

Session: 17901

MQ for z/OS – The Insider Story

Paul Kettley

PLM for Messaging on z

paulk@uk.ibm.com



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Agenda

- Transactions
- Queue Managers
- Resource Managers
- What does a transaction look like?
- Scenario Walkthrough
- Summary



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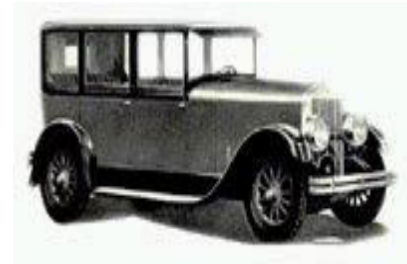
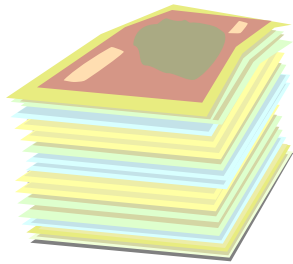
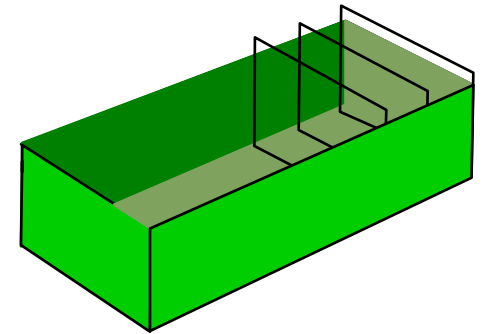
Transactions



