35TH ANNIVERSARY

VISION 2016
TAKE CONTROL
A ROADMAP FOR GROWTH

#vision2016

The new standard for financial data management

What **you** can learn from BCBS 239

Experian®

Getting more from what you have

Image source: www.atarlife.com

Image source: www.123rf.com

Introducing:

- **John Bottega**
  Enterprise Data Management Council

- **David Bresnick**
  Experian

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Data management
How did we get here???

The Mainframe → PCs → [ENRON, Orange County California, LTCM The financial technology company] → KYC, 9/11, AML → [battle scene] → [money, coin, man] → [network] → [Bank, arch] → EXTRA! EXTRA! OMG!!

Financial crisis through the data lens

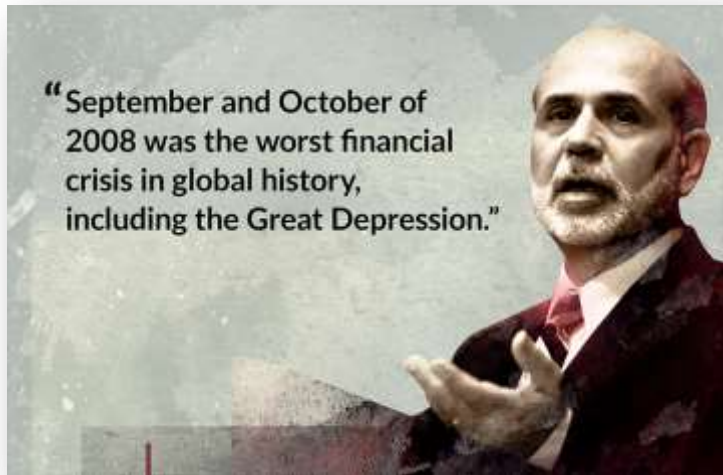"September and October of 2008 was the worst financial crisis in global history, including the Great Depression."
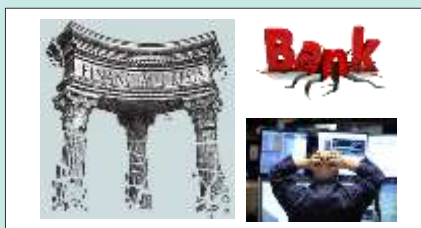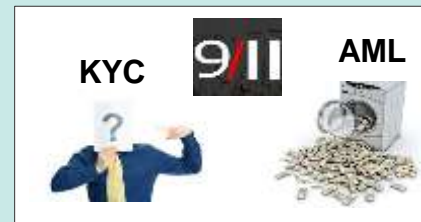
Impact of Bad Data

Gaps in the quality and completeness of our data contributed to the crisis by leaving the decision makers without the important and timely information they needed to make sound decisions.

Data was not the cause of the crisis, but...

Data quality was poor...

- Lacked accuracy, completeness, timeliness
- Did not adhere to standards (disparate; inconsistent; siloed)
- Critical components (lineage; linkages; hierarchies) were not present
- Process to collect and normalize data (Data Supply Chain) malfunctioned

More was NOT better

- We had plenty of data, but it was not actionable
- Data was not harmonized (data could not be easily compared or aggregated)
- Data was not uniquely identified
- Data did not satisfy business and risk requirements

Financial crisis through the data lens

Consider the role that mortgage data played during the crisis

Looking at the collateralization process...

Mortgages → **SOLD** → Banks → **COMBINED** → Pools → **COLLATERALIZED** → Structured products → **SLICED** → Tranches

Data issues along the supply chain

- Bits and pieces of descriptive data are not carried through each step of the process
- Linkages to the underlying loans become broken or obscured
- Slicing and dicing created a wedge of abstraction between the original loans and the newly created investment vehicles

The result:

- Critical information about the underlying loans became so abstracted from the financial product in hand that it became increasingly difficult, if not impossible, to truly assess the true value (and risk) of that instrument
- And when the perfect storm materialized – home values dropped and adjustable mortgages adjusted up – mortgages began to default leaving decision makers without the proper information needed to assess and react

Financial crisis through the data lens

Consider the events of the Lehman collapse

Unique entity identification and legal hierarchy did not holistically exist

- Unable to uniquely identify financial entities
- Unable to understand the complex relationships of parent to sub, entity to sub-entity
- Unable to understanding of the systemic impact of one entity onto another

Data was not readily available….

- The "raw materials" were not there
  - ► There was no standard way to identify Lehman and her entities cross the industry
  - ► There was no clear understanding of the Lehman organizational structure
  - ► There was not way to fully understand and predict the impact across the industry

BCBS 239
Risk data aggregation

Basel Committee
on Banking Supervision

Principles for effective risk
data aggregation and risk
reporting

January 2013

BANK FOR INTERNATIONAL SETTLEMENTS

Principles for effective risk data aggregation and risk reporting

"One of the most significant lessons learned from the global financial crisis that began in 2007 was that banks' information technology (IT) and data architectures were inadequate to support the broad management of financial risks…This had severe consequences to the banks themselves and to the stability of the financial system as a whole."

