

Data Management

Best Practices

Practicing Data Management Better



peter.aiken@anythingawesome.com +1.804.382.5957



1 + 1 = 11



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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)
- Institute for Defense Analyses (ida.org)
- DAMA International (dama.org)
- MIT CDO Society (iscdo.org)
- Anything Awesome (anythingawesome.com)
- Experienced w/ 500+ data management practices worldwide
- 12 books and dozens of articles
- Multi-year immersions
 - US DoD (DISA/Army/Marines/DLA)
 - Nokia
 - Deutsche Bank
 - Wells Fargo
 - Walmart
 - HUD ...

\$1,500,000,000.00 USD



<http://anythingawesome.com>



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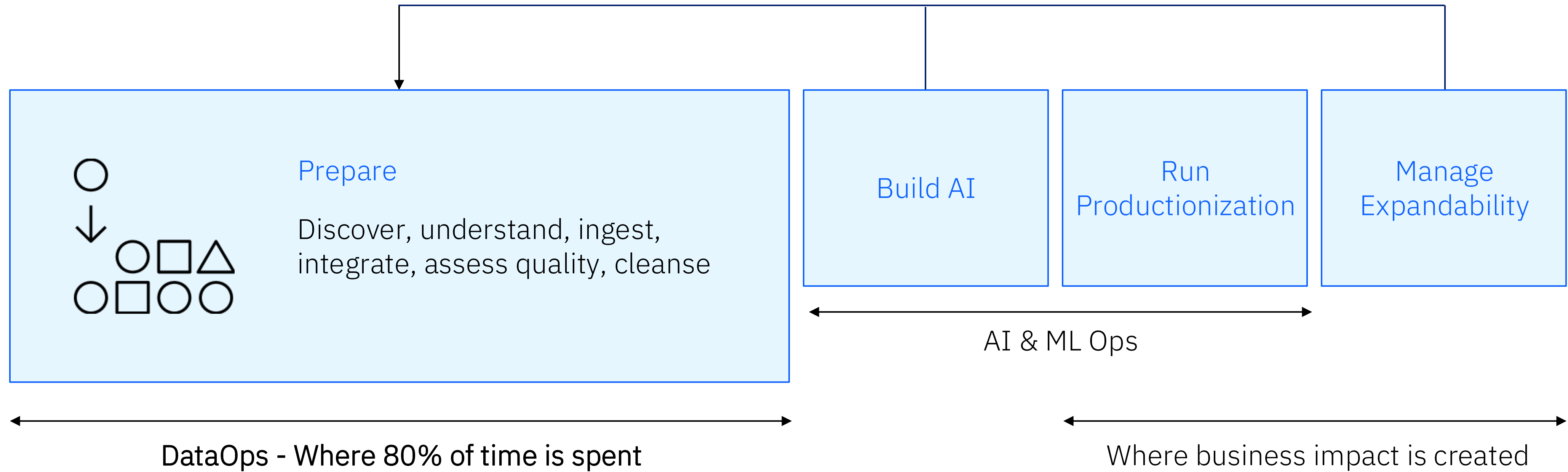
Data Management

Getting Data AI ready

Sonia Mezzetta
Director,
Product Management

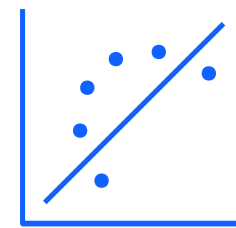


Making data ready for high-value AI is widely time consuming



AI is only as good as your data

Unprecedented data challenges to scale AI



There's more data

- Exploding data growth
- The aggregate volume of data stored is set to **grow over 250%** in the next 5 years



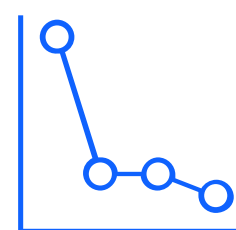
In more locations

- Multiple locations, clouds, applications and silos
- **82% of enterprises** are inhibited by data silos



In more formats

- Documents, images, video
- **80% of time** is spent on data cleaning, integration and preparation

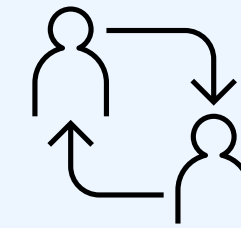


With less quality

- Stale and inconsistent
- **82% of enterprises** say data quality is a barrier on their data integration projects

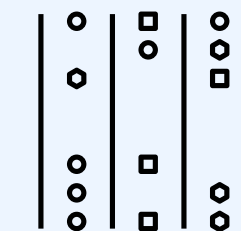
Source: <https://www.idc.com/getdoc.jsp?containerId=US49018922>

Emerging challenges of unstructured data



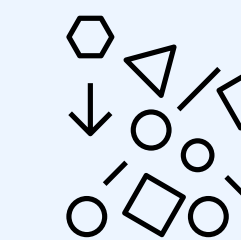
Distributed and disorganized

- Difficult to catalog and search, much of it left to content creators/owners to manage
- Massive duplication and redundancy



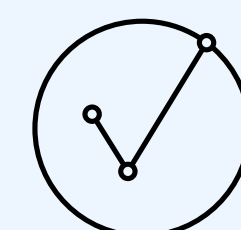
Bottlenecks and silos

- Documents are managed with productivity tools by CIO while enterprise data and analytics are managed by CDOs



Near infinite variety

- Hard to classify and identify entities/values
- No well-established patterns of interpretation



Quality and compliance

- Dynamic version control, lineage, transmutation
- Coarse-grained user authorization model (user has access, yes/no)

#IBMTechXchange

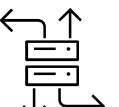
The hybrid, open data lakehouse



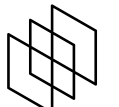
Hybrid, and multi-cloud
Run across public cloud, on premises and multi-cloud



Open by design - no vendor lock in
Future proof your data with open software and a modern data stack that values flexibility and choice.



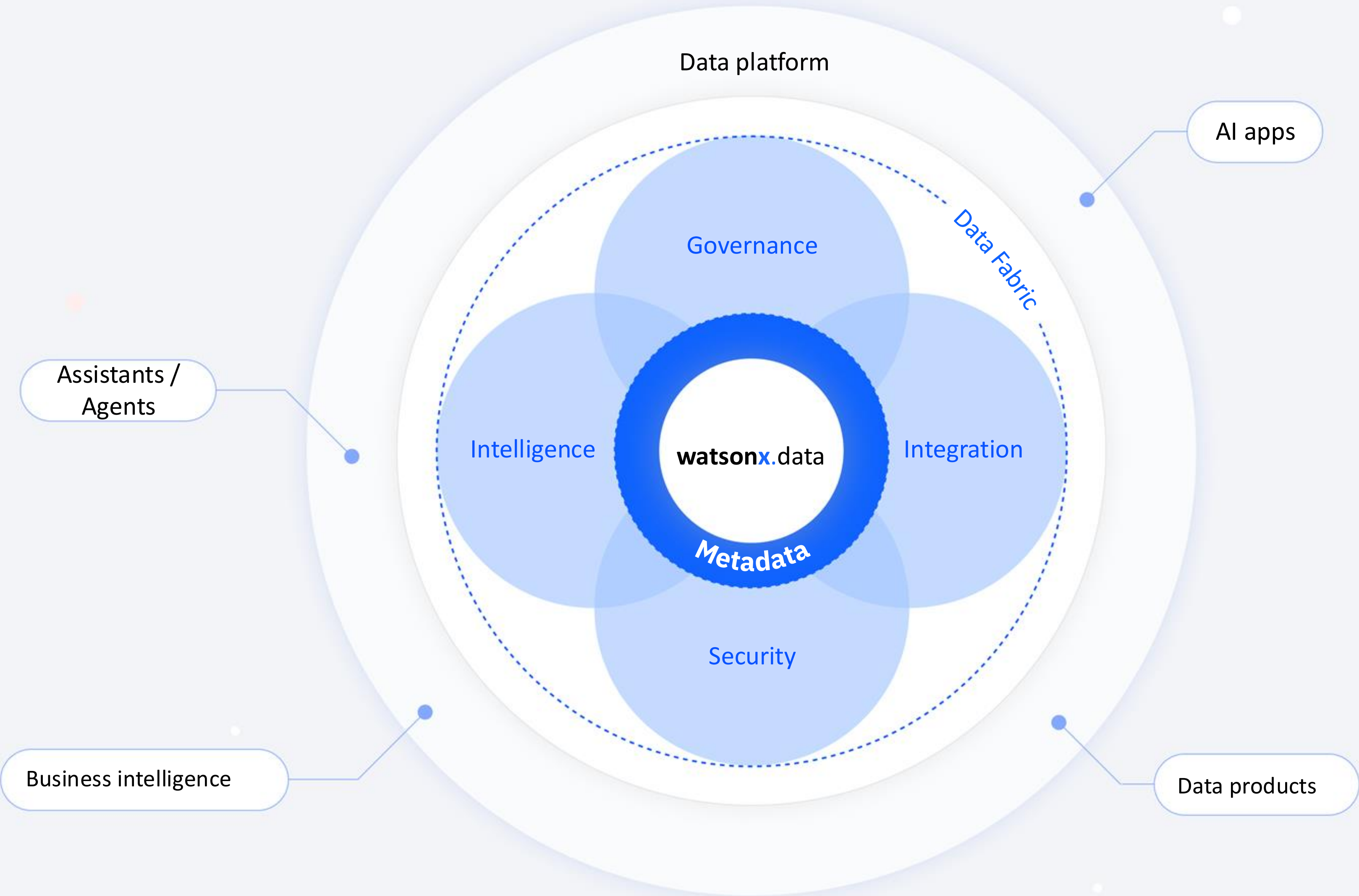
Govern your data
Easily integrate, secure, and govern data across the entire estate




Reduce your analytics costs
Optimize workloads for price-performance by pairing the right workloads with the right engines



Improve your AI output
Connect your data from anywhere and combine curated structured and unstructured data to build new AI apps and services



IBM watsonx.data – the hybrid, open data lakehouse for AI and analytics

 AI workloads

 BI & Analytical workloads

 Data Engineering

AI Enabled Insights

Highly Optimized & Price Performant Processing


Unified Metadata & Governance

Built-in meta data and access management to support AI and Analytical workloads.



Multiple Query Engines

Multiple engines such as Presto, Spark and Milvus that provide fast, reliable, and efficient processing of data at scale. Optimize workload costs and performance.

 presto
 Milvus  Spark

Open-source Formats

Vendor agnostic open formats for analytic data sets, allowing different engines to access and share the same data, at the same time. Enables access of data across databases and data lakes.

 ICEBERG  Parquet
 ORC

Object Storage

IBM Cloud Object Storage Amazon S3 Google Cloud
Azure Blob Storage. Red Hat Ceph Storage

 teradata.

Content Management

 CLOUDERA

Netezza

 snowflake

Your Data

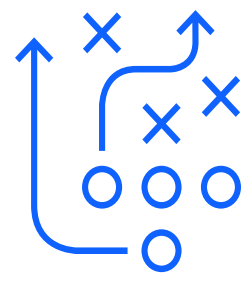
 databricks

FileNet

IBM Db2

Three ways to get started with watsonx.data today

Looking forward to today's discussions



Free trial

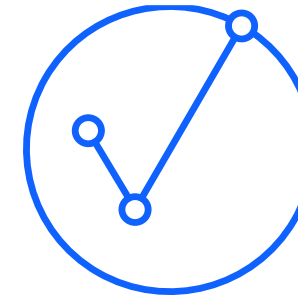
Core watsonx features to start building AI models and accessing data across your organization.



Request a client briefing or demo

Discussion and custom demonstration of IBM's generative AI watsonx point of view and capabilities. Understand where generative AI can be leveraged now for impact in your business.

2-4 hours
onsite or virtual



Assess business value of a 5-year program

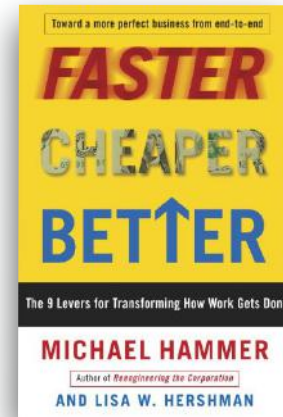
Engagement with an IBM multi-disciplinary team to jointly innovate and rapidly prove the business value of generative AI solutions using watsonx.

1-4 weeks

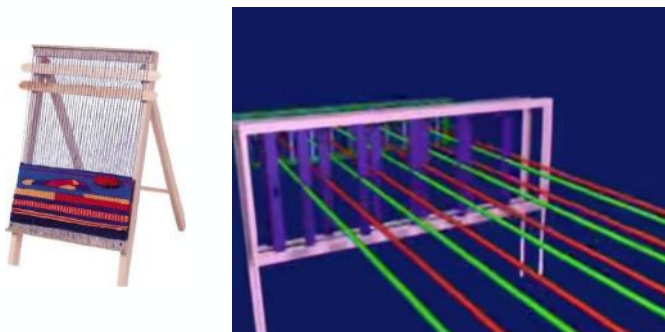
IBM

Doing Data Better means that you

- Understand that the vastness and quality of data plays an increasing role in everyone's life
- Are motivated to increase your individual data skills because you now know that poor data skills:
 - Cost you more
 - Steal increasing amounts of your time
 - Deliver less
 - Presents greater risk
- Recognize the critical importance of data management in modern life and its positive and negative applications
- Develop defensive skills to differentiate between good and bad data (understanding that most data is of unknown quality)
- Can assign values to some of your personal data and its use
- Are able to take advantage of decreases in the general workload load needed to effectively manage data in your professional and personal life



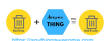
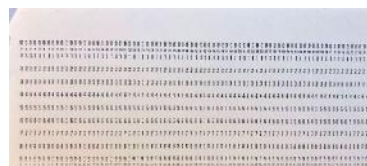
Augusta Ada King (aka Lady Ada, Countess of Lovelace)



