OLAP Theory-English version
On-Line Analytical processing (Buisness Intelligence)

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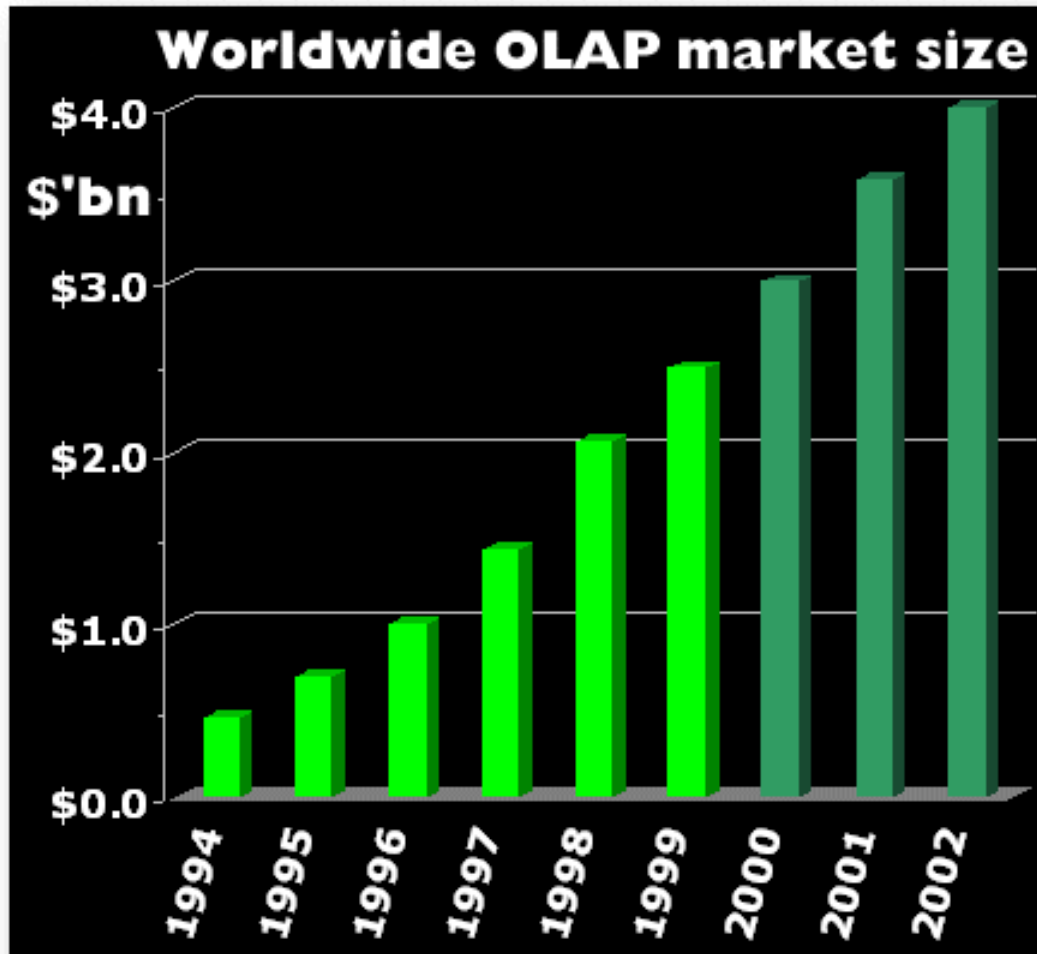Faculty of Economics and Administration

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Czech Republic

Agenda

- The Market
- Why OLAP
- Introduction to OLAP
- OLAP Terms and Concepts
- Summary

OLAP market size

Worldwide OLAP market size

Why OLAP

- **The Right Information In The Right Place At The Right Time**
- **Why**
  - More self-sufficient Business users
  - Keep the integrity of the data
  - Reduces the query drag(burden) and network traffic
  - Organization can respond more quickly to market demands

Introduction to OLAP

"OLAP enables analysts, managers, and executives to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information. OLAP transforms raw data so that it reflects the real dimensionality of the enterprise as understood by the user. "
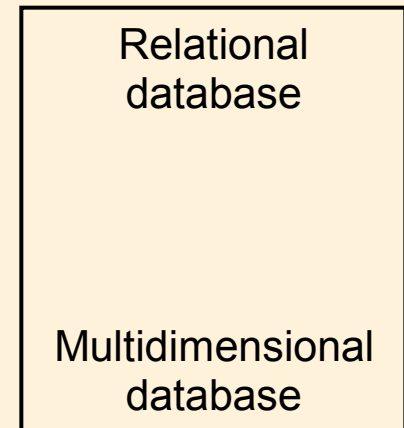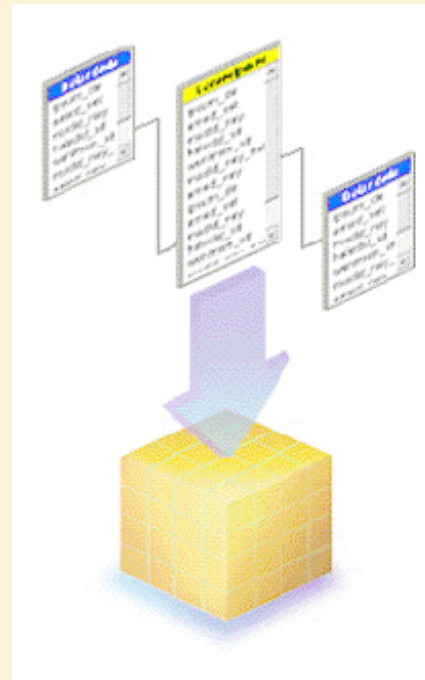
Introduction to OLAP

- Users
  - Analysts, managers and executive managers
- Access
  - Fast consistent, interactive
  - Wide variety of possible views
- Transformation
  - Raw data
  - Real dimensionality of enterprise

