How to Deliver Self-Service BI

Best Practices for IT Professionals

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IT organizations dream of providing self-service BI to business users, but they struggle with users’ analytical skills and issues of data governance. Self-service BI is possible, but it requires changes to BI architecture and the BI organizational model.

Analysis

Best Practice 1: Change Long-Held Beliefs About the Right BI Organizational Model and Technical Capabilities

The first step to delivering self-service BI is to recognize that “we’re doing it wrong” – and have been for the past decade. The first mistake we made was in the organizational model. Centralized, IT-dominated BI teams are not conducive to empowering end users. BI leaders should replace the existing vendor-customer relationship that persists between IT and the business with a cross-functional team that blends IT and business skills. Consider three ways of fostering such a team:

• **Colocate staff**: Locating people who fulfill IT and business roles in the same place can be a huge aid to building a team culture and increasing the agility and pace with which BI projects are delivered.

• **Use a shared-reward system**: The best way to make individuals act as a team is to introduce a shared-reward system. We need to end the common situation in which business users state that “IT couldn’t deliver our requirements.” Create a reward system whereby people with IT and business skills share the glory if the BI project goes well and share the blame if it goes badly. There must be shared accountability.

• **Make organizational changes**: When creating a cross-functional team one danger is that some members have only a dotted-line reporting relationship to the team – they do something else as their “day job.” This prevents them fully committing to and focusing on the work of the BI team. Creating solid-line reporting relationships to the BI team will provide the necessary accountability for each team member.

Admittedly, executing these team-building changes will be difficult. In particular, getting solid-line reporting relationships to the BI team poses a huge political challenge. Pragmatically, you may need to start with a dotted-line reporting relationship to the BI team in order to get a cross-functional BI team started, and then gradually make the virtual team more physically instantiated.

BI leaders should also create an organizational model that strikes a balance between centralization and decentralization. We describe a two-tier organizational model with cross-functional BI teams working at an enterprisewide/central level and a series of cross-functional teams operating at a local level in “Deliver Business Intelligence With a ‘Think Global Act Local’ Organizational Model” (Note: This document has been archived; some of its content may not reflect current conditions). This idea is not “one size fits all.” Organizations will need to consider how much they should empower the various local teams, depending on the culture of the organization. Some more centralized organizations may want to use a franchise metaphor whereby the central BI team creates a globally common way to integrate, report and analyze data that is implemented consistently at a local level. Other
organizations may favor a government metaphor where it is clearly determined what work will be done by the global team and what work will be done by the local teams. We recommend holding a “constitutional convention,” with representation from across the business, to determine which data definitions, dimensional hierarchies, performance measures, algorithms and business rules need to be globally consistent, and that you make this the domain of the global BI team – a cross-functional BI team that blends IT and business skills from across the business. Any data definitions, dimensional hierarchies, performance measures, algorithms and business rules that do not need to be globally consistent should fall under the jurisdiction of the local BI teams. Whichever approach you opt for, ensure there is close collaboration between the global and local BI teams.

The second mistake we made was to focus on the wrong technical capabilities. For the past decade we have provided semantic-layer-based ad hoc query tools and OLAP cubes as the primary BI capabilities for end users. BI leaders have viewed these tools as the “sweet spot” between static reports and Microsoft Excel spreadsheets. The problem is that ad hoc query and OLAP are not the sweet spot on the spectrum of capabilities shown in Figure 1. By focusing on the center of the spectrum, we, as BI leaders, have overshot information consumers, who do not want to write their own reports; they want someone else to write interactive reports for them – hence interactive reporting is the sweet spot for information consumers. At the same time, ad hoc query and OLAP undershoots power users, who want to mash up data from different sources and drill anywhere in the data: the semantic layer modeling of ad hoc query and OLAP tools means power users can only explore data that has been modeled and only drill down hierarchical paths defined by IT. This is why power users create spreadmarts – to gain the autonomy to mash up disparate data sources and the freedom to explore this data. BI leaders should focus on the data discovery sweet spot between ad hoc query/OLAP and isolated spreadmarts.

