An operational Data Governance Framework for New Zealand Government

March 2020

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The world has moved on...

Data: Then

- Limited
- Specialist
- Collateral

Data Governance framework

Data: Now

- Ubiquitous
- Democratised
- Currency
- Culture

...but our approaches to data infrastructure have not
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From Csaba Pasztai; Stats NZ, 2017

TRADITIONAL DATA VALUE CHAINS
- Closed production pipeline
- Focus on end product
- Pull logic
- Reliance on primary data
- Unfragmented control

CONTEMPORARY DATA VALUE CHAINS
- Open pipelines
- New value chains
- Interdependence
- Push logic (exploratory)
- Data re-use
- Fragmented control
“The ‘plumbing’ aspects of data management may not be as sexy as the predictive models and colorful dashboards they produce, but they’re vital to high performance.”

Information Asset Strategy

Frameworks:
- Governing
- Organising
- Analysing
- Deploying

DalleMule & Davenport; Harvard Business Review; May-June 2017

< 50% Structured data used to make decisions
< 1% Unstructured data used at all
> 70% Employees with access to data they shouldn’t
80% Analysts’ time spend finding and prepping data for use

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Awareness has taken hold...

Why data governance?

Data governance used to be a nice to have, but due to the increasing focus and importance of data and analytics, it’s becoming a necessity that helps to drive data management across the enterprise.

3 Reasons Why Data Governance is Important

by Lane Hartman | October 11, 2018 | Data Governance

Why is data governance important to your business? This might seem like it would be a rhetorical question. The power of data in shaping businesses today is well-recognized. Data is power and you might better be data-driven. So, it follows that data governance is important as well—right? So why is this exactly—what does data governance do for the bottom line? In this blog post, I will go over 3 reasons why data governance is key to your business, and why it will only become more necessary in the future.

Data Mapping May Be the Hardest Part of GDPR Compliance

One expert in GDPR said that the "most common" factor in compliance challenges was that companies didn’t know what data they had and where it could be located.

We’re Not Doing What? ; The Top 10 Corporate Oversights In Data Governance

Marinov, George Old Reviewer, New York Vol. 14, Iss. 9, (Sep 2014) 62.

5 reasons why data governance is becoming more important for your business

The current technological blue eyed boys are social media and cloud computing. But amongst these Goliaths there is a little David, working his way towards popularity and acceptance. We are talking about data governance which has got sidelined by other more glamorous IT phenomena. Companies, big and small, are waking up to the benefits of governing...
The full potential of data governance not yet realised

In general, governance is about controlling, so data governance is about controlling data. Tallon, et al. 2013

Protectionist Governance

Reality: Data governance as compliance mechanism [risk mitigation]

Potential: Data governance as enabler [business opportunities]

Opportunistic Governance

Disconnect
SOME KEY CONCEPTS
Data and the Organisational Story

Recognising story has a highly practical value

- Supports a common vision across diverse roles
- Helps the organisation articulate its value to its constituents or customers
- Helps individuals understand their place in the organisation
- Influences operational processes, decisions

Understanding the role of data in the story

- How/where does data fit in?
- How does data define or shape the story?
- Is there a separate “data story”? Or is it the story?
Realising and growing the inherent potential of data assets

Data Lifecycle

- Raw data
- Managed data
- Analysed data
- Shared data
- Linked data

Potential

organisational boundary

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A whole of data lifecycle approach

- Design
- Source
- Collect
- Store
- Enrich
- Analyse
- Publish
- Dispose

Data Lifecycle

- **Stewardship**
- **Accountability**
- **Governance**
- **Management**
- **Quality**

Operationalising through consistently high levels of *data mindfulness*

“by design”
Striking a balance

- Enterprise
- Consistent
- Standardised
- Direction Setting
- Risk Management
- Authoritative

common

unique

- Business
- Individualised
- Freedom
- Federation
- Distributed
- Agile
- Responsive
- Innovation

- A source of (useful) business “tension”
- Shifts back and forth over time
- Co-exists across different business units within the same organisation

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A more complete view of enterprise

Challenge: siloed data

Solution: Enterprise (traditional)

Top

Down

Solution: Enterprise (operational)

Bottom

Up

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DRIVERS FOR A NEW APPROACH
Deliver practical implementation

Acknowledge low data maturity

Embed data accountability

Leverage infrastructure as enabler

Promote stewardship mindset

Sustain data quality focus

Facilitate integrated government

Align data management with business process

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Within the context of my position, I am accountable for my organisation’s relevant data assets, and as such I have a view of where they reside throughout their lifecycle, a measure of their quality, understand and can protect against associated risks, am informed of relevant constraints, and possess knowledge of how they contribute value within my organisation and across the wider system.

