A REVIEW ON AN ETL PROCESS IN BUSINESS INTELLIGENCE SYSTEM IN TELECOM AND AUTOMOBILE SECTOR IN MAHARASHTRA

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Abstract- An Extraction, Transformation and Loading Process in Business intelligence is at the base and core of the data loading process for the purpose for both in Automobile and manufacturing industry and in telecom industry .This paper elaborates this data loading process and its importance in business intelligence system. Further it throws the light on the Business intelligence system being used -across world in the various systems in multidisciplinary data analysis. Further data loading process in case of the BSNL as a specific case is discussed in detail .It is further shown by the organizational process improvement due to the implementation of BI in the project management scenario in telecom and manufacturing sector ,organizationally.

Keyword- Abbreviations :-E-Extraction, T-Transformation ,L-Loading , PSA-Persistent staging area, SAP- Systems, Applications, Products in data processing ,DSO-Data stored object, DTP-Data Transfer process .DW-Data wearhouse, BSNL-Bharat sanchar Nigam Limited, MTNL-Mahanagar Telephone Nigam Limited, ERP- Entreprise resource planning.

I. INTRODUCTION

The Extraction , transformation, and loading is the basis of the BI Data ware house in SAP BI application in telecom , in the telecom giant like IT BSNL/MTNL, and in automobile in Bajaj and its allied work related subsidiaries in Maharashtra in the Mumbai-Pune-Auranagabad industries in Telecom and Automobile sector .
The following figure elobarates the general flow of the system .

Source system-----PSA Data wear house----DTP----DSO---server selection----Data Loading—Activation of loaded data

Data Warehouse is a centrally managed and integrated database containing data from the operational sources in an organization (such as SAP, CRM, ERP system). It may gather manual inputs from the users determining criteria and parameters for grouping or classifying records.
The Business integration of the CIM in cad/cam erena forms a basis for the Business Intelligence to be a part of the process in the manufacturing and in Automobile sector helping for the decision making process in the Automobile sector [5]Such as Tata motors Pune and Bajaj Auto in Maharashtra .

Here we are experiencing major growth in the use of computer-based decision support. Companies such as IBM, Oracle, Microsoft, and others are creating new organizational units focused on analytics that help businesses become more effective and efficient in their operations. As more and more decision makers become computer and Web literate, they are using more computerized tools to support their work. The field of decision support systems (DSS)/business intelligence (BI) is evolving from its beginnings as primarily a personal decision making purpose tool in Automobile sector-in manufacturing and as a system integrator with CAD/CAM-CAE –CIM.

[10] A source for the data warehouse is a data extract from operational databases. The data is validated, cleansed, transformed and finally aggregated as it becomes ready to be loaded into the data warehouse. That database contains structured data for query analysis and can be accessed by users. The data warehouse can be created or updated at any time, with minimum disruption to operational systems. It is ensured by a strategy implemented in a ETL process. Data warehouse is a dedicated database which contains detailed, stable, non-volatile and consistent data which can be analyzed in the time variant.
Sometimes, where only a portion of detailed data is required, it may be worth considering using a **data mart**. A data mart is generated from the data warehouse and contains data focused on a given subject and data that is frequently accessed or summarized.

II. LITERATURE REVIEW I

Keeping the data warehouse filled with very detailed and not efficiently selected data may lead to growing the database to a huge size, which may be difficult to manage and unusable. To significantly reduce number of rows in the data warehouse, the data is aggregated which leads to easier data maintenance and efficiency.
[1]Key Data Warehouse systems and the most widely used database engines for storing and serving data for

the enterprise business intelligence and performance management:

- Teradata
- Oracle
- SAP BW - Business Information Warehouse (SAP Netweaver BI)
- Microsoft SQL Server
- IBM DB2 (Infosphere Warehouse)
- SAS

Mainly, Business Objects is a company concentrated about vending databases and applications supporting data management. Furthermore, BI offerings include solutions for enterprise performance management, as well as diverse Business Intelligence solutions designed especially for tiny and medium-size companies.

