BALANCING DATA AND PROCESS
TO ACHIEVE ORGANIZATIONAL MATURITY

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@DataAviator
AGENDA

- Organizational effectiveness
- Standards/bodies of knowledge
- Maturity indicators
  - Data Maturity
  - Process Maturity
- Supporting Perspectives
  - Governance
  - Enterprise architecture
  - Architecture complexity
- Summary
- Q&A
SO MANY STANDARDS AND BOKS!

- CMM: Capability Maturity Model (1988)
  - Sponsored by US Department of Defense
  - Carnegie Mellon University, Software Engineering Institute
  - Used as the basis to derive many other standards

- Other Standards
  - DMM: Data Maturity Model
  - BPMM: Business Process Maturity Model - Object Management Group
  - COBIT: Control OBjectives for Information and Technology 2000
  - ITIL: Information Technology Infrastructure Library 2002
  - TQM: Total Quality Management
  - SPC: Statistical Process Control

- The Bodies of Knowledge
  - DMBOK: Data Management Body of Knowledge
  - BABOK: Business Analysis Body of Knowledge
  - PMBOK: Project Management Body of Knowledge
WHAT IS MATURITY?

- Mature
  - “Having reached an advanced stage of development”

- Organizational maturity requires:
  - Data Maturity
  - Process Maturity
    - One cannot be achieved without the other

- They are fundamental to:
  - Enterprise architecture
  - Governance
<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Data Governance</th>
<th>Master Data Management</th>
<th>Data Integration</th>
<th>Data Quality</th>
<th>Behaviour</th>
<th>Technology &amp; Infrastructure</th>
<th>Primary IT Focus</th>
<th>Information &amp; Strategic Business Enablement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>None</td>
<td>no formal master data classification</td>
<td>ad-hoc, point to point</td>
<td>Silos, scattered data, inconsistencies accepted</td>
<td>Unaware / Denial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Initial</td>
<td>Project Level</td>
<td>Non-integrated master data</td>
<td>Reactive, point-to-point interfaces, some common tools, lack of standards</td>
<td>Recognition of inconsistencies but no management plan to address</td>
<td>Chaotic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Managed</td>
<td>Program Level</td>
<td>Integrated, shared master data repository</td>
<td>common integration platform, design patterns</td>
<td>Data cleansing at consumption in order to attempt data quality improvement</td>
<td>Reactive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Standardized</td>
<td>Division Level</td>
<td>Data Management Services</td>
<td>Middleware utilization: service bus, canonical model, business rules, repository</td>
<td>Data Quality KPI's and conformance visibility, some cleansing at source.</td>
<td>Stable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Advanced</td>
<td>Cross Divisional</td>
<td>Master data stewards established</td>
<td>Data Excellence Centre (education and training)</td>
<td>Prevention approach to data quality</td>
<td>Proactive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Optimized</td>
<td>Enterprise Wide</td>
<td>Data stewardship council</td>
<td>Data Excellence embedded in corporate culture</td>
<td>Full data quality management practice</td>
<td>Predictive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Value Generation**
- **Primary IT Focus:**
  - **High**
  - **Low**

**Risk**
- **Low**
- **High**
DATA MODEL UTILIZATION

Evolution

Organization Maturity

Documentation and/or Physical Database Generation (project focused)

Conceptual, Logical, Physical (Design)

Enterprise including canonical, lineage, governance metadata

Full governance metadata, business glossary integration, lifecycle, value-chain

Fully integrated modeling, glossaries, metadata, self-serve analytics
DATA - LIFECYCLE

