MSc GFIS

Business Intelligence

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Module Content:

- Examine business intelligence concepts, processes and technologies.
- Organisation memory – structured storage for data analysis, e.g. Data Warehouse.
- Integration with data in an unstructured format, e.g. web
- Create insights/knowledge from data – data mining concepts
- Demonstrate reporting and dashboard visualization tools to visualise data to present data for decision making.

Module Readings & Software:

- Textbooks: Business Intelligence, Analytics, and Data Science: A Managerial Perspective. Sharda, Delen & Turban. 2018. Pearson. 4th Edition
- Business Intelligence. Sabherwal, 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 2018-19 is: Analytics
    - http://www.sdn.sap.com/irj/uac/library-bi access to software, curriculum and resources.
- Labs: Excel, 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)
- The OLAP Report (olapreport.com)
- DSS Resources (dssresources.com)
- Business Intelligence Network (b-eye-network.com)
- TechTarget (https://www.techtarget.com)

Assessment

- Module is 50/50
  - Written Exam 50% - May 2019
  - Continuous Assessment 50% -
    - Practical Project

Timetable – week starting Tuesday…

Date	Week	Topic	Labs
15/01	1	Introduction	Introduction
22/01	2	Org Memory - Data Warehousing	Excel
29/01	3	Data Warehousing	Excel
5/02	4	Information Integration	Excel
12/02	5	Information Integration	Excel
19/02		Study week	
26/02	6	Info Insights -Data mining	Qlik
05/03	7	Data Mining	Qlik
12/03	8	Presentation	Qlik
19/03	9	Presentation	Qlik
26/03	10	Future trends	Qlik
2/04	11	Future trends	Qlik
9/04	12	Revision	Project demo

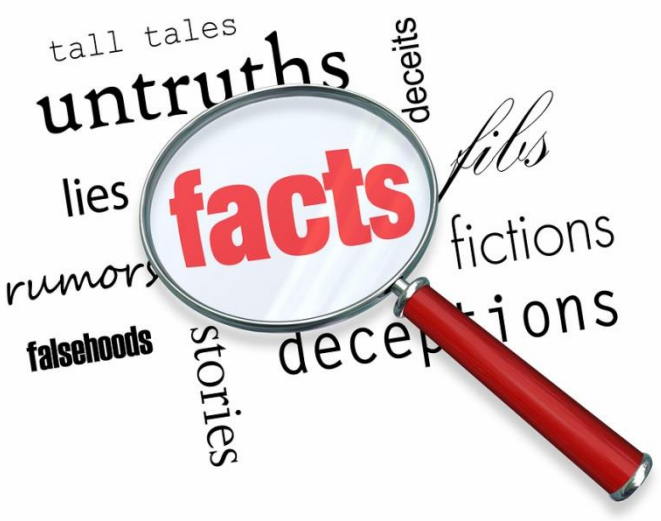
Business Intelligence

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



- The ability to provide accurate information when needed, including a real-time view of the corporate performance and its parts

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

Why BI ?

- Exploding data volumes

  BI solutions provide managers the ability to more effectively utilize these larger data volumes

- Increasingly complicated decisions

- Global competition

- Decisions from structured and unstructured data

  BI solutions provide managers the ability to make decisions that incorporate all the important factors and are based on integration across the information.

Business Questions

- BI in Finance – What is the net income, expenses, gross profit, and net profit for the quarter/year?
- BI in Accounts – What is the sales amount this month and what is the outstanding pending payment?
- BI in Purchase- Who is the vendor to be contacted to purchase products?
- BI in Production – How many products are manufactured in ach production unit today/weekly/monthly?
- BI in Sales – How many products have been sold in each area today/weekly/monthly?
- BI in Quality – How many products have been defective today/weekly/monthly/quarterly/yearly?
- BI in Service – Are the customers satisfied with the quality?

