mipro

Singular Focus. Limitless Passion.

MIPRO's Business Intelligence Manifesto:

Six Requirements for an Effective BI Deployment

Contents

Executive Summary

Business Intelligence (hereafter "BI") has been around for many years. In recent times, however, there have been significant advancements in the tools that power BI as well as the expansion of the definition or requirements of a sound BI solution such as data integration, data quality and data federation. Even the core BI tools for report development and dashboarding have become more powerful and advanced, offering more value to BI practitioners.

Some organizations have embraced the more complete definition of BI and more powerful tools to drive their business in the correct direction. The companies that truly embrace BI and use it as both a strategic and tactical tool will find their data turning into useful, actionable information. Those companies that do not have a strategic direction and view BI as only a reporting tool are not as fortunate. The decision capability delta between these two types of organizations is growing every month.

This white paper's objective is to discuss the top requirements when it comes to executing a top-performing BI system that can strategically guide your company's direction. None of these topics are new or have escaped discussion before, but putting them together in a white paper such as this can serve as a checklist to help avoid pitfalls and, more importantly, help drive a successful BI program. These items are MIPRO Consulting's top requirements for deploying BI and we have attempted to provide real-world, front-line examples to help illustrate the value of executing on these best practices.

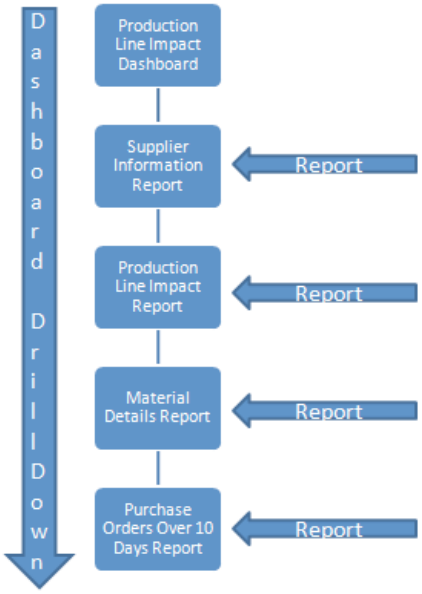
Requirement #1: Execute dashboards effectively; don't simply turn reports into dashboards

Dashboards have been around for a while now, although the new capabilities of dashboards that allow for interactive "what if" analysis bring a new level of value and necessity. With this new impression of dashboards permeating the marketplace, more and more organizations are trying to adopt the dashboard "at a glance" approach to daily business insight. However, there are certain skills and data structures that must be in place to properly support truly intelligent dashboard deployments. For example, one mistake that can be easily made is to use report developers to turn simple reports into dashboards. Our definition of a report is data that is presented in a specific format. A report provides information, but does not necessarily answer key business questions. It provides clues, but generally deeper analysis is required to make key decisions. A dashboard, on the other hand, should always provide real, pre-correlated insight (read: intelligence) into key aspects of the business at the level of the audience reviewing the dashboard.

We can walk through a scenario that clearly outlines the difference between a report and a dashboard. For example, let us take a purchasing buyer of raw materials in a production facility. If that buyer is asked what type of report he would find useful, the answer may be a report that shows all purchase orders that have not been fulfilled/delivered and are overdue by 10 days or more. That could be a very useful report. However, while report itself does not answer a key business issue, it does provide insight into issues that require further analysis. Let us further assume that we now want to provide that same buyer a dashboard that answers a key business question and supports a positive financial influence on the organization.