Principle-based directive

RDA is NOT regulation – instead, it is a principles-based initiative focused on identifying data as critical factors of input to and effective risk management framework.
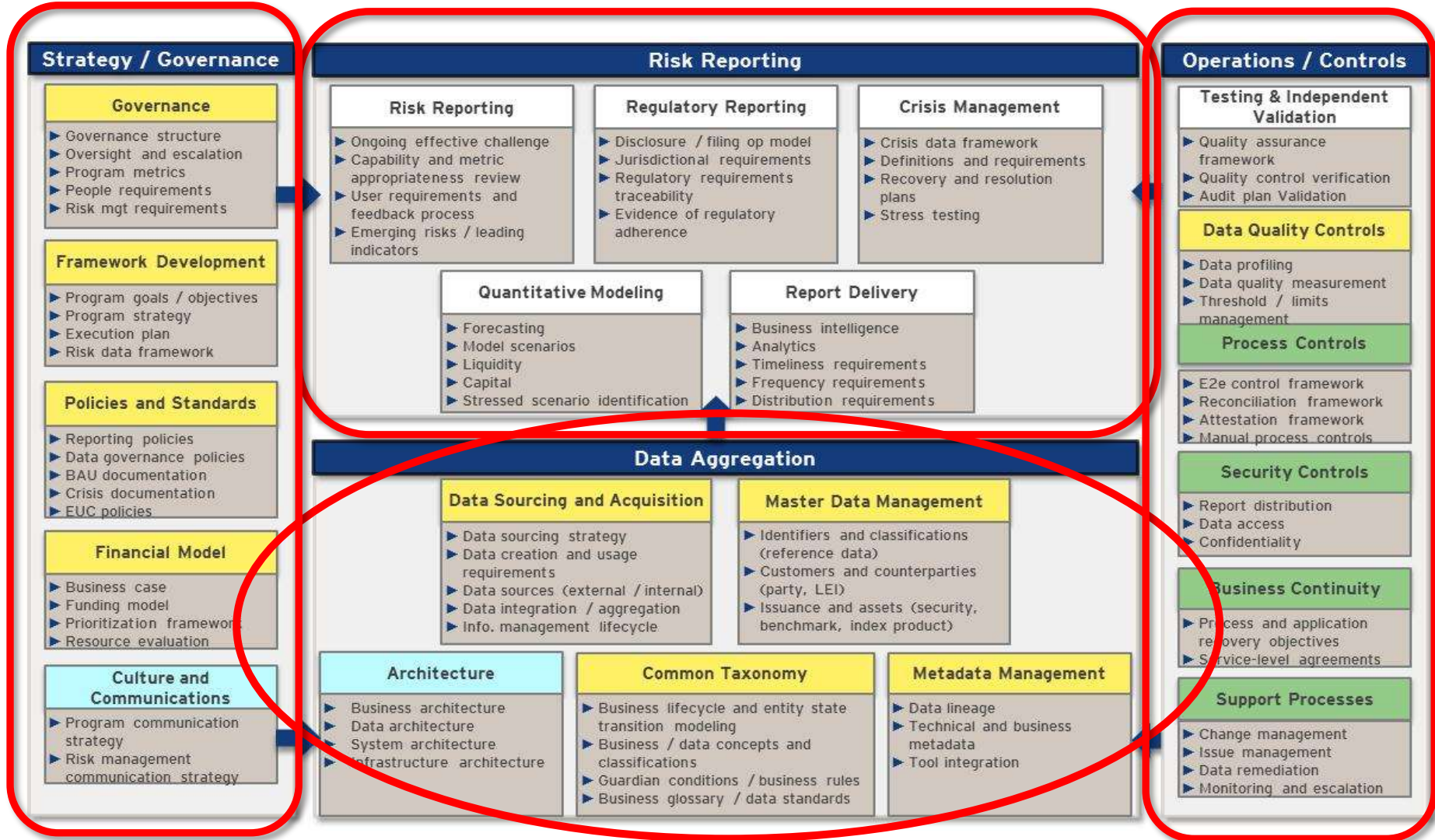
14 principles

- Principles 1-6: **Data**

- Principles 7-11 **Risk**

- Principles 12-14 **Regulatory**

BCBS 239
Risk data aggregation

Strategy / Governance

Governance
- ► Governance structure
- ► Oversight and escalation
- ► Program metrics
- ► People requirements
- ► Risk mgt requirements

Framework Development
- ► Program goals / objectives
- ► Program strategy
- ► Execution plan
- ► Risk data framework

Policies and Standards
- ► Reporting policies
- ► Data governance policies
- ► BAU documentation
- ► Crisis documentation
- ► EUC policies

Financial Model
- ► Business case
- ► Funding model
- ► Prioritization framework
- ► Resource evaluation

Culture and Communications
- ► Program communication strategy
- ► Risk management communication strategy

Risk Reporting

Risk Reporting
- ► Ongoing effective challenge
- ► Capability and metric appropriateness review
- ► User requirements and feedback process
- ► Emerging risks / leading indicators

Regulatory Reporting
- ► Disclosure / filing op model
- ► Jurisdictional requirements
- ► Regulatory requirements traceability
- ► Evidence of regulatory adherence

Crisis Management
- ► Crisis data framework
- ► Definitions and requirements
- ► Recovery and resolution plans
- ► Stress testing

Quantitative Modeling
- ► Forecasting
- ► Model scenarios
- ► Liquidity
- ► Capital
- ► Stressed scenario identification

Report Delivery
- ► Business intelligence
- ► Analytics
- ► Timeliness requirements
- ► Frequency requirements
- ► Distribution requirements

Data Aggregation

Data Sourcing and Acquisition
- ► Data sourcing strategy
- ► Data creation and usage requirements
- ► Data sources (external / internal)
- ► Data integration / aggregation
- ► Info. management lifecycle

Master Data Management
- ► Identifiers and classifications (reference data)
- ► Customers and counterparties (party, LEI)
- ► Issuance and assets (security, benchmark, index product)

Architecture
- ► Business architecture
- ► Data architecture
- ► System architecture
- ► Infrastructure architecture

Common Taxonomy
- ► Business lifecycle and entity state transition modeling
- ► Business / data concepts and classifications
- ► Guardian conditions / business rules
- ► Business glossary / data standards

Metadata Management
- ► Data lineage
- ► Technical and business metadata
- ► Tool integration

Operations / Controls

Testing & Independent Validation
- ► Quality assurance framework
- ► Quality control verification
- ► Audit plan Validation

Data Quality Controls
- ► Data profiling
- ► Data quality measurement
- ► Threshold / limits management

Process Controls
- ► E2e control framework
- ► Reconciliation framework
- ► Attestation framework
- ► Manual process controls

Security Controls
- ► Report distribution
- ► Data access
- ► Confidentiality

Business Continuity
- ► Process and application recovery objectives
- ► Service-level agreements

Support Processes
- ► Change management
- ► Issue management
- ► Data remediation
- ► Monitoring and escalation

BCBS 239
Risk data aggregation

Tenet 1: The Governance Mandate

- **BCBS observations:**
  - ► Lack of formal / documented frameworks
  - ► Lack of defined ownership with clear demarcation of responsibility
  - ► Lack of requirement coordination among business IT and risk
  - ► Decentralized and undocumented data policies
  - ► Need for improved SLAs and measurement criteria for risk data processes
  - ► Need for higher standard for audit of with respect to risk data aggregation

- **Objective direction:**
  - ► Establish a fully documented, appropriately resourced data framework, with no organizational barriers and top-of-the-house engagement

You ain't got no choice!!!