For the past two decades there have been two primary architectural options for BI platforms: OLAP cubes such as Oracle Essbase, Microsoft SQL Server Analysis Services, SAP BW InfoCubes, and semantic layers such as Business Objects Universe, Cognos Framework Manager and MicroStrategy Projects. But the emergence of data discovery tools during the past few years has disrupted

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**Figure 1** | Find the Right “Sweet Spot” for Business Intelligence

Software development methods have increasing relevance in this direction, where IT builds semantic models and/or reports.

Information Consumers

<table>
<thead>
<tr>
<th>Centralized/Controlled</th>
<th>Decentralized/Autonomous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Reports</td>
<td>Interactive Reports</td>
</tr>
<tr>
<td>Ad Hoc Query/OLAP</td>
<td>Data Discovery</td>
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<tr>
<td>Data Dump in Excel/Access</td>
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</tr>
</tbody>
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The Dark Side

The Dull Side

Self-Service BI

Software development methods are increasingly irrelevant here, because developer and user are the same.

BI = business intelligence; OLAP = online analytical processing
Source: Gartner (May 2012)
the market. Data discovery tools such as those of QlikTech (QlikView), Tableau and Tibco (Spotfire) do not require a well-modeled semantic layer and are therefore more conducive to rapid prototyping of analytical content that has not already been modeled. Moreover, the lack of a semantic layer, coupled with the built-in performance layer, enables the unfettered drilling that power users want in order to explore detailed data.

**Best Practice 2: Establish Governance of BI Content Creation and Dissemination**

We are not suggesting, however, that organizations abandon the data warehouse OLAP- and semantic-layer-based architectures that are the foundation of every BI program. The need for well-defined information models will persist. IT leaders need to keep this foundation, but augment it with the data discovery approach for faster prototyping and greater user autonomy. Doing both will require innovation in governance models, since, if we enable more users to create analytical content, we need to ensure there is a promotion process to certify this content as validated and as something that should be disseminated to a broader audience.

A key capability emerging as the force behind this user empowerment trend is the data mashup. Vendors like Tableau and Microsoft (with PowerPivot) are essentially creating personal extract, transform and load tools that require little IT assistance. We expect the data mashup to emerge as a core BI platform capability and more vendors to differentiate themselves in this area.

Enabling end users to mash up disparate data sources to create their own custom analytical views, though empowering to them, also presents a major risk to the organization. Widespread adoption of data mashups will inevitably lead to the same result that widespread adoption of spreadsheets led to – pervasive errors in business logic. And just as with spreadsheets, prohibition will not be the answer. Power users are clamoring for data mashup functionality and IT leaders need to facilitate this requirement. But they also need to implement processes to “validate” and “promote” user-generated data mashups, from prototypes to systems of record (see Figure 2).

Even without widespread use of data mashups, report accuracy can be a big problem in self-service environments, one that is often only detected in management meetings when all the users compare their self-service BI data and find it does not match. The problem stems from end users creating reports that look correct – because the SQL statement has returned rows and columns – but conceal logical flaws. These are most frequently caused by overestimated or underestimated measures, based on mistakes in joining fact and dimension tables. Because such problems are difficult to identify, they can persist undetected in flawed reports that are used to run the business and make decisions.

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**Figure 2 | Certification of Business Intelligence Content**

- **Published:** Information that has gone through a rigorous validation process can be disseminated as official data.

- **Shared:** Information has been created by end users and is worth sharing, but has not been validated.

- **Personal:** Information is created by end users with little or no oversight. Users are empowered to integrate different data sources and make their own calculations.

Source: Gartner (May 2012)
One potential answer is to provide business users with only simple semantic layers to create reports — single fact tables with basic dimensions. Another is to build a cultural understanding that ad hoc reports and analyses are not meant to be used as systems of record to run the business. Several companies have achieved success by enabling users to create their own reports and even to share them in public folders, but in these companies it is culturally understood that unless these reports go through a rigorous validation process (usually carried out by the central BI team) they should be treated as containing preliminary results; only once validated are they put in a system-of-record folder.

