

# Chapter 35

## Integrated Data Architecture for Business

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### ABSTRACT

*This chapter describes data integration issues in big data analytics and proposes an integrated data integration framework for big data analytics. The main focus of this chapter is to address the issues of data integration from the architectural point of view. Addressing the issues of data integration from the architectural point of view will lead to a better understanding of the current situation and better construction of proposed solutions to those issues since architectural approach can give us a holistic and comprehensive view of the problems. The chapter also discusses future research directions of the proposed integrated data architecture framework.*

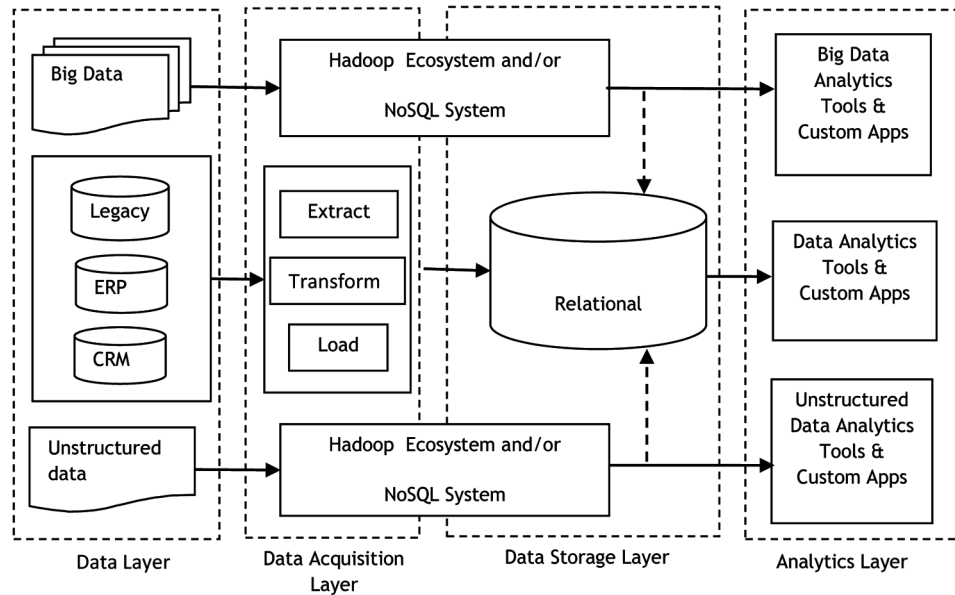
### INTRODUCTION

According to (Kosala & Kumaradjaja, 2014), to achieve a better analytics capability business organizations must utilize three Business Analytics components altogether so that a 360 degree analysis or a more comprehensive view of data can be implemented. The three Business Analytics components are: Big Data Analytics Tools and custom applications, Data Analytics Tools and custom applications, Unstructured Data Analytics Tools and custom applications form the Analytics Layer of the Big Data Analytics within the Business Intelligence and Business Analytics framework proposed by (Kosala & Kumaradjaja, 2014). For convenience, the structure of the Big Data Analytics framework is shown in Figure 1.

As stated by (Kosala & Kumaradjaja, 2014), the integration methodology of the three analytics components in Figure 1 and how they can be utilized together to get a 360 degree analysis view of data could represent a major research effort in the next few years. One of those research areas is about the data integration framework between unstructured Hadoop or NoSQL systems to create a structured OLAP data structure, and its real business case studies.

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*Figure 1. Big data analytics within the business intelligence and business analytics framework*



The author believes that the data integration framework must consider all layers of the Big Data Analytics framework shown in Figure 1, namely, Data Layer, Data Acquisition Layer, Data Storage Layer and Analytics Layer. Therefore, the proposed data integration framework must consider the entire Big Data Analytics ecosystem as one integrated data architecture.

The purpose of this article is to clarify and show the concept of an integrated data architecture as a foundation of a modern data architecture which has the potential of addressing and solving critical issues related to big data analytics implementation in business organizations. Eventually, the goal of this article is to improve the likelihood of successful big data analytics implementation in businesses.

## **BACKGROUND**

In their article (Kosala & Kumaradjaja, 2014) has pointed to data integration framework between unstructured Hadoop or NoSQL systems to create a structured OLAP data structure as one of the promising future research areas in big data analytics. The issue, however, is that there are still some confusions about data integration as mentioned by (Russom, 2008). In the next section, the concept of data integration architecture will be clarified as well as the detailed explanation of the proposed integrated data architecture for business organizations.

## **MAIN FOCUS OF THE ARTICLE**

The main focus of this article is to address the issues of data integration from the architectural point of view. Addressing the issues of data integration from the architectural point of view will lead to a better

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