White Paper

Data Governance Considerations for EA and BPA Modeling Tools

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With Enterprise Architecture (EA) and Business Process Analysis (BPA) modeling tools, there is always a need to govern content. The importance of data governance may not be initially clear, but over time as content increases data governance challenges increase in visibility.

This white paper aims to define data governance, highlight some standards used in this area and perhaps most importantly offer some practical guidance as to how to implement comprehensive data governance. The practical guidance has been used successfully many times with EA and BPA tool implementations in the past.

What is Data Governance?

Although data governance is generally a well-understood term, there are many definitions. One of the better definitions is published in the Data Management Body Of Knowledge (DMBOK) standard:

> *"The exercises of authority, control and shared decision making (planning, monitoring, enforcement) over the management of data assets"* [1]

Another good and concise definition is below as published in the Data Administration Newsletter:

> *"The execution and enforcement of authority over the management of data assets and the performance of data functions."* [2]

With the data governance concept well defined, it may be useful to review the relationship between data governance and governance, the

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latter is much broader and has a close relationship with government. The DMBOK refer to simple "governance" as:

> *"The exercise of authority and control over a process, organization or geopolitical area. The process of setting, controlling and administering and monitoring conformance with policy"* [1]

In order to further define data governance, it helps to look at the DMBOK data governance functions, from these we can see all of the areas a data steward and / or tool owner would be responsible for. In the context of EA and BPA tools, such a comprehensive set of functions is partly redundant since the data governance required is on a much smaller scale, yet many should resonate with tool owners. These functions are shown in the below graphic and are further analyzed in section 4:

Fig 1 DMBOK[1]

Why Implement Data Governance?

As already mentioned, the need for data governance is not always immediately clear, outlining the case for governance however is often quite simple. One example of a common data governance challenge is found in an organization's collection of Microsoft SharePoint sites. More often than not they have poorly implemented data governance making it difficult to find content, difficult to understand what should be deleted or archived and when, etc.…

> *"These so-called collaborative tools have become nothing more than document graveyards where old Word documents go to die. Expensive and harmless until a legal case pops up and the company discovers it should have deleted those a long time ago"* [3]

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One of the primary concerns of EA and BPA tool owners is (or should be) how to enable multiple users to collaborate with one repository of information whilst ensuring the information created can be relied upon. If an EA or BPA modeling tool's repository has no data governance the below are common complaints:

1. The prevalence of rogue content
2. Difficult to find correct data
3. Inaccurate reports / analyses
4. Frequent erroneous content updates

These complaints are caused by any combination of the below factors:

1. Poorly trained users
2. Data models misaligned with business needs
3. Failure to properly safeguard live content
4. Poor user management
5. Missing tool functionality
6. Lack of content management i.e. simple folder and library structures
7. Missing or partial data (making it difficult to distinguish correct data from incorrect data)
8. Infrequent data update / refresh / synchronization

Most of the above challenges can be overcome with well-defined and implemented data governance.

What Does Data Governance Involve?

In section 2 the DMBOK data governance functions were shown and explained to help define data governance. In order to better understand the practical application of these functions, in the context of an EA / BPA data steward or tool owner, the below is a proposed mapping of these data governance functions into some competency areas for governance implementers.

DMBOK Function: Meta Data Management

Competency Area(s):

- Metamodel definition, extension

DMBOK Function: Quality Management

Competency Area(s):

- Definition and communication of data quality standards and guidelines
- Data quality reporting, communication and enforcement

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DMBOK Function: Data Architecture Management

Competency Area(s):

- Metamodel publication and communication
- Data integration control & communication

DMBOK Function: Data Development

N/A - Provided by the vendor

DMBOK Function: Database Operations Management

Competency Area(s):

- Database configuration management
- Database cleanup (perhaps via tool interface)

DMBOK Function: Data Security Management

Competency Area(s):

- User and profile management
- Management of data access permissions

DMBOK Function: Reference & Master Data Management

N/A - function for broader enterprise data management

DMBOK Function: Data Warehousing & Business Intelligence Management

N/A – function for broader enterprise data management

DMBOK Function: Document & Content Management

Competency Area(s):

- Database backup policy implementation
- Repository content management reporting & implementation

It is critical to understand at this stage, that implementing data governance is not the same as managing information. Although this can be done by the same person, they are two distinct roles. In order to highlight this John Ladley has created the “Governance V” which shows; the left side – data governance, ensuring that data management is happening as it is supposed to. The right side – information management, the managers and executives who set the direction for information management. At the bottom of the V are the activities that operate the organization.