BCBS 239
Risk data aggregation

Tenet 2: The Data Infrastructure Mandate

- **BCBS observations:**
  - ► Inconsistent taxonomies
  - ► Inconsistent metadata, identifiers and dictionaries
  - ► An inability to harmonize, integrate and compare among repositories
  - ► The need for data identification and definition of CDE
  - ► A failure to take into account interdependencies between processes

- **Objective direction:**
  - ► Build integrated data architecture (taxonomies, metadata, identifiers); establish controls across the full data lifecycle; create flexible classification and aggregation schemes; support on-demand, ad-hoc reporting and scenario-based analysis

Data harmonization is mandatory

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BCBS 239
Risk data aggregation

Tenet 3: The Data Quality Mandate

- **BCBS observations:**
  - ▶ Too much reliance on manual processes
  - ▶ Insufficient data reconciliation (root cause analysis and executable business rules)
  - ▶ A need for better control across lifecycle of data (data inventory, transformation mapping, cross-referencing, authoritative sources)

- **Objective direction:**
  - ▶ [Risk] data must be timely, accurate and comprehensive; must adopt authoritative sources and the creation of a data control environment; need to align data to "concepts" for consistency of meaning across the organization; must be able to generate timely [risk] reporting across all dimensions of quality and all risk categories

Data must be fit for purpose

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What is the real message of BCBS 239?

Firms need to implement an effective and sustainable data control environment

- Governance by policy

- Sanctioned by executive management

- Fully resourced (no organizational barriers)

- Based on "content" standards

- Focused on data quality

- Driven by best practices

- Harmonized across the lifecycle

- Clear (coordinated) accountability

- Monitored by audit

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The "other" business case

Realize INSIGHT from our data...

Operational efficiency	Commercial insights	Model-based strategies	Market agility

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Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

Takes a long time

Hard to implement

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Lots of repositories, lots of functions, difficult to get people to play nice in the sandbox.

Skill sets are missing

Hard to sell

Takes a long time

Hard to implement

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

Takes a long time

Short-term / spreadsheet-based mentality, expensive, disruptive, not well-understood, hard to measure, few serious wins, ROI hard to define

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

Takes a long time

Hard to implement

Execution capability lagging, legacy spaghetti and silo barriers, project-based mentality

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

Takes a long time

Hard to implement

Social and political culture, interconnected activity, IT barriers, data factory complexity

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

Takes a long time

Hard to implement

"Unless you are helping me with something real, you are either an annoyance or a problem"

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Hard to sell

Hard to implement

Hard to orchestrate

Skill sets are missing

Need combination of IT knowledge, product and processing expertise, modeling capability, legal obligation understanding, diplomacy, project management skills

Data management reality

Hard to sustain

This stuff is hard to do

"Big hairy process", ownership and accountability missing, little executive air cover, lack of sustainable funding, broad scope of data quality problems to manage

Hard to sell

Takes a long time

Hard to implement

Hard to orchestrate

Data management reality

Hard to sustain

This stuff is hard to do

Skill sets are missing

Hard to sell

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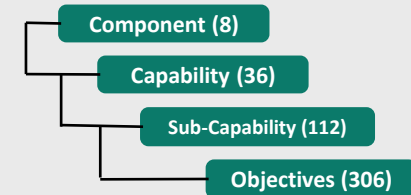
Approach: Best practices
Data Management Capability Assessment Model

DCAM
Data Management Capability Assessment Model

- Created based on **practical experience**
- **Capabilities orientation**: Not done; in process (low, medium, high); capability achieved; capability enhanced
- Each category is defined by a set of **capabilities and sub-capabilities**
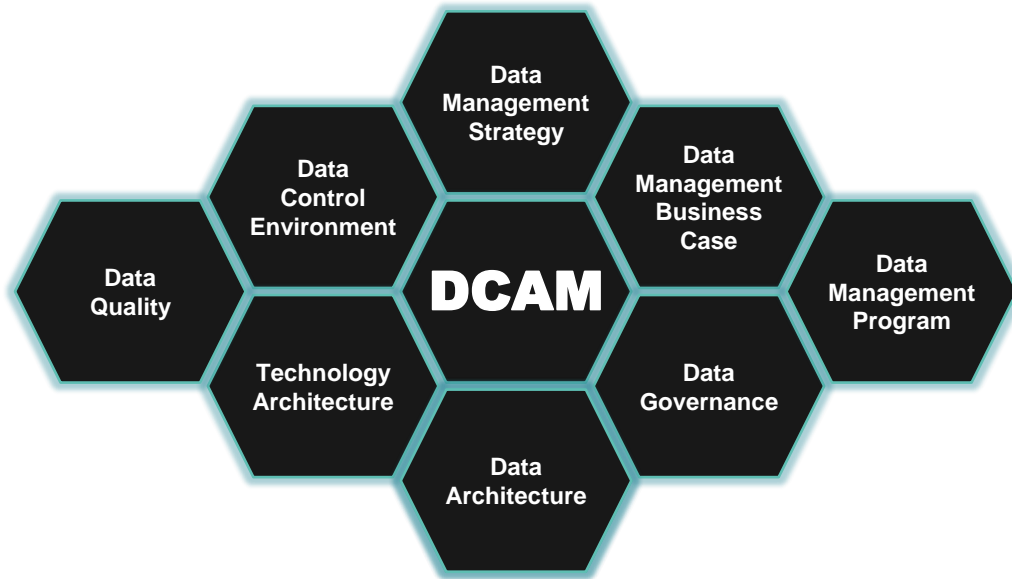- Each sub-capability is **evidenced** by a series of capability objectives

- Component (8)
- Capability (36)
- Sub-Capability (112)
- Objectives (306)

DCAM hexagon diagram:
- Data Quality
- Data Control Environment
- Data Management Strategy
- Data Management Business Case
- Data Management Program
- Technology Architecture
- DCAM
- Data Governance
- Data Architecture