http://learndatamodeling.com/blog/advantages-of-business-intelligence/

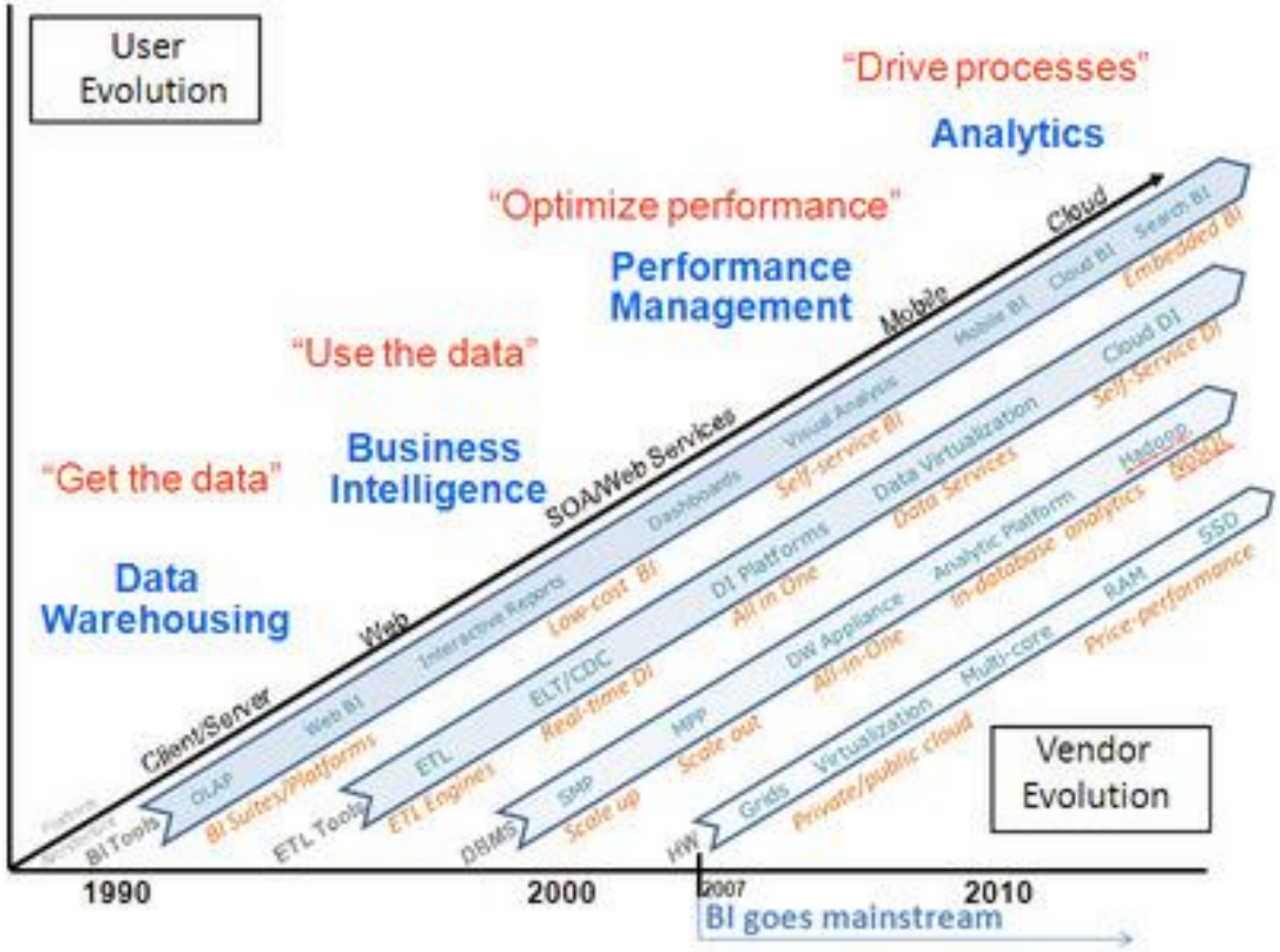
Business Intelligence (BI)

- BI is an evolution of decision support concepts over time.
  - Meaning of EIS/DSS…
    - Then: Executive Information System
    - Now: Everybody's Information System (BI)
- BI systems are enhanced with additional visualizations, alerts, and performance measurement capabilities.
- The term BI emerged from industry apps. and evolved from data warehousing, customer relationship management, point-of-sale systems and enterprise resource planning.

