



DATA ANALYTICS

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INFORMATION PRESENTATION

- DISSEMINATE THE DISCOVERED INSIGHTS TO MAKE BI MORE VALUABLE TO CONCERNED USERS.
- TECHNOLOGIES THAT SUPPORT DECISION MAKING
- TACTICAL DECISIONS
- STRATEGIC DECISIONS
- ONLINE ANALYTICAL PROCESSING (OLAP)
- VISUAL ANALYTICS
- BUSINESS PERFORMANCE MANAGEMENT
- PERFORMANCE DASHBOARDS

ONLINE ANALYTICAL PROCESSING

- TRANSACTIONAL DATABASES ARE ACCESSED BY ONLINE TRANSACTION PROCESSING (OLTP) APPLICATIONS
- OLAP WAS COINED BY EDGAR CODD [1970]
- OLAP IS USED ESSENTIALLY TO QUERY THE DW
- OLAP SUPPORTS THE PRESENTATION OF DATA IN A MULTI-DIMENSIONAL FORMAT CALLED A CUBE
- THE NUMERIC FACTS IN THE DW KNOWN AS THE MEASURES

ANALYSIS OF DATA IN DW

- ONLINE ANALYTICAL PROCESSING (OLAP)
 - DATA DRIVEN ACTIVITIES PERFORMED BY END USERS TO QUERY THE ONLINE SYSTEM AND TO CONDUCT ANALYSES
 - DATA CUBES, DRILL-DOWN / ROLLUP, SLICE & DICE, ...
- OLAP ACTIVITIES
 - GENERATING QUERIES (QUERY TOOLS)
 - REQUESTING AD HOC REPORTS
 - CONDUCTING STATISTICAL AND OTHER ANALYSES

ANALYSIS OF DATA STORED IN DW

OLTP VS. OLAP

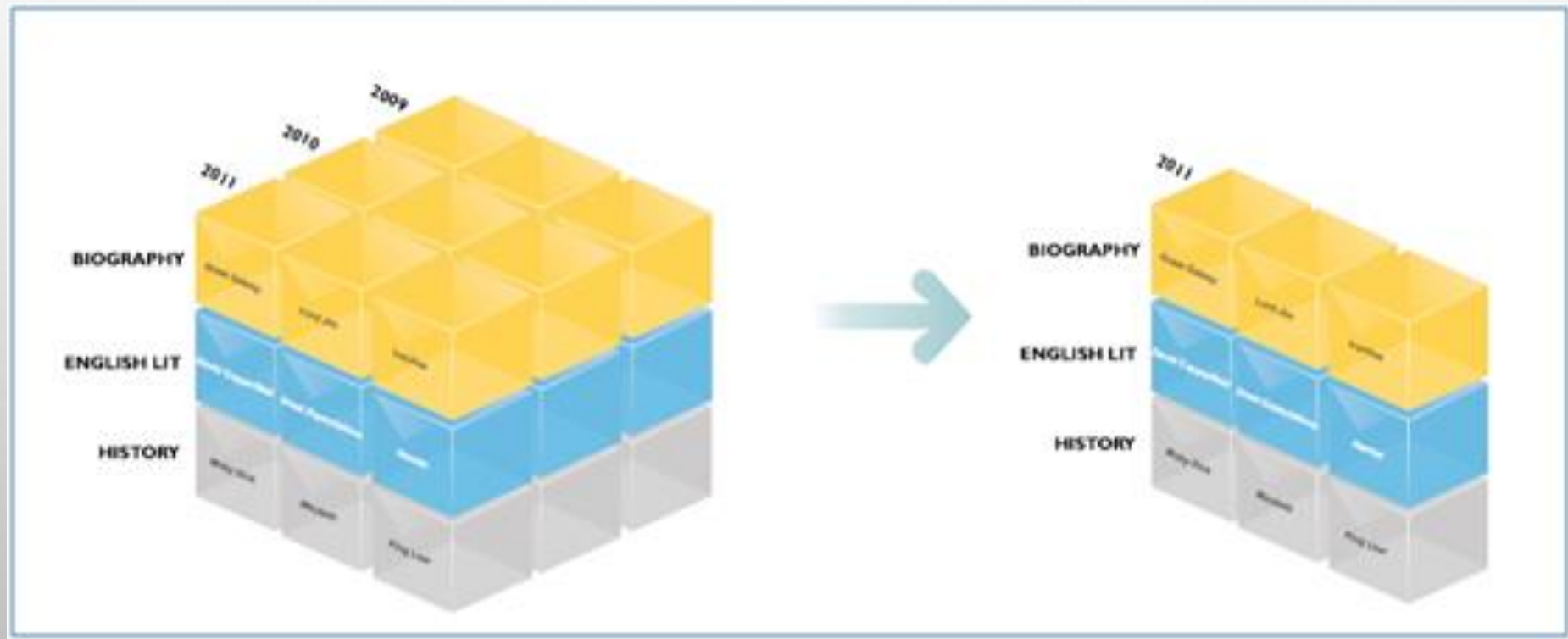
- OLTP (ONLINE TRANSACTION PROCESSING)
 - A SYSTEM THAT IS PRIMARILY RESPONSIBLE FOR CAPTURING AND STORING DATA RELATED TO DAY-TO-DAY BUSINESS FUNCTIONS SUCH AS ERP, CRM, SCM, POS,
 - THE MAIN FOCUS IS ON EFFICIENCY OF ROUTINE TASKS
- OLAP (ONLINE ANALYTIC PROCESSING)
 - A SYSTEM IS DESIGNED TO ADDRESS THE NEED OF INFORMATION EXTRACTION BY PROVIDING EFFECTIVELY AND EFFICIENTLY AD HOC ANALYSIS OF ORGANIZATIONAL DATA
 - THE MAIN FOCUS IS ON EFFECTIVENESS

