Achieving Information Self-Sufficiency

As organizations struggle to meet the demands of the global marketplace, a business intelligence competency center can help create the systems and processes to synthesize all types of data, providing the business with trustworthy, timely and actionable information.

Executive Summary

The speed of business has accelerated, thanks to the commoditization of communications and the ability of information to circumnavigate the globe. This has resulted in the need to turbo-charge the speed at which information is made available to business stakeholders and their ability to act on it. This new age of information presents a number of challenges:

• Finding relevant tidbits of data in the ever-increasing deluge, with the necessary context of turning it into actionable information quickly enough to make an impact on the global marketplace.
• Deriving actionable information from coordinated activities.
• Presenting new information from sources not yet utilized.
• Instilling confidence that the information obtained is relevant, trustworthy and current.

Many organizations are trying to deliver a high degree of self-service information management to business stakeholders, or information self-sufficiency. This is possible when users have both the actionable information required to make informed decisions and the tools necessary for very quickly turning newly obtained data – in a variety of formats – into collaborative insights that drive coordinated action. This needs to happen at a lightning pace in order to retain competitive advantage over others with access to the same information in today’s highly communicative, global marketplace.

This is being accomplished through one or more of the following capabilities:

• A set of proven templates that help identify relevant and trustworthy information and transform these tidbits into coordinated activities. This can be tabular information generated internally or obtained from external sources; log-centric information (Web logs, RFID logs, mobile activity logs, etc.); and document-centric information (Web content, news media, social media, etc.).
• A consultative support organization that continually works with stakeholders to translate information into captured, extracted or created value and uses the necessary tools and processes to ensure insights can be continually derived to execute action in a competitive timeframe.
• Assurance that the full complement of just-in-time, relevant, actionable, focused and trustworthy information will be made available as
Information Self-Sufficiency

Figure 1

...a resource, with the necessary support and in the required timeframe, to those responsible for creating, extracting and capturing incremental value for the organization. This will discourage the practice of storing local copies for decision-making, as the shared information resource will be viewed as more efficient.

This white paper provides a synopsis of the major capabilities of enterprises that enable information self-sufficiency. Organizations that have reached this level provide business stakeholders with enhanced execution agility by empowering them with information that is highly collaborative and focused (see Figure 1).

Enterprises that embark on this journey have reduced the time it takes to use information by:

- **Reengineering the processes** used to synthesize new data sources into the information fabric of the enterprise.
- **Improving the processes** used to enhance the understanding of information quality and lineage.
- **Adopting new approaches** to enable the availability of just-in-time information.
- **Consolidating the number of places** that enterprise stewards need to interrogate, thinning out the barrage of information generated, both internally (introspective information) and from external sources. This capability takes into consideration the time lag for disruptive events to register their presence in internal systems for analysis and predictive modeling.
- **Negating the need** for business stakeholders to become technologists to use information.
- **Managing the entry points to analysis** so stakeholders can focus on top-of-mind business issues and identify disruptions to the status quo.

From the Beginning

Much has been written in recent years about the need to make business more self-sufficient in obtaining information required for deciphering market maneuvers, strategizing on corrective actions and taking swift and decisive action, as well as ensuring intended outcomes. However, the ability to make such information available in a self-service environment remains a lofty goal, one that is out of reach for many enterprises (see Figure 2, next page). There are several reasons for this phenomenon, including but not limited to:

- **The sheer complexity** of how information is organized requires those intending to use it to become technicians or hire “translators” to serve as their technicians. Neither is an optimal solution.
- **The multitude of technologies** employed to obtain information also introduces complexities, resulting in the same scenario described above.
- The top-of-mind information that is actionable changes more rapidly than can be accommod-
dated by the technologists supporting the volumes of well-organized information.

- **The information that is well-organized** is largely introspective – not at all useful for identifying and reacting to market forces in time to have any measurable impact.

- **The information that provides context** for facts and figures is stored separately and organized much differently from the facts and figures used in analysis, once again requiring the hiring of translators who can effectively bridge the gap.

