White Paper

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Introduction

Self-service data access is the terminology used within business intelligence to explain any business user being able to easily access the information required to make better decisions. In order to provide consumable information, solutions need to be designed with ease of use in mind. At the same time, data needs to be captured and stored using a governed approach. This means making sure that the information accessed is reliable and valid. Data governance allows for this by providing organizations a way to manage data entities over time. This cohesive approach to data access provides businesses with the flexibility they need to analyze data in the way they require by ensuring data accuracy and validity. It also supports data consumption within an easy to use, consistent, and reliable manner.

The reason data governance cannot be overlooked is because organizations struggle with their data on a continuous basis. Self-service access adds additional challenges because not all business users understand the principles of statistics or how to validate their business rules accurately. Ensuring data accuracy within self-service design means managing data in a centralized structure using a data governance approach. The combination of data governance and self-service access is what provides the value within an analytics environment because the information being consumed can be validated against the data being accessed.

Therefore, self-service BI requires organizations to consider how they will manage their data for consistency and reliability. This requires evaluating data governance and developing a strong approach to managing data. This paper will look at the importance of implementing a data governance strategy to complement self-service BI access. It is no longer enough to implement easy access to information that is agile without ensuring a strong data infrastructure and way to manage accuracy and data validity. Therefore, this paper will also identify the infrastructure requirements, managed data access, the value of self-service interactivity, and the development of a long-term data governance strategy to support broader analytics use and getting business value out of data.

The Importance of Data Governance

Data governance provides a consistent way to manage data across business units and to make sure that information delivered is reliable and accurate. Organizations without this level of understanding run the risk of making decisions based on wrong data. This can include only having access to a subset of information needed or not being able to access the information needed to make decisions. On a practical level, this can lead to the inability to understand why sales or customer retention is being affected in a negative way due to a new marketing initiative or leave management with multiple versions of the truth without a way to know which version is correct. These are only some of the areas affected by a lack of centralized data governance.

Gwen Thomas at the Data Governance Institute defines data governance as "a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models within describe who can take what actions with what information, and when, under what circumstances, using what methods."[1] Therefore, data governance focuses on these three areas:

1. Developing and aligning business/data rules
2. Managing and resolving issues associated with these rules
3. Monitoring and enforcing compliance of these rules while supporting the stakeholders involved

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[1] http://datagovernance.com/

As such, governance is tightly coupled with BI. Based on the business challenges faced due to inaccurate data management, the importance of data governance becomes obvious. Businesses need a way to leverage self-service BI access and diverse data assets without having to compromise data integrity. Data governance is the answer to these challenges and although processes and defined rules may be different within each company, the concepts applied are meant to ensure data validity within any organization.

To benefit from a data governance initiative, organizations need to address the following:

This chart provides more insight into the steps required for successful governance initiatives:

Step	Task	Description
1	Identify the right data stakeholders	This means attaching ownership to information assets and understanding the role these stakeholders play in relation to the value associated with that data.
2	Define the organization's data entities	Each data entity will have its own business processes and general rules that support the business.
3	Develop the procedures and rules that make up data governance compliance	Ensure that there is agreement across the organization in relation to rules and what each means.
4	Identify how to handle non-compliance	This includes the processes to correct non-compliance, and the chain or responsibility for addressing issues that arise.
5	Create a way to monitor ongoing data governance	Some organizations do this manually, while others take advantage of metrics designed to monitor processes and develop an action plan based on non-compliance.

Step	Task	Description
6	Ensure that the technology used can support the data governance initiative	Look at software offerings that include data governance capabilities to develop an integrated approach to self-service access.
7	Provide data governance at the data access level	This means making sure that information is managed through the infrastructure and not at the application level to make sure that governance is standardized across the organization.

Understanding The Technology That Supports BI Agility And Self-Service Interactivity

There is an inaccurate assumption that achieving an agile and self-service BI environment is easy. The reality is that, although the solution should be designed in a way that is easy for business users to consume, the actual IT infrastructure requires a lot of effort to design and maintain. The goal of developing a strong infrastructure to support self-service, ease of use, and flexibility is to provide business users and business analysts with the tools they require to make better decisions in a way that is intuitive and trustworthy. Due to market trends, many solutions are designed to do just that, but still require developers or BI expertise to design solutions that support agile and self-service needs. What this means for organizations trying to achieve true ease of use is that a strong technology infrastructure is required to support easy and reliable data access. To accomplish this, strong infrastructures require three things.