Introduction to OLAP

- Organizational functions
  - Finance
    - Budgeting
    - Performance analysis
  - Sales
    - Sales analysis and forecasting
  - Marketing
    - Market research analysis
    - Market/customer segmentation
  - Purchase
    - Cost of materials
  - Production
    - Cost of conversion
  - Distribution
    - Cost of shipping
  - etc

OLAP Terms and Concepts

- Relational database

- Multidimensional database

| Relational database |
| Multidimensional database |

For MPH_AOMA not mandatory

MS Dynamics NAV Relationships

Sales Line Order

Location card

Location List

Bin Contents

Bins Tab

Bins List

Item Card

MS Dynamics NAV Analysis by Dimensions

Will be presented by teacher

OLAP Terms and *Concepts*
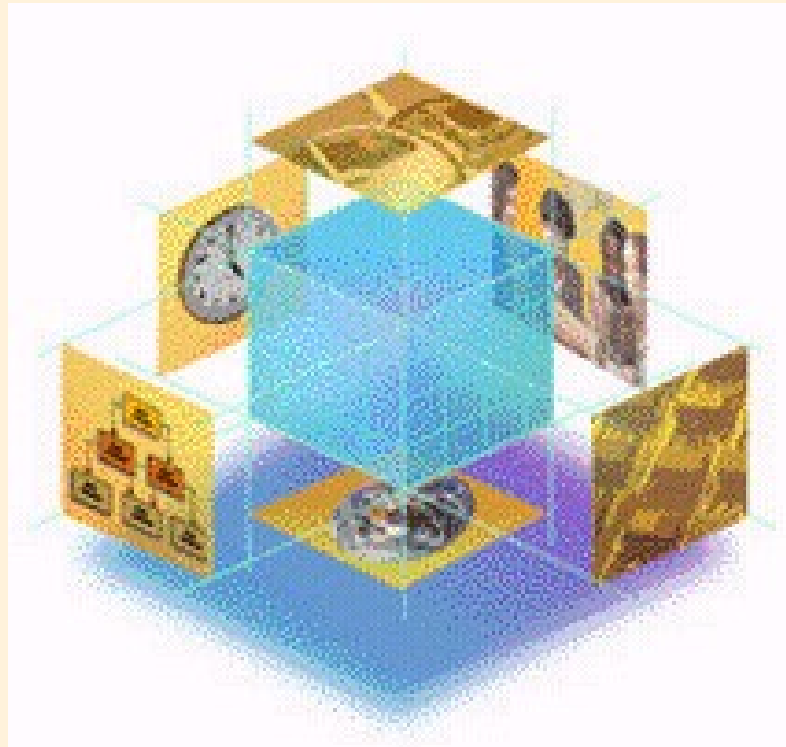
N-dimensional Cube

OLAP Terms and Concepts
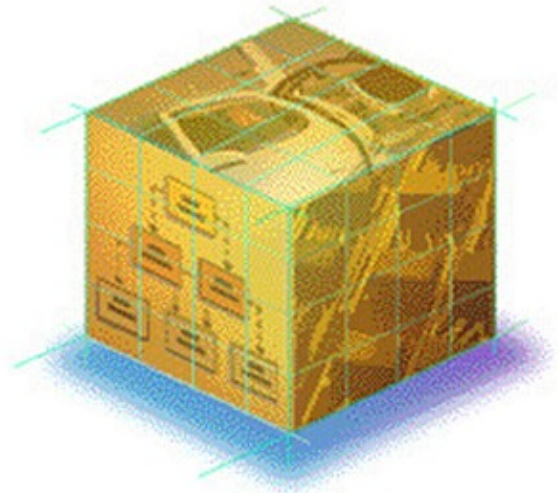
- Cube
  - Information Is conceptually viewed as cubes.

OLAP Terms and Concepts

- Cube
  - Information Is conceptually viewed as cubes.

- Dimension
  - Distinct categories for business data.
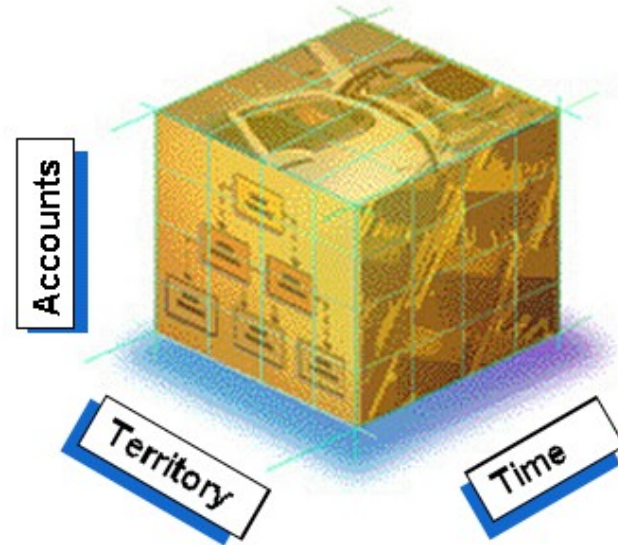
OLAP Terms and Concepts

- Cube
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- Hierarchy
  - Levels of details on the data.

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OLAP Terms and Concepts I.

- Cube
  - Information Is conceptually viewed as cubes.
- Dimension
  - Distinct categories for business data.
- Hierarchy
  - Levels of details on the data.
- Measure
  - Quantitative values.