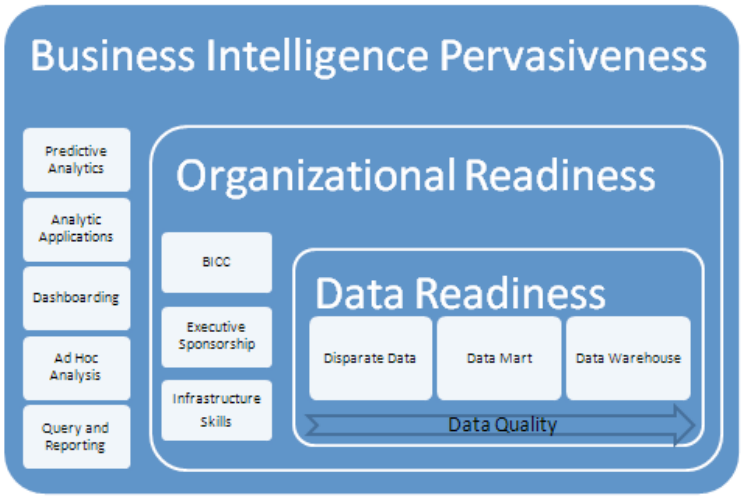
MIPRO Consulting uses a rigorous requirements-gathering technique based upon understanding an individual's main work responsibilities. Through this technique, we can better understand what information would provide value in a dashboard. Asking that same buyer what he would do next with that information regarding 10-day overdue deliveries, the business-relevant scenario may unfold like this: the buyer takes every purchase order from the report and looks up (queries) what materials are on each purchase order (which, incidentally, would be another valuable report for that buyer). Then, based upon the materials that are on each purchase order, the buyer reviews the production schedule and determines if any production will be impacted (another valuable report). If a production line is negatively impacted, then the buyer works jointly with the production scheduler to determine whether materials need to be expedited or the production schedule can be changed. The buyer then works with the suppliers to discuss whether the materials require expediting. In this scenario, the dashboard truly identifies what production lines will be shut down due to overdue purchase orders not being fulfilled. We just don't see data, but the downstream effects of the data as they relate to the business operation itself. With a dashboard such as this, the buyer can drill back into the details to take actionable measures. This dashboard offers true business value, answers key business questions and offers significant risk mitigation to operational business and (ultimately) financial metrics.

The cornerstone aspect of our dashboard development approach is that the buyer's daily work process is used to define the dashboard that provides the most value. The buyer may have been able to get to the answer without a dashboard, but it would have been through a time-consuming series of individual reports (and several nodes of possible human/analytical error) as opposed to logging in, identifying the issue at a glance and drilling back to the details. The following diagram attempts to depict the dashboard to report detail scenarios:



Requirement #2: Understand where your organization falls on the BI Maturity Model (BIMM)

Having a sound understanding where your organization is within the BI Maturity Model (BIMM) can help ensure a stronger user adoption and overall successful deployment of BI. While many different versions of BIMMs can be found, MIPRO has developed a version that considers BI usage accurately from organizational readiness, data readiness and tools deployment perspectives.



The BIMM is a framework to depict the elements that are critical for success and ultimately impact what aspects of BI an organization should deploy and when. By way of illustration, we will walk through MIPRO's BIMM.

The first layer of the foundation for a successful BI deployment is the data layer, commonly referred to as "data readiness." Without a strong data structure in place designed to answer business questions, it will be a much greater challenge to have a widely successful BI deployment. Disparate data sources that are transformed, combined and manually manipulated will prove a challenge to secure information that is trusted throughout the organization. Varying data sources that contain similar information may have issues validating the results from one data source to another, resulting in executives questioning the value and validity of the data.

As organizations progress in their need for information, there is often a tendency to build subject-specific data marts. The data structure for these data marts is considerably improved over disparate data sources, but there are still challenges related to combining the data across subject areas. Additionally, as BI requirements increase across the enterprise, there is a tendency to modify or enhance the data mart to encompass multiple subject areas. This results in a data mart less efficient (and relevant) than originally intended.

Ultimately, successful organizations—for a wide variety of technical and business reasons—deploy a data warehouse. The key here is that the data warehouse must not be solely designed from the technical perspectives of size, performance and structure, but first must be considered from a business-facing standpoint. It must be understood what business questions the data warehouse must support (presently and in the future) and not just from a siloed (sales, finance, HR, etc.) perspective. The data warehouse must be designed to allow departmental metrics to link across operations and support corporate objectives.

Whether there are disparate data sources, data marts, data warehouses or any combination thereof, it is critical that a strong data quality program is in place in order to make the data more accurate, reliable and "trusted." We will discuss a data quality deployment further in a later section.

Organizational readiness is the next layer of the BIMM. This aspect is really about having the right skills in place and the right organizational structure to support those skills. For example, the organization may have excellent network, web server, DBA and SQL skills, but business intelligence skills require specific BI tools knowledge, business knowledge related to what metrics to measure and why, skills pertaining to dashboard best practices and information presentation, and very specialized data mining and predictive analysis skills. What in-house and external skill sets an organization has access to will drive what level of BI they are ready to deploy. Certainly if an organization only has report developers they are not ready to deploy intelligent dashboards or predictive analytics.

In addition to the individual skills of an organization, executive exposure and sponsorship is essential. If the executive management of an organization views BI as mission critical and strategic as opposed to a tactical tool, that organization is more likely to get the resources required to move them up within the BIMM and be in a better position to deploy the more advanced features of BI–the features that position organizations with the information to drive business in the right direction.

