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CDO Model Repository

A Model Repository for EMF
A Framework for Distributed Shared Models

Agenda

§ EMF basics

- § EMF persistence framework
- § XML file persistence

§ CDO client overview

- § Distributed shared models
- § Detailed design review

§ CDO server overview

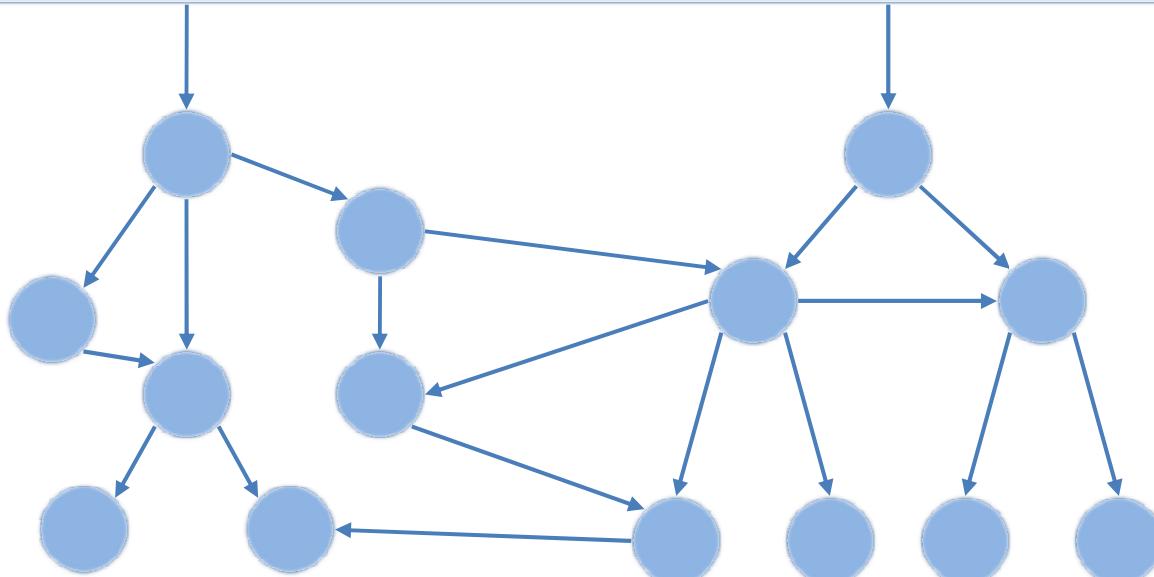
- § Brief design introduction

Application

On

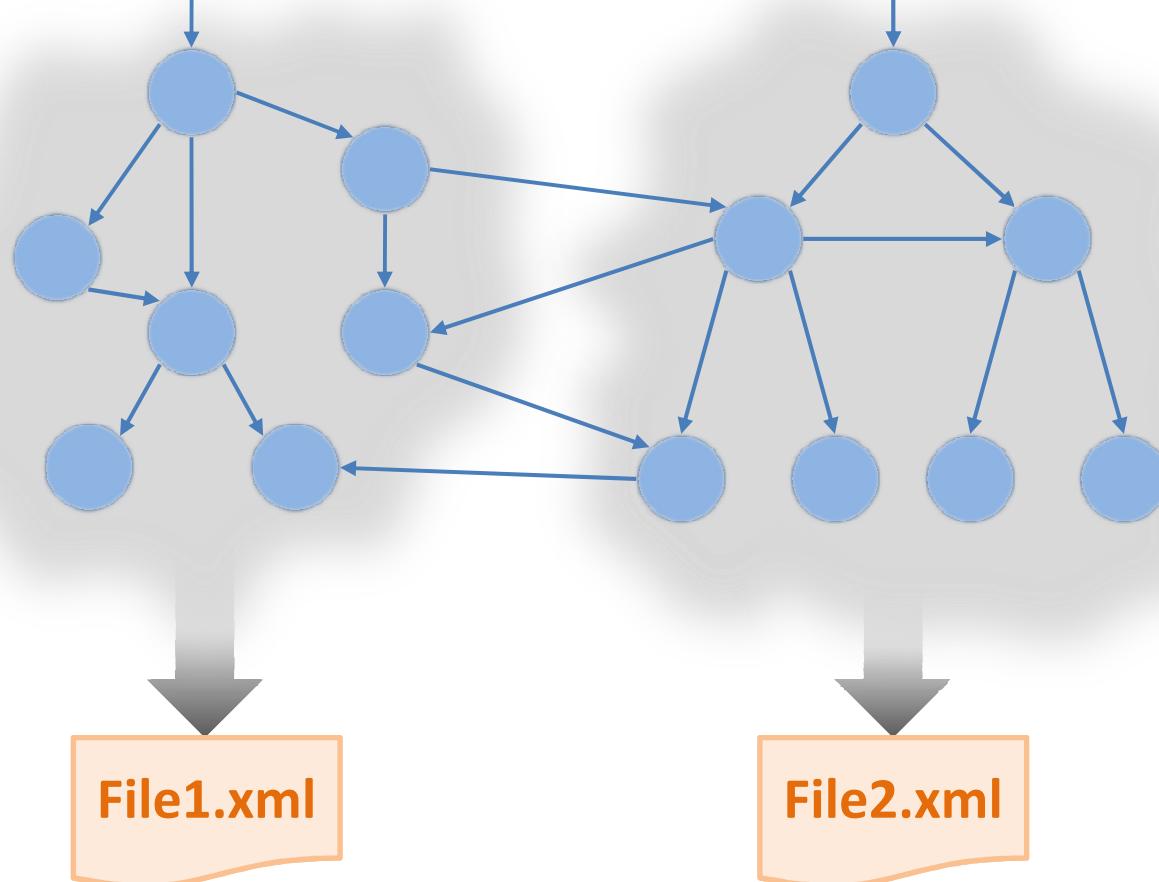
Application

On



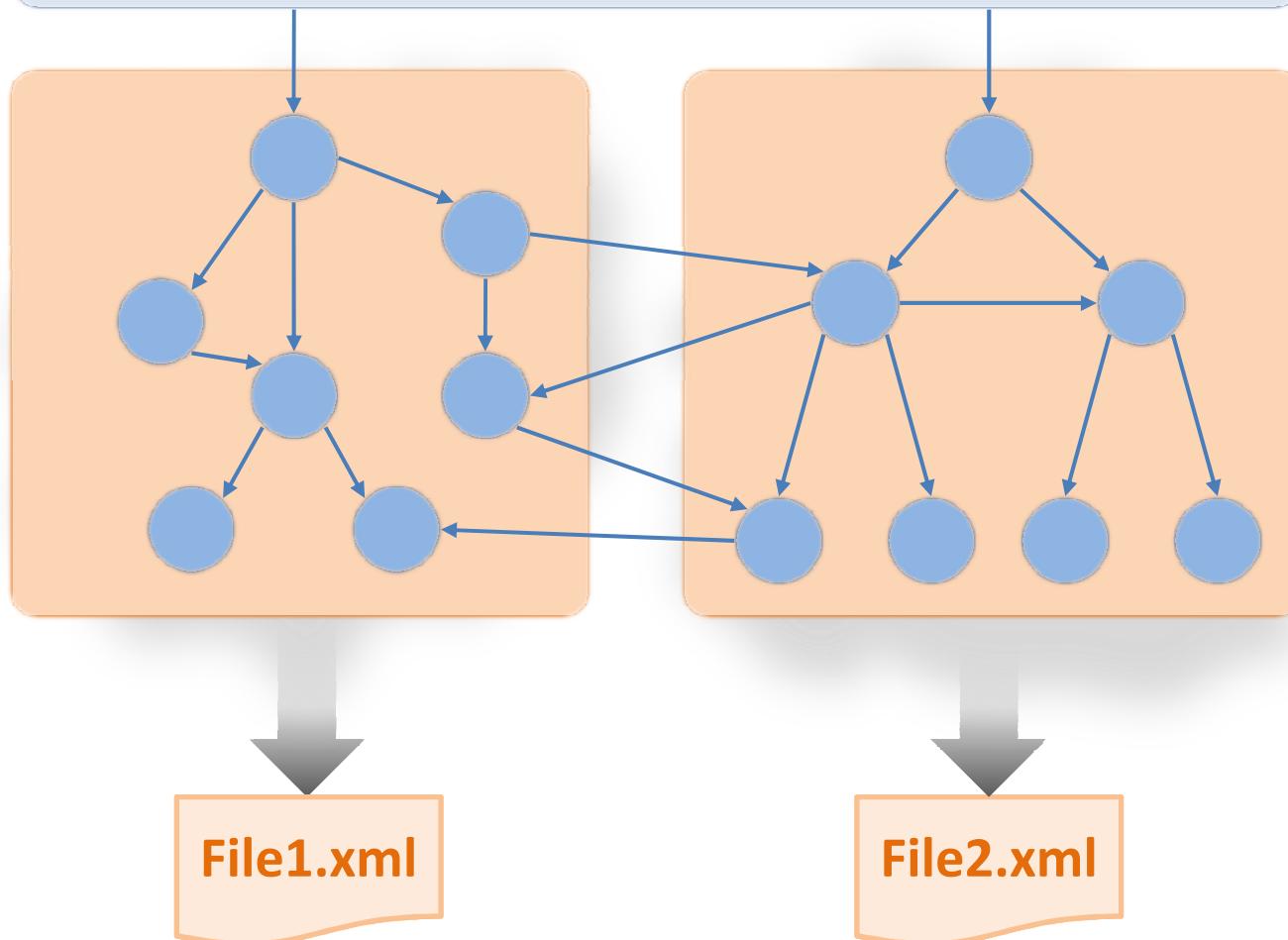
Application

On



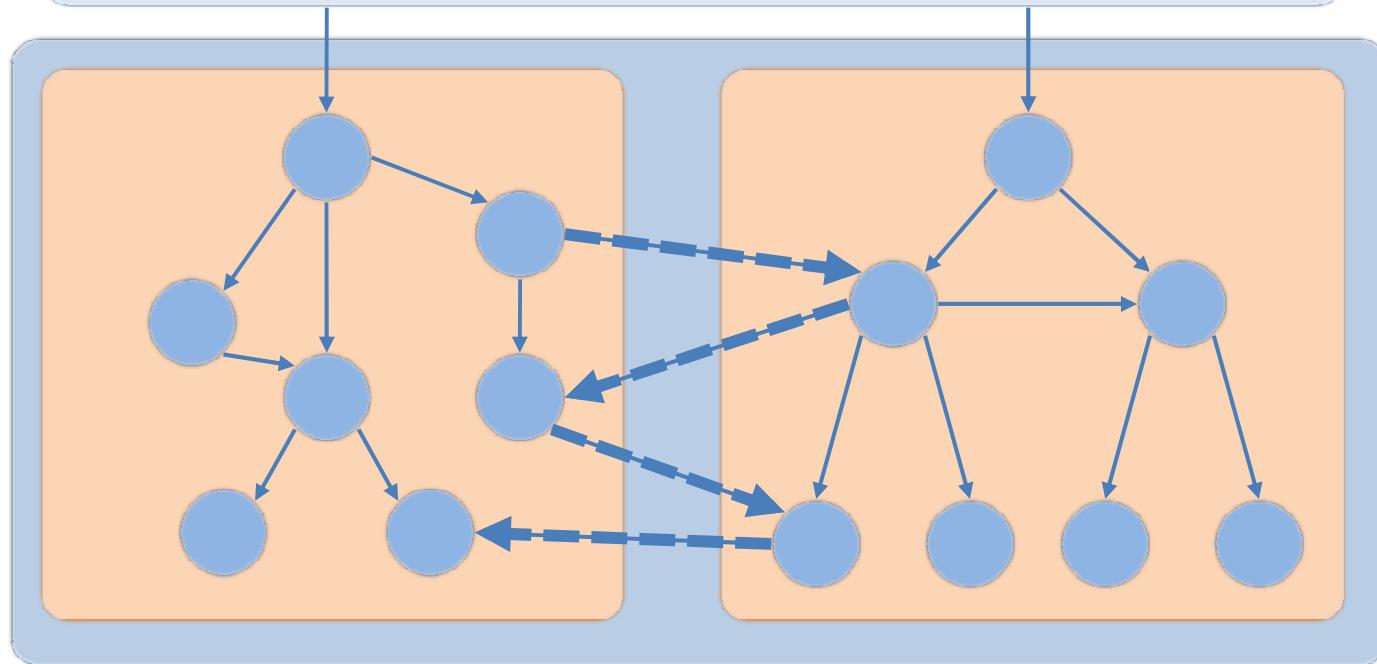
Application

On



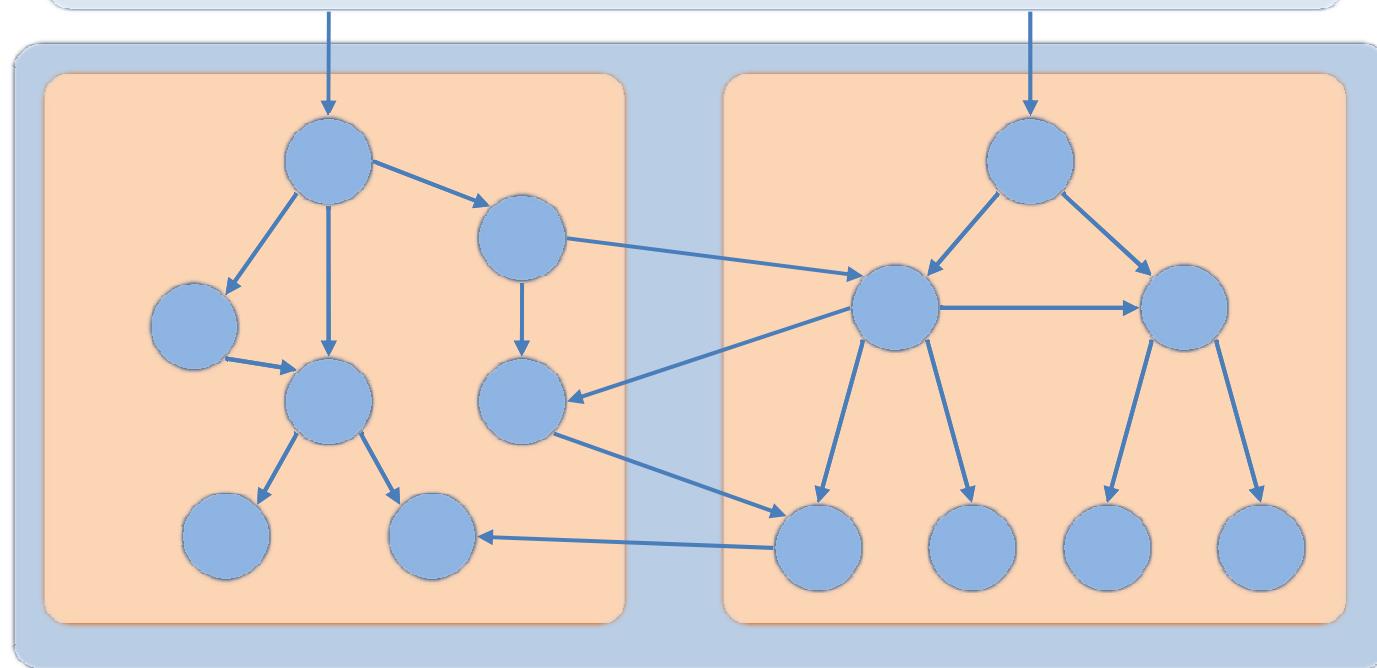
Application

