

Lecture Notes

7023T Advanced Database System

session 10

Introducing business intelligence applications

LEARNING OUTCOMES

- Participants will be able to understand the application of BI (*business intelligence*) and characteristics.
- Participants are expected to explain the type of BI applications.
- Participants will be able to identify every stage *analytic cycle* the BI application.
- Participants are expected to understand the latest development of BI applications.

OUTLINE OF MATERIAL (Sub-Topic):

1. preliminary
2. Application type *Business Intelligence*
3. *Analytic cycle*
4. *Business Intelligence Tools*

preliminary

Application *business intelligence* (BI) is a major component of the DW / BI is accessed by business users. The majority of the users of these circles, BI is the only way they interact with DW / BI. If the BI application confuse the user, displaying inaccurate information, or difficult to is used then the user will look for other sources to meet the needs. By Therefore BI applications is very important from a system DW / BI.

BI applications must have the following characteristics:

- **accurate:** BI application should provide information that is truthful and accurate.
- **responsive:** BI applications must be able to give a quick response, to follow standard web based applications (<5 seconds).
- **Easy to use:** it is assumed that the user of BI applications have often make a purchase through an online site can use BI applications.
- **Intuitive:** BI applications must be clear, easy menu access, and structured.
- **Managed by either:** BI applications are making long-term investments This application needs to be documented and well run and always upgraded in accordance with user needs.

BI Application Type

BI applications must be able to fill the data access requirements of an organization, such as illustrated in Figure 1 which shows the start of a strategic reporting needs up to operational. Access *ad hoc* means that users need to make *query* for obtain information or perform strategic analysis of the data in the data warehouse. *Direct access query* and *reporting tools* provides flexibility for users to do *query* to the data. *Reporting tools* can be any device that can generate a report with tabular format, up to generate reports more complex equipped with graphics and other components. Figure 2 shows sample interface *reporting tools* from SAP Crystal Reports. Between *ad hoc* and *operational reporting* located users who belong to the category " *push-button access*". users from among usually use a report that comes with certain parameters, examples include sales report parameter type of product, location of branch offices, and

etc. 80 to 90 percent of all users DW / BI will fit into the

this. *Standard reports* is the kind of applications that can provide multiple types of reports

the content and the format has been defined previously. Applications of this type

selection capability parameter values and the level of detail of the reports generated.

Analytic Applications are a set of statements that are based on analysis using

approach *data mining*. *Data mining* is a method for finding a pattern

or connectedness and data on DW. Figure 3 shows the interface of

software *data mining* RapidMiner Studio. *dashboard* and *scorecard* give

the combination of the report and charts that include the ability *drilldown* for

analyze multiple business processes. Tactical analysis is done through *operational reporting*

namely to create a report based on transaction data in operational systems. Application

operational BI can be used to analyze multiple business processes at once in

order to support operational decision making.

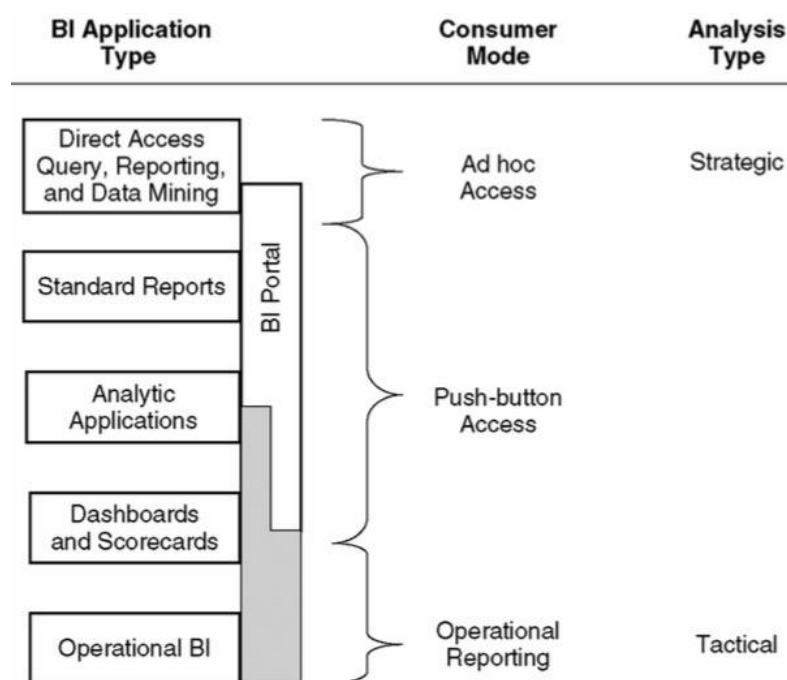


Figure 1. BI application needs for the different users

A system DW / BI can consist of tens or even hundreds of different types of BI applications, by

Therefore all these applications need to be organized on an interface

enabling users to access the applications they want. the interface

referred to as a BI portal that provides access to BI applications and reports. BI portal can

equipped with a search function that allows search applications or reports

using keywords or meta data. Display of BI portal can also be customized the profile of each user. Figure 4 shows an example of a BI portal.

