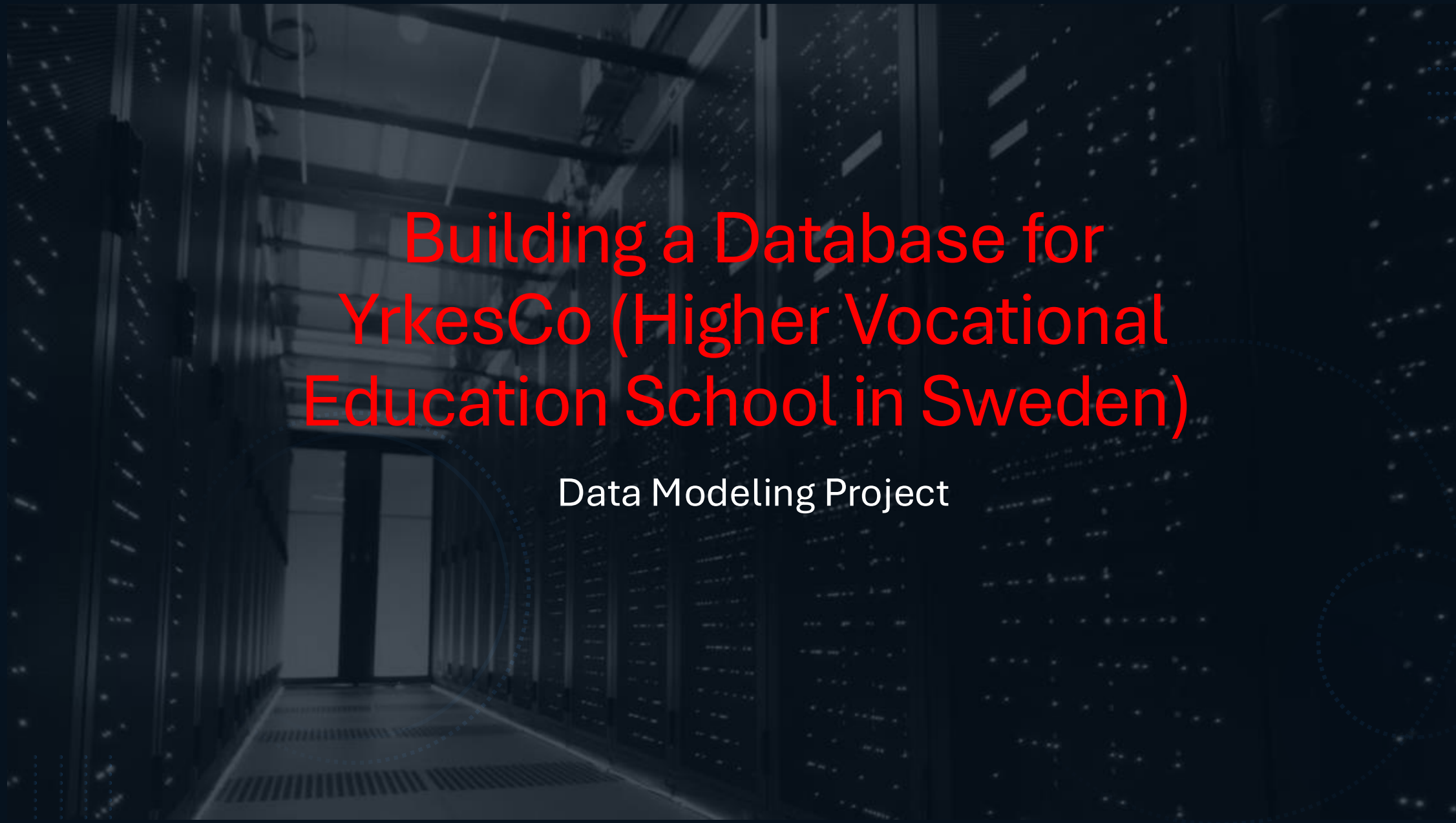


Building a Database for YrkesCo (Higher Vocational Education School in Sweden)

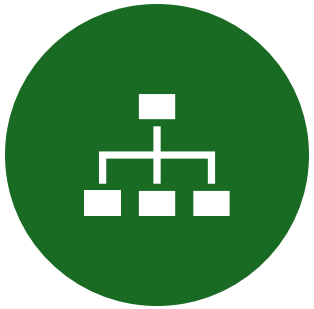
Data Modeling Project

Business Problem

- Multiple Excel files
- Duplicate data / Redundancy
- Hard to maintain consistency
- Limited access control for sensitive data

