CHAPTER 4: BUSINESS INTELLIGENCE
**MEANING**

Business Intelligence (BI) is an umbrella term introduced by Howard Dresner of the Gartner Group in 1989 to describe a set of concepts and methods to improve business decision making by using fact-based support systems. It generally covers terms like Executive Information Systems (EIS), Decision Support Systems (DSS) and other similar terms to describe systems that provide directed background data and reporting tools to support and improve the decision-making process of business organization.

**DEFINITION**

Business Intelligence (BI) is an umbrella term applied to methods, applications and technologies used to gather, integrate, present and analyze business information to improve decision making.

Business Intelligence Solutions (BIS) lead to better business decision making through providing access to enterprise data for easy analysis against Key Performance Indicators (KPIs). This is achieved through having more information available at all levels of an enterprise and enabling each management level to be more responsive to current market trends. Every aspect
of the business can be coordinated efficiently and dealt with at various levels of management.

As technology has improved, the volume of information available for analysis has increased significantly and more efficient systems have been designed to handle the data collection process. The data collection services and tools available ensure even microscopic pieces of information are included for analysis whereas they would have been ignored previously due to not being cost-effective to collect.

BIS plays a strong role for an enterprise of any size. The development of automated collection tools has helped reduce the time cost and monetary cost of intelligence gathering. A smart business will look at evaluating every piece of data individually and collectively to help make more informed decisions. BIS enables collective data to be analyzed for trends and then for every subset of data to be drilled down and analyzed individually.

Business Intelligence comprises the following main elements:

1. Analytics

2. Customer Relationship Management (CRM)
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3. Dashboards

4. Data Warehouse

5. Data Integration

6. Data Management

7. Data Mining

8. Extract, Transform and Load (ETL)

9. Online Analytical Processing (OLAP)

10. Business Performance Management (BPM)

11. Reporting

12. Scorecard

SOME WELL-KNOWN BI TOOLS

The most common tools used for business intelligence are as follows. They are listed in the following order: Increasing cost, increasing functionality, increasing business intelligence complexity, and decreasing number of total users.

1. EXCEL

Take a guess what’s the most common business intelligence tool? You might be surprised to find out
it is Microsoft Excel. There are several reasons for this:

1. It is relatively cheap.

2. It is commonly used. You can easily send an Excel sheet to another person without worrying whether the recipient knows how to read the numbers.

3. It has most of the functionalities users need to display data.

In fact, it is still so popular that all third-party reporting / OLAP tools have "export to Excel" functionality. Even for home-built solutions, the ability to export numbers to Excel usually needs to be built.

Excel is best used for business operations reporting and goals tracking.

2. REPORTING TOOL

In this discussion, I am including both custom-built reporting tools and the commercial reporting tools together. They provide some flexibility in terms of the ability for each user to create, schedule, and run
their own reports. The Reporting Tool Selection discusses how one should select an OLAP tool.

Business operations reporting and dashboard are the most common applications for a reporting tool.

3. OLAP TOOL

OLAP tools are usually used by advanced users. They make it easy for users to look at the data from multiple dimensions. The OLAP Tool Selection discusses how one should select an OLAP tool.

OLAP tools are used for multidimensional analysis.

4. DATA MINING TOOL

Data mining tools are usually only by very specialized users, and in an organization, even large ones, there are usually only a handful of users using data mining tools.

Data mining tools are used for finding correlation among different factors.
BI APPLICATIONS & IMPLEMENTATION

BUSINESS INTELLIGENCE APPLICATIONS CAN BE

- Mission-critical and integral to an enterprise’s operations or occasional to meet a special requirement
- Enterprise-wide or local to one division, department, or project
- Centrally initiated or driven by user demand

IMPLEMENTING BIS IN ENTERPRISE

There will be a significant cost of implementing any BIS if existing applications exist for any part of the overall process. The ideal scenario would be to use solutions for each aspect of BIS from the same vendor or where they are proven to be able to integrate with other vendors. In some cases, it may be more cost-effective migrating existing processes into a bespoke system to facilitate better control and understanding. This will reduce the training costs associated with training new personnel as they will only be required to learn one system as opposed to multiple existing systems.

After the decision has been taken to implement business intelligence solutions, a set of criteria must be
addressed from the outset in order to gain the most benefit. The most important areas for consideration are:

1. RESPONSE TIME

Considerations will need to account for data capture time, ETL processing time, caching and reporting time in addition to user expectations. For example, if the service is offered to clients and they are informed statistics are updated in "real-time", they do not expect to be waiting for a few minutes every time they log in to check stats.

It would be unwise to have every piece of data update in "real-time" as it may cause too much load on the server and result in reliability issues. Instead, only the absolute necessary pieces of information should be updated in "real-time". This area needs to be clearly defined in the design process - what constitutes essential information.

1. Data Refresh Rates

Automated queries and database dumps can be routinely scheduled to take snapshots of actual statistics to reduce potential problems with the live data capture. Providing only the vital information is extracted, it can be set to retrieve a database dump
every minute if necessary. The data integration tools should be designed to have minimal impact on a server when importing new data sets to facilitate smooth data exchanges. If designed correctly, management would be querying backup data from the latest data refresh rather than causing additional load on the live server.

2. **Visual vs. Analytical Dashboards**

Statistical information is essential to represent the current state of affairs and should be available for drilldown analysis. However, a visual dashboard should suffice to present a quick overview of affairs with any changes highlighted. It is especially useful for CEOs to see actual performance against KPIs instantly.

3. **Data Delivery**

It isn't necessary for every managerial level to have access to all the data collected, but it is necessary for them to have access to all data relevant to their decision making. In this instance, BIS must be designed from the outset to have flexibility in assigning different roles. A bespoke solution that enables new roles to be created where specific sets of data can be extracted and delivered for analysis
without needing to cross reference with other departments is essential.

4. Scalability

After an initial assessment of enterprise requirements it is still important to consider scalability issues and possible future requirements. Any BIS implementation should adequately provide the capability for future modification and expansion without posing any significant risk to current procedures and management requirements.

The criteria above is not extensive but does cover the most common considerations that can be overlooked when designing bespoke BIS applications. The more thorough the planning undertaken before designing a bespoke solution, the more useful and cost-effective the end solution will be.