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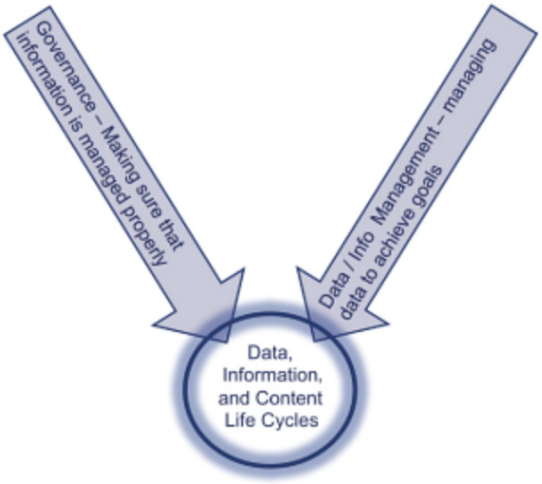

Fig 2 John Ladley [3]

In the context of EA and BPA tools, information management would primarily include metamodel strategy, user management and data storage fundamentals.

How to Implement Data Governance

Sometimes tool owners set themselves the challenge of defining data governance, without fully understanding what they want to achieve, it is much easier to first define a set of desired data quality requirements. There are many academics who have proposed data quality criteria, including Wang and Strong [4], Delone and McLean [5] and Goodhue [6], however a simple yet comprehensive set has been provided by the US Department of Defense (DoD) [7]:

Accuracy: A quality of that which is free of error. A qualitative assessment of freedom from error, with a high assessment corresponding to a small error.

Completeness: Completeness is the degree to which values are present in the attributes that require them.

Consistency: Consistency is a measure of the degree to which a set of data satisfies a set of constraints.

Timeliness: As a synonym for currency, timeliness represents the degree to which specified data values are up to date.

Uniqueness: The state of being the only one of its kind. Being without an equal or equivalent.

Validity: The quality of data that is founded on an adequate system of classification and is rigorous enough to compel acceptance.

By understanding the criteria by which we are measuring our data quality, it is possible to implement comprehensive data governance.

There are hundreds of detailed analyses employed by data stewards and / or Modeling tool owners to govern content. It would serve a limited purpose to attempt to list out these analyses however it is practical

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and useful to give some sample types of analysis or methods typically used. In order to present a coherent set of these methods, the data governance requirements listed in the previous section will be used for classification.

Accuracy

Method	Example
Fuzzy logic checks	Financial Advisor / Finance Advisor
Alias / Name comparison	Compare master data source names vs. Tool data source names, i.e. SAP Solution Manager vs. SAP Solman
Master data source checks	Retirement dates for applications correct
Custom	i.e. All high level processes should have an ownership relationship to a business unit

Completeness

Mandatory field completeness	All processes must have a description
Mandatory relationship population	All applications must have a vendor
Data source comparison	Master application catalog vs. tool data source application catalog

Consistency

Library content comparison	If a complete target state is required, missing object comparison & validation

Timeliness

Mandatory data deadline check – varies	All project dates must be populated within 1 week of kick-off
User Activity Checks	Confirm a user is active / license management

Uniqueness

Fuzzy Logic checks (see accuracy)	

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Validity

Custom	All objects must be reviewed yearly, report objects out of range
Master data source checks	Retirement dates for applications correct (see accuracy)
SME logic checks	Processes which aren't performed anymore / invalid / inaccurate information

In order to implement the methods listed above, it is important to use a variety of features / functions of your EA or BPA tool, John Ladley [3] has listed some of the features which may be required of a tool to implement governance:

- Principal and policy administration*
- Business rules and standards administration*
- Organization management
- Workflow for issues and audits*
- Data dictionary
- Enterprise search*
- Document management*
- Metrics scorecard – data gathering, synthesis and presentation
- Interfaces to other workflows and methodologies
- Training and collaboration facilities*

The above features apply mainly to Master Data Management (MDM) and Enterprise Data Management (EDM), some of these features apply to the governance of EA and BPA tools, these features have been marked *.

Each modeling tool has its own set of relevant modules / functionality to support the above list of features, in my experience the most flexible and valuable piece of functionality available in an EA and BPA modeling tool is the reporting module. Generally all modeling tools support custom reporting and since data governance isn't a one size fits all discipline, this functionality lends itself most naturally to support data governance. Custom reports can be created to filter and sort data to create data governance views, these views enable stakeholders to quickly gain visibility of the state of the data they manage.

One reporting tool, which has been used with the EA and BPA modeling tool iServer 2015, is Microsoft Report Builder. This tool has been used to develop many data governance reports to great effect and works well with iServer and other SQL based EA and BPA modeling tools.

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Conclusion

Data governance is a key consideration for EA and BPA tool owners, for this reason it is advisable to provide some rigor to the development and implementation of this governance. This white paper has introduced the DMBOK data governance functions and broken them down into competency areas for governance implementers. The role of data governor has been further defined by separation of the information governor role vs. the data governor.

Building upon this definition of what should be done by a data governor, the Department of Defense's (DoD) data quality criteria have been used to classify some typical data governance methods, which offer practical guidance on the implementation of data governance.

The methods listed in this white paper can be used by tool owners to begin defining organization specific data governance, while the DoD criteria or any of the other data quality criteria listed can be further used to guide implementations.

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