Data Management Maturity (DMM)\textsuperscript{SM} Model Case Studies

HIT Spring Conference, HiMSS Minnesota Chapter

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Kingland Systems Corporation Offerings

- INFORMATION MANAGEMENT SOFTWARE
- DATA CLEANSING & MANAGEMENT
- COMPLIANCE SOFTWARE
- TECHNOLOGY HOSTING
- DATA MANAGEMENT MATURITY
- ADVISORY DEVELOPMENT SERVICES
Analytics Prerequisites

Analytics requires 5 things

1. Data which is complete, timely, and accurate; i.e. trusted and fit for purpose
2. A data model that is designed to meet analytic purposes and intended use
3. Analytic algorithms and statistical models that are available to be leveraged by users
4. User-interface for exploiting the data and presenting the analytics in a user-friendly and accessible fashion
5. Data management activities and technology which is designed and executed to achieve the first 4 aspects; i.e. Data Management Maturity
Data Management – A Definition

• “The ability of an organization to precisely define, easily integrate, protect, effectively retrieve, and deliver data for both internal applications and external communication.”

• Data Management begins with establishing objectives and continues through governance and operational management to deliver quality data outputs to relevant stakeholders that is fit for ‘purpose’.

• Data Management emphasizes data precision, granularity and meaning (aka metadata), and is concerned with how data content is integrated into business applications, as well as how it is passed from one business process to another. It is not technology-dependent, but rather addresses the overall condition of enterprise data from both a business and IT perspective.
It is not possible to master the advanced concepts and functions without a strong foundation.
Data Management Maturity Model Construct

Purpose

- Business purpose of the Process Area

Introductory Text

- Intent of the PA, synopsis of activities, context

Goal(s) of the Process Area

- Goals to be achieved through execution of practices

Core Questions for the process area

- Probing questions for self awareness

Capability Practices (Levels 1-5)

- Objective statements of DM practices expected within the PA, organized by capability level

Example Work Products

- Identification of typical of work products/assets used or generated by the activities

Key

- Explanatory Model Components
- Required for Model compliance
Data Integration

2.1 The set of data integration disciplines and tools used by the organization provides bulk transport and load, change data capture, versioning and configuration, metadata capture and management, and in-line data quality checks and controls.

Data transfer from sources to destinations typically requires complex rules, data transformations, and data standardization. To accomplish these tasks consistently and with the least amount of risk, specialized tools designed to support physical capture and movement of data should be applied, but they can also be used to provide basic analysis of the data and transformations. These tools facilitate maintenance of the metadata associated with ETL processes and provide a means to make changes in a controlled fashion.

Refer to Metadata Management for more information on establishing the processes and infrastructure for specifying and extending clear and organized information about the data assets under management, to increase data sharing, ensure compliant use of data, increase responsiveness to business changes, and reduce data-related risks.

Refer to Architectural Standards for more information on providing an approved set of expectations for governing architectural elements regarding approved data representations, data access, and data distribution, fundamental to data asset control and the efficient use and exchange of information.
Data Management Maturity (DMM<sup>SM</sup>) Model

Compendium of nearly 800 described activities of what must be accomplished to achieve high maturity in data management.

The Data Management Maturity Model and DMM sales mark are owned by the CMMI Institute.
DM processes are **regularly improved and optimized** based on changing organizational goals – we are seen as **leaders in the DM space**

DM practices are managed and **governed through quantitative measures** of process performance

DM practices are **aligned** with strategic organizational goals and **standardized across all areas**

DM practices are **deliberate, documented and performed consistently** at the Business unit level

Data management practices **informal and ad hoc** Dependent on heroic efforts and lots of cleansing
Case Study #1

- Data governance activities had begun across the organization in the year prior
- Belief was that the organization had moderately mature data management capabilities, with some gaps
- The organization had recently undergone a major data quality assessment and cleansing operation on customer data
- Clear evidence existed of poor quality
  - Duplicate data
  - Missing data
  - Inconsistent data
Plan

• Perform scoping and planning to develop organizational scope and ID necessary stakeholder participation
• Conduct a 5-day workshop for reviewing data management activities relative to the DMM Model expectations
  – 4 days of 1-hour Process Area centric workshops
  – Half day for follow-up
  – Preliminary findings brief
• Include stakeholder participants from across the organization, but related to data centered on Customer Registry data as a proxy for data management activities across the organization
• Workshops included 28 attendees, with an average of 5 attendees per workshop session
• Develop affirmation-based information from which to develop a findings report with prioritized recommendations
  – 3-weeks of findings analysis and report generation
Workshop Goals

- Validate organizational goals as they relate to data
- Educate workshop attendees on DMM Model construct
- Furnish attendees with an understanding of Model practice expectations
- Provide leadership with knowledge of how the DMM Model can be used to drive data management process improvement initiatives
- Establish an objective baseline of current organizational practices around Customer Registry relative to the DMM Model
- Develop information from which prioritized and targeted improvement suggestions could be developed
- Review any key artifacts that were identified during the workshops to ensure they were ‘on track’
Workshop Conduct

