

# Jumpstart to Leverage BI in P&C Insurance

## Executive Summary

Industry dynamics and changing market conditions have driven the P&C insurance industry to focus on amplifying the opportunities enabled by greater business intelligence and the potential application areas where analytical tools can be applied to help firms increase their competitiveness. This white paper looks at the industry dynamics and their impact on strategic objectives, as well as the essentials of a BI framework, BI application areas and conceptualization of a solution framework for effective BI implementation in the P&C sector. It works as a quick reference for those in the P&C space that are assessing potential BI implementations.

## Introduction

P&C insurance carriers face numerous challenges and are looking for more progressive ways of enabling growth and optimizing operational performance. Many have been investing heavily in IT to transform their systems and knowledge workers to meet the evolving needs of customers and to improve their competitive stance. To meet their business objectives, carriers require:

- Process improvements that continuously enhance operational performance, enabled by the latest technology.

- Heightened ability to predict, make better decisions, proactively apply controls and take action by capitalizing on best-in-class decision-making systems and models.

Among the key areas of IT spend, the focus will be on information management and the application of business intelligence (BI) to advance better decision-making, thus improving competitiveness and also enabling effective risk management. Carriers are investing more in building a sound BI platform but are approaching this cautiously (especially SMBs) through phased deployments. Initial targets include claims (fraud detection, performance optimization, subrogation, etc.) and sales and marketing (growth analysis, channel distribution analysis, customer attrition/ affinity analysis, etc.). Both product vendors and systems integrators are customizing their pitches and targeting their solutions to address carrier needs in these functional areas.

## Industry Dynamics

P&C insurance carriers are responding to industry churn, resulting in a new set of business drivers. Over the last few years, cost inflation, new regulations, consolidation and evolving complex risks have conspired with low return on investment to undercut the P&C industry and force carriers to seek new strategic alternatives. Importantly, these insurers must significantly reduce customer



## Industry Dynamics

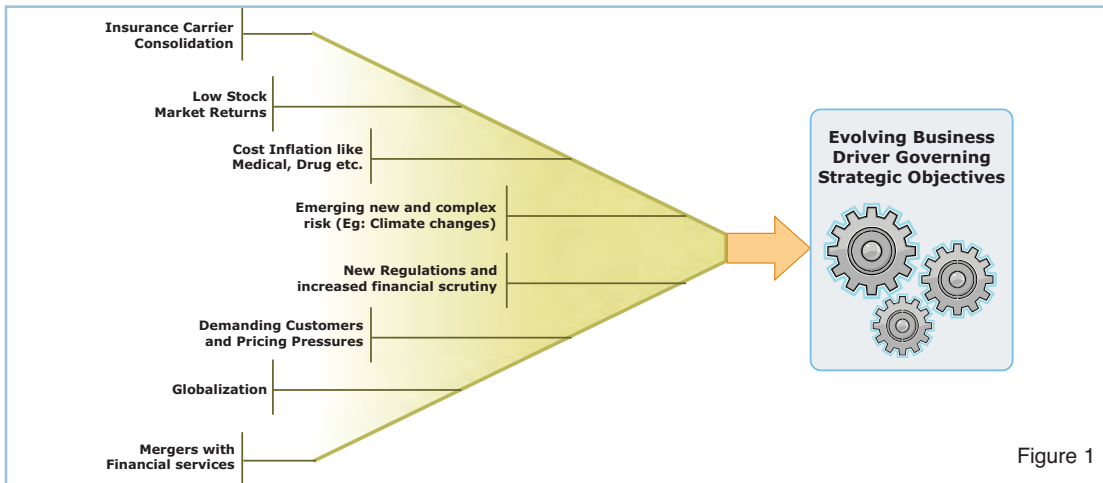


Figure 1

attrition, which has hindered growth at many carriers over the last few years.

Customers have also become more demanding, which poses new challenges around improving customer service and achieving customer satisfaction. This has caused many to revisit their business objectives (see Figure 1). It is important to understand these dynamics when building a BI solution framework because it provides a rationale for incorporating design flexibility to accommodate changing user demands.