- **People who would benefit** from the information do not necessarily consider it to be trustworthy or relevant.

A technique that many enterprises have adopted is the concept of an information competency center (ICC). An ICC provides a framework for elevating the speed at which insights can be derived from published information for heightened self-service. The role of the ICC is to serve the needs of those accountable for creating, extracting and capturing value from information. This includes helping them identify the most suitable information and providing guidance on the tools and processes that will turn this deluge of information into collaborative insight and, eventually, coordinated action.

By now, you might be wondering how to identify whether the issues impeding the delivery of information self-sufficiency exist in your organization. Some of the signals to watch for are depicted in Figure 3.

### Are You Self-Sufficient?

<table>
<thead>
<tr>
<th>Observed Activity</th>
<th>Why This Occurs</th>
<th>What to Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>A large number of Excel spreadsheets and Access databases used to house data originating in internal systems.</td>
<td>The complexity of information organization leads to translators extracting information into Excel and Access for use by business stakeholders.</td>
<td>The perception that the technology arm of the organization cannot deliver new information at the speed required by business stakeholders.</td>
</tr>
<tr>
<td>A large number of business spreadsheets integrating information managed from production systems, with data extracted from sanctioned data sources.</td>
<td>It takes too long to change the organization of sanctioned data sources to meet the needs of top-of-mind business issues.</td>
<td>The perception of data quality issues that must be fixed before using it for anything meaningful.</td>
</tr>
<tr>
<td>A delay between the availability of information and the communication of intended action.</td>
<td>The information made available for analysis is not considered trustworthy or relevant.</td>
<td>The perception of low information quality.</td>
</tr>
<tr>
<td>Significant performance issues associated with recent changes to technologies used to access data, resulting in many local copies of data used for analysis.</td>
<td>Information was migrated to new technologies, but it is not optimally organized for the new environment, leading to performance anomalies.</td>
<td>The perception that performance is insufficient or that information will not be available at critical times.</td>
</tr>
<tr>
<td>The use of information available in sanctioned sources for operational and scheduled reporting but not for strategic purposes.</td>
<td>The basic assumptions used to organize data have likely changed, making it difficult to use the information for analysis.</td>
<td>The perception that the information available through sanctioned sources represents operational reporting needs only and/or that sufficient changes have occurred in the business that have not been factored into the sanctioned information fabric.</td>
</tr>
</tbody>
</table>
Accelerating Information Self-Sufficiency

There are several ways to accelerate information self-sufficiency:

- Task a supporting organization with ensuring the continued relevance and focus of the information.
- Change the focus of the supporting organization, shifting its intent from delivery-based to consultative-based, with the additional ability to perform delivery.
- Define and publish metrics for measuring the effectiveness of the supporting organization and the relevance and actionability of the information it supports.
- Define and publish metrics for measuring the relevance, trustworthiness and actionability of information published for self-sufficiency.
- Insulate the intended audience from the technical intricacies of using information published for self-sufficiency.
- Ensure that information published for self-sufficiency is not completely introspective.
- Introduce methods and metrics to facilitate an accelerated publication cycle for information aligned with the enterprise's top-of-mind issues.
- Implement processes that protect the sanctioned sources of self-sufficient information from becoming complex information dumps.
- Ensure that the organization chartered with publishing self-sufficient information has permission to obtain and synthesize the informational needs of the enterprise at the speed required to react to the market, media and regulatory influencers of the enterprise.

Self-Sufficiency Program Determinants

Self-sufficiency programs, such as an ICC, can reduce the time it takes to synthesize unexpected information derived from internal sources (introspective information) and external sources, as well as use it in action plans and massage it into coordinated activities.

