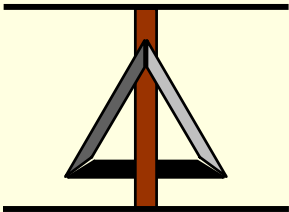


Data Model Patterns: A Metadata Map

East Coast DAMA 2006

David C. Hay

May-June, 2006



Essential Strategies, Inc.

13 Hilshire Grove Lane, Houston, TX 77055

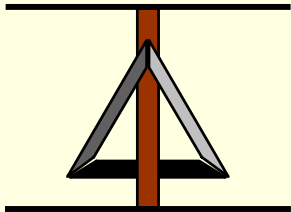
☎ (713) 464-8316

✉ dch@essentialstrategies.com

🌐 www.essentialstrategies.com

*There once was a fellow named Corey
Whose career was not covered in glory
He had a bad day
When he just couldn't say
Metadata Repository.*

Introduction



Essential Strategies, Inc.





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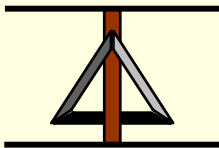
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





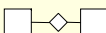
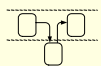

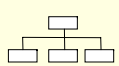



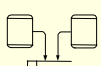
















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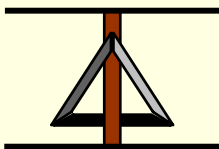
About Metadata . . .

This Book (Meta- metadata)	Elements of metadata (metadata model)	Objects: "Entity Class", "Attribute"	Objects: "Entity Class" "Attribute" "Role"	Objects: "Table" "Column"	Object: "Program module", "Language"
Data Management (Metadata)	Data about a database (a data model)	Entity class: "Customer" Attributes: "Name" "Birthdate"	Entity classes: "Branch", "Employee" Attributes: "Employee.Address" "Employee.Name" Role: "Each Branch must be managed by exactly one Employee"	Table: "CHECKING_ ACCOUNT" Columns: "Account_number" "Monthly_charge"	Program module: ATM Controller Language: Java
IT Operations (Instance Data)	Data about real world things (a database)	Customer Name: "Julia Roberts"; Customer Birthdate: "10/28/67"	Branch Address: "111 Wall Street" Branch Manager: "Sam Sneed"	CHECKING_ ACCOUNT. Account_number: = "09743569" CHECKING_ ACCOUNT. Monthly_charge: "\$4.50"	ATM Controller: Java code
	Real world things	Julia Roberts 	Wall Street branch 	Checking account #09743569 	ATM Withdrawal 



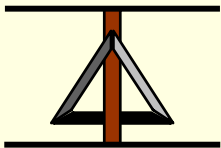
The Architecture Framework . . .

	Data (What)	Activities (How)	Locations (Where)	People (Who)	Time (When)	Motivation (Why)
Objectives / Scope (Planner's view)	List of things important to the enterprise 	List of processes the enterprise performs 	List of enterprise locations 	Organization approaches 	Business master schedule 	Business vision and mission 
Enterprise model (Business Owners' Views)	Language, divergent data model 	Business process model 	Logistics network 	Organization chart 	State / transition diagram 	Business strategies, tactics, policies, rules 
Model of Fundamental Concepts (Architect's View)	Convergent e/r model 	Essential data flow diagram 	Locations of roles 	The viable system, use cases 	Entity Life History 	Business rule model 
Technology Model (Designer's View)	Data base design 	System design, program structure 	Hardware, software distribution 	User interface, security design 	Control structure 	Business rule design 
Detailed Representation (Builder's View)	Physical storage design 	Detailed program design 	Network architecture, protocols 	Screens, security coding 	Timing definitions 	Rule specification program logic 
Functioning System	<i>(Working System)</i>					
	Converted data	Executable programs	Communications facilities	Trained people	Business events	Enforced rules



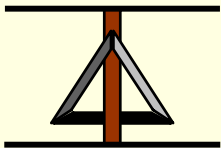
The Rows . . .

- ***Planner's View:*** Scope, Vision, Mission
- ***Business Owner's View:*** The people who do the work
- ***Architect's View:*** Looking for a single, integrated view
- ***Designer's View:*** Using technology to solve problems
- ***Builder's View:*** The nuts and bolts of programming, database administration
- ***The Functioning System:*** Systems as they exist