Changing industry dynamics is forcing carriers to re-formulate their strategic objectives and goals. To align performance with revamped goals, it is imperative for carriers to formulate best-in-class systems and an effective BI platform that is optimized to:

- Track, monitor and report on business performance.
- Provide business intelligence for better informed decision making.

Carriers' strategic objectives can be broken into five major categories (see Figure 2). It is, therefore, imperative that carriers create a BI solution framework that addresses these objectives by providing quicker and higher quality measurable indicators for both executives and knowledge workers to inform potential actions in a timely way.

### Building Blocks of a BI Framework

A useful BI framework must address three basic needs: information retrieval, reporting and analysis. Basic elements as represented in see Figure 3, next page, aid in understanding the levels of building blocks required to construct a complete BI solution.

It is to be noted that information consolidation and data quality anchor the BI framework and are a key to its success. Insurance carriers, therefore, need to decide on the breadth and depth of scope coverage (i.e., what data should be consolidated from which sources into what data warehouse) within these levels after

## Strategic Objectives

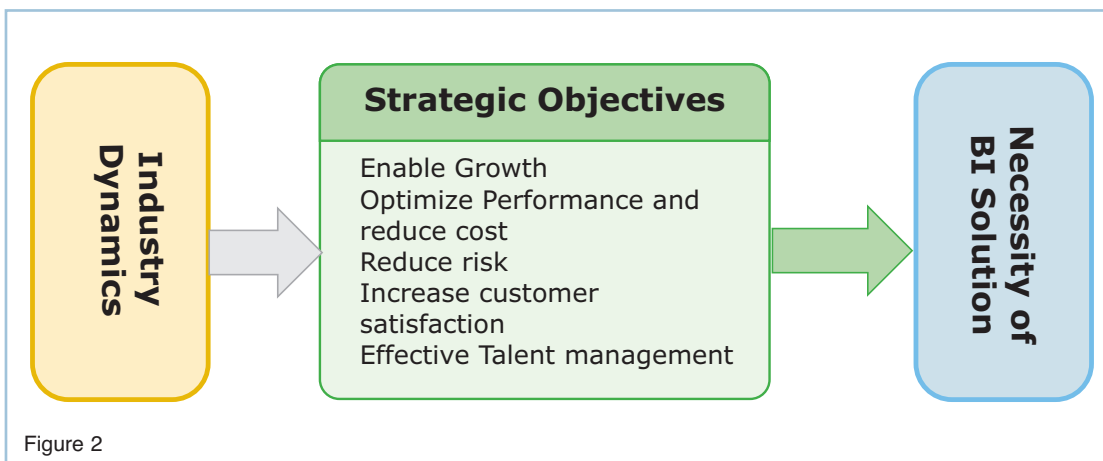
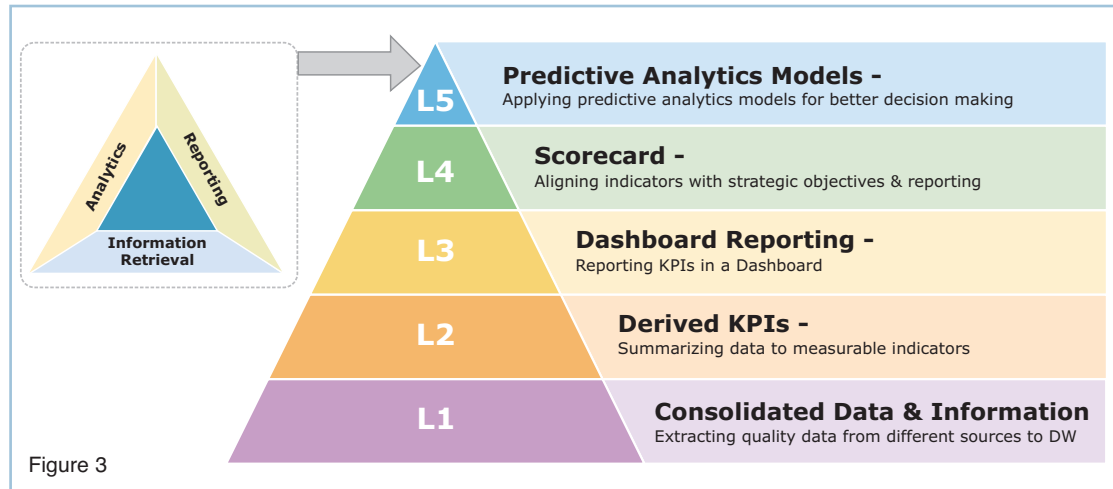