Best Practice 3: Invest in Consumerization Technologies to Increase Adoption

So far, we have examined how to enable users to create their own analytical content, but we should not forget the need to make it easier for users to consume BI content that has already been created. There is a clear trend toward the consumerization of IT, and it is impacting the world of BI by making it more user-friendly. In particular, three technologies — mobile-, visualization- and search-related — are making BI consumption more palatable to a mainstream audience.

In April 2010, Apple released the iPad. Shortly after, it became apparent that media tablets are strong devices for BI consumption in some use cases. In addition to the interactivity of the tablet’s touchscreen and larger display (compared with a smartphone), we now have a user community that is accustomed to searching for the information they require on mobile devices. For years, one of the major flaws of BI initiatives was the belief that “if you build it, they will come.” As BI architects, we assumed that if we put valuable content in a data warehouse mainstream business users would break away from their personal workflows and scour that warehouse for the right report or information. This rarely happened as envisioned, because users were simply too busy. The mobile trend will not solve this problem, but it will help.

Interactive visualization tools are also expected to increase mainstream adoption of BI. With these tools, in addition to the visual display being more attractive than most dashboards, the interactivity tends to be more intuitive than with the traditional BI approach that relies on more complicated menu options. Indeed, with most interactive visualization tools users require very little training to consume content and perform BI tasks such as ranking, sorting, filtering and pivoting.

Similarly, the trend toward BI-integrated search has the potential to attract a much wider audience of users. At the very least, applying a search index to existing reports will make it much easier for business users to find relevant reports, as they will no longer have to sort through a hierarchical folder structure. Many BI vendors also enable the creation of simple reports, based on the mapping of key words to a semantic layer. The big news, however, is the arrival of true natural-language query technology. We saw two very high-profile uses of this technology in 2011: IBM’s Watson and Apple’s Siri. Figure 3 shows a screen shot of the search engine of EasyAsk — a third vendor in this space — which enables users to use natural language to enter a question and have it translated into SQL.

Individually any one of these technologies will have a positive impact, but the cumulative impact of all three should make consuming BI content substantially more user-friendly.

Source: Gartner Research, G00232650, Kurt Schlegel, 10 May 2012

Figure 3  |  Make Business Intelligence Consumer-Friendly With Search Technology

Source: EasyAsk
Become a ‘Champion to the Business’ with Self-Service BI

The idea of self-service BI isn’t new: traditional report-centric BI vendors have been trying to accommodate this demand for years. More broadly within IT, self-service has become a new ‘normal’ these days, with ‘BYOD’ (Bring Your Own Device) just one example of its proliferation and success. Within BI, especially with report-centric vendors, it has often fallen short of expectations because efforts to implement it have been narrow in scope and required heavy maintenance from the very IT professionals whom they are trying to liberate. But it doesn’t mean the demand has gone away and high-performing organizations recognize the necessity to embrace self-service BI in order to stay competitive.

The QlikView Business Discovery platform is inherently self-service, with a very important caveat: IT groups must be allowed to maintain discipline and control over core infrastructure elements while ensuring business units can generate and share relevant insight with ease.

Discipline at the core – QlikView gives IT professionals strict control over who can view which data and access which applications. This is done by integrating with the existing security infrastructure within your organization and by providing highly-granular security within applications (row-level and field-level security).

Liberating IT groups from mundane tasks – By providing a truly self-service BI environment, QlikView removes the burden on IT for providing all the analytics to the business, and makes it a provider of an analytics platform through which business users can conduct their own analytics. This frees up IT professionals to focus on higher-value activities such as infrastructure, security and governance rather than simply writing and packaging reports.

Governance and compliance – QlikView provides extensive logging and server-side management capabilities to help IT administrators manage their QlikView deployments. All licensing, user, application, and data access tasks are managed via a single QlikView Management Console. Additionally, the QlikView Governance Dashboard provides a view into data lineage in a deployment and provides an impact analysis when data sources are changed or moved.

