

# 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 data & report Pane

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

Order_ID	Sales	Pofit	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
<b>Total</b>	<b>\$2,297,200.86</b>

# 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

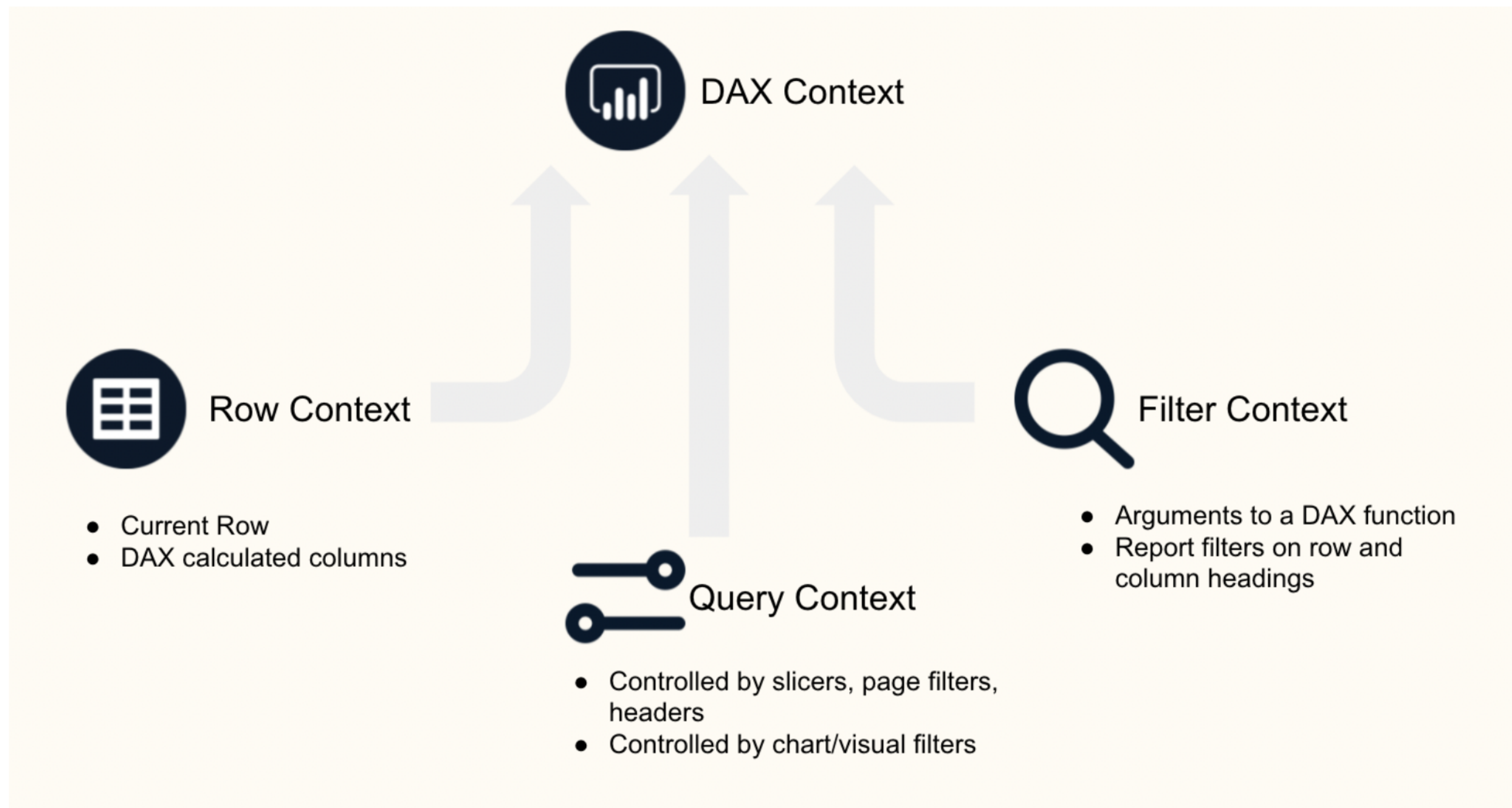
There are three types of context: row, query and filter context.