On



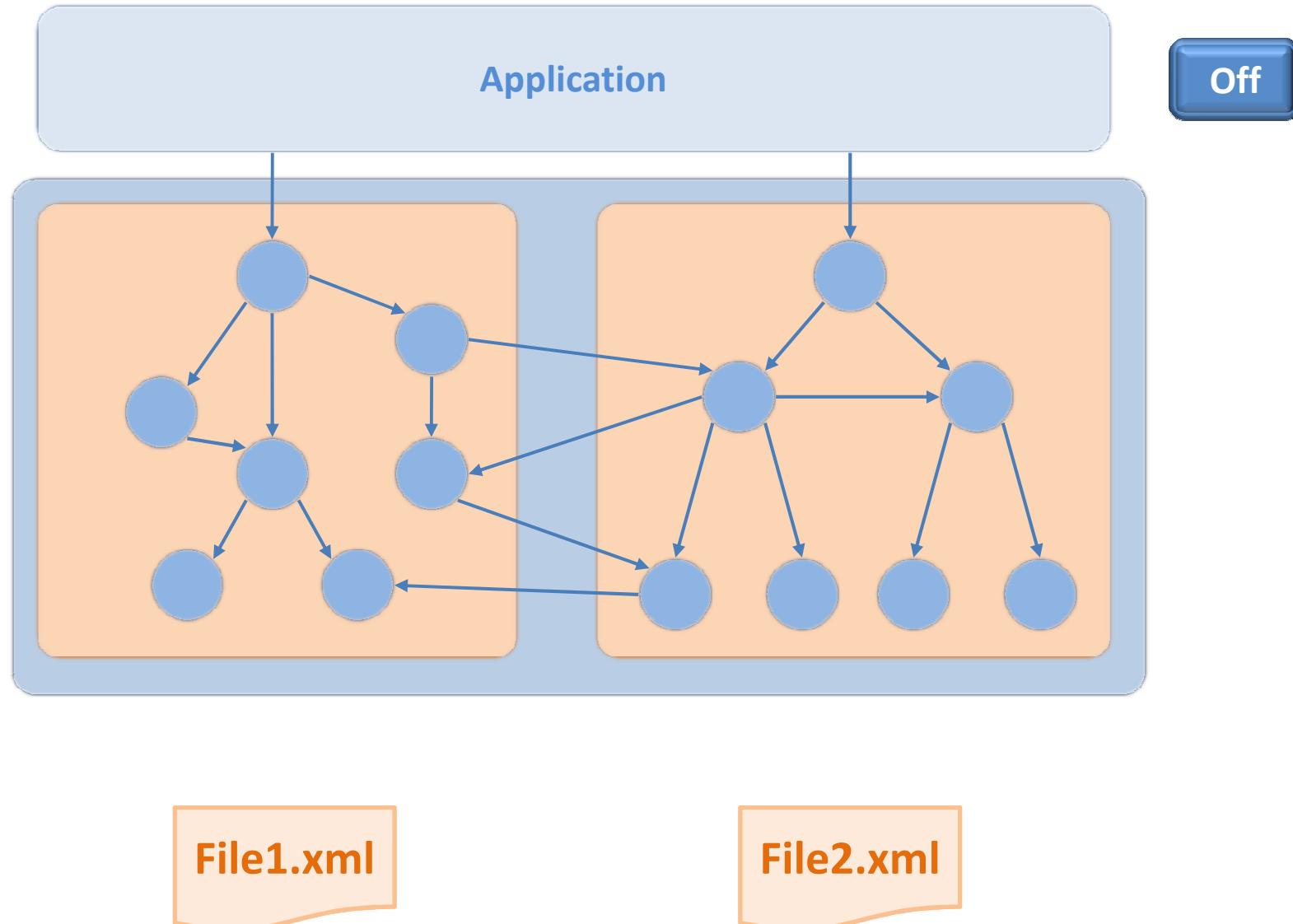
Application

On



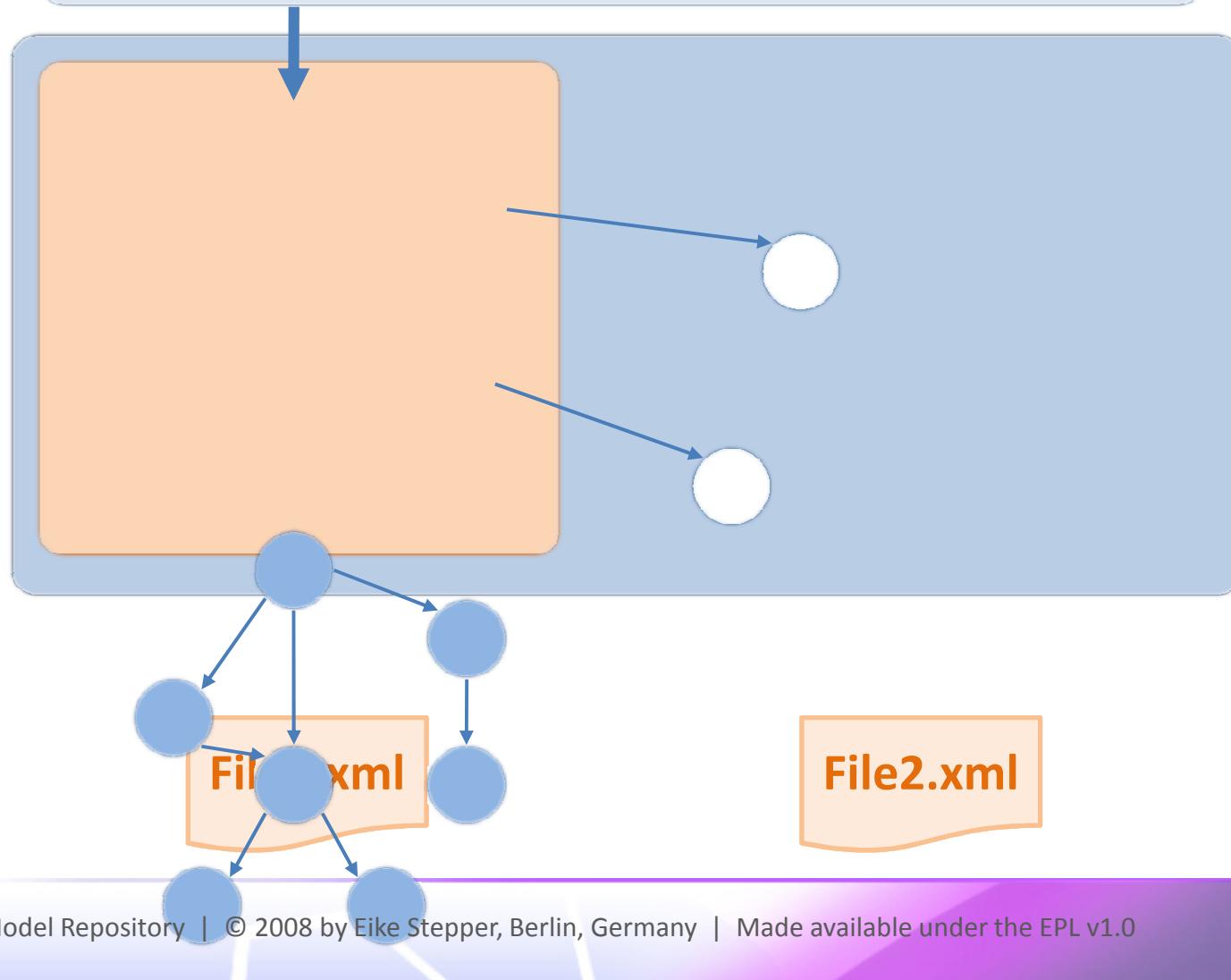
File1.xml

File2.xml



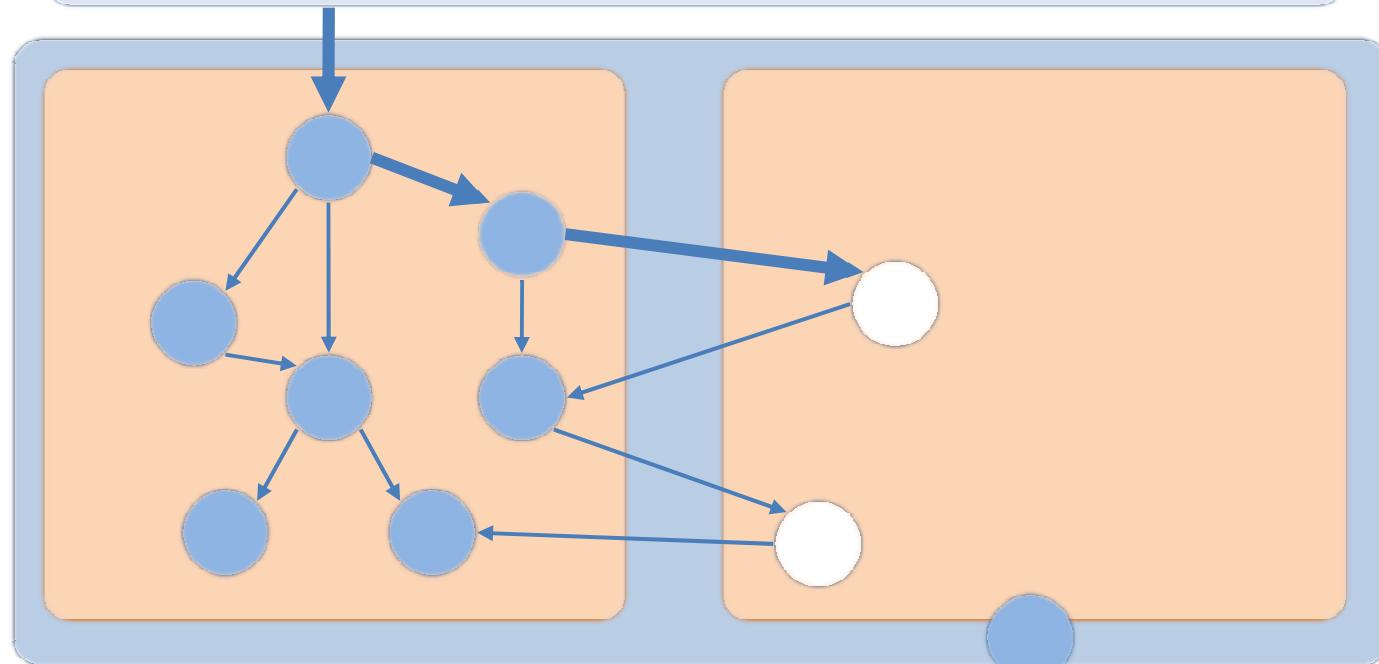
Application

Off



Application

On



File1.xml

File2.xml

Recall: With EMF you can...

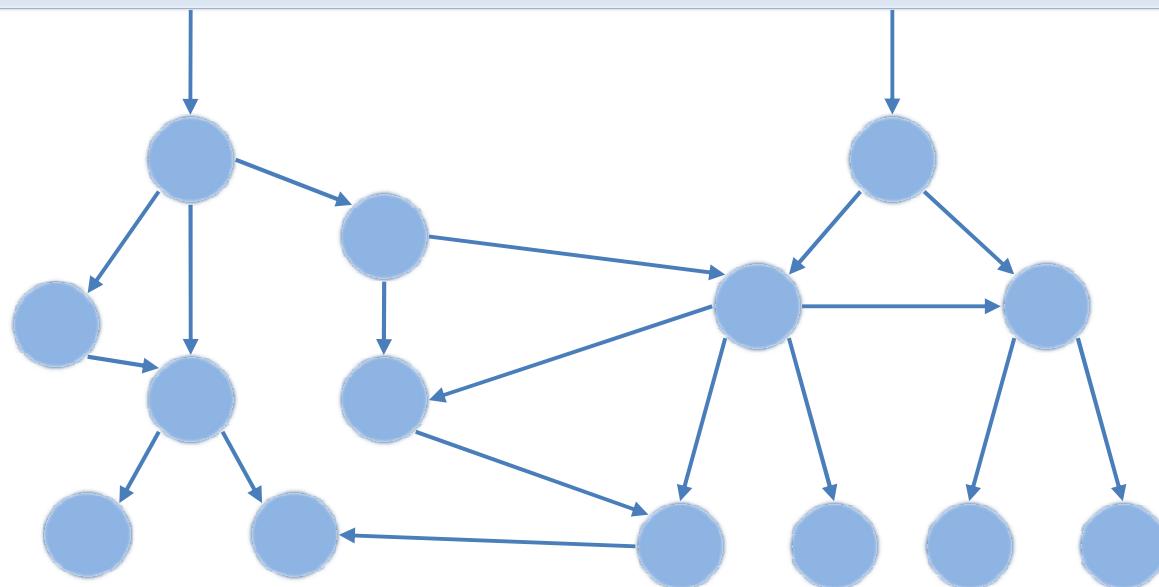
- § **Create Ecore models**
- § **Configure generator models**
- § **Generate Java code for**
 - § Your Ecore model
 - § Command framework
 - § Eclipse UI
- § **Use the EMF persistence framework**
 - § Save and load XML files
 - § Resolve cross references across files

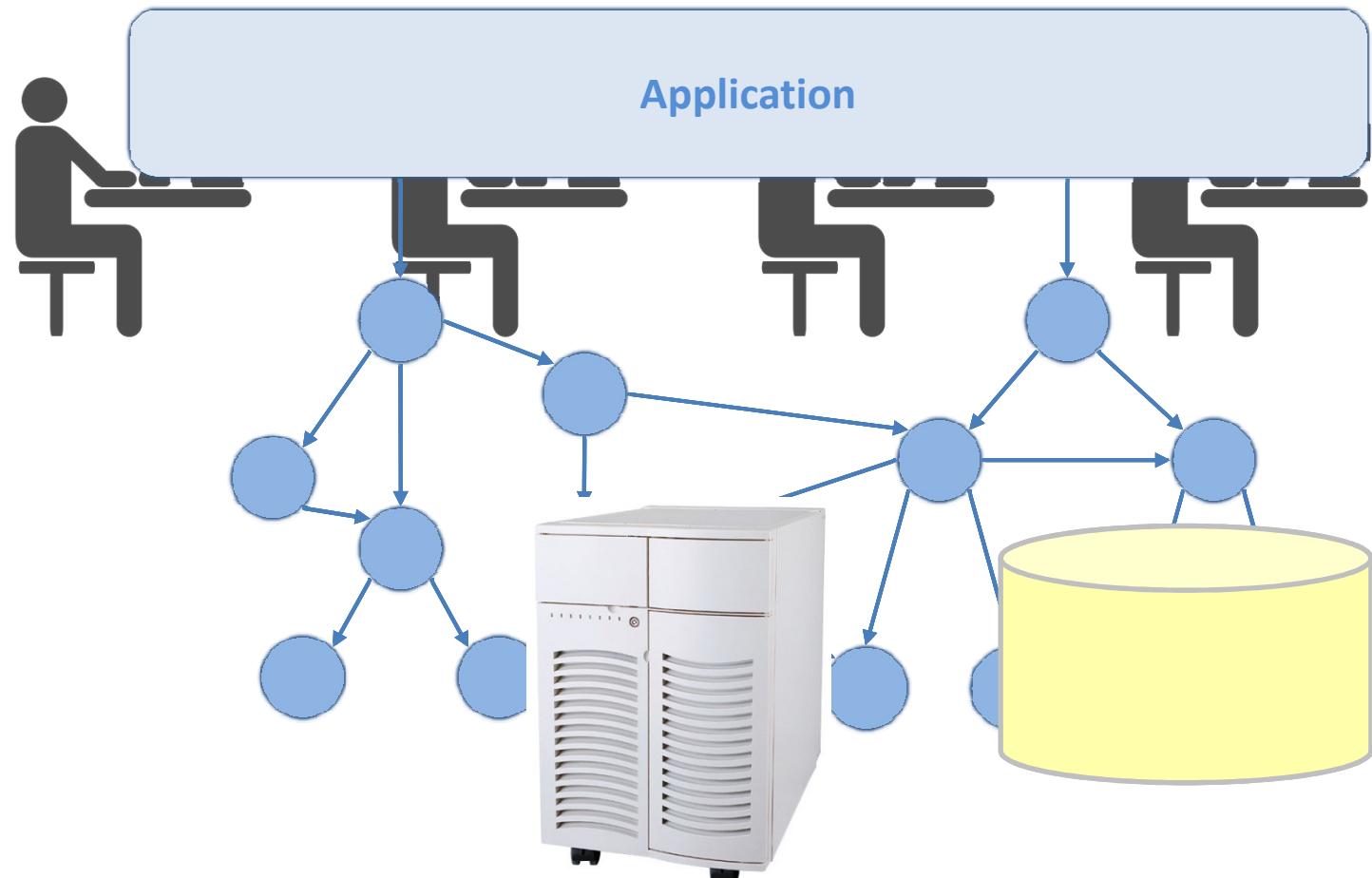
With XML files you can NOT...