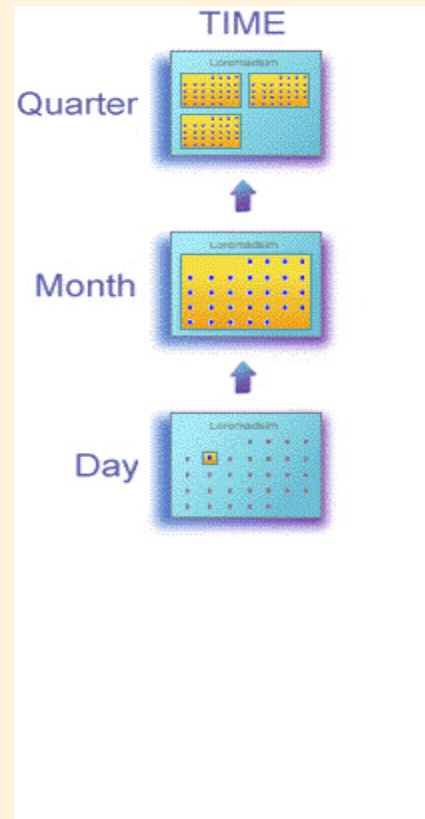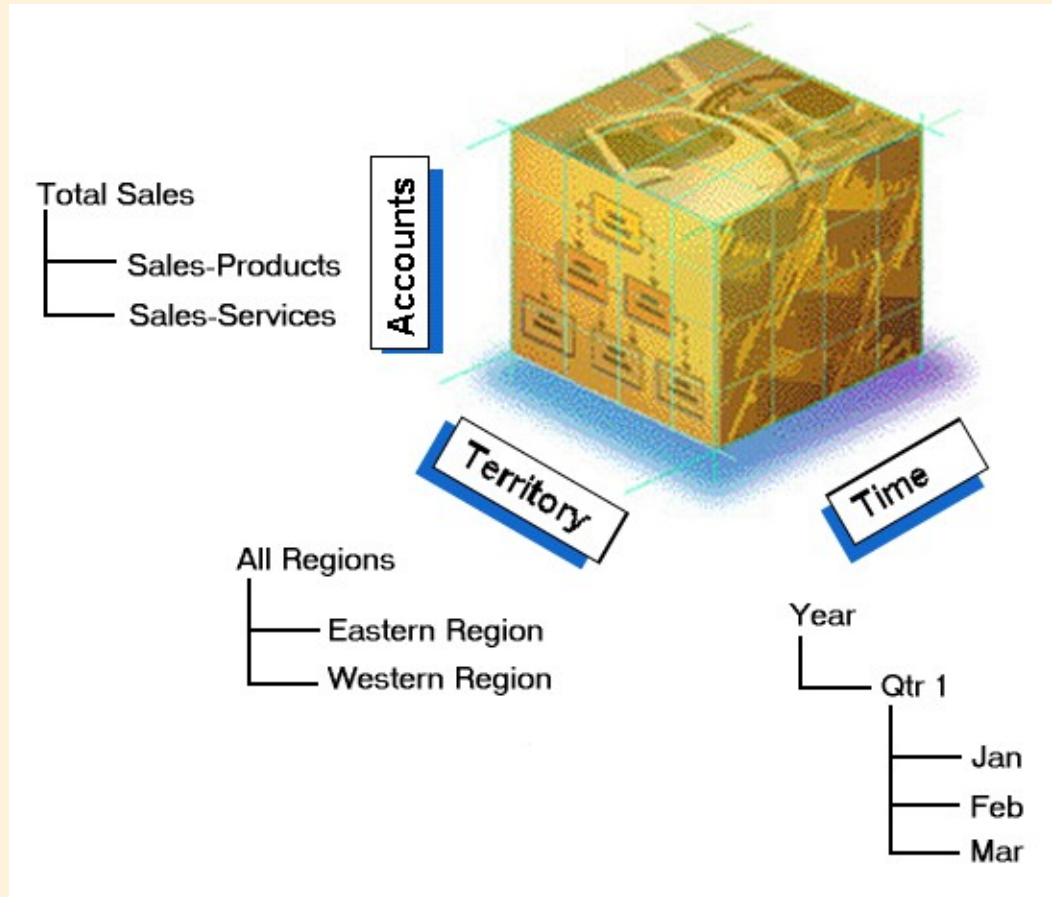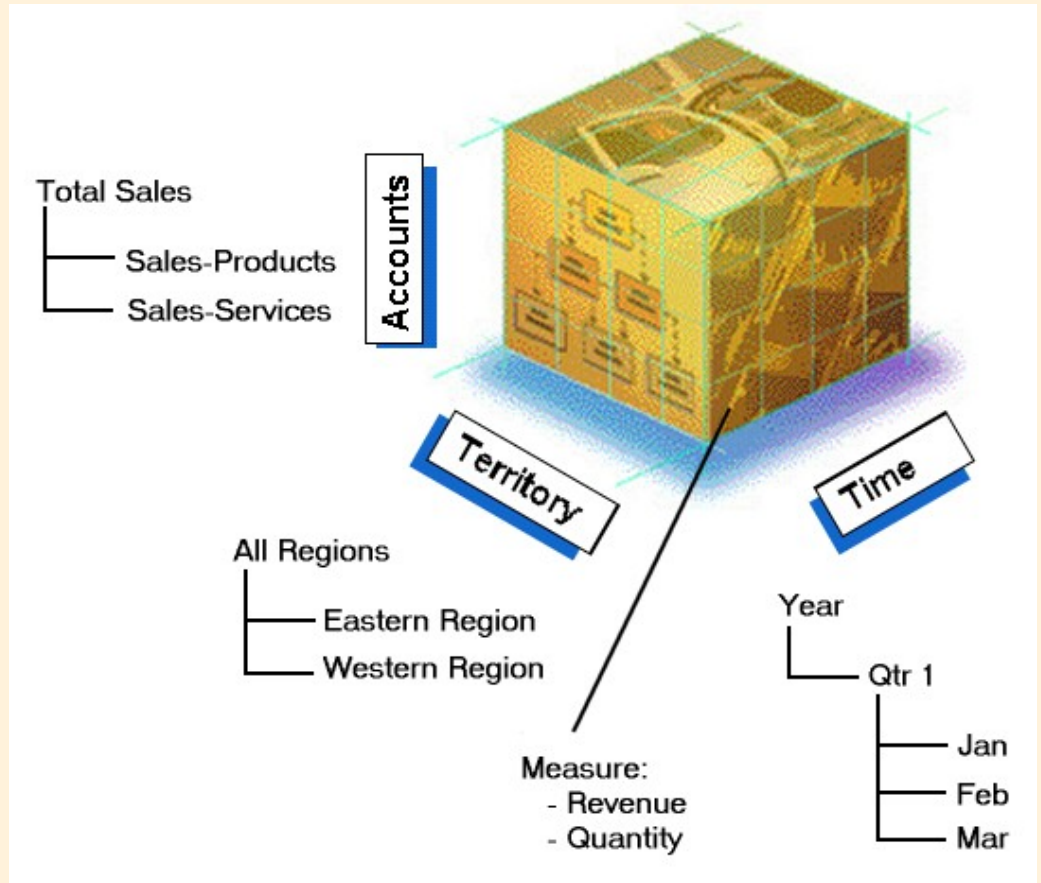# OLAP Terms and Concepts II.

