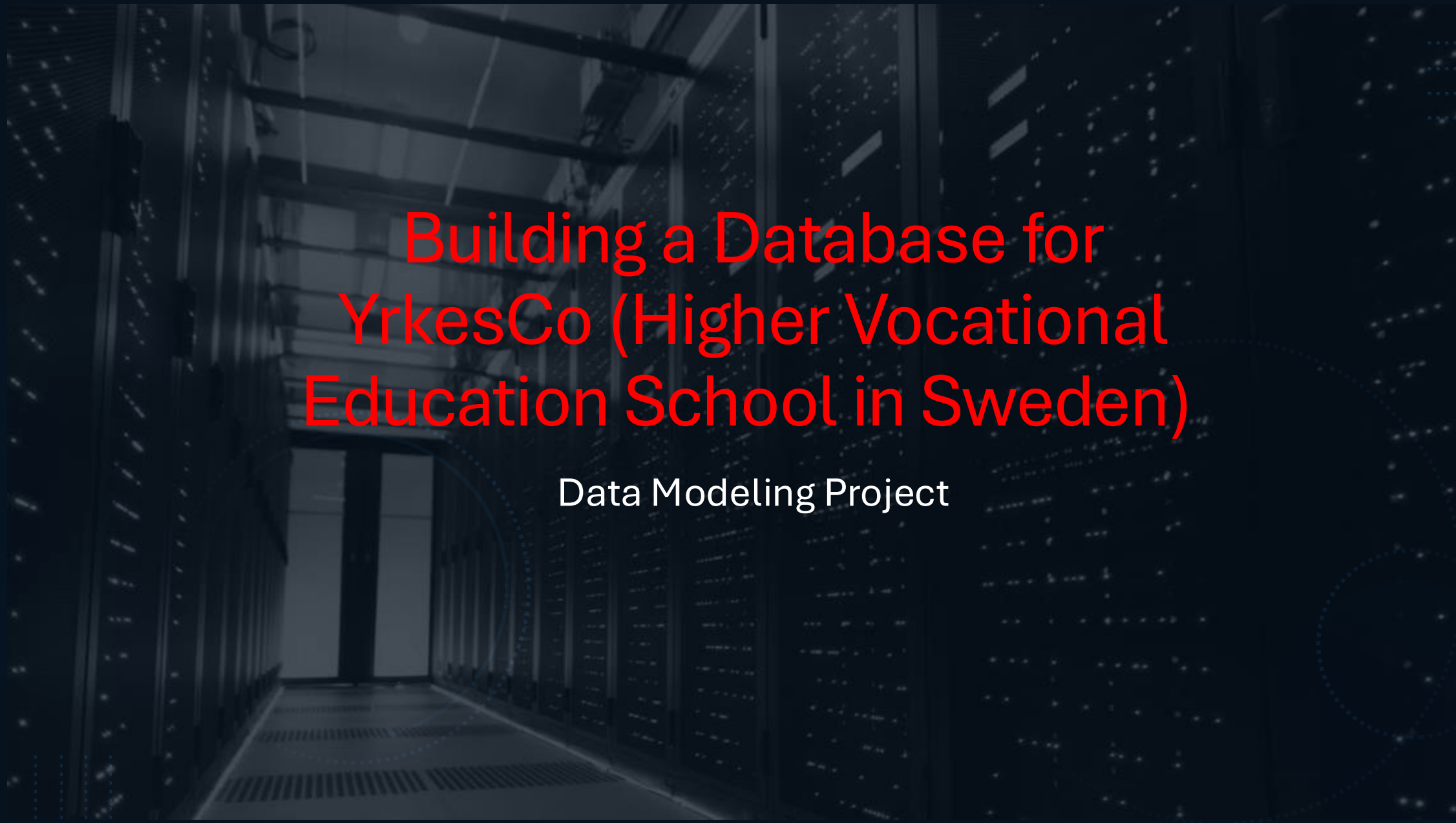


Building a Database for YrkesCo (Higher Vocational Education School in Sweden)

