

## View Point



### Effective Visualization Technique for Business Intelligence (BI)

#### Clickable Mock-ups

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#### Abstract

Effective business intelligence (BI) can help companies gain a comprehensive understanding of the factors affecting their business, enabling them to make informed business decisions for the competitive edge. In order to achieve this, organizations use BI applications or technologies to analyze information from external and internal sources. This information can help companies get better understanding of changing trends in the market, customer behavior and spending patterns, empowering managers to make informed business decisions for better results.

However, while BI vendors have developed software tools to gather and analyze large quantities of data, it is difficult to obtain the correct business requirements that guide metric definition and analysis. This paper examines why this happens and shows how visual representation of requirements using clickable mock-ups can provide an effective way to overcome the problem.

## Introduction

Implementing BI projects is extremely challenging for organizations – they usually exceed budget, fail to meet deadlines and have a low user satisfaction rate. The primary cause for many projects facing difficulties is the issue of identifying appropriate business requirements. It is extremely difficult to elicit specifications from users who are unsure or unclear of their future needs.

Further, requirements for a BI project are abstract, unlike an application development exercise where the purpose is well-defined and inputs/outputs are discrete. Most users are unable to conceptualize requirements since they do not know the data or the capabilities of the BI tool. As time runs out, incomplete requirements are rushed to the development team with the expectation that developers will be able to fill in the missing pieces. The results are usually disappointing with users receiving something completely different from what they wanted or needed.

This situation triggers a series of review cycles between business users and developers to correct the requirements, while they undergo development, creating frustration on both sides and, at times, leading to cancellation of the BI project.

The solution for this problem is a visual representation of business requirements, because it ensures that nothing is lost in translation when users and developers work on a BI project.

## The Need for BI Business Requirements Visualization Technique

Imagine two gears with different-shaped spokes failing to interlock, and thus spinning independently. Now, compare that mental image with the illustration in Figure I. Based on prior experience and understanding, it may have taken you a while to visualize this image.

Further, given the fact that each individual thinks in a unique way, each of us probably came up with our own representation (shapes, color, placement, etc.) of the gears. However, a glance at Figure I would help understand the content much faster and bring out the differences with your mental image.



*Figure I – Visualization of requirements and development as gears with different shapes*

Since visual representation makes conceptualization and comprehension simpler, rendering business requirements through graphics creates a more effective BI solution.

## Solution for Visual Representation in BI

Given that most of us are more adept at processing graphic information, why do we still use textual explanations for BI requirements? Traditionally, it is extremely difficult – not to mention costly and time consuming – to create an accurate visual representation of the requirements for a BI project.

In our experience, most BI projects begin with the intention of leveraging visual tools like Excel, Power Point and professional graphic design tools to create mock-ups or strawmen of reports, dashboards or scorecards. However, creating such visual models is a time-consuming process, which ultimately burdens the requirement team. Invariably, they focus more on aesthetics than on business content.

As the requirements team does not usually comprise graphic designers, this situation builds frustration among members. In their haste to finish mock-ups as soon as possible, they often fail to understand the information needs behind the expressed requirement. Eventually, the business users get frustrated due to lengthy discussions over static mock-ups, while being unable to visualize real data. Perhaps the most aggravating aspect is that the static mock-up barely resembles the end product.

Ideally, there should be two teams handling requirements – one team that interacts with business users to understand the business and rationale behind the information needs, while the other concentrates on creating an interactive and dynamic prototype or a clickable mock-up.

In the past such a division of functions was not feasible as it would disrupt the cost and timeline of the project. Also, coordinating the logistics of simultaneous operations of two teams was arduous. However, thanks to the Global Delivery Model (that blends off-shore development with on-site presence), the situation has changed. Companies can now not only afford, but should have, two teams diligently working on BI requirements.

During one shift, the on-site team can interact with business users to elicit business requirements, while in the other shift the off-shore team can work on creating clickable mock-ups. This technique is highly effective as it leverages day and night without downtime. Further, the benefit of reducing, and perhaps eliminating, costly out-of-cycle reviews more than justifies the minimal additional cost.

## What Makes an Effective Clickable Mock-up

An effective clickable mock-up is more than just a collection of pretty pictures – it encapsulates complete dashboards, scorecards, reports, alerts, and other features in a stand-alone HTML package. It also provides sample data sets relevant to business users that can be demonstrated from any browser. All of this showcases the potential value of the application and how it can be used to explain specific situations before the code is developed.

The most important feature of the clickable mock-up is the inclusion of hyperlinks that permit business users to explore analysis paths or drill ways that will be available to them once the application is fully developed. This feature enables guided analysis, thus capturing and embedding organizational best practices in the BI system.

Further, an effective clickable mock-up can present different scenarios (operational, tactical or strategic) depending on the users' information needs. This establishes a proper framework for delivering the right data to the right people at the right time.

## How to Create a Clickable Mock-up



Figure II – Two dimensions are combined to create the “Clickable Mock-up”

A clickable mock-up should be created through two discrete though complementary modes (Figure II).

### 1. Business and BI Features

The most important element of any BI requirements technique is to accurately capture what business users need.

This is done by first understanding the information needs of business users in the context of their day-to-day activities. A list of metrics is derived from these needs and the attributes that qualify these metrics are identified.

The attributes are organized in hierarchies based on how the business wants to read the information. Metrics and attributes become a pool of objects that can be combined to create any desired scorecard, dashboard or report. The consolidation, called a ‘building block’ (See Figure III), can be connected to other building blocks through drill paths to define the guided analysis.

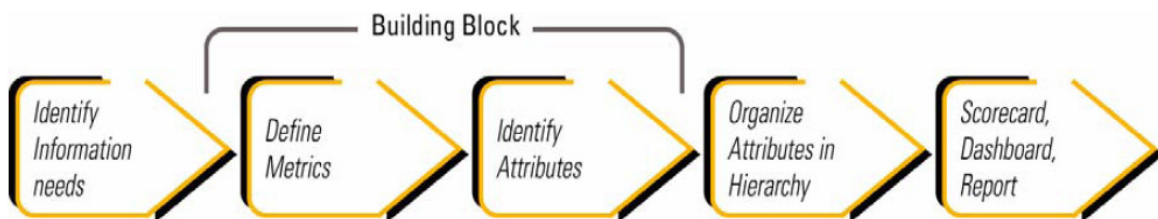


Figure III – Steps in creating a clickable mock-up

### 2. Graphics and Visualization

Visualization can be termed the presentation card or wrapper for the information gathered above. While it does not play a critical role in defining the core solution, it is important from the standpoint of perception and usability.

Perception matters since most of us tend to judge a book by its cover. Hence BI too needs an attractive wrapper. Accurate representation of information may be diluted or even discredited if the visual theme is not engaging. Hence, careful tailoring of the theme to the particular organization is necessary. This can be done by designing a wire frame that leverages appropriate corporate colors and standards, and the right chart type and space dimensions to convey the displayed data.

## Example of a Clickable Mock-up

A corporate retailer looking to implement a company-wide store performance system could leverage the clickable mock-up technique to demonstrate how proposed reports, dashboards and scorecards should look for department managers, store managers, regional managers, and corporate users.

The retailer could also demonstrate drill paths, role customizations and wizard-like features for system capabilities, thereby setting the right expectations for stakeholders.

## Conclusion

Using a visual requirements technique can minimize the risk of rejection and increase user adoption rates for a BI project. The clickable mock-up leverages the Global Delivery Model to create highly dynamic and engaging artifacts that help business users understand how the real application will appear and behave before it is developed, without significantly impacting timelines and cost.

### About the Author:

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