

Chapter 1

Business Intelligence: Body of Knowledge

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ABSTRACT

This chapter attempts to define the knowledge body of Business Intelligence. It provides an overview of the context we have been working in. The chapter starts with a historical overview of Business Intelligence stating its different stages and progressions. Then, the authors present an overview of what Business Intelligence is, its architecture and goals, and its main components including: data mining, data warehousing, and data marts. Finally, the Business Intelligence ‘marriage’ with knowledge management is discussed in details. The authors hope to contribute to the recent discussions about Business Intelligence goals, concepts, architecture, and components.

INTRODUCTION

Business Intelligence is becoming an important IT framework that can help organizations managing, developing and communicating their intangible assets such as information and knowledge. Thus, it can be considered as an imperative framework in the current knowledge-based economy era.

Business Intelligence applications are mainly characterized by flexibility and adaptability in which traditional applications are not able to deal with. Traditional process modeling requires a lot of documentation and reports and this makes traditional methodology unable to fulfill the dynamic requirements of changes of our high-speed, high-change environment (Gersten, Wirth, and Arndt, 2000).

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An important question raised by many researchers (Power, 2007; Shariat & Hightower, 2007) as to what was the main reason pushing company to search for BI solutions, and what differentiates BI from Decision Support System (DSS) systems? In fact, over the last decades, organizations developed a lot of Operational Information Systems (OIS), resulting in a huge amount of disparate data that are located in different geographic locations, on different storage platforms, with different forms. This situation prevents organization from building a common, integrated, correlated, and immediate access to information at its global level. DSS have been evolved during the 1970s, with the objective of providing organization's decision makers with the required data to support decision-making process. In the 1980s, Executive Information System (EIS) was evolved to provide executive officers with the information needed to support strategic decision-making process. In 1990s BI was created as data-driven DSS, sharing some of the objectives and tools of DSS and EIS systems.

BI architectures include data warehousing, business analytics, business performance management, and data mining. Most of BI solutions are dealing with structured data (Alnoukari, and Alhussan, 2008). However, many application domains require the use of unstructured data (or at least semi-structured data), e.g. customer e-mails, web pages, competitor information, sales reports, research paper repositories, and so on (Baars, and Kemper, 2007).

Any BI solution can be divided into the following three layers (Alnoukari, and Alhussan, 2008): data layer, which is responsible for storing structured and unstructured data for decision support purposes. Structured data is usually stored in Operational Data Stores (ODS), Data Warehouses (DW), and Data Marts (DM) while unstructured data are handled by using Content and Document Management Systems. Data are extracted from operational data sources, e.g. SCM, ERP, CRM, or from external data sources, e.g. market

research data. Data extracted from data sources are then transformed and loaded into DW using ETL tools. The second layer is the analytical layer which provides functionality in order to analyze data and provide knowledge including OLAP and data mining. The third layer is the visualization layer which can be realized using some sort of software portals (BI portal).

Our main focus in this chapter is to provide an overview of Business Intelligence by focusing on its body of knowledge. The authors start by providing a historical overview of Business Intelligence explaining the evolution of its concepts, followed by a brief discussion about different definitions and concepts of this field. The authors will describe the different layers and components of Business Intelligence application. Finally, the core body of knowledge, and the marriage between Business Intelligence and Knowledge Management will be discussed in details.

HISTORICAL OVERVIEW

In his article "A Business Intelligence System." Which have been published in IBM Journal, Luhn had defined intelligence as: "the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal.", (Luhn, 1958).

Business Intelligence is considered as a result of Decision Support Systems progression (DSS). DSS was mainly evolved in the 1970s. Model-driven DSS was the first DSS models that use limited data and parameters to help decision makers analyzing a situation (Power, 2007).

Data-driven DSS was also introduced as a new DSS direction by the end of the 1970s. It focused more on using all available data (including historical data) to provide executives with more insights about their organization's current and future situation. Executive Information Systems (EIS) and Executive Decision Support (ESS) are examples of data-derived DSS (Power, 2007).

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