Enterprise System Architecture

Data Tier

Storage Options

Persistent Store modeled as a tier

- Relational Database
- Object Oriented Database
- Specific purpose storage
Relational Model

Why Relational?
- Well accepted and understood
- Set Theory and Propositional Calculus
- Normalization rules

Data Modeling

Challenges for an enterprise application
- Data Modeling
- Object Relational mapping
- Performance against volume data
- Vendor lock-ins
- Legacy Integration
Data Modeling

- Tables
  - Transaction
  - Metadata
  - Fact
  - Summary
  - History

- Indexes
  - Unique and non-unique
  - Column statistics

- Views
  - Complex views
  - Materialized views

Object-Relational Mapping

Model Tuple as an object

- Use off-the shelf tools
- Built-in support in database
- Code your own mapping
- Use abstractions such as Entity beans
- Challenge is to manage the mapping
Performance

Performance against volume data

- SQL Tuning
  - Any query that does not perform is as good as a query that does not work

- Optimizers
  - Cost Based
  - Rule Based

- Execution plans
- Binding
- Static and Dynamic SQL

Vendor lock-ins

- Procedural Languages
- Database specific advanced features
- Tools
- Lock-ins are not always bad!
Legacy Integration

- Database-to-database integration
- SQL Gateways
- Custom hacks!
- Integration pushed to the business tier