Among a few main products, one might be described as a factor determining Business Objects market success. **Business Objects XI Enterprise** is a rightful, independent BI platform ideal for usage in the largest enterprises. The widest-known and - simultaneously - the most successful product in Business Objects' portfolio was designed for supporting data quality management, data integration, ad-hoc information analysis, reporting (including print-oriented formatting), and data visualization cockpits for managers. Finally, facilitated data sharing and compatibility with Microsoft Office suite, coupled with multiple functionality and high performance, make Business Objects XI Enterprise a really efficient solution.

As long as **extracting, transforming, and loading data (ETL)** make up the essence of business intelligence, grows the importance of data management system. In this case, both solutions - Business Objects BI and SAP Business Intelligence - are extremely different. SAP BI is a singular data warehouse, itself supporting all the ETL processes, as well as data management, and providing reporting tools. The architectural model assimilated by Business Objects BI is slightly different, as it provides the broad range of tools separate for every process. Even though there are a lot of diverse tools, all of them cooperate well thank to open standards (CORBA, Web services, etc.). Both models are different, but it cannot be undoubtedly stated which one is better.

Second aspect, **data access method**, also differs. With SAP Business Intelligence, data from diverse sources is being extracted, loaded into a data warehouse. Next, data stored in OLAP cubes is being reported. This model of data accessing is commonly described as "business interface", enabling all types of the access without involving into a complex physical data structure. Once again, the solution used by Business Objects BI is slightly diverse. With BO, data isn't stored regardless to reports in OLAP cubes. Instead of this, high efficiency is being reached through concrete reports. Even though both models are different, each of them might be replaced by the other one. To reach that, using remote cubes becomes a necessity (SAP Business Warehouse) or using the data integrator (Business Objects BI).

Thirdly, features. Both solutions have their strengths, among which a few deserve pointing out.
Business Objects Business Intelligence:
- wins with more intuitive reporting (creating and sharing) interface,
- couples its main goal with wide range of tools extending its functionality.

SAP Business Intelligence:
- praises for its more advanced data store module,
- enables significantly faster access to data.

These features listed above are only chosen from much longer list, commonly similar for both solutions. All in all, the most meaningful features of both vendors' solutions supply themselves mutually, what was an additional factor favoring the acquisition.

III. LITERATURE REVIEW II

[11][4]The choice between Business Objects BI and SAP Business Intelligence has always been difficult, but has become even worse since the acquisition. However, earlier and recently, it depends on the customer, especially the size of an enterprise, which is of the most meaningful factors. The second factor that should be considered, are all the former implementations of any SAP solutions. Along that, enterprises might be divided into five specific groups, being simultaneously a base for future solution choice.

- **Large enterprises with no earlier implementations of SAP solutions** - This is a kind of customers, which generally Business Objects XI is suggested for. The factor determining this choice is multitude and diversification of systems already reporting with direct access to databases. Why BO? Mainly because of its simplicity of cooperation with multiple databases and data sources. Also user-friendly interface and no necessity of moving already existing data to the new data warehouses argue for using Business Objects XI. Eventually, additional functionalities of BO XI might also be useful. On the other hand, large enterprises might prefer SAP Business Intelligence. Especially while attention is attached to reporting of large data volumes and data access efficiency. SAP BI guarantees the highest performance with possibilities of data extracting to off-line data

warehouses and reporting with OLAP data structures.

- **Large enterprises, which earlier implemented SAP solutions** are important element of BI system in - Already existing systems (especially with SAP ERP) heterogeneity, might be a factor arguing for implementing typically hybrid solution. Already mentioned SAP ERP contains data that might be easily reported with SAP Business Intelligence, while any other data sources and more advanced BI appliances might demand Business Objects XI.
- **Large and medium-sized enterprises, which earlier implemented SAP solutions** play dominant role. Generally, regardless to a company's size, main role of SAP ERP determines future SAP Business Intelligence usage. Logically, the best integration might be reached when using tools from the same vendor's portfolio. Along that, ETL tools provided with SAP BI might work with currently stored data in the most efficient way. However, more advanced Business Intelligence appliances might demand implementing Business Objects BI.
- **Medium-sized companies with no or only marginal earlier implemented SAP solutions** - While considering this type customers, the choice depends on real company's needs. Generally, for most of their uses, Business Objects Edge is ordered, due to its simplicity (in oppose to Business Objects XI and SAP BI), but - simultaneously - even more functional.
- **Medium-sized and tiny companies with no or only marginal earlier implemented SAP solutions** - Finally, the tiniest and medium-sized companies as well should accurately consider their real needs. If they're keen exclusively on reporting, then Business Objects Crystal Reports would suit them best. It's a solution designed strictly for reporting (excluding most of other Business Intelligence appliances) and its main strength is price. Crystal Reports is relationally the cheapest solution, designed especially for customers who don't want to pay for functionalities they're never going to use.

