Implementation of UML Schema in Relational Database

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STANDARD

Defines a common view
Based on experience
Enhances creativity

USB

Connects multiple devices
IBM, Intel, Microsoft
“Anyone” can implement it
ISO 19100

ISO/TC 211

Manage geographic Information

“Anyone” can implement it
PROJECT

Has a Data Model

Has Import / export procedure

Has persistence storage

MyProject

ISO19103 (UML profile), ISO19115, ISO19108, ...

ISO19136 (GML)

ISO191?? (RDBM, XML-DB, NoSQL, ..)
Relational Database

- Reliable tools
- Known querying language (SQL)
- Long optimization history
- Transaction

\{ MyUML \} + \{ ??? \} \rightarrow \{ MyStorage \}
MyUML → Not standard → MyStorage
ISO19100 → Not trivial → RelationalDB

Class → Table
Inheritance (single/multiple) → Proprietary solutions/No solutions

Relations → Foreign Keys
Class loops → Circular reference

Constraint → Types, Functions
Property overriding → ??
1) **OO Class**

2) **Inheritance to Composition**

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- **MyUML**
- **Java App**
- **Map file**
- **OO lib**
- **ORM**
- **MyApp**
- **DB**

**680 tables**

**50 active tables with ~500k rows each**

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**ORM**

(Object to Relational Model)
Conclusions

- A general UML to RDBM is feasible
- Performance optimization possible through:
  - DB tools (view, stored procedures)
  - Pre-mapping data types (i.e. TM_Instant family to SQL timestamp)
Thanks!
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Questions?