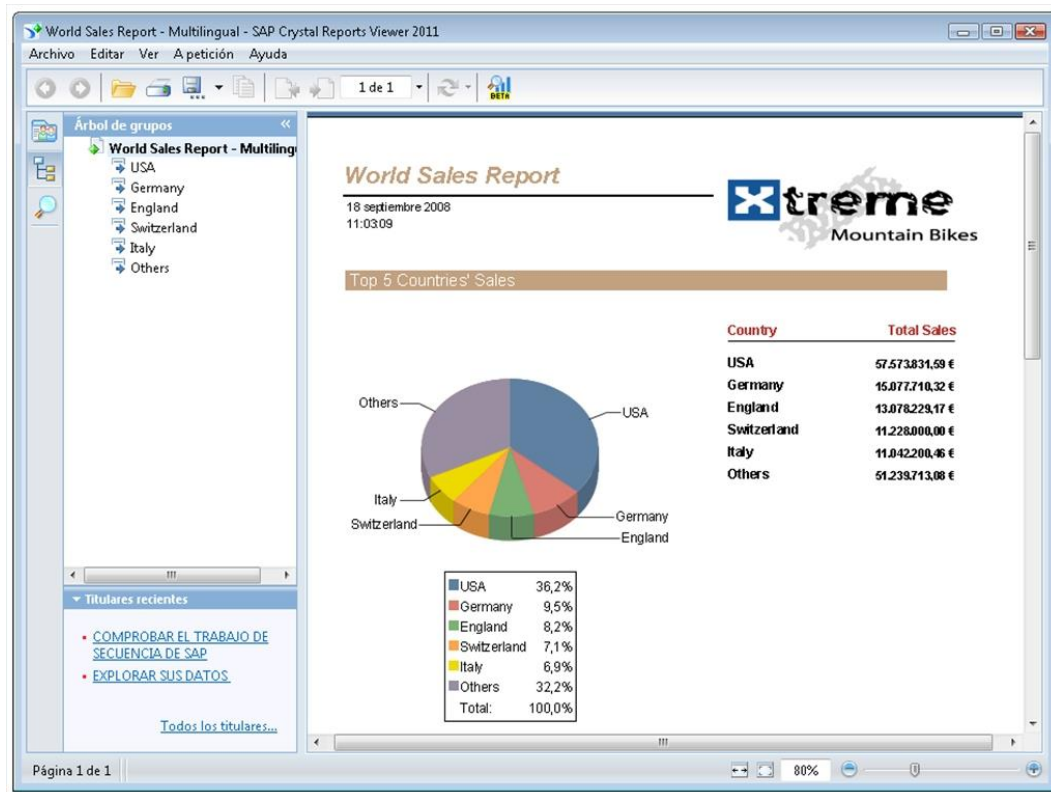


Figure 2. interface devices reporting tools SAP Crystal Reports

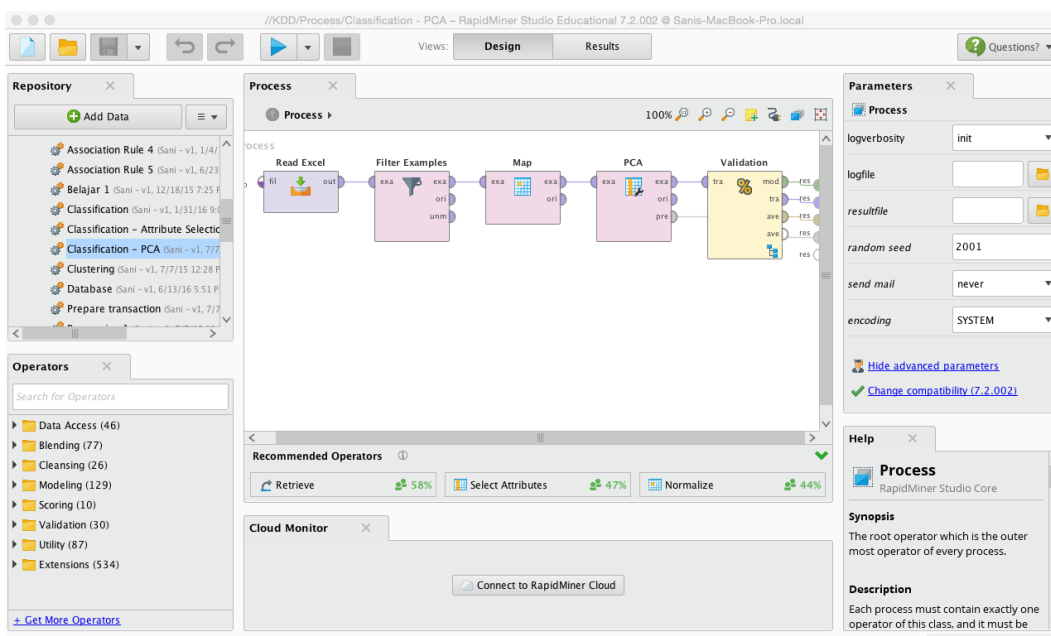


Figure 3. The software interface data mining RapidMiner Studio



Figure 4. Examples of BI portal interface

Analytical Cycle

The designers and developers of BI applications need to have a good understanding of the process undertaken by businesses when making decisions analytically. The process is referred to as *analytic cycle* which is a guide for designers and BI application developers. As illustrated in Figure 5, *analytic cycle* consists of 5 stages. In the first phase, namely *monitor activity*, analyzing the current report is the report on the prior period, or planning ahead for obtain current business conditions. BI application needs at this stage include *dashboard, portal, or scorecard*. on stage *identify exceptions*, do identifikasi to determine the source of the problem that led to the company's performance declined or missed development opportunities. The identification results can be presented in the form of visual such as *trend lines, spark lines, geographical maps, and others*. In the third stage, *Determine causal factor*, to identify what the cause of *exceptions* known in previous stage. Some additional components DW / BI can be used to quantifies the causation, for example *statistical tools, data mining, classification, and segmentation*. In the fourth stage, ie *alternatives models*, do development a model that can be used to evaluate several alternative decision-making. The device can perform the analysis " *what-if*" And simulations based on historical data very helpful in this regard. In the final stage, ie *take action and track result*, in

Ideal applications DW / BI can provide feedback to the operational system. Feedback The need to have access to the operating system, usually using the API (*applications programming interface*) or SOA (*service oriented architecture*) call. All stages in the *analytic cycle* is a recurring cycle, so that the output of a cycle can be input in the next cycle in order to obtain more results optimal at each cycle.

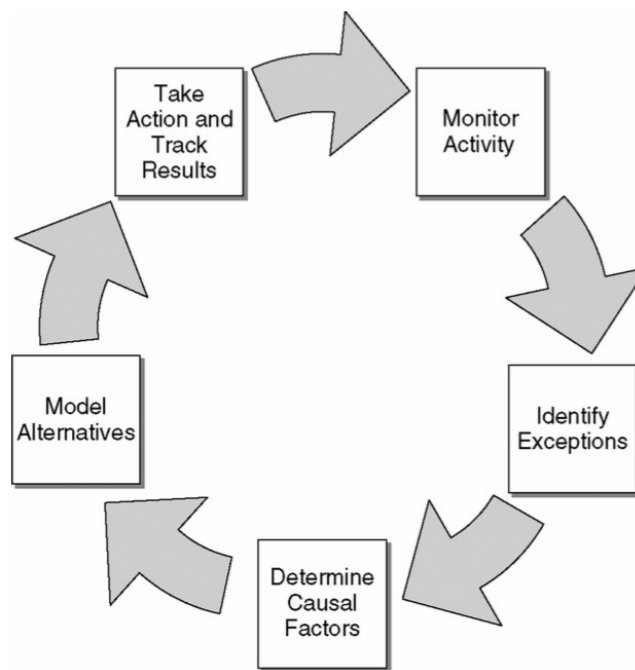


Figure 5. *Analytic cycle for the analysis of BI*

Business Intelligence Tools