- Workshop sessions planned 3 weeks in advance to accommodate scheduling of participants
- All participants attended Introduction and Model Overview, along with validation of organizational goals related to data
- Subsequent sessions each focused on 1 Process Area with targeted stakeholders
- Discussed each Practice expectation and developed consensus-based implementation characterization (minimal artifact review)
- All affirmations and notes related to findings were collected in appraisal tool (Appraisal Wizard™ from ISD) for subsequent analysis, report generation and baseline records. (Copy of DB provided to client)
- Collected team attributions only
## Practice Characterizations

<table>
<thead>
<tr>
<th>Characterization</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Fully Implemented</strong> (FI, 100)</td>
<td>Sufficient artifacts and/or affirmations are present and judged to be adequate to demonstrate practice implementation and no weaknesses noted</td>
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<tr>
<td><strong>Largely Implemented</strong> (LI, 75)</td>
<td>Sufficient artifacts and/or affirmations are present and judged to be adequate to demonstrate practice implementation and one or more weaknesses are noted</td>
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<tr>
<td><strong>Partially Implemented</strong> (PI, 50)</td>
<td>Some evidence is present to suggest some aspects of the practice is implemented and several weaknesses are noted.</td>
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<tr>
<td><strong>Improvement In Progress</strong> (IP, 25)</td>
<td>Evidence exists to indicate that initiatives have begun on practice implementation, but activities are still at the beginning stages and not yet fully deployed</td>
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<tr>
<td><strong>Not Yet</strong> (NY, 0)</td>
<td>Evidence indicates that the practice has not yet been initiated</td>
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</table>
- Clear identification of weaknesses in data operations and quality controls
- Identified gaps in governance, guidance and standards contributed to operational and quality deficiencies
- Major deficiencies in process management facilitated inconsistent performance
Detailed Findings

2.1 Data management objectives, priorities, and scope are defined and approved.

The subject areas within scope, that are relevant to a business unit or cross-cutting initiative (for example, reference data used by multiple business areas) are defined and approved by all stakeholders, including IT and lines of business. When multiple business units are impacted, data governance should be engaged. In addition, the scope should address requirements such as externally procured data vital to business processes, regulatory requirements, etc.

Additional characterization or recommendation record associated with the DMS 2.1 Model Practice expectation

Workshop characterization record reference number and record text

Component DMS FP 2.1

DMM Model reference to the specific practice

DMM Model Practice statement and elaboration

Baseline
Model: DMM V1.0 2014-07-22
Process Area: Data Management Strategy (Pa)

Additional practices within the Model that this characterization of applies

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<th>Rec ID</th>
<th>Record Text</th>
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<tr>
<td>816</td>
<td>The team would characterize the interaction model and understanding of priorities and the principles behind them as fully implemented because everyone 'knows' the priorities and objectives, but this is rated as largely implemented due to the lack of a documented set of objectives, priority and scope would be the subject of what will be developed in the later stages of the Data Governance Program at Scale.</td>
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<th>Rec ID</th>
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<td>1047</td>
<td>The Organizational data management strategy expected by the DMM practices can be viewed as the founding document of a data governance program (it may be titled or referred to under a variety of names such as program guide, data governance charter, etc.). It may refer to policies that are in place or need to be developed or may carry policy-level authority depending on the documentation framework employed at the organization. What is critical is that this parent-level document establish the</td>
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**Shared Findings – Case 1**

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<td>904</td>
<td>All indications through affirmations is that data requirements are aligned with business goals so that the relationship between the required data and the business requirement is within the requirements document. While the affirmations indicated that this practice expectation is met with a high degree of certainty regarding business requirements/objectives and data requirements, it was admitted that other than the fact these were both supposed to be documented in the requirement document, there was little in the way of traceability in place to link data to its supported business requirement(s). Therefore this is rated as Largely Implemented versus Fully.</td>
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<td>905</td>
<td>Several conversations spoke of the exercise in place to inventory the data elements and map the data to the business purpose, and the difficulty in this undertaking. This is indicative of weaknesses in the bi-directional traceability between the data requirements and the business need. Continuation of work underway to complete these mappings and the work associated with process flow and data flows will close this gap.</td>
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<tr>
<td>906</td>
<td>Serious consideration should be applied to investigation of how testing can be used to facilitate better traceability between data and business needs. Use of a comprehensive tool could provide significant value for this type of traceability as well as help achieve objectives and needs associated with business glossary and meta data management. It would also provide a much needed capability to ensure that impact assessments related to changes can be conducted with strong confidence.</td>
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**TABLE**

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<th>DRD FP 2.2</th>
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Questions on Case Study 1
Case Study #2

