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Research & Development



- JDO Model
 - Principles
 - Serialization, JDBC and JDO
- The Speedo project
- Use cases:
 - France Telecom projects
 - Groupama
 - Stockholm County Council

JDO Model

<http://java.sun.com/products/jdo/>





JDO, what is it?

- Java Data Objects
- Many SQL dialects VS JDOQL
- Features:
 - Automatic cache management
 - Query abilities
 - Transactional support
 - Distributed and heterogeneous data stores
 - Integration with EJB

Serialization, JDBC & JDO

- **Serialization**
 - ⊕ Directly persist application's object model
 - ⊖ Lacks the db features for building reliable & scalable applications
- **JDBC**
 - ⊕ Provides reliability & scalability
 - ⊖ Difficult to integrate with an application's object model
- **JDO**
 - Combines Java object model support and portability of Serialization with reliability & scalability of JDBC
 - "Write once, persist everywhere!"



The Speedo project

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Speedo implementation

- Implementation of Sun's JDO specification
- Part of the ObjectWeb open source community
- Built on top of
 - JORM: mapping objects onto a persistent support
 - MEDOR: query framework
 - Perseus: persistence framework
 - Fractal/Julia, Monolog, ASM
- Main sponsor: France Telecom

Speedo in Objectweb

Application = { Components }

Container

EJB CMP2

Speedo

Frame-
work

Concurrency
(Perseus)

Transaction
(JCA)

Mapping
(JORM)

Query
(MEDOR)

Cache
(Perseus)

Data
support

ODB

RDB

File

LDAP

Speedo: features (1/2)

- Uses byte code enhancement (ASM)
 - Performance choice
- Optimistic or pessimistic transaction mode
- Cache of persistent objects
 - Replacement policies: LRU | MRU | FIFO | ...
- Prefetch during queries
 - Avoids useless I/O → increases the performance

Speedo: features (2/2)

- Fractal
 - Component architecture
- Pools of components for performance
 - Avoids the creation and the linking of components
- JORM/MEDOR advantages
 - Legacy support
 - Other than relational databases
 - Distribution / federation
- J2EE integration with JCA
 - JOnAS, Weblogic



Speedo: use cases

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France Telecom use cases

- **ODIS**
 - Platform for the management of real-time information coming from various sensors
 - Usage of the platform for real-time coverage of sporting events:
 - Marathons
 - Tour de France
 - Dakar
- **IntelliInventory**
 - Inventory management
 - Application to the inventory of computer equipment within France Telecom



Groupama, Mercure project

- Unilog project
 - French insurance society
 - Manage data about its experts
 - National solution



Stockholm County Council

- Overall Problem
 - Fragmentation of health information about patients
 - Within Stockholm region: 1.8 M inhabitants
 - 23 different EHRs (Electronic Health Record systems)
- The GLL project
 - Consolidate the information in a common repository
 - Show the feasibility of this strategy
- Solution
 - J2EE based technology & a presentation framework
 - ObjectWeb's suite of solution: JOnAS, Barracuda, Speedo.

Scaling from 3 to 30

- Success
 - Delivered on time and performing as expected
 - Scaling from 3 to 30 units: 1000 users
- Speedo "performs very well and is fast"
 - Caching mechanisms
 - Initially, considered as the highest risk in the project
 - Problems with first versions but quickly responded to
 - Guide with design patterns improving performance
 - Since April 2004, "functions very smoothly" in every day production

Conclusion

- Work plan
 - JDO 2
 - Some features already available
 - JBoss integration
 - JMX
- Speedo is an open source project
 - Use it!
 - Contributors welcome!