

# Data Pipelines

## Business & Management

How data gets from source to dashboard, and where it breaks.

*The stages between a source system and a report.*

1

### Extract

Pull from source systems, on a schedule or by event.

2

### Transform

Clean, join, deduplicate, conform definitions.

3

### Load

Into a warehouse. ELT loads first, then transforms.

4

### Model

Business logic: what counts as an active customer?

5

### Serve

Dashboards, reports and applications.

#### WHERE IT BREAKS

A source schema changes silently

A join duplicates rows

Two teams define a metric differently

A failed load leaves yesterday's numbers showing

Show the last-refreshed timestamp on every dashboard. A stale dashboard that looks current is worse than a broken one.