OLAP

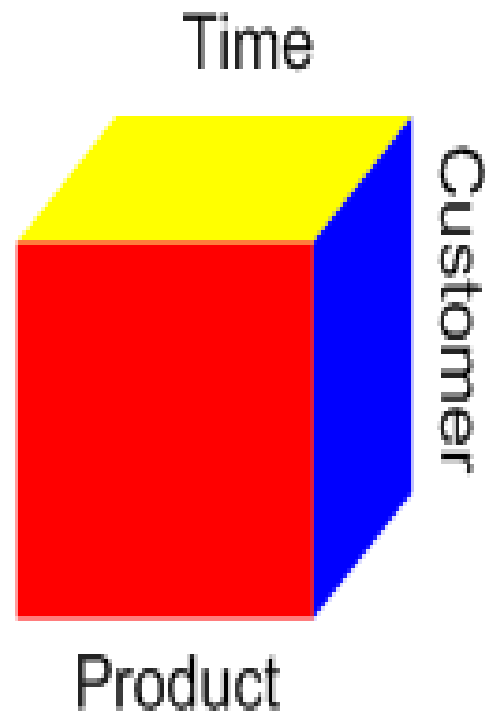**O**n-**L**ine **A**nalytical **P**rocessing

What is OLAP?

- **OLAP** is computer processing that enables a user to easily and selectively extract and view data from different points of view.

- OLAP is actually a **multidimensional database** which considers each data attribute (such as **product**, **geographic sales region**, and **time period**) as a separate **"dimension"**. OLAP software can locate the intersection of dimensions (all products sold in the Eastern region above a certain price during a certain time period) and display them. Attributes such as time periods can be broken down into sub attributes.

- For example, a user can request that data be analyzed to display **a spreadsheet showing all of a company's beach ball products sold in Florida in the month of July, compare revenue figures with those for the same products in September, and then see a comparison of other product sales in Florida in the same time period.** To facilitate this kind of analysis, OLAP data is stored in a multidimensional database.

- Data Refresh happens **from OLTP system to OLAP system**

Let's play cube!!??

