Operational Excellence for Data Quality

Building a platform for operational excellence to support data quality.
Background & Premise

- The concept for an operational platform to ensure Data Quality is founded on the Good Manufacturing Practice (GMP) used in most supply chain operations around the world. A GMP is a system for ensuring that products are consistently produced and controlled according to quality standards. It is designed to minimize the risks involved in any pharmaceutical production that cannot be eliminated through testing the final product.

- GMP covers all aspects of production from the starting materials, premises and equipment to the training and personal hygiene of staff. Detailed, written procedures are essential for each process that could affect the quality of the finished product.

- In a similar manner, a GDAP (Good Data Architecture Practice) is a systematic way of ensuring that the data used in operations and across the business supports high quality decision making and meets the quality standards for all core capabilities used to deliver value to customers and stakeholders.
Introducing GDAP

- "Good Data Architecture Practice" or "GDAP" is part of a quality system covering the creation, acquisition, management, and testing of corporate data assets. GDAP is a set of guidelines that outline all aspects of operations and testing that can impact the quality of corporate data (used in core business processes). Many countries are beginning to regulate & legislate that companies submit to audits of their data governance processes and “best practices” are being developed everywhere as a result. GDAP procedures are proposed to consolidate these best practices into a set of consistent guidelines that address current legislative requirements and assure companies data assets are properly managed going forward.

  - Although there are a number of them, all guidelines follow a few basic principles.
  - Data Governance processes are clearly defined and controlled. All critical processes are validated to ensure consistency and compliance with specifications.
  - Data Governance processes are controlled, and any changes to the process are evaluated. Changes that have an impact on the quality of information consumed by internal core business processes (or external entities) are validated as necessary.
  - Instructions and procedures are written in clear and unambiguous language. (Good Documentation Practices)
  - Operations personnel are trained to carry out and document procedures.
"Good Data Architecture Practice" or "GDAP" is part of a quality system covering the creation, acquisition, management, and testing of corporate data assets. …..

- Audit Records are captured throughout the lifecycle for master data (Tier 1) or other data sources that can impact master data (Tier 2) to ensure that all the steps required by the defined procedures and instructions were in fact taken and that the quality data (integrity) is maintained. Deviations are investigated and documented.
- Traceability of operations that “touch” master data is provided in a complete history and records are retained in a comprehensible and accessible form.
- The security and distribution of master data should minimize any risk to data quality.
- Remediation Processes are in place to: conduct data investigations; assess impact on people, processes and technology; effect data modifications and remediate impacts to people, processes, and technology (within and without the company).
- Formalized Defect Management processes are in place to: capture complaints about data and information quality (where information is derived from data); complaints are examined and root cause analysis (RCA) are conducted; appropriate measures are taken with respect to the data defects; and continuous improvement is used to prevent recurrence.
- GDAP guidelines are not prescriptive instructions on how to govern and manage master data. They are a series of general principles that must be observed during the lifecycle of master data management. When a company is setting up its quality program and data governance process, there may be many ways it can fulfill GDAP requirements. It is the company's responsibility to determine the most effective and efficient quality process.
Benefits of GDAP

- **Increased Revenue**
  - Better defined business definitions
  - Improved Customer Service
  - Improved Decision Making

- **Reduced Cost**
  - Improving Integration
  - Improving Service Automation

- **Reduced Risk**
  - Data Standardization and Higher Quality
  - Enforces Data Governance Policies

- **Increased Productivity**
  - Improving Knowledge Consumption
  - Consistent View of Data
  - Reduction in system maintenance workload
  - Increased ROI for Technology Investments
Key Success Factors for GDAP

- **Executive Sponsorship**
  - Master Data is a corporate asset (increases in value & increasingly regulated)

- **Business Owns Data**
  - Decisions around data need to be managed by business function leaders
  - Implementation of decisions is owned by IT
    - Data Stewardship (Processes, Automation, and Operations)
    - Data Integration, Dependencies, & Impact Analysis (int. & ext. providers/consumers)

- **Strong Project Mgmt & Change Management**
  - Changes to master data may impact projects in the pipeline and generate new ones
  - Impact analysis will become a core competency for planning change
  - Covers changes to master data, technology, or DG operational processes
  - Test Automation will become increasingly important to reduce cycle time for change

- **Leverage Enterprise Architecture**
  - People, Process, and Technology need to be woven into the planning & execution for data governance and mastering data in a holistic manner
  - Need to constantly manage Technology Debt & Technical Debt around DG & MDM

- **Operationalize Data Governance & MDM**
  - New set of operational processes that requires dedicated resources
  - Need to adopt LEAN techniques for driving continuous improvement
Implementing GDAP using a Data Mgmt Framework