Transaction Contract



Message Transaction

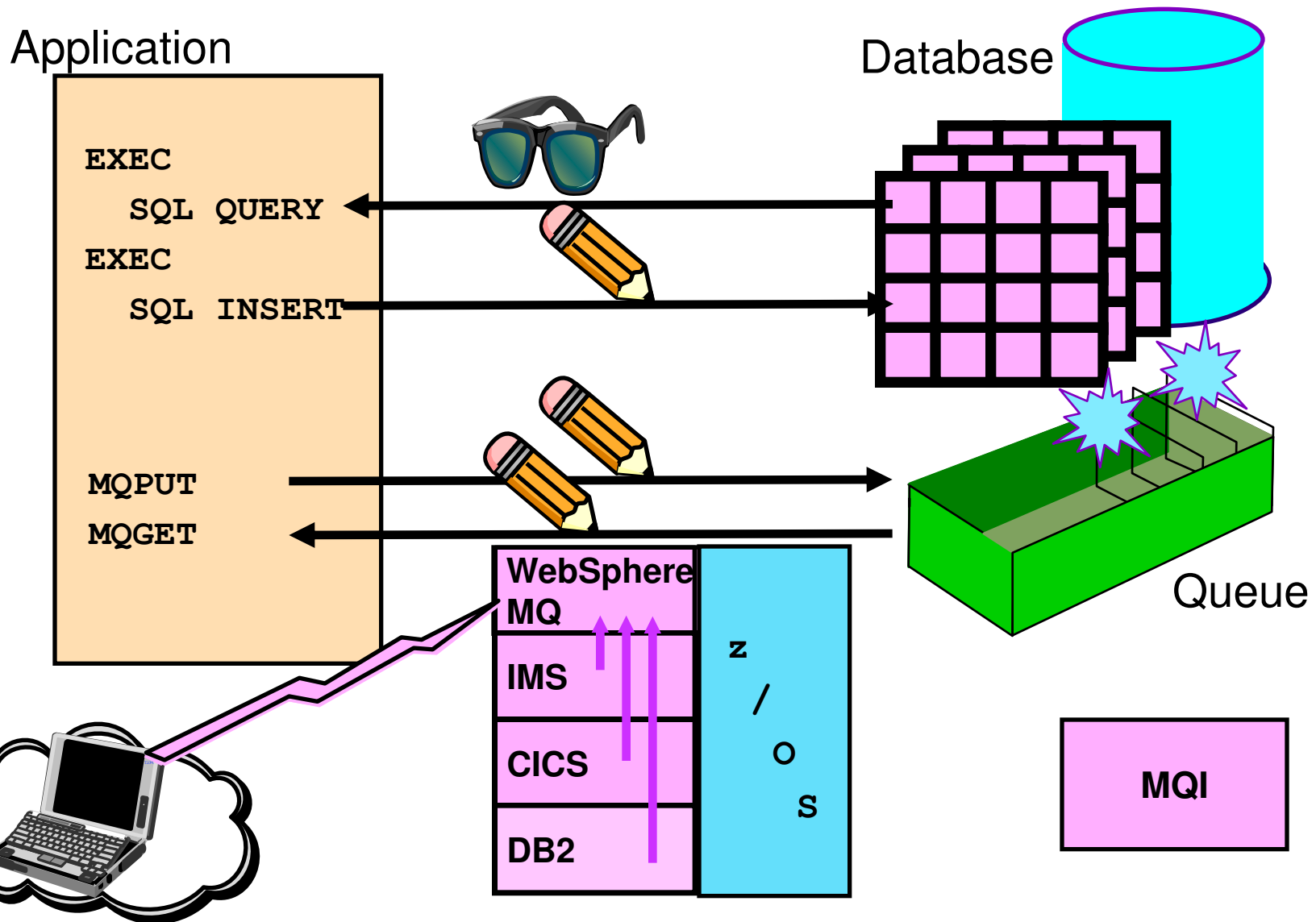


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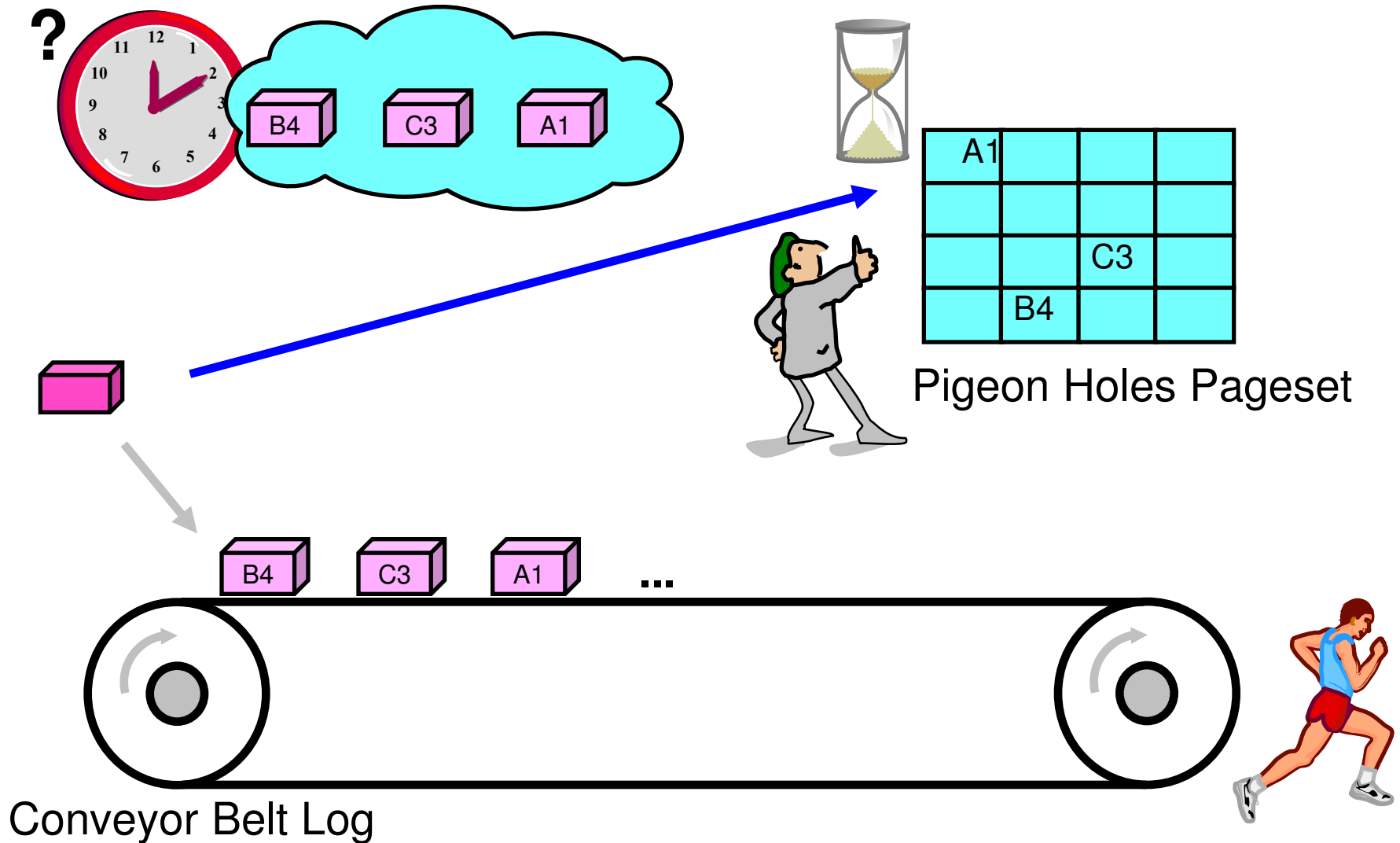