Figure 2

## Building Blocks of BI



considering the investment they are willing to make, their business priorities and business model. Some examples under each level are:

- **Consolidated data and information:** This includes data extracted from different systems such as policy administration and claims processing, etc. Based on necessity, data could be extracted from other systems such as ERP, CRM, financials and accounting, feedback management systems, etc.
- **Derived KPIs:** These are key performance indicators, which are measures that are defined to help monitor the business progress toward goals. KPIs should assist in understanding what has already happened (history, past trends), how the business is doing (current status) and what might happen (future). Hence, formulating KPIs is very critical and forms the basis for business intelligence. There are different best practices around KPI coverage addressing the three basics of past, current and future measurements/predictions. Some examples are loss ratio (%), outstanding claims (measured in dollars), best performing product, etc.
- **Dashboard:** Provides an intuitive, friendly and visual interface for presenting the KPIs to users in a crisp format.
- **Scorecard:** Provides a bird's eye view of performance against each of the identified strategic objectives.
- **Predictive analytics:** Includes statistical models and analytical techniques to assist in the development of predictive/estimation models. Fraud

detection and risk detection models are some examples.

### BI Component Visualization

The power of the BI solution depends on the breadth and depth of information retrieval, the capability to analyze and slice/dice the data and, finally, presenting it in an easily comprehensible way to users. Based on different levels of building blocks, the component view of a BI platform can be conceptualized as shown in Figure 4, on the next page. The components can be classified into four distinct groups:

- Information Management/Central Data Store
- Reporting and Visual Component
- Analytics
- Portal, Workflow and Control Components

### Information Central Data Store

There have been debates on whether data extraction has to be considered within the scope of BI. It really depends on how the organization is structured and how cost centers are aligned. In most cases, data extraction has been within the scope of BI, and so is the responsibility of identifying required triggers in transactional systems for capturing necessary data to derive the performance indicators. It is important to have a holistic understanding of the business functions, data spread within an organization, BI requirements and excellent data warehousing skills in designing or modeling a flexible central data store.