- Describes how a data element is created, read, updated, deleted (CRUD)
- Many factors come into play
  - Business rules
  - Business processes
  - Applications
- There may be more than 1 way a particular data element is created
- Need to model:
  - Business process
  - Data lineage
    - Data flow
    - Integration
    - Include Extract Transform and Load (ETL) for data warehouse/data marts and staging areas
<table>
<thead>
<tr>
<th>Level/Description</th>
<th>Initial</th>
<th>Managed</th>
<th>Standardized</th>
<th>Advanced</th>
<th>Optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus</strong></td>
<td>Individual: people rely on personal methods to accomplish work</td>
<td>Proactive: management take responsibility for work unit operations and performance</td>
<td>Integrated: standard processes based on best practices in work units</td>
<td>Stable: variation reduced - re-use, mentoring, statistical management</td>
<td>Systematic: improvements evaluated and deployed using organizational change management</td>
</tr>
<tr>
<td><strong>Work management</strong></td>
<td>Inconsistent: little or no preparation for managing a work unit</td>
<td>Managed: balance commitments with resources</td>
<td>Adaptable: standard processes tailored for best use in different circumstances</td>
<td>Empowered: staff have the process data to evaluate and manage their own work</td>
<td>Continual: individuals and workgroups continuously improve capabilities</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>Inefficient: few measures for analyzing effectiveness</td>
<td>Repeatable: work units use procedures that have proven to be effective</td>
<td>Leveraged: common measures and processes. Promote organization wide learning.</td>
<td>Multi-functional: advance from functional processes to role based business processes. (ownership)</td>
<td>Aligned: performance aligned across the organization to attain strategic objectives</td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td>Stagnant: no identifiable foundation for commitment and improvement</td>
<td>Responsible: work units manage capability to meeting their own commitments. (Silos)</td>
<td>Professional: organizational culture emerges from common practices across work units</td>
<td>Predictable: metrics in place to predict capability &amp; performance</td>
<td>Preventative: Systematic elimination of defects and problem causes</td>
</tr>
<tr>
<td><strong>Business Process</strong></td>
<td>Few activities explicitly defined. Processes lack current state documentation.</td>
<td>Basic management processes and controls established to track progress. Processes planned, documented, tactically performed.</td>
<td>Process is documented and standardized. Cross functionality understood.</td>
<td>Detailed measures of process and output quality. Processes managed, controlled and forecasted using quantitative techniques (and statistical algorithms)</td>
<td>Continuous process improvement enabled by quantitative feedback. Processes fully integrated, fluid, highly predictable</td>
</tr>
<tr>
<td><strong>Decision making</strong></td>
<td>Tribal Knowledge, gut-feel decisions, hierarchical structure.</td>
<td>Functional process orientation, data driven decisions, quality by inspection</td>
<td>Integrated processes, performance metrics, data driven decisions</td>
<td>Self service dashboards &amp; analytics, exception management</td>
<td>Competitive advantage through best practice innovation.</td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
<td>Disparate IT systems</td>
<td>Random services adoption</td>
<td>Full service adoption</td>
<td>Service Oriented Architecture (SOA)</td>
<td>Process driven enterprise</td>
</tr>
<tr>
<td><strong>Productivity</strong></td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Low</td>
<td>Risk</td>
<td>Low</td>
<td>Efficiency</td>
<td>Value generation</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>High</td>
<td>Waste</td>
<td>Low</td>
<td>Management</td>
<td>Leadership</td>
</tr>
</tbody>
</table>
PROCESS MODEL UTILIZATION

Organizational Maturity vs. Evolution

- Documentation
- Business Process Management (BPM)
- Process Improvement
- Process Design
- Fully Mature (Lean, Six Sigma)