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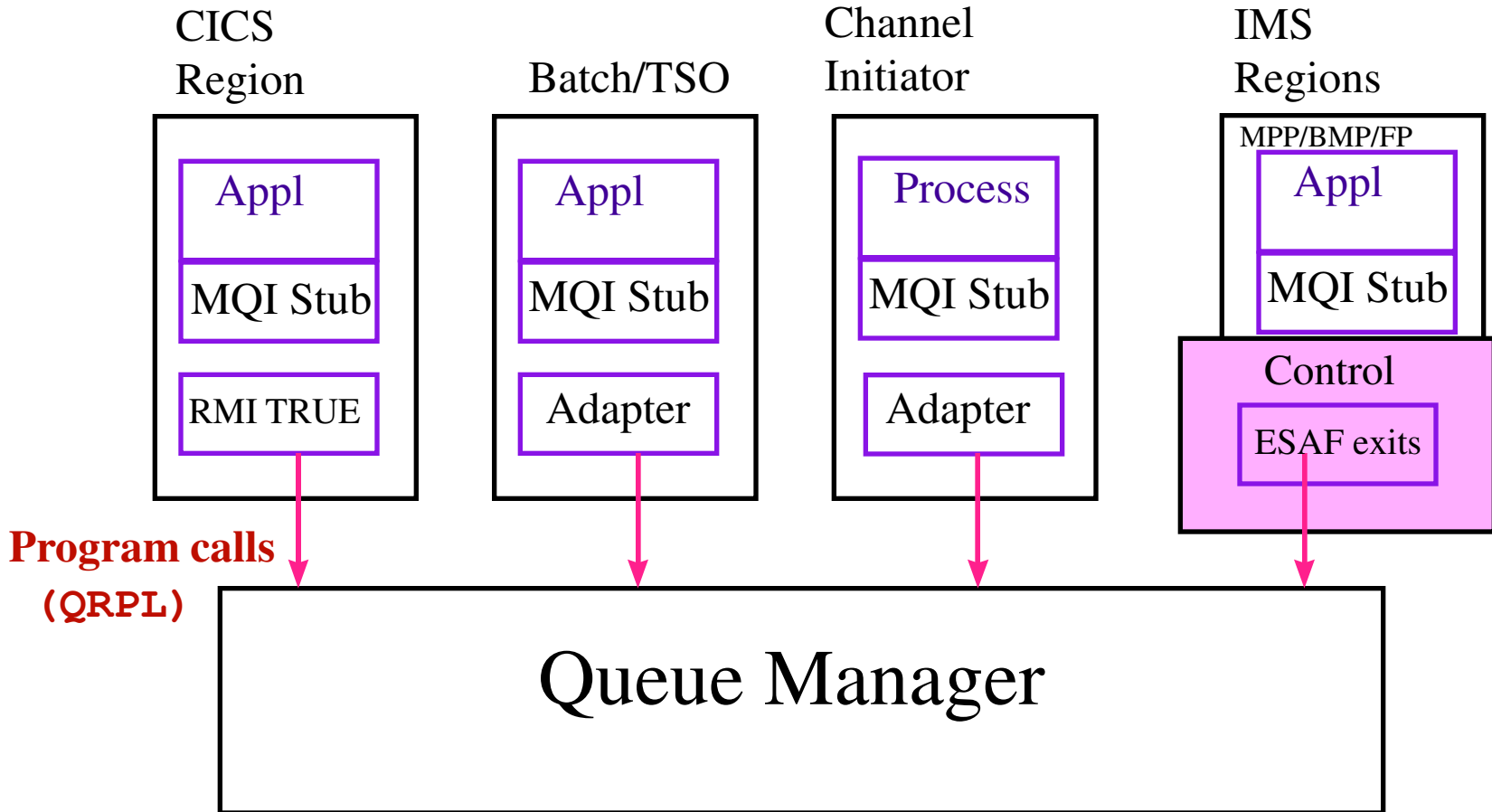
The Queue Manager - Delivering Messages