# BI Component Overview

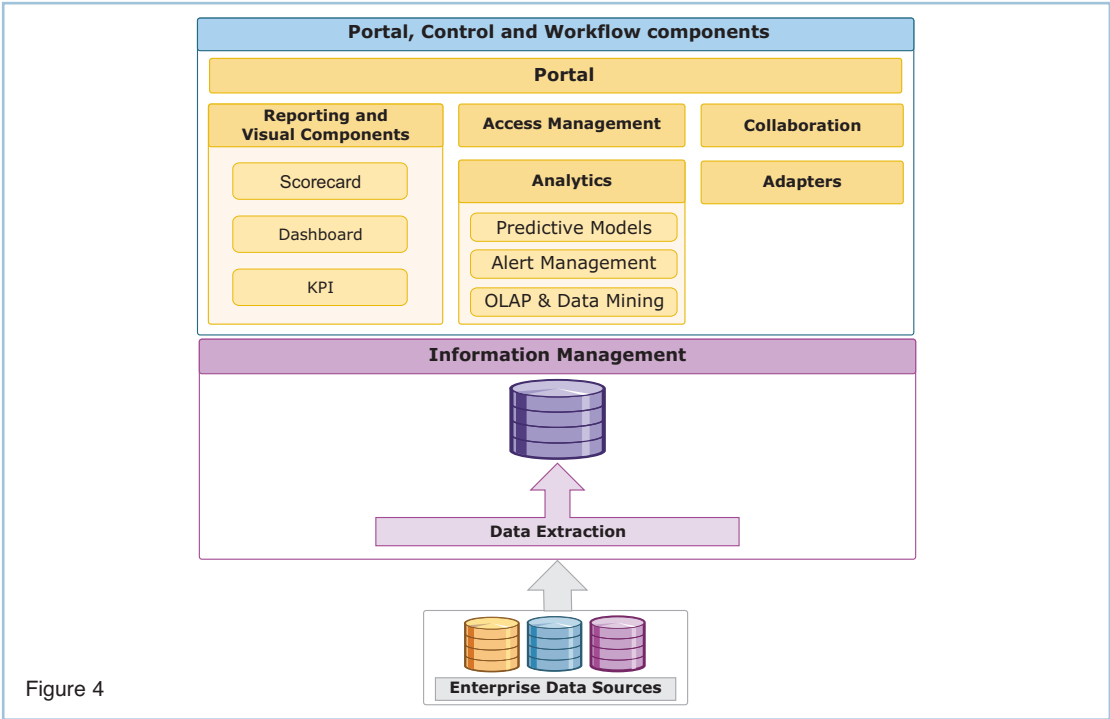


Figure 4

## Reporting and Visual Components

This includes the necessary components required to build the dashboard and scorecard from the derived KPIs. Key to successful dashboard reporting depends on the power of visualization components and related graphical generations so that KPIs and metrics are presented in a way for users to quickly make observations without requiring them to further navigate or analyze. A range of products and services are readily available and can be leveraged to build the dashboard or scorecards. Conceptualization of a meaningful information presentation framework that uses effective visual techniques (discussed in later sections) is critical to building this component layer.

## Analytics

Performing data mining, applying required analysis techniques and utilizing appropriate predictive models are required for an effective BI framework. OLAP (or online analytical processing) tools help in performing multi-dimensional analysis and reporting. Data mining assists in identifying patterns in data by applying statistical models and techniques. These components, together with techniques related to alert management and predictive models, are grouped under this component layer.

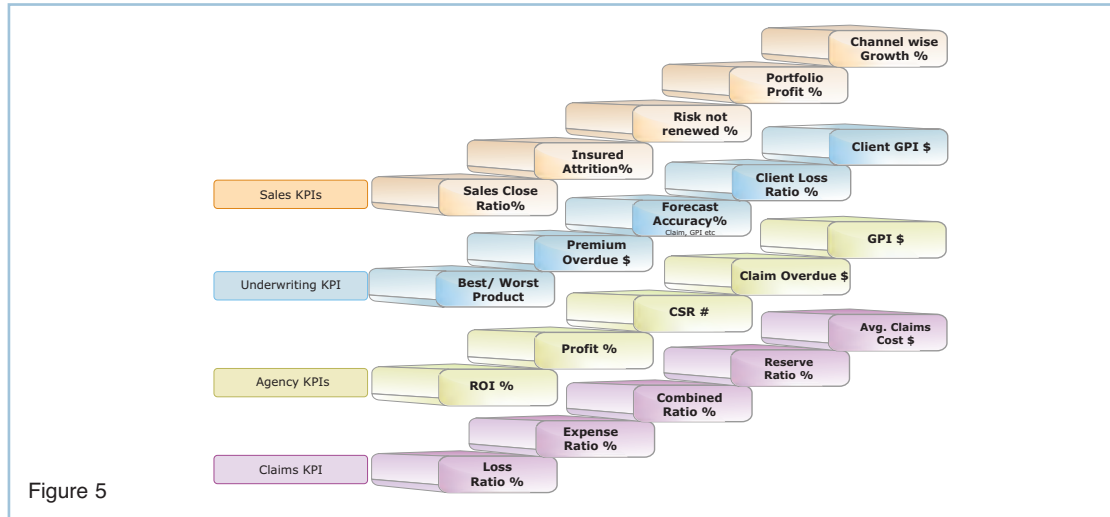
## Portal, Control and Workflow

Presenting the formulated information requires a portal platform coupled with access management and workflow management for aiding in tracking and monitoring. This integrated portal layer acts as a point of access to information and enables users to view the generated reports, dashboards and scorecards. Depending on necessity, there might be a need for the BI platform to integrate with other external systems (like a rating engine for predictive analysis), which is achieved through the adapter component.