1. Technology platform

Many agile platforms are developed to take into account regular changes to the data being analyzed. This includes both data sources accessed and the fields within them. Because organizations use analytics to support their decision-making, static access to data provides no value. Consequently, businesses require the ability to access information assets, as they need them, share data when required, and be able to slice and dice pieces of information based on business challenges and not based on pre-defined drill through patterns. What this means for software selection is that selecting a solution that supports this type of flexible data access is just as important as the capabilities supporting self-service interactivity.

The business intelligence market landscape has evolved from a historical looking reporting and analytics solution set to a flexible data architecture meeting the needs of a variety of operational and advanced analytics requirements. The platform supporting this requires data acquisition and storage that include support of regular changes within the data model and information being accessed, as well as, potential change data capture. In some cases, data discovery requires the development of a flattened data structure whereby business users can add the data they need when they need it.

2. Expertise

Although little expertise should be required to use these solutions, developing successful BI applications does require a certain level of expertise. BI experience requires more than database development skills. IT experts tend to view the world from the perspective of IT – hardware, software, business applications, data management, and the like. Having the proper expertise in-house means that there is an understanding of how data will be accessed and the business value associated with leveraging BI to address business challenges. This can then be translated into a sustainable infrastructure to take into account what data is important to which departments and why.

At the same time, some argue against the idea of developing data access that is specific to a role or that may limit the types of analytics possible. This argument addresses the fact that expertise of business users is not required and that a standard access point will be provided for all BI needs. In this case, self-service means just that. IT develops the framework that business users can access without having to rely on knowledge of what may be needed. In these cases, it is assumed that BI users will be able to interact with the data the way they need in a way that is self-evident. This issue is that this might apply to a subset of business users but cannot be a given when looking at broad BI use.

3. Data access and consolidation

Access to the right information at the right time supports strategic decision-making and planning. This requires the availability of relevant data sets and a broader view of the information value chain. For instance, gaining better insights into customer behavior requires understanding customer transactions, level of satisfaction, overall perceptions, demographics, reviews, and financial standing. Much of this information will reside in different places, sometimes internal and sometimes external to the organization. In order to access information effectively, it requires consolidation and management at a broader level, or alternatively a way to access federated or disparate data from trusted sources. This helps ensure data accuracy and long-term validity. Without this, business users learn to not trust their data. Because BI's success lies in its ability to increase accuracy and visibility, ensuring that disparate data sets are joined and stored properly help increase trust in data, which in turn helps increase general adoption.

Developing Data Consistency and Reliability

The ability to combine self-service and agile BI deployments with strong data governance requires a structured approach and strong data management. A key success factor to self-service is making sure that those using BI actually trust the validity of the data. Without this trust, adoption will be low and analytics will always come under scrutiny. This is why there is a focus on consolidating data and developing a platform that provides flexibility in self-service access. Flexible front-end design means that the data being accessed needs to be consistent and reliable.

Without a way to govern data, it becomes impossible to know whether the information presented is accurate, how it has been manipulated, and whether it can be audited. This has been shown time and again by organizations leveraging spreadsheets and coming to learn that each department maintains their own view of the organization – none of which match each other. This reflects the bigger issues surrounding a lack of compliance and the availability of an audit trail because it becomes virtually impossible for companies to identify the right version of the truth without a lot analysis into understanding the existing data disparities. Essentially, for organizations wanting to understand data inconsistencies across the organization, using spreadsheets leaves them out in the cold. Consequently, businesses require a way to validate data regularly, address issues as they occur, and ensure that inconsistencies can be corrected.

This is the essence of a centralized data access point or system of record. With all business users accessing the same data stored in a single platform, or by having users access federated data stores that have been validated, value-based decisions can be made and trust guaranteed. Information remains consistent so that even when users within different business units require individual insights, the underlying data will be monitored to ensure that it is accessed within a governed environment. Essentially, making sure that information sources and any calculations are defined and managed centrally to ensure that data can be justified and remains consistent over time.