Even though SAP AG do its best to calm down former BO customers, the most meaningful acquisition of recent years became a fact, and - as a consequence - a lot of changes are unstoppable.

IV. LITERATUREREVIEW -III ON: SAP BUSINESS INTELLIGENCE FOR THE CUSTOMERS .

While the acquisition's results are more and more visible, SAP states to keep each BO BI and SAP BI separate. Despite all the promises, some specific relation among both solutions must have evolved. Along that, the basic, fundamental BI role has been confided to SAP Business Intelligence. According to proven SAP Business Warehouse, SAP BI might function as a base for diverse solutions. On the other hand, Business Objects BI saved its independence and - as well - might function completely alone, but also using SAP BW's foundation. The benefits of such cooperation may be meaningful - multiplied functionality, improved Enterprise Performance Management, etc.[7]

Even though the acquisition process has been announced to be completed, integration has to last much longer. First forecasts state the two-year period for integration, but no one can be sure of its success - there's still so much to be done that even two years might eventually turn out insufficient. What exactly changes are being prepared?

To begin with data extracting, both solutions Business Objects Quality Management and SAP Master Data Management are going to become fully integrated. Data management is announced to stay unmodified and still provide two separate, differentiated models of access. Reporting solutions are going to be intercepted from Business Objects. The point is to rely formatted reporting on Crystal Reports (to be significantly extended), and make Pionieer (the effect of current Voyager BO and SAP BEx Analyzer consolidation) solution responsible for ad hoc reporting. Furthermore, former Xcelsius and Web Application Designer solutions are going to be integrated in one, called Xcelsius+, responsible for cockpit creating and managing. In the matter of reports availability, portals of SAP and Business Objects are said to become integrated. Was the acquisition a profitable move? For SAP - certainly. And for the market? There are two sides to every story. At once, the integration made SAP's offering much more attractive for customers, making it one of the best - if not the very best - solutions ever. On the other hand, the acquisition was a move against competition and its long-term results are difficult to be predicted.

Problem statement :- **The ETL(Extraction, transformation & loading) process is the basic underlying the Business intelligence system however various factors are responsible for the SAP BI implementation in Maharashtra, in telecom and in Automobile sector .**

- **Why Telecom and Automobile sector through I.T Tools comparison ?**

It is due to the fact that both telecom and Automobile sectors are presently flourishing in nature . The decision making based on BI and ERP is highly effective in both these sectors . These two sectors are diversified but flourishing through IT by means of BI and ERP and interdependent.

Telecom industry in Broad band , GSM, CDMA, and Land line can boost the make in india and

automobile sector , and Automobile sector Network will increase use of above technologies , and hence these diversified fields can support each other in their own ways.

The study discusses the present status of sector and in telecom and Automobile engg sector where BI is implemented through IT .Their contribution in Indian economy and future challenges posed in front of this sector due to liberalization and globalization. ERP and BI can play a pivotal role in the process of industrialization. It can make contribution to sustainable industrial development through innovation, product development and improvements in productivity, production process and systems. The question which, we are facing by them is: What are the critical and non-critical characteristics in telecom and auto sector for BI ?

