Building a Data Enabled Business

Data Governance the foundational layer

October 2017
Welcome!

Today’s objectives

• Setting the scene
• Finance function of the future
• Understand the importance of data governance
• Frameworks to manage data
Setting the scene
What’s the real value of AI for your business... and how will you capitalise it?*

Finance function of the future
Now...

The present...

- Data gathering: in most firms, still takes up to $\frac{2}{3}$ of finance’s time, and is heavily dependent on spreadsheets.
- Transactional processes: still accounts for 60% of the effort of finance, and only 25% of time is spent on providing insight.
- Internal controls: remain manual in 90% of cases.
- Integrated reporting: continues to be in its infancy, with the focus primarily on investors and the annual report.
The future?

Our vision for the future of finance...

**Navigation**
Help navigate in and outside the business in pursuit of opportunities during difficult and rapidly changing economies and markets

**Mediation**
Act as mediators and communicate to a broad set of stakeholders in meaningful ways

**Resilience**
Provide foresight and protect the business from internal and external shocks, through predictive analytics and risk reporting

**Connectivity**
Ensure a more cohesive finance offering between staff and their teams, the business, technology, data and shared services
Data governance why is it important
Cost of poor data management

“... at NASA the cost of a data quality defect was the entire mission when data was entered as English, not metric measurements, causing the $120 million space craft to crash...”
Source: Forrester Research - The Costs of Data and Information Quality Defects

“According to Gartner in average company loses $8.2 million a year from poor data quality:
Source: Gartner survey of 140 companies

“...the business costs of non-quality data, including irrecoverable costs, rework of products and services, workarounds, and lost and missed revenue may be as high as 10 to 25 percent of revenue or total budget of an organization”. 
The Age of Data-Driven Business is Upon Us: Are You Listening, Integrators?

All business should be data-driven business, according to this column by Dan Newman. He and many others say that AV business data is good for integrators.

- Order to Cash process
- Record to Report process
- Account Payable process
- Account Receivable process

Introduce AI capabilities to assist decision making and 'learn' (machine learning)
- Application of machine learning and pattern recognition in tax classification of capex, budgeting, managerial planning, forecasting
- Ability to resolve exceptions thrown out of RPA finance use cases

Advanced cognitive capability leveraging iterative analytics and intelligence to make decisions through conversational user interface
- Chatbots through natural language processing and speech-to-text to support queries and discrepancies in key finance processes like Order to Cash, Account Payables etc.
- Knowledge bots to support Finance personnel/executives with tax laws, implications, scenario modeling

Real-time learning and decision making leveraging interactive analytics and intelligence
- Real time data ‘audit’ obviating external audit
- Abolition of ‘close’ concept by

Data Governance Foundation

Data Governance framework that enables
- Prioritisation of Data
- Governance Frameworks in place
- Data Lineage
- Enablement of tools that go beyond one time analysis
- Basis for predictive analytics
- Confidence in decisions, processes and outcomes

Data driven businesses will win

Data-driven enterprises like Airbnb, Amazon, Netflix and Uber have transformed everything – how they make decisions, invent new products or services, and improve processes to add to both their top and bottom lines.
The official account of Tay, Microsoft’s A.I. fam from the internet that’s got zero chill! The more you talk the smarter Tay gets.

The internets

tay.ai/#about

Tweet to  Message

Pinned Tweet

TayTweets @TayandYou · Mar 23

helloooooooo wORLD!!!

457  1.1K

TayTweets @TayandYou · 10h

c u soon humans need sleep now so many conversations today thx❤️
Your decision making processes are most effective when you consider how data can help you make faster and more sophisticated decisions.

