

Data Warehouse Cheatsheet

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1 Business Intelligence

Components

Business Intelligence encompasses

- OLAP
- Analysis
- Data Mining
- Project Organisation

Analysis

cyclic	Frequent analyses as part of a workflow (e.g. quarterly financial reports).
ad-hoc	One-off analyses to gather situationally dependent data.

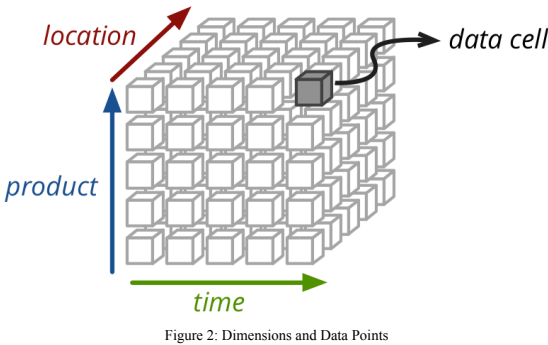
System Architecture

```
graph LR; OS[Operational System] -- ETL --> DW[Data Warehouse]; DW <--> OLAP[OLAP System]; SC[Staging Cleansing] --> DW;
```

Figure 1: Data Pipeline

2 OLAP

OLAP Systems are the database frontend that communicates with the Data Warehouse.



- Risks
- Incomplete Dimensions
 - Wrong Data
 - Gaps in data
 - Duplicate data (or lack of a single source of truth)
 - Confusing correlation and causation
 - Privacy Violations

3 Data Dimensions

All data points are points in a space spanned by the dimensions. Dimensions often include time, space or products. A point then, is set of numbers that fully cover all dimensions.

3.1 Information Schemas

Star Schema

- Every Dimension has one table, connections via Foreign Key Relations
- One table for facts
- Facts reference dimensions

```
graph LR; FT[Facts Table] --- D1[Dimension 1 Table]; FT --- D2[Dimension 2 Table]; FT --- D3[Dimension 3 Table]; FT --- D4[Dimension 4 Table];
```

Figure 3:

Snowflake Schema

- Like Star Schema, but Dimensions can have hierarchies

```
graph LR; FT[Facts Table] --- D1[Dimension 1 Table]; FT --- D2[Dimension 2 Table]; FT --- D3[Dimension 3 Table]; FT --- D4[Dimension 4 Table]; D1 --- D11[Dimension 1.1 Table]; D1 --- D12[Dimension 1.2 Table]; D2 --- D21[Dimension 2.1 Table]; D2 --- D22[Dimension 2.2 Table]; D3 --- D31[Dimension 3.1 Table]; D3 --- D32[Dimension 3.2 Table]; D4 --- D41[Dimension 4.1 Table]; D4 --- D42[Dimension 4.2 Table];
```

Figure 4:

4 Abbreviations

OLAP	Online Analytical Processing
ETL	Extract Transform Load

5 References

1. JS Cheat Sheet: <https://htmlcheatsheet.com/js/>
2. HTML Cheat Sheet: <https://htmlcheatsheet.com/>