The key foundational components critical to the success of a self-service program include:

- **Elevating the trustworthiness of information.** Too often, time-critical opportunities are lost because of the need to validate the reasonability and lineage of data used to derive an action plan. This results from a lack of trust that the correct or most timely information was obtained or that the process was error prone. There are four common types of errors that can incorrectly influence an action plan:
  - **Origination errors** (data incorrectly entered into the system).
  - **Capture errors** (inconsistent or incorrect vintages of information captured and used).
  - **Transformation errors** (errors made when transforming data from its source form to the form captured for analysis).
  - **Identification errors** (incorrect information captured by identifying a system of record or reference that was out of synch with other information utilized).
- **Reducing the time required to provide access** to new information sources deemed critical to business stakeholders.
- **Shortening the time required to identify key tidbits of data** that will serve as the starting point for deriving coordinated action plans using repeatable processes.
- **Doing the above**, in a way that is repeatable (through the use of well-orchestrated templates that systematize information access).
- **Providing a catalog as a central resource, maintained by a central body** (normally an ICC), which typically contains the templates, processes, business metadata, contact information for experts and best practice guidelines to achieve the desired level of self-service. (A new family of products is emerging that provides this catalog, as well as hot links to templates independent of the technologies used to create the templates, thereby negating the need for business stakeholders to become proficient in the family of tools used to participate in the self-service program.)
- **A consultative organizational arm** whose primary mission is to facilitate the foundational components critical to the success of the self-service program.
- **A series of key metrics** specifically devised to measure the adoption, continued viability and contribution to incremental organizational value influenced by the self-service program.
Elevating Information Trustworthiness

A whole book could be dedicated to the topic of elevating information trustworthiness and still only scratch the surface of the issues and opportunities that enterprises must tackle. A recent study of business stakeholders from the Global 2000 found that business decisions were made with either irrelevant (42% of the time) or erroneous (50% of the time) data.1

Three tenets drive information trustworthiness:

- **The more time-critical the information**, the greater the need for information trustworthiness.
- **The more critical the potential action plan**, the greater the level of scrutiny demanded for trustworthy information. This level of scrutiny directly impacts the time required to utilize information.
- **The higher the regulatory consequences for not having trustworthy information**, the greater the investment in controls and programs for institutionalizing information trustworthiness. It could be argued that the benefits of doing this are higher for opportunistic readiness than for protecting organizations from the pain of regulatory consequences; however, the latter is often the driving force for programs such as data governance, which prioritize initiatives that yield elevated information trustworthiness. This behavior results in elevating the trustworthiness of mandated data items and not necessarily those that will increase incremental organizational value.

The more complex the processes used to convert information into an easily digested form, the more these processes appear as a black box to those responsible for creating, extracting and capturing value for the enterprise. This image of a black box causes two major challenges for the enterprise.

- **Questions around information trustworthiness** force users of the information to check its accuracy and validity before publishing it into a workflow process that will result in coordinated action. This time delay can rob the company of key opportunities and turn risks into catastrophes.
- **Because of the lack of trust**, those accountable for wielding trustworthy information often store local copies of information they have validated themselves. The use of these local copies to make decisions greatly complicates the viability of collaborative insight and coordinated actions in the enterprise.

A new family of technologies has begun to surface that provide an analysis of information lineage as a means of identifying transformation anomalies and elevating trustworthiness. Many of the Excel sheets and Access databases distributed across organizations originate from business stakeholders doubting that the technology arm of the organization is capable of obtaining and synthesizing information critical to the success of the

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**Information Lifecycle**

![Information Lifecycle Diagram](image)

Figure 4
enterprise within the time constraints demanded in today’s accelerated business climate.

Three ways to accelerate time to market for new information sources include:

- **Post-discovery**, or the ability to figure out how information ties into an enterprise information model after it is published. This requires a longer-term architectural change in the way information is made available. Information portals such as Attivio reduce the timeline for publishing new information available for analysis and collaborative insight by enlisting post-discovery processes.²

- **Columnar and cell-based enterprise reporting and analysis tools**, which lessen the importance of the enterprise information model. Examples include Sybase IQ, IBM Netezza, Greenplum and Teradata’s columnar solution. Columnar and cell-based solutions reduce the time it takes to make new information available to business stakeholders by separating the synthesis of new information into the enterprise information model from the process of making the information available.