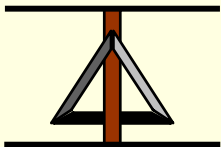
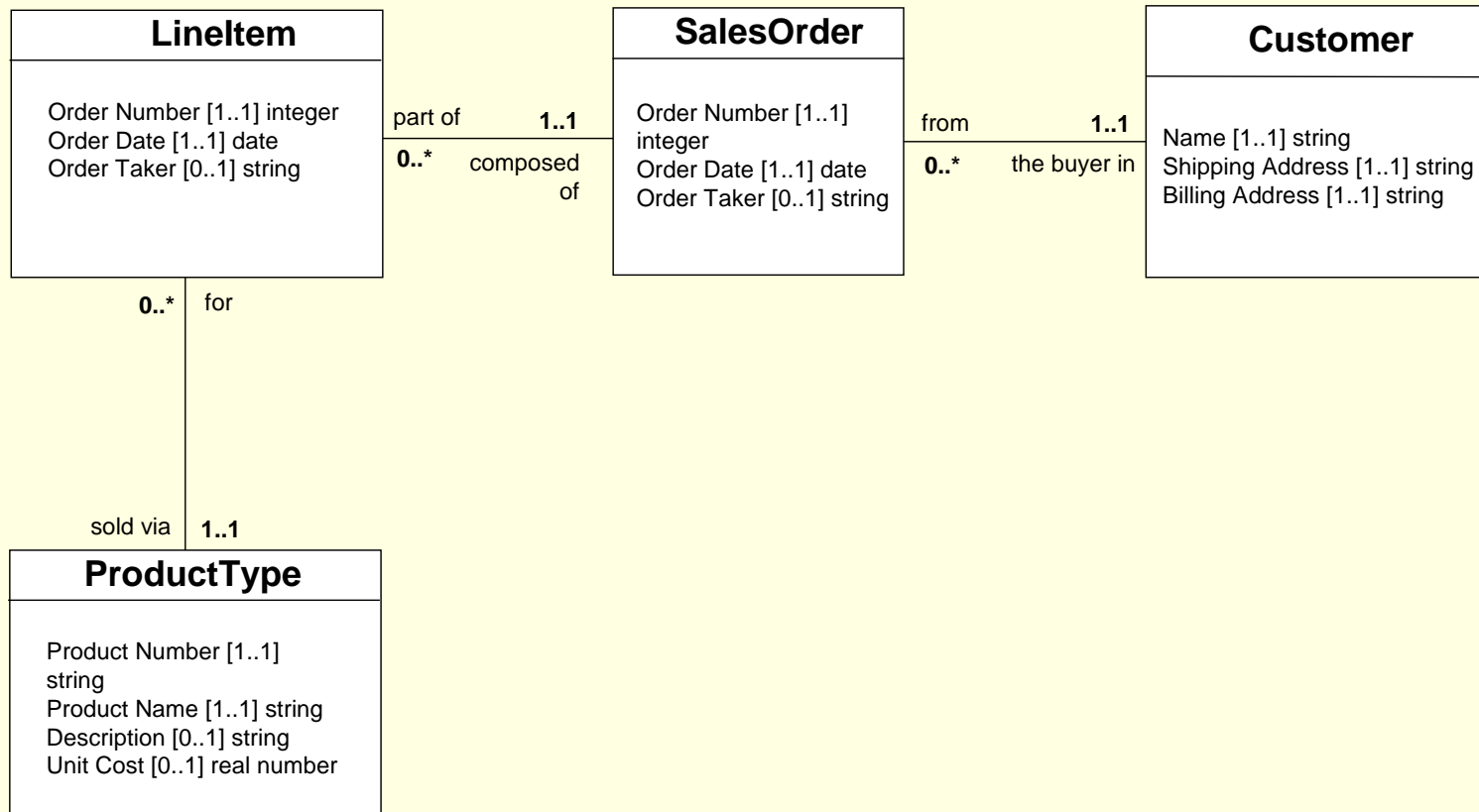


The Columns . . .

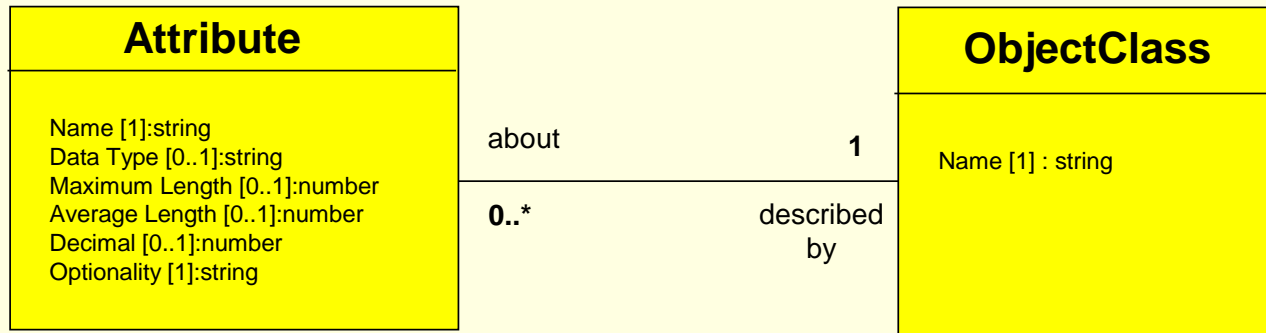
- **Data:** *What* does the enterprise works with?
- **Activities:** *How* does the enterprise do its job?
- **Locations:** *Where* does the enterprise work?
- **People and organizations:** *Who* is involved?
- **Events and timing:** *When* do things happen?
- **Motivation:** *Why* does the enterprise do what it does?