Proposed Solution: Data Modeling

CENTRALIZED RELATIONAL DATABASE



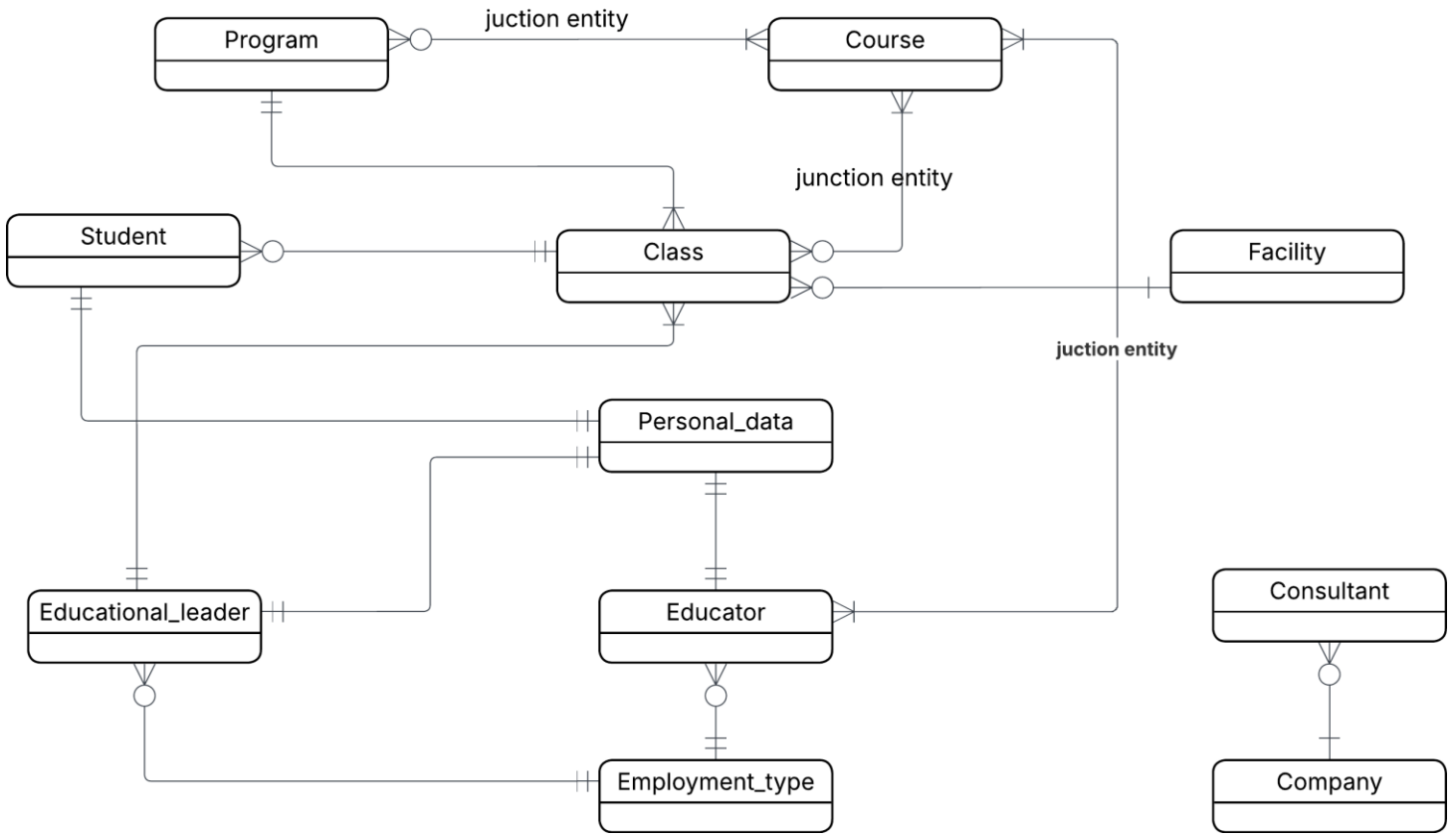
NORMALIZED STRUCTURE

CLEAR OWNERSHIP OF DATA

SCALABLE FOR FUTURE EXPANSION