With executive sponsorship and the right skills in place, a Business Intelligence Competency Center (BICC) can take an organization to the next level of BI effectiveness and value. A BICC is a permanent organization within a company with a formal structure. The roles in a BICC can vary within each organization, but they typically contain roles such as data stewards, data quality engineers, metadata management engineers, business analysts, tools specialists, data modelers, ETL specialists, etc. The BICC can help ensure BI projects are prioritized properly and both technical and business aspects are taken into consideration for the successful deployment of BI. Organizations that maintain a BICC prove to have very successful BI implementations with high user adoption and increased BI pervasiveness. This will be discussed in more detail later in this document.

The final aspect within the BIMM is tool complexity and execution. Please note that tool complexity is not just a factor from a technical perspective but is measured by the number of users, the training required, the business expertise and technical expertise required to deploy these tools. In summary, this portion of the BIMM is indicating that an organization can deploy developer reporting tools to a small population of users in a relatively lightweight manner. Little training is required except for the developers tasked with creating the reports. As more ad hoc query and analysis is deployed, a metadata infrastructure may be required along with more significant training for the end users. Once metadata is in place and users understand how to secure data and understand what metrics can be measured and how, dashboards can be deployed. Over time and provided maturity and pervasiveness increases, advanced analytics and predictive analytics can be deployed. These tend to be the most advanced features of BI and require deep technical and business skills to execute.

In summary, it's imperative to understand where the organization sits in relation to the BIMM. Further, self-aware organizations don't try to deploy advanced features of dashboards and a predictive analytics before reporting and query analysis. This is the sound walk-before-you-run approach applied to BI.

Requirement #3: Execute a data quality strategy

Data is the backbone that allows for a sound BI deployment. Data allows an organization to not only generate reports, but take analytics to the next level and allow for the establishment of KPIs, alerts and predictive analysis. However, none of this is possible without a sound data quality strategy and execution plan in place. There are many reasons why data quality is important and below we explore the several most prominent.

• **Trusted Data**. The ability to trust data and know that facts and figures are correct is extremely important, especially in financial reporting and today's SOX-dependent environment. Data comes from multiple sources, is extracted, transformed and loaded multiple times as it moves throughout the data structure of an organization. It is essential to ensure that the data is cleaned as it goes through Extract-Transform-Load (ETL) processes. Today's superior ETL tools also boast the ability to clean the data as it is extracted, transformed and loaded.

• **Accurate Information.** In order to get valuable reporting, you must have clean data. Let's take an example of sales reporting based upon customer IDs. If there is not a master data management system in place or stringent rules on customer master entry, it is highly likely that there are duplicate customer entries. For example, **Microsoft** could be entered into the customer master as *Microsoft, Msoft, MicroSoft,* or *MS*, just to use a few examples. Clearly, there could be multiple versions of Microsoft and this may negatively impact the customer order process, as orders may be entered under any or all of the multiple versions of "Microsoft" from the customer master. If there is a requirement to track sales to Microsoft, the reporting process would have to capture each of the orders under each of the various iterations of "Microsoft" and roll them up in order to accurately capture this information. A data quality tool can identify duplicates and cleanse and consolidate them for more accurate and consistent information. Additionally, a data quality tool can cleanse the data interactively as the information is entered resulting in consistently clean data from the point of entry.

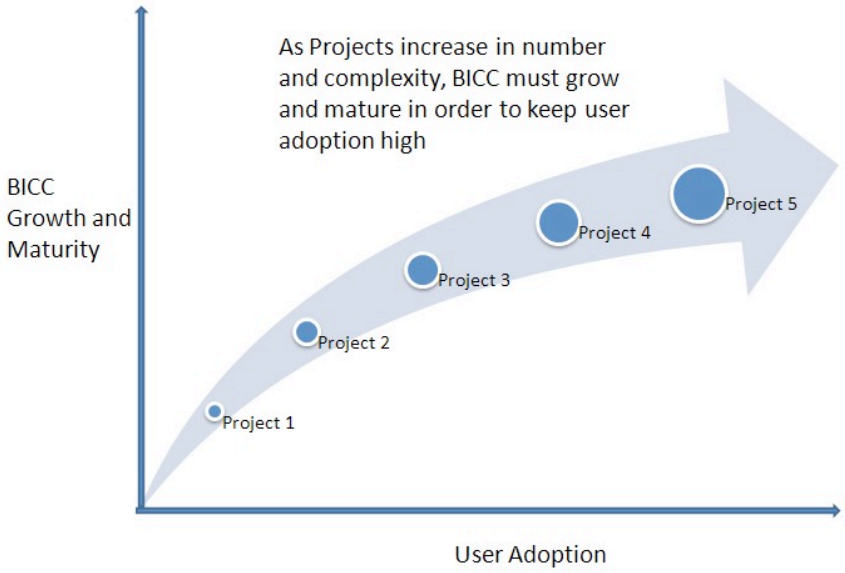
• **Compliance.** SOX and HIPPA are just two examples of mandated compliance. The challenge to comply with these requirements is nearly impossible without quality data. A data quality program can help ensure that financial figures are accurate and trusted and data privacy for HIPPA (for example) is successfully implemented. Let's use a similar example to the previous one, but instead of a company name, let's use an individual's. Suppose you have individual data in your system for **Michael Andrew Jones**. This individual may have entries as *Mike Jones, Mike A. Jones, Michael Jones, Michael A. Jones, Michael Andrew Jones, Mike Andrew Jones*, etc. It becomes a severe challenge to data privacy if this data is not cleansed and accurate. Are these versions of the same individual or different people? How do you know?