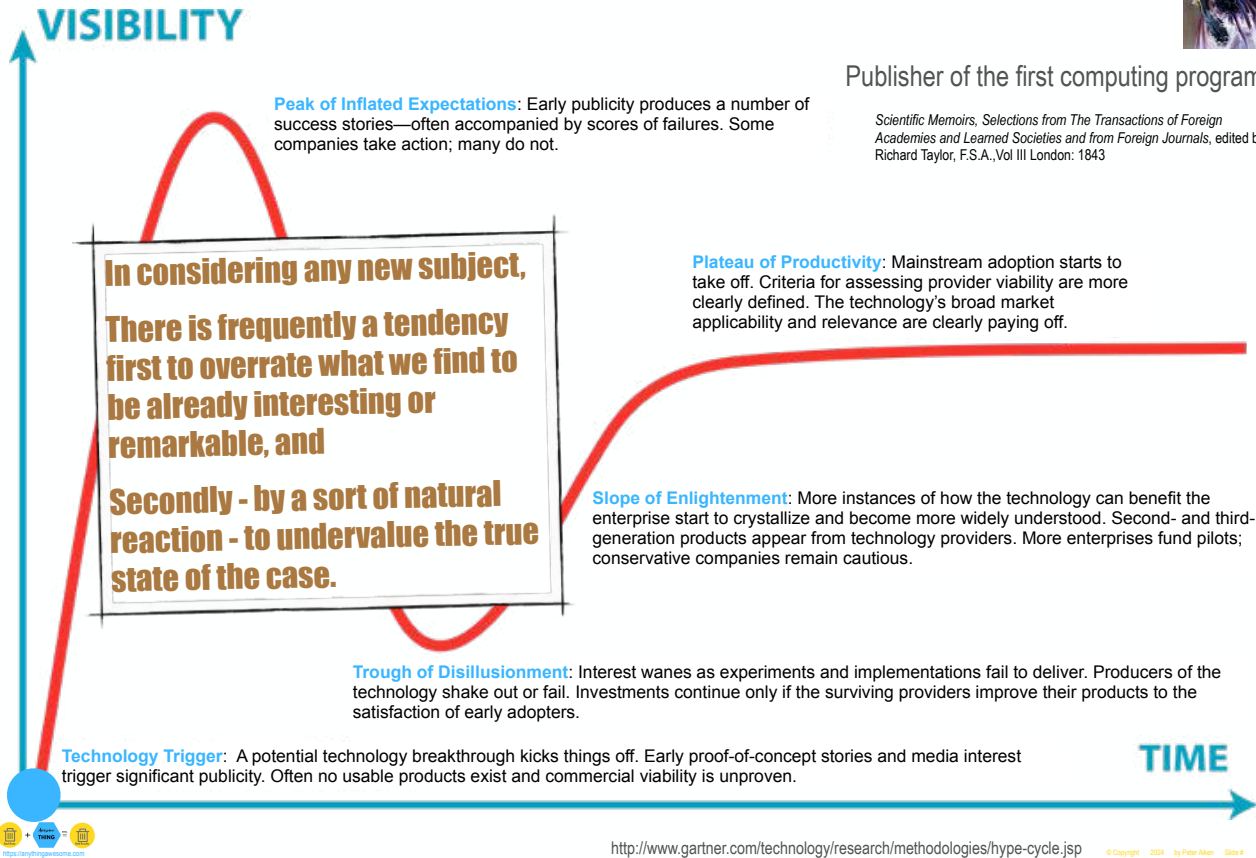
Jacquard machine 1804



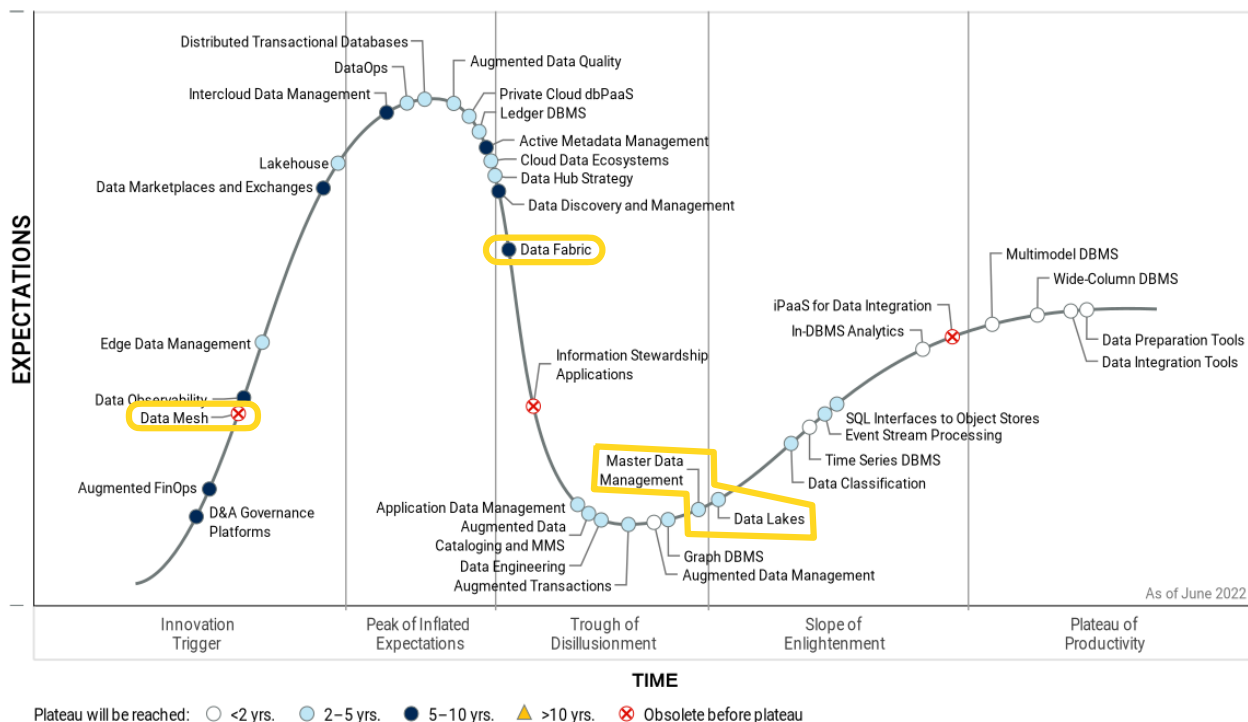
<https://people.well.com/user/adatoole/bio.htm>



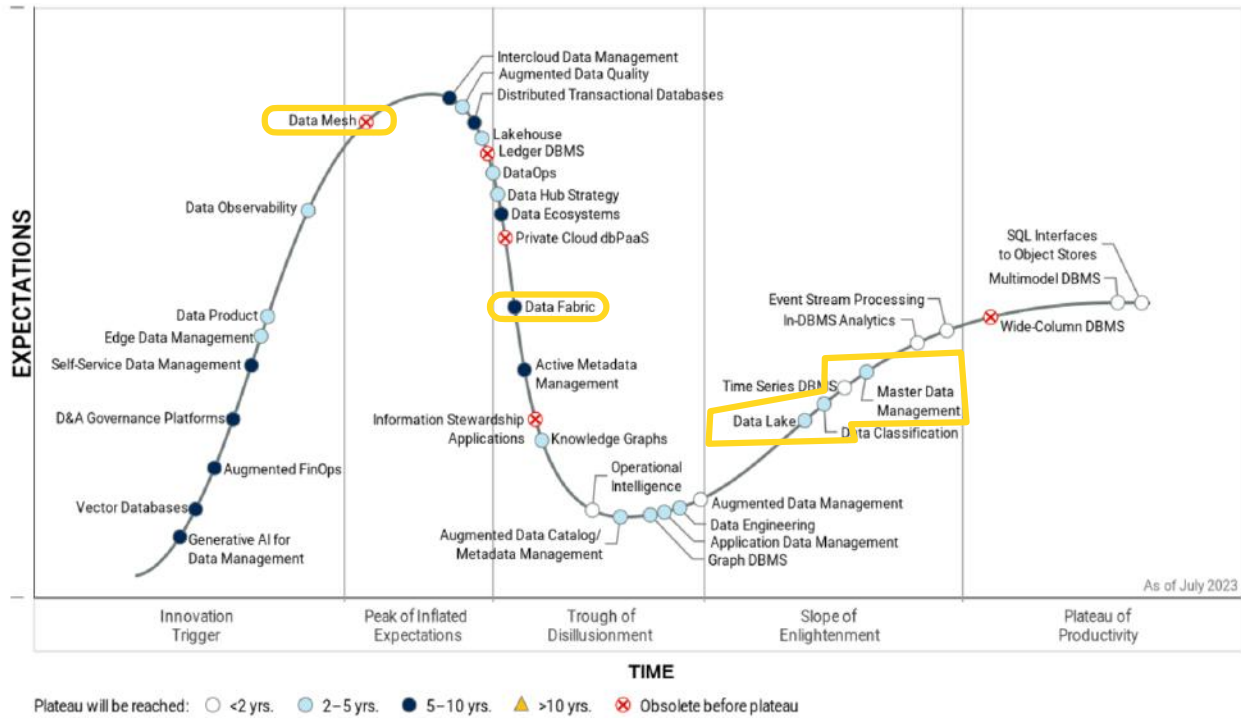
Credit for the Hype Cycle should go to Lady Ada!



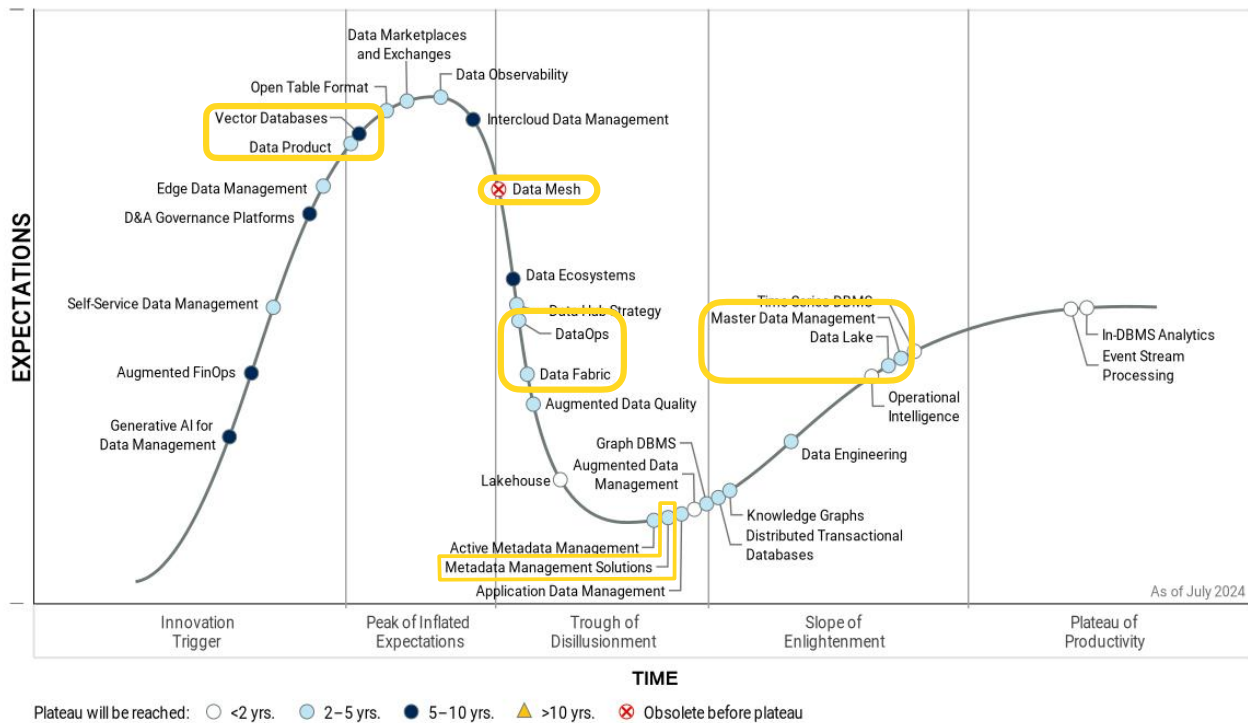
Gartner Hype Cycle for Data Management 2022



Gartner Hype Cycle for Data Management 2023



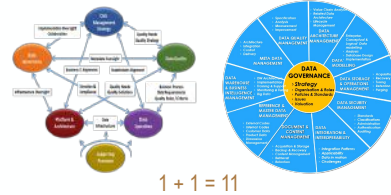
Gartner Hype Cycle for Data Management 2024



Program Overview

Practicing
Data Management
Better

- Motivation
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<https://medium.com/interoperable/knowledge-workers-information-life-cycles-and-content-silos-oh-my-a4263eed427>

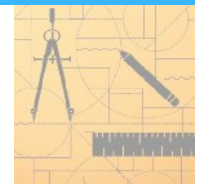
Measures of Unproductivity

Knowledge Worker Stress

- 33% of time spent reworking/ recreating knowledge that already exists!
- 10% of time spent creating new knowledge and content
- 53% would rather to household chores
- 52% would rather pay bills than use content management/repositories
- 74% report feeling **overwhelmed** or **unhappy** when working with data
- 33% of overwhelmed employees spend at least one hour a week **procrastinating** over data-related tasks



Measurements



Everyone

- 14% have a good understanding of how to use business data
- 21% aged 16-24 classified themselves as data literate

Conclusion: future employees are underprepared for data-driven workplaces

Business decision makers

- **24%** of business decision makers feel fully confident in their ability to read, work with, analyze & argue with that data
- **33%** are able to create measurable value from data
- **27%** say my analytics projects produce actionable insights
- **78%** willing to invest time/energy improving data skillsets



<http://TheDataLiteracyProject.org>



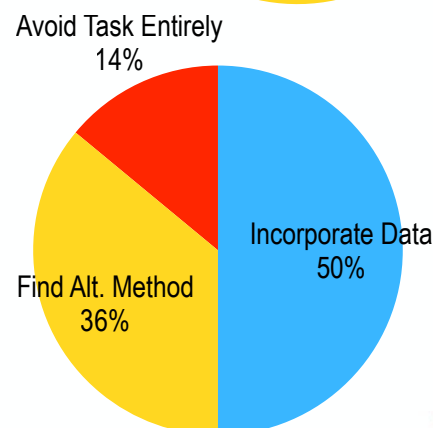
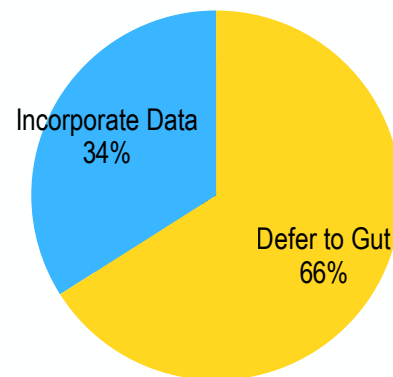
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<http://TheDataLiteracyProject.org>

When asked to incorporate data

Too many organizations have simply put data in the hands of employees and expected them to make a success of it

- Data appreciation isn't translating into employee adoption
 - 48% frequently make gut decisions
 - 66% for C-suite executives
- Lack of data skills is limiting workplace productivity
 - 36% said they would find an alternative method to complete the task **without using data**
 - 14 percent **avoid the task entirely**