Although different business units may define entities in a different way, it is still important to make sure that all users access the same information. A common argument against this is that customer may be defined differently depending on

who is looking at customer information. For instance, a customer service manager considers customers as consumers buying a product, while the help desk may be supporting internal users, and suppliers may consider buyers as customers. Therefore, organizations need to manage this diversity of terminology and definitions by maintaining strong metadata while providing end users with the flexibility to analyze data and access BI in a way that supports self-service delivery. All of these data complexities highlight the importance of building a BI platform based on strong data governance.

Making Sure Self-Service Capabilities Match The Usability Requirements Of Business Users and Support Agile Development

Saying that self-service BI and an agile infrastructure should be easily accessible and provide ease of use is one thing; actually accomplishing this task requires gathering business requirements to ensure usability. Many organizations overlook the value of taking the time to gather business requirements and understand the needs of the user community. They feel that once software is selected it will automatically meet business needs because of the broad capabilities that can be leveraged.

Developing an offering without including gathering business requirements, however, leads to a lack of cohesion between IT development and the business units adopting the solution. In some cases, self-service interactivity will still provide benefit, while in other cases, adoption will be lacking, leading to high levels of frustration and low trust. For organizations committed to self-service success and data governance management, here are the questions to ask to make sure that the right requirements are gathered for both business use and strong information management:

1. Who are the stakeholders involved?

Each BI project will have a variety of stakeholders involved. There are project sponsors, future end users, subject matter experts, project managers, and IT developers that will be involved and have a say in the final look and feel of the solution. Each stakeholder group may have its own outlook on both self-service BI, developing an agile platform to support analytics, and maintaining a data governance initiative – all of which will require longer-term commitment. Understanding stakeholder outlook and what each group and/or individual hopes to achieve will make gathering requirements and prioritizing development tasks easier. In some cases, understanding the stakeholder landscape also provides any insight into corporate politics and how to manage discrepancies between project sponsorship and delivering business value.

2. What is the scope of the project?

Although it would seem that defining project scope would be easy, many organizations find this phase challenging because over time projects seem to expand as organizations try to include additional items that relate to the original scope, but fall just outside of it. Scope creep has wide implications that include data not accounted for and trying to address business challenges that were previously considered out of scope.

Identifying the scope means prioritizing how self-service will be rolled out, what data access is required, and how solutions will be leveraged. In some cases, organizations choose to load all of the potential data needed initially with future development focusing on applications deployed to end-users. The opposite approach involves developing the data platform based on fixed analytics' needs and expanding data access over time. Both approaches have benefits and challenges and may depend on deployment methodology (i.e. on premise versus in the cloud or hosted) and project sponsorship.

The best way to implement a BI project is to do so incrementally. Whether this means data stored or actual use, organizations need to understand that BI is a continuous and iterative process. Therefore, platforms should be selected with the ability to support growth – both in data storage volumes and diversity in processing requirements – while making sure it addresses the needs of the current project.

3. What business pains are being experienced?

BI implementations are always driven by some lack. Organizations struggle with accessing their data in a consolidated manner and may not be able to see a full view of what is occurring within the organization. The same is true for sales performance, financial planning, and customer insights. Most decision makers only have access to pieces of information and make decisions based on an incomplete view of what is happening. Effective BI solves this providing BI initiatives are tied into addressing business pains.

These challenges exist because sometimes projects are defined without understanding the true operational challenges. If IT initiatives aren't coupled with the issues being faced by the business units being served, then self-service BI initiatives will be misdirected. Although it isn't always important to understand the exact way business users will interact with the toolsets developed, it is important to understand what gaps exist to help drive insight within the new BI applications.

4. What is the underlying data behind these business pains?

Once the people involved and business challenges are identified, the associated data can be identified. Even if taking an iterative approach to data capture, this phase still requires identifying:
   a. All of the relevant data sources
   b. How they are interconnected
   c. How they fit within the bigger picture of the business

In many cases, this will include external or unstructured data, which makes the data integration processes more complex. There have been estimates as high as 80% of the overall time spent on a BI implementation is taken up by data integration activities. Although this is not always the case, data integration and the management of information assets stored within a data warehouse or operational data store, through data streaming, or federation can be quite complex.

