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**MSc Enterprise Software Systems/MSc
Communications Software**

Business Intelligence

Module Learning Outcomes:

- ▶ Examine business intelligence concepts, processes and technologies.
- ▶ Produce a plan for the application of business intelligence for decision support and process improvement in a business environment.
- ▶ Assess the concepts and recommended use of data warehouses to store data.
- ▶ Develop and demonstrate Extraction, Transformation and Loading (ETL) techniques and the data cube for analysis.
- ▶ Critically analyse data.
- ▶ Demonstrate reporting and dashboard visualization tools to visualise data to support and improve decision making.



Module Readings & Software

- ▶ Textbooks: Business Intelligence, 3rd Ed, Turban, Sharda, Delen & King. Business Intelligence, Rajiv Sabherwal, Irma Becerra-Fernandez, John Wiley & Sons, 2014
- ▶ <http://www.teradatauniversitynetwork.com/tun/> A great and free academic resource for BI (the available resources include cases, articles, tools including Microstrategy, datasets, exercises, etc.
 - ▶ Register asap:
 - ▶ The new student password for 2015-16 is: Analytics
- ▶ <http://www.sdn.sap.com/irj/uac/library-bi> access to software, curriculum and resources.
- ▶ Labs: Excel, SAP Business Explorer, Dashboard Design, Qlikview



Additional BI Resources

- ▶ **Teradata University Network**
 - ▶ A great and free academic resource for BI (the available resources include cases, articles, tools including Microstrategy, datasets, exercises, etc.)
- ▶ **The Data Warehousing Institute (tdwi.org)**
- ▶ **DSS Resources (dssresources.com)**
- ▶ **Business Intelligence Network (b-eye-network.com)**
- ▶ **AI World (aisnet.org)**
- ▶ **Gartner group (gartner.com)**

