1) Types of BI Systems

2) Solutions (CRM and ERP contexts)

Ivan Kuyumdzhiev
What is BI?
BI Systems are Information systems

Information system is a set of interrelated components that collect, process, store, and distribute information resources to support decision making and control in an organization.

• Types of information resources?
• Types of information systems?
• Where is the BI?
Information resources

• **Data** - discrete, objective facts about events
• **Information** - organized meaningful data

Strategic information:
- **aggregated** information
- from **combined** data sources
- where data is optimized for **reporting** purposes
- and history is preserved so **trends** are easily visible
Information resources

• Knowledge - the application of expert opinion, skills and experience to data and information for decision making.

(“Business intelligence (BI) is the ability to convert all of the data from a particular organization into knowledge”)

• Wisdom - the collective and individual experience of applying knowledge to solution of problems
Which management level uses which information resources?
Types of information systems

1. Enterprise systems:
   • Enterprise resource planning systems (ERP)
   • Supply management systems (SCM)
   • Customer relationship management systems (CRM)
   • Knowledge management systems (KMS)
Enterprise resource planning systems (ERP)

Manage information about organizational resources such as raw materials, products, staff and customers as part of delivery of a product or service

Set of integrated software modules and a central database

Supported business processes:

- Financial and accounting
- Human resources
- Manufacturing and production
- Sales and marketing
Customer relationship management systems (CRM)

Manage personal details of customers, their product order history and how they have responded to marketing campaigns.

• Sales Forces Automation - helps sales staff increase their productivity by focusing sales efforts on the most profitable customers

• Customer Service - provide information and tools to increase the efficiency of call centers, help desks, and customer support

• Marketing - support direct-marketing campaigns (campaign data, content, data analysis)
Types of information systems

2. Information systems for management decision making support:

- Transaction processing systems (TPS)
- Business Intelligence Systems:
  - Management information systems (MIS)
  - Decision support systems (DSS)
- Executive Support Systems (ESS)
EVOLUTION OF ENTERPRISE DATA

- Technology Platforms
  - Open Source Software
  - SOA
  - Web 2.0
  - Cloud Apps
  - SaaS
  - ERP
  - ERP CPM
  - MDM
  - BI Suites
  - BI Appliances
  - Cloud BI
  - Data Discovery
  - Big Data
  - Internet of Things
  - Social Media
  - Tablets
  - Smartphones
  - Web Services

- Enterprise Applications
  - ERP DW
  - ERP BI
  - Performance Management
  - Operational BI
  - BI
  - BI Appliances
  - DW Appliances
  - Data Virtualization
  - Cloud
  - Cloud DBs
  - Databases

- Business Intelligence (BI)
  - Balanced Scorecards
  - Data Quality
  - MDM
  - CDI
  - PIM
  - Federated Data Marts
  - Enterprise Application Integration (EAI)
  - Data Transformation & Load (ETL)
  - Extract, Transform & Load (ETL)
  - OLAP
  - OLAP Databases
  - Data Warehouses
  - Data Marts
  - Data Mining
  - EIS
  - DSS
  - Information Centers

- Data Integration
  - Hub & Spoke
  - Storage Arrays
  - Columnar Databases
  - MPP Databases
  - Columnar Databases
  - NoSQL Databases
  - In-Memory Databases
  - Cloud
  - Cloud
  - Cloud DBs
  - Databases

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What is BI?

Data and software tools for organizing, analyzing, and providing access to data to help managers and other enterprise users make more informed decisions.
What is BI?

“the total of applications and technologies for gathering, analyzing and providing access to data to help users make better decisions”

Ralph Kimball
What is BI?

BI draws information from all sectors of a business and helps companies make better decisions based on the available information.
What is BI? Purpose!

1) Draws information
2) Analyze the information
3) Displays the analysis in a understandable manner
Question

What has changed for the last 10 years of BI?
BI environment
Why business intelligence?

• How are we doing? Good or bad?
• Aim for goals and targets - where do we want to be and where are we now?
• What is our status compared to last time?
• Quality control - is everything working smoothly?
• Are we in sync with all legal regulations? Audit
• How are we doing compared to similar organizations?
Commonly used tools

A **scorecard** is a data visualization tool that helps organizations, individuals, or groups of individuals to reach goals by **displaying progress toward objectives against the objectives themselves.**
# Salesperson Scorecard