A comprehensive study in this regard for Telecom is considered for BSNL as a company and the related ERP and BI present status in the company .An understanding of these classification-weighted factors helps government, private sectors, banks and insurance in effective decision-making process helped through BI and ERP as a tool .[6]

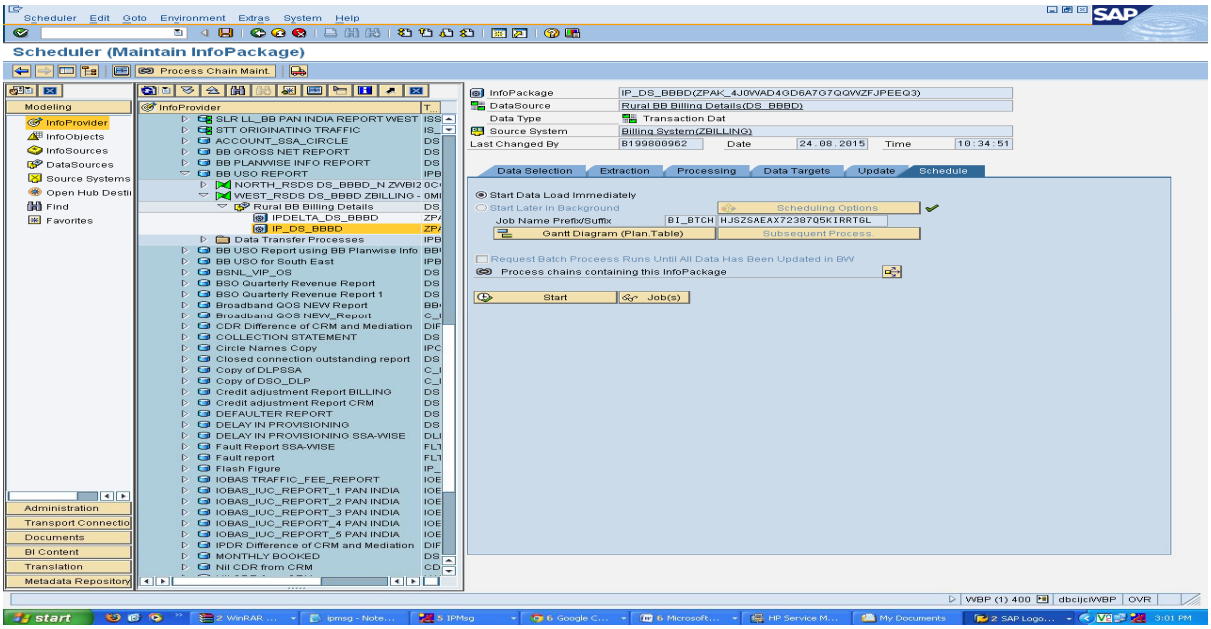
Scope :[12]

- We examine the decision environment in terms of the types of decisions made and the information processing needs of the organization. Our findings suggest that chnological capabilities such as data quality, user access and the integration of BI with other systems are necessary for BI success, regardless of the decision environment. However, the decision environment does influence the **...**