## Application of BI in Insurance

The extent to which BI can be applied in P&C insurance is vast. In fact, BI can be potentially leveraged in almost each and every step of the insurance function. A simple three-step approach is discussed below that helps in understanding how organizations can leverage BI in P&C insurance. It is based on the three simple essentials of any intelligence exercise: knowing what to track and monitor; deriving what is needed; and viewing crisply what needs to be seen.

## Representative KPIs



### Identification of KPIs and Applying Innovations

Understanding the KPIs and deriving them for various business functions is one of the very critical steps in building the BI platform. There are standard sets of KPIs available for each of the insurance business functions (sales, marketing, claims, underwriting, etc.) that can be assessed when determining immediate BI needs. For each identified KPI, it is important to set the tolerance level or target values to assist in tracking, reporting and taking action (if any). A visualization of a sample set of KPIs for different insurance business function is highlighted in Figure 5. It is represented as steps (or a ladder) to highlight the necessity of continuous innovation for figuring out improvements in KPIs needed to ascend the value chain.

### Application of Analytics

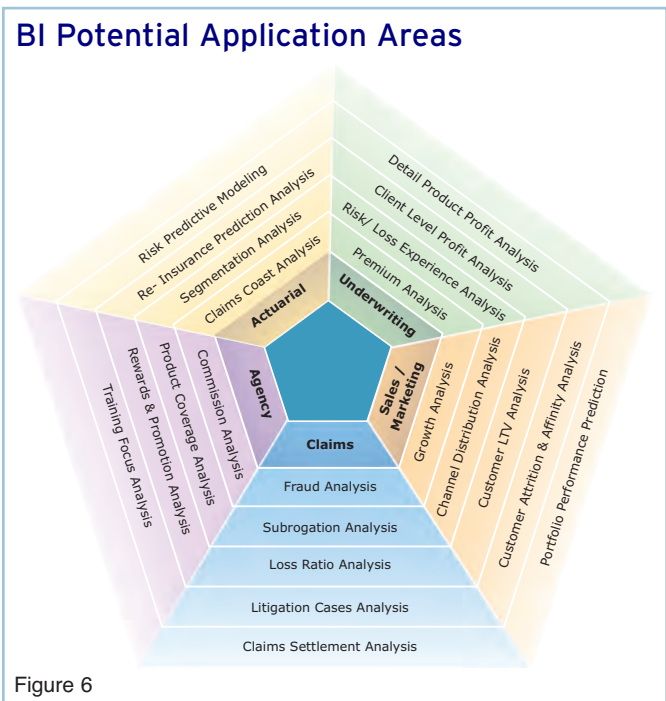
Performing data mining, analyzing the data by applying sound analytics and using predictive modeling techniques defines the power of the BI platform. Some of the challenges faced when applying analytics include the ability to analyze data from different stored formats (structured or not), anticipating the required forecasting model and applying the right statistical model.

Figure 6 lists the potential applications of analytics and predictive

modeling techniques in appropriate P&C insurance functional areas. Potential application areas are represented in a spider-like web model by insurance functional area to indicate that scope is unlimited and the framework strength increases as new areas are identified and built.

### Bird's Eye Summary View

The ability to present relevant information based on the appropriateness of the user group is another important criterion for successful BI implementation. By grouping all the individuals who are associated with the BI function and