Core Technology - Logging and Buffering



Accessing the MQI - Stubs and Adapters

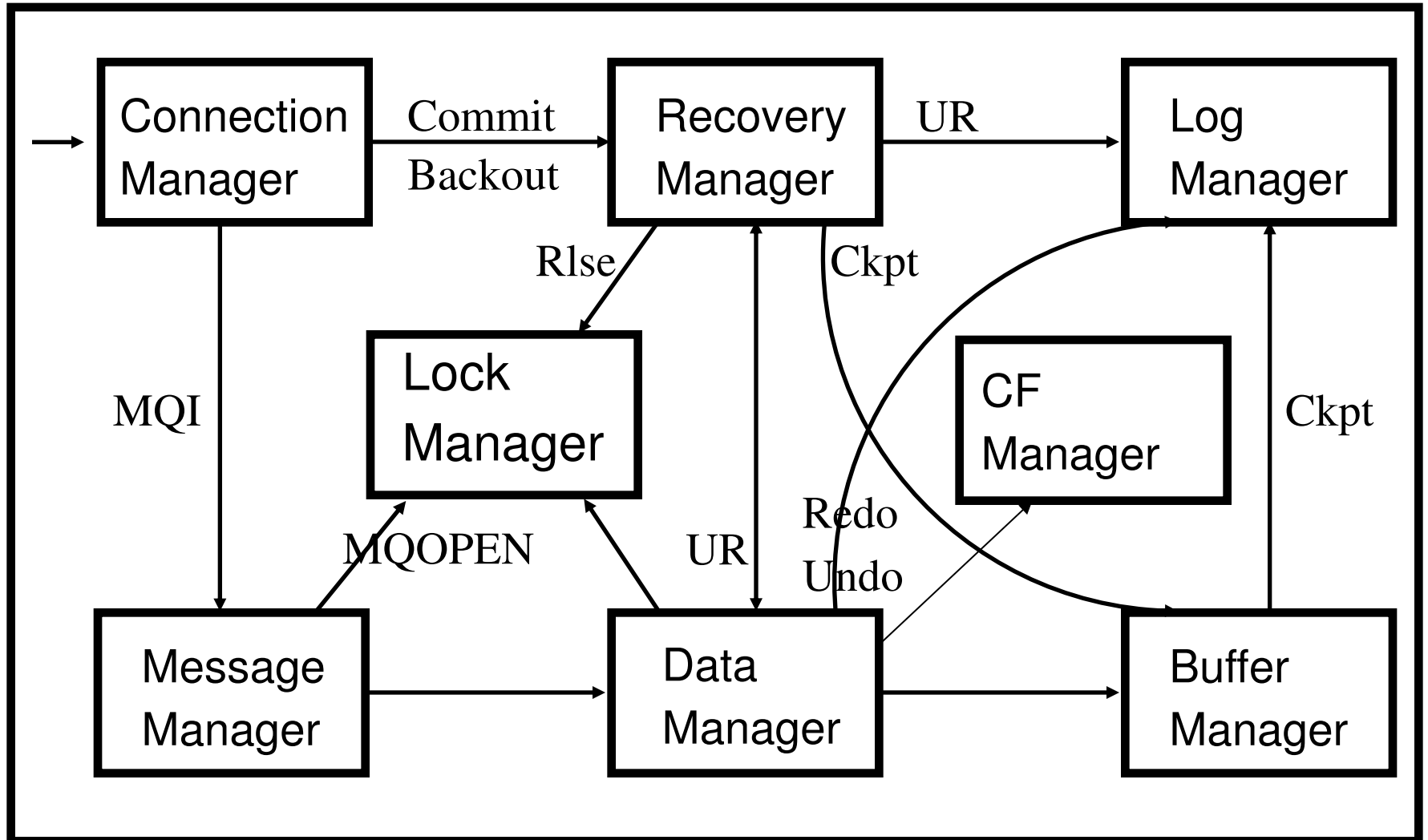