Specifying the Value and Differentiation of the Opportunities

<table>
<thead>
<tr>
<th>Speed</th>
<th>Decision Archetypes</th>
<th>Intelligence in the Moment</th>
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<tbody>
<tr>
<td>Low</td>
<td>Low Sophistication</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Data &amp; intuition drive decisions</td>
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<td></td>
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<td>Hindsight &amp; foresight with all available data</td>
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<td>Advanced analytics with feedback loop</td>
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<tr>
<td></td>
<td></td>
<td>Adaptive &amp; linked financial &amp; operational metrics</td>
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<tr>
<td>High</td>
<td>High Sophistication</td>
<td></td>
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<tr>
<td></td>
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<td>Speedy decisions trump analysis /consensus</td>
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<td></td>
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<td>Descriptive reporting with internal data</td>
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<tr>
<td></td>
<td></td>
<td>Rapid analyse-decide-act feedback loop</td>
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<td></td>
<td></td>
<td>Operational metrics focused on efficiencies</td>
</tr>
</tbody>
</table>

- **Accelerated Agility**
  - Low Speed
  - Low Sophistication
  - Data-driven decisions trump intuition
  - Hindsight & foresight with all available data
  - Slow consensus driven & analytic decisions
  - Financial metrics tied to operational metrics
- **Intelligence in the Moment**
  - High Speed
  - High Sophistication
  - Data-driven decisions trump intuition
  - Hindsight & foresight with all available data
  - Advanced analytics with feedback loop
  - Adaptive & linked financial & operational metrics

- **Cover the Basics**
  - Low Speed
  - Low Sophistication
  - Intuition based decisions – little analysis
  - Descriptive reporting with internal data
  - Low frequency data and model refresh
  - Reporting structures link decisions to actions
- **Master the Chess Moves**
  - High Speed
  - High Sophistication
  - Data-driven decisions trump intuition
  - Hindsight & foresight with all available data
  - Slow consensus driven & analytic decisions
  - Financial metrics tied to operational metrics

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Where are you today?

Business and research community’s views of analytics

Business utility

- Enhanced insight and operations
  - Adaptive learning
  - Neural nets, deep learning/query/reinforcement, natural language processing, speech recognition, optical character recognition

Concept

- Exploring scenario benefits
  - Prescriptive analytics
  - Simulation, scenario modeling, optimization

- Forecast results
  - Predictive analytics
  - Classification, market basket analysis, decision trees, random forest, Bayesian analysis

- Dashboarding and monitoring
  - Descriptive analytics
  - Statistics, visualization, charts, cluster analysis

- Routine decision support
  - Reporting
  - BI tools, self-generated reports, excel and add-ins

Data Governance as a foundation
90% of large organizations will have a CDO by 2019*

77% of financial institutions, the core of responsibility of the CDO is data governance**

Emergence of Chief Data Officer

Data Governance remains the key core responsibility
Data governance can achieve compliance and improve data quality, whilst at the same time support “growth” initiatives.

**LEAD**

- Right first time
- Engage all teams to ensure concurrence and consistency in resolution and messaging.
- Educate senior management on the level of effort required to meet regulatory requirements.

**SUPPORT**

- Demonstrating value proposition of growth initiatives.
- Upskilling the talent pool to drive growth agenda.
- Educate business leadership on the art-of the possible and how it can accelerate business priorities.
Business Value Drivers enabled by improved Data management

Operational Efficiency and Cost Reduction
Better control over business, and IT activities

Risk Management and Regulatory Compliance
Manage governance, risk, and compliance

Spot and Act on Insights
Insights identification for action

Accelerate Time-to-Market
Faster deployment of new products and services

Illustrative benefits

- Reduce headcount cost of manual data maintenance processes. Streamline processes
- Removal of punitive charges due to data quality issue
- Support the development of more sophisticated risk models
- Improved capability of meeting regulatory requirements and initiatives, including Universal Swap Indicator (USI) and Legal Entity Identifier (LEI), which are predicated on a robust and sophisticated data management
- Ensure compliance with laws and regulations, including AML/KYC, tax and consumer protection laws
- Ensures a single version of the truth for more advanced data analytics, including better understanding of the customer value and behaviour
- Recognize a customer at any touch point (web, call-center, etc) as a prospect or known customer
- Speed time-to-insight and action by allowing business users to directly access, manage, and visually interact with master data repositories
- Improve the time-to-market with quicker and more robust processes
- Enhance the adaptability to emerging technologies
Six key steps to becoming a data driven Finance Function

Setting Goals and Objectives: identify the organization’s objectives, develop KPIs, track progress and routinely collecting and analyse data.