Individual statement (consistent)

Sample organisational statement (varies)

This enables my organisation to articulate the conditions (open by design) under which we manage our data assets so they can be made available to others to re-use for their benefit and to help realise the data’s full potential.
Addressing the challenges of a roles-based approach

Avoiding definition inconsistency

Eliminating the Custodian’s burden

Expanding good practice accountability

Supporting agile business

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The states of data

<table>
<thead>
<tr>
<th>gas</th>
<th>solid</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>ad hoc</td>
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<td>dispersed</td>
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<tr>
<td>chaotic</td>
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<tr>
<td>acknowledge</td>
<td>consolidate</td>
<td>channel</td>
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<tr>
<td><strong>data discovery</strong></td>
<td><strong>data access</strong></td>
<td><strong>data flow</strong></td>
</tr>
</tbody>
</table>

"bow-tie"

Increasing value potential

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from: Global Data Strategy, Ltd
Acknowledging different perspectives

infrastructure as enabler

Stewardship
Government

\textit{kaitiakitanga}
Māori

Asset Management
Business

Trust/Social License
Constituents

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null | traditional model | operational Data Governance Framework
--- | --- | ---
ad hoc | centralised | dispersed
isolated | enterprise/top-down | distributed/bottom-up
individuals | champions | everyone
**random** | **designated roles** | **capabilities**

**Increasing enablement potential**
Mindful data management

aligning data management with business process

"Can I call you back, Ed? I'm in the moment here."
A NEW APPROACH
A path to new thinking

new ways of thinking about data

holistic data governance

operational Data Governance Framework

steady state data flow map

ideas

approach

framework

output
An operational Data Governance Framework for Data Stewardship

Government Priorities

Data System Stewardship

operational framework

Asset management

Asset knowledge

Data flow

Steady states model

Asset care

Best practice data management

Core capabilities

"Nexus"

Operational context

Business decision point

Beneficial outcomes

Accountability
Data quality
Transparency
Integration
Automation
Data valuation
Assurance
Data security
Open data
Trust/Social license
Agile operating models

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We are seeking to:

- Cultivate a comprehensive and actionable knowledge of our data and information assets
- Facilitate improved data and information management behaviours

Through the delivery of:

- An enabling operational data governance infrastructure
- Data management and business process alignment
- Steady states data flow mapping
- Operationally relevant data stewardship
- Embedded data accountability
- Core set of data governance capabilities

Resulting in beneficial outcomes:

- A robust approach to data and information asset management
- An effective means of improving and monitoring data quality
- Data integration across the data system
- Agile and responsive business operating models
- Data practice transparency that engenders trust
A continuum of governance for data

**Gap:** People and Information capabilities

**operational** Data Governance

**political** Governance

Data Governance Board

LDS

CDO

GCDS

GCDO

NZ Data Office

NZ Data Advisory Group

System Structures

Enterprise Structures

Data Flow Mapping

Accountability Designation

Line of Business

Individual

Top - down

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Bridging the gaps

Route: asset management

Knowledge

Steady state model

Data flow

Core capabilities

Data management best practice

Behaviours

Data stewardship

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Holistic data governance

Data-specific aspects of governance:
- Value
- Risk
- Constraints


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ASSET CARE: DATA GOVERNANCE CAPABILITIES
**Traditional Data Governance Model**

- **Designated Governance Roles**
  - **Steward**
  - **Custodian**

- **Line Staff**

**Proposed Data Governance Model**

- **Designated Governance Roles**
  - **Steward**
  - **Custodian**

- **Line Staff**

**Evolving with organisational data maturity**

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Core data governance capabilities

Data point of contact
Subject matter expertise
Access control
Risk management
Internal relationship management

QA/QC management
Data management
Data champion
Data innovation
External relationship management

Proposed Core Capabilities
operational Data Governance Framework

Data point of contact - those delivering this capability will represent a coordinator or staff focal point for data assets within a particular business unit or area of responsibility, including:
- acting as the designated ‘go-to’ person for internally and externally sourced questions, issues or information requests about the data;
- resolving, delegating or coordinating escalation, as appropriate.

Subject matter expertise - the delivery of this capability facilitates the proper management and business use of organisational data assets through the provision of a sufficient level of expertise in either:
- the technical specifications of the data itself;
- public expectations and commitments made at the time of data collection;
- the processes used to evaporate the data;
- the parties of the business where data is critically utilised;
- a combination of these knowledge sources.

If a suitable level of insight isn’t readily available, those applying this capability will understand how to access it from other sources or, having identified a genuine knowledge gap, be able to escalate the topic appropriately for resolution.

Access control - this capability involves the administration of, and accountability for, proper access to relevant data assets, promoting good practice data security. Drawing on the proper level of expertise or delegated authority to make decisions, staff delivering this capability ensure data assets designated as sensitive are only accessed by individuals with the proper authority, clearance and permissions. While exercising this capability, staff will also account for commitments made at the time of collection about how the data would be used, any potential harm to individuals, households, and organisations, and public expectations.