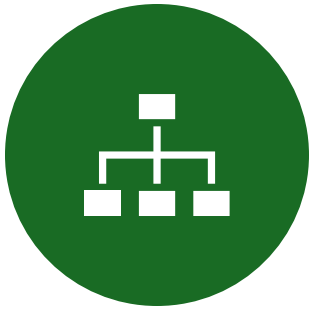
Data Modeling Project

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



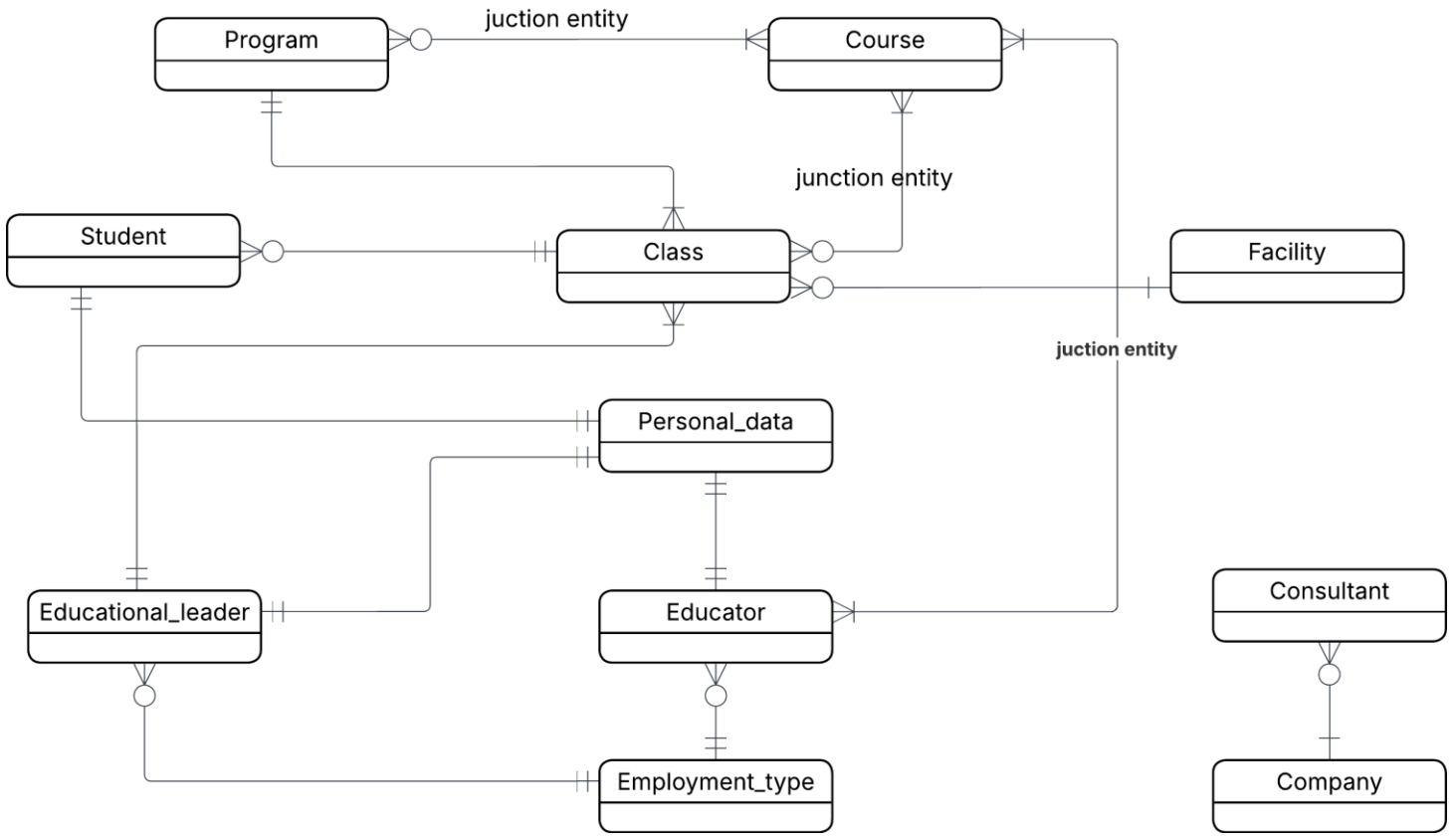
NORMALIZED STRUCTURE