Data Management Strategy
Defines the long term goal of the data management program. The blueprint to gain internal alignment among stakeholders and to define how the organization will approach the management of data content

Approach: Best practices
Data Management Capability Assessment Model
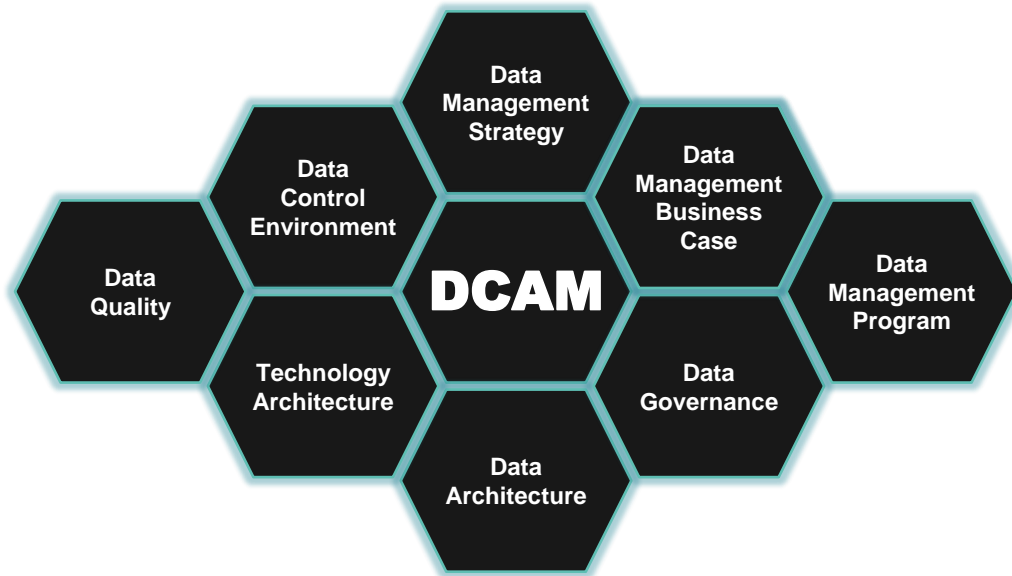
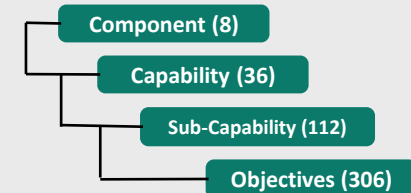**DCAM**
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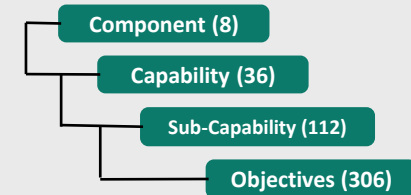
Data Management Business Case
The justification for the data management program. The mechanism for ensuring sufficient and sustainable capital. The approach for measuring the costs and benefits of EDM

Approach: Best practices
Data Management Capability Assessment Model
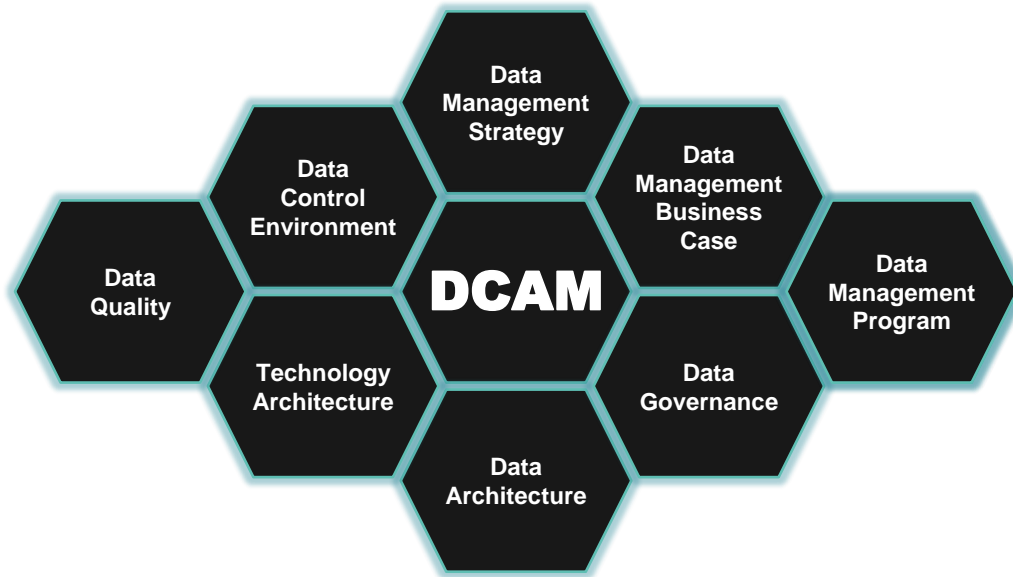
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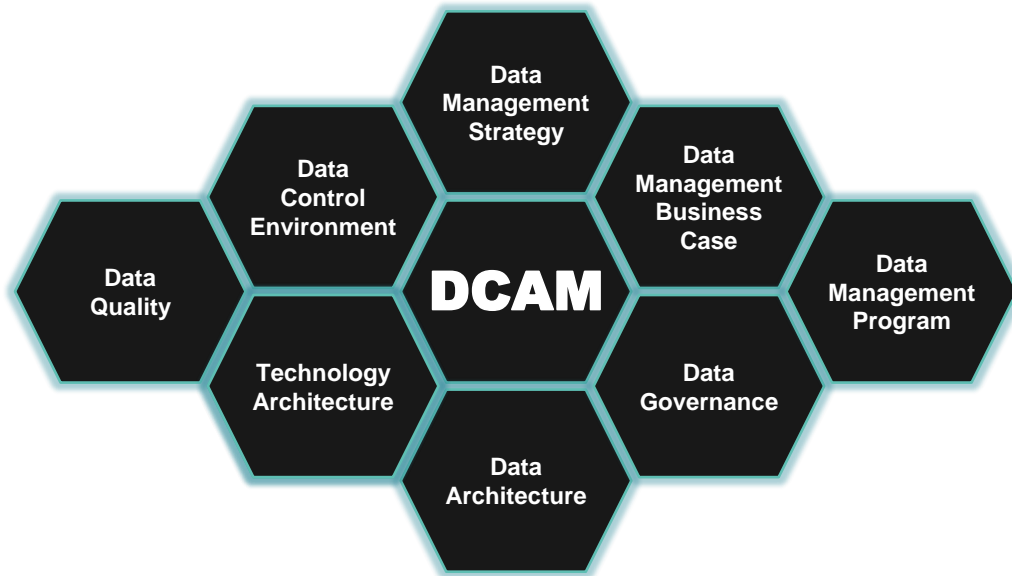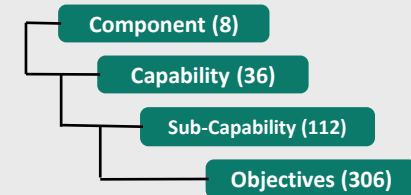- Each sub-capability is **evidenced** by a series of capability objectives