Cube
Information Is conceptually viewed as cubes.

Dimension
Distinct categories for business data.

Hierarchy
Levels of details on the data.

Measure
Quantitative values.

Cube Member

Sales-Products

Eastern Region

January

Measure:
- Revenue: USD 450.000,-
- Quantity   100
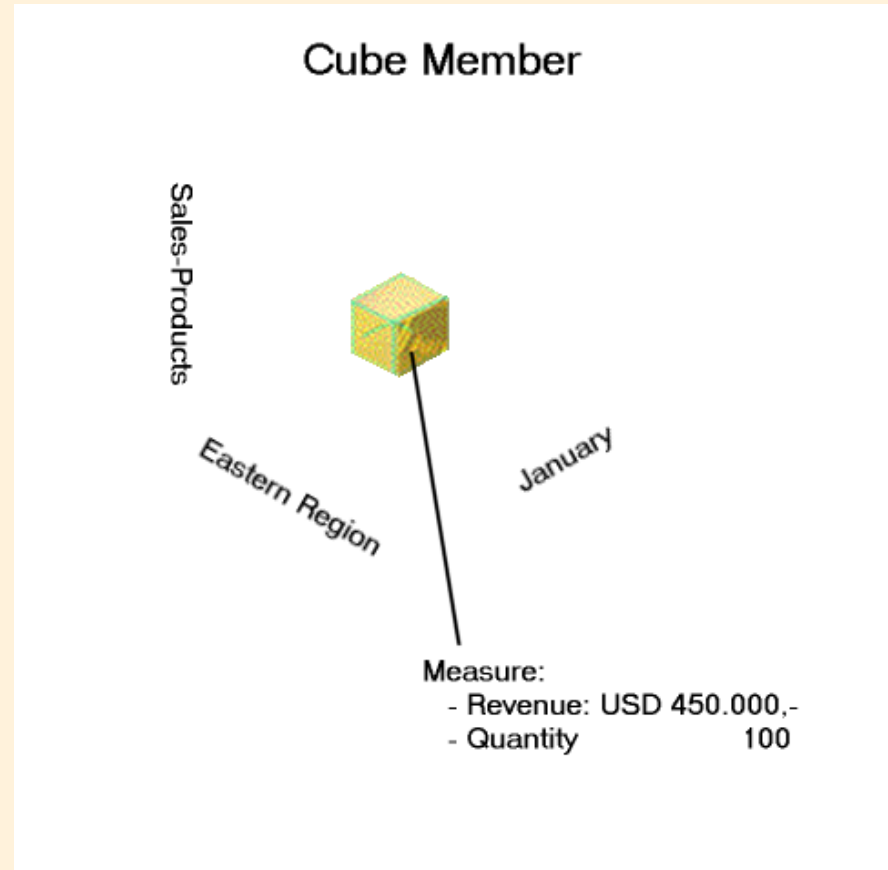
OLAP Cube
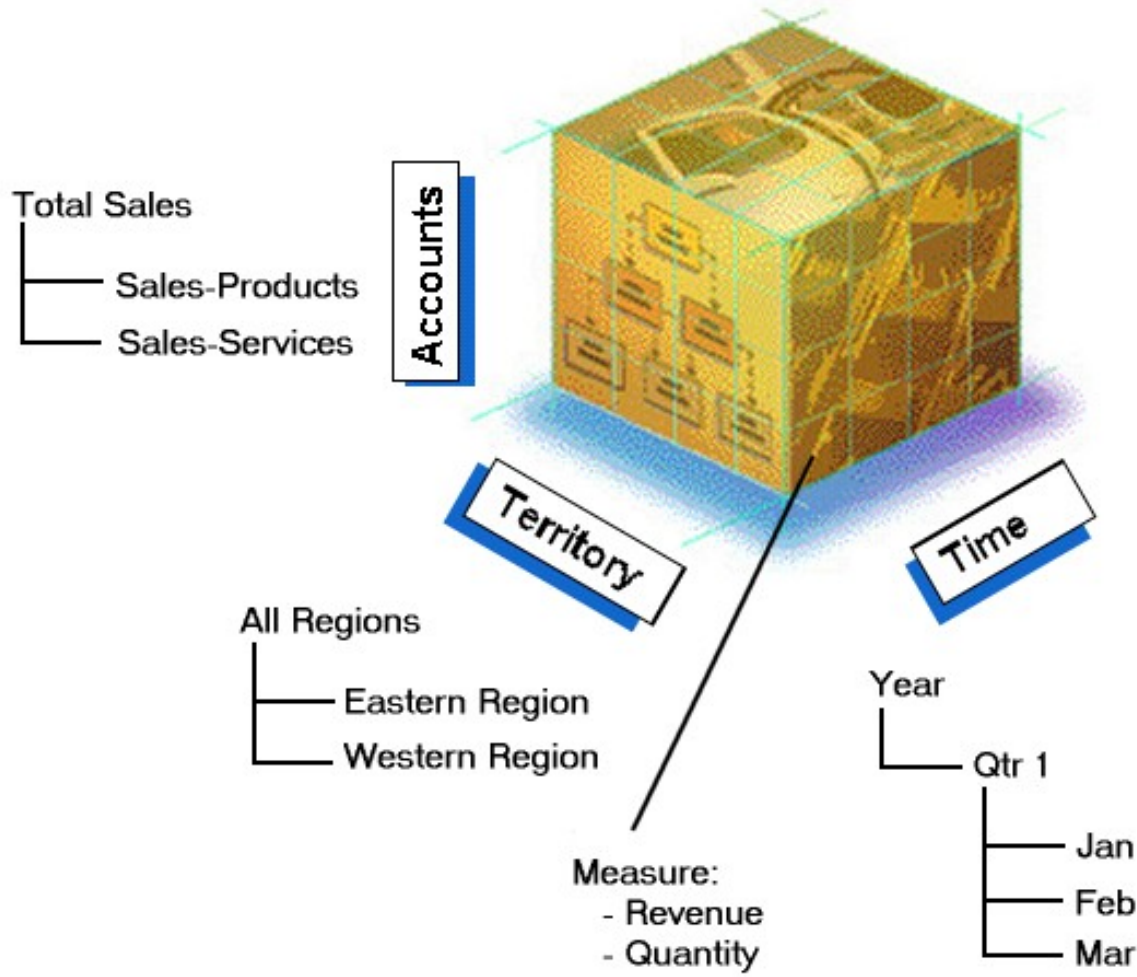
Reporting (NAV tools or JETs)