OLAP OPERATIONS

- **SLICE** – A SUBSET OF A MULTIDIMENSIONAL ARRAY
- **DICE** – A SLICE ON MORE THAN TWO DIMENSIONS
- **DRILL DOWN/UP** – NAVIGATING AMONG LEVELS OF DATA RANGING FROM THE MOST SUMMARIZED (UP) TO THE MOST DETAILED (DOWN)
- **ROLL UP** – COMPUTING ALL OF THE DATA RELATIONSHIPS FOR ONE OR MORE DIMENSIONS
- **PIVOT** – USED TO CHANGE THE DIMENSIONAL ORIENTATION OF A REPORT OR AN AD HOC QUERY-PAGE DISPLAY

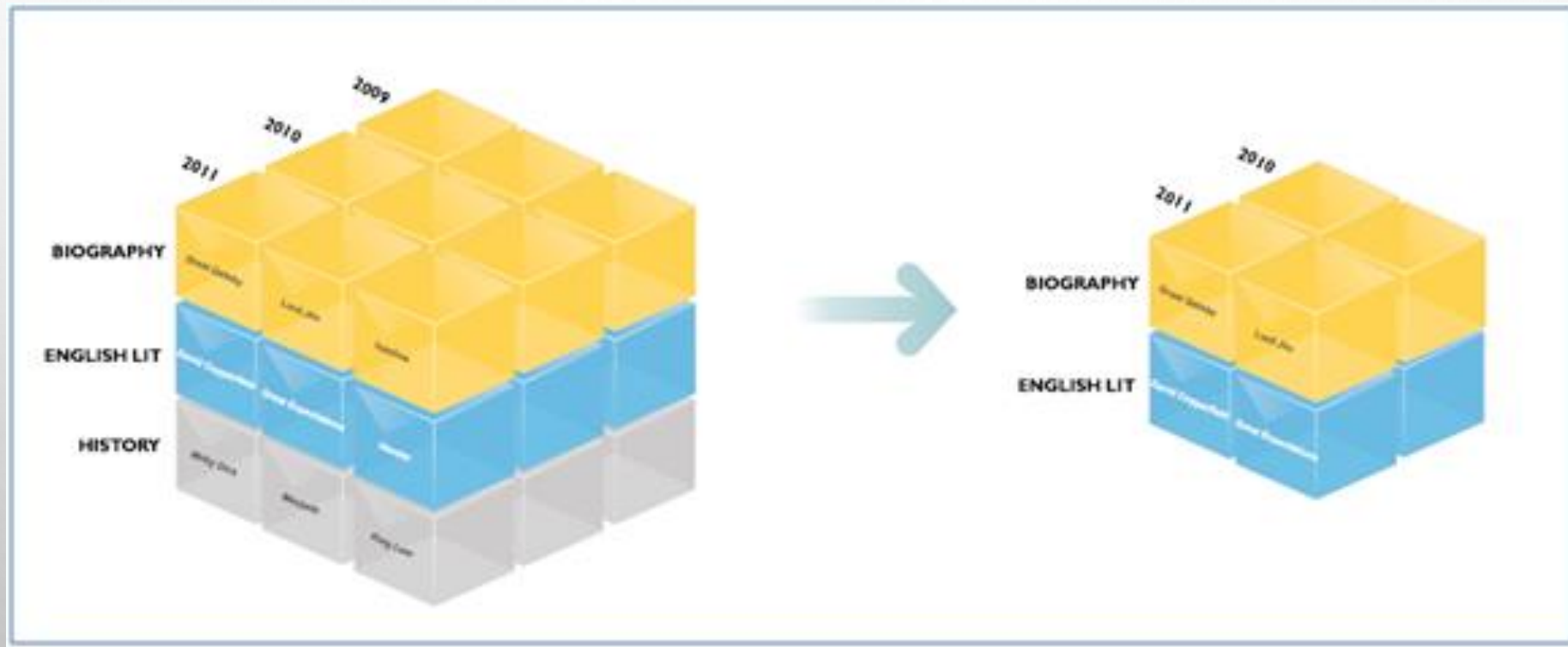
OLAP

- SLICE

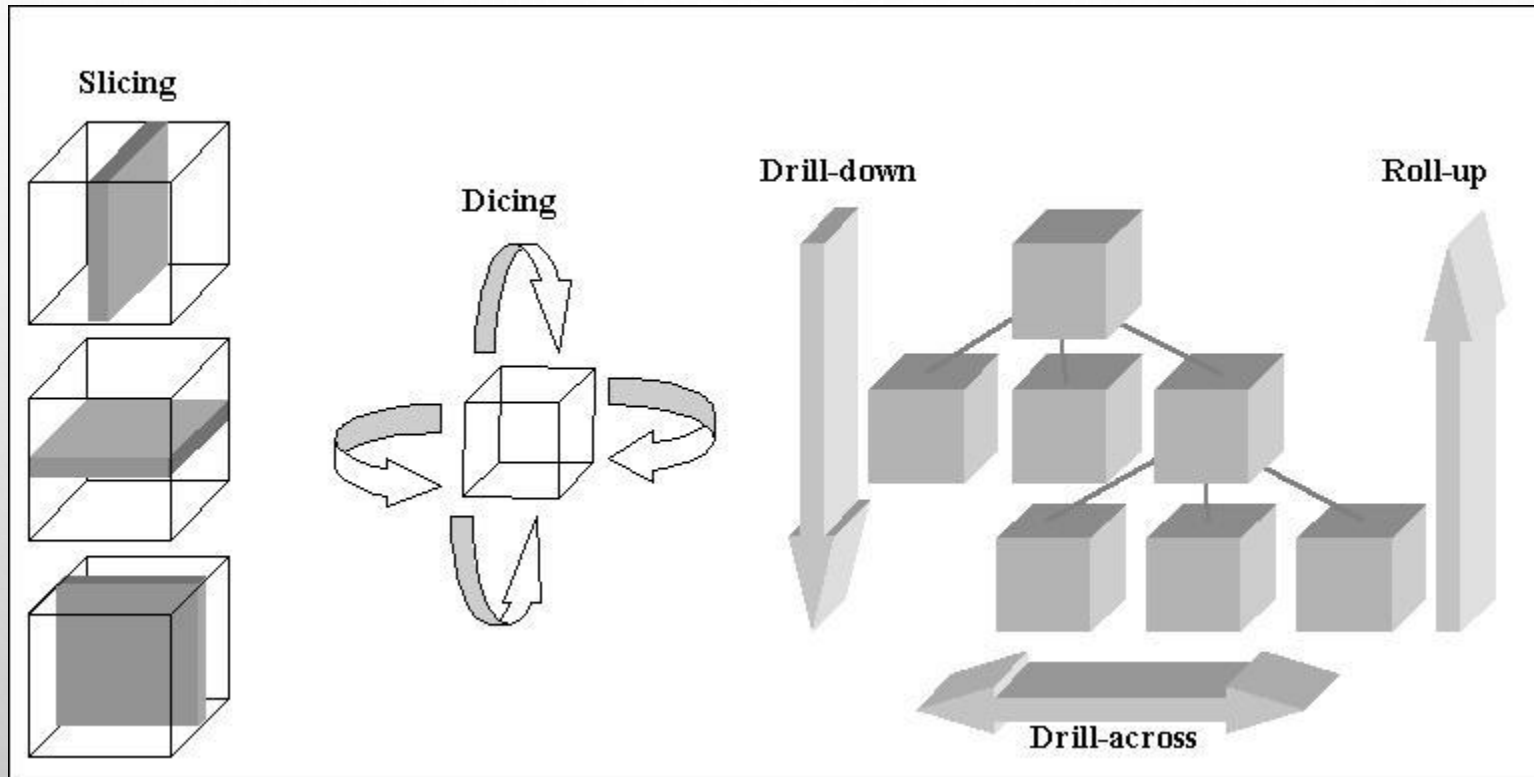


OLAP

- SLICE



OLAP





BUSINESS REPORTING

DEFINITIONS AND CONCEPTS

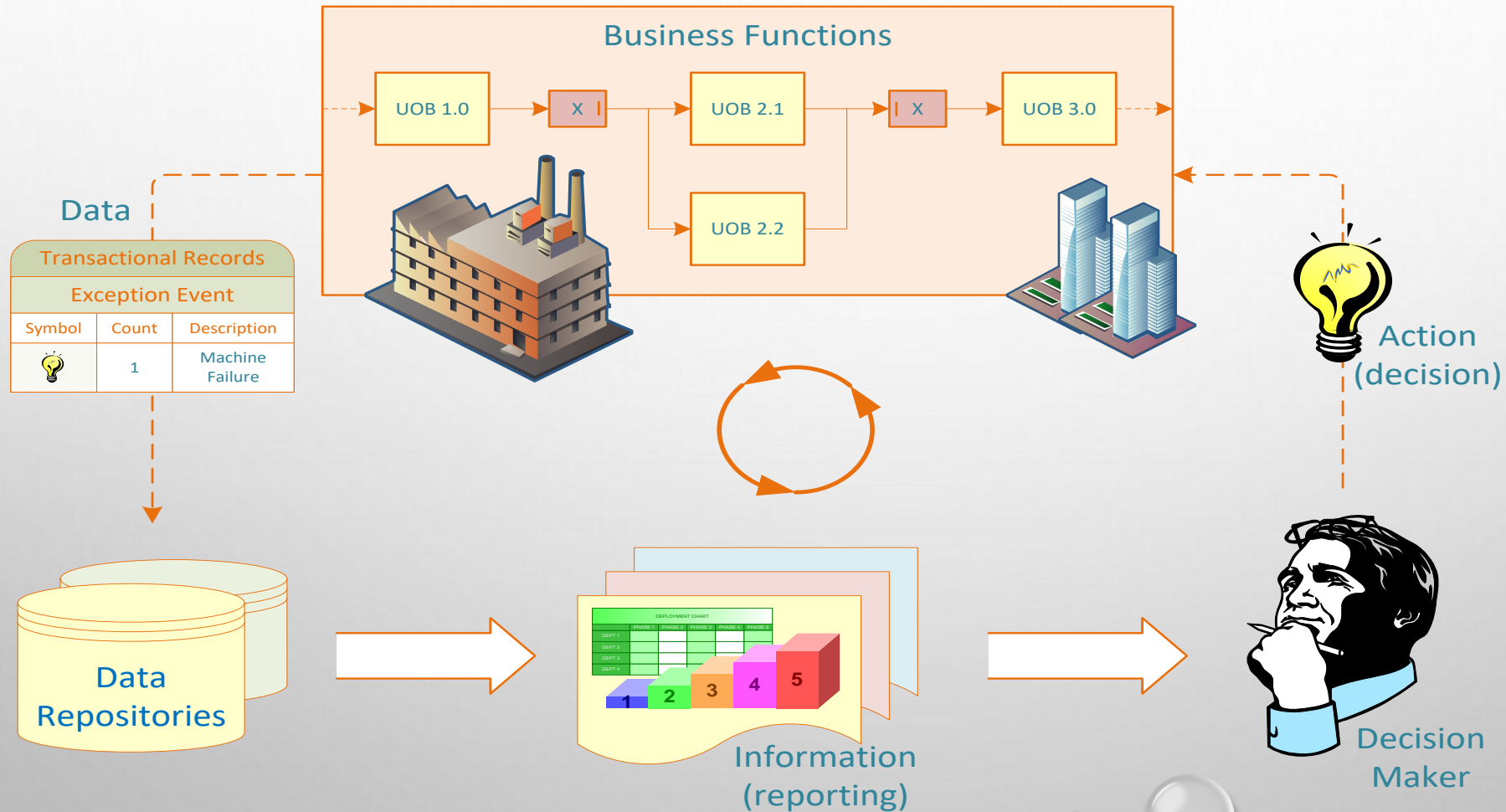
- REPORT = INFORMATION → DECISION
- REPORT?
 - ANY COMMUNICATION ARTIFACT PREPARED TO CONVEY SPECIFIC INFORMATION
- A REPORT CAN FULFILL MANY FUNCTIONS
 - TO ENSURE PROPER DEPARTMENTAL FUNCTIONING
 - TO PROVIDE INFORMATION
 - TO PROVIDE THE RESULTS OF AN ANALYSIS
 - TO PERSUADE OTHERS TO ACT
 - TO CREATE AN ORGANIZATIONAL MEMORY...

WHAT IS A BUSINESS REPORT?

- A WRITTEN DOCUMENT THAT CONTAINS INFORMATION REGARDING BUSINESS MATTERS.
- **PURPOSE:** TO IMPROVE MANAGERIAL DECISIONS
- **SOURCE:** DATA FROM INSIDE AND OUTSIDE THE ORGANIZATION (VIA THE USE OF ETL)
- **FORMAT:** TEXT + TABLES + GRAPHS/CHARTS
- **DISTRIBUTION:** IN-PRINT, EMAIL, PORTAL/INTRANET