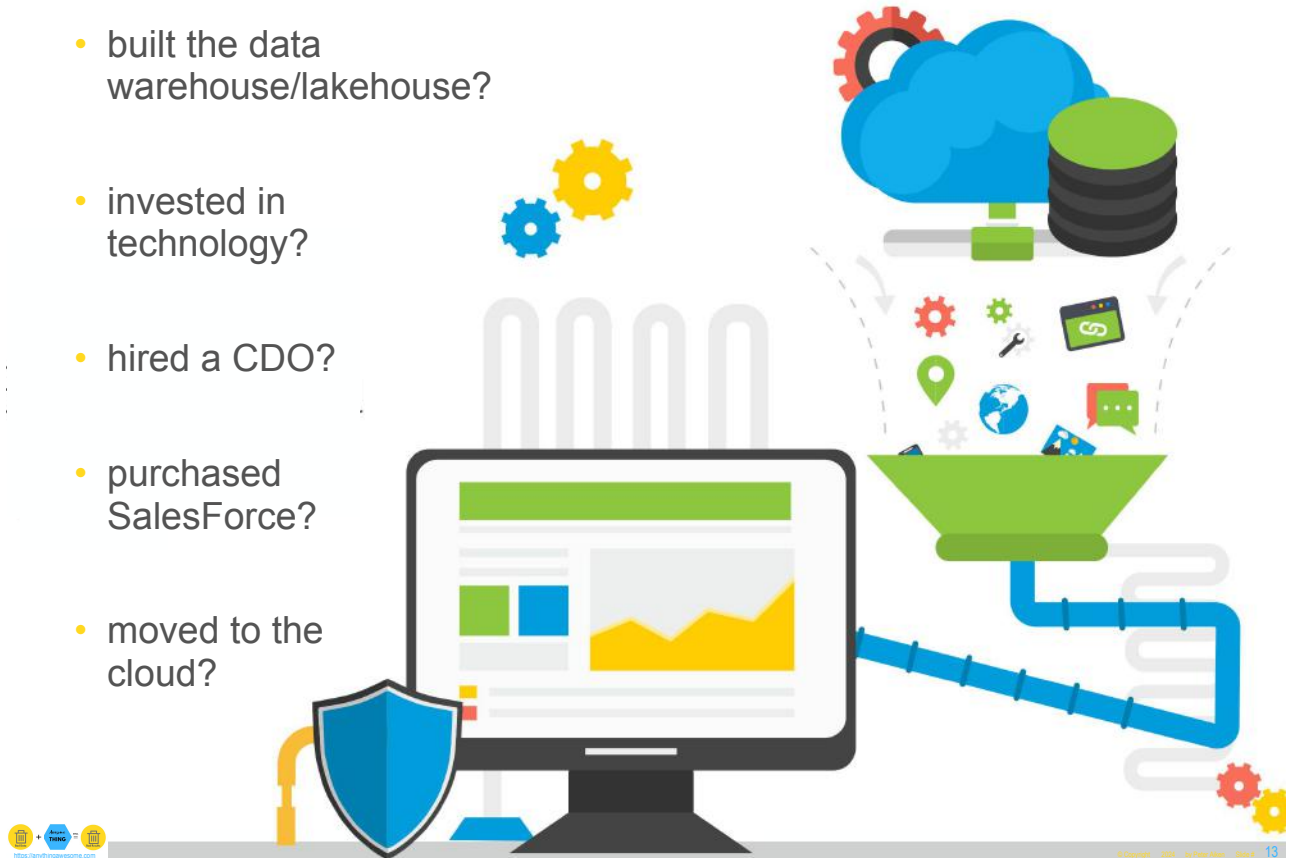
<http://TheDataLiteracyProject.org>



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Why weren't my data problems solved when we

- built the data warehouse/lakehouse?
- invested in technology?
- hired a CDO?
- purchased Salesforce?
- moved to the cloud?



<https://builtin.com/articles/clarify-cloud-spending>

Cloud Spending Infuriates Executives. Here's How to Solve It.

While C-suite disagreements are to be expected, squabbles over the way a company spends on cloud services don't have to be.



Written by [Willy Sennott](#)
Published on Aug. 24, 2023



Data in the cloud should have three attributes that data outside the cloud/warehouse should not have. It should be:

Cleaner



Smaller

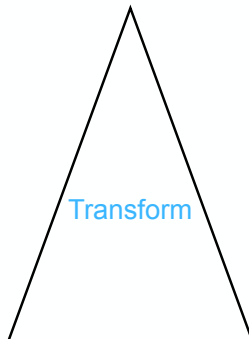
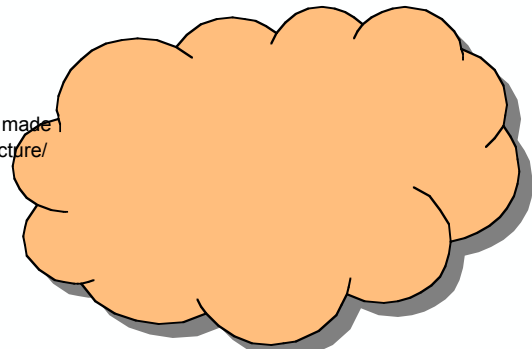
Sharable-er



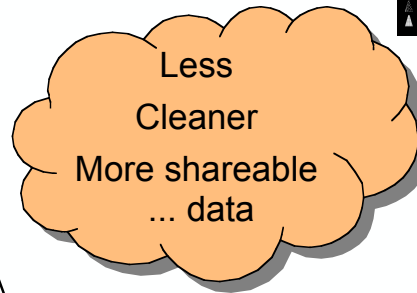
Making —Cloud— Successful



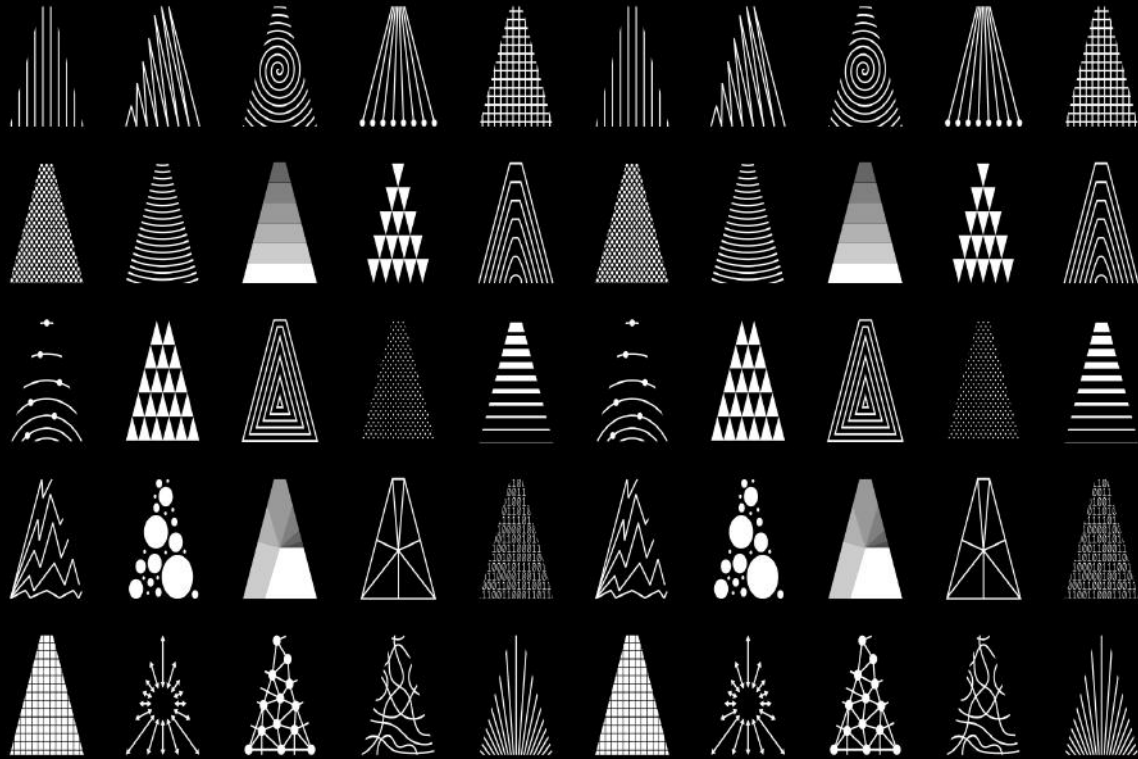
- Problems with forklifting
1. no basis for decisions made
 2. no inclusion of architecture/engineering concepts
 3. no idea that these concepts are missing from the process
 4. 80% of organizational data is ROT



Data Branding



Data Branding



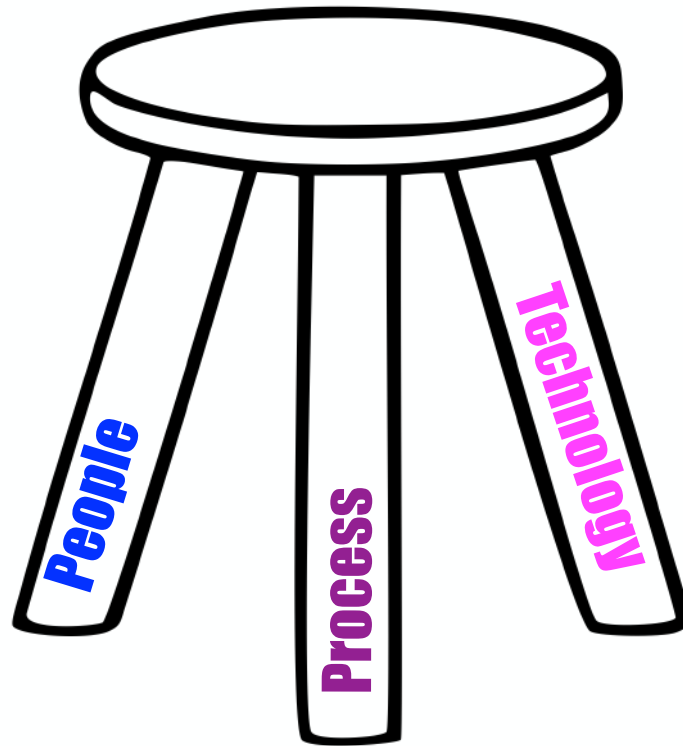
<https://mindsparklemag.com/design/arcadia-data/>



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Success Requires a 3-Legged Stool



Current approaches are not and have not been working

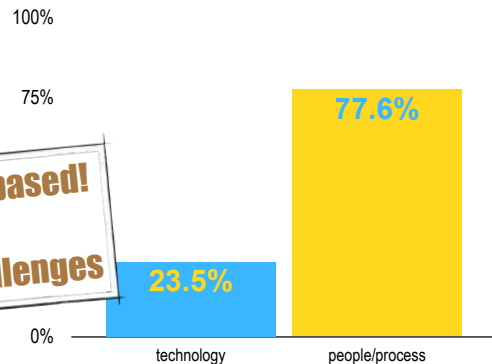
What We Learned From Top Execs About Their Big Data And AI Initiatives



Randy Bean Contributor
CIO Network Contributor Group @
Enterprise & Cloud

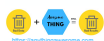
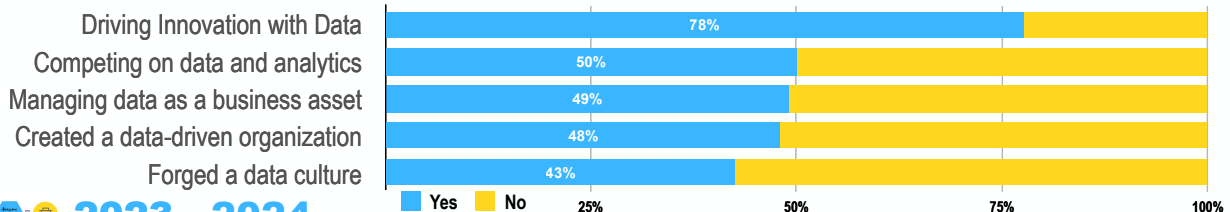
Culture still eats strategy for breakfast

This aphorism is attributed to legendary management consultant Peter Drucker, and it certainly appears to hold true for data transformation efforts. Leading companies continue to identify culture – people, process, organization, change management – as the biggest impediment to becoming data-driven organizations – 92.2%. Few companies – only 30.0% – have even developed a well-articulated data strategy that culture could eat for breakfast. There is plenty of work to be done.



80% of data challenges are people/process based!
&
DG is the only resource to address these challenges

2024



2023 → 2024



External Comprehension

Everything Else Data

Data Management

Data Governance Program

Data (blah blah blah)

Most do not appreciate the difference between Data Governance and the other data stuff that needs to be done

Data Program



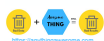
Program Overview

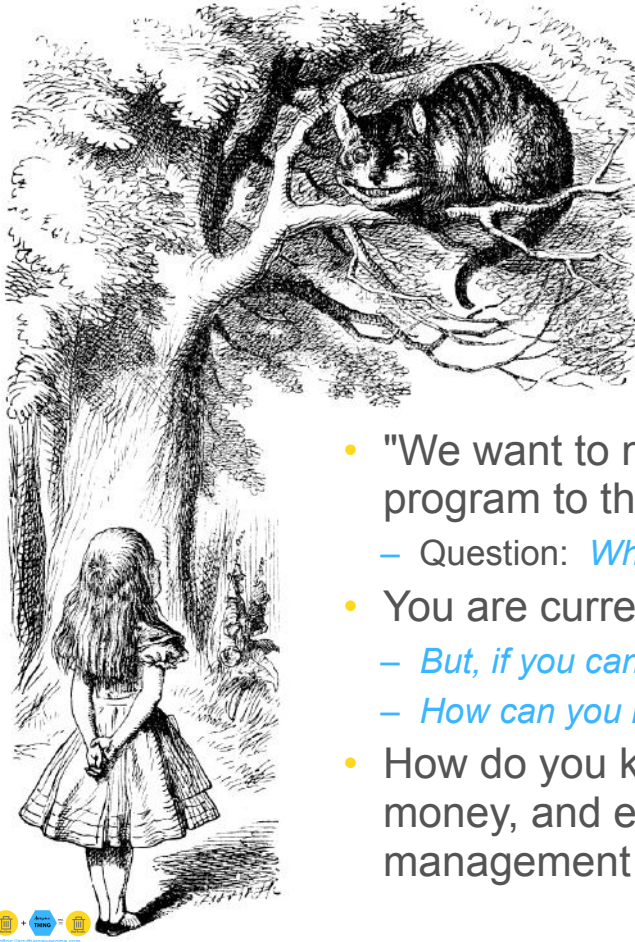
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Practicing Data Management Better



1 + 1 = 11





Motivation



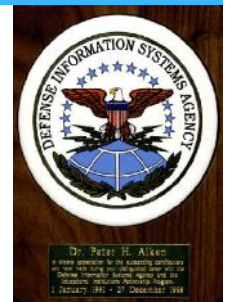
"One day Alice came to a fork in the road and saw a Cheshire cat in a tree. Which road do I take? she asked. Where do you want to go? was his response. I don't know, Alice answered. Then, said the cat, it doesn't matter."