- A national financial organization with $3.6B market capital with 6 distinct business units
- The organization has been on a growth pattern of 14 acquisitions over the past 10 years
- Significant challenges with data integration and maintaining data quality
- Wanted to ensure they had a sound data governance program tightly coupled with risk management
Plan

- Perform scoping and planning to develop organizational scope and ID necessary stakeholder participation
- Conduct a 4-day workshop focused on data governance, leveraging the DMM Model
  - 1 day of data scoping exercises
  - 2 days of 1-hour workshops, Process Area Centric
  - Half-day for follow-up
  - Preliminary findings brief
- Include stakeholder participants from across the organization, but related to data centered on Private Client Group (largest of the business units) as a proxy for data management activities across the organization
- Collect information from which to develop a data governance implementation plan
  - 3-weeks of findings analysis and report generation
Workshop Goals

- Educate workshop attendees on DMM Model construct
- Furnish attendees with an understanding of Model practice expectations relative to data governance
- Provide leadership with insight to how the parts of the DMM model interact with each other
- Establish an objective baseline of current practices across Private Client Group relative to the DMM Model
- Collect information from which to develop a precise roadmap for implementation of a data governance program across the organization that leverages existing practices and plans.
Workshop Conduct

- Sessions planned 2 weeks in advance to accommodate scheduling of participants
- All participants attended Introduction and Model Overview, along with validation of organizational goals related to data
- Initial session conducted an introduction to data scoping for identification of critical data
- Subsequent sessions focused on 1 Process Area each
- Discussed Practice expectations and developed consensus-based implementation characterization (minimal artifact review)
- All affirmations and notes related to findings collected in appraisal tool (Appraisal Wizard™ from ISD) for subsequent analysis, report generation and baseline records. (Copy of DB provided to client)
- Developed record of critical data sets and criteria for identification of critical data elements during a 1-day series of team-focused workshops
Data Management Strategy (DMS) and Data Requirements Definition (DRD) have a good foundation in place, and Risk Management (RSKM) is poised for implementation.
• Process Areas focused predominately on data governance, but including some performance guidance

• Other process areas may contain minor guidance related to data governance, but are predominately focused on performance of other activities

• Found areas of existing capabilities related to governance
Implementation Roadmap

- Roadmap provided via MS Project file
- Tasks, dependencies, and relative durations included
- A few parallel activities, but most are dependent

Establish Data Governance Program (PCG Pilot)

(Monthly progress checkpoints)

~45% of DMM L3 functional expectations

Full DMM Workshop

Rollout Data Governance Program across

Adjustments to performance activities

DMM L3 Assessment
Cross reference guide between business activities and associated project plan recommendations, and the target DMM Model guidance

<table>
<thead>
<tr>
<th>Work focus</th>
<th>DMS</th>
<th>DMP</th>
<th>GM</th>
<th>BG</th>
<th>MM</th>
<th>DQS</th>
<th>DRD</th>
<th>PRVM</th>
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**Notes:**
- 2.1: Business activities
- 2.2: Project plan recommendations
- 2.3: Target DMM Model guidance
- 3.1: Cross reference guide
- 3.2: Additional notes
- 3.3: Technical details
- 3.4: Implementation strategies
- 3.5: Best practices
- 3.6: Monitoring and evaluation

**Source:** Kingland Systems
Questions on Case Study 2
Applicability of the DMM Model

- Comprehensive guidance on what is required to effectively and efficiently manage data, regardless of current data management posture
- Universally applicable set of data management activities (aka Practice Statements). All types of organizations need data management, the ‘what’ is the same – only the how and why differ.
- Focuses on the ‘state of practices’ vs. state of the art, i.e. fundamentals through advanced capabilities (data science, analytics…)
- Ensures alignment on strategy and governance mechanisms
- Built-in dependencies between management, strategy, operational components and IT capabilities to facilitate incorporation and use of trusted data
- Provides a structured and standard framework of activities that can be leveraged to build an individualized roadmap to increased capabilities and data management maturity
Using the DMM – Organizationally-focused Workshops

- Education across all stakeholder groups (senior management, data management professionals, operational staff, key IT resources, and process and risk management staff)
- Analysis of current data management activities (baseline) relative or organizational objectives and DMM model expectations
- Development of targeted recommendations and prioritized improvement guidance
- On-going assistance and checkpoints
- Programmed roadmap of progress assessments
- Formal Capability and Maturity Appraisals to allow comparative evaluation between organizations.
Summary

- DMM model consists of best practices that describe activities for establishing, building, and sustaining effective data management activities from creation through delivery and maintenance. It defines the “what”, you define the “how”

- Developed over several years under leadership by the CMMI Institute (Developer and steward of the CMMI model), leveraging their 25-year global experience with Maturity Models

- Provides a structured and standard framework of practices that can be leveraged to build an individualized roadmap to data management maturity

- It has an accompanying standardized methodology for conducting objective appraisals of capability and maturity levels within the organization’s data management practice for benchmarking and tracking improvements
Thank You

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