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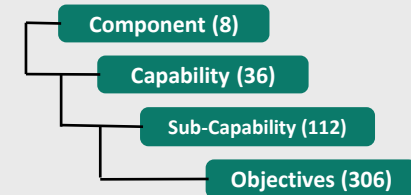
Data Management Program
The mechanism for EDM implementation. Stakeholder engagement. Communications program and education on the concepts of data CONTENT management. Engagement model and operational routines

Approach: Best practices
Data Management Capability Assessment Model
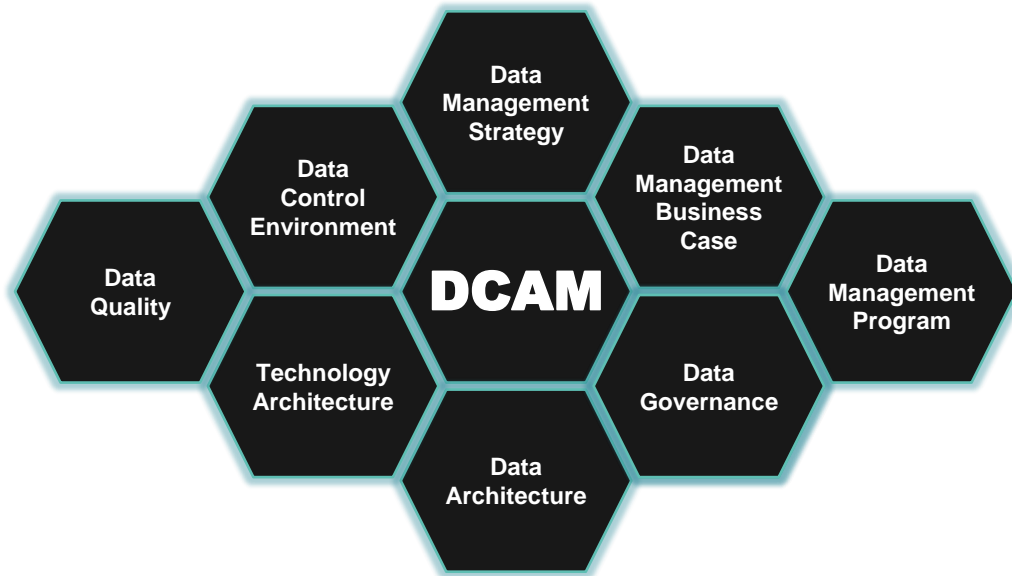
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Data Governance
The rules of engagement for implementation of the data management program. The focus is on implementation of policies, standards and operational procedures necessary to ensure that stakeholders "behave"
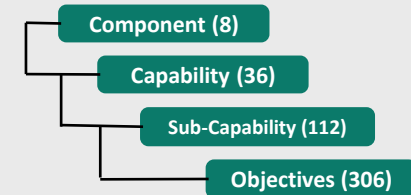
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Hexagon diagram labels:
- Data Management Strategy
- Data Control Environment
- Data Management Business Case
- Data Quality
- DCAM
- Data Management Program
- Technology Architecture
- Data Governance
- Data Architecture

Data Architecture
The "design of information content" including the identification of data domains, establishment of taxonomies, alignment with contractual obligations, documentation of metadata and designation of CDEs

Approach: Best practices
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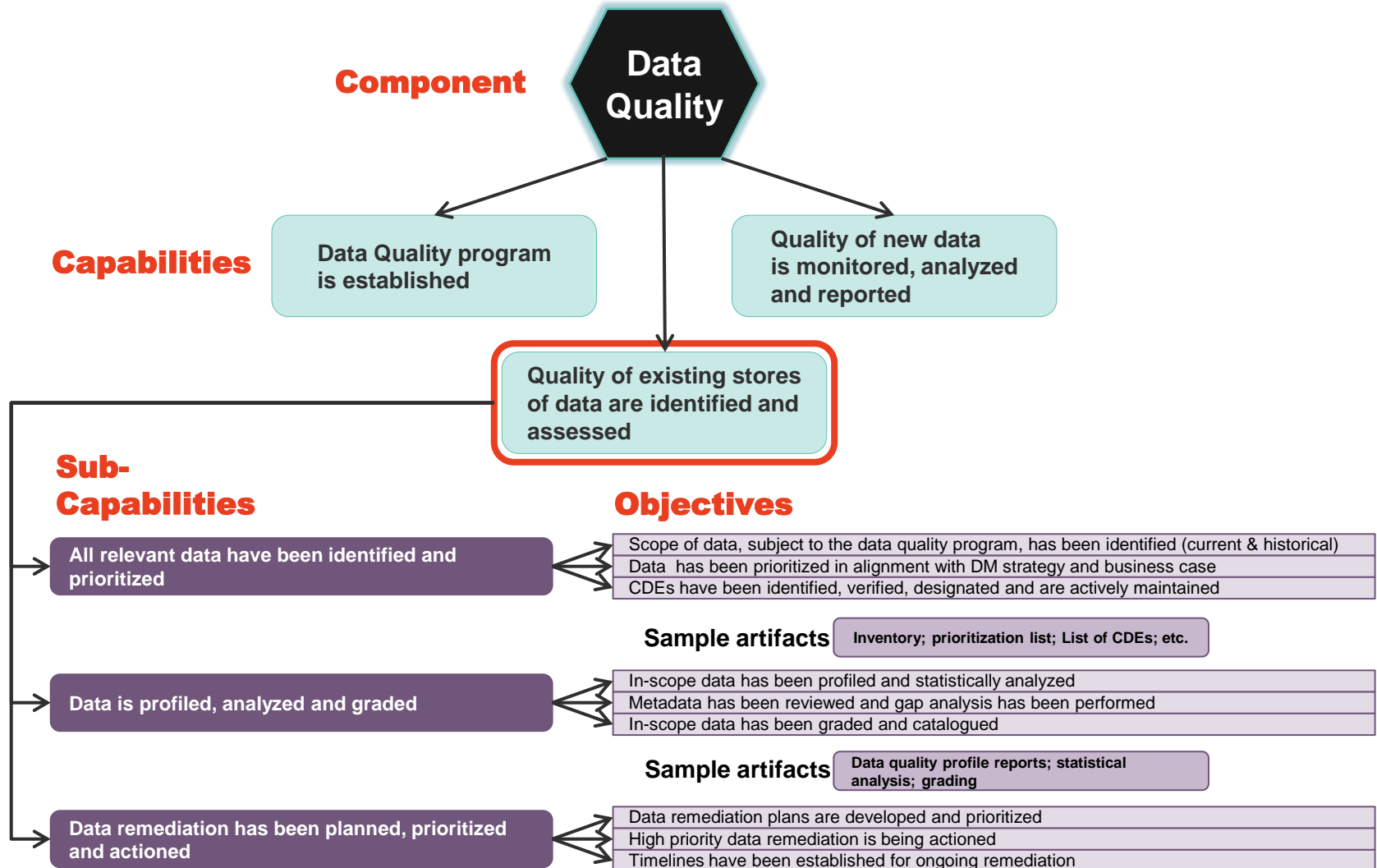
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Hexagon diagram labels: Data Quality, Data Control Environment, Data Management Strategy, Data Management Business Case, Data Management Program, DCAM, Technology Architecture, Data Governance, Data Architecture