Lewis Carroll from *Alice in Wonderland*

- "We want to move our data management program to the next level"
 - Question: *What level are you at now?*
- You are currently managing your data,
 - *But, if you can't measure it,*
 - *How can you manage it effectively?*
- How do you know where to put time, money, and energy so that data management best supports the mission?

DoD Origins

- US DoD Reverse Engineering Program Manager
- We sponsored research at the CMM/SEI asking
 - "How can we measure the performance of DoD and our partners?"
 - "Go check out what the Navy is up to!"
- SEI responded with an integrated process/data improvement approach
 - DoD required SEI to remove the data portion of the approach
 - It grew into CMMI/DM BoK, etc.



Measuring Data Management Practice Maturity: A Community's Self-Assessment



Peter Aiken, Virginia Commonwealth University/Institute for Data Research
M. David Allen, Data Blueprint
Burt Parker, Independent consultant
Angela Mattia, J. Sergeant Reynolds Community College

MITRE Corporation: Data Management Maturity Model

- Internal research project: Oct '94-Sept '95
- Based on Software Engineering Institute Capability Maturity Model (SEI CMMSM) for Software Development Projects
- Key Process Areas (KPAs) parallel SEI CMMSM KPAs, but with data management focus and key practices
- Normative model for data management required; need to:
 - Understand scope of data management
 - Organize data management key practices
- Reported as not-done-well by those who do it

Increasing data management practice maturity levels can positively impact the coordination of data flow among organizations, individuals, and systems. Results from a self-assessment provide a roadmap for improving organizational data management practices.



Melanie Mecca

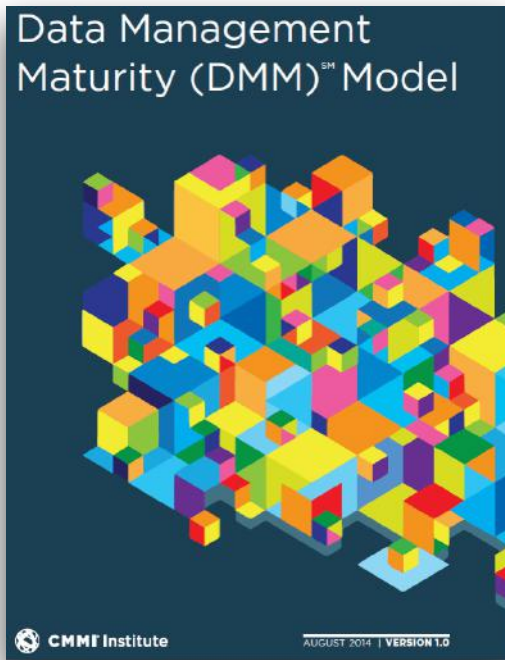
- Former CMMI Institute/Director of Data Management Products and Services → datawise.inc
- 30+ years designing and implementing strategies and solutions for private/public sectors
- Architecture/Design experience in:
 - Data Management Programs
 - Enterprise Data Architecture
 - Enterprise Architecture
- DMM's Managing Author
Certified Partner, CMMI Institute



– melanie@datawise-inc.com

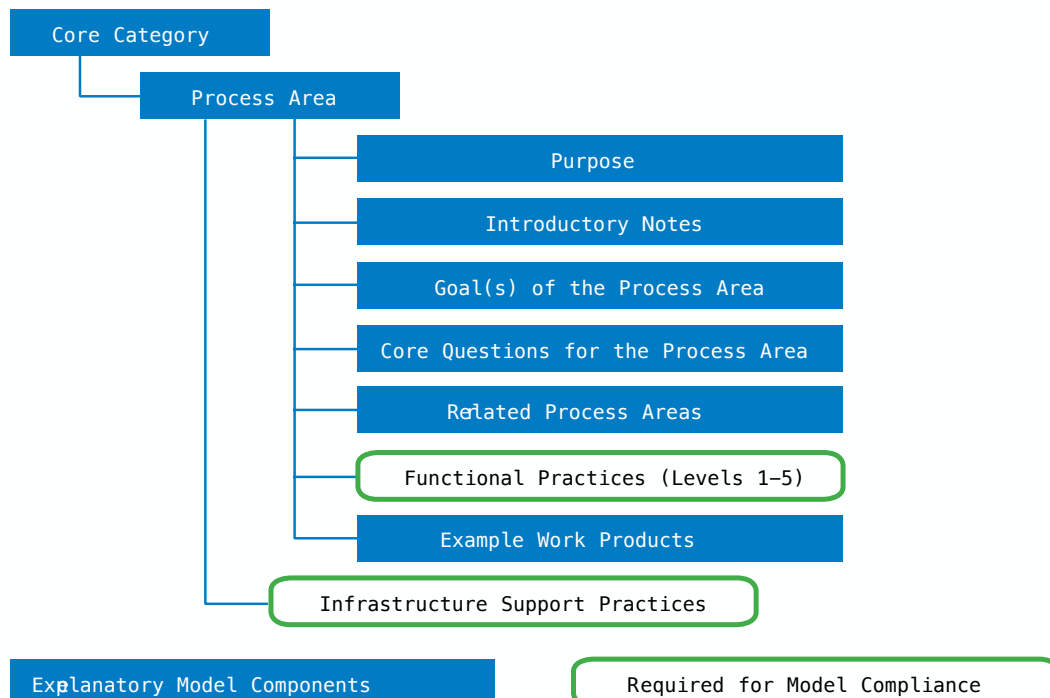


Data Management Maturity (DMM)SM Model



- DMM 1.0 released August 2014
 - 3.5 years in development
 - Sponsors – Microsoft, Lockheed Martin, Booz Allen Hamilton
 - 50+ contributing authors, 70+ peer reviewers, 80+ orgs
- Reference model framework of fundamental best practices
 - 414 specific practice statements
 - 596 functional work products
 - Maturity practices
- Measurement instrument for organizations to evaluate capabilities and maturity, identify gaps, and incorporate guidelines for improvements.

DMM Structure



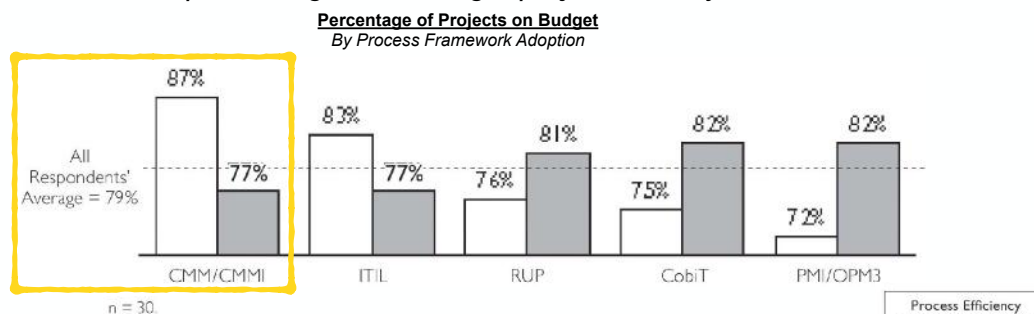
“You Are What You DO”

- Model emphasizes behavior
 - Proactive positive behavioral changes
 - Creating and carrying out effective, repeatable processes
 - Leveraging and extending across the organization
- Activities result in work products
 - Processes, standards, guidelines, templates, policies, etc.
 - Reuse and extension = maximum value, lower costs, happier staff
- Practical focus reflects real-world organizations – enterprise program evolving to all hands on deck.

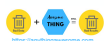
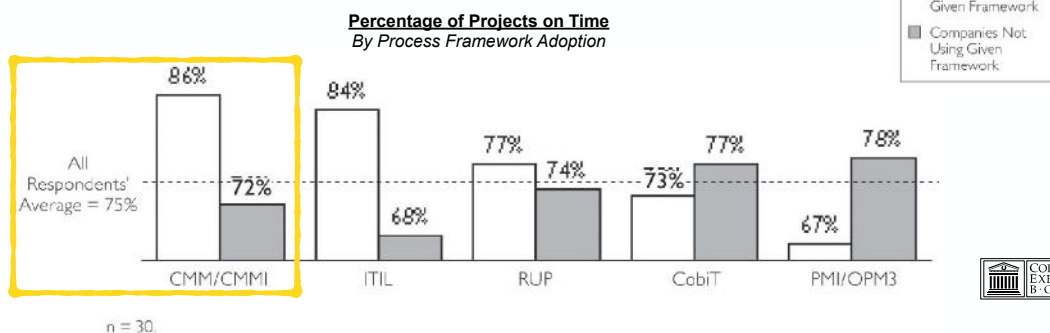


Key Finding: Process Frameworks are not Created Equal

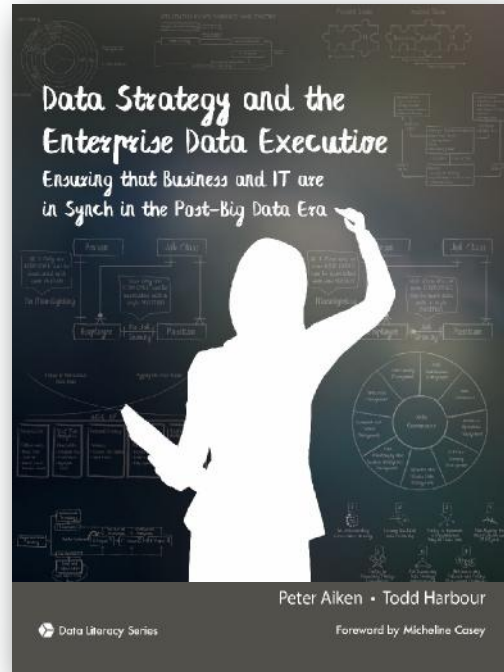
With the exception of CMM and ITIL, use of process-efficiency frameworks does not predict higher on-budget project delivery...



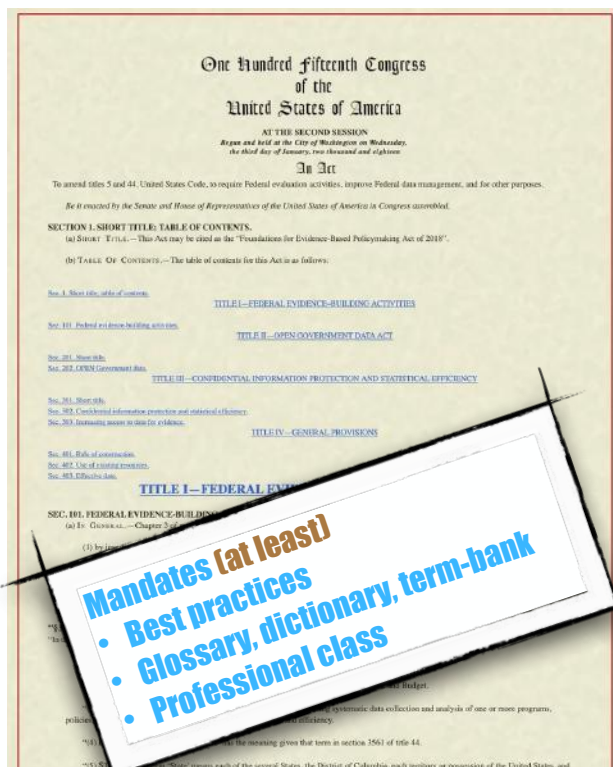
...while the same pattern generally holds true for on-time performance



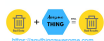
"While all improvement efforts begin with the obligatory 'assessment' phase, Carnegie Mellon's CMMI and DMM are the only proven frameworks that have the added benefit of literally decades of practice and benchmarking data. Organizations not using the DMM risk an inability to meaningfully compare results against other organizations and, as a result, adopt unproven methods."



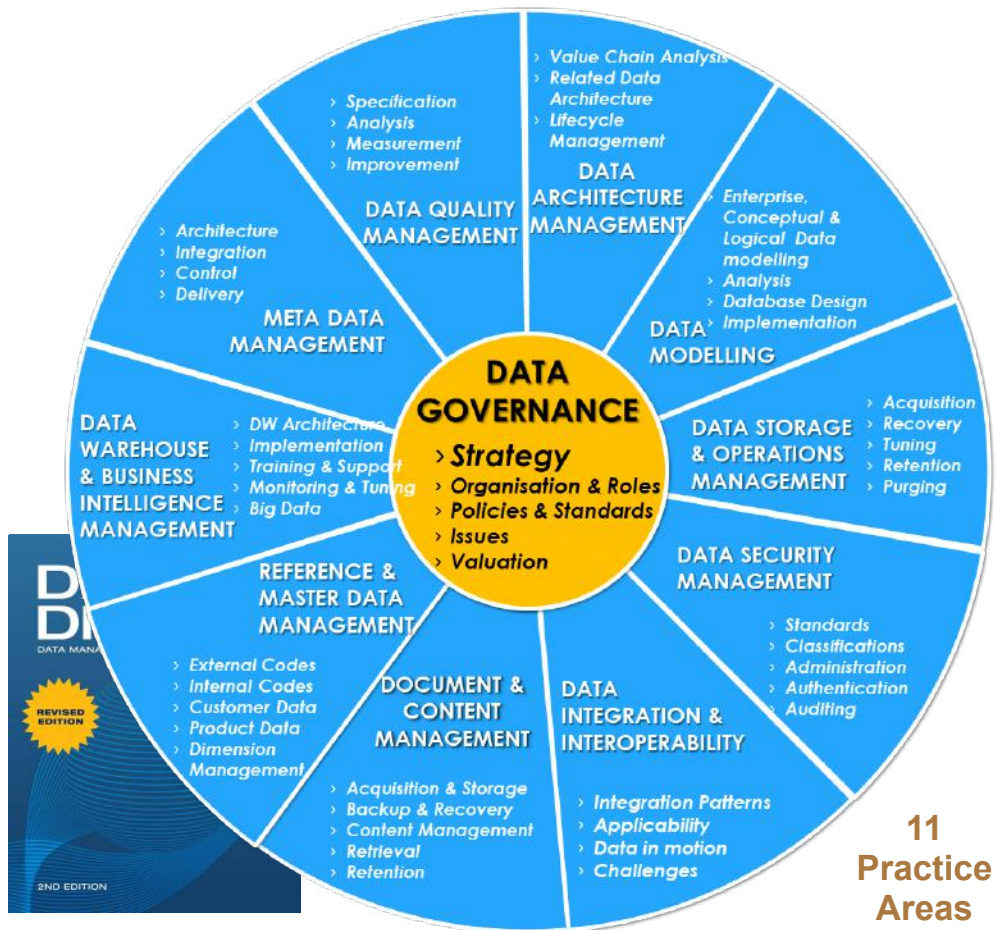
FEPA/OPEN Government Data Act 2019



- Foundations for Evidence-Based Policymaking (FEBP) Act (H.R._4174,_S._2046)
- Title II, which includes the Open, Public, Electronic, and Necessary (OPEN) Government Data Act
 - Use of open data and open models required in policy evolution
 - All federal data is open by default
 - Non-political CDOs are required
 - Penalties are higher than HIPAA