CLEAR OWNERSHIP OF DATA

SCALABLE FOR FUTURE EXPANSION

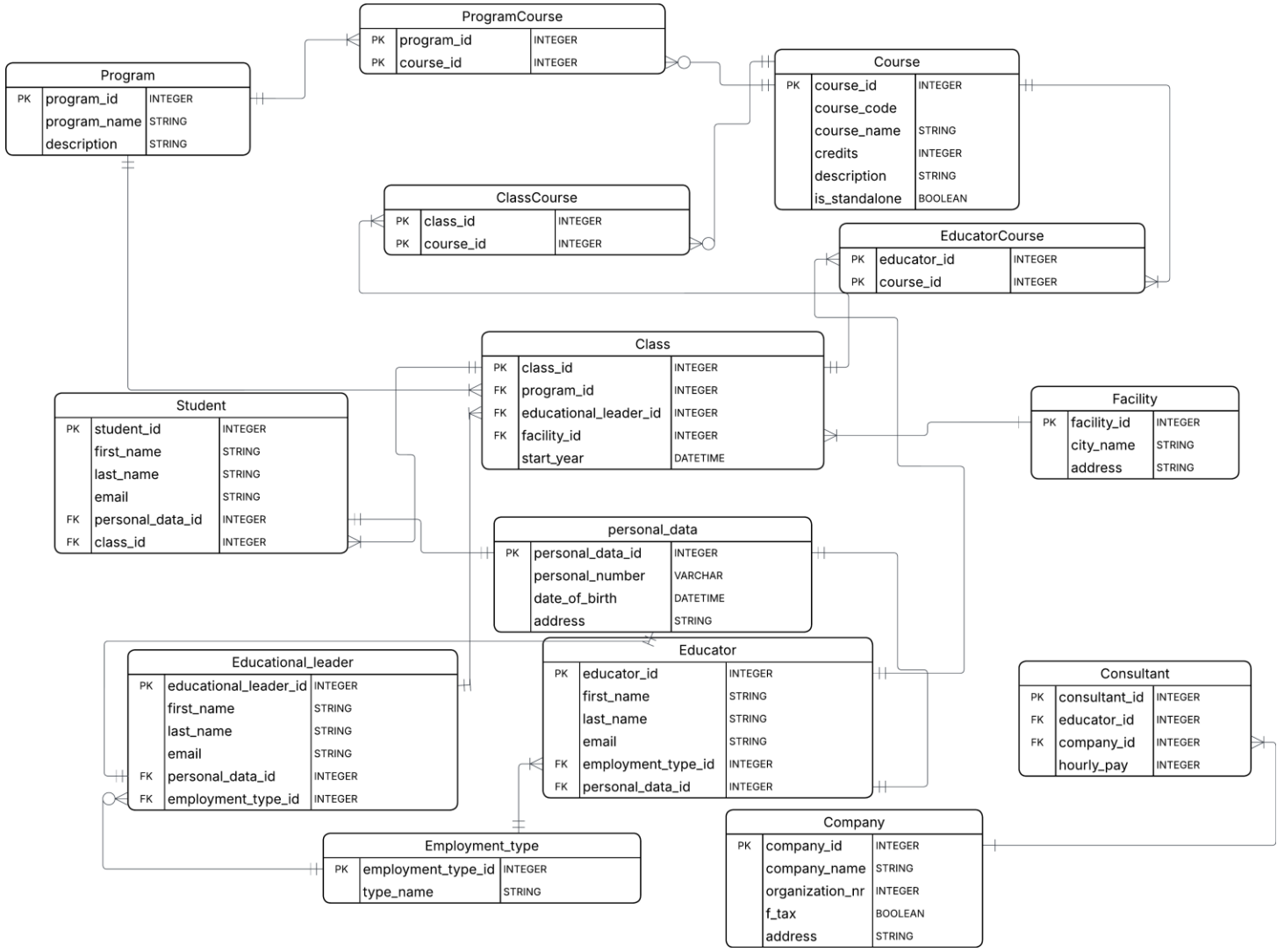
Conceptual Model

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



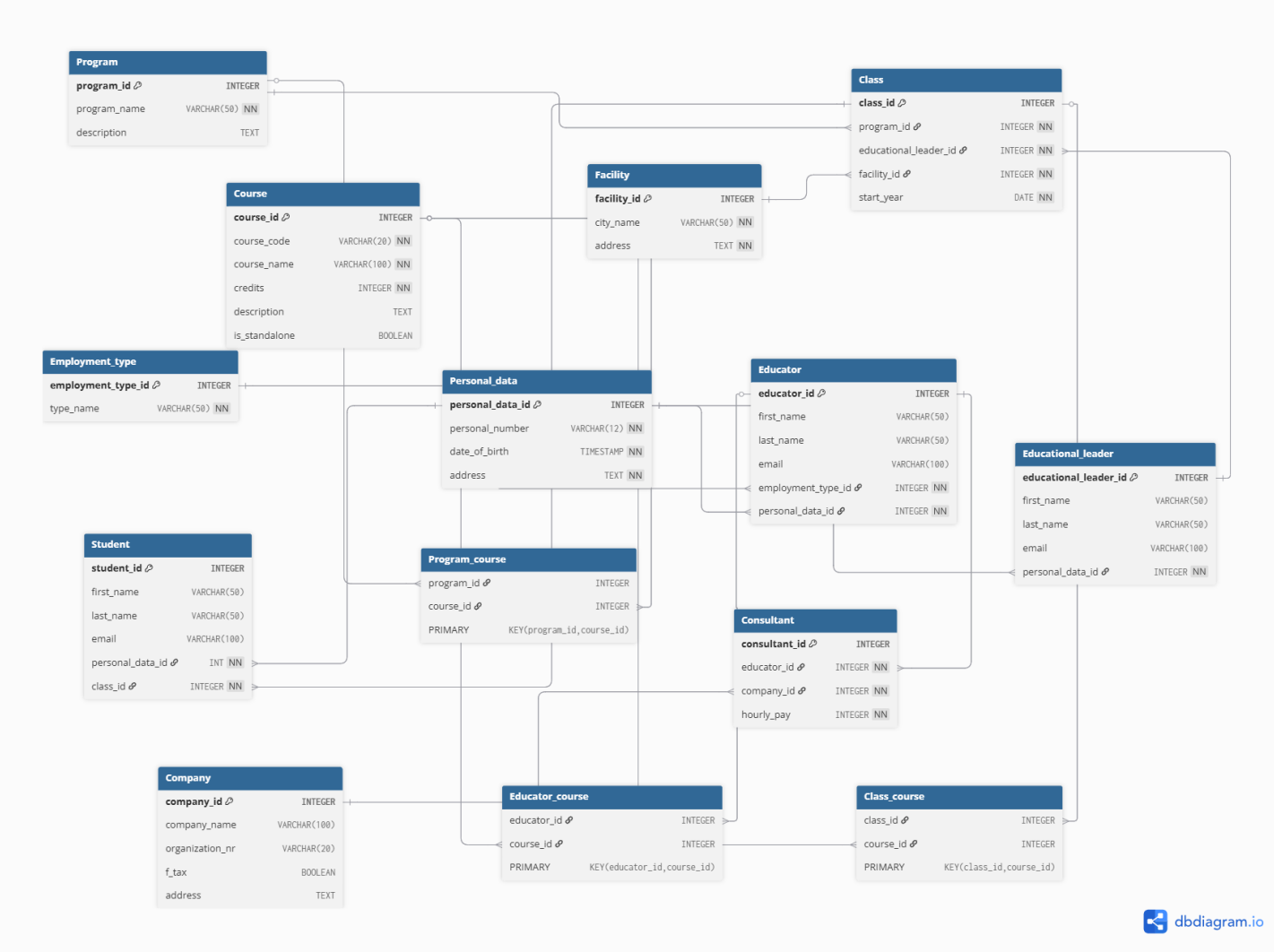
Logical Model

- 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

Correct and fail insert operations for testing

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