy dose of management support
- Advised the group of his opinion on the matter
- Any questions as to future direction
  - *"They should make an appointment to speak directly with me!"*
- Empower the team
  - The conversation turned from "can this be done?" to "how are we going to accomplish this?"
  - Mistakes along the way would be tolerated
  - Implement a workable solution in prototype form

Triple Play: Leadership, Value & Strategy





Strategy

Value

Leadership

It isn't possible to go digital

Digital

By just spelling 'data'

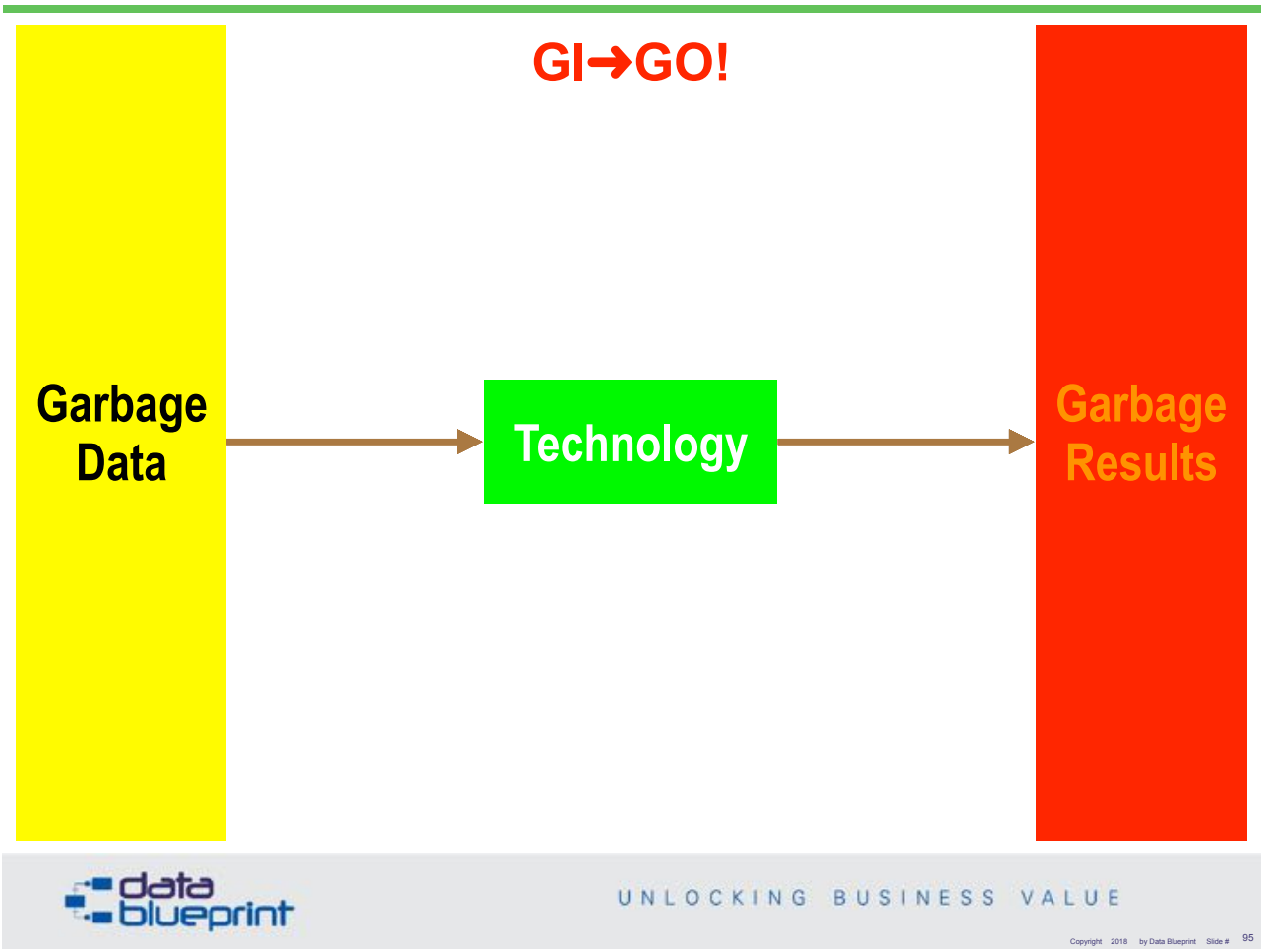
Dat

It requires more work

Data

My most profound lesson! (so far)