Main principles (source tables and their entries)

Posting Date	Entry Type	Document Type	Document No.	Item No.	antity	Invoiced Quantity	Remaining Quantity	Sales Amount (Actual)	Cost Amount (Actual)
31.5.2011	Purchase	Purchase Receipt	107044	1908-S		10	10	0,00	40 993,06	0,00

Control parameters
(time, type of products, Costs, Revenue, Area,..)
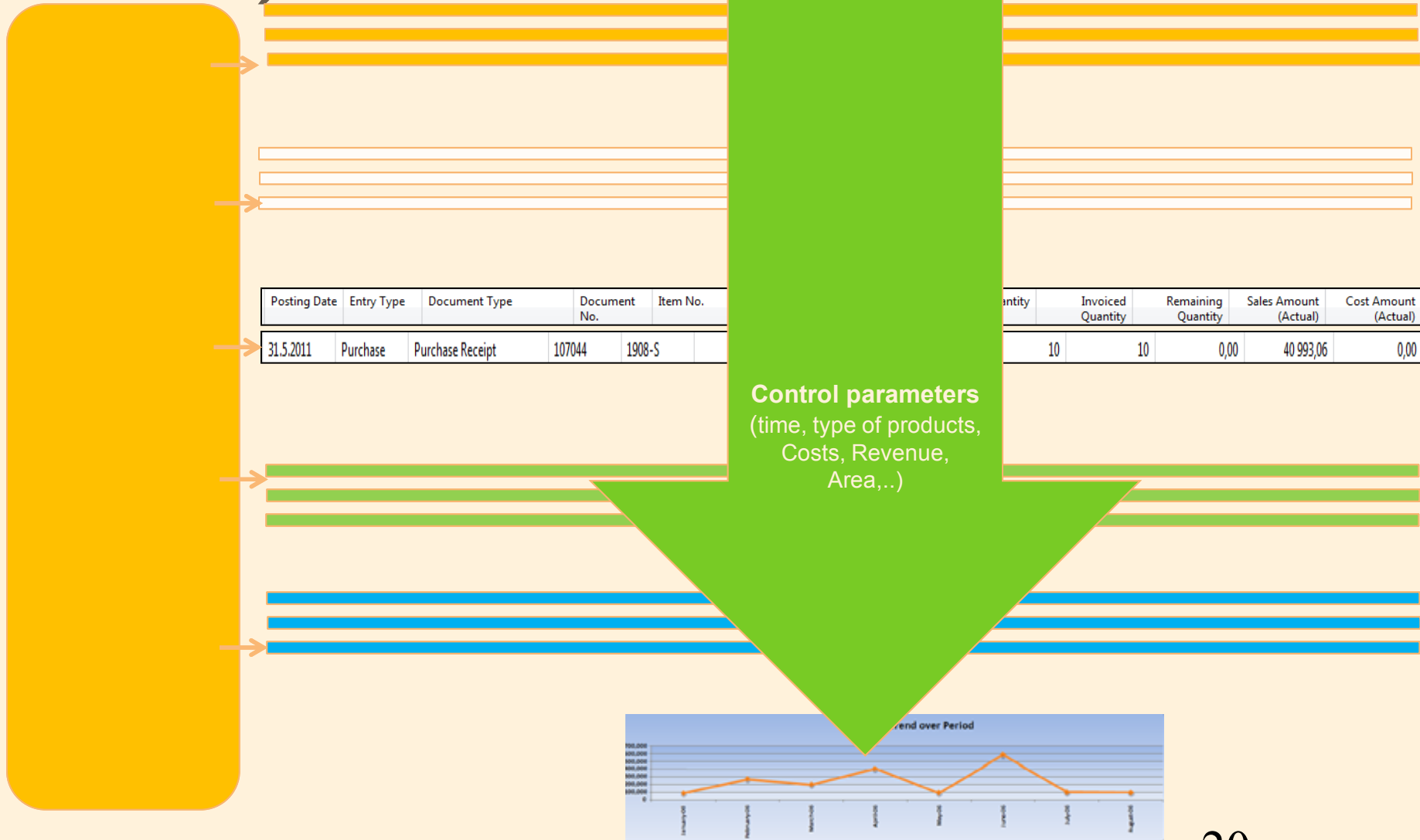
Sales analysis NAv 2016w1-part of CRM

Sales Cycle - Analysis

| |◀| 1 | of 1 | ▶ |▶| | ⊗ | | 🖶 | 🗔 | 📖 | 💾▾ | | 100% | ▾ | | | Find | Next |

Sales Cycle - Analysis   8. November 2017
CRONUS International Ltd.   Page   1
                                                                                            ESF\MIKI

EX-LARGE   Existing customer - Large acc.

