JMS vs XVSM

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[XVSM] Coordination model

- Containers for actions like
  - ASSIGN_TABLE
  - DELIVER_PIZZAS
  - …
- Per Pizzeria containers which always contain the overall-state:
  - PIZZERIA_GROUP
  - PIZZERIA_TABLE
  - PIZZERIA_DELIVERY

[XVSM] Coordination model

- Pizzeria GUI and Group GUI have notifications on PIZZERIA_GROUP, PIZZERIA_DELIVERY, PIZZERIA_TABLE

- Waiters, Drivers and cooks have notifications on their action containers.
  If there were no notifications for a certain time, timers fetch the containers to get missed entries.

[XVSM] Problems 1/2

- Heavy use of linda querying
  - Problems with extending classes. Search the template if a superclass's field of the template is set.
  - Wrapper types are necessary instead of primitive types
- „Info" Containers (e.g. PIZZERIA_GROUP)
  - High congestion for „take"-ing the entries

[XVSM] Problems 2/2

- Notifications

  - No guarantees on order and delays of notifications

  - → not good for

    - FIFO

    - Recovery

    - Dependencies between actions (e.g. „don't prepare group pizzas while there is a delivery order...")

- Strange Nullpointer Exception

  java.lang.NullPointerException
  at java.util.LinkedList$ListItr.next(LinkedList.java:891)
  at org.mozartspaces.capi3.javanative.persistence.
  DeferredDB$PersistentTransaction.commitTransaction(DeferredDB.java:68)
  at org.mozartspaces.capi3.javanative.isolation.
  DefaultTransaction.commit(DefaultTransaction.java:133)

[XVSM] Persistenz & Recovery

Run the spaces with a configuration file with a
persistence profile different from „in-memory“:

```
<persistence>
<profile>berkelydb-lazy</profile>
</persistence>
```

[JMS]

Time Analysis

- 1.1 Group GUI + Pizzeria GUI: 12 H
- 1.2 Space Implementation: 25 H
- 1.3 JMS Implementation:
- 2.1 Group GUI + Pizzeria GUI: 8 H
- 2.2 Space Implementation: 22 H
- 2.3 JMS Implementation:
- 2.4 Benchmark: 18 H
- 3.0 Dokumentation: 4 H

Lines of Code

- Group GUI   1250
- Pizzeria GUI   950
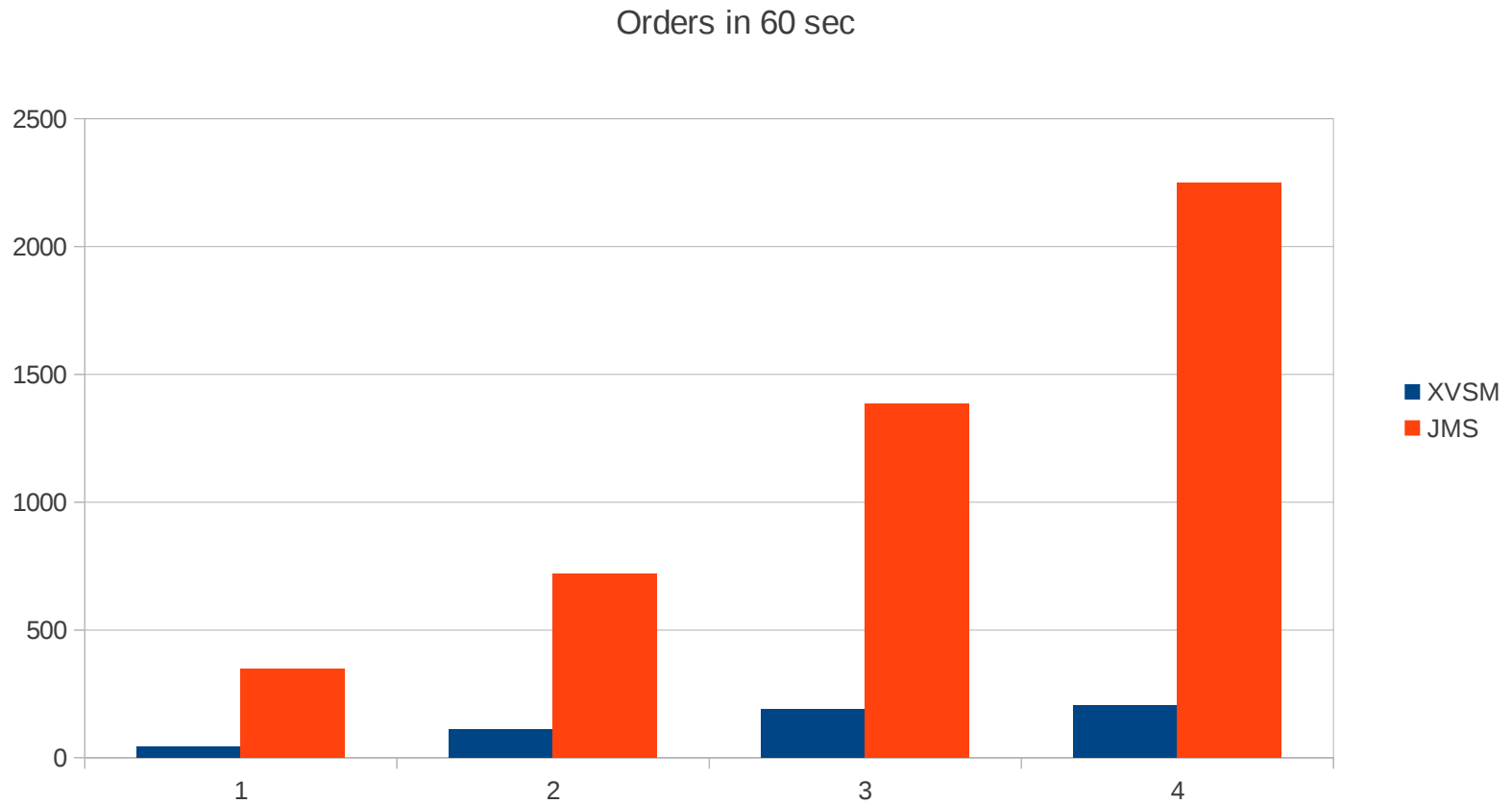- XVSM Implementation   1850
- JMS Implementation

Benchmarks – Orders in 60 sec

	XVSM	JMS
• 1 CPU:	42 Orders	finished after 52 sec
• 2 CPUs:	112 Orders	finished after 25 sec
• 4 CPUs:	192 Orders	finished after 13 sec
• 8 CPUs:	207 Orders	finished after 8 sec

Benchmarks – Orders in 60 sec

Orders in 60 sec

Evaluated space technologies

- Gigaspaces
  - Need to register to download free version
- Blitz
  - Simple examples
- MozartSpaces
  - Best documentation!
  - Detailed examples
  - Has notifications

Evaluated non-Space technologies

- Sockets
  - Much too low-level. No coordination support!
- RMI
  - Still too low-level. No transactions, no FIFO.
- JMS
  - Loosely coupled
  - Transaction support
  - Queue should provide FIFO