

# Phases of Data Modeling & Database Design

- High Level Data Modeling: Obvious, Core Entities (& possibly Attributes)
- Hidden and dependent and Intersection Entities, Attributes & Data Types, Relationships
- Advanced Modeling; Resolve M:M, Exclusivity, Subtypes, Patterns
- Normalization

Database Translation & Mapping:

Choose Implementation Database (Relational, Network, Hierarchical, OO, NoSQL)  
(Mapping - Relational: E-> T, A-> C, R->FK)

Vendor Specific Mapping

Ex: Ora12 – varrays

Nested Tables,

User-defined Data Types

Performance:

Ex: Index, partitions,

Query optimization,

Denormalization

Where to implement

Business rules?

# Where to Implement Business Rules?

## Database:

- Declaratively (Keys: P, F, U)
- Constraints
- Code: PL/SQL Stored Procedures & Functions
- Triggers

## Middle Tier:

- Libraries (locally deployed apps)
- Web Services (interoperability)

## Client Side:

- UI Code