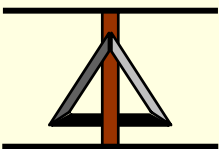
A typical data (object) model . . .



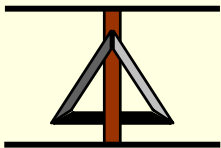
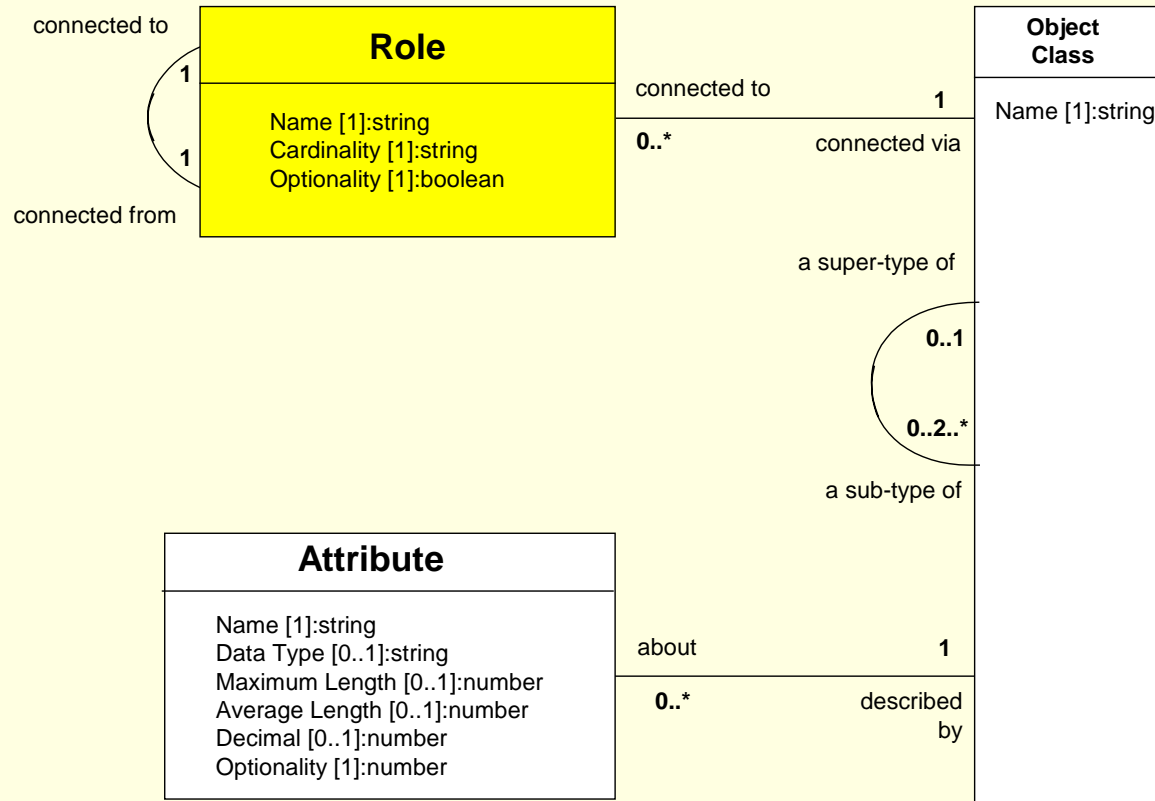
Our first metamodel . . .