Stage	Description	Activity Code	No. of Opportunities	Estimated Value (LCY)	Calcd. Current Value (LCY)	Average No. of Days
1	Initial	INIT	6	3 368 000,00	25 721,00	0
2	Understanding needs meeting	NEEDS	0	0,00	0,00	0
3	Product Presentation/Workshop	P-WORK	0	0,00	0,00	0
4	Proposal	PROPOSAL	0	0,00	0,00	0
5	Sign Contract	SIGN	0	0,00	0,00	0
	Existing customer - Large acc.		6	3 368 000,00	25 721,00	0

EX-SMALL   Existing customer - Small acc.

| Stage	Description	Activity Code	No. of Opportunities	Estimated Value (LCY)	Calcd. Current Value (LCY)	Average No. of Days
1	Initial	INIT	6	14 300,00	2 190,50	0
2	Presentation	P-WORK	1	10 000,00	5 500,00	0
3	Proposal	PROPOSAL	0	0,00	0,00	0
4	Sign Contract	SIGN	0	0,00	0,00	0
	Existing customer - Small acc.		7	24 300,00	7 690,50	0

Some chosen analysis asked by CFO of company X in Czech Republic

○ Working capital – Show of the results from JETs

Working Capital & Current Ratio

Report Date   8/23/2011

2011												
	January	February	March	April	May	June	July	August	September	October	November	December
Current Assets	74,405	(90,939)	(16,110)	136,096	(92,528)	101,144	(155,777)	174,615	(363,170)	1,015	72,525	(72,789)
Current Liabilities	109,902	(62,118)	(14,989)	127,587	(76,890)	78,566	(193,757)	112,467	(376,168)	2,070	79,494	(65,841)
Working Capital	(35,497)	(28,821)	(1,121)	8,508	(15,638)	22,579	37,980	62,148	12,998	(1,055)	(6,969)	(6,948)
Current Ratio	0.68	1.46	1.07	1.07	1.20	1.29	0.80	1.55	0.97	0.49	0.91	1.11
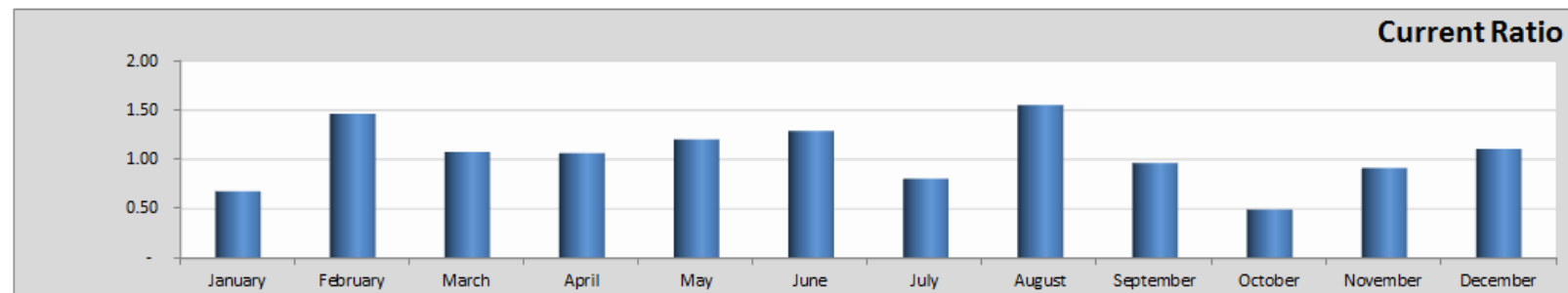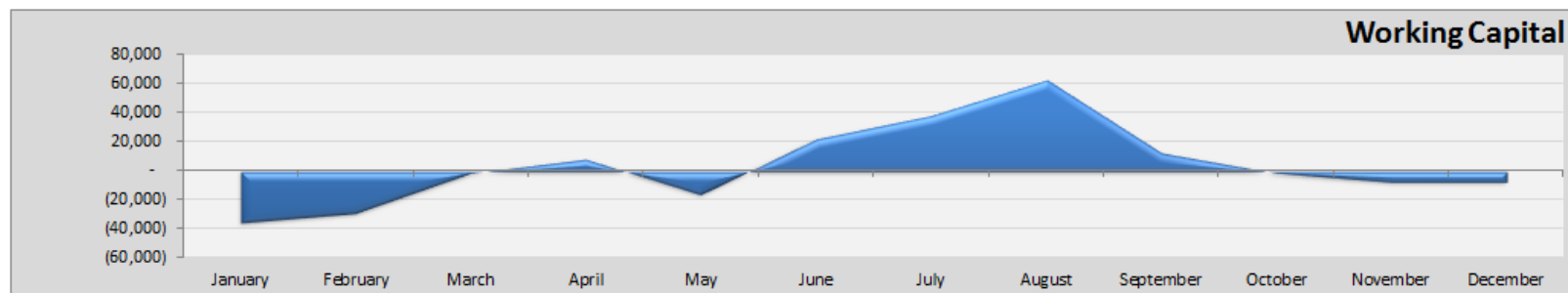
Some chosen analysis asked by CFO of company X in Czech Republic