Technology Architecture
The "design of physical architecture" including the platforms and tools in support of data management implementation. This is domain of IT and defines how data is acquired, stored, integrated and distributed

Approach: Best practices
Data Management Capability Assessment Model
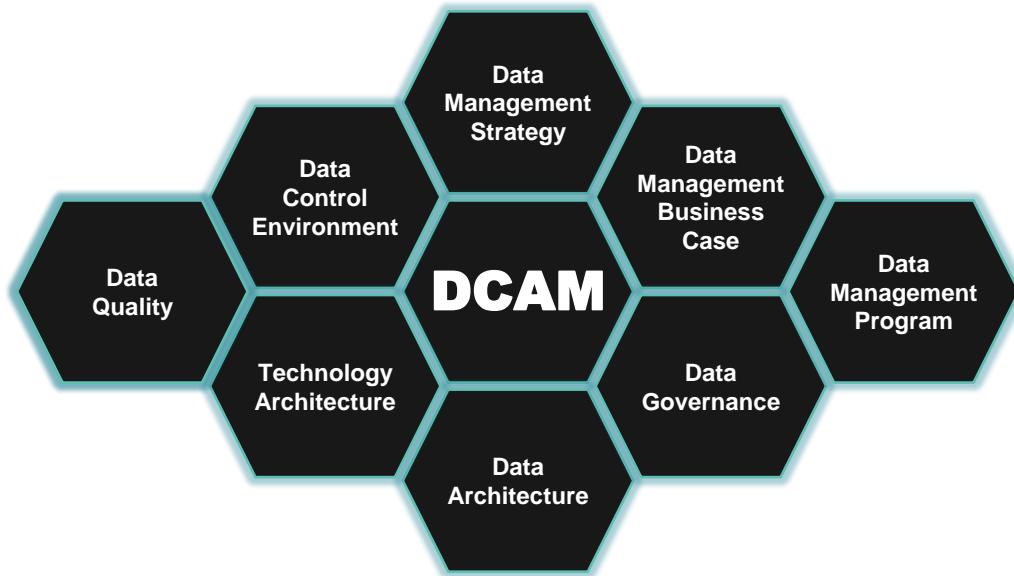
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Data Quality

Deliver to business users data that is fit-for-purpose. The goal is data that users trust and have confidence in to be exactly what they expect it to be without the need for reconciliation and data transformation

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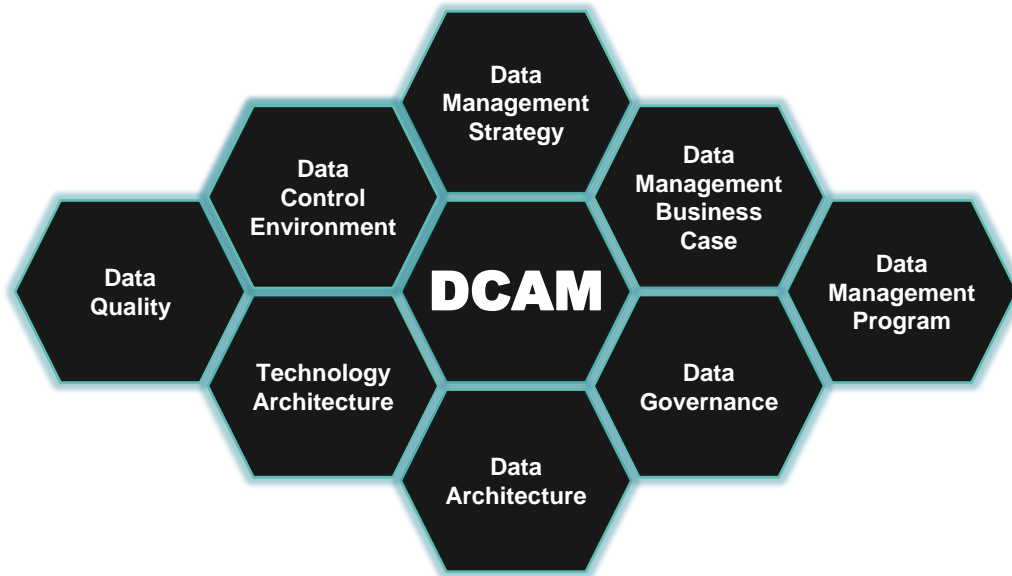
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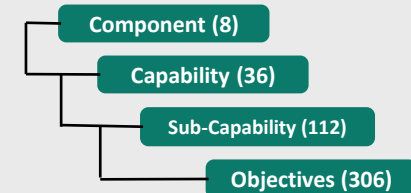
Data Control Environment
Coordination of the components into a cohesive operational model; ensure that controls are in place for consistency across the lifecycle; align with organizational privacy and security policies

How the model works...