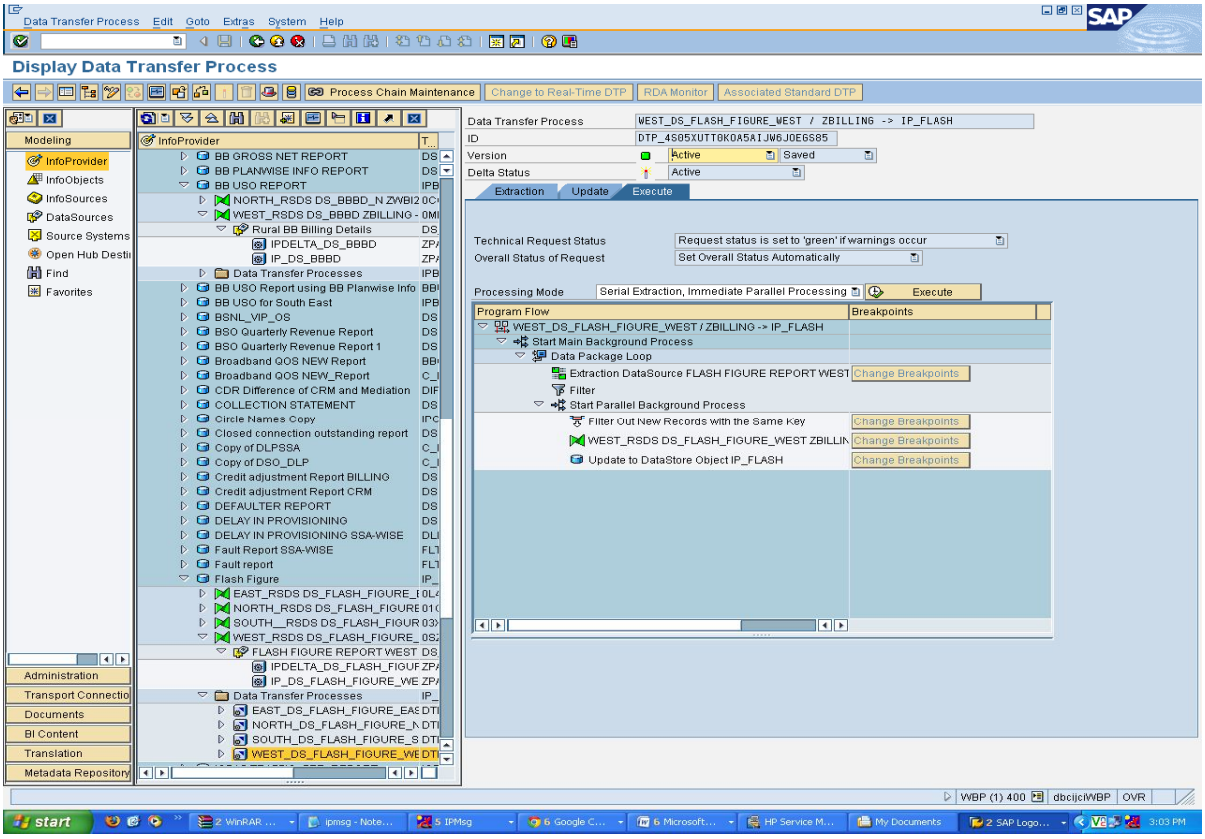
[2]Strong competition in the manufacturing industry makes efficient and effective manufacturing processes a critical success factor. However, existing warehousing and analytics approaches in manufacturing are coined by substantial shortcomings, significantly preventing comprehensive process improvement. Especially, they miss a holistic data base integrating operational and process data, eg, from Manufacturing Execution and Enterprise Resource Planning systems. To address this challenge, we introduce the Manufacturing **.**

The present invention provides a system consisting of reusable components for implementing data warehousing and business intelligence solutions. The reusable components comprise a data model component housing an exhaustive pre-built vertical and business function specific data models and key performance indicator libraries. The reusable components further comprise a MetAL component which serves as a key repository of all mappings between all standard source data systems and vertical function specific **.[3]** Abstract Strong competition in the manufacturing industry makes efficient and effective manufacturing processes a critical success factor. However, existing warehousing and analytics approaches in manufacturing are coined by substantial shortcomings, significantly preventing comprehensive process improvement. Especially, they miss a holistic data base integrating operational and process data, eg, from Manufacturing Execution and Enterprise Resource Planning systems. To address this challenge, we introduce the Manufacturing in BI environment.
.The following screen shots elaborates this ETL process in SAP .