<table>
<thead>
<tr>
<th>Salesperson</th>
<th>Month</th>
<th>Target</th>
<th>Revenue</th>
<th>Average</th>
<th>Goal</th>
<th>Orders</th>
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<tbody>
<tr>
<td><strong>Sammy Savino</strong></td>
<td>January</td>
<td>$18K</td>
<td>$12,600</td>
<td>$6,300</td>
<td>70%</td>
<td>★★★</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>$18K</td>
<td>$6,300</td>
<td>$2,100</td>
<td>35%</td>
<td>★★★★</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>$18K</td>
<td>$23,600</td>
<td>$11,800</td>
<td>131%</td>
<td>★★★★</td>
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<tr>
<td></td>
<td>April</td>
<td>$18K</td>
<td>$15,230</td>
<td>$7,615</td>
<td>85%</td>
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</tr>
<tr>
<td></td>
<td>May</td>
<td>$18K</td>
<td>$50,691</td>
<td>$16,884</td>
<td>281%</td>
<td>★★★★</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>$18K</td>
<td>$2,300</td>
<td>$2,300</td>
<td>13%</td>
<td>★</td>
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<tr>
<td><strong>Red Rockwell</strong></td>
<td>January</td>
<td>$10K</td>
<td>$1,400</td>
<td>$1,400</td>
<td>14%</td>
<td>★</td>
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<td></td>
<td>February</td>
<td>$10K</td>
<td>$2,800</td>
<td>$2,800</td>
<td>28%</td>
<td>★</td>
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<tr>
<td></td>
<td>March</td>
<td>$10K</td>
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<td>$1,546</td>
<td>15%</td>
<td>★</td>
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<tr>
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<td>April</td>
<td>$10K</td>
<td>$3,560</td>
<td>$1,780</td>
<td>36%</td>
<td>★★★</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>$10K</td>
<td>$6,600</td>
<td>$2,867</td>
<td>86%</td>
<td>★★★★</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>$10K</td>
<td>$11,023</td>
<td>$11,023</td>
<td>110%</td>
<td>★</td>
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<tr>
<td><strong>Moira Mangold</strong></td>
<td>January</td>
<td>$5K</td>
<td>$2,432</td>
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<td>$5,867</td>
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<td>★</td>
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<tr>
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<td>$1,786</td>
<td>$1,786</td>
<td>36%</td>
<td>★</td>
</tr>
<tr>
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<td>$1,012</td>
<td>20%</td>
<td>★</td>
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<tr>
<td></td>
<td>June</td>
<td>$5K</td>
<td>$545</td>
<td>$545</td>
<td>11%</td>
<td>★</td>
</tr>
</tbody>
</table>
Commonly used tools:

Dashboard - data visualization tool that displays the current status of metrics and key performance indicators
Types of BI Systems

• Spreadsheets – These interactive computer applications manage information in a visual format, organized by rows and columns.

• Reporting and Querying Software – These tools extract, sort and summarize data. There is a variety of software programs used to present this data, including open-source and commercial software types.
Types of BI Systems

• Online Analytical Processing – This processing approach quickly answers analytical queries that are multi-dimensional. The types of applications included in this processing include business reporting, marketing, budget and forecasting.

• Data Mining – Data mining is the bridge between statistics and computer science. It is used to uncover patterns in large sets of data.
Types of BI Systems

- Data Warehousing – This comprehensive database is used for reporting and data analysis. The information is uploaded from a separate operational system. This system is used for reporting and data analysis, and is considered as a core component of business intelligence environment. DWs are central repositories of integrated data from one or more disparate sources.
Types of BI Systems

• Process Mining – This process management technique logs various events to determine business processes.

• Digital Dashboards – A single-page interface in real-time that show at-a-glance information.
Types of BI Systems

• Decision Engineering – A framework that utilizes the best practices for organizational decision making. It helps businesses make decisions based on a variety of business approaches.

• Business Performance Management – Management and analytic processes that manage a business’ performance to achieve short- and long-term goals.
HOW TO DECIDE WHICH BI SOLUTION IS BETTER?
2) BI Solutions (CRM and ERP contexts)

The CRM approach tries to analyse data about customers' history with a company, to improve business relationships with customers, specifically focusing on customer retention, and ultimately to drive sales growth.
Salesforce.com – best selling CRM solution (video)

• Salesforce entered the BI platform market in October 2014, with its launch of Salesforce Wave Analytics.
• Wave offers standard point-and-click interactive visualizations, dashboards and analysis that form the basis of packaged, closed-loop, front-office analytic applications initially focused on sales. The platform is natively mobile
Salesforce strengths

1) Wave offers a visually appealing dashboard experience for Salesforce business consumers. Unlike the operational reporting available within Salesforce CRM applications, the Wave architecture enables customers to easily integrate Salesforce with non-Salesforce cloud and on-premises data from multistructured sources — although customers must rely on data integration partners to load non-Salesforce data into the cloud, rather than accessing it in place.
Salesforce weakness

However, consistent with its low complexity of, the platform currently lacks certain features of data discovery — such as advanced data exploration and manipulation for the business analyst, extensive geospatial capabilities, self-service data preparation and hybrid cloud, among others — although many of these features are on the Wave roadmap.
SAP (video)

SAP delivers a broad range of BI and analytics capabilities for both large IT-managed enterprise reporting deployments and business-user-driven, data discovery deployments. Companies often choose SAP as their enterprise BI standard, particularly if they also standardize on SAP for the enterprise data warehouse and ERP applications.
The top reasons customers select SAP are functionality and the integration with enterprise applications.
Pentaho

Pentaho is a company that offers Pentaho Business Analytics, a suite of open source Business Intelligence (BI) products which provide data integration, OLAP services, reporting, dashboarding, data mining and ETL (Extract, Transform, Load) capabilities.
The Pentaho Open Source BI Suite provides comprehensive reporting, analysis, and dashboard capabilities that help organizations operate more efficiently and effectively.
Pentaho strengths

• Pentaho offers native integration with technologies such as Hadoop, Spark, Cassandra

• Able to blend and analyze traditional SQL-based repositories, ad hoc files, NoSQL databases and unstructured data (such as social media feeds, log data and machine data streams from IoT )
Conclusions?

• What has changed?
• How to choose BI solution?