• **Security**. The concept of data security ranges from keeping confidential company strategic differentiators constrained to those with the proper permissions to ensuring employees only see certain types of data. This is critical to most organizations. A sound data quality program can help ensure that data is secure by consolidating and moving data appropriately to make sure employee information is clean and accurate and constrained appropriately. Without a sound data quality program in place, there is tremendous potential to put data security in jeopardy.

The above are real-world, seen-many-times-before examples of the potential perils of not having data quality and a data quality program implemented. Data quality should be an enterprise-wide initiative—not just from an IT perspective, but, most importantly, from a business standpoint.

Requirement #4: Really, truly think about a BI Competency Center (BICC)

As mentioned previously, a BI Competency Center (BICC) is, ideally, a permanent organization within a company with a formal structure designed to most effectively promote BI within an organization. A BICC's primary function is to find and combine the right skills and knowledge which, if done properly, results in higher BI user adoption. Many articles have been written about BICCs so this paper won't spend a tremendous amount of time on the overall subject. However, one mainline point that should be noted about BICCs is that a BICC does not have to start out with every role and every skill that is defined in the desired end solution. A BICC should and can evolve as your organization evolves, adding the necessary skills as your BI deployment grows and more business units and users adopt the chosen BI tools. Initially, organizations may not require a significant BICC if they have a single data source and are deploying developer-level reports to a single business unit. However, as companies deploy end user reporting solutions and dashboards to additional business units, the BICC must grow and adapt in order to sustain user adoption of the BI solution. The figure on the next page attempts to depict this growth and alignment of a BICC.



It is important to understand the types of resources and skills required for a BICC so it can be determined what specific skills your organization needs as BI becomes more pervasive and evolves. The chart below depicts some typical resources/skills required for a BICC. Not every role is absolutely required and some roles can be combined; each organization is different. Consulting organizations such as MIPRO can assist in designing a BICC specific to your organization's requirements.

Data Steward	Business Analyst	Meta Data Mgr	Data Warehouse Mgr
Data Quality	Data Architect	Data Security	ETL Specialist
DBA/Data Modeler	BI Tools Specialist	Data Governance Lead	Education Specialist
BICC Manager	Business Sponsor	Training Coordinator	Infrastructure Specialist

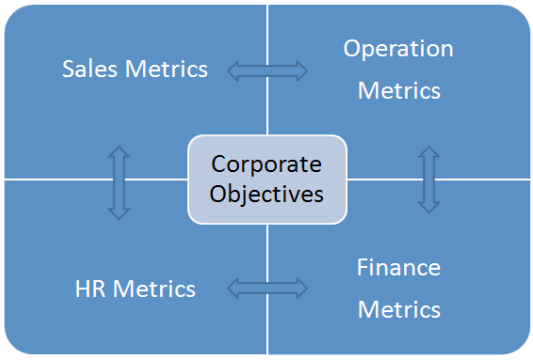
Requirement #5: Align analytics and metrics from top to bottom

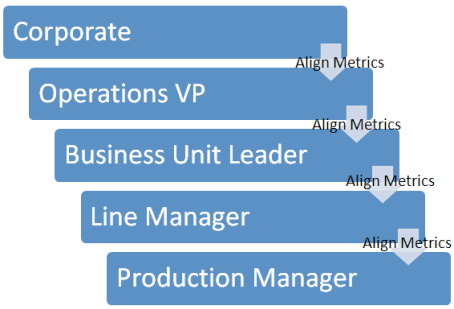
Early versions of BI certainly provided information and insight into the business, but they tended to focus on siloed information. Metrics were created by functional areas such as Finance, Sales, Marketing and HR. In order to truly provide value to the organization from top to bottom, these metrics must align from top to bottom across information requirements and eliminate silos. Certainly there is still value in maintaining HR, Finance, Sales and Marketing metrics, but if each area of the organization can align its metrics within each level of the organization, it can prove to be a powerful tool to help the business's top and bottom lines. Line leaders to middle managers to executives must have metrics and dashboards that are in alignment and support one another. As an example, the following scenario attempts to illustrate the alignment of metrics top to bottom across functional areas.