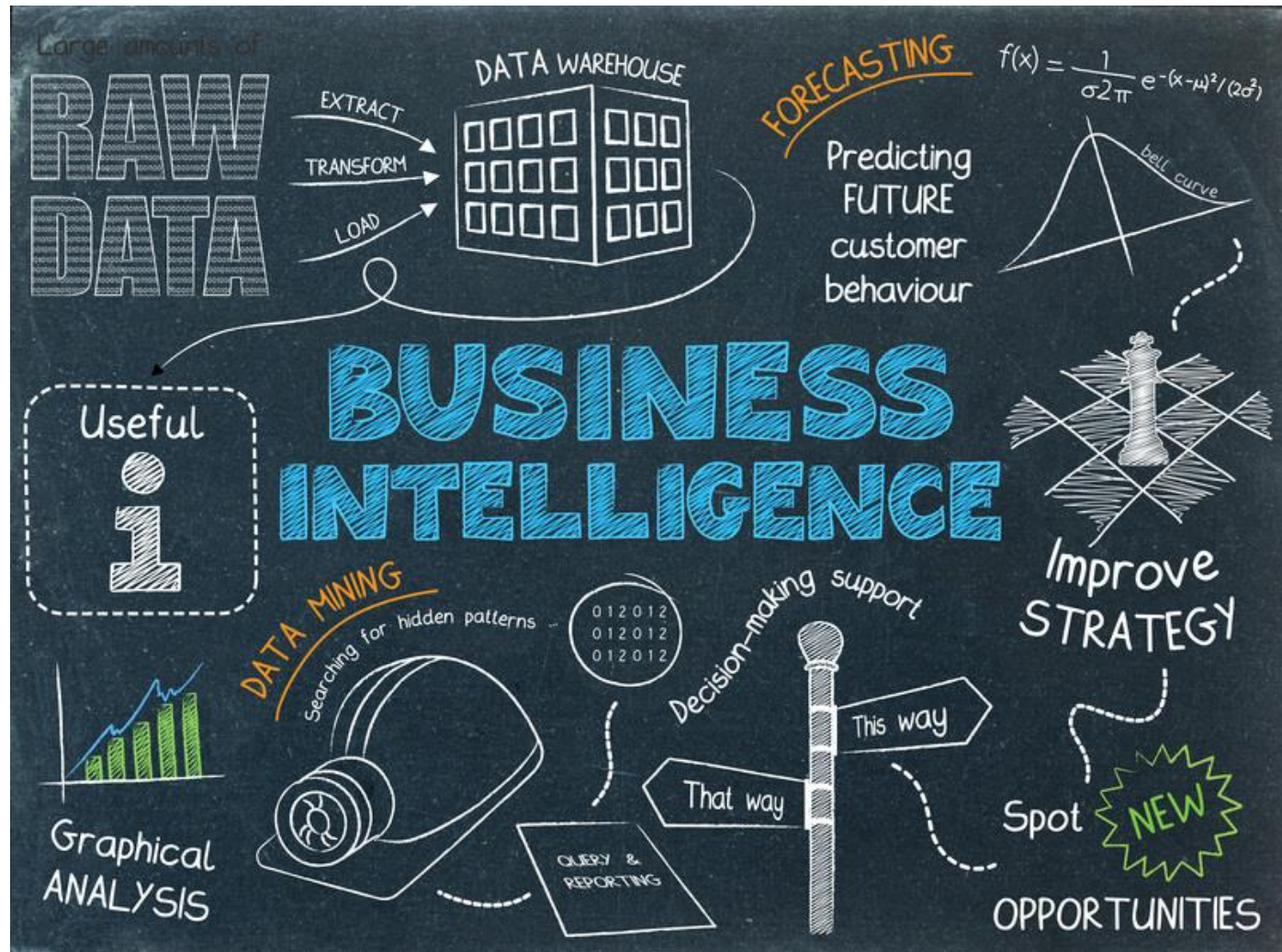


Assessment

- ▶ **Module is 50/50**
 - ▶ Written Exam 50% - December 2016
 - ▶ Practical 50% -
 - ▶ Practical project



Business Intelligence



Definition of BI

- ▶ BI is an umbrella term that combines architectures, tools, databases, analytical tools, applications, and methodologies.
- ▶ BI's major objective is to enable easy access to data (and models) to provide business managers with the ability to conduct analysis and make decisions.
- ▶ BI helps *transform* data, to information (and knowledge), to decisions and finally to action.



BI – A highly important field

▶ Benefits

- ▶ Management effectively aided
 - ▶ Intellectual capital better deployed
 - ▶ Business operations improved
 - ▶ Customer service enhanced
 - ▶ New opportunities identified
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- ▶ The ability to provide accurate information when needed, including a real-time view of the corporate performance and its parts