BI applications that can effectively present the correct information for the user right at the right time. The executive branch usually requires *summary reports*, *dashboards*, and *scorecards*. A *summary report* can be combined with textual information that describes trends or deviations from targets. On the other hand, manager at the department level requires OLAP analysis capabilities (*online analytical processing*) as *drill down*, *roll up*, *slice*, and *dice*. OLAP analysis capabilities greatly useful in analyzing factual information based on the dimensions and the level of detail different, examples of annual sales information can be presented in multiple columns combined with the categories of products in each line. Operation *drill down*

enables managers to get information on the duration of annual sales, quarterly, or monthly.

Current BI Applications already provides capabilities that are very helpful users in the analysis that previously took hours to do becomes a matter of seconds. One example is the multi-dimensional analysis which provides the function " *drag and drop* "To help users of BI applications in designing reports, OLAP analysis, and *dashboard* as shown in Figure 6.

Some BI applications even provide templates ready to be used users, thus simplifying the design of the report or *dashboard*. Some BI system vendors have applied NLP technologies (*natural language processing*) that Could users use everyday language to interact with the system so they just write a text like "last year sales reports by product category and outlet location "to produce a report on last year's sales by product category and location of outlets.

CONCLUSION

- Applications business intelligence (BI) is a major component of the DW / BI is accessed by business users. In general, the BI application is one-
the only way they interact with DW / BI so that the design of BI applications
should do well, if not the purpose of development of the system DW / BI
will not be achieved.
- BI application types can be distinguished based on groups of users: *ad-hoc*,
push button access, *operational reporting*.
- All stages in the *analytic cycle* is a repetitive cycle, thereby
the output of a cycle can be input in the next cycle with the aim of
to obtain optimal results in each cycle.

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