- As was stated above, data architecture is best rolled out in a series of waves.
- Each wave is comprised of a 3-step program to ensure data is ready for harmonization and GDAP can be applied.
- The 3-steps include Data Modeling, Data Analysis, & Data Integration. These steps form a framework for managing data in an effective and consistent manner.
- This Data Management Framework (DMF) is applied each time a new set of master data is prepared for GDAP.
- The DMF is explained further in the following slides:
GDAP Requires a “shift” in thinking

- Data Integrity is a competitive necessity
- Adaptability, Agility and Accountability can drive competitive advantage
- Data Management is the cornerstone for building an Information Architecture
- Information Architecture will enable The Organization to better deploy and realize benefits from formalized tools, processes & governance

Traditional

- Application-centric
- ERP is the centerpiece
- Function oriented
- Build to last
- Long development cycles
- Application silos
- Tightly coupled
- Object oriented
- Known implementation

Progressive

- Data is the foundation
- Metadata drives the enterprise
- Integration depends on data
- Process oriented
- Build to change
- Agility & Adoptability
- Orchestrated solutions
- Loosely coupled
- Message oriented
- Metadata Driven

Shift Focus to Model-Driven Approach

Shift in Information Architecture Strategy
The future is about building a sustainable & scalable framework for managing the lifecycle for enterprise data. The 3 components will provide consistency, support reusability and improve quality while reducing overall costs. The foundation also maintains control over costs as data volumes and complexity grows in the future.
Executing a DMF “wave” for GDAP

Data Modeling
- Data Model
- Interfaces
- KDEs / Processes
- Define Meta Data
- Review processes against model

Data Analysis
- Cleanse existing data
- Cleanse Data processes / interfaces
- Data gold source enforcement
- Data analysis based on Meta Data
- Define data gold sources
- Structured impact analysis for data model changes
- Update model based on Mfg blueprint

Update & Extend
- Define rules for new processing
- Support new project data governance
- Continuous improvement for data models and data management processes
- Cleanse, & load first waves of new data
- Enforce consistent, validated business rules across users and applications
- Publish/Subscribe implementation / support

Data Integration
- Integrate validated rules and processes for data governance into data processes
- Automate workflows for data review and approval
- Leverage approved data management services vs. system load and deploy
- Improve agility of business to reduce data related process/ service constraints

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## Progression of Benefits for DMF

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<th>Reduce Costs</th>
<th>Support Business Agility &amp; Growth</th>
<th>Improve Stability &amp; Scalability</th>
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<tbody>
<tr>
<td><strong>Data Modeling</strong></td>
<td>• Reduce Manual Workload for Diagnosis</td>
<td>• Improved control enables faster change management</td>
<td>• Centralized model for all data</td>
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<td>• Simplified analysis for identifying dependencies</td>
<td>• Ability to connect strategic vision to tactical implementation</td>
<td>• Applying metadata to data manipulation improves consistency</td>
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<td>• Improve knowledge transfer</td>
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<td><strong>Data Analysis</strong></td>
<td>• Proactive cleansing &amp; profiling reduces rework</td>
<td>• Easy to adapt metadata to meet business needs</td>
<td>• Ability to improve data quality across each technology layers and organizational boundaries</td>
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<td>• Ability to improve data ETL processes for core systems</td>
<td>• Ability to integrate metadata into a single set of tools for Profiling, Auditing &amp; Cleansing</td>
<td>• Apply Business Rules consistently</td>
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<td>• Changes to data easier to develop/integrate</td>
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<td><strong>Data Integration</strong></td>
<td>• Ability to improve day-to-day operations</td>
<td>• Lower integration effort (applications + partners)</td>
<td>• Ability to align data across the enterprise</td>
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<td>• Outsourcing of standard processes/services</td>
<td>• Pre-configured business content</td>
<td>• Centralized management of applied metadata</td>
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<td>• Changes to data easier to develop/integrate</td>
<td>• Simplify Integration Planning</td>
<td>• Automation of manual processes</td>
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<td>• Increased flexibility for planning and managing data changes</td>
<td>• Support consistency in data manipulation and transforms</td>
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<td>• Automate enforcement of Business Rules</td>
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Key Milestones for GDAP

- Establish the Business Vocabulary
- Build the Core Models (Ontologies, Taxonomies)
- Introduce Lightweight Data governance
- Implement MDM for Tier 1 Data
- Establish Information Architecture across the data lifecycle
- Align Data Quality & Data Security
- Extend the Core Models to include Measures & Analytics
- Operationalize Deep Analytics using Metadata (core & context)
- Establish Policies & Six Sigma for Data Management Operations
- Build Enterprise Search as a platform independent utility
- Introduce a Metadata Repository as a key enabler for Big Data
Contact us if we can assist you further:

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