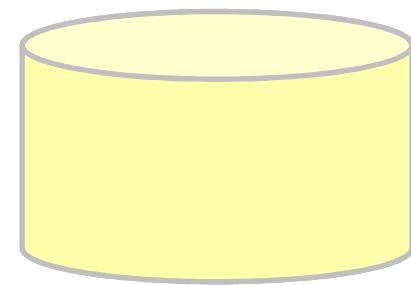
- § **Load single instances lazily**
 - § Resource size is limited
- § **Load collections partially**
 - § Collection size is limited
- § **Unload single instances transparently**
 - § Bad influence on footprint (garbage collection)
 - § Bad influence on model design (containment)
- § **Work concurrently**
 - § No transactions
 - § No fine grained locking
 - § No remote update notification

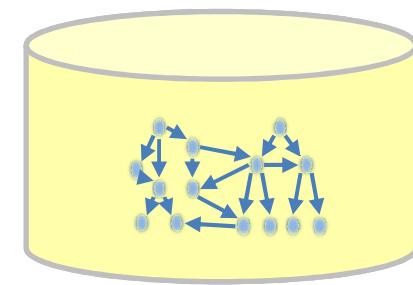
They just don't behave like multi-user databases

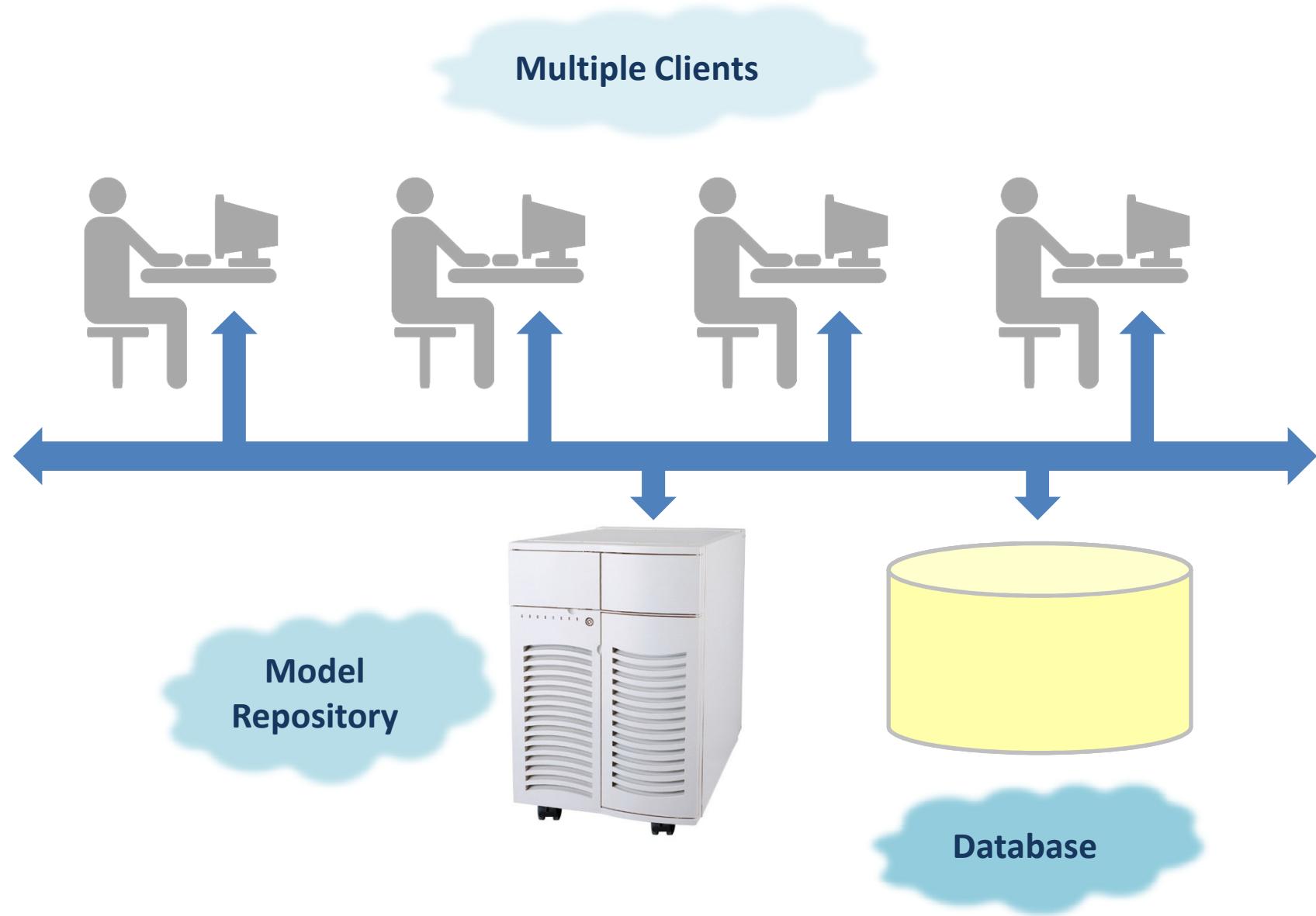
Application





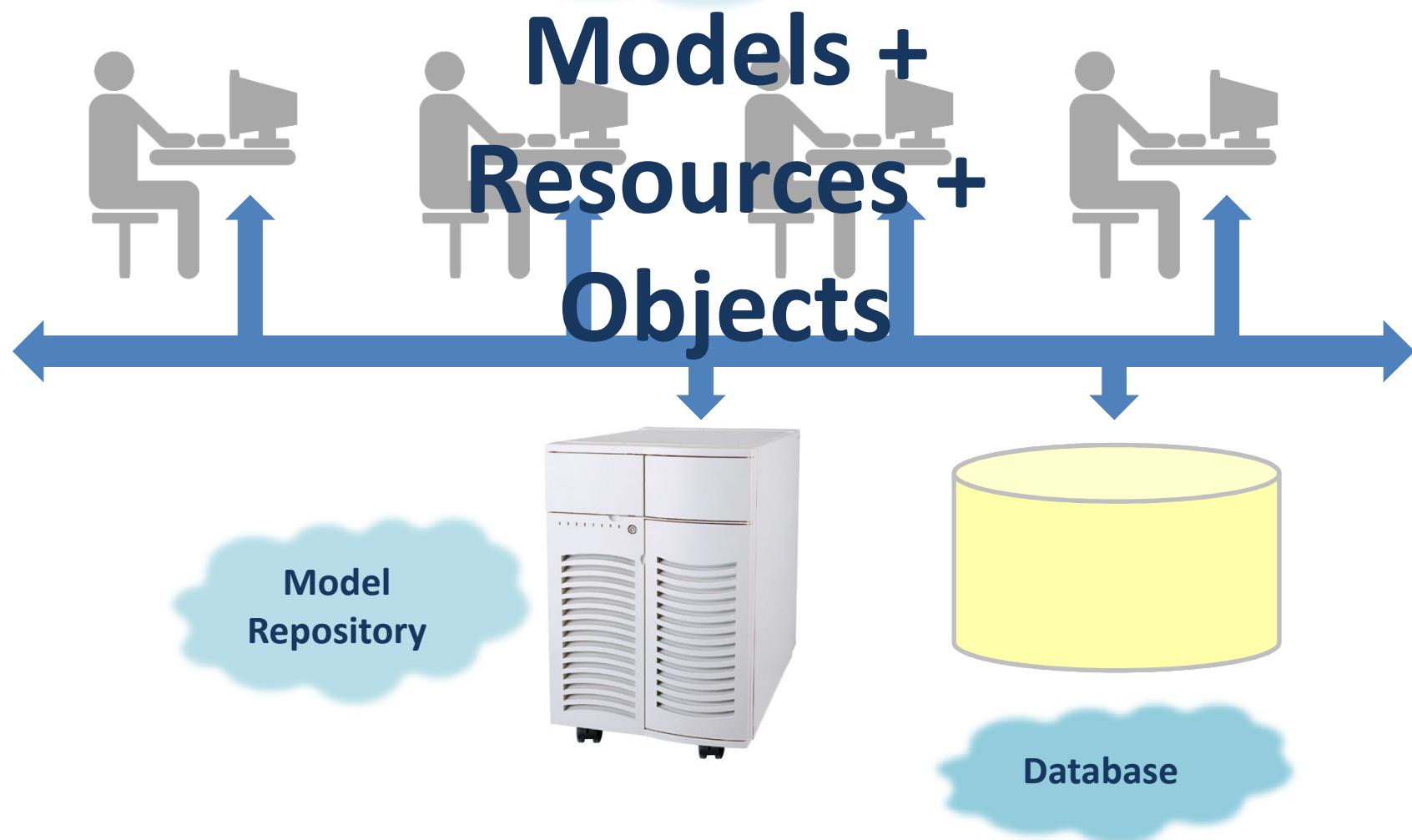






Model Repository =

Multiple Clients



With CDO you can...

- § **Maintain a central model repository**

- § Store models in arbitrary backends
 - § Cache models in server memory

- § **Connect from multiple clients**

- § Manage sessions
 - § Manage views and transactions

- § **Work with a distributed shared model**

- § Distribute change notifications
 - § Present hot data

CDO supports...

§ Multiple sessions on a single client

- § TCP connections
- § HTTP connections
- § JVM connections

§ Pluggable connection security

- § Challenge/Response negotiation

§ Pluggable fail-over strategies

CDO supports...

§ **Multiple views per session**

- § Read-only views
- § Transactions and save points
- § Audit views (time machine)

§ **Local sharing across all views**

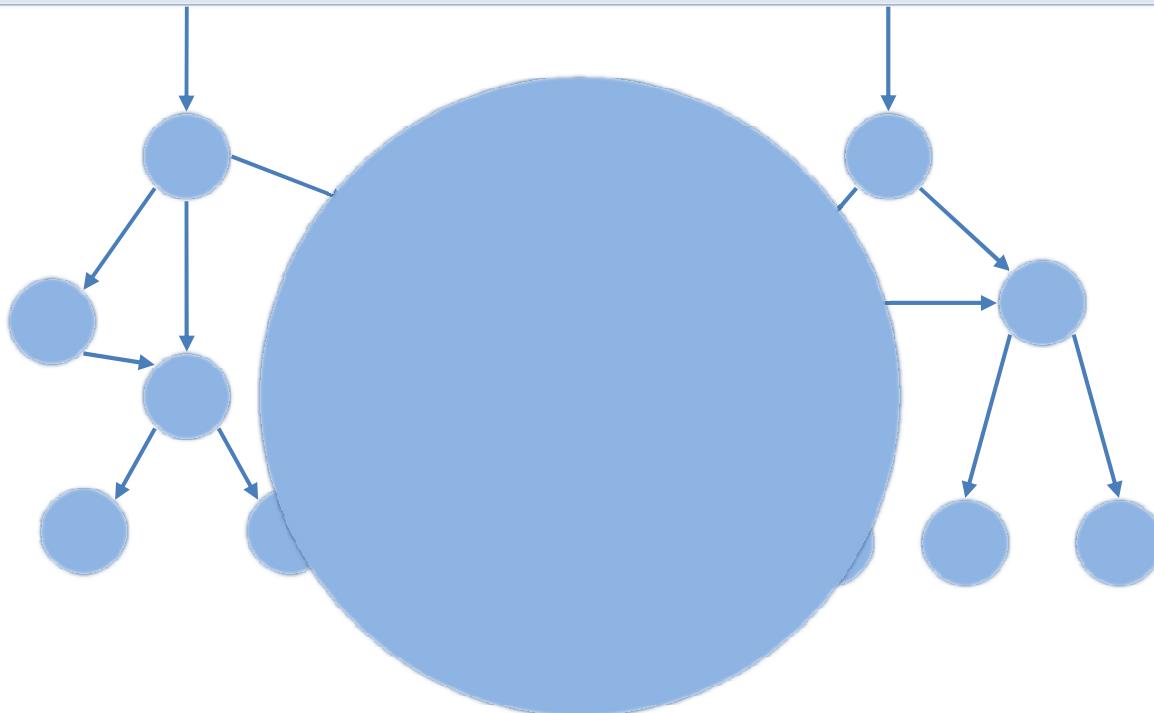
§ **Potentially huge object graphs**

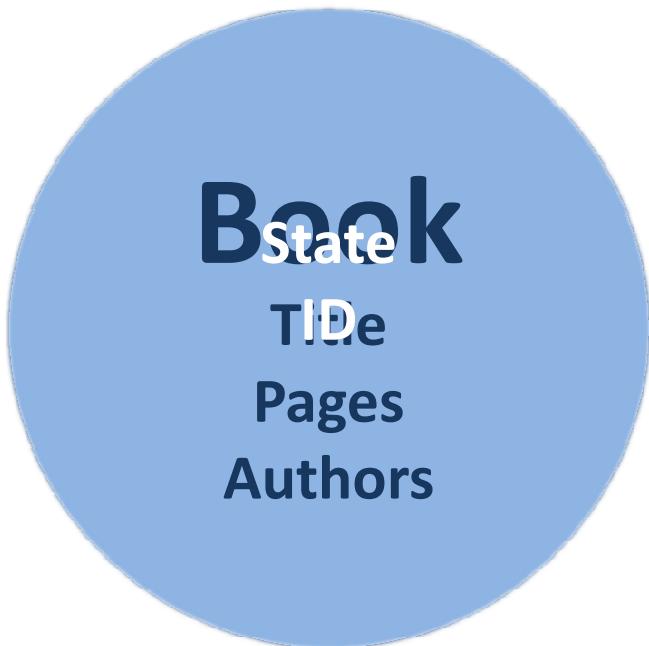
- § Transparent loading/unloading on demand
- § Partial collections
- § Intelligent prefetching