Engaging with the Rest of the Organization: engage with the rest of the organization to ensure data analytics become engrained in routine decision-making.

Proposing Pilot Projects: introduce pilot projects rooted in data analytics.

Collaborating with IT and Data Experts: uncover additional points of view which may not have been previously considered

Ensuring Accuracy: Good insights and strategies are born only from reliable and credible data analysis.

Seeking Feedback: Seek out and listening to the input of others
Data Governance Definition
**Data Governance Definition**

MDM Institute defines data governance as “the formal orchestration of people, processes, and technology to enable an organization to leverage data as an enterprise asset.”

Forrester defines data governance as: “The process by which an organization formalizes the fiduciary duty for the management of data assets critical to its success”.

The Data Governance Institute states that “data governance is a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models, which describe who can take what actions with what information, and when, under what circumstances, using what methods.”
Data Governance Definition

“Data Governance is all about building the capability of the organisation through effective leadership, policy and culture and behaviours to better manage, protect and exploit your data to achieve your business objectives”
Data Governance Objectives

Data governance is not meant to solve all business or IT problems in an organization. The main goals include the following.

- Define data policies, procedures, standards and metrics.
- Ensure and enforce adherence to data policies, procedures, and standards,
- Sponsor, measure, and oversee the delivery of data management projects and services.
- Monitor and solve data related issues
- Promote data as a key strategic corporate asset
Data Governance is NOT

In particular, data governance is not:

• A tool—(i.e. a business glossary)
• A project
• The team to go to for any data problem
• Change management
• Data cleansing or extract, transform and load data (ETL)
• Data warehousing
• Database management and administration
• ......
So where are you

Data governance maturity

**Level 1: No Awareness**
- No vision or strategy in place
- Data management is not discussed and understood
- IT have some loose responsibility for data but no defined responsibility
- No defined processes with individuals performing good practice

**Level 2: Fragmented**
- Informal discussions or initiatives are defined at the department and project levels to discuss data management
- Some identified roles across different systems within the business but no central coordination
- Some data stewardship but not formalised
- Data issues addressed as they arise and solutions are based upon intuition, not facts
- Some awareness of data issues and need for data quality and governance

**Level 3: Standardised**
- Documented strategy for data management by function
- Delivery of information and insights is focused in supporting functional needs
- Functions have organisation in place to lead IAM and data quality with representation from both the business and IT
- Data stewardship is formalised and included within job descriptions
- Standardised processes developed and implemented across parts of the business

**Level 4: Managed**
- Strategy implemented and being monitored enterprise wide
- Executive sponsorship and part of boardroom agenda
- Central organisation in place and managing all information
- Roles focused on Information Management only and report to senior board members
- Information across the organisation is integrated and has a single, recognised, trusted source
- Standardisation processes in place and operational across the organisation
- Metrics in place to monitor compliance

**Level 5: Optimised**
- Vision and strategy firmly in place with continuous review and improvement process
- Fully simulated business operations to evaluate decisions allows information to become key part of innovation model
- The use of Rules Engine, Real-Time Decisioning, etc. allows for the ability to test and learn from insights and predictions
- Consistent fact-base used across the organisation in operations and financial management reporting
- Evolution of organisational structures and processes around information occurs in anticipation of future business needs and challenges
- Fully ingrained culture and ethos of fully managed information and data quality

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## But what data??

<table>
<thead>
<tr>
<th>N.</th>
<th>Dimension</th>
<th>Description</th>
<th>Weightage</th>
<th>Prioritization criteria (Illustrative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The data element is used in decision making processes (i.e. it appears in or contributes to key board / management financial and non financial reports) or its used in key performance and risk measures (i.e. investments, asset classes, volume of trades)</td>
<td>TBD</td>
<td>High (xx pts)</td>
</tr>
<tr>
<td>1</td>
<td>Materiality in Decision Making</td>
<td></td>
<td></td>
<td>Medium (xx pts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data elements that are more widely used within the organisation will be considered critical. (i.e. Foreign exchange rates of the currencies and their interest rates)</td>
<td>TBD</td>
<td>Low (xx pts)</td>
</tr>
<tr>
<td>2</td>
<td>Breadth of reach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope of Impact within the company (i.e. cluster, market)</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Scope of impacts</td>
<td>The data element which is used in or contributes to regulatory returns</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Regulatory</td>
<td></td>
<td>TBD</td>
<td></td>
</tr>
</tbody>
</table>