## Bird's Eye View

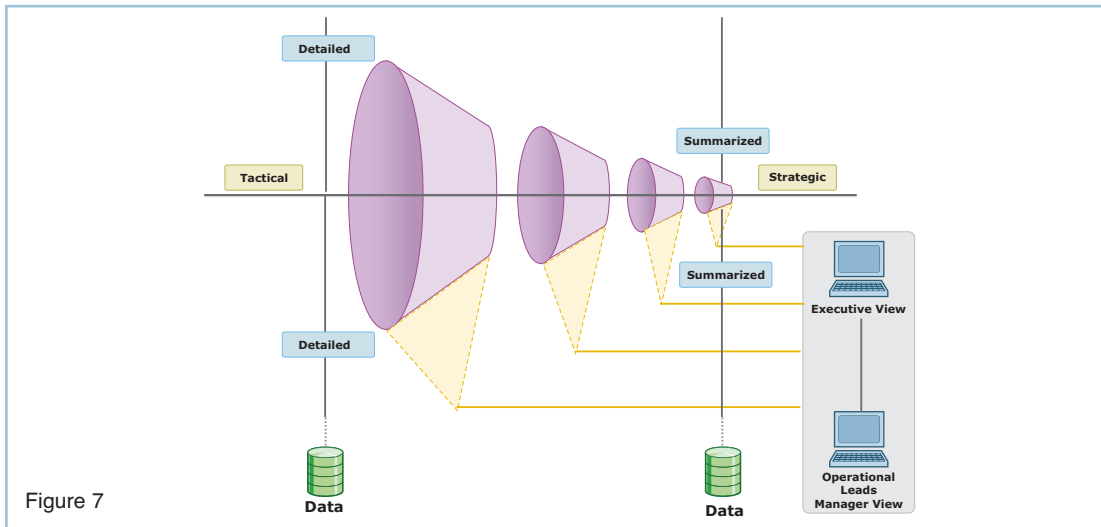


Figure 7

analyzing the outcome, it's clear that 98% of the groups within a P&C insurance carrier just need to view and make decisions from presented data. Hence, it is critical to conceptualize the information presentation framework with a clear understanding of each user group's objectives.

A bird's eye summary view is a visualization of the presentation techniques that could be potentially applied in the process of building a BI solution framework. To achieve relevant visual presentation of data that meets the objectives of the user at a glimpse requires the ability to provide an at-a-glimpse view of:

- a. Strategic objectives (growth, cost reduction, talent management, etc.).
- b. Business function or processes (sales and marketing, agency, underwriting, claims, actuarial, etc.).

- c. Compliance (including adherence to both standards and regulations).
- d. Financials.

Drill-down of the data from the bird's eye view should have the feasibility of providing multidimensional visualization of key measures by dimensions such as geography, product, coverage, line of business, agent, time, etc. The bird's eye summary view represented in Figure 7 acts as a tool to assist in conceptualizing data presentation requirements. If the user is an executive, for example, data must be presented in a highly summarized way with correlation to measures related to strategic objectives. For operational managers/leads, measures are usually tactical in nature, and a detailed level of data should be presented.

## Approach Framework

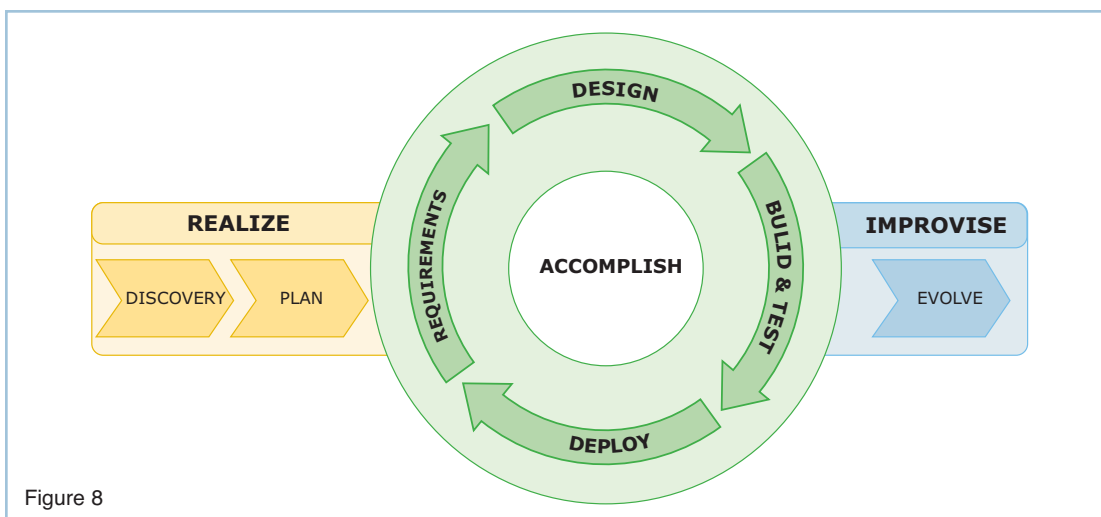


Figure 8

## Solution Approach for BI Implementation

Building the required business case for the creation of a cohesive BI strategy is among the major challenges facing P&C carriers. First and foremost, the management team across the departments should realize that existing pockets of independent reporting and manually intensive analytics usually have minimal connection to the business's overall strategic objectives. They also will not provide the right information at the right time to decision makers and will undercut operational effectiveness.