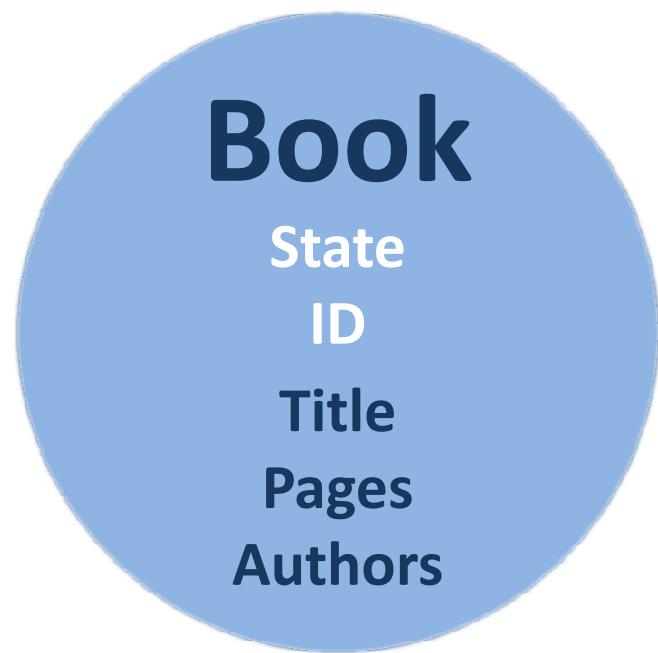


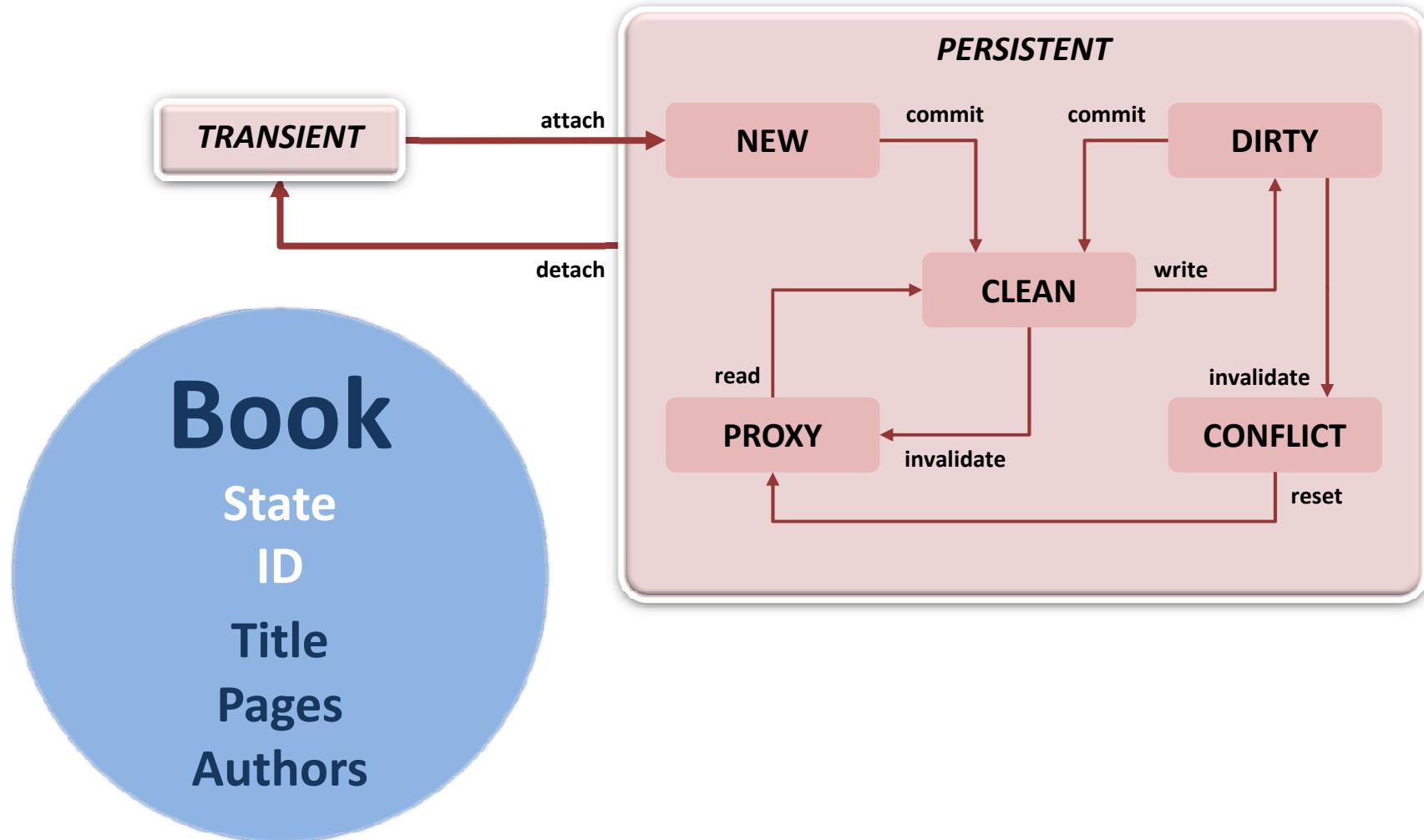
How does all this work?