DATA ACQUISITION → INFORMATION GENERATION → DECISION
MAKING → PROCESS MANAGEMENT

BUSINESS REPORTING





KEY TO ANY SUCCESSFUL REPORT

- CLARITY ...
 - BREVITY ...
 - COMPLETENESS ...
 - CORRECTNESS ...
 - REPORT TYPES (IN TERMS OF CONTENT AND FORMAT)
 - INFORMAL – A SINGLE LETTER OR A MEMO
 - FORMAL – 10-100 PAGES; COVER + SUMMARY + TEXT
 - SHORT REPORT – PERIODIC, INFORMATIVE, INVESTIGATIVE
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TYPES OF BUSINESS REPORTS

- METRIC MANAGEMENT REPORTS
 - HELP MANAGE BUSINESS PERFORMANCE THROUGH METRICS (SLAS FOR EXTERNALS; KPIS FOR INTERNALS)
 - CAN BE USED AS PART OF SIX SIGMA AND/OR TQM
- DASHBOARD-TYPE REPORTS
 - GRAPHICAL PRESENTATION OF SEVERAL PERFORMANCE INDICATORS IN A SINGLE PAGE USING DIALS/GAUGES
- BALANCED SCORECARD-TYPE REPORTS
 - INCLUDE FINANCIAL, CUSTOMER, BUSINESS PROCESS, AND LEARNING & GROWTH INDICATORS

COMPONENTS OF BUSINESS REPORTING SYSTEMS

- COMMON CHARACTERISTICS
 - OLTP (ONLINE TRANSACTION PROCESSING)
 - ERP, POS, SCM, RFID, SENSORS, WEB, ...
 - DATA SUPPLY (VOLUME, VARIETY, VELOCITY, ...)
 - ETL
 - DATA STORAGE
 - BUSINESS LOGIC
 - PUBLICATION MEDIUM
 - ASSURANCE

DATA AND INFORMATION VISUALIZATION

“THE USE OF VISUAL REPRESENTATIONS TO EXPLORE, MAKE SENSE OF, AND COMMUNICATE DATA.”

- DATA VISUALIZATION VS. INFORMATION VISUALIZATION
- INFORMATION = AGGREGATION, SUMMARIZATION, AND CONTEXTUALIZATION OF DATA
- RELATED TO INFORMATION GRAPHICS, SCIENTIFIC VISUALIZATION, AND STATISTICAL GRAPHICS
- OFTEN INCLUDES CHARTS, GRAPHS, ILLUSTRATIONS, ...

VISUAL ANALYTICS

- VISUAL ANALYTICS REFERS TO THE USE OF COMPUTER GRAPHICS TO CREATE A VISUAL REPRESENTATION OF LARGE COLLECTIONS OF INFORMATION
- PURPOSE OF VISUALIZATION IS TO ENABLE KNOWLEDGE DISCOVERY
- IMPORTANCE: VISUALIZATION HELPS USERS SEE PATTERNS

THE EMERGENCE OF DATA VISUALIZATION AND VISUAL ANALYTICS

- EMERGENCE OF NEW COMPANIES
 - TABLEAU, SPOTFIRE, QLIKVIEW, ...
- INCREASED FOCUS BY THE BIG PLAYERS
 - MICROSTRATEGY IMPROVED VISUAL INSIGHT
 - SAP LAUNCHED VISUAL INTELLIGENCE
 - SAS LAUNCHED VISUAL ANALYTICS
 - MICROSOFT BOLSTERED POWERPIVOT WITH POWER VIEW
 - IBM LAUNCHED COGNOS INSIGHT
 - ORACLE ACQUIRED ENDECA

VISUAL ANALYTICS

- A RECENTLY COINED TERM
 - INFORMATION VISUALIZATION + PREDICTIVE ANALYTICS
- INFORMATION VISUALIZATION
 - DESCRIPTIVE, BACKWARD FOCUSED
 - “WHAT HAPPENED” “WHAT IS HAPPENING”
- PREDICTIVE ANALYTICS
 - PREDICTIVE, FUTURE FOCUSED
 - “WHAT WILL HAPPEN” “WHY WILL IT HAPPEN”
- THERE IS A STRONG MOVE TOWARD VISUAL ANALYTICS