Become a ‘champion to the business’ once again – QlikView enables IT professionals to deliver far more analytics and BI to the business than with any other approach. With its rapid application development capability, requests from the business for new apps can be answered much more quickly and changes to existing applications made easily. With QlikView, business users can get answers to their own questions without turning back to IT for a new report. In fact, a single QlikView dashboard can replace many Oracle 10g’s standardized reports.

Source: QlikTech
Apply Practical Data Governance as You Deploy

The QlikView Governance Dashboard is a free QlikView application available on QlikMarket (http://market.qlikview.com/) that delivers a 360-degree view of any QlikView deployment starting with version 10 SR2 and up. Created using QlikView and QlikView Expressor technology, the QlikView Governance Dashboard focuses on managing and understanding the QlikView environment. It allows QlikView and IT professionals to discover how QlikView is being used. This information subsequently helps to introduce a more manageable and repeatable process when developing QlikView applications, addressing data lineage and impact analysis type questions, allowing them to maximize data governance and optimize their QlikView investment.

QlikView Manageability – The explosive growth of QlikView applications within enterprises has introduced a greater need for manageability and best practices. The QlikView Governance Dashboard meets the needs of organizations trying to carefully balance data governance of QlikView applications with the continued speed and flexibility that are essential to any QlikView deployment.

Improving the IT user experience – IT professionals are tasked with maintaining IT systems and having insight into their operations so they can predict and mitigate the impact of changes. This is also true for QlikView deployments. The QlikView Governance Dashboard allows IT organizations to save time and resources by deploying quickly across the enterprise with a repeatable and consistent view of common business and data definitions. It gives business and IT professionals confidence and trust in the data they use often because there is a secure data governance framework in place.

An Associative Experience – The QlikView Governance Dashboard puts the power of QlikView’s unique Associative Experience in the hands of IT professionals; providing immediate visibility into the operations of their QlikView deployment. With these insights, IT professionals can make decisions that range from allocating new data sources and hardware to creating a reusable, centralized repository of consistent analytical data models to support new and existing QlikView applications.

Simple to deploy – A one-click installation wizard unloads the appropriate software on top of an existing QlikView environment. Configuration is a snap. Just access the QlikView Governance Dashboard and its configuration sheet from QlikView Desktop, enter your document and log directory paths, and reload to complete. The scanning engine, powered by QlikView Expressor, knows exactly what QlikView metadata to scan, extract and prepare as a QlikView associative data model. Use the QlikView Governance like any other QlikView application.

Source: QlikTech

Figure 5 | Self-Service BI Maturity Levels

Source: QlikTech
Take Full Advantage of Tablets and Smartphones

Reporting alone doesn’t drive value on mobile. The same contrast holds true with BI on mobile devices. The ability for a user to ask any number of questions and explore freely, against a full set of live data, is far more valuable than simply delivering pre-aggregated subsets of information or standalone visualizations. With traditional architectures:

• **Reports limit reaction** – Reporting and visualization-based tools rely on extracting a small subset of data into a predefined set of views. This approach greatly limits a mobile user’s ability to immediately react to their current situation. Although a few levels of drill-down or selection may be available, these interactions are pre-defined and don’t offer users the option to explore the data freely.

• **Questions must be predicted** – A standalone visualization shows a single view of data. A report shows a static view of data. These tools can only help people answer pre-defined questions – questions someone thought of in advance. In other words: old questions. The report or visualization can be refreshed with updated data but it still just provides new answers to old questions. In QlikView, however, something as simple as a keyword search across a complete set of data can be a very powerful capability for mobile users with new questions on-the-go.

• **New questions require new reports** – Historically, the only option for answering questions that were not anticipated is to go back and build new reports or visualizations. Whether this is a BI report writer or even a business user attempting this on their own, it’s still a time-delayed step that’s not available on-the-spot, when having the right information can really influence a decision.

Mobile users need answers, and they typically can’t wait until they are back in the office to ask colleagues or request new reports. Immediate response to new questions and follow-up questions can make or break a deal or decision for a mobile worker. With reporting, it is often too late to capture these critical opportunities in the field.