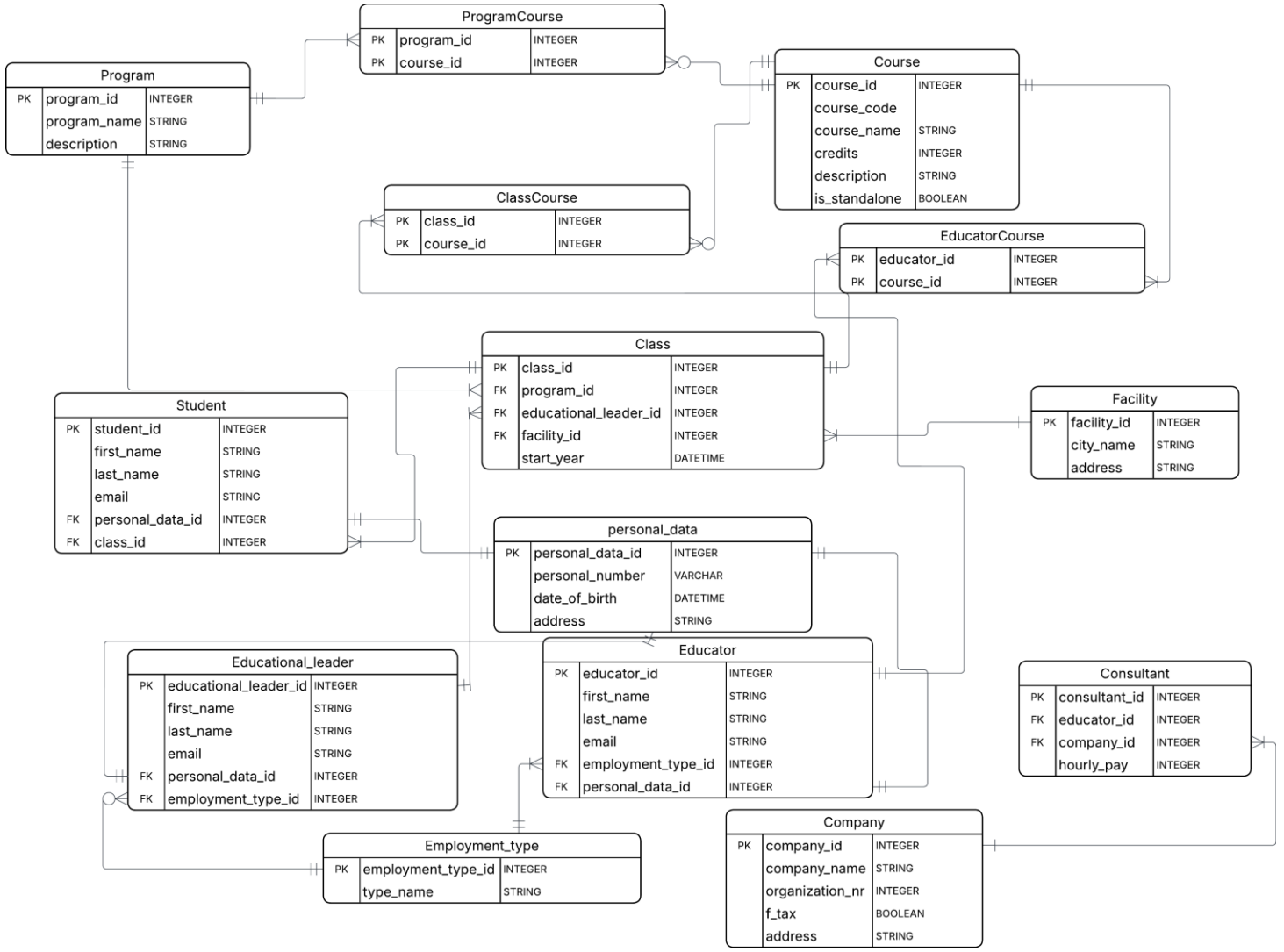
Conceptual Model

- High-level entities
- Visualization without technical implementation
- Focus on business relationships
- Ensures clarity for non-technical stakeholders