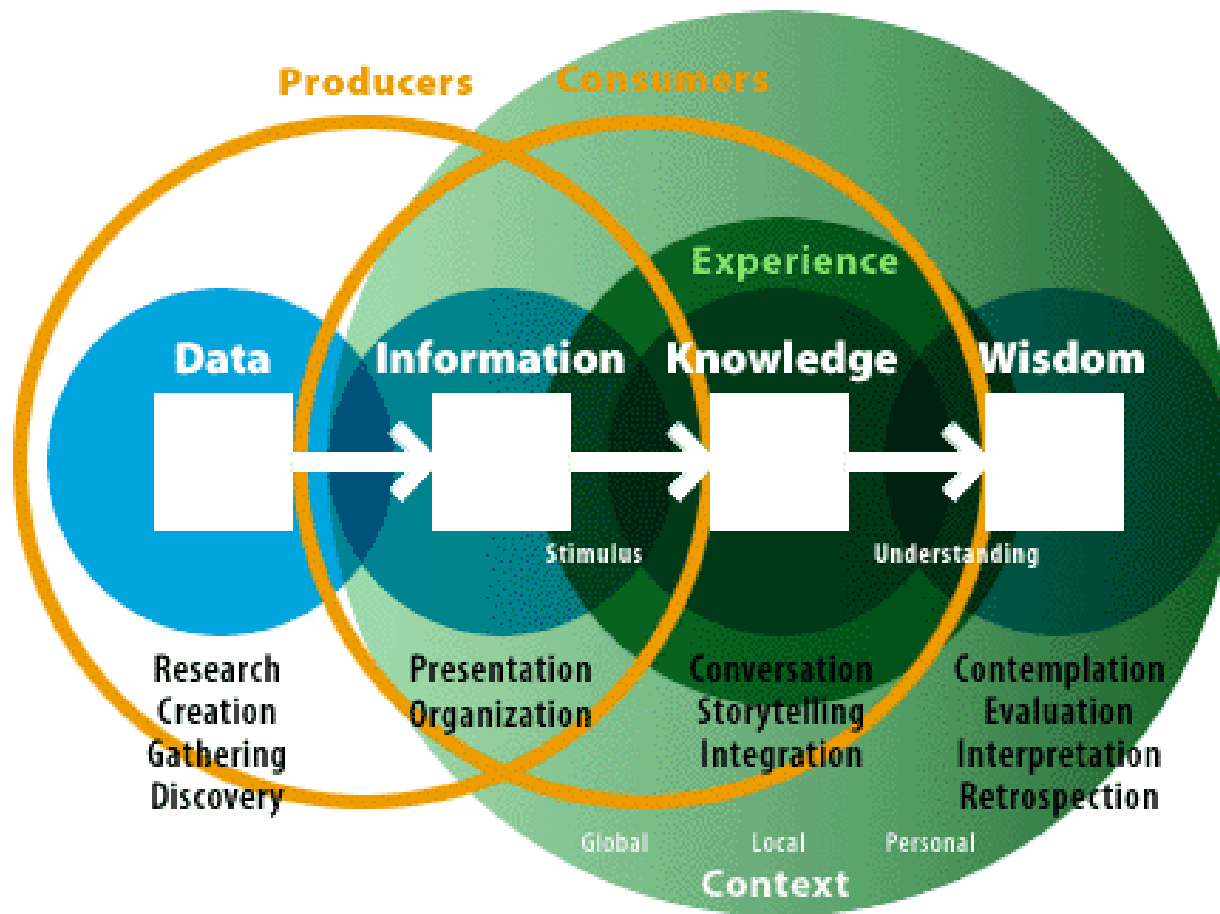


Data, Information, Knowledge

- ▶ Data
 - ▶ Raw data values
- ▶ Information
 - ▶ Subset of data
 - ▶ Data possessing context, relevance, and purpose
- ▶ Knowledge
 - ▶ Justified beliefs about relationships, patterns, predictions



Data, information, knowledge...