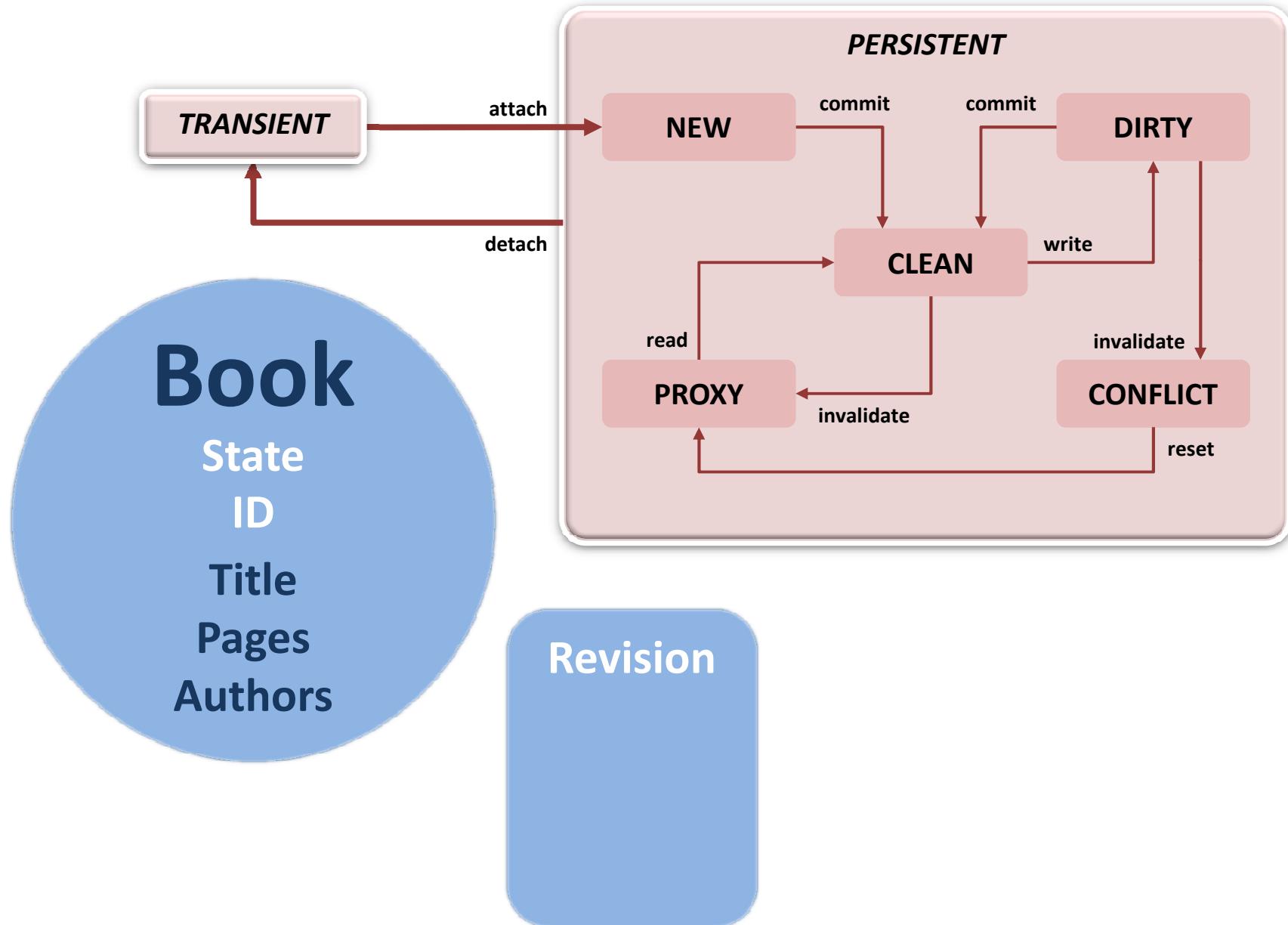
Application

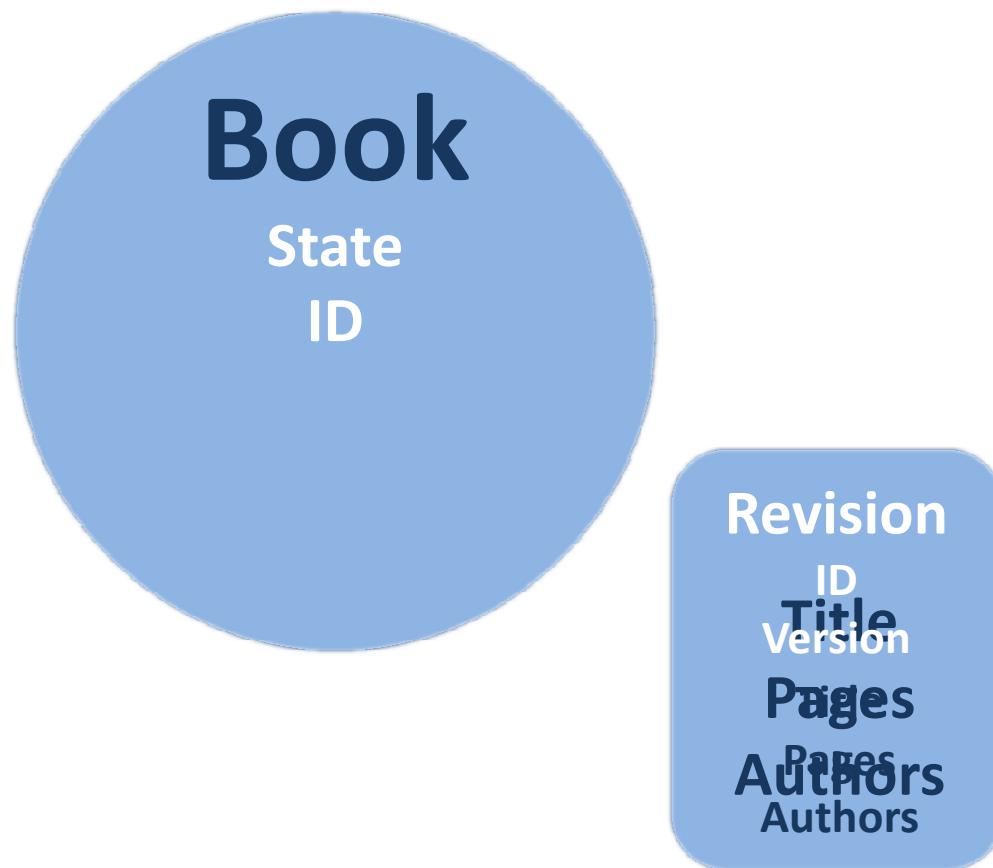


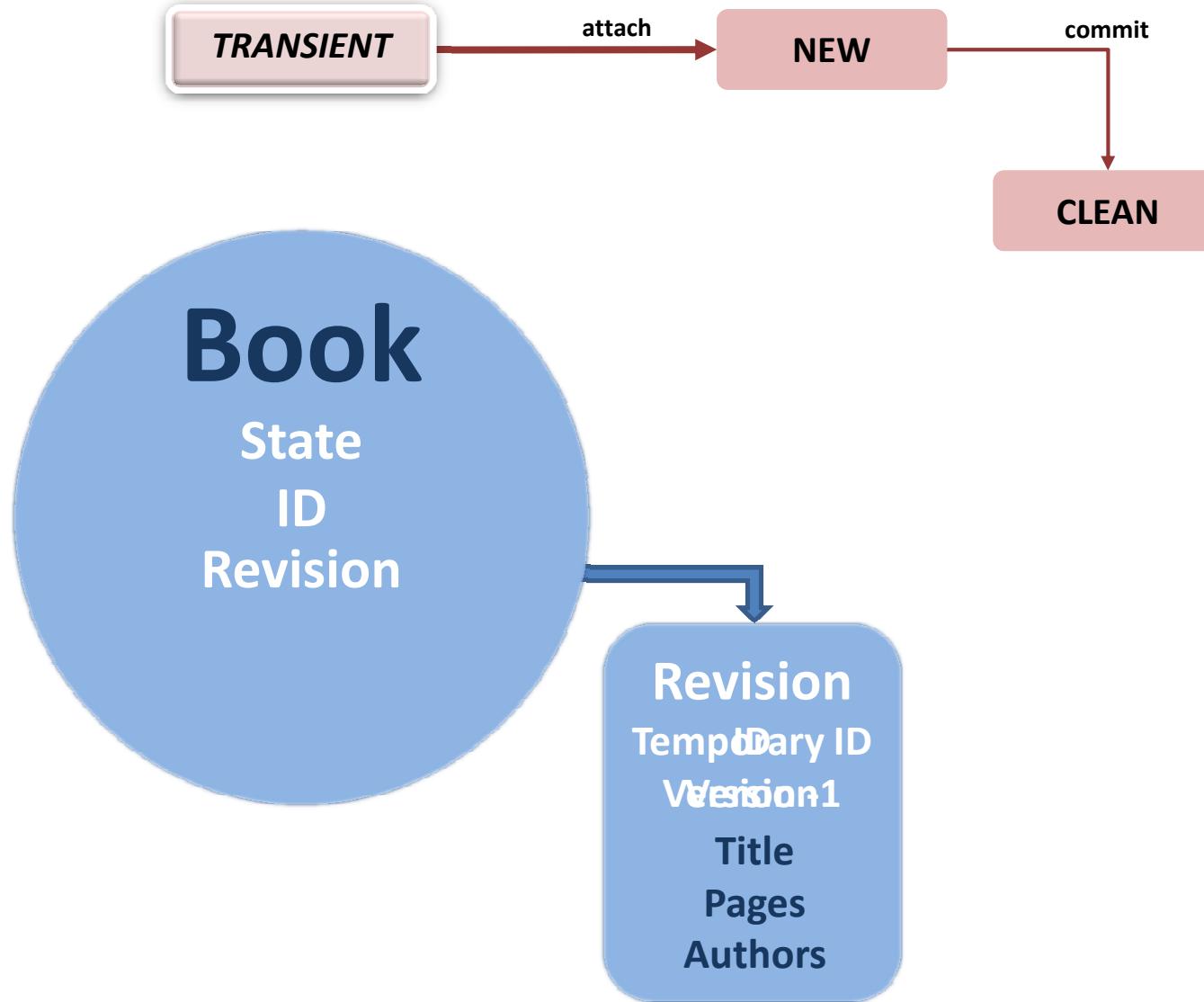


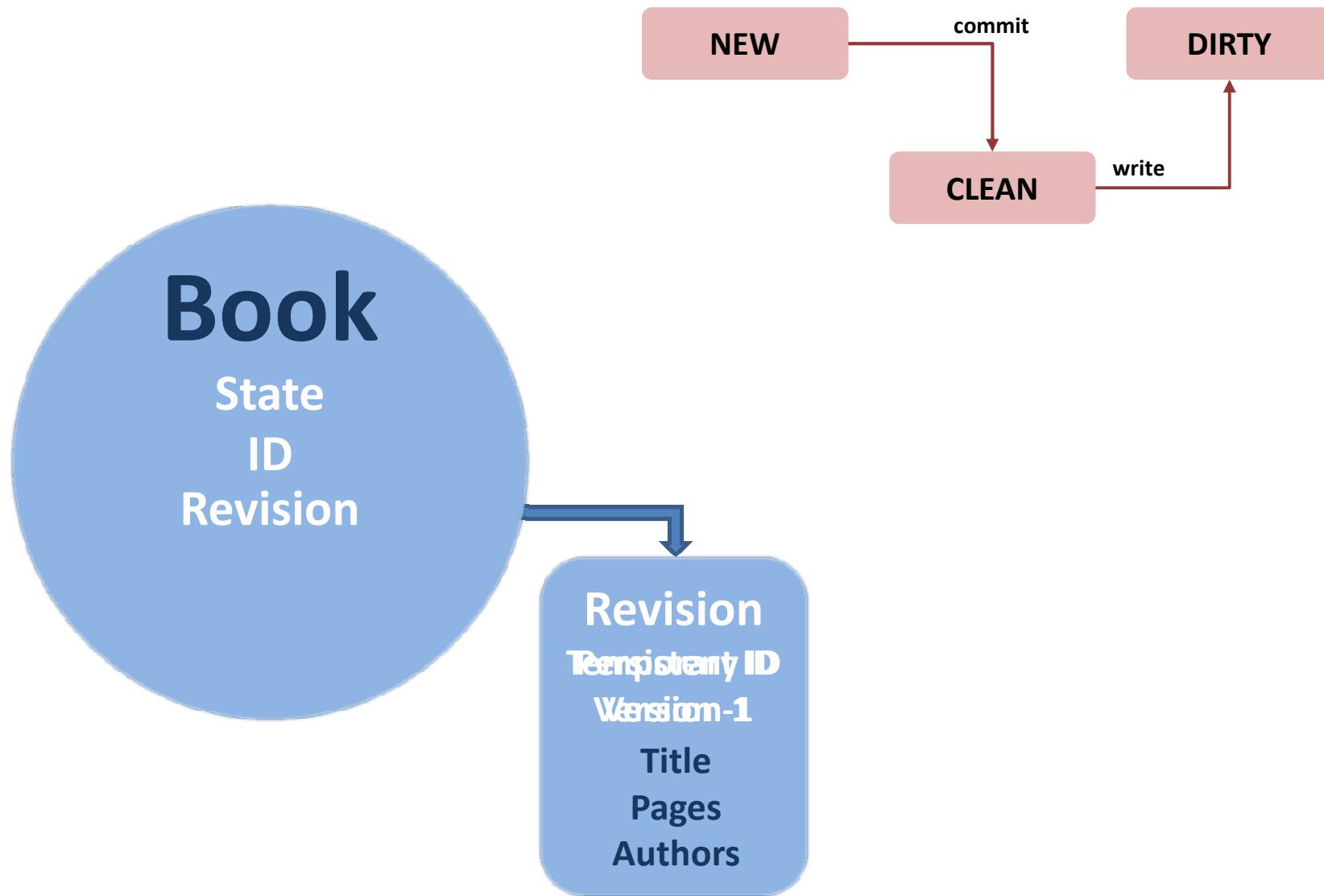


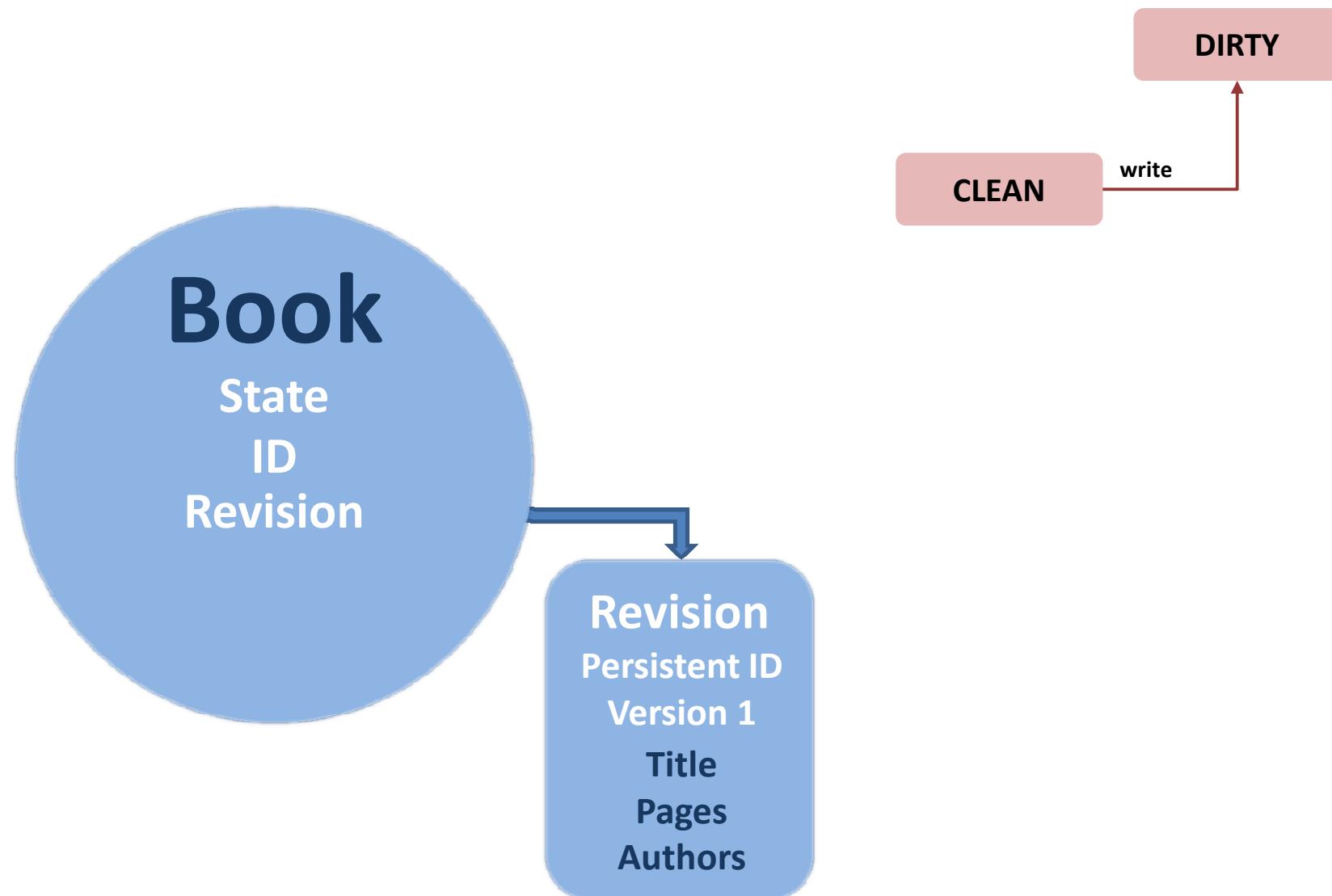


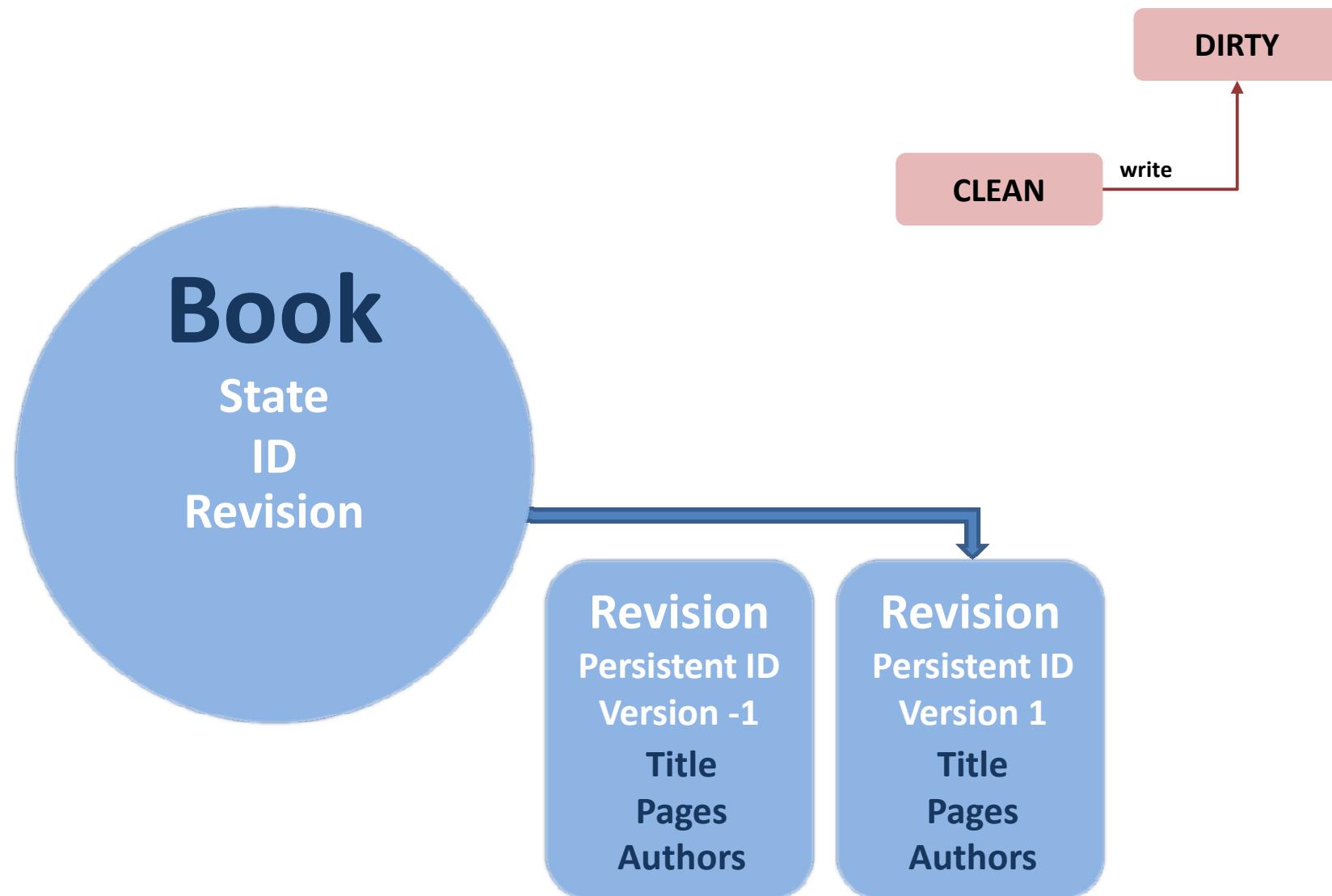


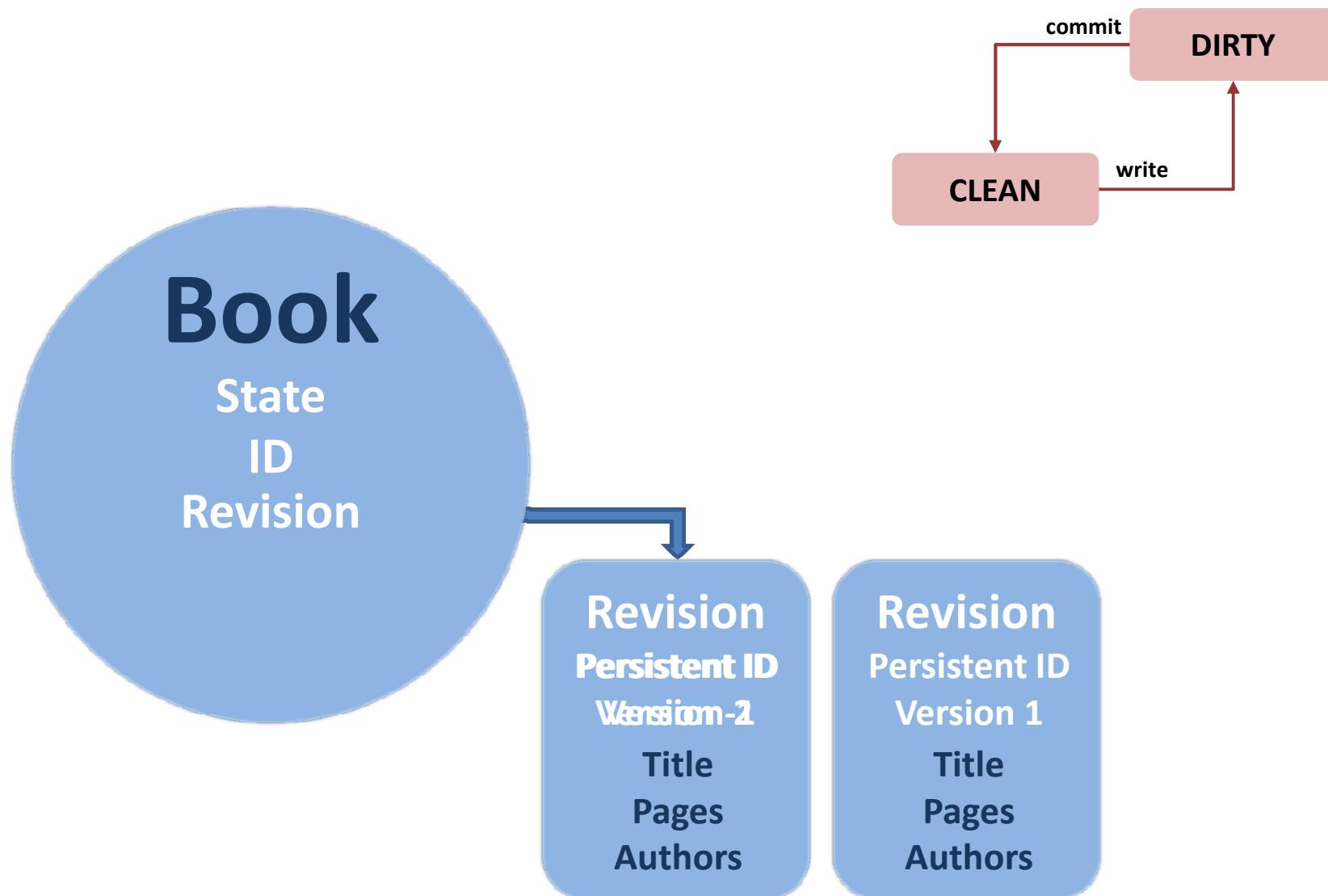


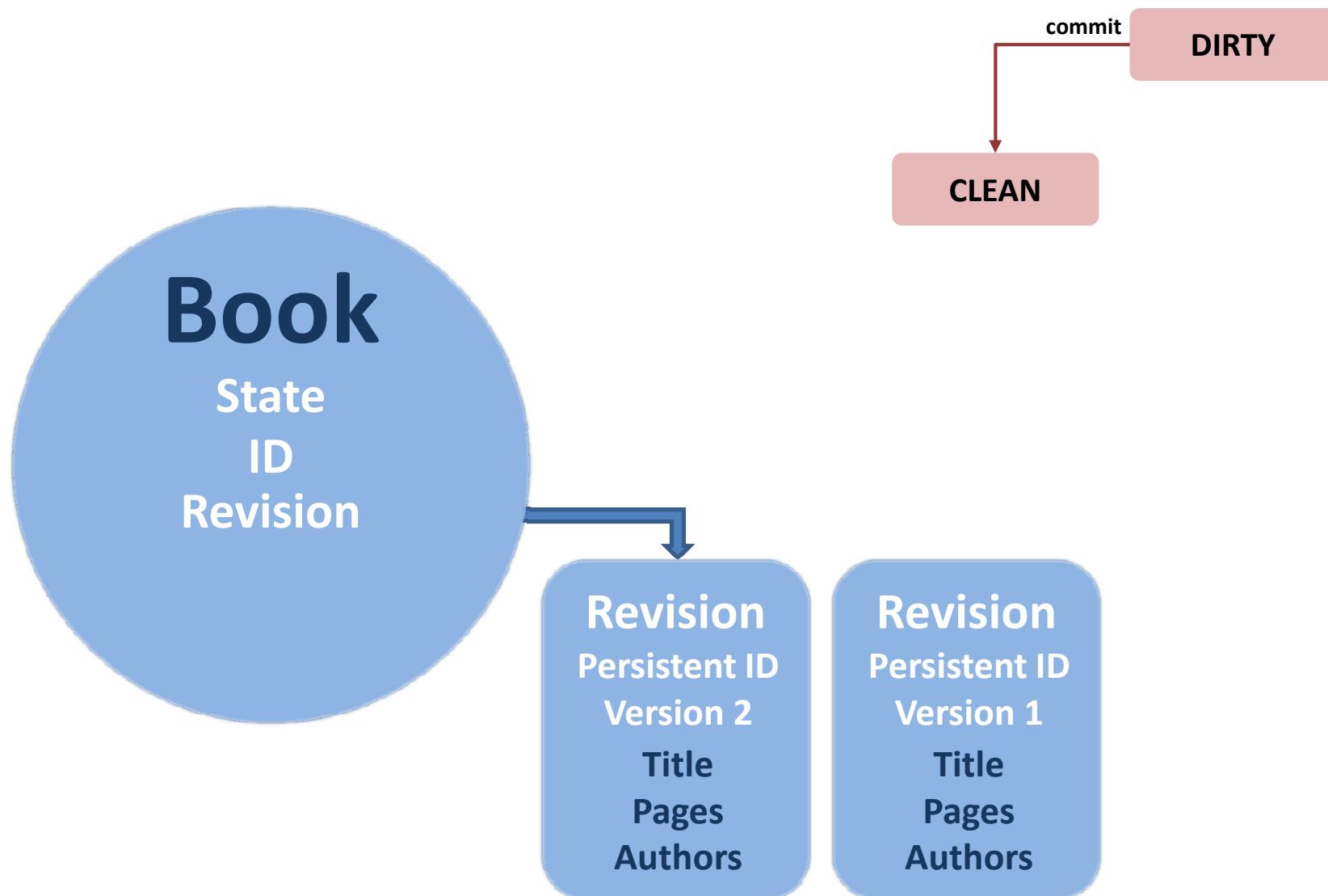