Garbage In ➜ Garbage Out!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Garbage Data
Technology
Garbage Results
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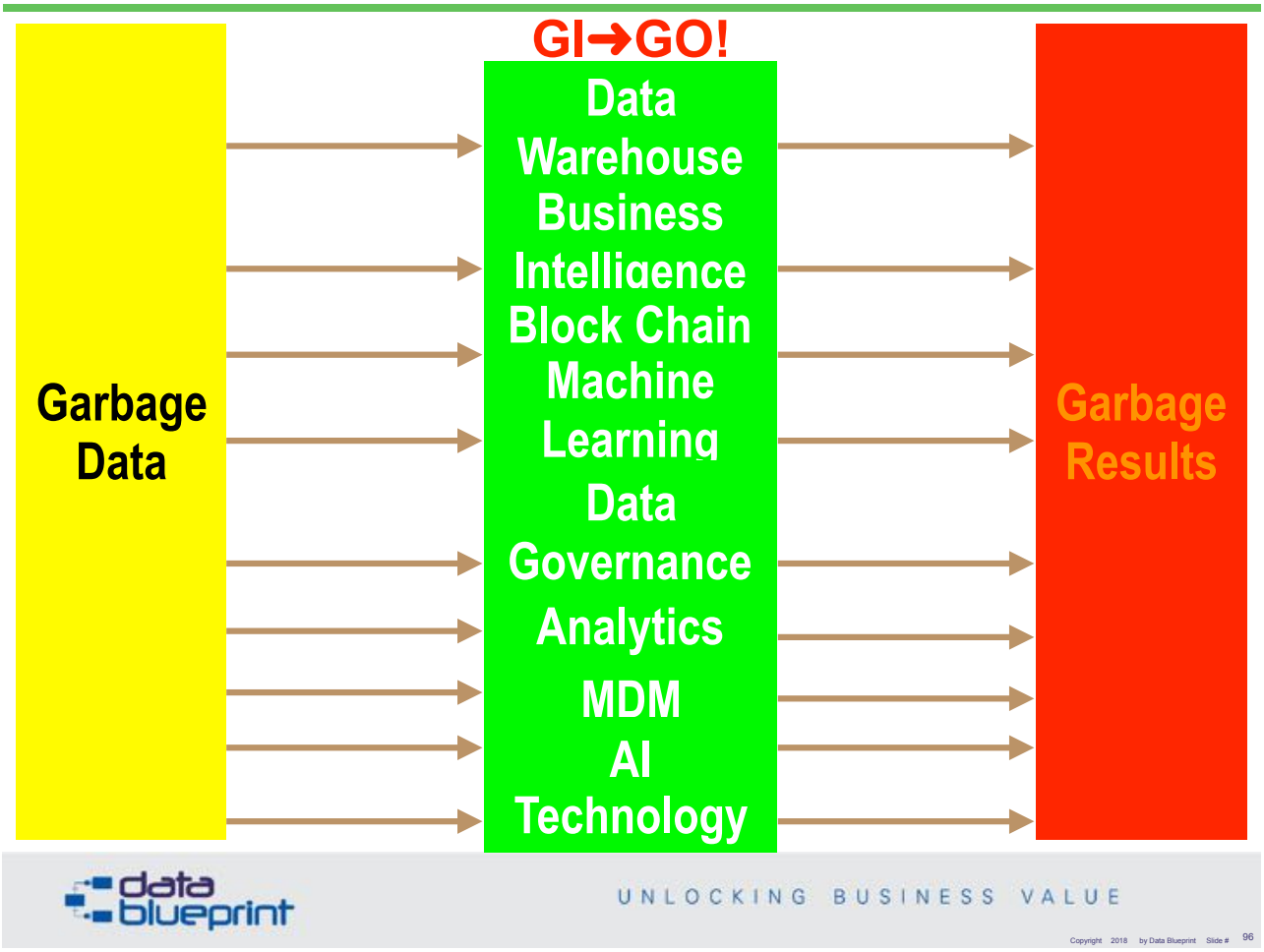
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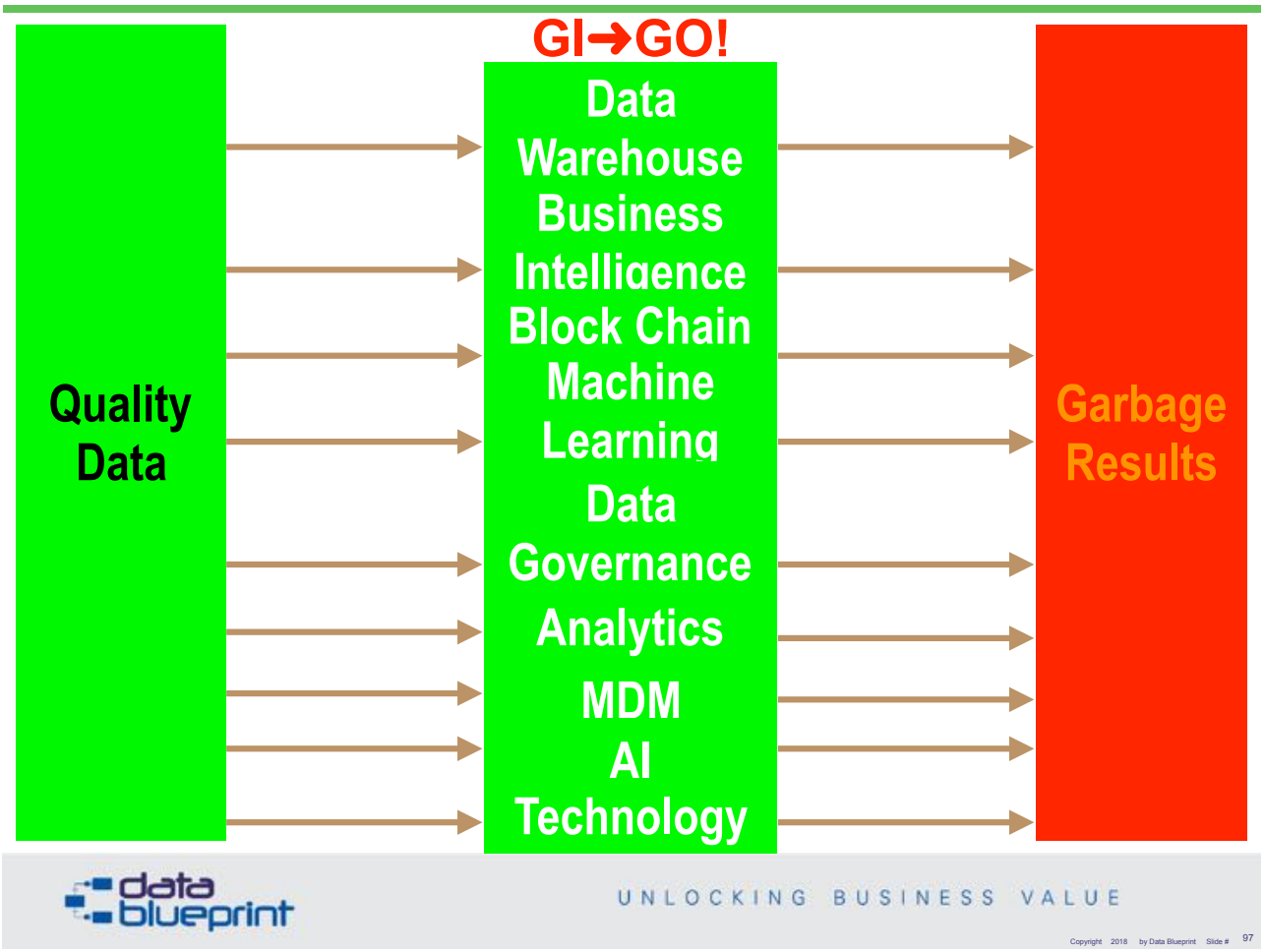
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