DAX for creating tables and columns

DAX FUNCTIONS IN POWER BI

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DAX stands for data analysis expressions

- DAX is a formula expression language used in multiple Microsoft analytics tools

- DAX formulas include functions, operators and values to perform advanced calculations

- DAX formulas are used in:
  - **Measures**

  - **Calculated columns**

  - **Calculated tables**

  - Row-level security

The power of DAX

- It opens up new capabilities:
  - Joins, filters, measures, and calculated fields become part of your toolbox

- DAX + Power Query = a powerful data analysis tool:
  - Dive deeper into the data and extract key insights

  - Use DAX for rapid prototyping

Measures vs calculated columns

Calculated Columns:

- Calculated on data import

- Visible in Table and Report view

```
COST = Orders[Sales] - Orders[Profit]
```

Order_ID	Sales	Profit	Cost
3151	$77.88	$3.89	$73.99
3152	$6.63	$1.79	$4.84
3153	$22.72	$10.22	$12.50
3154	$45.36	$21.77	$23.59

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Measures:

- Calculated at query run-time

- Visible only in report pane

`Total Sales = SUM(Orders[Sales])`

Region	Total Sales
Central	$501,239.89
East	$678,781.24
West	$391,721.91
South	$725.457.82
Total	**$2,297,200.86**

Context allows you to perform dynamic analysis

There are three types of context: row, query, and filter context

- Row context: (1)
  - "The current row"

  - DAX calculated columns

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- Query context: (2)
  - Refers to the subset of data that is implicitly retrieved for a formula

  - Controlled by slicers, page filters, table columns and row headers

  - Controlled by chart/visual filters

  - Applies after row context

Context allows you to perform dynamic analysis

- Query context: (2)
  - *Example:* Filter data by Region.

Region	Total Sales
Central	$501,239
East	$678,781
West	$391,721
South	$725.457

- Query context: (2)
  - *Example:* Filter data by State.

State	Total Sales
Alabama	$13,724
Arizona	$38,710
Arkansas	$7,669
California	$381,306

Context allows you to perform dynamic analysis

There are three types of context: row, query, and filter context

- Filter Context: (3)
  - The set of values allowed in each column, or in the values retrieved from a related table
  - By using arguments to a formula or by using report filters on row and column headings
  - Applies after query context
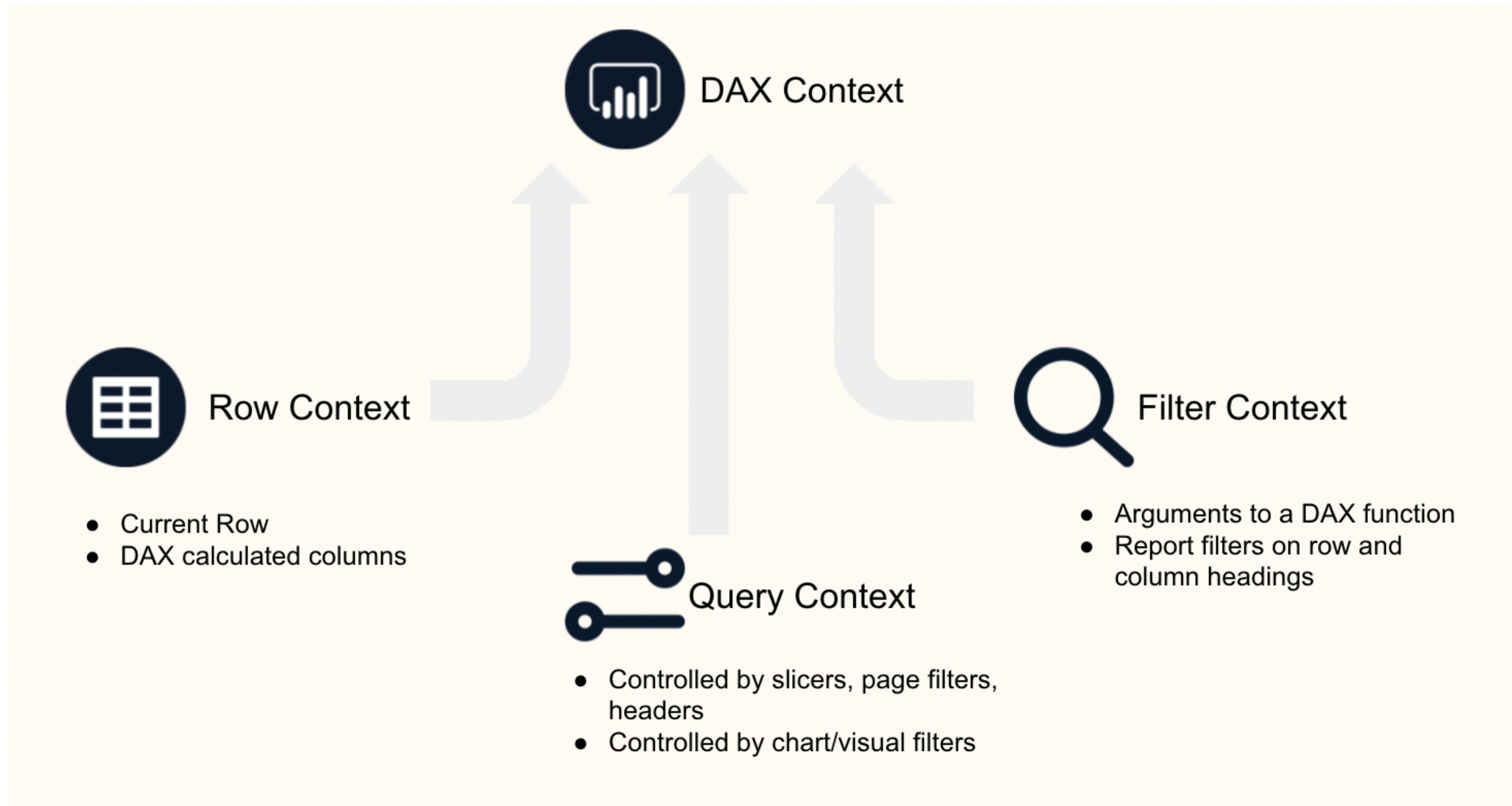
Context allows you to perform dynamic analysis

There are three types of context: row, query, and filter context.