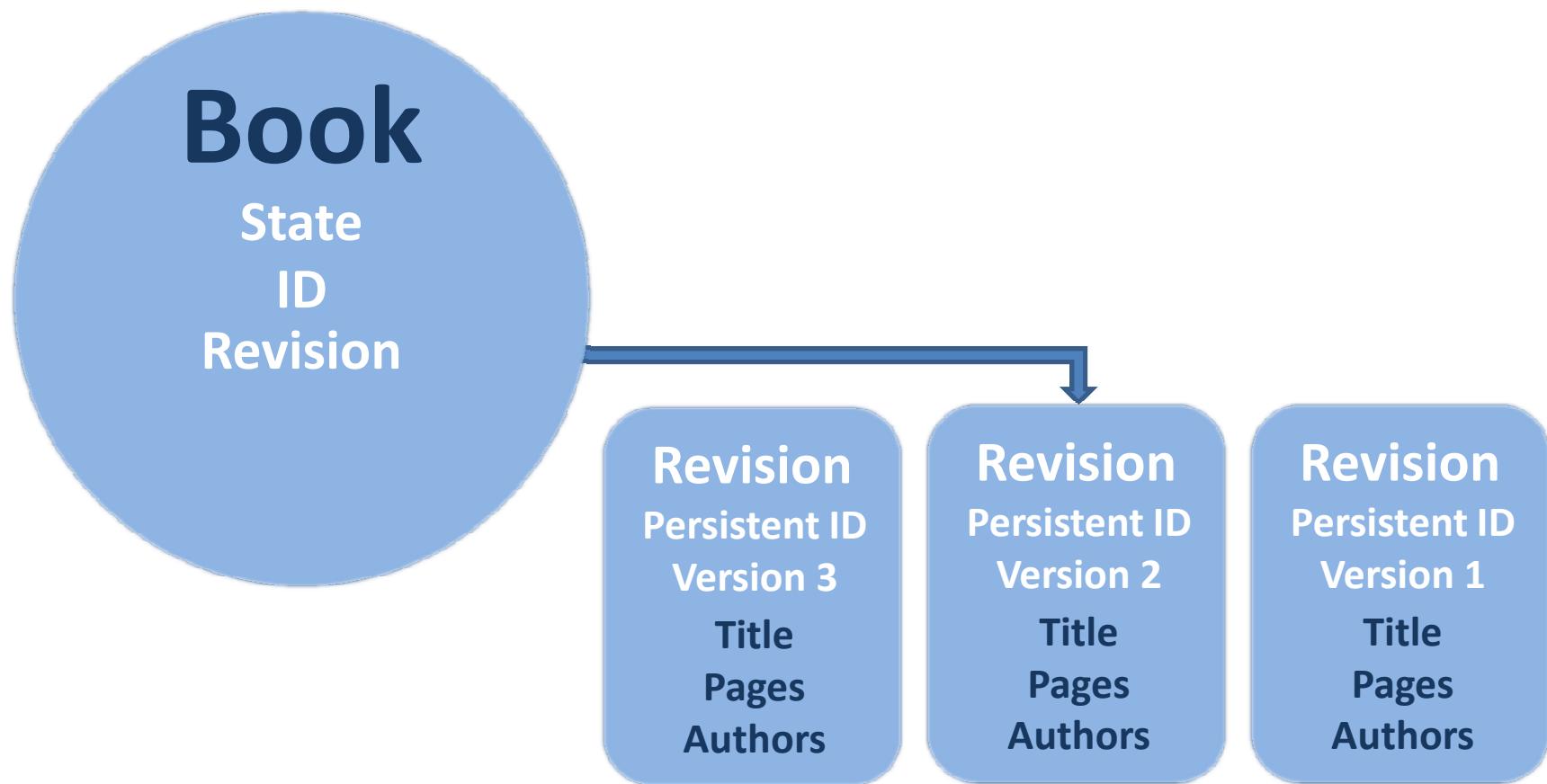




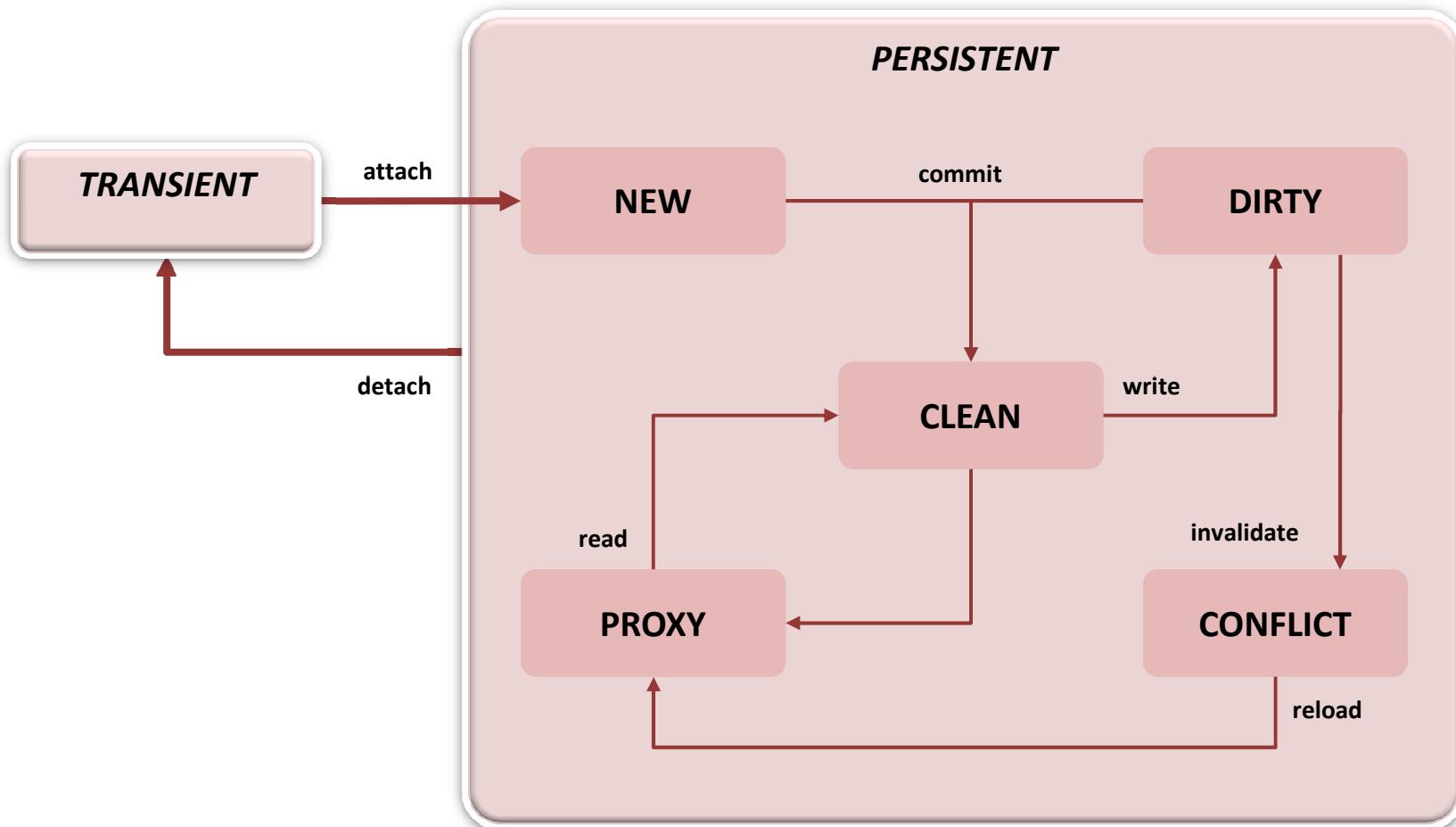








CDOStateMachine

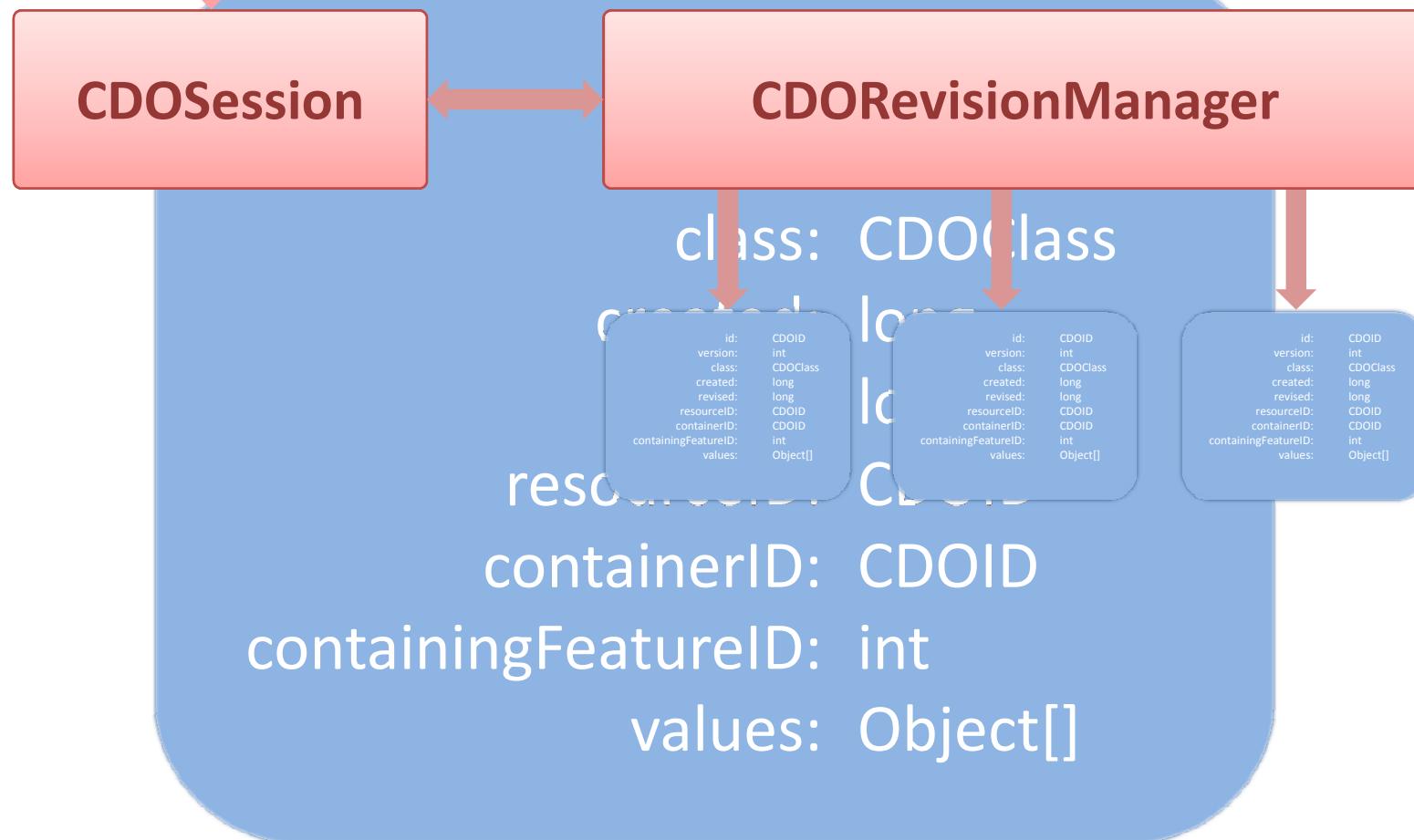


CDOResolution

```
id: CDOID  
version: int  
class: CDOClass  
created: long  
revised: long  
resourceID: CDOID  
containerID: CDOID  
containingFeatureID: int  
values: Object[]
```