Component — Data Quality

Capabilities
- Data Quality program is established
- Quality of new data is monitored, analyzed and reported
- Quality of existing stores of data are identified and assessed

Sub-Capabilities

Objectives

Sub-Capability	Objectives
All relevant data have been identified and prioritized	Scope of data, subject to the data quality program, has been identified (current & historical)
	Data has been prioritized in alignment with DM strategy and business case
	CDEs have been identified, verified, designated and are actively maintained

Sample artifacts — Inventory; prioritization list; List of CDEs; etc.

Sub-Capability	Objectives
Data is profiled, analyzed and graded	In-scope data has been profiled and statistically analyzed
	Metadata has been reviewed and gap analysis has been performed
	In-scope data has been graded and catalogued

Sample artifacts — Data quality profile reports; statistical analysis; grading

Sub-Capability	Objectives
Data remediation has been planned, prioritized and actioned	Data remediation plans are developed and prioritized
	High priority data remediation is being actioned
	Timelines have been established for ongoing remediation

How the model is scored...

DCAM Scoring Philosophy

	Process	Formality	Engagement
Not Initiated	Capabilities are not Being Performed		
	Tactical	Ad Hoc	Heroes
In Process (**Conceptual**)	Capabilities are in their Initial Planning Stages		
	Issues are under debate	White board planning	Data practitioners
In Process (**Developmental**)	Capabilities are Being Developed		
	Policies, procedures, standards, roles and accountabilities are being established	Meetings are underway (notes and planning documents)	Stakeholders are identified (negotiated resources/annual budgets)
In Process (**Defined**)	Capabilities are Defined and Formalized		
	Policies and standards exist (roles, responsibilities and accountabilities are being coordinated)	Routines exist (structured documentation)	Verified by stakeholders (business and functional responsibility/sustainable funding)
Achieved	Capabilities are Achieved and Implemented		
	Policies and standards are implemented (proactive issue management)	Capabilities are embedded into operations (standardized methodologies)	Executive management authority (strategic investment funding)
Enhanced	Capabilities are fully integrated into the operating culture of the organization		

How the model is being used...

| Program initiation | Assessments | Training and compliance | Benchmarking and surveys |

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State of data management in finance

Industry study in 2015 to determine the level of capability achieved in Data Management across the finance industry

- Derived from the Data Management Capability Assessment Model (DCAM)

- Eight components; 36 Capabilities; 112 sub-capabilities → distilled into 21 questions

- Over 300 qualified responses across a range of financial sectors and tiers

State of data management in finance

2015 DATA MANAGEMENT INDUSTRY BENCHMARK REPORT

In partnership with: Sapient Global Markets

Key observations

- **BCBS 239 –** "You Ain't Got No Choice" is an effective business case

- **Moving out –** Data management is moving out of technology and into new control functions either a combination of IT / operations or newly developed enterprise data management functions

- **Newer is better** – Most data management programs are newly established as formal initiatives – in line with the regulatory requirements for risk data aggregation

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Our organization has a defined and endorsed data management strategy.

Stakeholders understand (and buy into) the need for the data management program

The funding model for the Data Management Program is established and sanctioned

Question	Area	Score
Q1	Strategy	3.50
Q2	Alignment	3.53
Q3	Comm.	3.29
Q4	Funding	3.44
Q5	Metrics	2.80
Q6	Authority	3.41
Q7	Resources	3.26
Q8	Governance	3.39
Q9	Stewards	3.22
Q10	Policy	3.29
Q11	Adherence	2.72
Q12	Meaning	2.93
Q13	CDEs	3.20
Q14	Domains	3.29
Q15	IT Standards	3.06
Q16	Capability	3.06
Q17	Profiling	2.66
Q18	DQ Control	3.00
Q19	Root Cause	3.02
Q20	Lineage	2.73
Q21	Control	3.01

Average Scores for Financial Institutions

The "end user" community is adhering to the data governance policy and standards

End-to-end data lineage has been defined across the entire data lifecycle
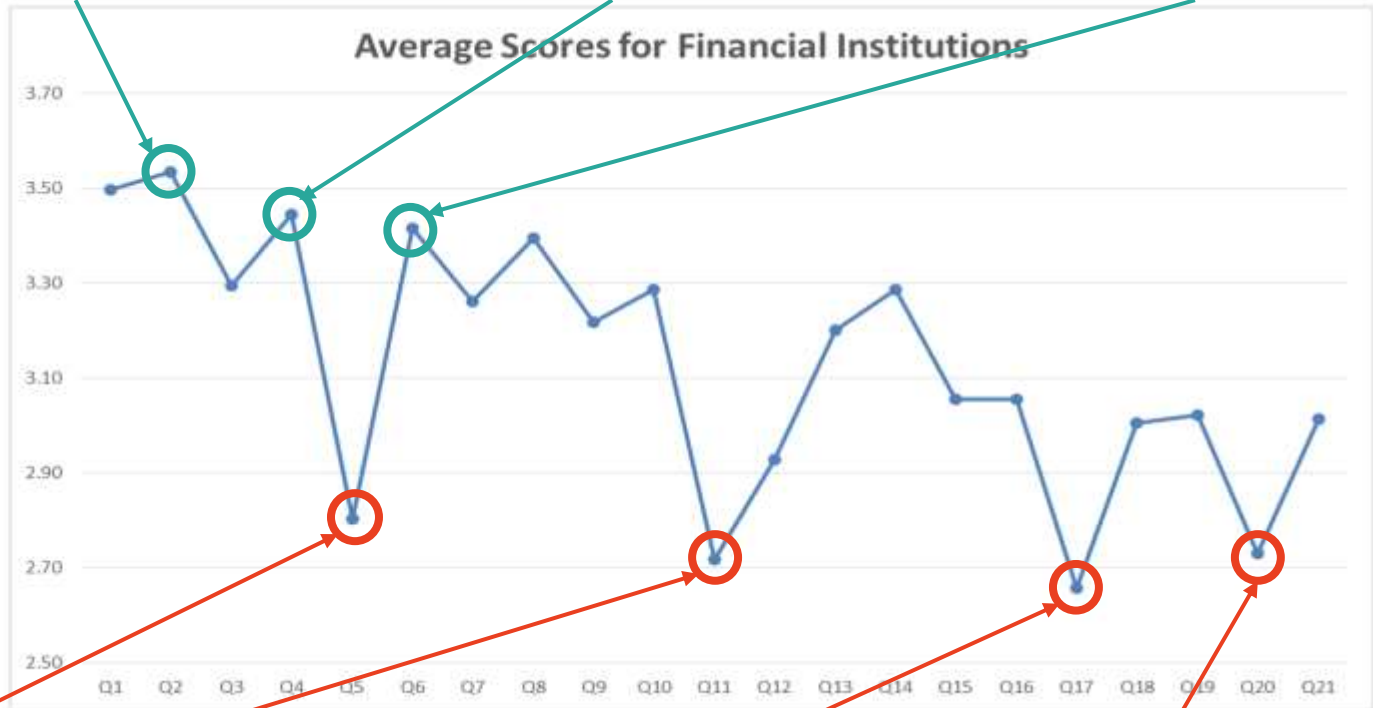
Programs are tracking "performance and outcome" metrics