Inventory - Dashboard
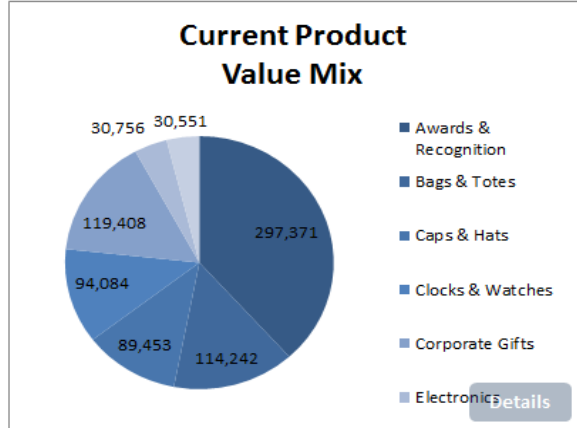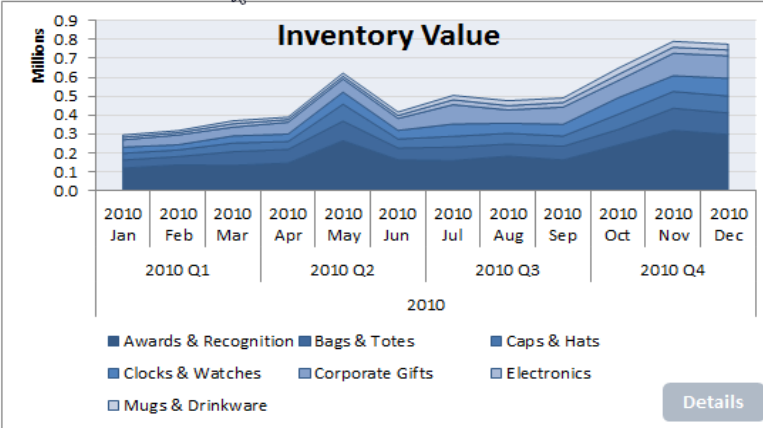
Average Inventory Value	Period	Prev. Yr	Variance	%	Grand Total
⊞ Awards & Recognition	188,840	200,797	-11,957	-5.95%	188,840
⊞ Bags & Totes	72,551	83,459	-10,908	-13.07%	72,551
⊞ Caps & Hats	56,765	63,983	-7,218	-11.28%	56,765
⊞ Clocks & Watches	57,043	63,353	-6,310	-9.96%	57,043
⊞ Corporate Gifts	73,856	81,520	-7,664	-9.40%	73,856
⊞ Electronics	19,293	18,451	842	4.56%	19,293
⊞ Mugs & Drinkware	19,052	16,732	2,320	13.86%	19,052

23
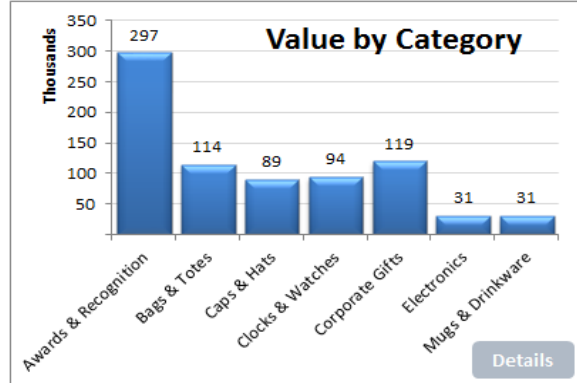
Some chosen analysis examples (JETs)
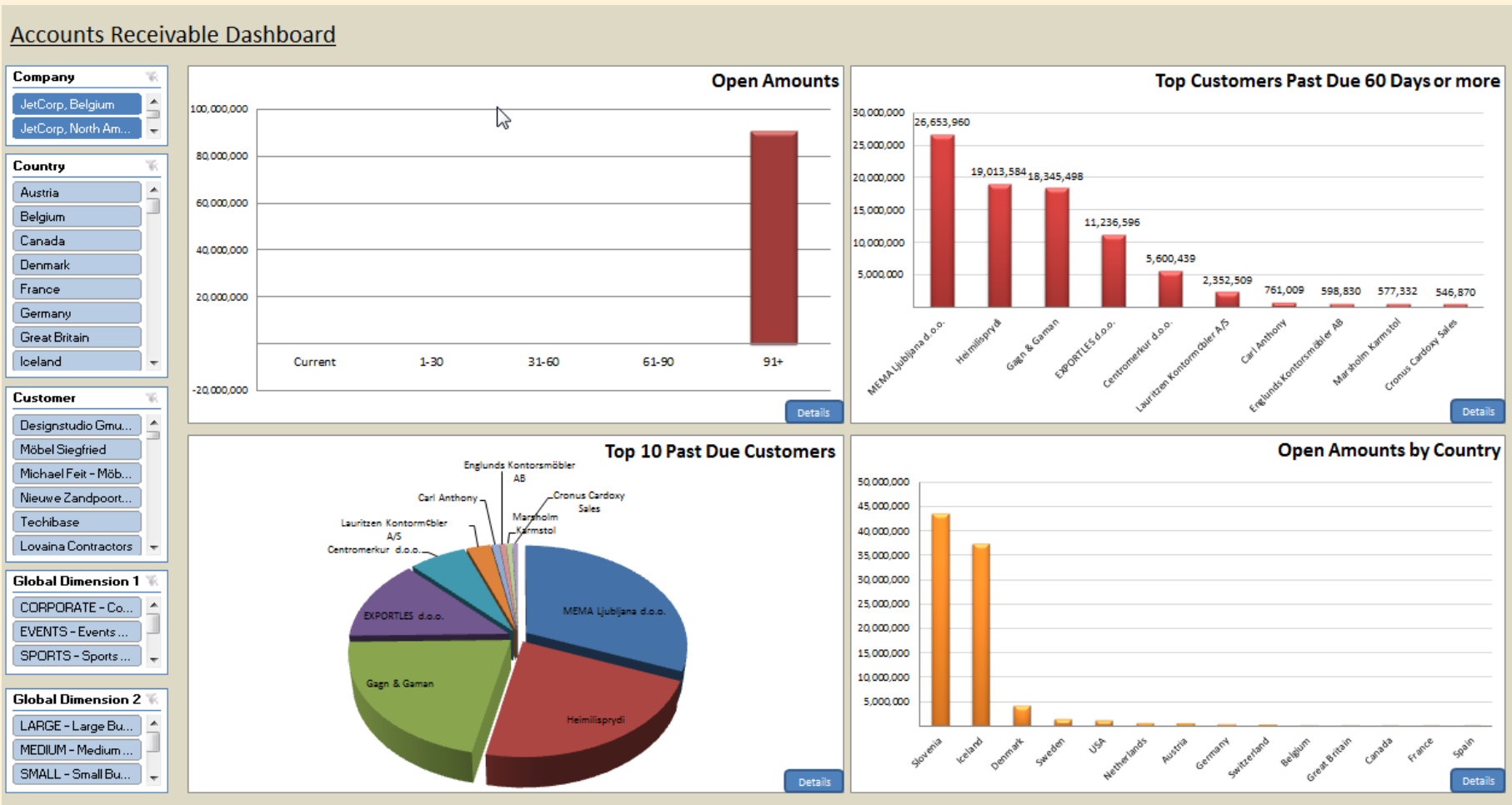
On-line Transaction Processing and OLAP