The amount of data and number of data sources influence the complexities involved in data capture, storage, and may affect the platform choice. For instance, organizations with growing complexities are starting to leverage big data platforms to store their increasing data volumes while leveraging BI platforms to access a sub-set of that data. Other organizations are moving to the cloud instead, to store their data without having to acquire more hardware in-house or support larger on-site deployments in the future. These two examples are common trends seen within the market and show the increasing diversity of data storage and how information is being captured to support BI applications.

5. Who is the BI audience and what is their level of interactivity with the tools provided?

The stakeholders involved in BI design might not be the users of the tool itself. In some cases, organizations build customer-facing applications to empower their customers. In many cases, these solutions are built with the input of those who interact with customers but not with a large number of customers themselves. Additionally, it is virtually impossible to interview everyone who will be using a solution if deploying to a large audience internal to the organization. For organizations aiming to target most employees, the main focus should be on ease of use and high levels of interactivity.

Different categories of BI users will have varying levels of comfort with technology. Some will have previous BI experience or be very well versed on many systems. Others have their own way of interacting with spreadsheets or documents that require minimal knowledge. To provide a true self-service experience, BI access needs to be granted in a way that accommodates a variety of levels of comfort with technology. Sometimes this requires building more than one interface to allow users of different BI experience levels individualized experiences. After all, the concept of self-service is the ability to access information intuitively, which will mean different things to people with varying levels of expertise.

6.   How is the data interrelated?

The identification of data sources represents the first part of data acquisition. Data needs to be joined to provide connections between datasets in order to make sense of information. These connections provide insights into customer lifecycle and offer connections between internal and external data sources as well as across numerous business units. With strong security parameters available, organizations can share some information and not others to make sure that people have access to what they need while protecting privacy. These considerations need to be taken into account and help provide an understanding of the data structure and associated context.

7.   How does data need to be delivered to provide value?

Effective data delivery can refer to design or information access. Delivery methods today include mobile, smart phone, desktop, laptop, and via any Web-enabled devices. Consequently, applications are designed to accommodate multiple screen real estates and to provide multiple access points. Aside from where BI is delivered, delivery itself includes taking evaluating application design to ensure that data can be consumed easily – both from the perspective of delivery method as well as the types of visualizations and analytical capabilities.

Developing BI agility means that all of these questions are addressed to make sure that the information captured matches the business requirements and provides the flexibility required for the platform itself. Agility and governance work hand in hand to ensure that flexibility in access exists while making sure that data validity, quality, and accuracy is maintained.

Looking At The Value Of Developing A Data Governance Cycle And the Ability to Reuse Data Assets

Understanding business and technical requirements to identify the value data provides when looking at strategic planning and analytical insight is the first step to developing a data governance cycle. The goal of this is to ensure that information accessed is always valid, accurate, and reliable. Many organizations still require justification when adding to an existing BI project. Companies may see BI projects as big expenditures and approving additional budget to include a governance initiative within the same context of BI may seem too far-reaching. The reality, however, is that the success of any BI initiative will be dependent on the data. Although self-service access is important when delivering analytics to many people, the only way it will be valuable is if it exists with the support of data governance.

The four general ways that data governance programs add value within any initiative requiring a level of information management are as follows:

1. Consistent view of information

Business users have different analytics needs based on their role within the organization. Even though this might translate into requiring access to different data sets, a consistent view of data provides more than just trust. It allows IT to support applications centrally without worrying about multiple versions of the truth being developed due to different needs. Aside from building trust and knowing that the information being analyzed is reliable, consistency allows IT to become more strategic and not only focus on support activities. In many businesses this also adds to the level of efficiency by giving business users broader access to information assets and can lead to better planning and operational cost savings.

2. Compliance and privacy

Many industries have specific compliance regulations that need to be met and all organizations are concerned with the privacy and security of their data. Data governance supports these initiatives by ensuring that rules govern the use and access of data. Additionally, non-compliance can be managed, documented, and acted upon in a systematic way, supporting overall regulatory and compliance efforts. Data governance can also ensure rules surrounding privacy and data access to make sure that information access is controlled and that an audit trail exists to identify changes made to calculations or the data itself.