- **Information portals**, or systems that table, document and log information through a single facility that makes finding information similar to the process of finding content on Google or Yahoo.

### Shortening the Time to Find Relevant Data

Much has been written on the ever increasing deluge of information available for analysis and how, despite this data abundance, it is becoming more difficult to find relevance.

The sheer volume of information made available for analysis is increasing at an ever faster rate, with the amount of information doubling every two years and accelerating.³ Keeping up with this deluge is difficult enough; analyzing it to spot patterns and useful information is harder still, given the pace at which information circumnavigates the globe.

There are two forms of information required for analysis:

- Information that meets the status quo (i.e., roughly fits existing models that predict the outcome of competitive market forces).
- Information that results from market disruptions and that will not appear in internal systems until it is too late.

One way to meet the demands of market disruption is to implement a “beacon” that looks

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**Business Information Model**

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Figure 5
for variances in what is expected from customers, financiers, competitors, media and regulators.¹

The Information Competency Center
The ICC facilitates reporting and analysis self-sufficiency throughout the enterprise (see Figure 6). The main product of the ICC is a catalog that is accessed through a search facility in one of five ways:

- Business stakeholders directly use the catalog to access information through active metadata.
- The ICC virtual team provides consultative support for finding needed information in the catalog and facilitates the browse and search processes to access information.
- During the consultative request process, additional metadata is identified, which is added to the catalog by the ICC virtual team.
- A template deemed worthy of sharing is promoted as an ICC resource by the ICC virtual team.
- A need for an additional template is identified and slated for development.

ICC Framework Components
The components of the framework are:

- The engagement interfaces, which are the key means for initiating self-sufficiency. These include:
  - The business consumer uses the intelligent search facilities managed by the ICC.
  - The ICC finds content worthy of sharing, converts it into a reusable template and places it in the catalog for shared use.
  - Business consumers ask for consultation on how best to use what is catalogued for their information needs.
  - Templates and catalogued content are managed to ensure relevance for business consumers’ top-of-mind issues.

- The catalog and intelligent search, which are the heart of business intelligence self-sufficiency and the primary product of the ICC. These components contain access to business metadata and hot links to information accessed through reporting and analytic templates.

- The communications framework, which is critical for an effective self-sufficiency initiative. It enables access to experts to communicate what is available, including success stories, metrics and future functionalities.

- Governance of the ICC. This includes the metrics published to manage the ICC and the oversight organization tasked with ensuring that the ICC is meeting the intended outcomes.

The ICC’s Role and the Development Processes
Many enterprises are spending time and resources encouraging their organizations to support all...
the types of clients served by their information-centric initiatives. Supported clients typically reside in multiple divisions, comprise multiple business functions and, in many cases, constitute multiple legal entities that are often spread across multiple geographies. In many enterprises, inconsistent technologies are deployed to support the conversion of large amounts of data into insight, including business intelligence, data warehousing, information portals and other tools, making this a complex support issue.

In an attempt to accelerate the conversion of data into insight, many enterprises have introduced Agile development techniques as a wrapper to their delivery processes. From an outsider’s vantage point, however, this is an additional level of complexity added to what is already a laborious, sluggish process. A different approach is required.

Finally, the complexity of information has introduced the necessity of data experts, or those who are intimately familiar with the scope, use and suitability of information made available for analysis. These experts are often geographically dispersed and not easy to find. Many organizations have data experts who maintain cross-reference tables in desktop tools that serve as the translation layer to connect two otherwise unrelated data sources.

Companies that have achieved information self-sufficiency have adopted a two-pronged organizational approach (see Figure 7).

- The first prong is responsible for the information needs that demand a level of rigor and repeatability. The Agile approach fits perfectly with these information needs.