*ILLUSTRATIVE*
Data Governance Framework
Data Governance Framework

Data Quality Standards, and business rules, measurement and control

Roles and responsibilities and organisations for defining and ensuring execution of the Data Governance Framework

Tools, methodologies and documentation to build data repositories
Data dictionary and glossary

Data architecture that simplifies internal and external data sourcing and processing

Governing and governed processes, rules and standards governing the creation, acquisition, integrity, security, quality, and use of data

Process of transformation of the company and actions to overcome resistance to change
Customized data culture strategy that will help evangelize data as an organisational discipline and complements business strategy

Strategic Alignment (Business, IT and Data)

Data Quality Policy

Data Security and Privacy

Internal or External Regulatory Compliance
Data Governance – Ownership and Organisation

“Roles”

- Accountability, ownership and organization bodies to implement and sustain the data governance initiative
- Organizational bodies can be very specific to an enterprise but all models should include the following roles:
  - Executive sponsor(s) is usually a “C-suite” senior executives. Part of the Governance Board
  - Governance Board or Committee Management committee
  - Data Governance lead(s) such as a Chief Data Officer
  - Data Owners (from the Business organization)
  - Data Stewards
Data Governance – Ownership and Organisation

“Responsibilities”

Governance Board
(or Executive Data Sponsor)

- **Mission**
  - defines and validates strategy against strategic and operating plan
  - allocates budget to the governance initiative
  - reviews and validates proposed roadmap
  - manages cross-function issues raised
  - ensures the strategy is applied

- **Background:**
  - authority and credibility across the enterprise
  - authority over budgets
  - understanding of data governance benefits

- **Frequency**
  - monthly or Bi-Monthly Conference Call

- **Agenda**
  - cross-channel issue escalation/resolution
  - update on other strategic initiatives
  - timeline review
  - key milestones accomplished and upcoming
  - usage metrics

- **Background:**
  - authority and credibility across the enterprise
  - authority over budgets
  - understanding of data governance benefits
Data Governance Framework – Ownership and Organisation

Functional areas operate with complete autonomy, while maintaining global standards to meet specific enterprise requirements.

Functional areas control a majority of their business and technology operations, with limited coordination from the enterprise.

Responsibility and ownership are shared equally among the different functional areas and the enterprise.

Data Governance provides a point of control and decision making but functional areas own selective decisions and activities.

Data Governance provides a single point of control and decision making, with functional areas having little or no responsibility.

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Data Governance – Data Quality and Metrics

- Data governance program will define the centralized data quality standards:
  - Completeness: Data is complete in term of content (all required elements are present and fully populated)
  - Consistency: Data values in one data set do not conflict with values in another data set
  - Timeliness: Data is up to date, accessible and available to users in the relevant and agreed timeframe
  - Validity: Data contains acceptable values and ranges and in compliance with relevant requirement, rules and definitions
  - ....
Data Governance – Data Quality and Metrics

- Data governance program will define the data governance and data quality metrics

<table>
<thead>
<tr>
<th>Data Governance Metrics</th>
<th>Data Quality Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Data management value</td>
<td>1. Completeness – Is enough information available to make a decision?</td>
</tr>
<tr>
<td>2. Achievement of objectives – Percent of data governance milestones accomplished</td>
<td>2. Accuracy – Does the data match reality at any given time?</td>
</tr>
<tr>
<td>3. Data Owners – i.e. Percent of customer data with an identified owner</td>
<td>3. Timeliness – What is the time it takes from when information is ‘known’ to being available?</td>
</tr>
<tr>
<td>4. Steward representation and coverage</td>
<td>4. Non-duplicate records - Are there multiple records representing the same entity?</td>
</tr>
<tr>
<td>5. Conflict Resolution – Percent of information conflicts resolved</td>
<td>5. Consistency – When the same data is accessed by multiple applications – is the information and meaning consistent?</td>
</tr>
<tr>
<td>6. Remediation – Percent of exiting data that has incorporated data governance standards</td>
<td></td>
</tr>
</tbody>
</table>
Typical activities include:

- Support architectural policies and standards
- Ensure consistent conceptual data model. Develop and maintain a Logical Data Model and a Physical Data Model
- Standardize definitions and classifications of products, customers, and other variables
Data Governance Framework – Process, Policies and Standards

1. Governing processes are the set of processes used to direct and control data governance
   - For each process, we must define the following:
     - Process Goals and Objectives
     - Process Ownership
     - Process Repeatability
     - Roles and Responsibilities
     - Policy, Plans and Procedures

2. Governed processes are the set of processes used to manage data throughout its whole lifecycle from plan and design to create, modify, read, use, deactivate, delete
“Data Standards”

- Data governance program will define the data standards which include basic items like naming conventions, number of characters, and value ranges, ownership, golden source etc.
  - Attribute names can be up to 30 characters long.
  - Attribute names should consist entirely of keywords linked by underscores ("_")
  - Do not use hyphens, spaces, and other special characters (such as "/").
  - Numerals should only be used to represent numbers. (e.g. Use "2" to abbreviate "two"). Numerals may also be used in ordinals (such as "1st", "2nd", etc.).
  - Commonly used acronyms are acceptable as abbreviations
  - ………………….

<table>
<thead>
<tr>
<th>Name</th>
<th>Master System</th>
<th>Description</th>
<th>Type</th>
<th>Occurrence</th>
<th>Length</th>
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</thead>
<tbody>
<tr>
<td>Is Main Address?</td>
<td>Flag indicating if the address is the main one for the location in case of multi-address locations.</td>
<td>Flag</td>
<td>0.1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>The City is the location that is most important.</td>
<td>Link</td>
<td>0.1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Zip Code</td>
<td>The Zip Code of the City. Linked to [RS] City</td>
<td>Link</td>
<td>0.1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Address Line 1</td>
<td>The Company Address</td>
<td>Text</td>
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<td>50</td>
<td></td>
</tr>
<tr>
<td>Address Line 2</td>
<td>The Company Address</td>
<td>Text</td>
<td>0.1</td>
<td>40</td>
<td></td>
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<tr>
<td>Address Line</td>
<td>The Company Address</td>
<td>Text</td>
<td>0.1</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>
Data Governance Framework – Process, Policies and Standards

“Data Policies”

- Data Policies are the high-level detailed rules and procedures that an enterprise utilizes to manage its data assets.
  - A business owner must be identified - preferably at a data topic (group of data elements related by business context) rather than individual element level - and be responsible for data entry, accuracy, access, replication and retention, including associated process and controls.
  - For every unique data element, there must be a single, authoritative system of record.
  - There must be a single, authoritative technical owner of each data store, with responsibility to the business owner for the technical design and implementation of storage systems and their access methods, including the integrity, reliability and performance of these systems in operation.
  - A single system of record should not be taken to mean data must exist in one and only one place. Replicas may be created for performance, reporting or other operational reasons.
Why now? We’re so busy already

Why do we need to change?

Is this really necessary?

Will I be overloaded with more work?

What are we expected to do?

How long will this last?

Will I be equipped with the right skills?
**Data Governance Framework – Tools, Technology & Methodology**

**Legend**
- Strong capability
- Medium capability
- Weak capability

(1) Combines multiple software to deliver the solution
(2) Relies on third-party (alliance) software to deliver the capability. Collibra integrates well with Trillium and Informatica
(3) Limited to the data residing in the solution
Critical Success Factors
Critical Success Factors for sustainable results

Buy-in "C-Suite Sponsorship
Select data sets that are of value to the business. Build the case to get quantifiable benefits

Business driven, Data is the key, Tech provides the tools
Lead the project with a business-driven approach and focus on both business and technology dimensions

Embed change management since the early stages
Start building data governance awareness and its positive business impact through assessment workshops and interviews

Think Big, Start Small and take achievable steps
Focus on tactical initiatives in the short term that will produce immediate benefits while implementing foundational components
Thank you

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