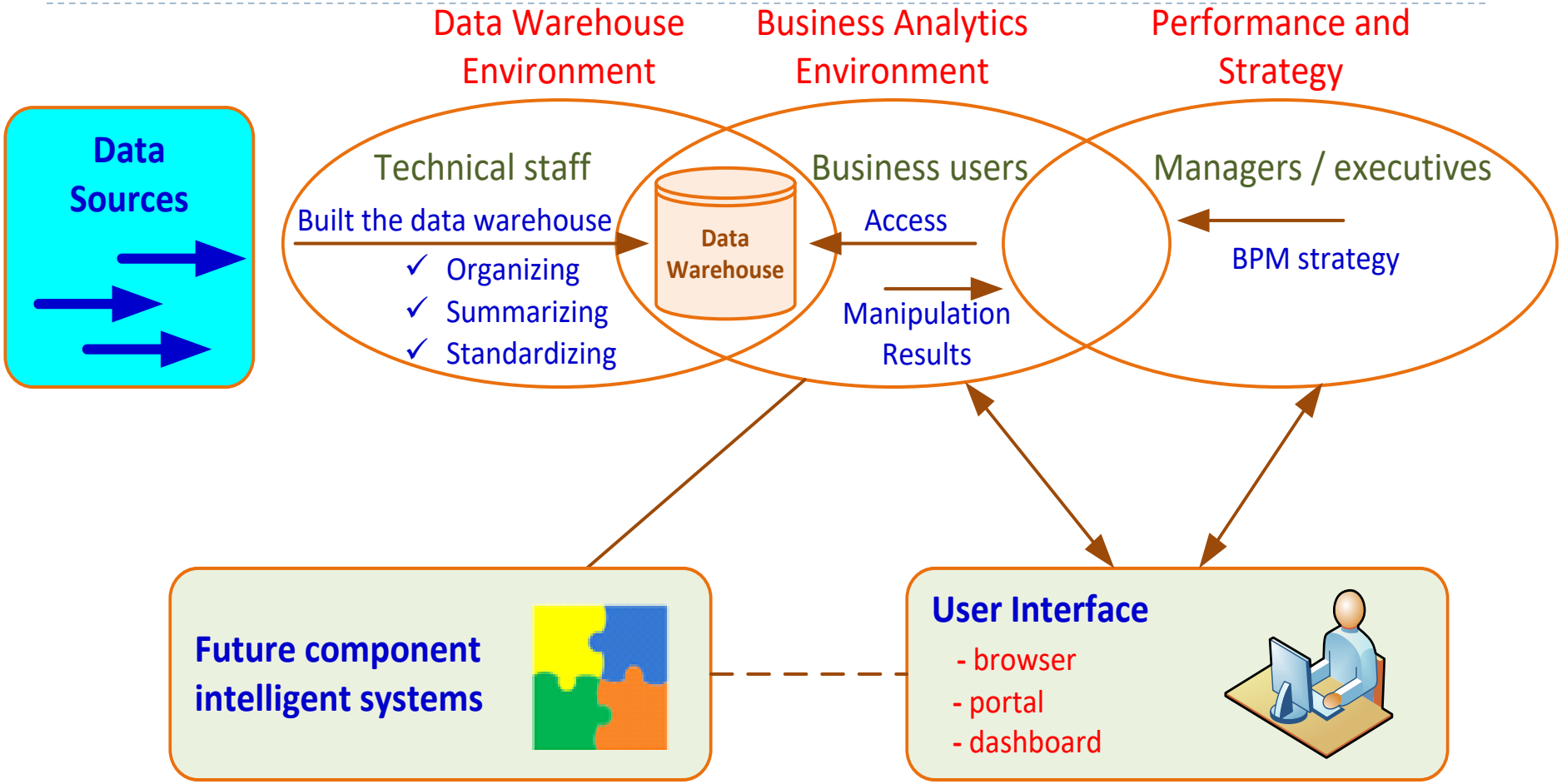
BI is not data warehousing, data mining nor decision support systems

- Data warehouse
  - A single logical repository for an organizations data
- Data mining
  - The process of discovering hidden patterns from data stored electronically (ex. in a data warehouse)
- Decision support systems
  - Use data as input along with prior knowledge to create rules that guide decisions
- Business Intelligence
  - Presents information to individuals with little technical expertise

Evolution of BI

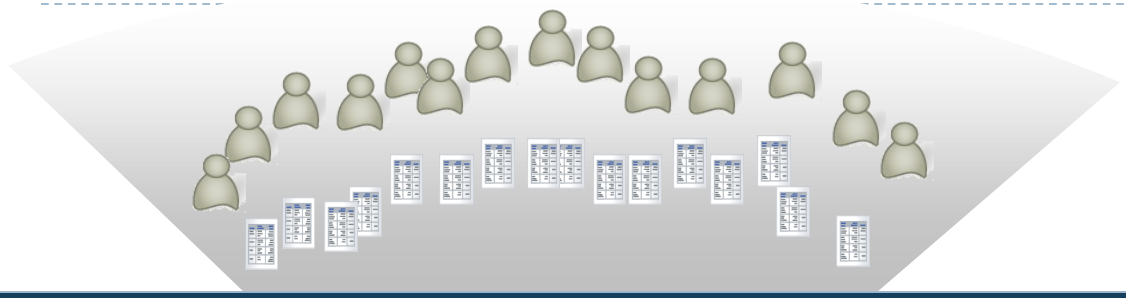


A High-Level BI Architecture



Source: Eckerson, W. Smart Companies in the 21st Century: The Secrets of Creating Successful Business Intelligent Solutions. The Data Warehousing Institute, Seattle, WA, 2003, p. 32