Repository

CDOResolution

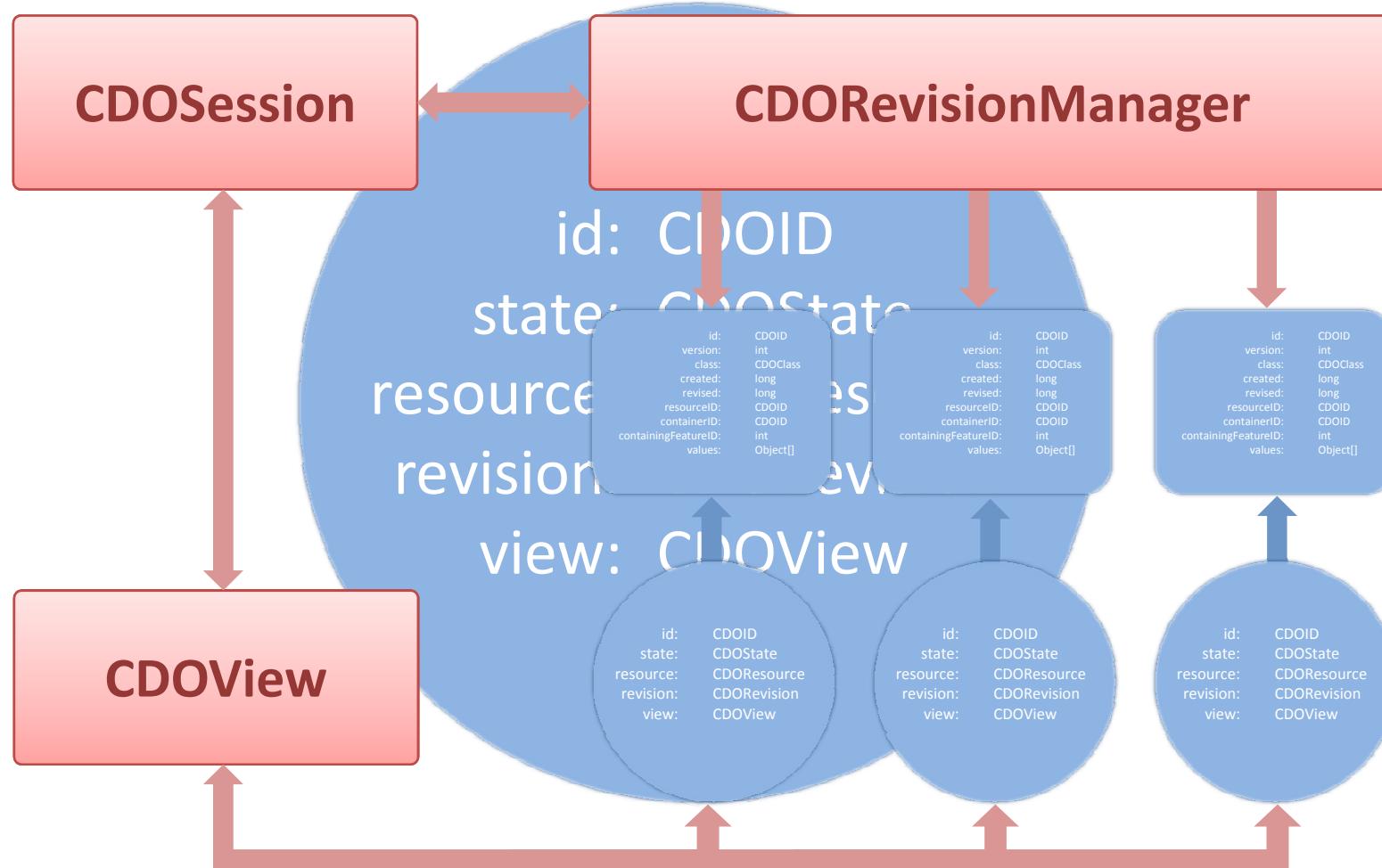


CDOObject

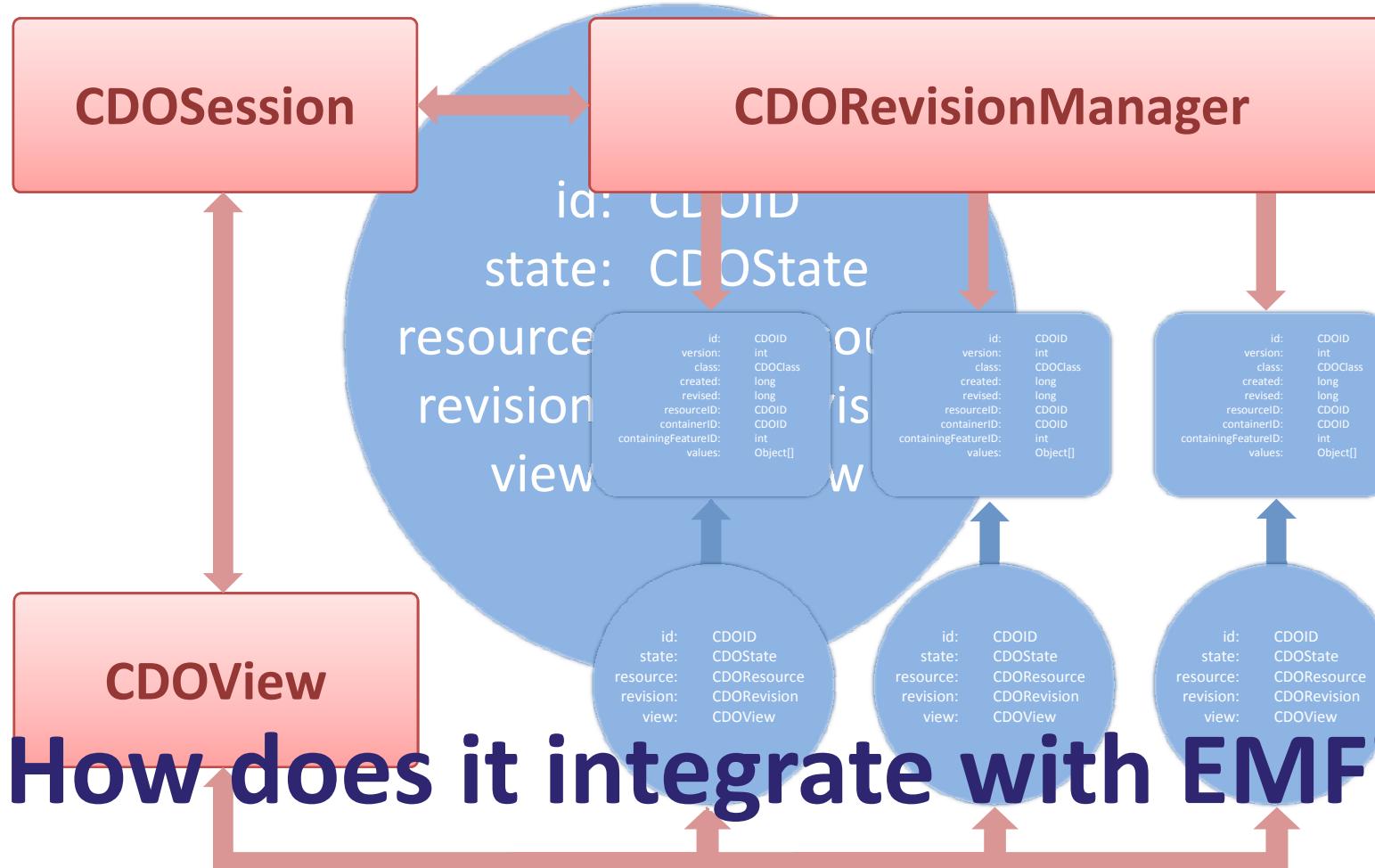


id: CDOIID
state: CDOSState
resource: CDOResource
revision: CDOResolution
view: CDOView