- The second prong focuses on ad hoc information needs, or those that are more urgent and not clearly defined, making the release cycle somewhat problematic. Examples include a report for monitoring an acquisition with a short fuse or an analysis to monitor a competitive situation or successful release of a new product. The size of the initiative undertaken by this second prong will vary from organization to organization, but creating a well-established and well-understood vehicle for supporting this type of information requirement is critical to the success of a self-service initiative.

Companies that have been successful in adopting a consultative framework for supporting the synthesis of insights as a normal way of doing business have grouped their consultative roles in the following ways:

- **Self-serve information with no need for consultative assistance.** Consultative activities that support this self-service capability are continued enrichment of the metadata catalog used to find information and discern the suitability of information for the task at hand.

- **A consultative need for using information models and templates made available for reporting and analysis.**

- **Small delivery efforts performed in less than “X days.”** (This is normally the sticking point that guidelines can help with.) Interestingly, IT is much more concerned than the business community about small delivery opportunities that slip under the radar; business users generally welcome this as an alternative to building it themselves in Excel.

- **Prototyping opportunities to help discover business requirements in complex delivery situations.** The prototyping arm normally ends up in the ICC but can be located anywhere.

- **Pure Agile/SDLC delivery.** Key metrics are required to monitor the successful execution of this organizational model. These metrics will monitor the engagement of information experts, the balance of the two prongs of the organizational model and the engagement of both organizational support mechanisms by the business stakeholders of the enterprise.

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**Two-Pronged Approach**

![Two-Pronged Approach Diagram](image)
Organizational Byproducts of Self-Sufficiency

Two classes of products delivered by the new organizational model depicted above include:

• **The traditional project-based model**, which aligns projects with the Agile release cycle and delivers BI through a traditional project management-based model. In this first category, projects are enabled through a traditional funding model.

• **The consultative arm of the organization**, which supports the more ad hoc information needs of the organization. This arm has a catalog of BI artifacts that can be used to support the information needs of the organization as they arise. (See the following sections).

The Catalog’s Role and Scope for Driving Self-Sufficiency

The catalog is the vehicle that catalyzes self-sufficiency (see Figure 8). Composed of business metadata, it is the first resource to be utilized when users are looking for available facilities to satisfy existing informational needs.

The catalog is not a list of data elements and their definitions. It is the single authoritative source for:

- **Reporting and analytic templates**, with guides to their use. In many cases, the templates are passive links, or they provide the necessary information for accessing the template. A new family of products delivers active links (e.g., Semanta, BBI, LyzaSoft) or allow the launching of templates right from the repository. Metrics are available for reporting and analysis, definition and derivation. These metrics are for corporate key performance indicators, as well as less pervasive metrics used to measure and influence the adoption of services delivered through the ICC.

- **The business rules** used to derive the data contained in the metrics and the reporting and analytical templates.

- **Guides** for the suitability of the metrics and templates.

- **Content** maintained by the experts.

- **Best practice** guides.

- **A list of the stewards and owners** of the data used in metrics and templates.

- **The governance and lineage** of the data used in metrics and templates.

The consultative component of the organization driving self-sufficiency should be accountable for ensuring that the business metadata contained in the catalog is relevant, accessible, secure and accurate.

The Role of the Information Lifecycle

If successful, there will be a push for the business

Consultative Catalog

Figure 8
community to create templates and share them for consumption through the central catalog. Two types of information include:

- **Introspective, highly predictable and highly repeatable information.**
- **Less introspective information** that is focused on top-of-mind issues surfacing from competitive, market, innovative, regulatory and other disruptors that require rapid synthesis, communication and monitoring of an action plan to ensure that the results of these actions are achieved as intended.