Most of the time, the push has to come from top-down to spark BI motivation across the organization. Successful strategies are usually initiatives that emanate from a CXO-level individual. The BI implementation framework should support a unified, top-down program to meet business goals. Conceptualization of a framework for BI implementation in P&C insurance is represented in Figure 8. It is built on three stages (as listed below), with each one addressing a specific set of objectives and milestones:

- **Realize:** This stage involves developing BI goals, building a core team, understanding strategic objectives and conceptualizing the roadmap.
- **Accomplish:** This stage encompasses envisioning the key performance measures, identifying technology needs and creating the BI platform through a phased, iterative approach.
- **Improvise:** This stage involves continuous improvisation of platform development by periodically monitoring industry trends and user feedback/requirements and ascertaining business needs.

### Realize

This stage focuses on building a detailed roadmap for the BI program, achieved through the following sub-stages:

- **Discovery:** After securing management commitment, a core team is formulated with relevant representations from different departments who unite as an SME and act as a virtual team defining the BI program. The objective is to understand the strategic objectives and potential associations across business functions.

Gathered information is then prioritized to assist roadmap development, and eventually a business case is formulated. One key deliverable of the discovery phase is the business case document.

- **Plan:** This stage commences with scoping the BI program across the business functions and applications. After finalizing scope, opportunities are analyzed around phasing out the program by adopting an iterative delivery model. This will be followed by developing milestones, timelines and a budgeting exercise to formulate a project plan. A key deliverable of this stage is a project plan with directives on iterative delivery priorities.

### Accomplish

The actual implementation of the BI platform is accomplished during this stage; it is represented as a circle in the diagram to showcase an iterative delivery approach toward implementation and deployment. It is further categorized into the following sub-stages:

- **Requirements:** Joint application design is conducted as a first step to finalize the business requirements document with a detailed focus around iteration-1 scope. After finalizing the business requirements document, KPIs are defined. Analysis is performed to arrive at the data requirements, followed by identifying required data sources. Conceptualization of information presentation is one of the key tasks in this stage. Requirements related to infrastructure/security and analytics are gathered. A key deliverable of this stage is the detail requirements document, which includes requirements related to data, information presentation, infrastructure/security and analytics modeling.
- **Design:** Based on the detail requirements document, the scope for the prototype is finalized per the required tool/product evaluation. The prototype scope should have extensive coverage and touch upon all complex requirements to assist in appropriate assessment of the solution's feasibility. Once a tool/product is selected, a high-level design document is prepared, followed by prototype development and user review. After multiple reviews, a fine-tuned detail design document is prepared, which is a key deliverable for this stage.