- Filter Context (3)

```
Total Costs East = CALCULATE([Total Costs], Orders[Region] = 'East')
```
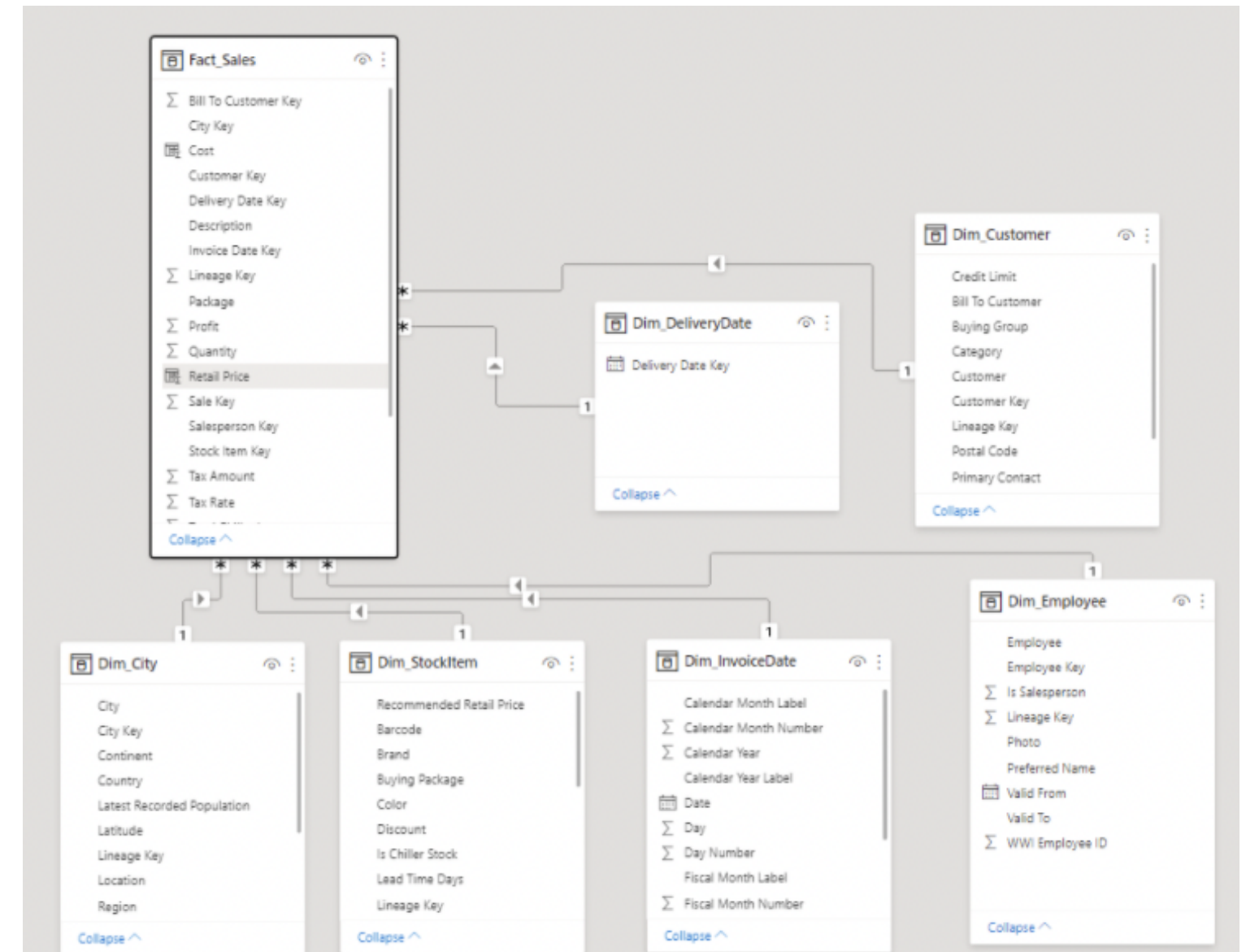
Region	Total costs	Total costs East
Central	$617,039	
East	$587,258	$587,258
West	$461,534	
South	$344,972	
Total	**$2,010,804**	**$587,258**

Context in a nutshell

DAX Context

Row Context
- Current Row
- DAX calculated columns

Query Context
- Controlled by slicers, page filters, headers
- Controlled by chart/visual filters

Filter Context
- Arguments to a DAX function
- Report filters on row and column headings

World wide importers dataset

- A fictitious wholesaler who imports and distributes novelty goods

- The dataset consists of:
  - A fact table that detailing sales transactions
  - Multiple other dimension tables:
    - Dates
    - Customers
    - Cities
    - Employees
    - Stock Items

Let's practice!

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