Let's look at a scenario involving a construction company. Suppose the main corporate objective and commitment to shareholders is to increase overall margin by 1%. In order to support that objective, each area of the business must put in place sub-objectives to help impact the bottom line, including the HR organization. In some cases, HR is traditionally viewed as necessary but not necessarily strategic or a fundamental contributor to the bottom line.

Let's also suppose that the Operations business unit has determined the best way it can contribute to the overall margin objective is to make 25% more use of a new type of machine that can lay pavement more efficiently and effectively. This particular machine is more complex than other machines and therefore requires specialized training. In order to hit its objectives of an increase of usage by 25%, Operations requires more experienced machine operators. Downstream, the HR business partner supporting the Operations business unit now has to tie its goals and metrics to help Operations hit its goals, thus directly contributing to the overall corporate objective. In other words, in order to enable its contribution to the overall corporate objective, HR must put in place goals to retain the skills required for the new machine's operation, cross train individuals appropriately and hire new skills relevant to the new machines. HR's metrics now map specifically to the Operations team's metrics which map directly to the overall corporate metrics. This is metric alignment.

It goes without saying that the data and data structure must be available and appropriate in order to successfully measure these metrics and create dashboards that monitor progress and success. However, if the data structure is present and objectives are in alignment, all aspects of an organization can be strategic and contribute to the overall success of the company.





Requirement #6: Treat your BI initiative as a project

If one thinks of BI simply as reporting, there is a tendency to treat the BI initiative as a list of reports awaiting design and development. There will be no project plans, no scope, no timeline. In order to effectively execute a BI initiative, the truth that must be embraced is that it must be treated like a full-on project. Everything begins with planning. Many organizations believe the greatest point of project risk is near the end, just before go live. However, studies show that risk is highest at the start of the project, as organizations have already invested in software selection, hardware acquisition and software purchase. If you do not take time to properly plan scope, resources, objectives and timeline, you are putting your project and investment at risk before you even begin. It is imperative to define the following:

- **Project Objectives**. Project objectives must align to corporate objectives; remember that the end goal of the BI initiative is to meet and drive corporate value. A project can be delivered on time and on budget, but if it does not deliver to corporate value, it still may not be deemed a success.

- **Scope**. Scope creep is one of the most predominant killers of a project. Even with BI, you must define the user groups, the tools that will be deployed (reports, queries, dashboards, etc.) as well as the subject areas to be deployed. Without proper scoping, history suggests there will be downstream scoping conflicts.

• **Risk**. For any good project plan, a risk mitigation plan must accompany it. You should identify your organization's historical risk issues (such as pulling resources for competing projects), the specific issues for the BI project, the likelihood of that risk occurring on the BI project and the impact if that risk does occur. For each of these items, you should develop a risk mitigation plan that accompanies the project plan and is managed to just as ardently.

• **Resources**. What resources are required to successfully deploy the BI project? What resources does your organization have? What percent of their time can they be committed to this project? What outside skills are required to support the project? Secure executive commitment to keep resources allocated to the project for the time commitments required. If the proper resources are not available or cannot be committed, the chances of the BI implementation being successful drop considerably. Resources plus executive sponsorship equal project success.

• **Approach**. Will BI be deployed in phases or in a big bang approach? There are many variables that can influence these decisions such as risk acceptance, competing projects, timeline constraints, size of the BI deployment, resource availability, budget, etc. The approach must be defined in order to create a BI project that is sustainable.

In reality, there are many other attributes to a project that are required. The above fundamentals, however, highlight the importance of early and committed planning in order to have a successful BI implementation. Take the time up front to plan out the project, gain executive commitment and execute to the project plan for an on time, on budget project that delivers true corporate value.

Final Thoughts

Whether you are just beginning your BI implementation or have a mature BI deployment that is not producing the value expected of it, these six suggestions can help deliver a better-performing BI solution. Certainly not every suggestion will be appropriate to implement and address immediately, but even a base understanding of these suggestions as you roll out BI can help create a BI solution that is robust and delivers true business value. Many different BI tools can help achieve your BI objectives; these suggestions are tool-independent and focused around process and infrastructure to get the most value out of your tool investment.

If you have any further questions about BI tools, best practices or real-world examples of successful deployments, please contact MIPRO Consulting at 800-774-5187, or at info@miproconsulting.com.

Thank you.