The main purpose of the information lifecycle is to shrink the size of the proverbial haystack. It needs to ensure that the nuggets of gold hidden in the deluge of data are not buried in what used to be important for deriving insight in the past but today is historical trivia. The information lifecycle is devised to monitor the use of information published for self-service and stratify it into several categories:

- **Information required for operational use.** This information is not subject to the same scrutiny in the information lifecycle process and is generally highly introspective.
- **Information that supports key strategic, tactical and operational organizational intents** and is not covered by category one.
- **Information required for strategic, tactical and/or operational intents** that have not been institutionalized into category one.
- **Information required for a short-term need that is expiring.** Information that is expiring will be put on a watch list to be removed from the pool of easily searched data once its relevance is diminished.
- **Information required for a short-term need that has expired.** This information should be immediately removed from the pool of easily searched data to avoid the unintended consequence of the information repository being relegated to the status of a data dump.

**Appliances and Self-Sufficiency**

Data warehousing appliances have stormed the marketplace, and for good reason. Appliances generally share nothing from the information infrastructure, enabling them to make assumptions about the storage and consumption of information not possible in general-purpose database solutions.

The way many appliances represent their data models is more closely aligned to the structures of columnar databases, thereby diminishing the enterprise data model’s involvement with analysis of data. Other appliances make it feasible to hide the complexities of the enterprise data model from those deriving insight from it through the use of massive amounts of memory and computing power. In both cases, it becomes much more possible for those utilizing these information stores to be self-sufficient.

One of the greatest attributes of an appliance is also its greatest downfall: its ability to access vast amounts of information quickly and hide the complexities of the model used to access the data from the eyes of those consuming its contents. Because it is simple to store data in an appliance, it is necessary to continually ensure it does not morph into a data dump due to lax information lifecycle management. Otherwise, the issues justifying investment in the appliance, such as performance and usability, will resurface.

**Behavioral Business Intelligence and Self-Sufficiency**

It's unlikely that the desire will be fulfilled for a single reporting and analytics tool, used throughout the enterprise. Even if fully deployed, traditional BI and reporting tools lack the collaborative, crowdsourcing and “recommendation engine” features that are taken for granted in our Internet experience but usually lacking in corporate systems.

Our introduction of “behavioral business intelligence,” or BBI for short, is a novel approach for making the best use of a company’s multiple reporting and BI systems, with multiple reports and sources, multiple opinions and numerous questions seeking answers from a pool of enterprise-wide expertise. BBI uses a combination of “social media” techniques to identify recommended next steps, allow annotations of insights and discoveries, post questions for review and archive the wisdom of the community. BBI attempts to logically harmonize the multiple BI systems and reports with users.

Another approach for simplifying the complexity of reporting tools is to physically harmonize them with technologies that serve as a wrapper
across a more complex environment. This has been accommodated in the marketplace in three distinct ways:

- **Information portals**, such as Attivio, which provide a single interface for tabular (structured), big data and document-centric (unstructured) information.

- **Collaborative BI solutions**, such as Lyzasoft, Yellowfin and Semanta, which provide a layer that insulates the business stakeholder from the reporting and analysis framework by integrating them into a new technology that serves as a springboard for all available reports and analysis templates.

- **Extending the collaborative team** to be experts in all the technologies utilized for reporting and analysis. This option, which might at first seem less expensive, often is more so due to labor costs. It can also relegate the collaborative team to being a purveyor of tools rather than a consultative partner.

**Spotlighting Top-of-Mind Issues**

Much has been written about the information deluge that companies must address to identify, synthesize, communicate, execute, monitor and adjust actions based on the impact measured in the marketplace.

One thing is perfectly clear: The ability to use retrospective information sources (internally generated or controlled information) is somewhat limited in scope and use. Therefore, a more holistic approach to information is required. This situation requires the consumption of information from the variety of consumer interface channels in which companies directly participate – the Web, RFID (the equivalent of Web logs for the storefront), mobile, agent and kiosk information feeds – as well as indirectly participate through the ever widening assemblage of social media, blogs and other sources (Facebook, Twitter, Google+, Yelp, Friendster, Xing, YouTube, Picasa, Blogger, Digg, Reddit, etc.).