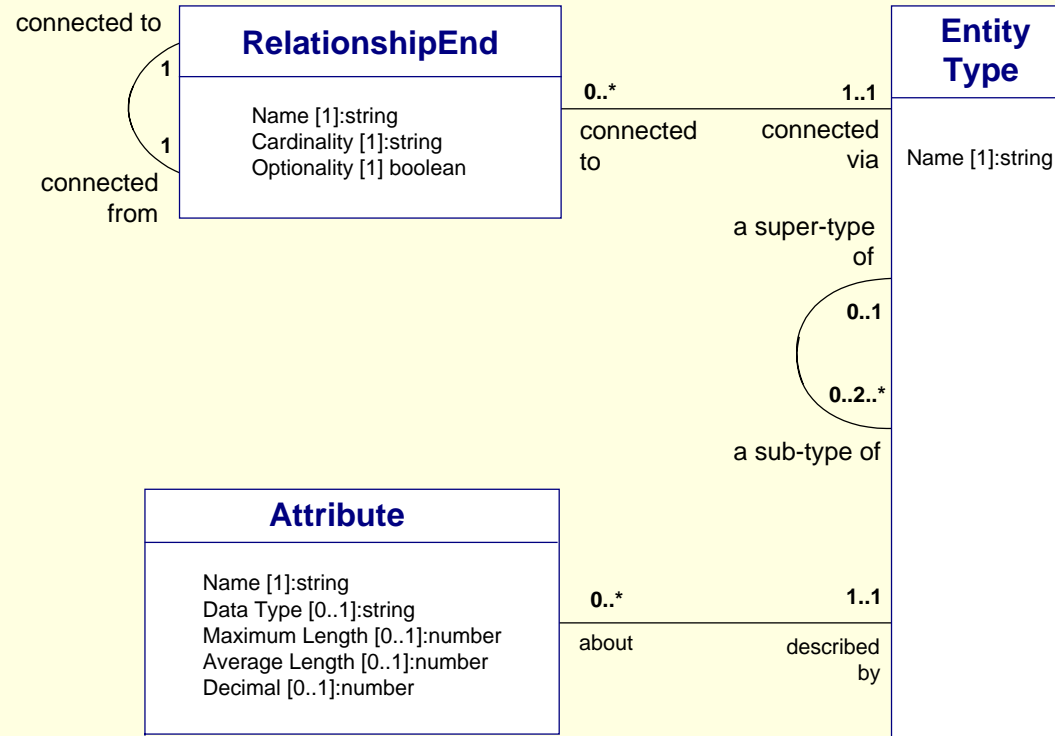
Object Classes	Attributes			
	Object Class (Name)	Name	Data Type	Max. Length
<i>ObjectClass</i>	<i>ObjectClass</i>	<i>Name</i>	<i>String</i>	<i>15</i>
<i>Attribute</i>	<i>Attribute</i>	<i>Name</i>	<i>String</i>	<i>15</i>
	<i>Attribute</i>	<i>Data Type</i>	<i>String</i>	<i>10</i>
	<i>Attribute</i>	<i>Maximum Length</i>	<i>Number</i>	<i>3</i>
	<i>Attribute</i>	...		



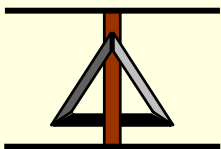
Add Roles . . .



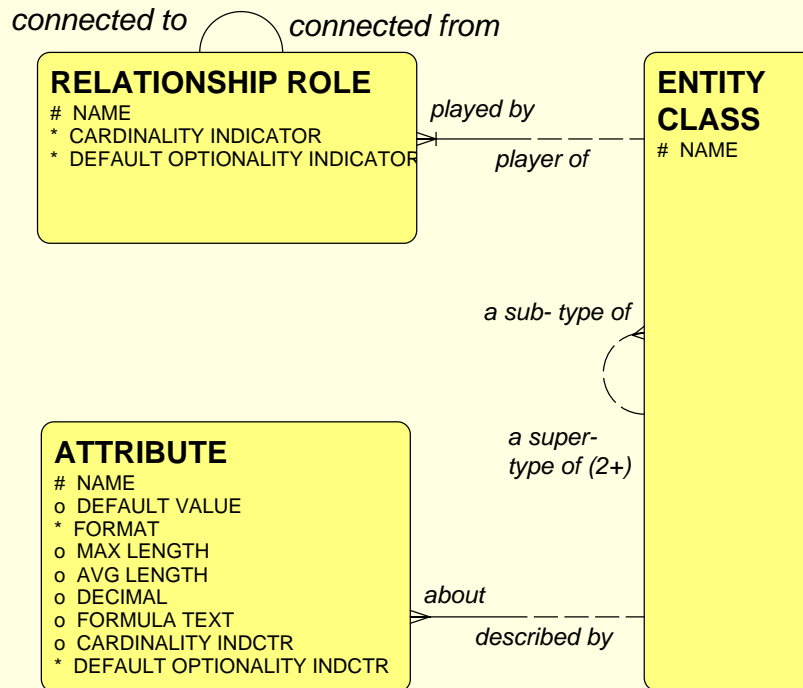
What about an entity / relationship model, instead . . .



Strange...It looks just the same...



Another approach . . .



Each

<entity class 1>

Must be

(or)

May be

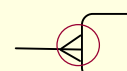
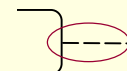
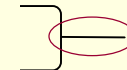
(<relationship name>

One and only one

(or)

One or more

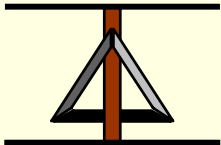
<entity class 2>



For example:

“Each ENTITY CLASS may be *player of* one or more RELATIONSHIP ROLES.”

“Each RELATIONSHIP ROLE must be *played by* one and only one ENTITY CLASS.”



On to the METADATA MODEL . . .