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## SUMMARY DESCRIPTORS

### Organizational Maturity

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Expansion</th>
<th>Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Initial</td>
<td>Managed</td>
<td>Standardized</td>
</tr>
<tr>
<td>Individual initiative, heroics</td>
<td>Reactive</td>
<td>Integrated</td>
</tr>
<tr>
<td>Inconsistent</td>
<td>Repeatable</td>
<td>Adaptable</td>
</tr>
<tr>
<td>Inefficient</td>
<td>Responsible</td>
<td>common processes</td>
</tr>
<tr>
<td>Stagnant</td>
<td>Tactical processes</td>
<td>Documented and standardized</td>
</tr>
<tr>
<td>Lacking current state documentation</td>
<td>Functional process orientation</td>
<td>Integrated processes</td>
</tr>
<tr>
<td>Tribal knowledge</td>
<td>Quality by inspection</td>
<td>Performance metrics</td>
</tr>
<tr>
<td>Gut-feel decisions</td>
<td>Random services adoption</td>
<td>Data driven</td>
</tr>
<tr>
<td>Disparate IT systems</td>
<td>Basic controls</td>
<td>Full service adoption</td>
</tr>
<tr>
<td>Cost cutting</td>
<td>Project monitoring</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Ad hoc</td>
<td>Reduced rework</td>
<td>Management</td>
</tr>
<tr>
<td>Low alignment</td>
<td>Typically meet schedules</td>
<td>Automated exception reporting</td>
</tr>
<tr>
<td>Unpredictable</td>
<td>No business architecture</td>
<td>Business silos still exist</td>
</tr>
<tr>
<td>Reactive</td>
<td>Immature or no data architecture</td>
<td>Data management services</td>
</tr>
<tr>
<td>Point-to-point interfaces</td>
<td>Integrated master data repository</td>
<td>Middleware (service bus)</td>
</tr>
<tr>
<td>Non-integrated master data</td>
<td>Common integration platform</td>
<td>Canonical model</td>
</tr>
<tr>
<td>Lack of standards</td>
<td>Recognize data quality problems</td>
<td>Model/metadata repository</td>
</tr>
<tr>
<td>Inconsistencies recognized</td>
<td>Data cleansing at consumption</td>
<td>Data quality KPI’s</td>
</tr>
<tr>
<td>Chaotic</td>
<td>Design patterns</td>
<td>Some data cleansing at source</td>
</tr>
<tr>
<td>Project data governance</td>
<td>Program data governance</td>
<td>Divisional data governance</td>
</tr>
</tbody>
</table>

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ORGANIZATIONAL MATURITY JOURNEY

Not Feasible

Not Feasible
ADDRESSING GOVERNANCE THROUGH MODELS

Data Quality
Data Architecture
Data Modeling & Design
Data Storage & Operations
Data Security
Data Integration & Interoperability
Reference & Master Data
Documents & Content
Data Warehousing & Business Intelligence
MetaData
TOGAF ARCHITECTURE DEVELOPMENT CYCLE
# MODELS ARE CRUCIAL! (ZACHMAN FRAMEWORK)

<table>
<thead>
<tr>
<th>Level</th>
<th>What</th>
<th>How</th>
<th>Where</th>
<th>Who</th>
<th>When</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual</td>
<td>Material List</td>
<td>Process List</td>
<td>Geographical Locations List</td>
<td>Organizational Unit &amp; Role List</td>
<td>Event List</td>
<td>Goal List</td>
</tr>
<tr>
<td>Conceptual</td>
<td>Entity Relationship Model</td>
<td>Process Model</td>
<td>Locations Model</td>
<td>Organizational Unit &amp; Role Relationship Model</td>
<td>Event Model</td>
<td>Goal Relationship</td>
</tr>
<tr>
<td>Logical</td>
<td>Logical Data Model</td>
<td>Process Diagram</td>
<td>Locations Diagram</td>
<td>Role Relationship Diagram</td>
<td>Event Diagram</td>
<td>Rules Diagram</td>
</tr>
<tr>
<td>Detailed</td>
<td>Data Details</td>
<td>Process Details</td>
<td>Location Details</td>
<td>Role Details</td>
<td>Event Details</td>
<td>Rules Details</td>
</tr>
</tbody>
</table>

1. **Scope**
2. **Business Model**
3. **System Model**
4. **Technology Model**
5. **Detailed Representation**
DATA MODELING CONTEXT

Enterprise Model(s)

Enterprise Data Dictionaries

Conceptual Models

Implementation Models

Data Warehouse

DATA WAREHOUSE

Customer

CustomerDemo

CustomerDemographics

Customers

Employees

EmployeeTerritories

Order Details

Orders

Products

Region

Shippers

Suppliers

Territories

Conceptual Models

Implementation Models

Data Warehouse
SUMMARY

- Organizational maturity requires:
  - Data Maturity
  - Process Maturity
    - One cannot be achieved without the other
- They are fundamental to:
  - Enterprise architecture
  - Governance
- Enterprise architecture is the solution
  - Solid data architecture foundation
  - Integrated process modeling to provide business context
- Modeling is more important than ever before!
  - Data modeling
  - Process modeling
  - Data lineage
  - Metadata
  - Business glossaries
- Focus on enabling business capabilities
  - Driven by goals and strategies
  - Supported by advanced architecture
THANKS!

Any questions?

You can find me at:
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