It is easy to get lost in the job of housing or referencing all of this data, and it is easier to get overwhelmed trying to use it. A better means of spotlighting top-of-mind issues is to align the information used within an organization with a value sourcing model (see Figure 9). The value sourcing model should be aligned with the strategic, tactical, operational and opportunistic goals of the enterprise. It should also be governed by an information lifecycle process that stratifies information into the following categories (see Figure 10):

- Information directly aligned with top-of-mind issues.
- Information required for operational and other regularly occurring purposes.
- Information required for regulatory purposes only.
- Supporting information that is made available for occasional use (i.e., lineage data).
- Information required to be accessible in archive form for regulatory purposes.
- Information that was recently (and could once again become) a top-of-mind issue.
- Information made available for other reasons.

In many organizations, the information governance function of the enterprise is accountable for fine-tuning the placement of information into the various stratified components of the information lifecycle, which can have an impact on both cost (i.e., the technologies utilized to house information) and usability.
**Business Architecture Implications**

The phenomenon with which enterprises have struggled over the past several years concerns the viability of the information model and the contents of the information represented by the ever-changing business model. The reason for this change can be attributed to:

- A business climate (both business-to-business and business-to-consumer) that is enabled by information.
- The reduction of communication costs to near zero.
- An expansion of the formal and informal media covering events through both traditional and less traditional news delivery mechanisms, such as social media and blogs.

Information and the vastly reduced cost of enabling communication has helped to rewire the world as we know it. However, the time value to information and the mechanisms utilized by many enterprises to enable the new-generation value proposition continue to be somewhat out of reach. In these organizations, it is easy to identify business stakeholders who have cobbled together what they believe they need as an information fabric to participate in the new digital economy, using the desktop tools they have, namely Excel and Access.

It is time for IT to adopt a new means for integrating new sources of information into the business information architecture that is available to business stakeholders both in time to be actionable and in an easily digested format.

There are a variety of ways to start the journey to this next-generation business information architecture, including the following:

- **Big data**, or enabling components of the information architecture in ways that are not practical or suitable through traditional means.
- **Data warehouse appliances**, or technologies devised specifically for reporting and analysis, thereby simplifying information consumption and presentation.
- **Shared metadata repositories** that provide hot links to reporting and analytical templates across all reporting and analytical environments accessible through Web and mobile technologies.
- **Extending secured access** to reports and analytical templates to remote locations through mobile and disconnected mobile facilities.
- **Business information competency centers**, or introducing organizational constructs, processes and business metadata repositories that facilitate self-service.
- **Behavioral business intelligence frameworks** that insulate the business stakeholder community from the complexities of the multitude of technologies available for reporting and analysis.

### Categories of Data

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Information supporting top-of-mind issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 2</td>
<td>Information required for regularly occurring purposes</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Information required for regulatory purposes</td>
</tr>
<tr>
<td>Tier 4</td>
<td>Information made available for occasional use (i.e. lineage data)</td>
</tr>
<tr>
<td>Tier 5</td>
<td>Information that was recently a top-of-mind issue, and can regain this status</td>
</tr>
<tr>
<td>Tier 6</td>
<td>Information required in archive form for regulatory purposes</td>
</tr>
<tr>
<td>Tier 7</td>
<td>Historical trivia</td>
</tr>
</tbody>
</table>

Figure 10
Footnotes

1 Information Management for Dummies, IBM Press, 2006, based on a joint study with Accenture of 250 companies.


About the Authors

Mark Albala is a Business Consulting Practice Director of Cognizant’s North American Enterprise Information Management (EIM) Business Unit, overseeing its Information On-Demand Group. Mark specializes in providing solution architecture, information governance, information strategy, strategy roadmap and governance services to companies across industries, and supports Cognizant’s enterprise information management delivery capabilities. A graduate of Syracuse University, Mark has held senior consulting, thought leadership, advanced technical and business development roles for organizations focused on the disciplines of business intelligence, governance and data warehousing. He can be reached at Mark.Albala@cognizant.com | Twitter: http://twitter.com/mcalbala | LinkedIn: http://www.linkedin.com/in/markalbala | Google+: mcalbala@gmail.com.

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