OLAP Cube with Time, Customer and Product Dimensions
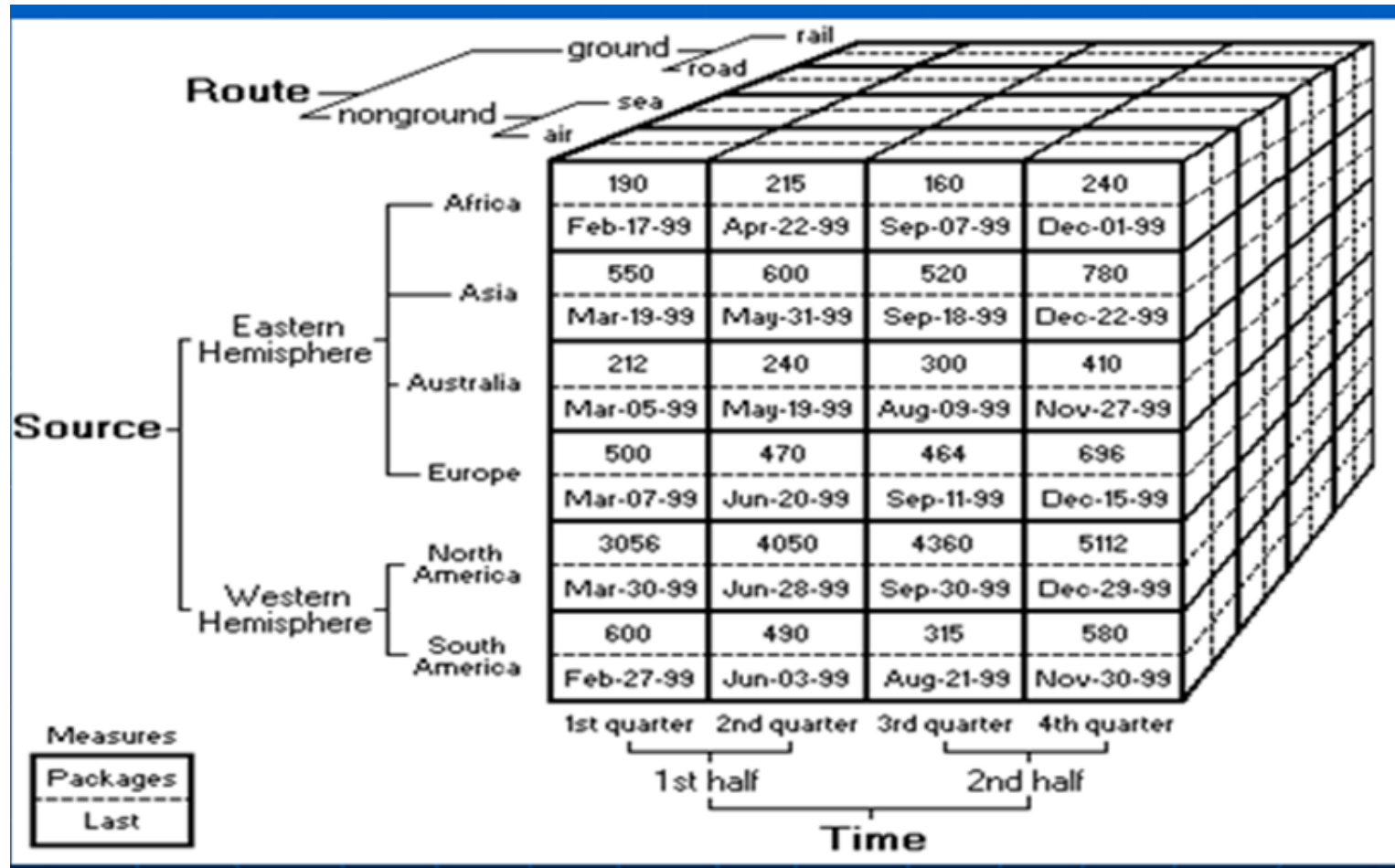
A complete Cube

Table vs Cube

➢ A simplified example:

A typical relational table

Data are organized by rows

Sales table

Product	Region	Sales $
Donut	East	1
Donut	West	2
Milk	East	3
Milk	West	4

Make it into a cube

Data are organized by intersections

Region dim

	East	West	Total
Donut	1	2	3
Milk	3	4	7
Total	4	6	10

Product dim

Country

France
Canada
Australia

Time

January
February
March
April
May

$6,745

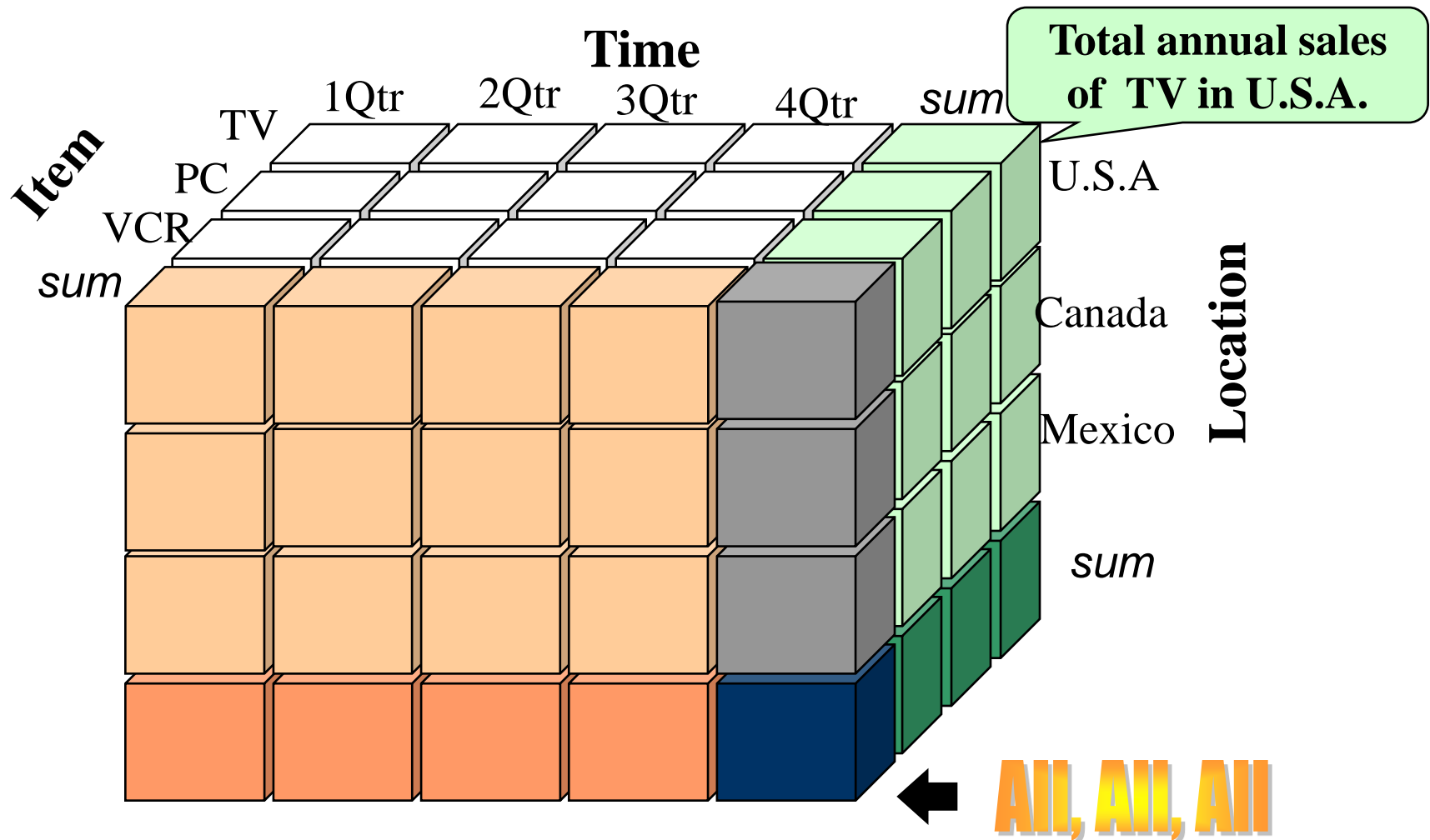"For *Australia*, show me the *Sales* for *February*"

Qty Budget Cost **Sales**

A Sample Data Cube

Total annual sales of TV in U.S.A.

Time

1Qtr 2Qtr 3Qtr 4Qtr *sum*

Item

TV PC VCR *sum*

U.S.A Canada Mexico *sum*

Location

All, All, All

OLAP for a Business Man --

For people on the business side, the key feature within interrelated data is "Multidimensional." In other words, the ability to analyze metrics in different dimensions such as time, geography, gender, product, etc.

For example, sales for the company is up.

➢ Which region is most responsible for this increase?

➢ Which store in this region is most responsible for the increase?

➢ What particular product category or categories contributed the most to the increase?

Answering these types of questions**, in order**, means that you are performing an **OLAP** analysis.

➢ **OLAP** is more suitable or relevant for top management team like CEO, MD, Board of Directors & Investors.

Major vendors of OLAP

- Oracle -- Essbase (Hyperion)
- OBIEE
- SAS
- Microstrategy
- Business Objects
- SSAS
- And many more…..

OLAP & Data Visualization

- All the analysis done through OLAP tools can be seen visually using Data Visualization tools.

- **Power BI** is one of the Data Visualization tool for this purpose.