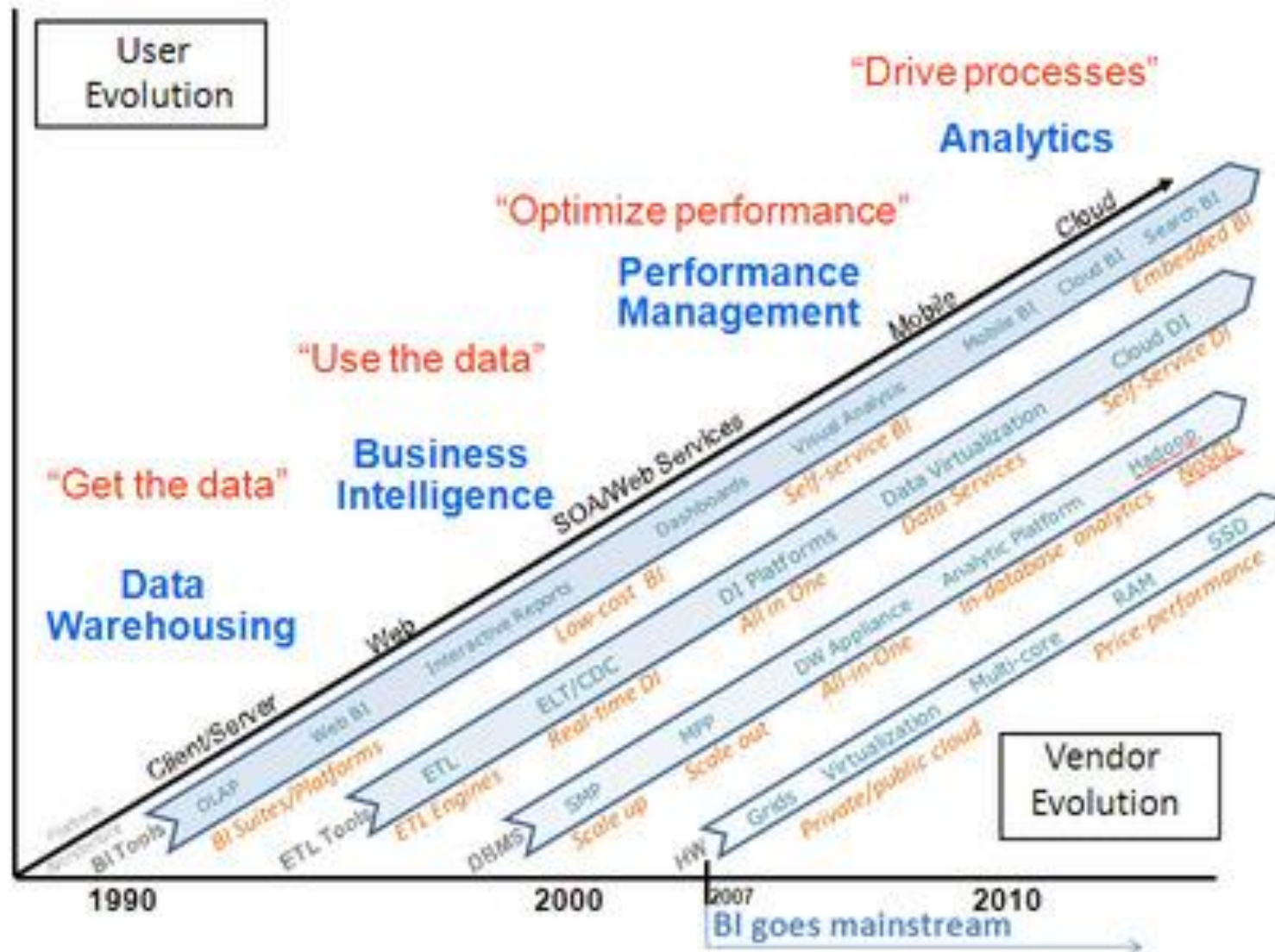


What is Business Intelligence (BI)?

- ▶ Information technology which provides decision makers with valuable information and knowledge by leveraging a variety of data sources as well as structured and unstructured information.
 - ▶ Data sources external or internal to the organization
 - ▶ Information quantitative or qualitative
 - ▶ Output: knowledge
 - ▶ Input: information and data



Evolution of BI



Factors that drive BI

- ▶ Exploding data volumes
 - ▶ Cheaper storage
 - ▶ More electronic connections
- ▶ Increasingly complicated decisions
 - ▶ Multi-industry, global competition
 - ▶ Decisions from structured and unstructured data
- ▶ Technological progress

BI solutions provide managers the ability to more effectively utilize these larger data volumes and make decisions that are based on integration across the information.



Factors that drive BI

- ▶ Need for quick reflexes
 - ▶ Faster pace of change (volatility)
 - ▶ Windows of opportunity close rapidly
 - ▶ Overcome processing delays
 - ▶ Converting data from variety of sources
 - ▶ Integrating information across sources
 - ▶ Making the results available to the decision maker