Data Management Body of Knowledge (DM BoK V2R)



11
Practice
Areas

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Our barn had to pass a foundation inspection

- Before further construction could proceed
- It makes good business sense
- No IT equivalent

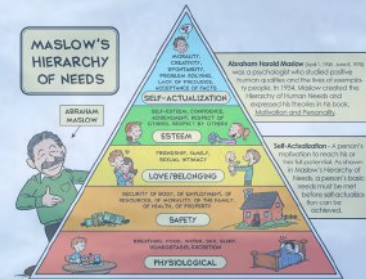
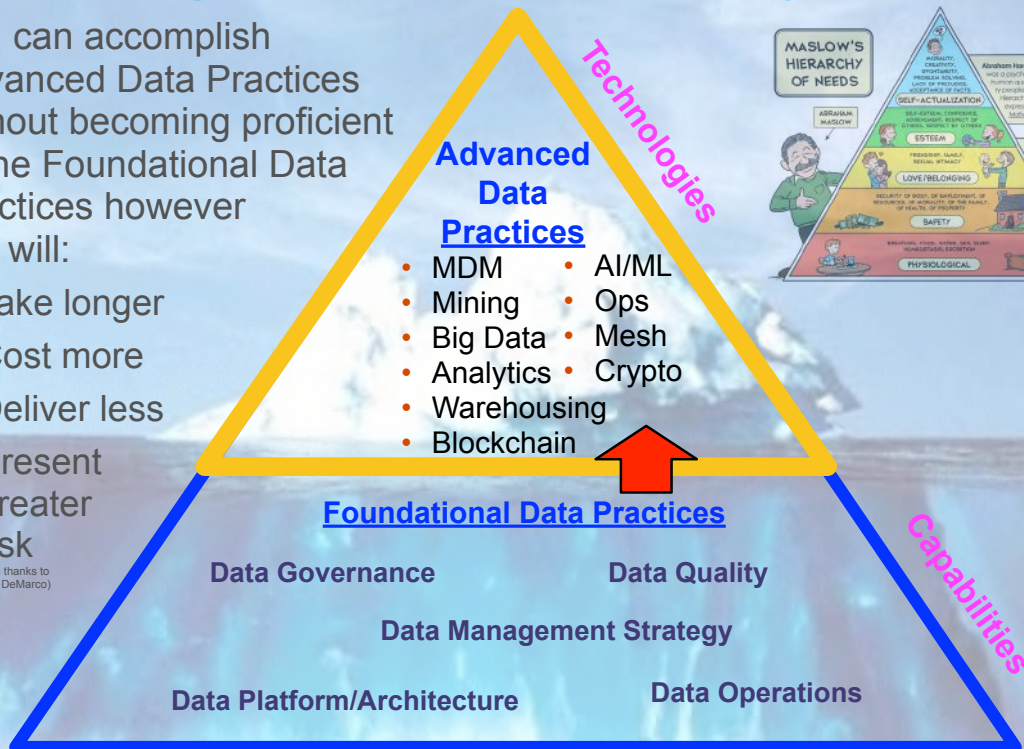


Data Management Practices Hierarchy

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

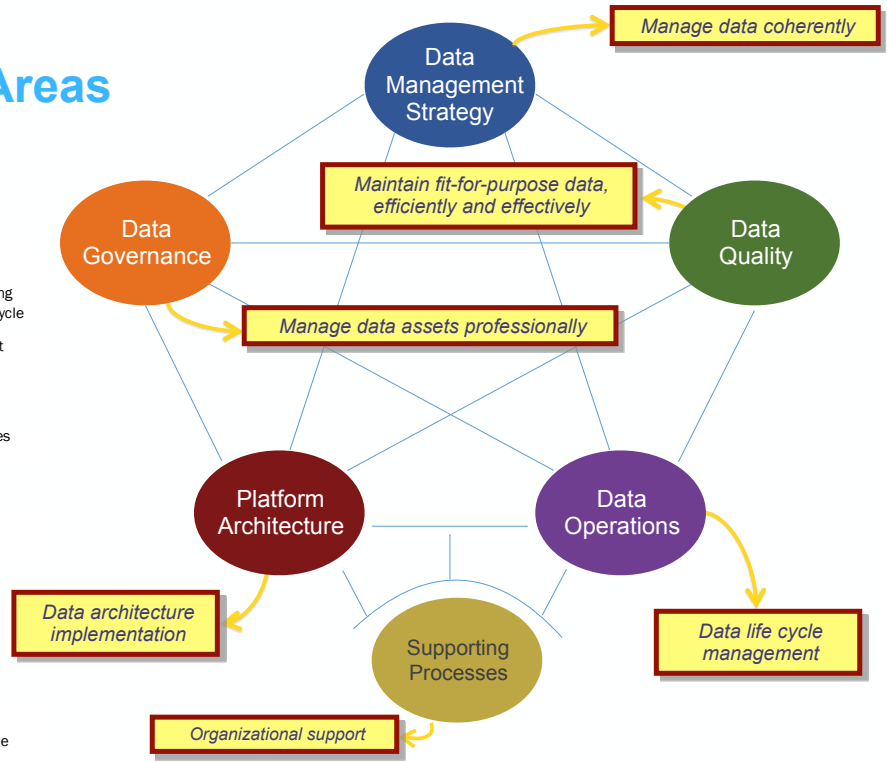
- Take longer
- Cost more
- Deliver less
- Present greater risk

(with thanks to Tom DeMarco)



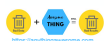
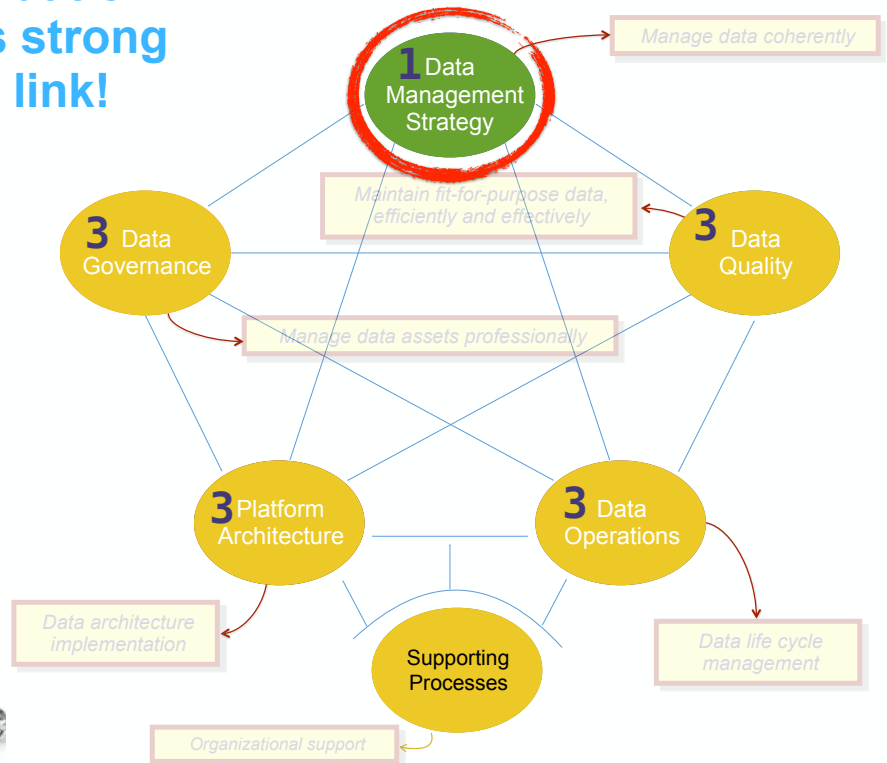
DMMSM Structure of 5 Integrated DM Practice Areas

Component	Process Areas
Data Management Strategy	Data Management Goals Corporate Culture Data Management Funding Data Requirements Lifecycle
Data Governance	Governance Management Business Glossary Metadata Management
Data Operations	Standards and Procedures Data Sourcing
Data Quality	Data Quality Framework Data Quality Assurance
Platform & Architecture	Architectural Framework Platforms & Integration
Supporting Processes	Measurement & Analysis Process Management Process Quality Assurance Risk Management Configuration Management



Your data foundation can only be as strong as its weakest link!

5	Optimized
4	Measured
3	Defined
2	Managed
1	Initial





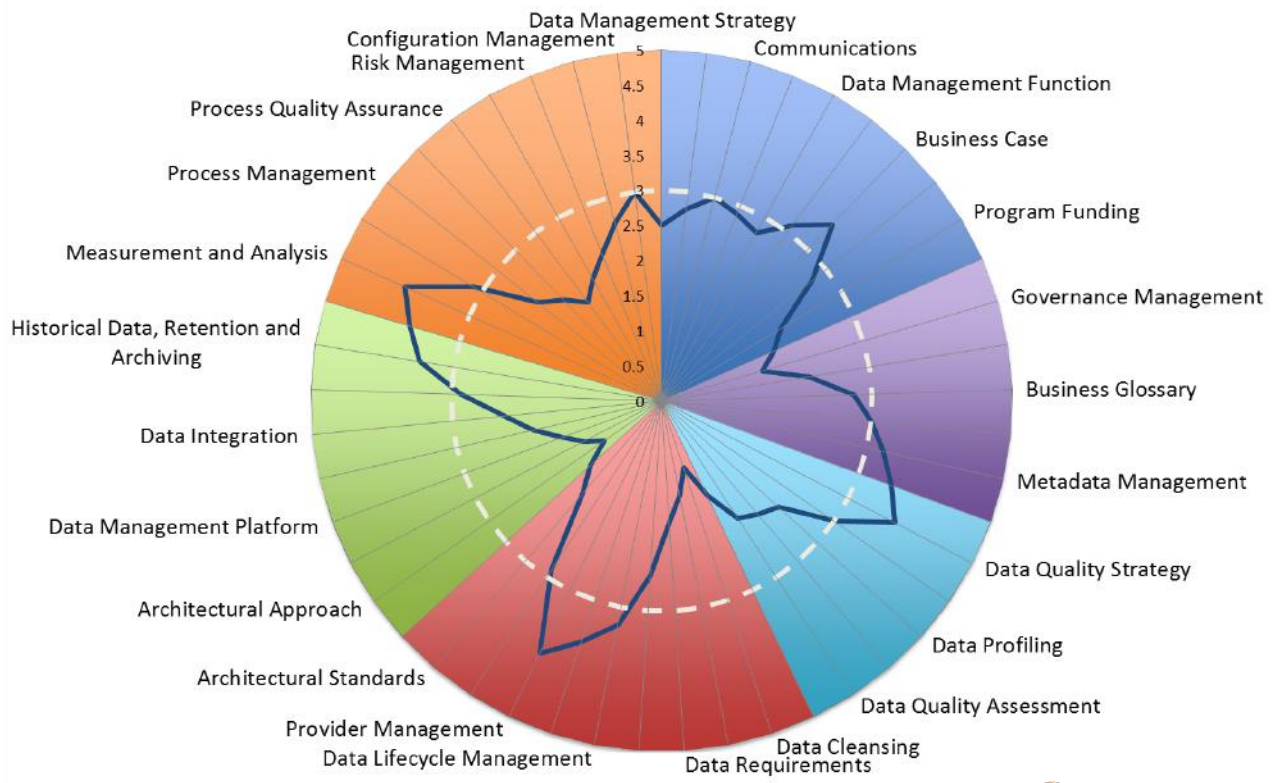
Assessment Components



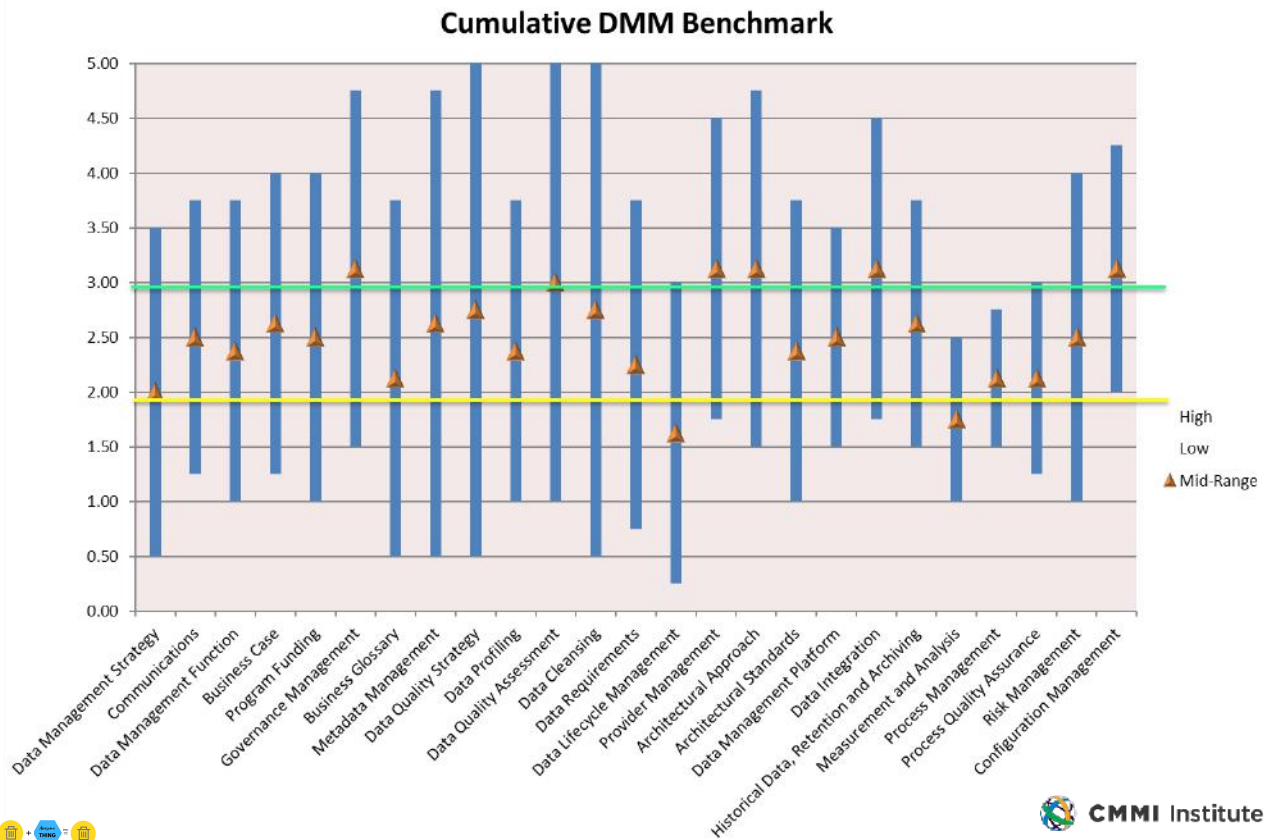
Data Management Practice Areas		Capability Maturity Model Levels	Examples of practice maturity
Data Management Strategy	DM is practiced as a coherent and coordinated set of activities	1 – Performed	Our DM practices are ad hoc and dependent upon "heroes" and heroic efforts
Data Quality	Delivery of data is support of organizational objectives – <i>the currency of DM</i>	2 – Managed	We have DM experience and have the ability to implement disciplined processes
Data Governance	Designating specific individuals caretakers for certain data	3 – Defined	We have standardized DM practices so that all in the organization can perform it with uniform quality
Data Platform/Architecture	Efficient delivery of data via appropriate channels	4 – Measured	We manage our DM processes so that the whole organization can follow our standard DM guidance
Data Operations	Ensuring reliable access to data	5 – Optimized	We have a process for improving our DM capabilities