CDOObject

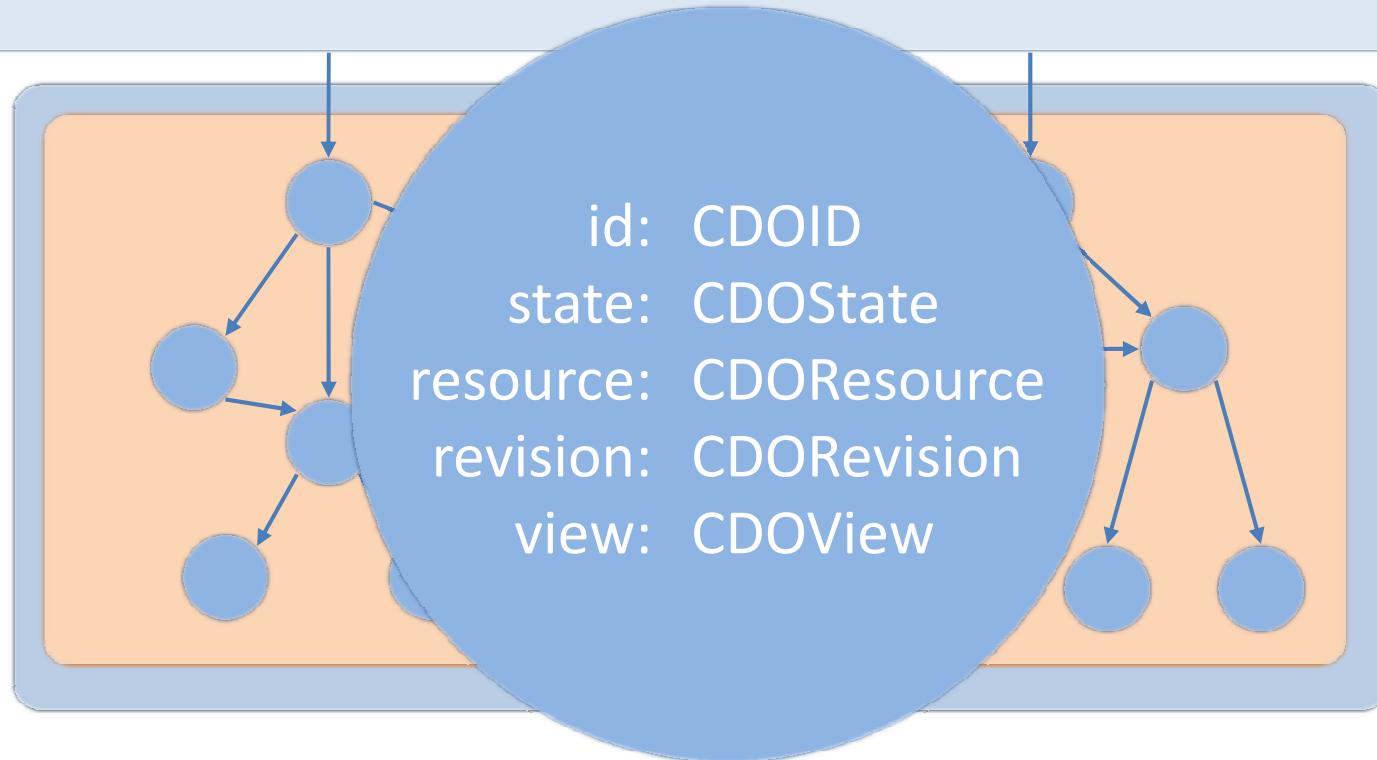


CDOObject

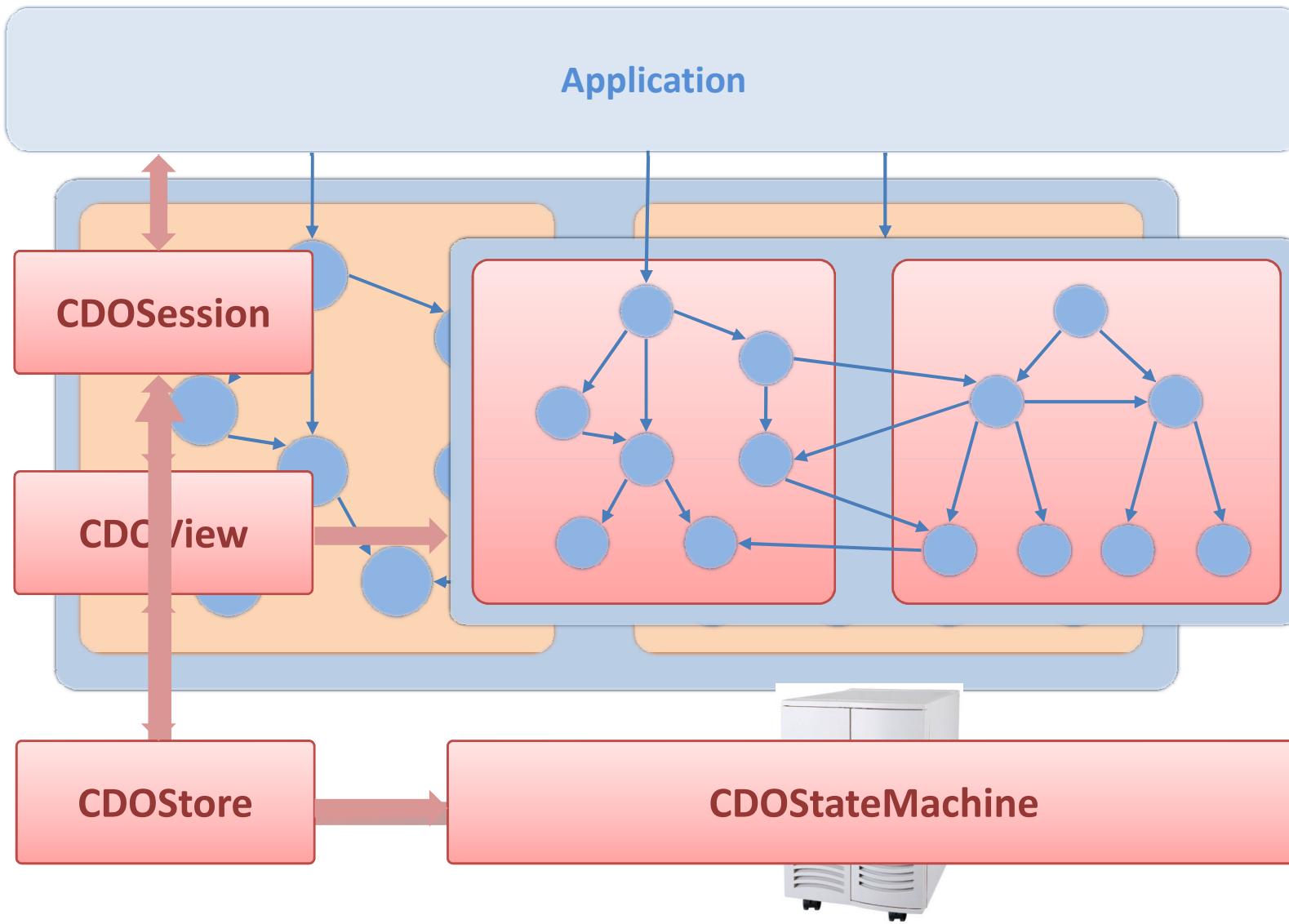


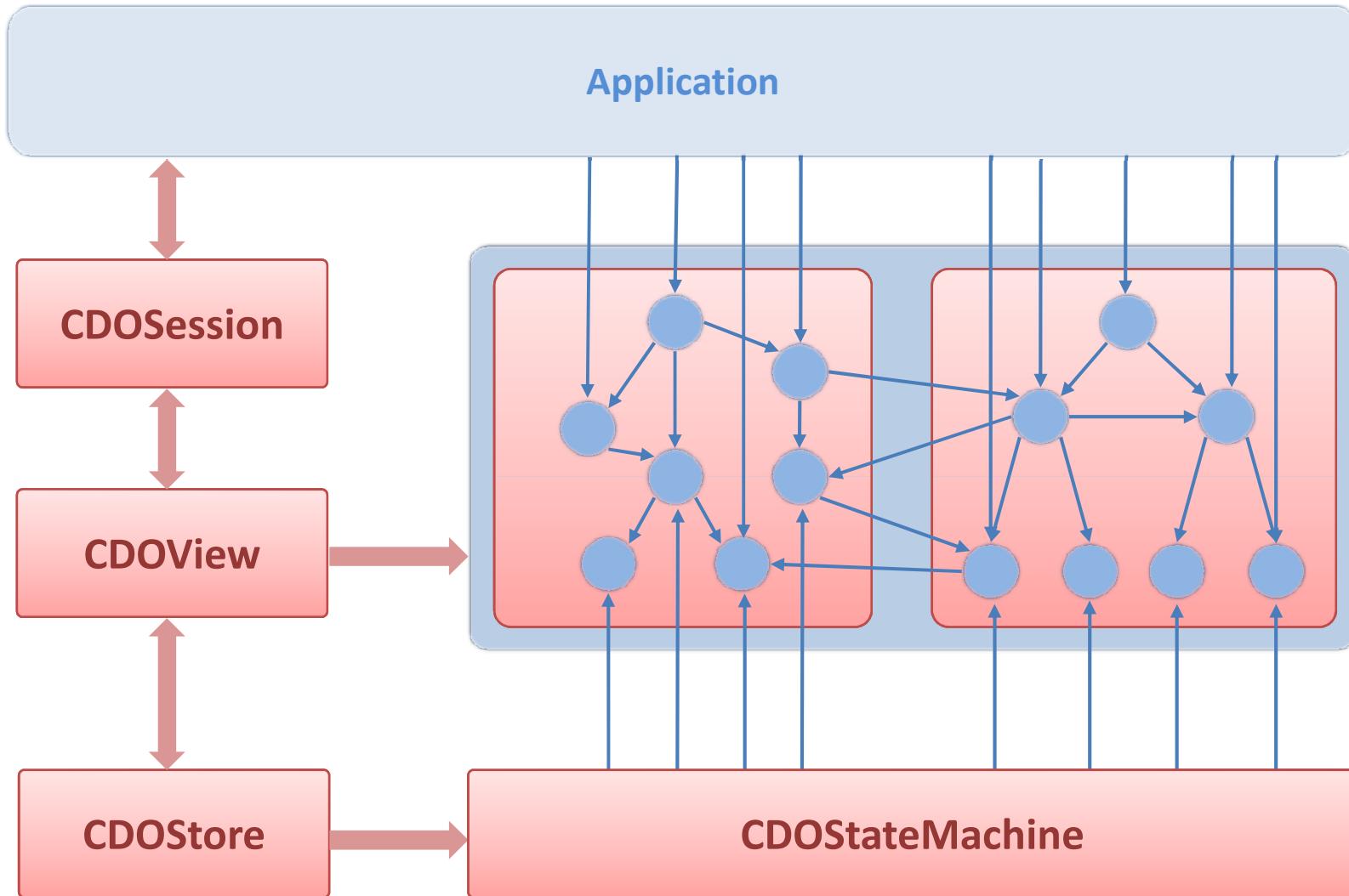
CDOObject

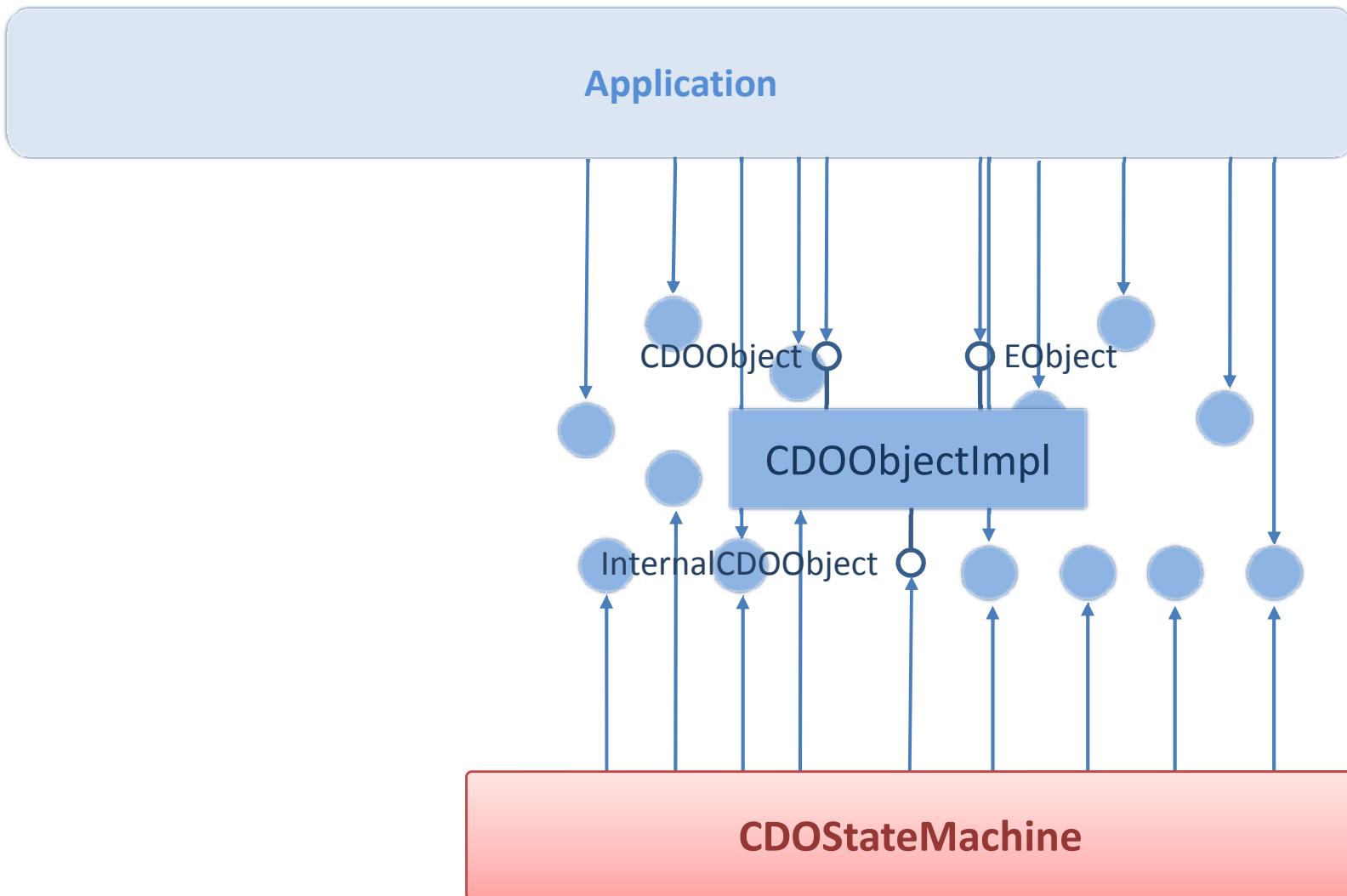
Application



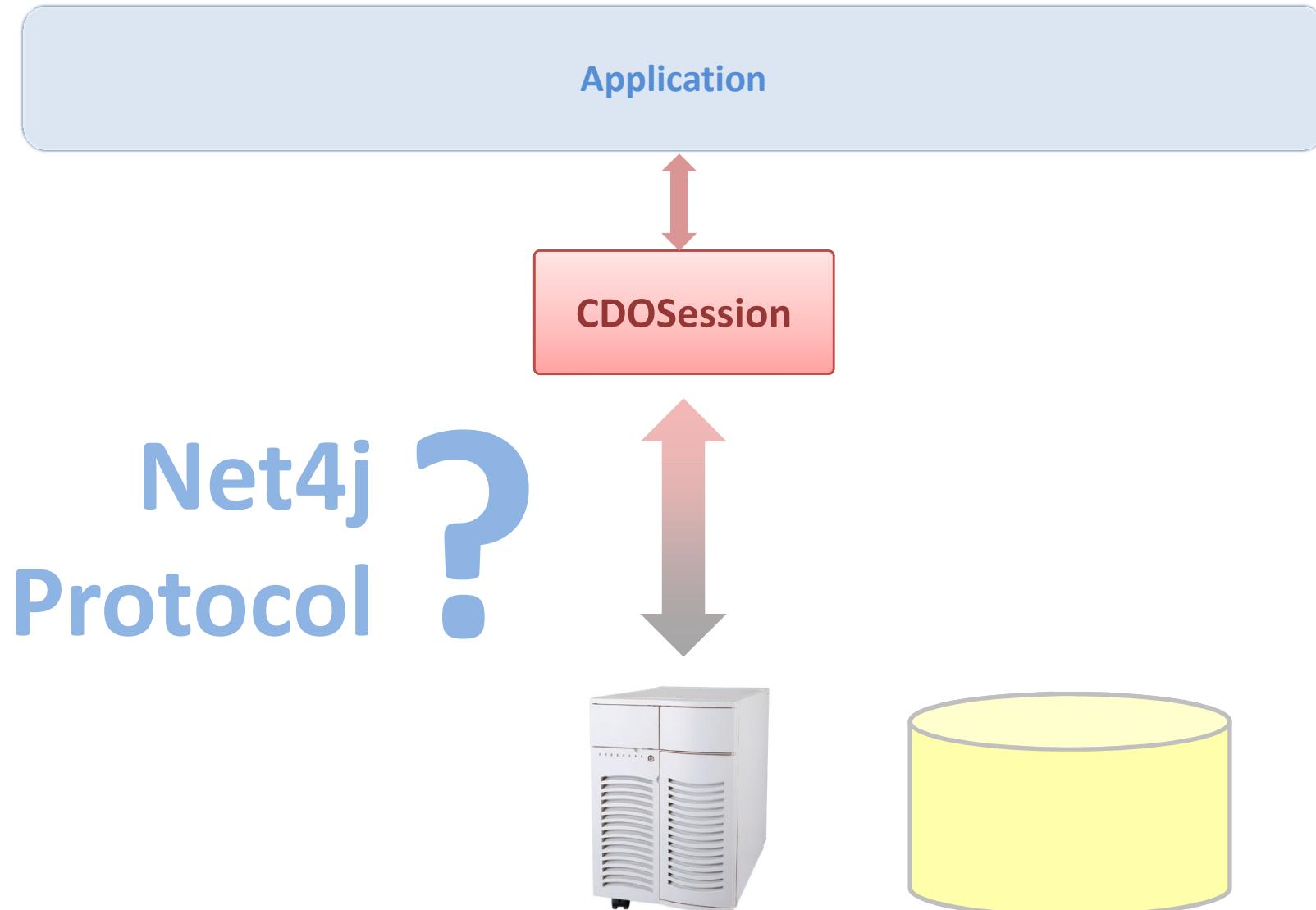
How does it integrate with EMF?



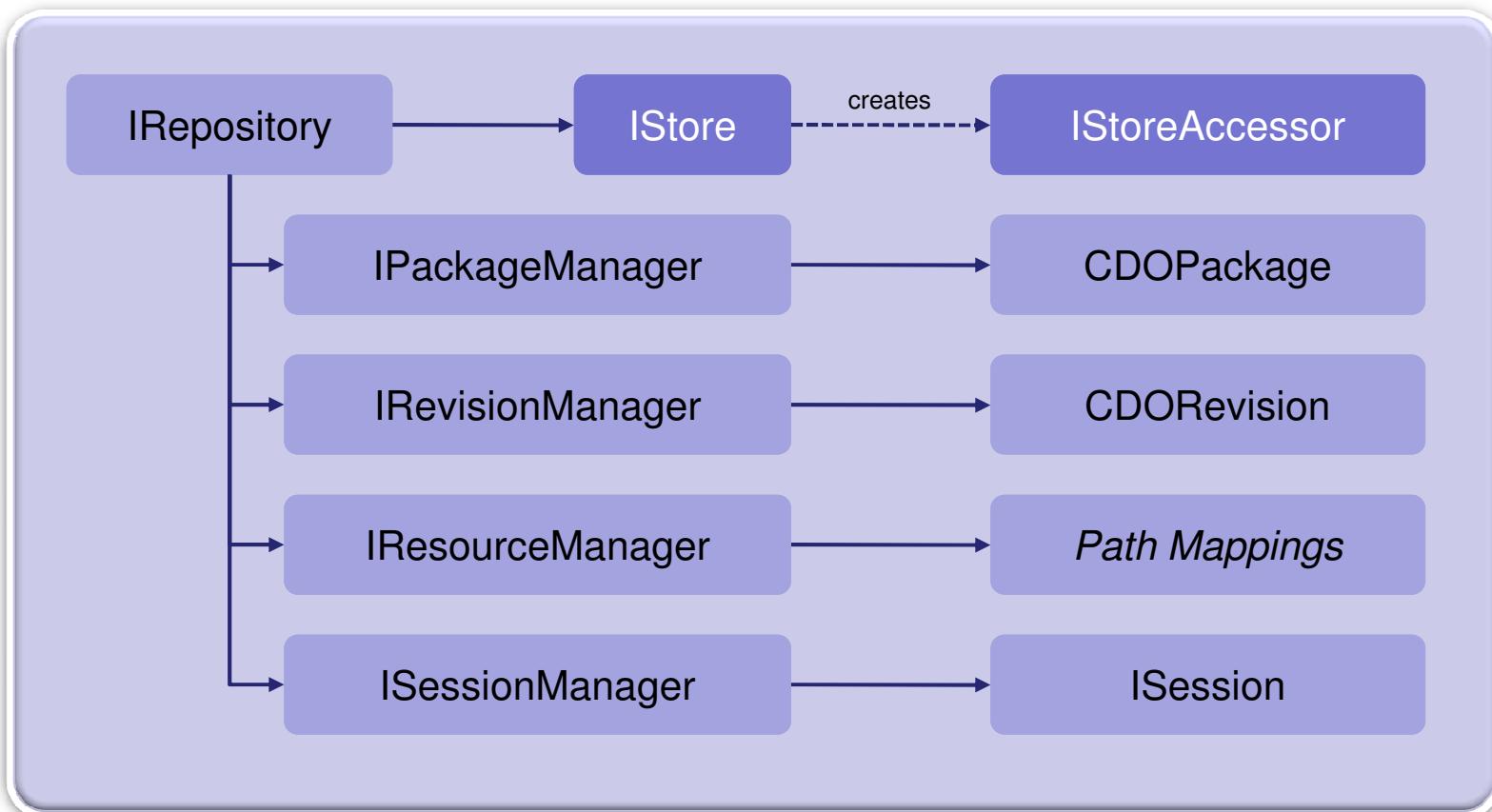




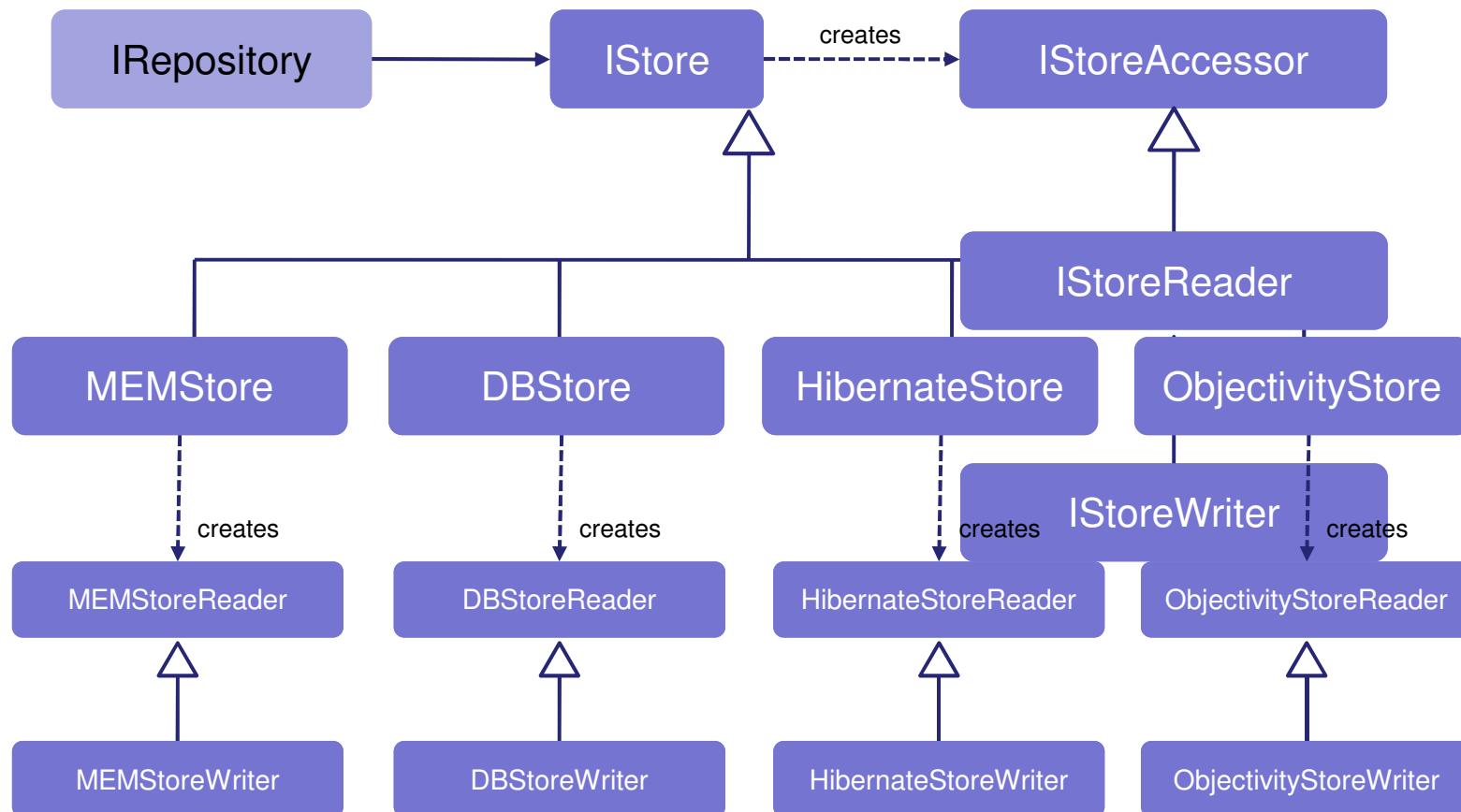
Model Type		Native		Legacy		Meta	
		Dynamic	Generated	Unwoven	Woven		
Development Artifacts	Ecore	Unaffected				N/A	
	Genmodel	N/A	Slightly modified	Unaffected			
Instance Interface		CDOObject		EObject		EModelObject	
State Machine Interface				CDOAdapter	CDOCallback	CDOMeta	
Location of Internal Values	class	DynamicCDOObject	Java Byte Code				
	store	CDOObject	N/A			CDOMeta	
	view		CDOAdapter	CDOCallback			
	id						
	state			CDOSESSION			
	revision						
	resource						
Location of Model Values per CDOState	TRANSIENT	CDOResolution	EObject			N/A	
	NEW		EObject				
	DIRTY		EObject and CDOResolution				
	CLEAN		EModelObject				



CDO Server-Side



CDO Server-Side



How to continue the tutorial?

§ Questions regarding the slides

- § Switch desktop sharing to Eike

§ Live Demonstration

- § CDO server application
- § CDO user interface

§ Open discussion + code walk-through