3. Data quality

Data accuracy leads to BI value because business users can make decisions without worrying about the validity of their data. This requires maintaining accuracy over time by developing a set of processes that are managed at the point of entry (when data is loaded into the system) and over time (by providing alerts so that disparities can be acted upon). Tying these activities together is where data quality and data governance overlap. To do so effectively, organizations require a centralized body of rules that are defined, aligned, and managed to help ensure a high level of quality over time. For data sources external to the organization and that won't be stored within a centralized data warehouse, the organization still needs to develop a way of managing data to ensure accuracy – i.e. though a system of record. Data quality management supports data governance by making sure that data assets are reflected correctly within data stores and throughout business processes that support decision-making activities.

4. Business ownership of information assets

Data governance creates autonomy for business owners of information assets because stakeholders maintain ownership over defined business processes that are tied to information management. For instance, specific data entities require rules that are managed over time. These can include the steps that are required before fulfilling an order, or the requirements to manage a customer account over time as addresses and household or company information changes. Data governance ensures that these types of rules across the organization are maintained centrally. Centralized data management and information entity ownership heighten the value of the data in the eyes of BI users because they know that

people who understand the intricacies and business process dependencies of the relevant data entity are responsible for maintaining data quality and governance over time.

Putting The Pieces Together - The Right Way To Achieve Governance and Self-Service Cohesion

For the past year Adobe has been perfecting their data governance and self-service BI environment within their sales operations. They have adopted a collaborative approach between business experts and IT that include a dedicated team that represents overall sales needs required to manage BI use and address broader business needs. This team's responsibilities include:

- Creating new BI and managing current solutions, including all reports and dashboards
- Working with IT to manage the data access and provide requirements for new additions to data, including data joins
- Understanding the needs of the business and managing their development priorities
- Making sure that an agile development cycle is followed
- Maintaining business and technical expertise to understand both perspectives

These responsibilities lead to increased governance. With a single access point to development, business users can interact with applications but cannot change data or make incorrect connections between data entities that may have similar naming conventions. This might seem like a small point, but in reality centralization of data supports strong governance by maintaining the accuracy of the information being accessed. At the same time, BI use is flexible because business users can access what they need in the way they require it without having to worry about the more technical aspects of creating their own analytics.

On a broader level, a more collaborative approach to BI development is created because IT can rely on their interaction with people who have subject matter and technical expertise. IT can also focus on developing and maintaining the database structure and provide data access points without being weighed down by requests for new solutions. What all of this leads to is the ability for business users to focus on their jobs because they have confidence in a team that has their best interests in mind. The success they have garnered through this approach to governance is based on a three-pronged approach:

1. Subject matter experts who understand the ins and outs of the sales process and how that affects business processes and day-to-day operations.
2. Internal skill sets that include the technical know-how to develop BI applications independently.
3. An understanding of business pains from both the business unit and IT perspectives to help support collaboration between both entities.

Adobe has placed priority on developing strong business partnerships to ensure that their BI initiatives are successful. Their focus on flexible BI delivery while maintaining a single data structure allows them to create strong data governance without compromising the flexibility and self-service access required by sales to get the information they need in the way they require it.

Creating A Long-Term Data Strategy To Ensure Continual Self-Service Interactivity

Creating a successful BI strategy means marrying data, accessibility, flexibility, and governance. Analytical insight only provides value if the information being accessed is reliable. Without data governance it becomes difficult for organizations to maintain their competitive edge. Doing so requires developing a long-term strategy that combines the following:

- Implementing a strong data governance program through stakeholder buy-in and IT support. This includes identifying data owners and applying responsibility for continued compliance.
- Staying true to centralized data storage with flexible access that encourages self-service interactivity, if right for the organization's BI strategy. This ensures that IT can manage and change information access or the database structure as needed without affecting application use.
- Identifying data sources that are external to centralized data storage that require access and ensuring ongoing validity and metadata management to ensure broader governance.
- Ensuring that self-service access matches the needs of the variety of business and technical users accessing BI applications. Because different requirements exist for end users, solutions need to be flexible enough to address ease of use for both novice and expert analytics users.
- Making sure that data is stored and managed within a centralized access point that provides integrated data quality processes to support ongoing data governance.