Sample Assessment Summary



Cumulative Benchmark – Multiple organizations



Assessments

ASSESSMENT

- It is generally not worth a lot of investment to discover that you are at the very beginning of your journey
- Use it to uncover previously unknown pockets of excellence
- First plan should be examine the feasibility of expanding these to other parts of the organization

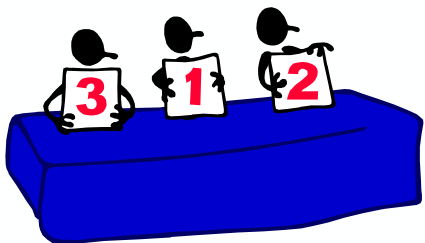


POCKETS OF EXCELLENCE



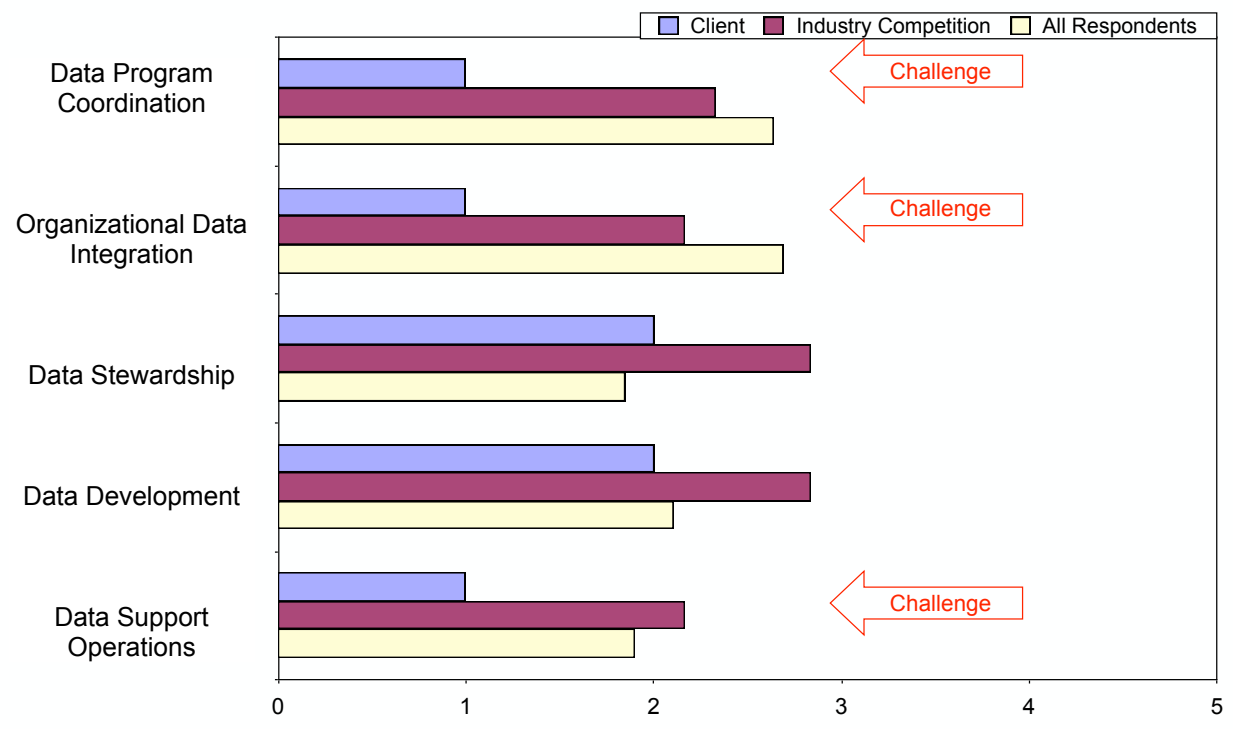
Industry Focused Results

- CMU's Software Engineering Institute (SEI) Collaboration
- Results from hundreds organizations in various industries including:
 - ✓ Public Companies
 - ✓ State Government Agencies
 - ✓ Federal Government
 - ✓ International Organizations
- Defined industry standard
- Steps toward defining data management "state of the practice"

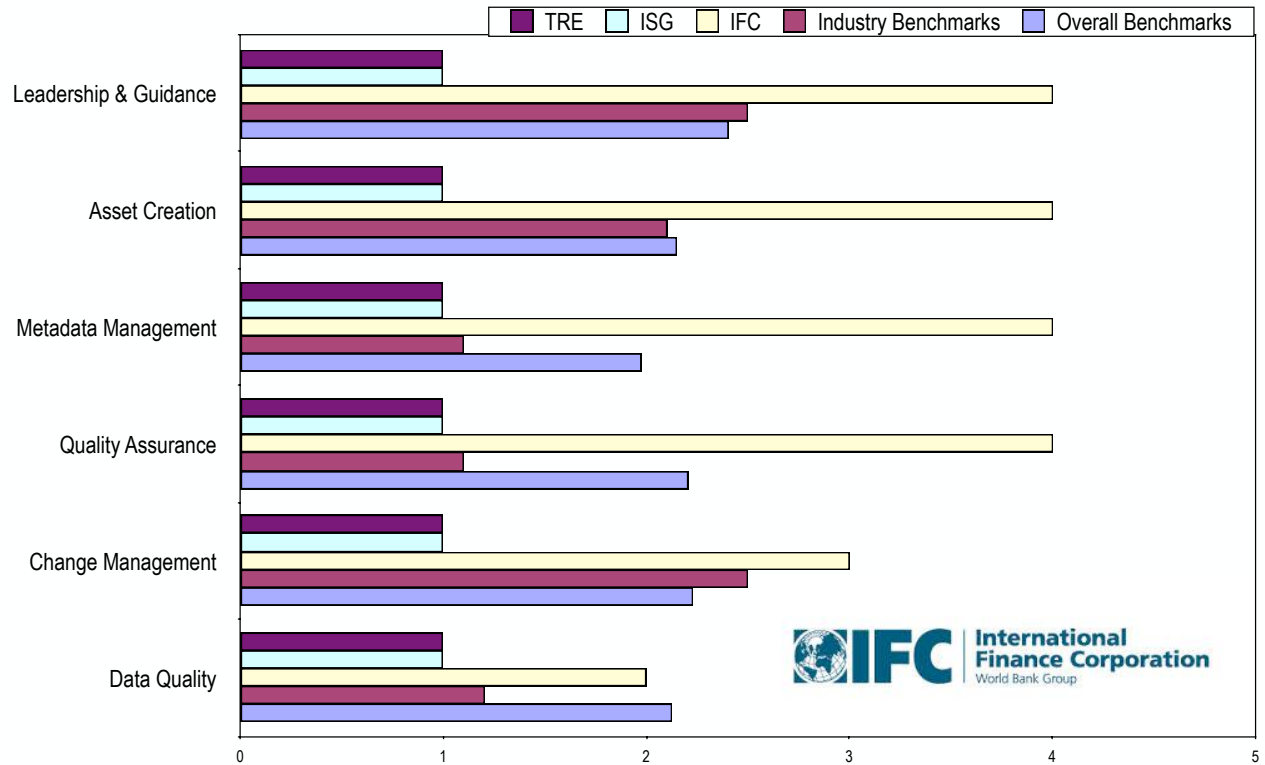


	Initial (I)	Managed (II)	Defined (III)	Measured (IV)	Optimized (V)
Data Management Strategy	Red	Yellow	Focus: Guidance and Facilitation		
Data Governance	Red	Yellow	Yellow	Yellow	Yellow
Platform & Architecture	Red	Green	Green	Green	Green
Data Quality	Red	Green	Focus: Implementation and Access		
Data Operations	Red	Green	Green	Green	Green

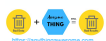
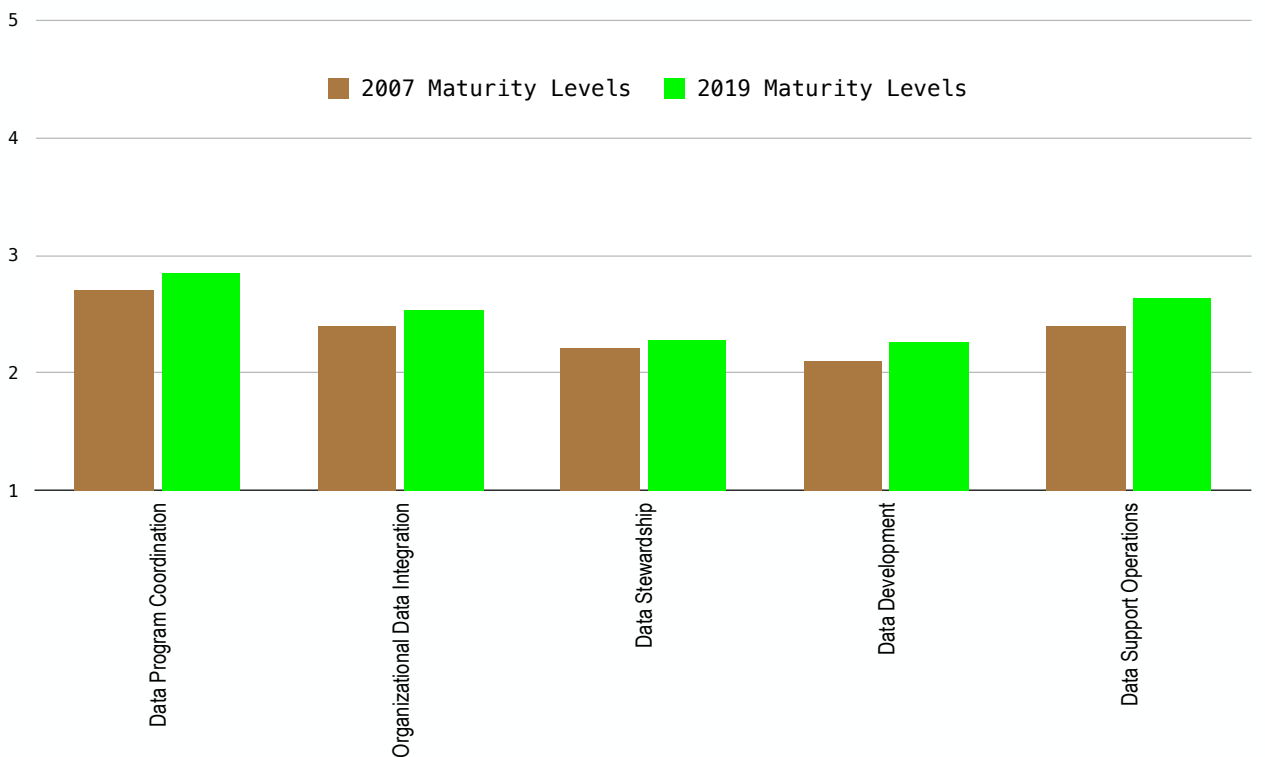
Data Management Practices Assessment



High Marks for IFC's Audit



Comparison of DM Maturity 2007-2019



How Literate are we?



What is NAAL?

- a **N**ationally representative **A**ssessment of English **L**iteracy among American **A**dults age 16 and older NAAL → PIAAC (Program for the International Assessment of Adult Competencies)
- PIAAC assesses three key competencies for 21st-century society and the global economy

- **Literacy**

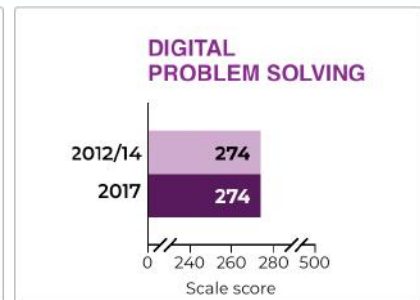
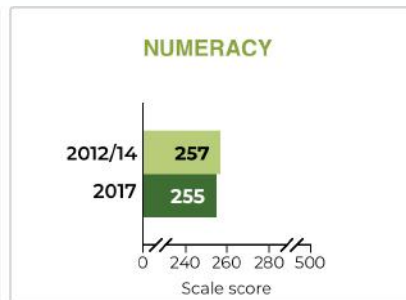
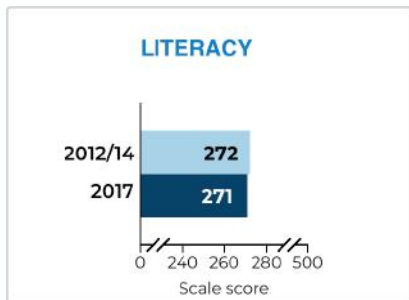
the ability to understand, use, and respond appropriately to written texts.

- **Numeracy**

the ability to use basic mathematical and computational skills.

- **Digital Problem Solving**

the ability to access/interpret information in digital environments to perform practical tasks.



https://nces.ed.gov/surveys/piaac/current_results.asp

- No statistically significant differences from 2012/14 to 2017!