## Roadmap Visualization

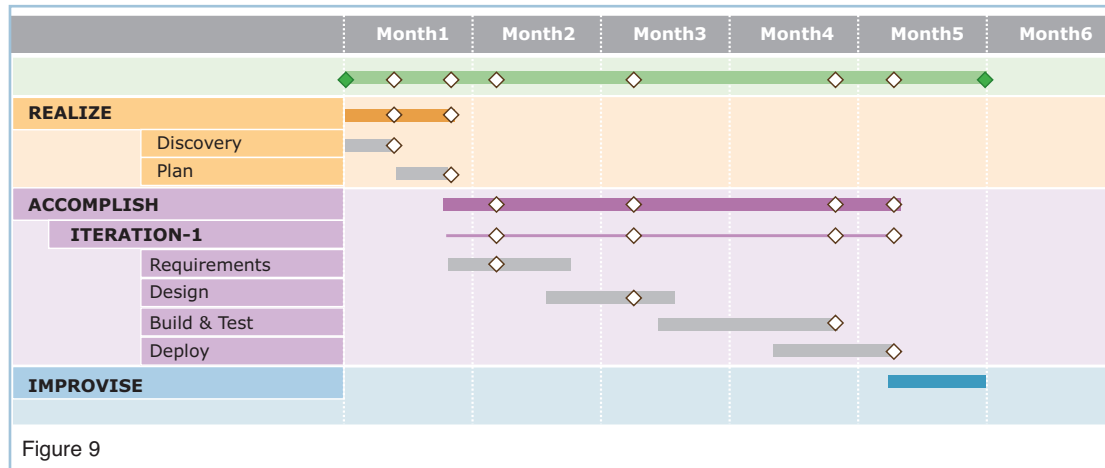


Figure 9

■ **Build and Test:** During this stage, construction of the data model, dashboard, scorecard, ETL and statistical models are initiated, together with the commencement of building the required infrastructure and security platform. Unit testing is performed simultaneously with development. It is followed by comprehensive system and integration testing of all components. Involving key business users for reviews at logical points will help in obtaining upfront feedback and fine-tuning the deliverables.

■ **Deploy:** A checklist related to deployment is then prepared; this is followed by workshops for business user training in this stage. Finally, all components are deployed in the production environment.

### Improve

It is important to understand that a business intelligence framework evolves continuously, and hence, it requires a well-defined user feedback program. The feedback program should target assessing improvement opportunities and implementing them. Findings are documented during this stage and taken forward to subsequent iterations.

A typical roadmap for BI implementation could be visualized as represented in Figure 9. The goal is to deliver the first iteration within four to five months after the commencement of the program.

The roadmap also provides opportunities in overlapping certain stages and compressing the overall schedule. However, the structure of the overall BI implementation program has a

number of dependencies and is impacted by factors such as organization size, initial priorities, capital availability, resource availability and skills gaps.

### Conclusion

Effective utilization of capital (both monetary and intellectual) towards the successful implementation of BI starts with the right framework. This paper provides a practical, iterative approach toward implementing a comprehensive BI solution platform that can be replicated time and again by P&C insurance carriers across functional areas. It highlights key success factors that carriers must achieve to meet changing industry demands, mandating the creation of a BI framework that is flexible, platform-independent, extendable and scalable.

This paper also provides high points related to achieving clarity on business objectives and a strong understanding of the industry drivers and numerous BI application opportunities of which a BI architect must be mindful to achieve a best-in-class design framework. Further, it lays out an iterative implementation solution approach to enable incremental rollouts to business users across the enterprise, thus enabling the realization of accelerated benefits and a repository of goodwill upon which future deployment plans can be based.

By taking an approach that pivots around BI platform extensibility, P&C carriers can add reporting and analytical capabilities as new components emerge. The result is a comprehensive BI platform with a full gamut of features that delivers high-quality, just-in-time

data to knowledge workers, helping them make more timely and informed decisions, thus improving the organization's overall performance and competitiveness.

## Glossary

<b>BI</b>	Business Intelligence
<b>BRD</b>	Business Requirements Document
<b>CRM</b>	Customer Relationship Management
<b>CSR</b>	Customer Satisfaction Rating
<b>CXO</b>	Chief Officers
<b>DW</b>	Data Warehouse
<b>ERP</b>	Enterprise Resource Planning
<b>ETL</b>	Extract, Transform, Load
<b>GPI</b>	Gross Premium Income
<b>JAD</b>	Joint Application Design
<b>KPI</b>	Key Performance Indicators
<b>P&amp;C</b>	Property and Casualty
<b>OLAP</b>	Online Analytical Processing
<b>SaaS</b>	Software as a Service
<b>SMB</b>	Small- and Medium-Scale Business
<b>SME</b>	Subject Matter Expert
<b>UI</b>	User Interface

## About the Author

Rajamuthiah Nellaiappan is a Senior Manager in Cognizant Technology Solutions' Insurance Practice in Seattle, WA. Raja has about 12 years of experience in IT and managed end-to-end project lifecycles in diverse work environments (client locations and onsite/offshore models). He has extensive exposure to the P&C insurance domain, technology, architecture, program/project management and relationship management. Raja holds a Bachelor of Engineering, an MBA in General Management and MS in Psychotherapy

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& Counseling. He secured a gold medal of the Madurai Kamaraj University, India, for the best academic performance in Electrical and Electronics Engineering.

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