BI Platform is the Key Component of Business Analytic Applications



Business Intelligence Applications

Data Mining & Predictive Analysis	OLAP Analysis	Data Discovery	Dashboards & Scorecards	Enterprise Reporting	Transaction Services	Mobile Apps & Alerting

Business Intelligence Platform

MapReduce Databases

cloudera, amazon web services, hadoop, HD, aster data

Columnar Databases

SAND, EXASOL, INFOBRIGHT, vectorwise, VERTICA, Sybase IQ, PARACCEL

Relational Databases & Multi-dimensional Databases

MySQL, DB2, ORACLE Exadata, TERADATA, IBM Informix, SAP, kognitio, GREENPLUM, ORACLE, Microsoft SQL Server, Hyperion, NETEZZA, SAP HANA, SYBASE, COGNOS TM1, PostgreSQL

User & Departmental Data

salesforce

Analytic Applications

Customer Analysis
- Customer Segmentation
- Customer Profitability
- Cross-sell / Up-sell

Supply Chain Management
- Inventory Analysis
- Fulfillment Analysis
- Distribution Cost Analysis

Financial Reporting Analysis
- P&L Reporting
- Profitability Analysis
- Financial Compliance Analysis

Product Management
- Product Performance Analysis
- Market Basket Analysis
- Category Management

Vendor Performance Analysis
- Service Level Agreement
- Chargeback Analysis
- Relative Sales Analysis

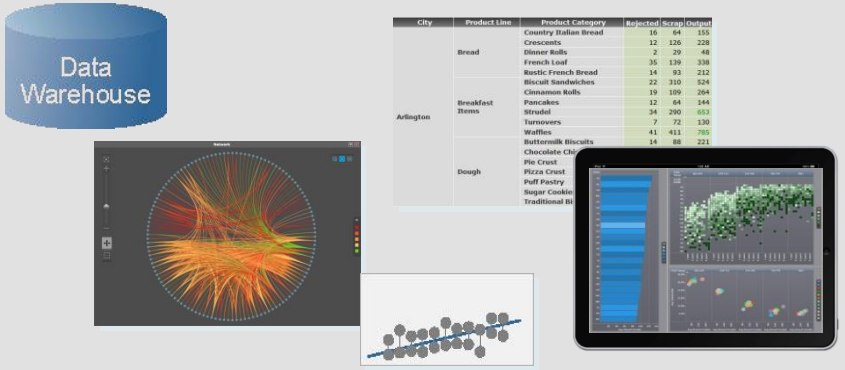
Risk Analysis
- Risk Management
- Portfolio Risk Analysis
- Fraud Detection

Operations Analysis
- Productivity Reporting
- HR Reporting
- Web Commerce Analysis

The Full Spectrum of Business Intelligence in One Seamlessly Integrated Platform

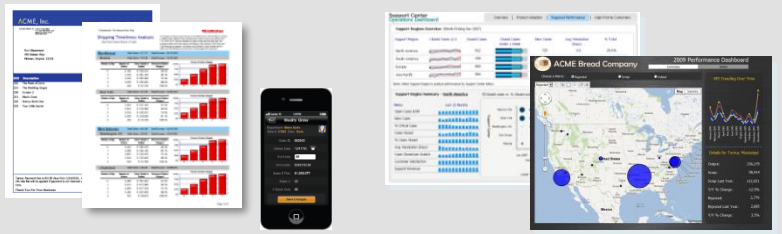
ANALYZE

- Predictive Analytics
- OLAP Analysis
- Data Discovery



MONITOR

- Enterprise Reports
- Dashboards



ACT

- Alerts
- Transactions

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

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

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.

Web resources:

- Business Intelligence Overview
- Business Intelligence Tools
- Top 5 Business Intelligence Myths Revealed
- 9 TED Talks That Anyone Working in Business Intelligence Should Watch
- Gartner BI and Analytics trends 2018 explored and for 2019
- Healthcare BI platform market by 2023

Business Intelligence Vendors