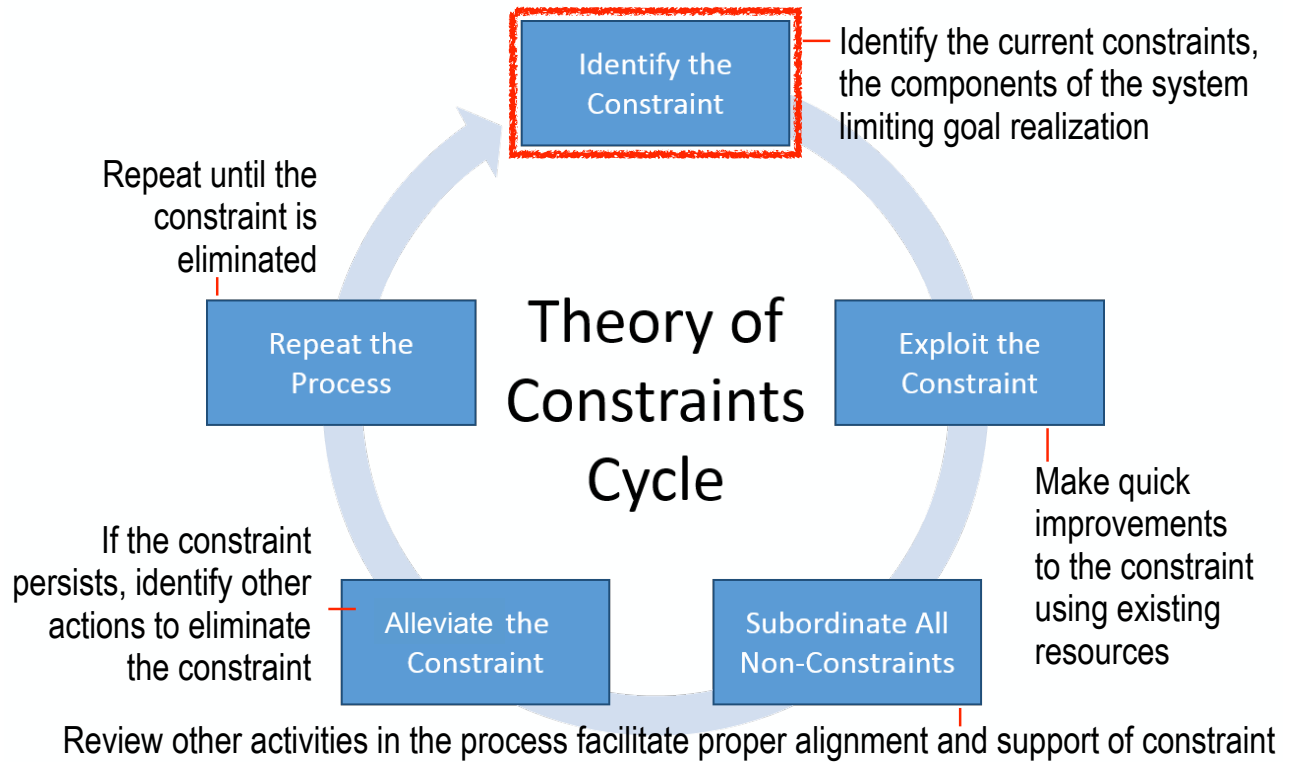


Strategy Guides Workgroup Activities

A pattern
in a stream
of decisions



Theory of Constraints - Generic

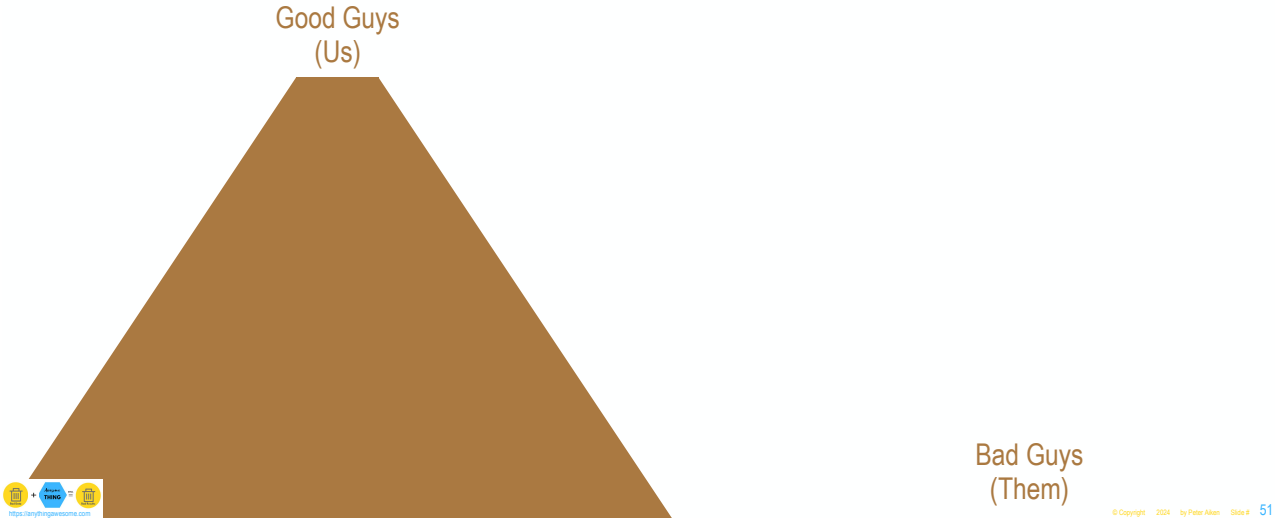


Strategy Example 1

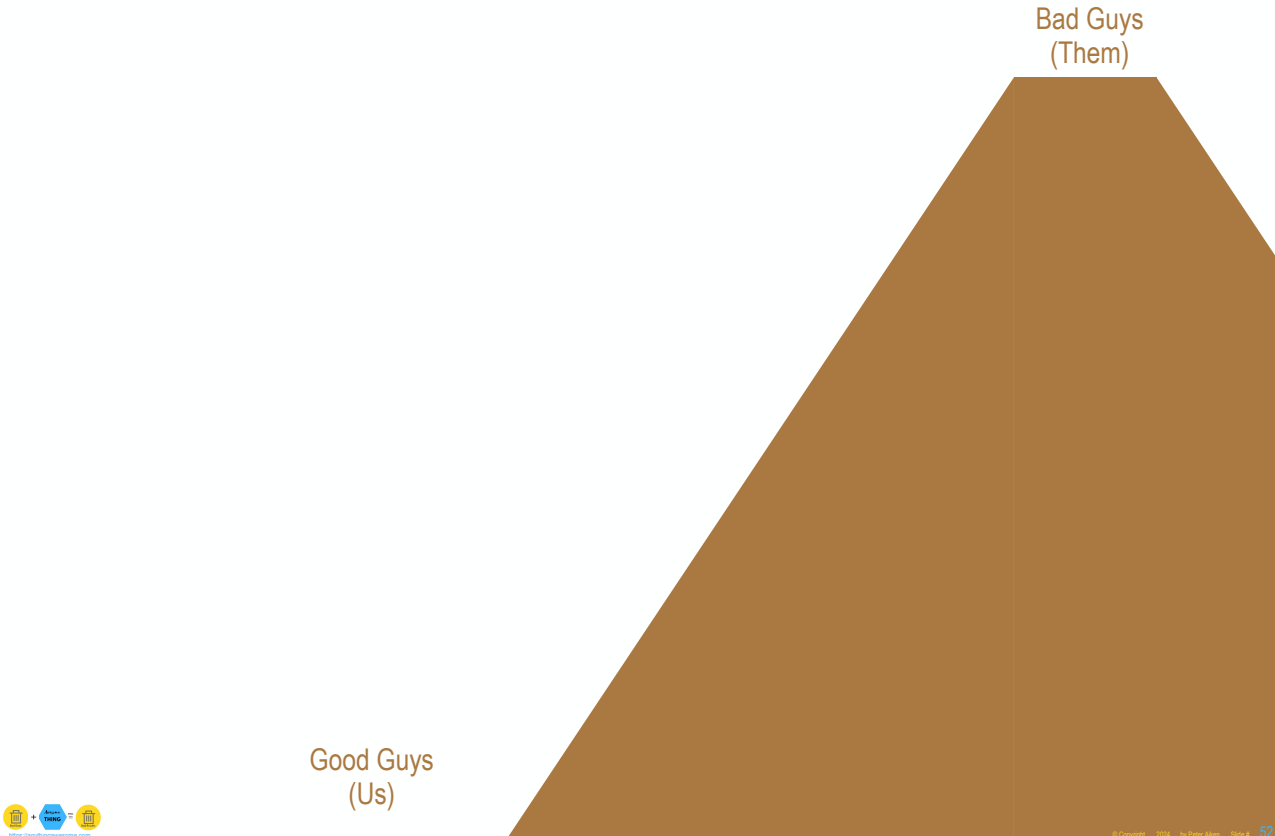
Good Guys
(Us)

Bad Guys
(Them)

Strategy Example 2



Strategy Example 3



General Dwight D. Eisenhower



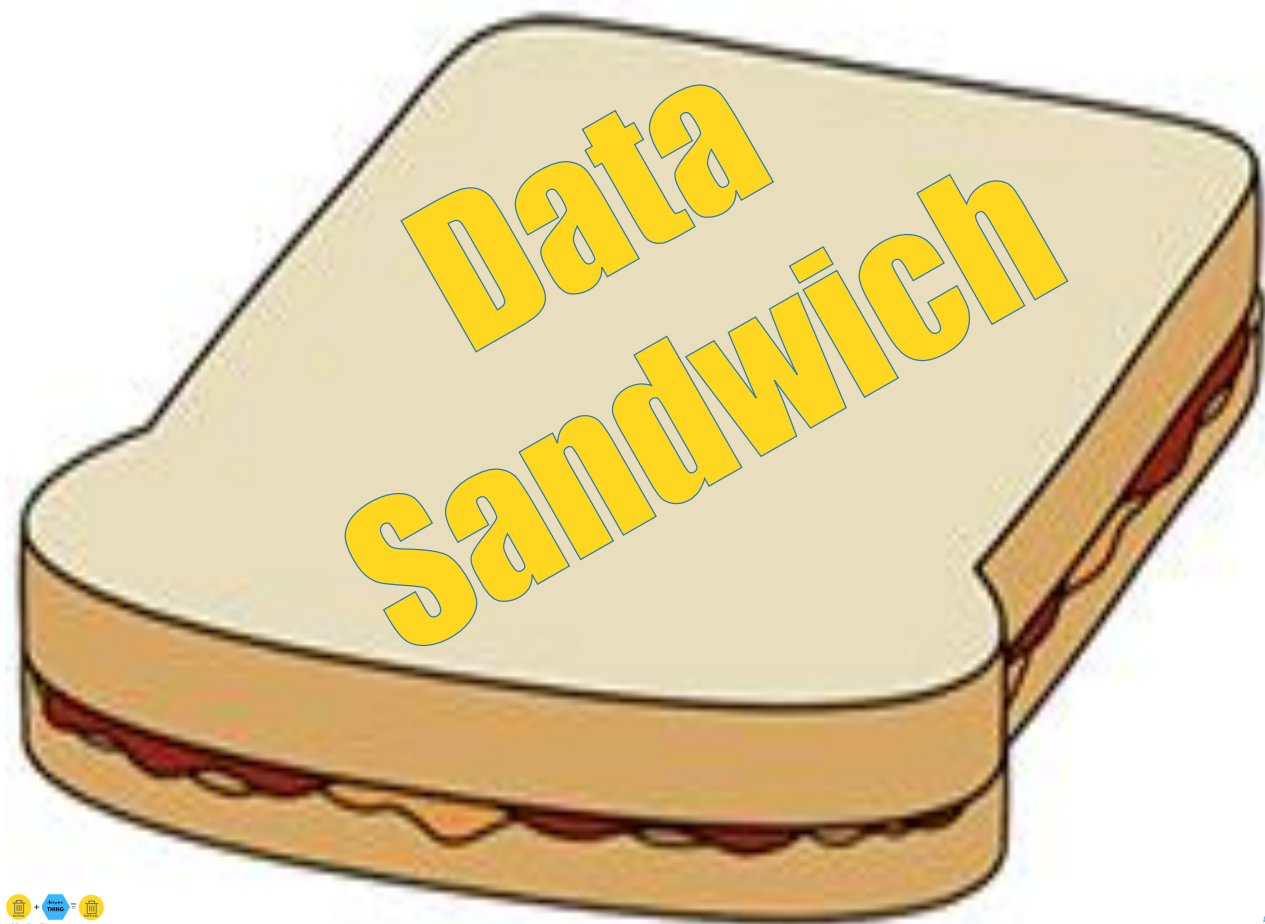
Military Plan



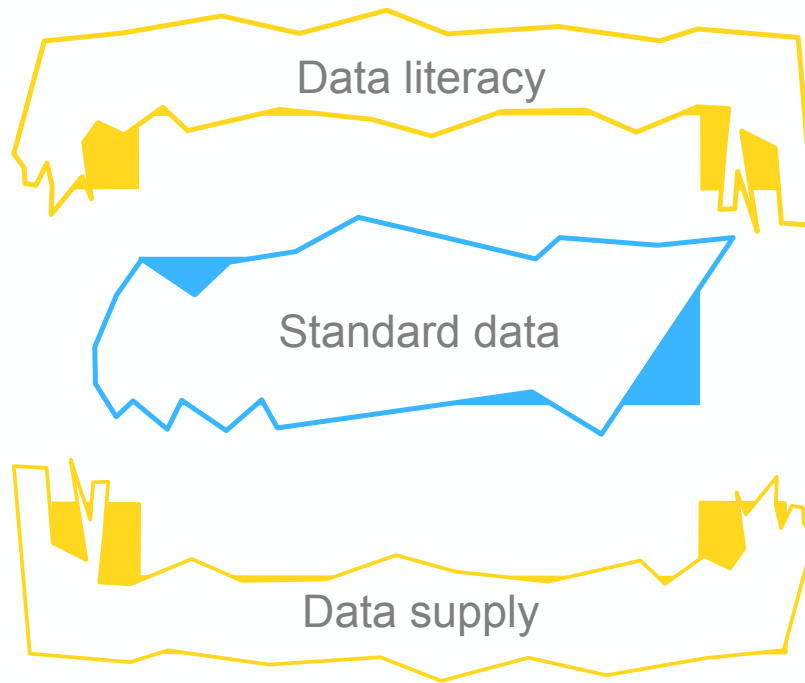
Dwight Eisenhower

“In preparing for battle I have always found that plans are useless, but planning is indispensable ...”