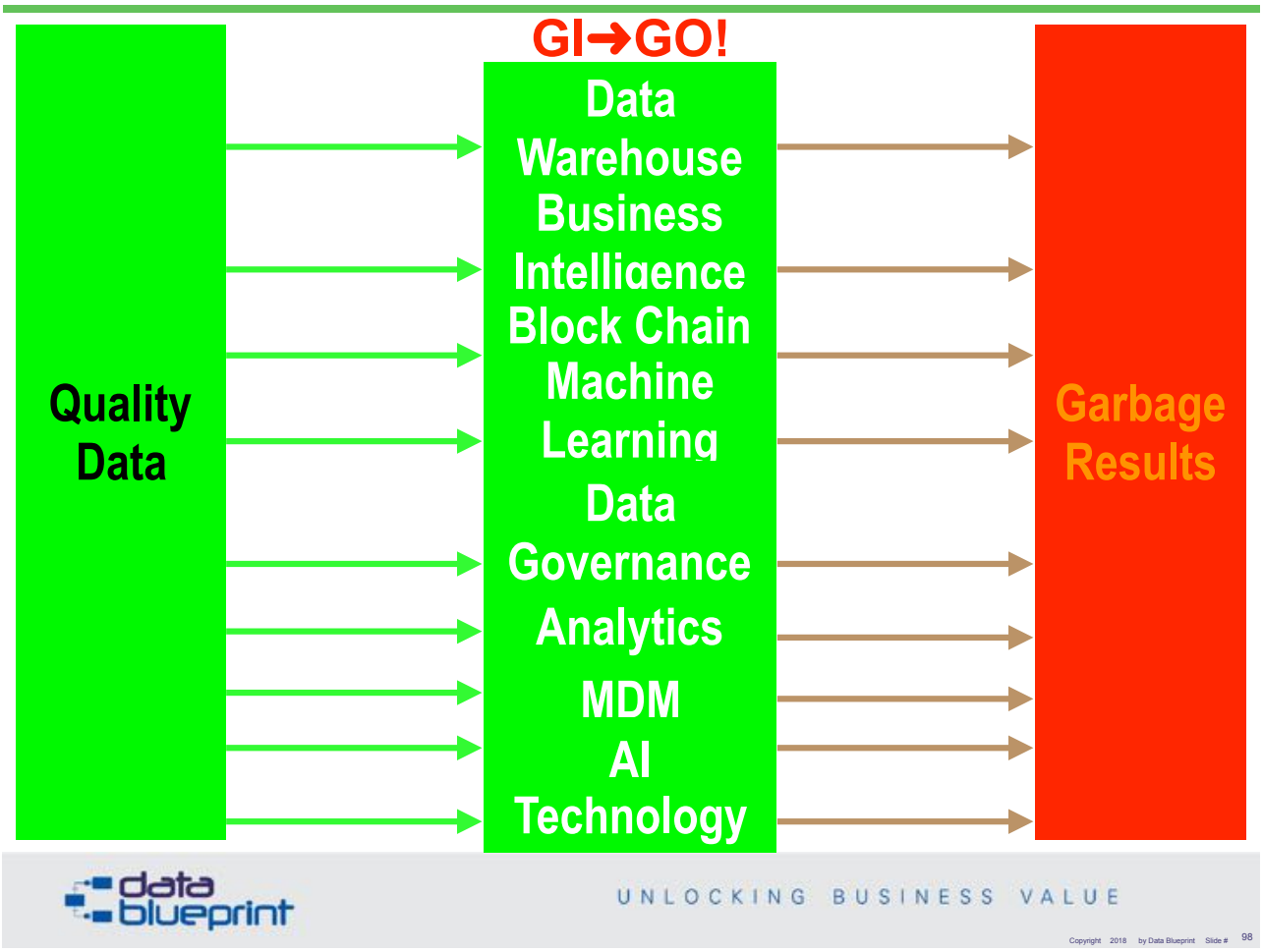
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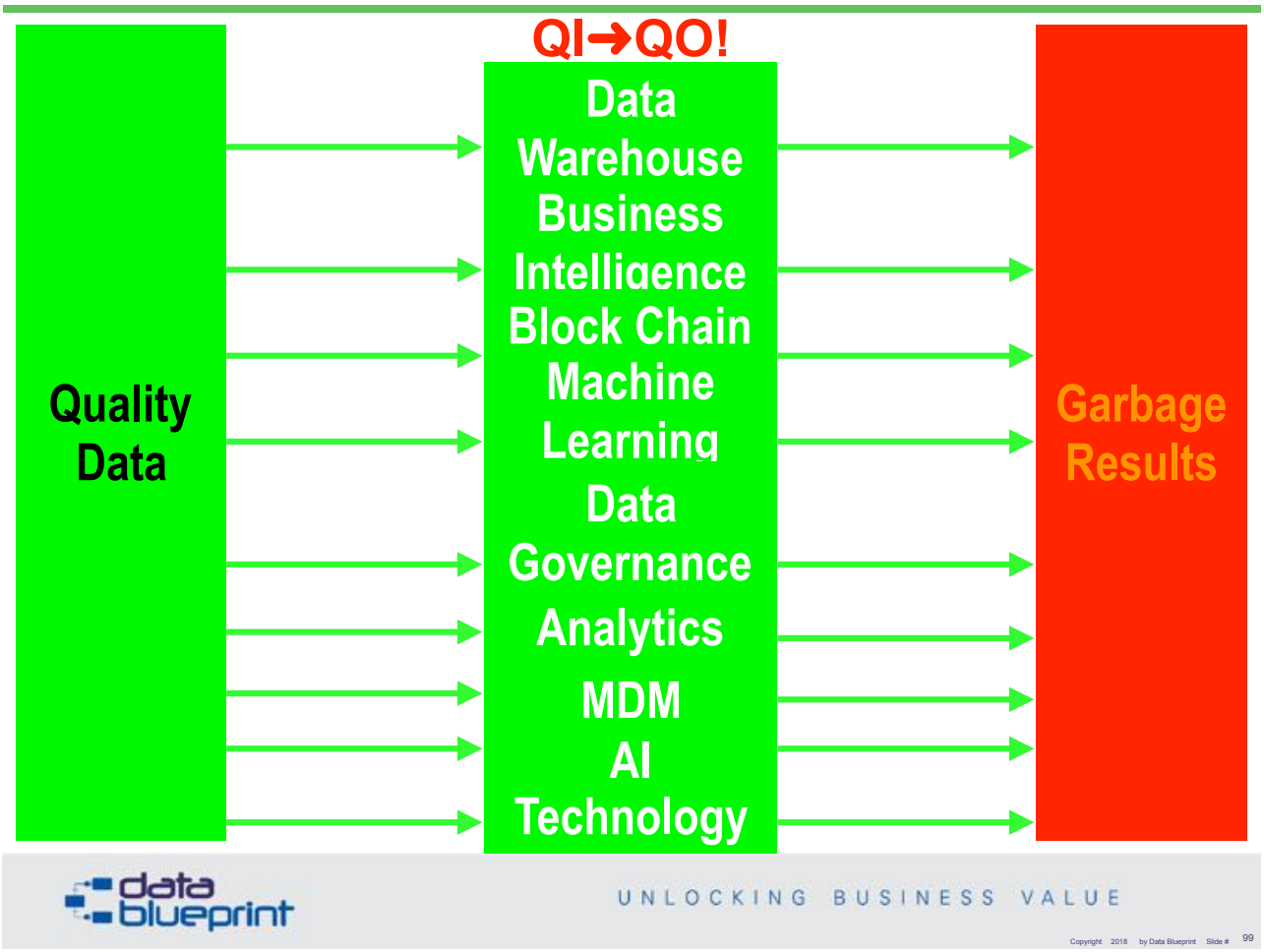
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