Risk management - those delivering this capability will administer data assets under their responsibility such that they can identify, manage and mitigate potential risks to the organisation, risks, potential harm from the use of that data that would affect external people or organisations.
Capabilities at the Business Decision Point Nexus

- Best practice data management
- Human resource frameworks
- Data ethics
- ngā mātāpono o te tiriti/Treaty partner obligations

ASSET KNOWLEDGE: STEADY STATES DATA FLOW
Why data flow?

- Pervasive gap
- Easily addressed
- Intuitive output
- Holistic view
- Wide range of benefits (high ROI)
**Steady States**: evolved from a production environment value chain context...

“A stable business process output (data + metadata) that satisfies a predefined level of quality.”

- Stats Netherlands

...to a data-mindful business decision point
Steady state decision criteria

1. Relevance
2. Accuracy
3. Timeliness
4. Accessibility
5. Consistency
6. Interpretability

Tolerance
- Qualitative (yes / no)
- Quantitative: (%)
A business decision point flow map

Output states reflect:
- Logical data processes
- Physical movements
- Format changes

Map

- data flow
  - Steady State
  - object
    - Verify
    - Store
    - Integrate
    - Aggregate
    - Analyse/Model
    - Report
  - organisational boundary

- information flow

input

Steady State n

output

Steady State n+1

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Steady state map settings

1. Granularity
2. Density
3. Depth
4. Frequency

- Granularity: SSₙ
- Density: SSₙ
- Depth: SSₙ
- Frequency: SSₙ

vs.

- Granularity: SSₙ
- Density: SSₙ
- Depth: SSₙ
- Frequency: SSₙ

**Criteria:**

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Steady state identification

- Sequential – downstream direction
- Initiates with steady state zero (SS$_0$)
- Unique ID for each steady state
- Logical
Steady state zero (SS$_0$)

- **Definition**: that point in the data flow where the data comes into existence, from the perspective of the relevant business unit.

- Reflects the point at which data is either:
  - collected by the host business unit, or
  - provided to them by an external entity

- Inherent relationship with the boundary of the business unit’s sphere of influence.
The steady state data flow map

Steady State Data Flow (primary)
Data Flow (other domains)
Information Flow

External Domains

Output

Internal Data Flow

External Data Flow

Data Storage

Manual annual data

Telemetered daily data

Installation data

QA/QC manual

QA/QC auto

FTP Data Transfer

Data Transfer

Store

Log

Data Integration

QA/QC verification

Escalation

Report

Other internal data

External data

External reporting
The steady state data flow map
The steady state data flow map
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An operational Data Governance Framework for New Zealand Government

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An infrastructure of data flow monitoring stations

**Business process/Data lifecycle access points:** maintaining data quality, monitoring workflow, transparency

**Business process/Data lifecycle entry points:** embedding best practice, data asset management, accountability
Facilitating line of business data accountability

Data inquiry

Information Asset Register

LOB1

LOB2

LOB3

LOB4

LOB5

Steady State

Accountable staff

Accountable staff

Accountable staff

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Informing data asset valuation

Steady states data flow model

**FOUNDATIONAL MEASURES**

- **Intrinsic Value of Information (IVI)**: How correct, complete and exclusive is this data?
- **Business Value of Information (BVI)**: How good and relevant is this data for specific purposes?
- **Performance Value of Information (PVI)**: How does this data affect key business drivers?

**LEADING INDICATOR**

- Focused on improving information management discipline
- What is your objective for valuing information?

**TRAILING INDICATOR**

- Focused on improving information's economic benefits

**FINANCIAL MEASURES**

- **Cost Value of Information (CVI)**: What would it cost us if we lost this data?
- **Market Value of Information (MVI)**: What good could we get from selling or trading this data?
- **Economic Value of Information (EVI)**: How does this data contribute to our bottom line?

Source: Why and How to Measure the Value of Your Information Assets, August 2015
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gartner.com/SmarterWithGartner
Addressing the high cost of data sourcing/processing

**Data Lifecycle Costs**

Collect and Process: 45% of total lifecycle costs

- Evaluate
- Specify Needs
- Design
- Build
- Collect
- Process
- Analyse
- Disseminate

Labour
Other
Capturing the dynamic nature of data quality

Line of Business - 1

Critical data quality dimensions

Line of Business - 2

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Piloting operational Data Governance and Steady State data flow mapping

- Central Government
- Local Government
- Māori/iwi
Implementation pathways

Explore

- Self Service: data.govt.nz

Socialise

- Engagement: internal & community

Investigate

- Characterise data culture

Commit

- Targeted action plan: Stats NZ
- Data & Analytics Consulting Service

Increasing investment

Increasing system participation

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Document Library Map: operational Data Governance Framework
Stewardship support for the data system

System Data Governance; Māori Data Governance

Data Stewardship Framework

Data Capability Hub

Stewardship “toolkit”

Data & analytics consulting service

data.govt.nz

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For more information...

- kevin.sweeney@stats.govt.nz
- www.data.govt.nz
- Stats NZ website: www.stats.govt.nz