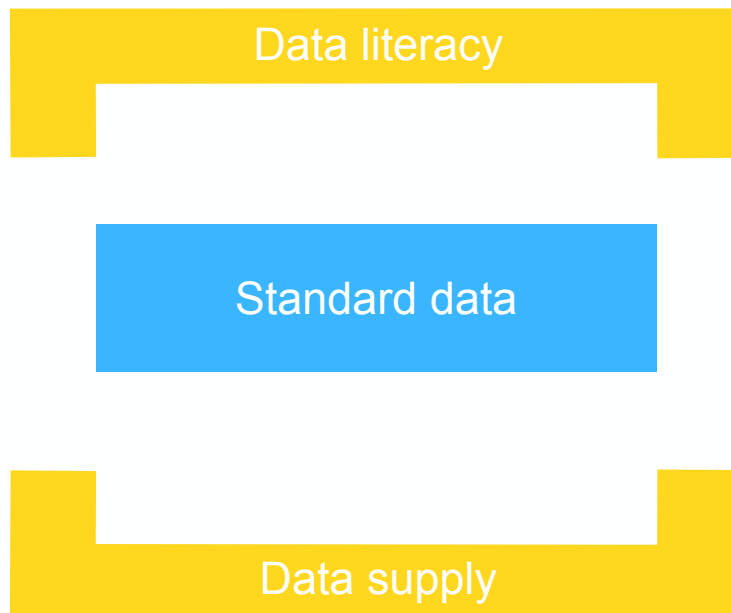
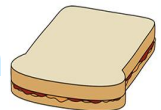
<https://quoteinvestigator.com/2017/11/18/planning/>



Leverage point - high performance automation



Leverage point - high performance automation



Leverage point - high performance automation

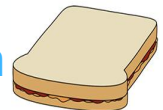


This cannot happen without investments in engineering and architecture!



**Quality engineering/
architecture work products
do not happen accidentally!**

Leverage point - high performance automation



This cannot happen without investments in data engineering and architecture!

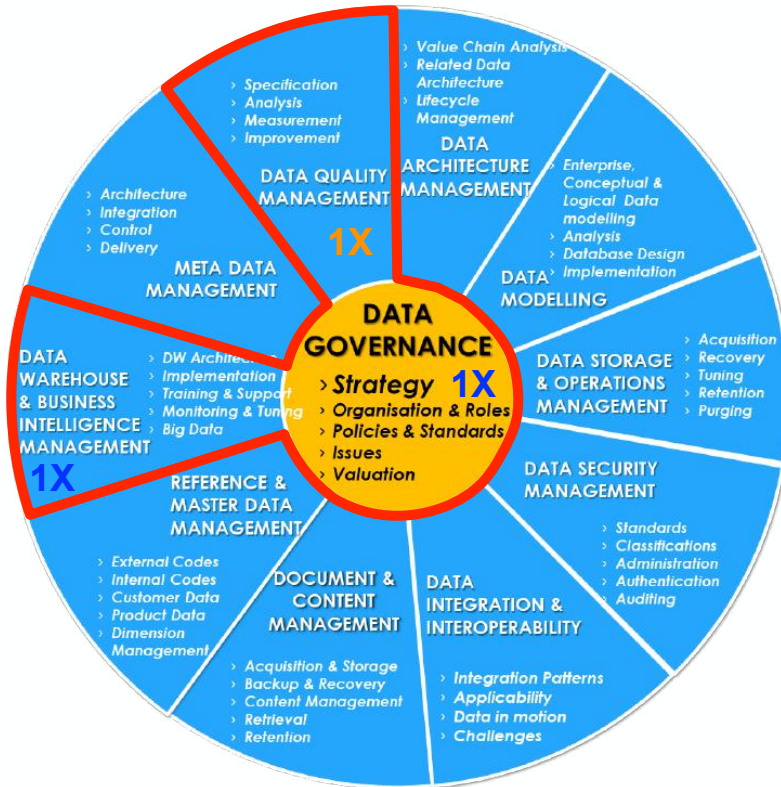
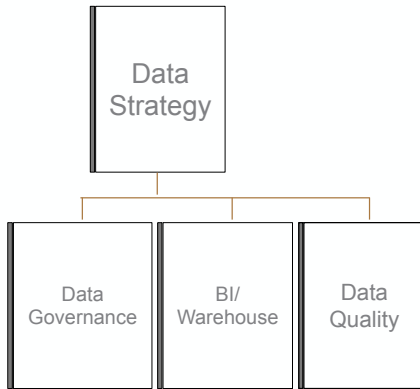


**Quality data engineering/
architecture work products
do not happen accidentally!**

Version 1



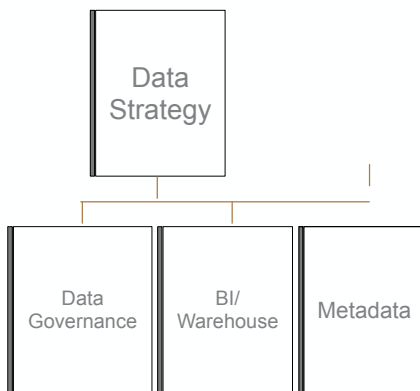
Perfecting operations in 3 data management practice areas



Version 2

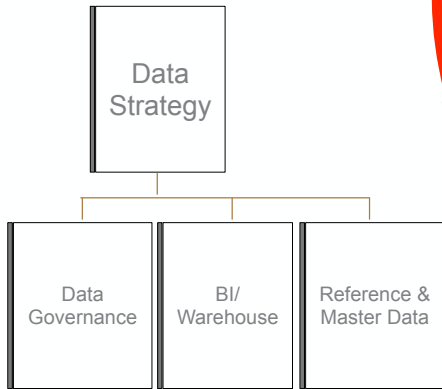


Perfecting operations in 3 data management practice areas

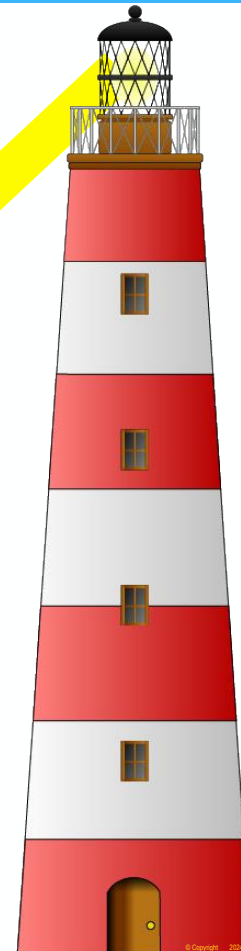




Perfecting operations in 3 data management practice areas



Lighthouse Projects Provide Focus





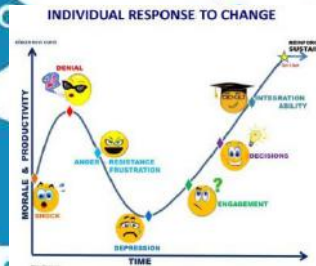
Program Overview

- Motivation
 - Frustration—we are unsatisfied with current state
 - Are we making progress? (No)
- How did we get here? (Building on proven research)
 - DoD → SEI → MITRE → CMMI
 - Industry push for best practices
- Ingredients
 - What is the Data Maturity Model? (DMM)
 - Body of Knowledge (DM BOK)
- Understanding and applying them together
 - Weakest link in the chain architecture
 - Just a bit on strategy
 - Three legged stool
 - How does one get to Carnegie Hall?
- Where to next?
- Q & A?

Practicing
Data Management
Better



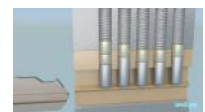
Change Management & Leadership



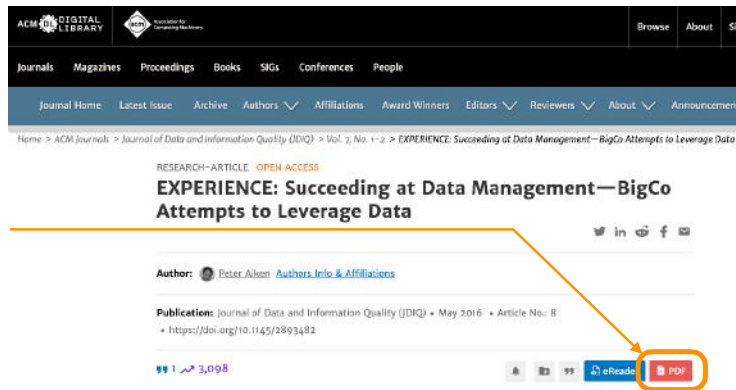
Diagnosing Organizational Readiness

	+	Skills	+	Incentive	+	Resources	+	Action Plan	=	Confusion
Vision	+		+	Incentive	+	Resources	+	Action Plan	=	Anxiety
Vision	+	Skills	+		+	Resources	+	Action Plan	=	Gradual Change
Vision	+	Skills	+	Incentive	+		+	Action Plan	=	Frustration
Vision	+	Skills	+	Incentive	+	Resources	+		=	False Starts
Vision	+	Skills	+	Incentive	+	Resources	+	Action Plan	=	Change

Culture is the biggest impediment to a shift in organizational thinking about data!



No cost, no registration case study download



- Download

— <http://dl.acm.org/citation.cfm?doi=2888577.2893482>

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

PETER AIKEN, Virginia Commonwealth University/Data Blueprint

In a manner similar to most organizations, BigCompany (BigCo) was determined to benefit strategically from its widely recognized and vast quantities of data. (U.S. government agencies make regular visits to BigCo to learn from its experiences in this area.) When faced with an explosion in data volume, increases in complexity, and a need to respond to changing conditions, BigCo struggled to respond using a traditional, information technology (IT) project-based approach to address these challenges. As BigCo was not data knowledgeable, it did not realize that traditional approaches could not work. Two full years into the initiative, BigCo was far from achieving its initial goals. How much more time, money, and effort would be required before results were achieved? Moreover, could the results be achieved in time to support a larger, critical, technology-driven challenge that also depended on solving the data challenge? While these questions remain unanswered, these considerations increase our collective understanding of data assets as separate from IT projects. Only by reenvisioning data as a strategic asset can organizations begin to address these new challenges. Transformation to a data-driven culture requires far more than technology, which remains just one of three required "steel legs" (people and process being the other two). Seven prerequisites to effectively leveraging data are necessary, but insufficient awareness exists in most organizations—hence, the widespread misfires in these areas, especially when attempting to implement the so-called big data initiatives. Refocusing on foundational data management practices is required for all organizations, regardless of their organizational or data strategies.

Categories and Subject Descriptors: H.2.0 [Information Systems]: Database Management—General; E.0 [Data]: General

General Terms: Management, Performance, Design

Additional Key Words and Phrases: Data management, data governance, data stewardship, organizational design, CDO, CIO, chief data officer, chief information officer, data, data architecture, enterprise data executive, IT management, strategy, policy, enterprise architecture, information systems, conceptual modeling, data integration, data warehousing, analytics, and business intelligence, BigCo

ACM Reference Format:

Peter Aiken. 2016. Experience: Succeeding at data management—BigCo attempts to leverage data. *J. Data and Information Quality* 7, 1–2, Article 8 (May 2016), 35 pages.
DOI: <http://dx.doi.org/10.1145/2888577>

1. CASE INTRODUCTION

Good technology in the hands of an inexperienced user rarely produces positive results.

Everyone wants to “leverage” data. Today, this is most often interpreted as investments in warehousing, analytics, business intelligence (BI), and so on. After all, that is what you do with an asset—you leverage it—so the asset can help you to attain strategic objectives; see Redman [2008] and Ladley [2010]. Widespread and pervasive

Author's address: P. Aiken, 10124C West Broad Street, Glen Allen, VA 23060; email: peteraiken@vcu.edu. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions.acm.org.
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ACM ISBN: 1555-2016/16/05-ART8 \$15.00
DOI: <http://dx.doi.org/10.1145/2888577>

ACM Journal of Data and Information Quality, Vol. 7, No. 1–2, Article 8. Publication date: May 2016.



Big changes – Aiken’s Four Data Truths

1. Data volume is still increasing faster than we are able to process it,
2. Data interchange overhead and other costs of poor data practices are measurably sapping organization and individual resources—and therefore productivity,
3. Reliance on existing technology-based approaches and education methods has not materially addressed this gap between creation and processing or reduced bottom line costs, &
4. There exists an industry-type, whose sole purpose is to extract data from citizens and then use it for to make money.



1. Process is more important than results at first
2. Failure is itself a lesson
3. People and process aspects are not receiving enough attention
4. Best practices do exist



Upcoming Events

Time: 19:00 UTC (2:00 PM NYC) | Presented by: Peter Aiken, PhD

Data Strategy Best Practices

14 January 2025



Data Modeling Fundamentals

11 February 2025

The Roles of Data Stewards

11 March 2025

Brought to you by:

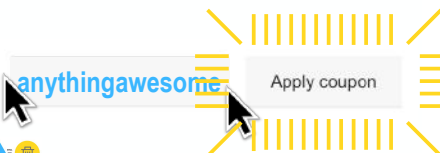


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Data Strategy and the Enterprise Data Executive

Ensuring that Business and IT are in Synchrony in the Post-Big Data Era

[Learn More of Data Strategy](#)



The Case for the Chief Data Officer

Recasting the C-Suite to Leverage Your Most Valuable Asset

(The Chinese Translation Title is: Chief Data Officer Combat)

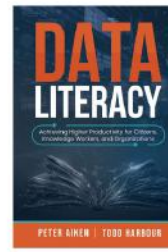
[Learn More of the Case for Data Leadership](#)



Monetizing Data Management

17 Case Studies Illustrating How Data Leveraging (Big and Small) Can Produce Quantifiable Results That Are of Keen Interest to C-Suite Occupants

[Learn More of Monetizing Data](#)



Data Literacy: Achieving Higher Productivity for Citizens, Knowledge Workers, and Organizations

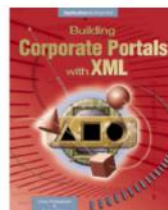
Citizens and organizations need to improve their data literacy to 'do more with data'

[Learn More of Data Literacy](#)



Data Reverse Engineering

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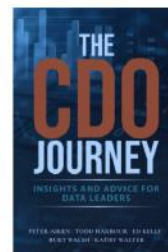
Building Corporate Portals with XML

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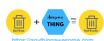
XML in Data Management

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The CDO Journey: Insights and Advice for Data Leaders

[Learn More of the CDO Journey](#)



<https://anythingsawesome.com>

Slide 70

Critical Design Review?

Mentoring?

Executive Data Literacy Training?

Collaboration?



Peter.Aiken@AnythingAwesome.com +1.804.382.5957



Independent Verification & Validation

Reverse Engineering Expertise?

Hiring Assistance?

Thank You!

Use your data more strategically?

Tool/automation evaluation?



Book a call with Peter to discuss anything - <https://anythingawesome.com/OfficeHours>