STRATEGIC FRAMEWORK
To Implement a Telecommunications Business Intelligence Solution in a Developing Country

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Abstract: Because no framework existed that considered both the technical and the human resource maturity of data warehousing and business intelligence in a company, a framework was developed to implement a business intelligence strategy. The framework consisted of the steps that had to be followed to grow business intelligence and data warehousing in a telecommunications company in a developing country. These steps were supported by two modules, the data warehousing lifecycle model and the business intelligence literacy and cultural maturity model, which formed part of the framework. All the components of the framework are discussed in detail.

1 INTRODUCTION

South Africa as a developing country has since 1994 gone through a process of privatisation of some of the state departments. The Department of Post and Telecommunications was one of those departments. In order to obtain exclusive rights as the sole landline provider, for a limited period, government has set several targets for the new telecommunications company. One of these targets was to render new telephone services in the under serviced areas of the country. A Data Warehousing (DW) and Business Intelligence (BI) solution was requested to provide management with the necessary decision support information to maintain a balance between acquiring new telephone services, while maintaining the financial health of the company.

2 STRATEGIC FRAMEWORK

Figure 1 presents the new framework that was developed to facilitate the alignment of the Business Intelligence (BI) strategy with the business strategy. The framework consisted of the steps that were followed to grow Business Intelligence and Data warehousing in the company. These steps were supported by two models which formed part of the

framework, namely the data warehouse lifecycle model and the BI literacy and cultural maturity model. Each of the steps will now be discussed.

2.1 Business Intelligence Vision

The vision of the above mentioned telecommunications company was to drive the BI Framework and to assist in selecting the appropriate methodologies, key phases, steps, and roles along the pathway to deliver decision support information to the business.

Wu J. (2000) believes that BI is responsible for the transition of data into wisdom through the following steps: Data, Information, Analytics, Knowledge and Wisdom. These steps were adopted into the above mentioned BI strategy framework and the implementation is explained by means of the following steps.

2.2 Data

The existing online transaction processing (OLTP) systems formed the basis for the first iteration of the framework. Because the BISIIF is iterative of nature, after the wisdom step new data needs can be identified which could result in changes in the OLTP systems. That means that the wisdom step can high-
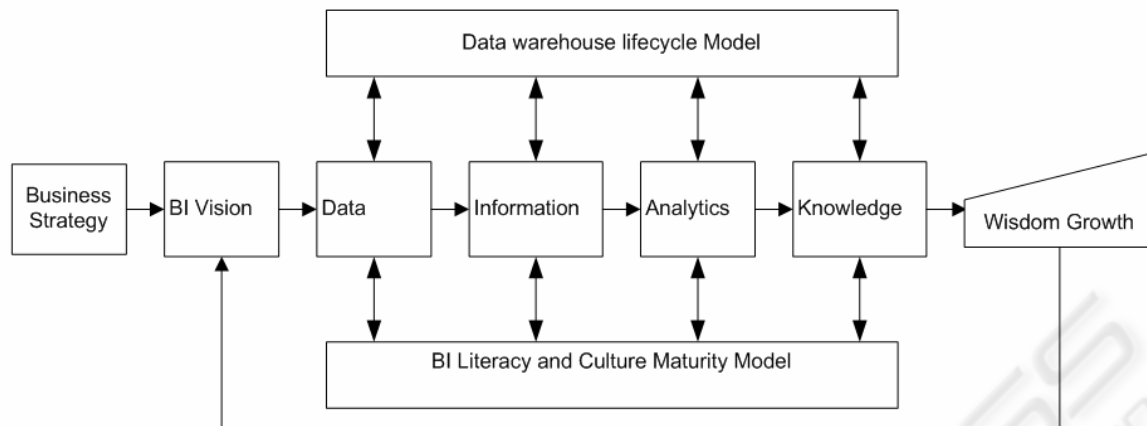
Figure 1: Business Intelligence Strategic Iterative and Incremental Framework (BISIIF).

light data needs which can require a change of the BI strategy that facilitate the process of collecting the data requires for the OLTP systems.

2.3 Information

As the number of transactions that were processed and collected by the company's systems increased, a wealth of data was collected. While each data element was a component of a transaction, it could not provide any meaning by itself. On an individual basis, a data element such as "product" did not provide meaning unless they were presented in conjunction with other data elements. Only accumulation of data into a meaningful context provided information. Extract Transform and Load (ETL) processes were used to provide BI specialists in the company with the ability to extract data from the OLTP databases and transform the data into information.

2.4 Analytic

While combining data and meaning to create information was extremely useful, separating or regrouping information extended the value of information. Applications that have online analytical processing (OLAP) capabilities provided users with the ability to analyze information and determine relationships, patterns, trends and exceptions.