	OLTP	OLAP
users	clerk, IT professional	knowledge worker
function	day to day operations	decision support
DB design	application-oriented	subject-oriented
data	current, up-to-date detailed	historical, summarized, multidimensional integrated, consolidated
usage	repetitive	ad-hoc
access	read/write index/hash on primary key	lots of scans
unit of work	short, simple transaction	complex query
# records accessed	tens	millions
#users	thousands	hundreds
DB size	100MB-GB	100GB-TB
metric	transaction throughput	query throughput, response

Terminoly - metadata

- Meta data is the data defining warehouse objects. It has the following kinds
  - Description of the structure of the warehouse (location, dimension, used schema..)
  - The algorithms used for summarization
  - Business data (business terms and definitions, ownership of data)

Business Intelligence Architecture
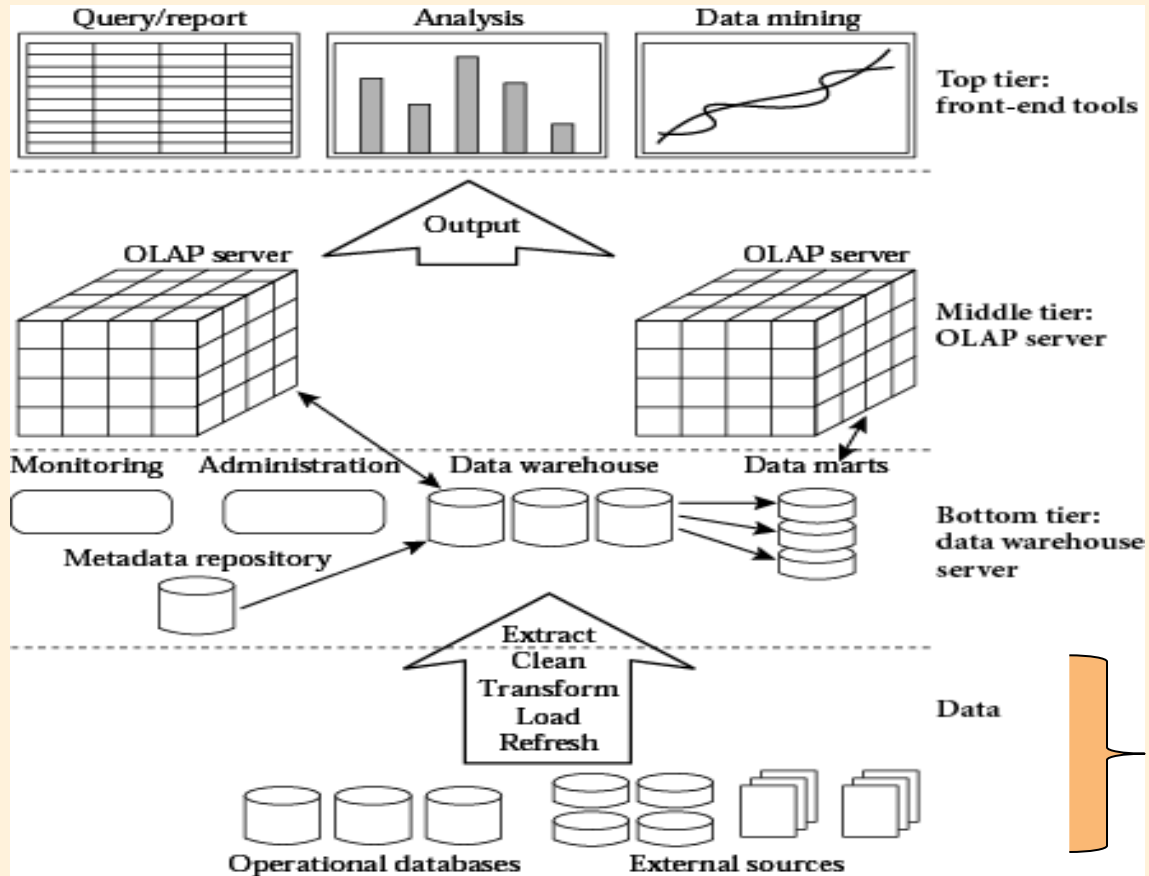
Database→ Data Warehouse->OLAP server->Reporting