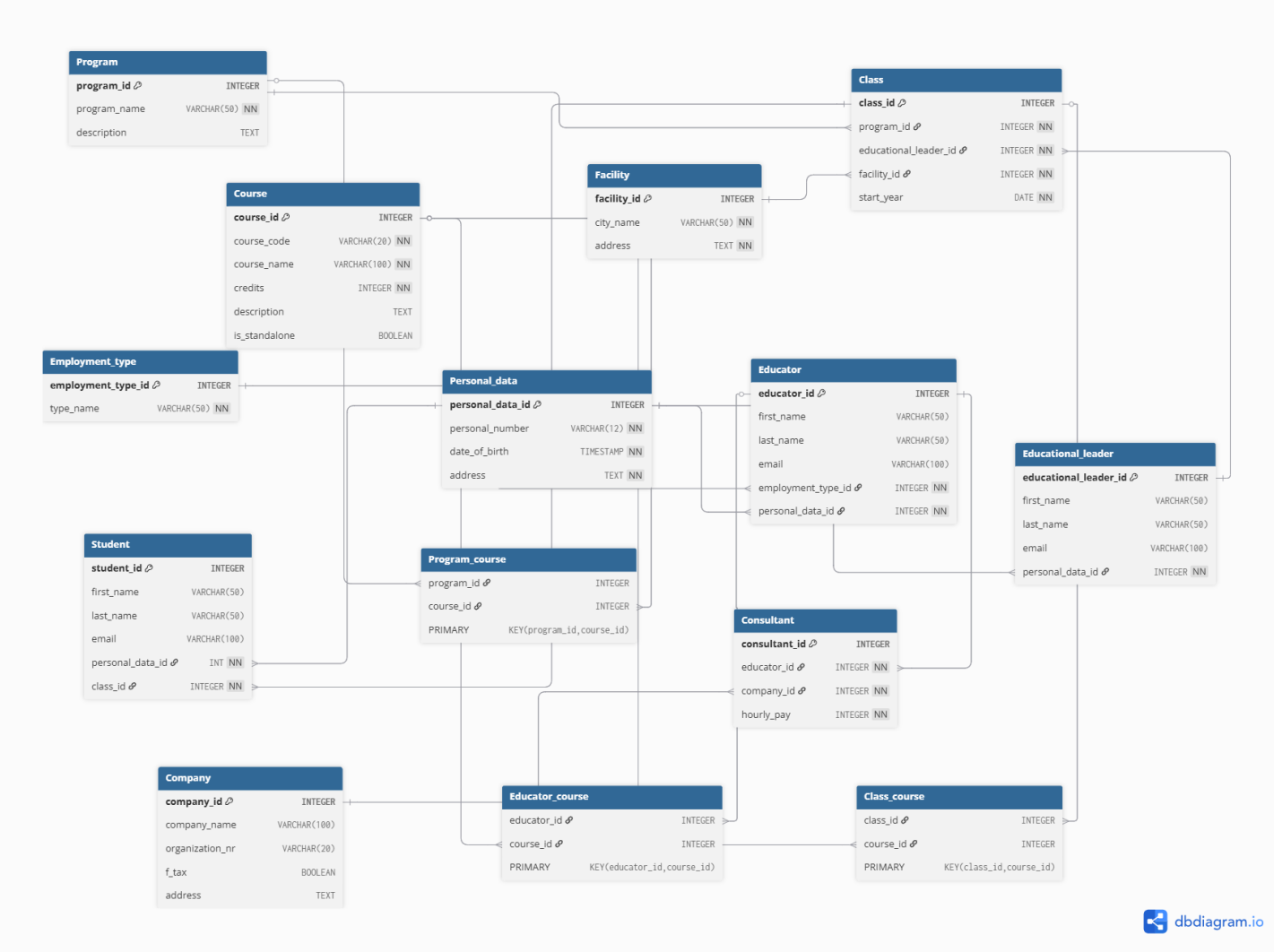
Logical Model

- Attributes, data types and keys added
- Many-to-many relationships resolved
- Junction tables introduced
- Maintains normalization rules



Physical Model

- PostgreSQL implementation
- Keys , data types and column constraints added
- Sensitive data separated
- Full visualization of the database using dbdiagram.io



Normalization (3NF)

1NF: PRIMARY KEY TO EACH TABLE, ATOMIC ATTRIBUTES AND NO REPEATING GROUPS

2NF: FULL DEPENDENCY OF NON-PRIME KEYS ON PK

3NF: NO TRANSITIVE DEPENDENCIES

REDUCED REDUNDANCY

Insert Operations and Example Queries

To test that the DB works as expected in Postgresql using docker .

Correct and fail insert operations for testing/ simple queries

Business Value

Reliable reporting

Improved data quality

Scalabilty

Scalability

The model supports:

Facilities in multiple locations and future expansions

Stand-alone courses

Addition of Permanently employed instructors

Employed and consultant teachers etc.


Data modeling is
the foundation for a
good business
database