All data under the authority of the Data Management Program is profiled, analyzed and graded

EDM Council
DCAM Industry Survey

Key areas of data management engagement

1. **Setting up the Data Management Program**
   - Strategy, communications, authority

2. **Commitment from Stakeholders**
   - Alignment, funding, metrics, resources, ecosystem

3. **Implementing Governance**
   - Organizational structure, stewards, policy, adherence

4. **Managing Data Quality**
   - Profiling, control points, root cause

5. **Working with IT**
   - Alignment on goals, capabilities exist

Industry Composite View
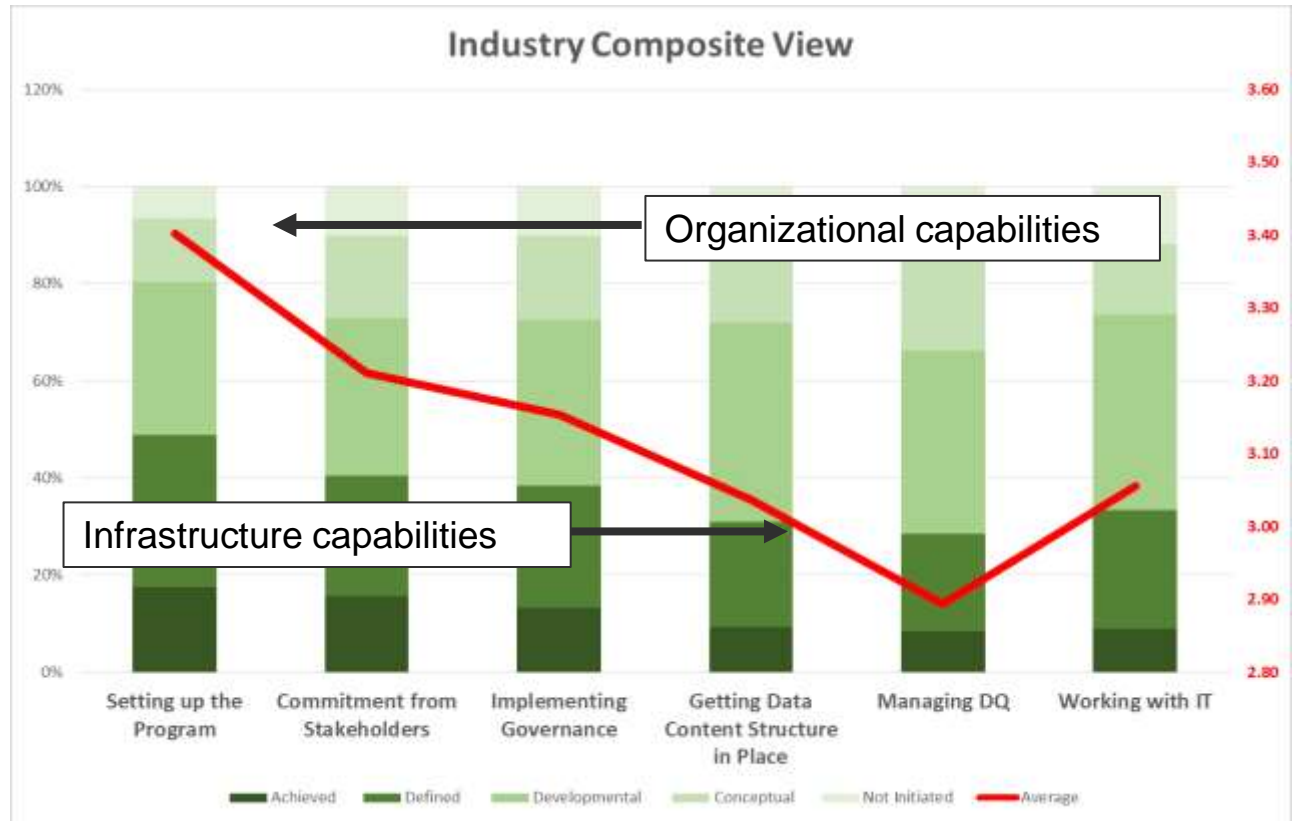
In conclusion...

Data was not the cause of the financial crisis

- However, accurate, complete and timely data, that can quickly and effectively be analyzed will enable the decision makers to "prescribe the right medication" to minimize the impact of an illness

  ▶ And perhaps even prevent it from occurring!!!

- Regulators expect industry to implement change that will improve their ability to protect and safeguard the financial industry and our economy!

- Data management; data quality and a data control environment stand at the forefront of the disciplines needed to accomplish this mission

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For additional information, please contact:

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www.linkedin.com/in/dsbresnick

www.bis.org/publ/bcbs239.pdf

edmcouncil.org

www.edq.com

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