**QlikView has a unified mobile architecture**

Traditional BI architectures typically require new mobile reporting layers on top of already complex stacks. In contrast, QlikView offers a unified architecture for delivering cross platform Business Discovery capabilities on mobile. QlikView delivers data exploration capabilities across platforms. QlikView Server recognizes mobile devices and delivers touch-enabled apps for those devices as needed. There are no additional stack layers, data transfers, report customizations, or duplicate security models required.

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**Figure 6**  Browser-based support makes optimal use of small touch screens

Source: QlikTech
One QlikView, any device

With QlikView, mobile access is no different than access to QlikView Server from any other client. The same apps are delivered with the same functionality on any platform. This allows users to benefit from a consistent experience across desktops, laptops, tablets, or smartphones. The platform’s power to generate insight is available everywhere.

Rich, attractive, HTML5-based interface

QlikView offers rich layouts, compelling visualizations, and a full set of touch interactions on mobile devices. By taking advantage of HTML5 technology, apps are automatically delivered with touch capabilities such as momentum-based scrolling, selection in charts and graphs, and multi-select. QlikView also supports device-specific features like pinch to zoom, adjusting for screen orientation, and bookmarking QlikView apps for full-screen mode access from the home screen, resulting in a user experience on par with native apps.

QlikView for iOS: Offline access and the best of both worlds

QlikView on Mobile operates in both a mobile browser setting and within the QlikView for iOS app. The QlikView for iOS app adds a disconnected mode for iPad that delivers your QlikView apps even when you’re offline. Users can define views to take offline, through a combination of QlikView bookmarks and dimensions, and can download these views to the device. When offline, users can launch the saved QlikView apps, browse all the tabs and objects, and select from available views through a native menu interface.

Full business discovery and data exploration are available when connected, and when disconnected, the same apps, rendered in the same manner, are available offline with all tabs and objects browsable and a series of selectable downloaded views. And because users themselves can create the bookmarks which serve as the basis for offline views, reliance on report writers to predict their offline needs is reduced. Users get more information than reporting when offline, full business discovery when online, and the ability to define their own offline views.

Secure and manageable

QlikView on Mobile leverages QlikView’s enterprise-proven server architecture. It gives organizations a combination of control at the center and flexibility at the edges. Because management and security are server capabilities in QlikView, the same access to apps and data entitlements apply regardless of the device used. Developers benefit from a ‘build once deploy anywhere’ approach that reduces the burden associated with maintaining multiple versions of apps. And any data that does reside on a device, in the iOS app for example, is encrypted using the highest levels of available encryption for maximum protection.

Source: QlikTech
Conclusion: Self-Service BI Without Borders

The QlikView Business Discovery platform eliminates traditional barriers to business intelligence success for both IT and the business users it serves. IT organizations of every size, across every industry, are relying on QlikView to provide a competitive advantage to the business.

With QlikView, IT enables business users to create their own analyses so they can generate relevant insight while asking and answering the next question. QlikView lets IT serve the business like never before, by making BI mobile, social and collaborative—all while assuring strict data security, quality, and governance. It reflects a true partnership that enables business users to work more effectively than ever, on their own terms, spurring new discoveries that drive revenue and innovation.

Source: QlikTech
QlikTech (NASDAQ: QLIK) is a leader in Business Discovery – user-driven Business Intelligence (BI). Its QlikView Business Discovery solution bridges the gap between traditional BI solutions and inadequate spreadsheet applications. The in-memory associative search technology QlikTech pioneered created the self-service BI category, allowing users to explore information freely rather than being confined to a predefined path of questions. Appropriate from SMB to the largest global enterprise, QlikView’s self-service analysis can be deployed with data governance in days or weeks. The QlikView Business Discovery platform’s app-driven model works with existing BI solutions, offering an immersive mobile and social, collaborative experience. Headquartered in Radnor, Pennsylvania, QlikTech has offices around the world serving approximately 28,000 customers in over 100 countries.

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