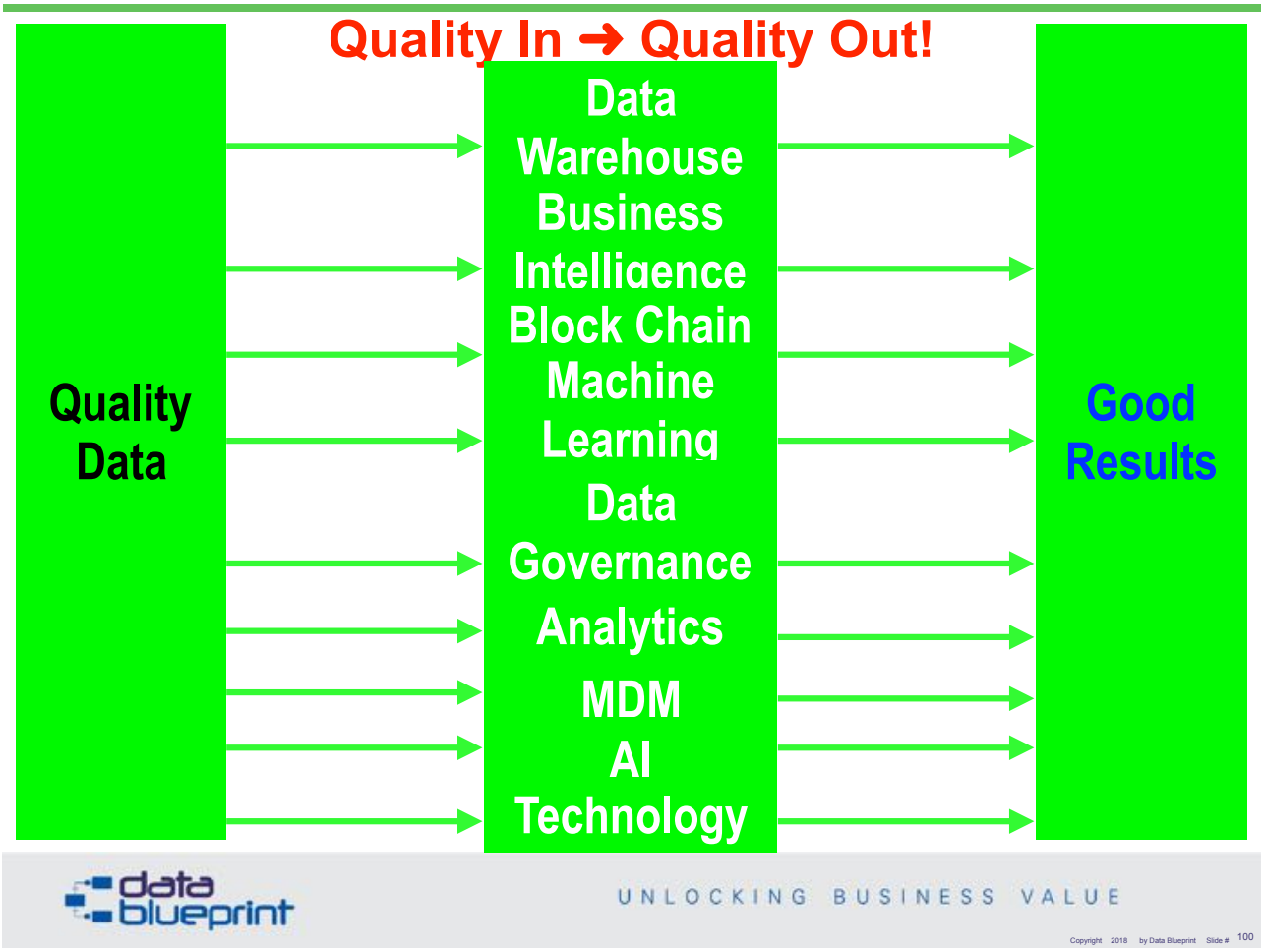
Quality In → Quality Out!
Quality Data
Data Warehouse
Business Intelligence
Block Chain
Machine Learning
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