2.5 Knowledge

The next level of elevated understanding was knowledge. Knowledge is different from data, information or analytics in that it can be created from any one of those layers, or it can be created from existing knowledge using logical inferences. BI applications that had data mining capabilities provided users with the ability to identify hidden trends and unusual patterns within the data. These BI applications utilized various data mining techniques which were based on statistics and algorithms to provide users with the ability to discover knowledge within their data. Without the use of a data mining application, identifying hidden trends or unusual patterns within the data would be extremely time-consuming.

2.6 Wisdom

Wisdom is the utilization of accumulated knowledge. By utilizing knowledge, a higher level of understanding of the data was created. The BI strategic framework was not a once-off exercise. There were more then one iteration of the framework. As the company has worked through the framework, each interaction increased the wisdom of the company. As the wisdom increased new requirements developed and this is how the BI solution was built in the company.
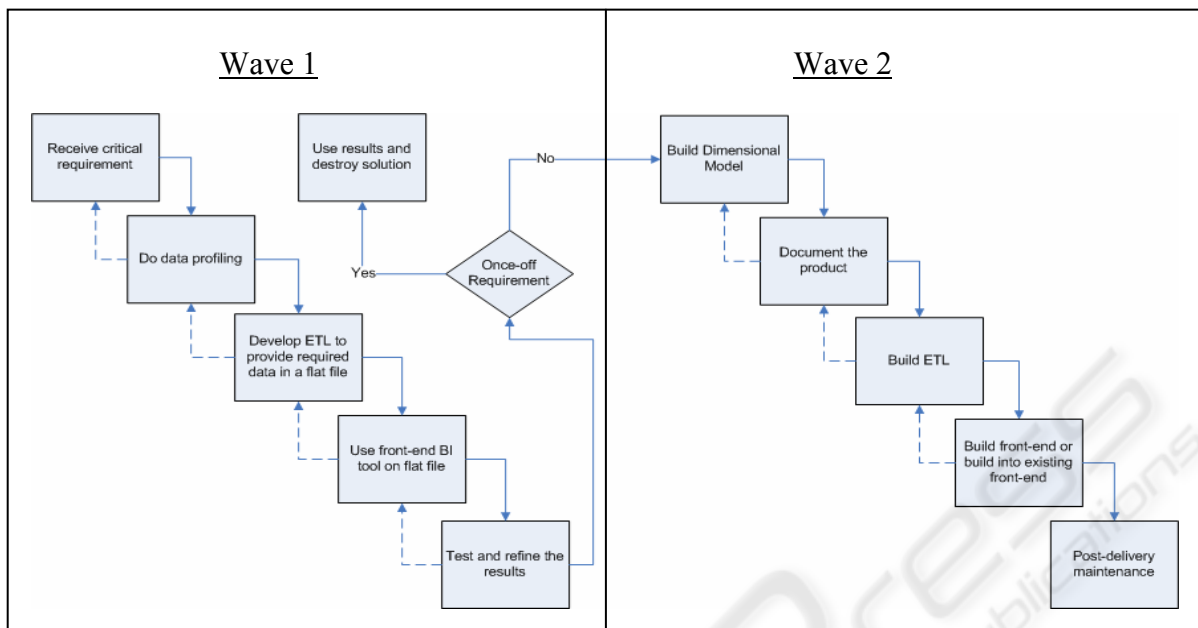
Figure 2: The Double Wave Data Warehouse Lifecycle Model.

2.7 Double Wave Data Warehouse (DWDW)

Du Plessis and McDonald (2007) developed the Double Wave Data Warehouse (DWDW) lifecycle model which consisted of two waves for the development of a data mart. Wave one concentrated on the rapid implementation of a business critical information solution. Wave two concentrated on modelling the ongoing requirement into a permanent dimensional model. To move from one step to another in the BI strategic framework, more development was required in most instances. The lifecycle model could therefore not be seen as one of the steps, but it was a parallel process that supported the company to move from one step to the next.

2.8 BI Literacy and Culture Maturity Model

Williams and Williams (2004) stated that, the real success of the data warehouse and business intelligence of today lies in how well it is utilised by the business. How "BI literate" the business is, is important information for businesses because literacy is closely linked with utilisation of the BI solution. A BI Literacy and Cultural Maturity Model was developed to measure the literacy and culture of

the business and facilitate the growth thereof (Du Plessis and McDonald, 2007).

3 CONCLUSION

This paper discussed some of the challenges faced when implementing a telecommunications business intelligence solution in a developing country. The Business Intelligence Strategic Iterative and Incremental Framework (BISIIF) was used to implement the BI strategy in the above mentioned company. This framework is iterative and incremental of nature and therefore do not support once-off, large enterprise data warehouse projects. Companies in developing countries are normally not so eager to spend on BI solutions because it is sometimes seen as a luxury and there are other information technology solutions that compete with BI for funding. BI in developing countries therefore calls for a framework that can deliver smaller chunks (Data Marts) which can deliver value earlier to ensure continued funding. This framework is sensitive for BI literacy and culture.

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