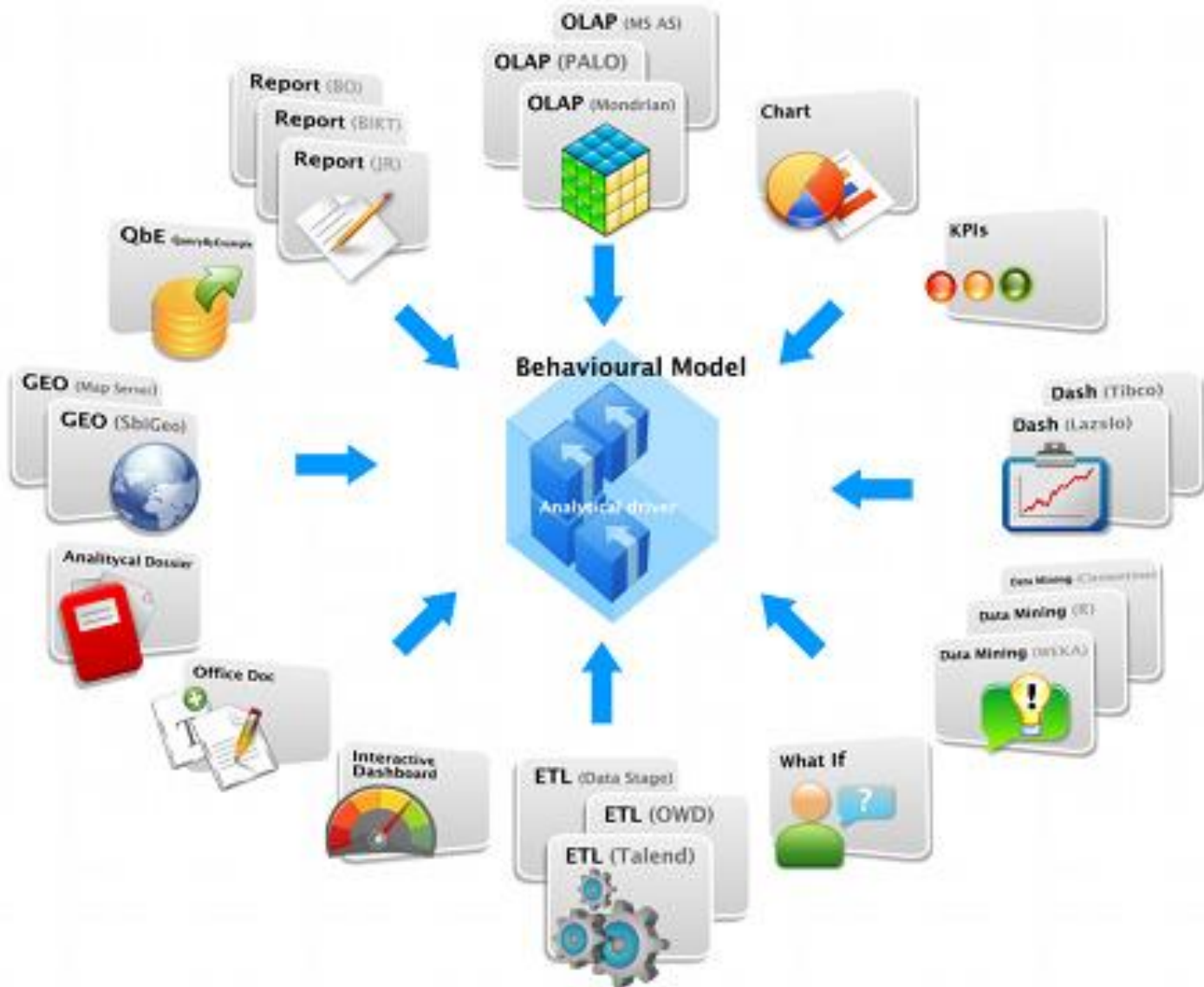


Major BI Tools and Techniques

▶ Tool categories

- ▶ Data management
- ▶ Reporting, status tracking
- ▶ Visualization
- ▶ Strategy and performance management
- ▶ Business analytics
- ▶ Social networking & Web 2.0
- ▶ New/advanced tools/techniques to handle massive data sets for knowledge discovery





Automated Decision Making

- ▶ A relatively new approach to supporting decision making that is used for repetitive decisions.
 - ▶ e.g. Airline industry - dynamically price tickets based on actual demand and if 70% of seats on a flight are sold 3 days prior departure offer a discount.
 - ▶ Based on the information provided and subject to verification, you will be admitted to the course in university



Four Contributions of BI

- ▶ Dissemination of user-friendly, real-time information
- ▶ Creation of new knowledge based on the past
- ▶ Responsive and anticipative decisions
 - ▶ Decision-making based more closely on all the latest information
 - ▶ Incorporate predictions regarding the future
- ▶ Improved planning for the future
 - ▶ More effective use of information
 - ▶ Use of past data for predictions about the future
 - ▶ Development of knowledge based on information about the past



Three Benefits of BI to Organizational Success

- ▶ **Improvement in operational performance**
 - ▶ Provide real-time information on performance
 - ▶ Organisational efficiencies
- ▶ **Improvement in customer service**
 - ▶ Improve quality of customer service provided
 - ▶ Identify problems and potential solutions quickly
 - ▶ Reduce customer concerns and improve retention
- ▶ **Identification of new opportunities**
 - ▶ Facilitate new insights through discover of unknown patterns
 - ▶ Track innovative projects more effectively



Successful BI Implementation

- ▶ Implementing and deploying a BI initiative is a lengthy, expensive and risky endeavor!
- ▶ Success of a BI system is measured by its widespread usage for better decision making.
- ▶ The typical BI user community includes
 - ▶ All levels of the management hierarchy (not just the top executives, as was for EIS)
 - ▶ Provide what is needed to whom he/she needs it
- ▶ A successful BI system must be of benefit to the enterprise as a whole.



Barriers to Successful BI

- ▶ **Security and Privacy**
 - ▶ Still an important research topic in BI
 - ▶ How much security/privacy?
- ▶ **Integration of Systems and Applications**
 - ▶ BI must integrate into the existing IS
 - ▶ Often sits on top of ERP, SCM, CRM systems
 - ▶ Integration to outside (partners of the extended enterprise) via internet –
 - ▶ customers, vendors, government agencies, etc.



Business Intelligence Vendors



Future...