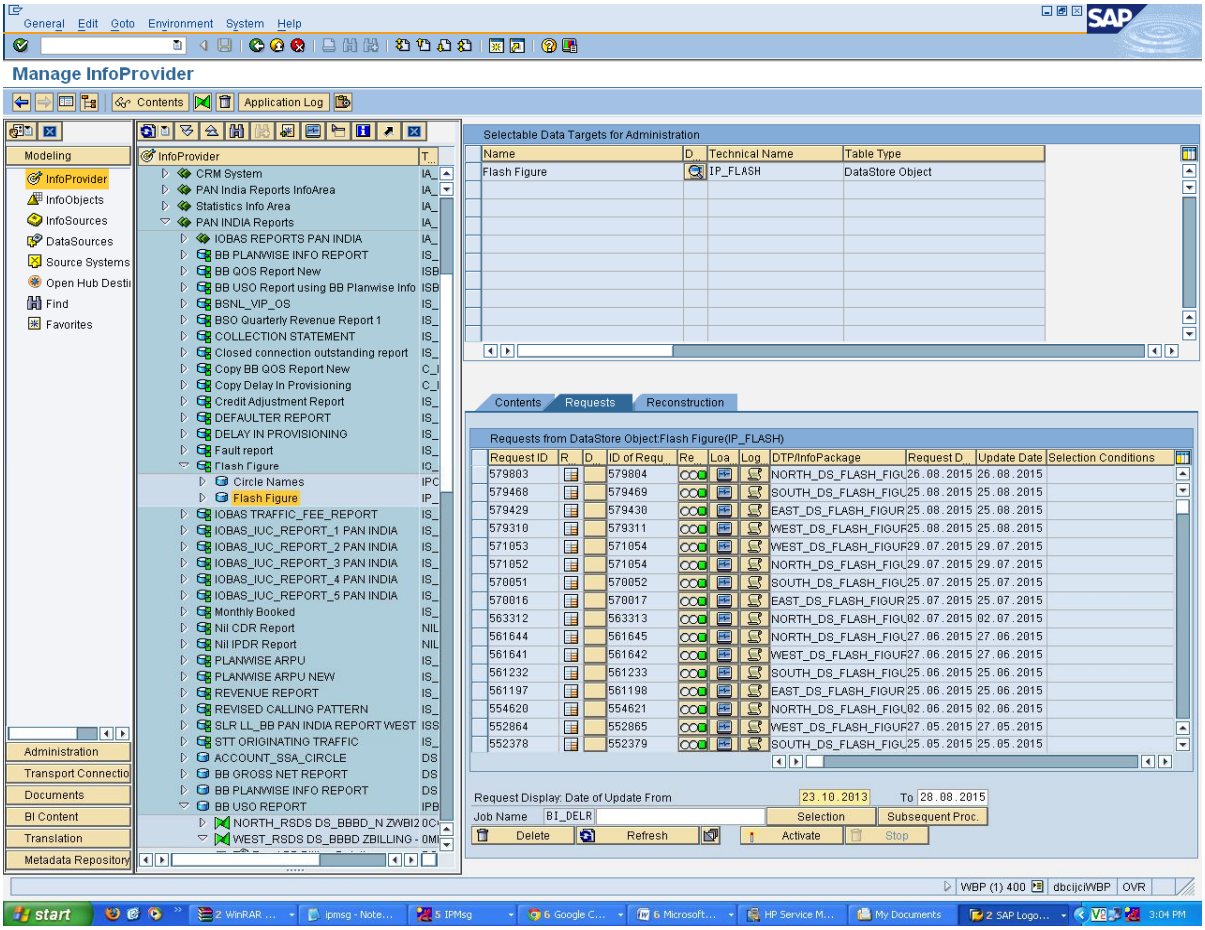
EXTRACTION :-



TRANSFORMATION :-



LOADING



The above process are elaborated as discussed here in detail.

1. [9]Extraction : The data is being extracted from the source system , the source systems are different in the various data centres, some of them are SAP to SAP In that situation , the data is being extracted automatically from the source system.In case of Non SAP data extraction , as attached on the screen details ,it can be either through the Running of the Info package through the Db link and further from the transformation which shows one to one corresponding data .In this case the data is being extracted to BI from the source system of Billing .The data is then being stored at an Intermediate state called PSA Persistent staging area.
2. Transformation :-
   It is the process of converting the data received from the source system in to the usable format for the data to be made available on the BI server. The transformation consist of the one to one correspondence of the data of the source system parameters and on the parameters available in the report available on the SAP BI portal .The DTP called Data Transfer Process is hence required to be run so the data available on PSA is then floated in to the vessel of the data bank of the loading , from where the actul loading on the data server is made available as attached .
3 Loading :- After the data is being pushed for the loading on the sap bi Server
   It is selected and the server selection is made , where in the data is made active
   by selection . Frequent data Refresh is required to be made for the proper and timely loading of the data .The figure shows the loading process in the SAP BI environment in a data centre.

CONCLUSION

An ETL process is the heart of the Bussiness intelligence sysem, which is being utilized-as a tool for the decision making process in the telecom reporting and manufacturing in ERP in OSS/BSS process improvement factor is the biggest advantage of the Business Intelligence . Disadvantage may be due to the large investment in data centre but compensates with other source systems being used. The survey in respect of telecom company like MTNL and BSNL make use of the process and similar is the process in automobile sector in Bajaj Auto, Tata Motors and other units in Maharashtra. Positive response is obtained from other manufacturing companies in Maharashtra.

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