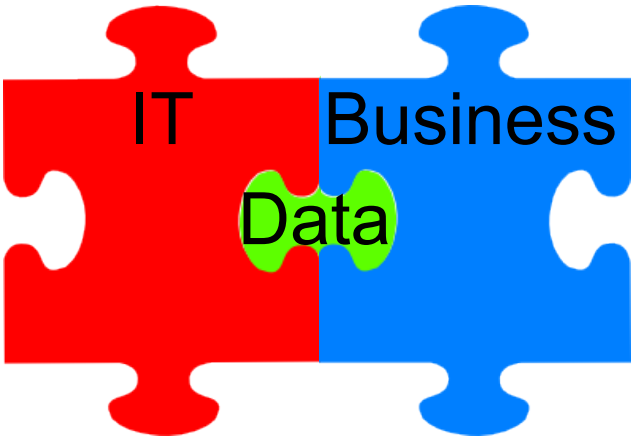
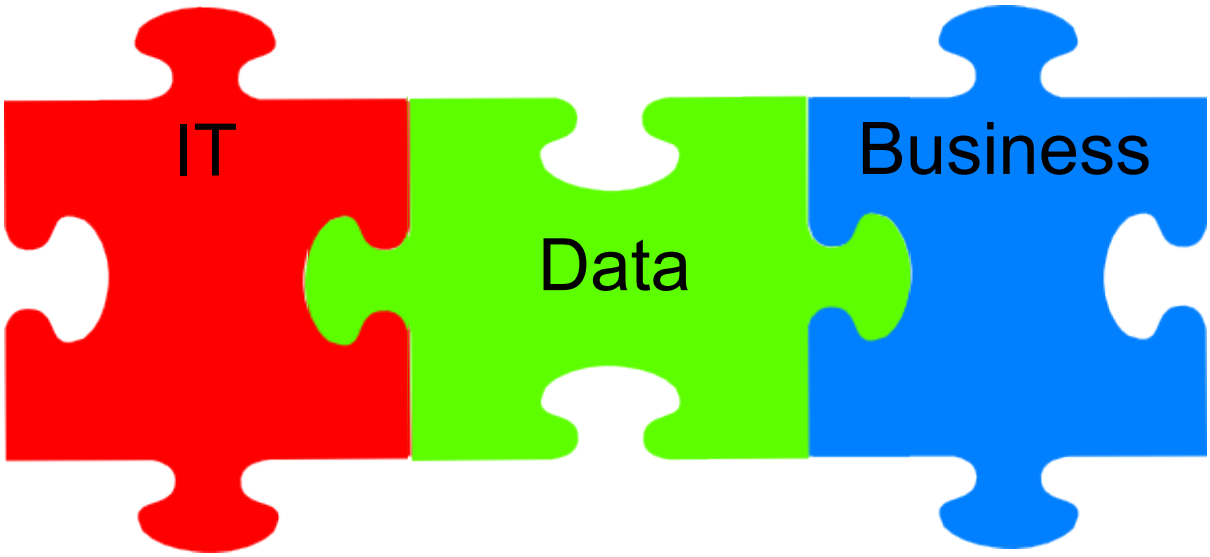
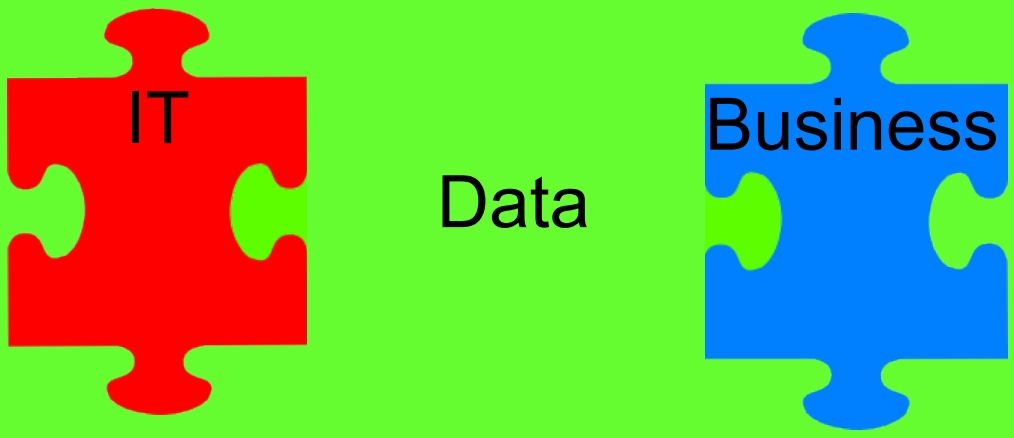
Perceived State of Data



Desired To Be State of Data



The Real State of Data



It's your turn!
Use the chat feature or Twitter (#dataed) to submit your questions now!

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