- Filter Context (3)

```
Total Costs East = CALCULATE([Total Costs], Orders[Region] = 'East')
```

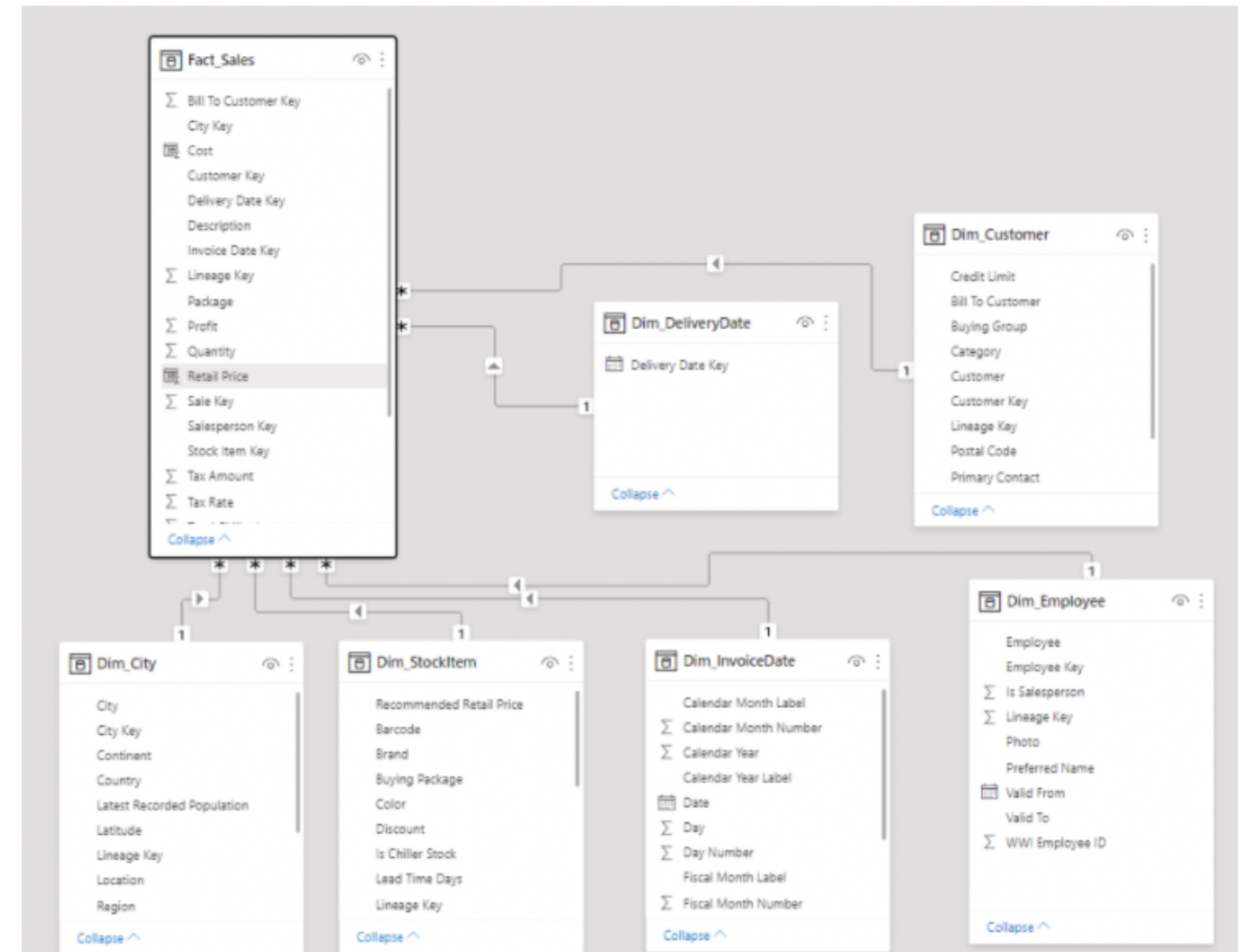
Region	Total costs	Total costs East
Central	\$617,039	
East	\$587,258	\$587,258
West	\$461,534	
South	\$344,972	
<b>Total</b>	<b>\$2,010,804</b>	<b>\$587,258</b>

# Context in a nutshell



# 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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# DAX for calculated tables and columns

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