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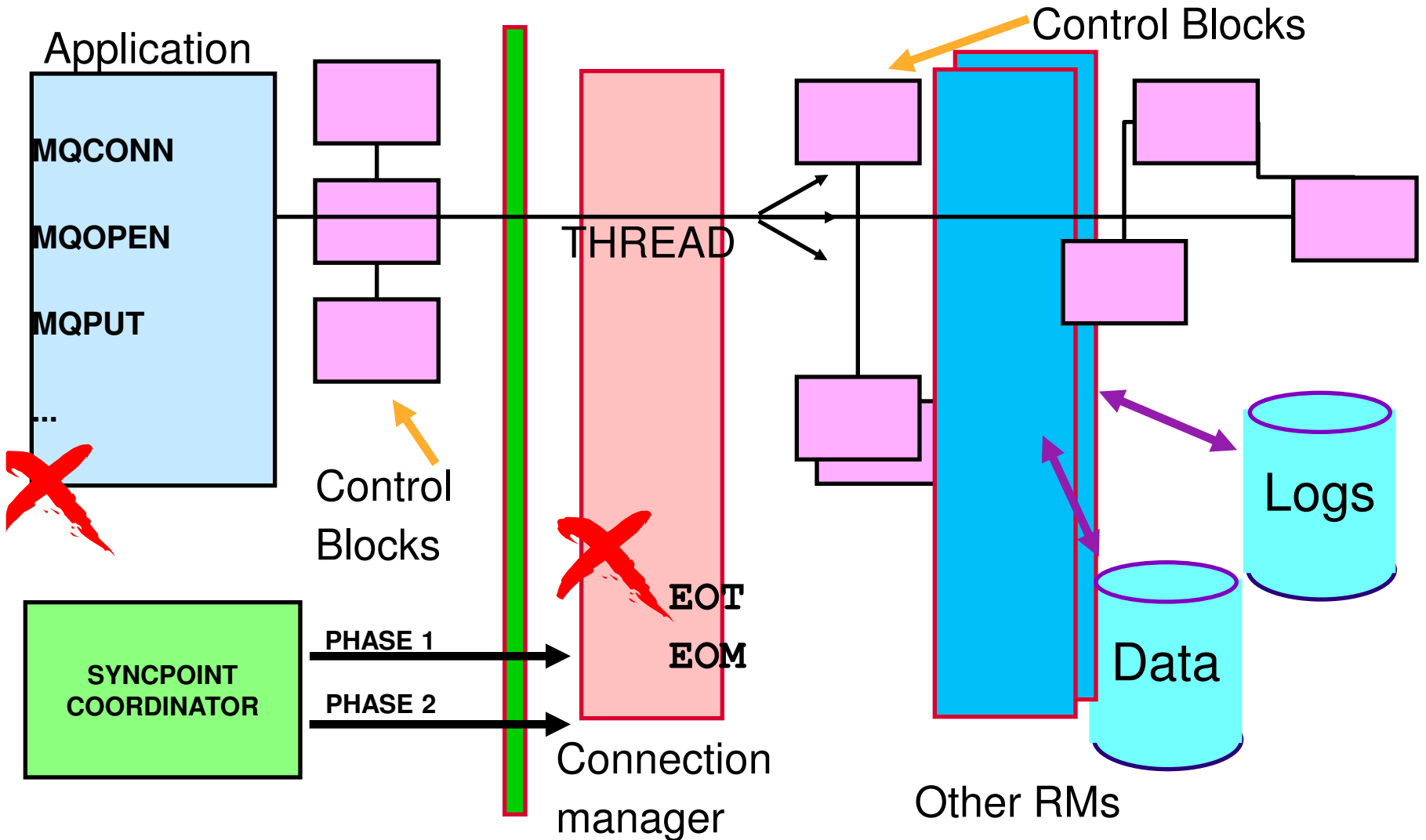
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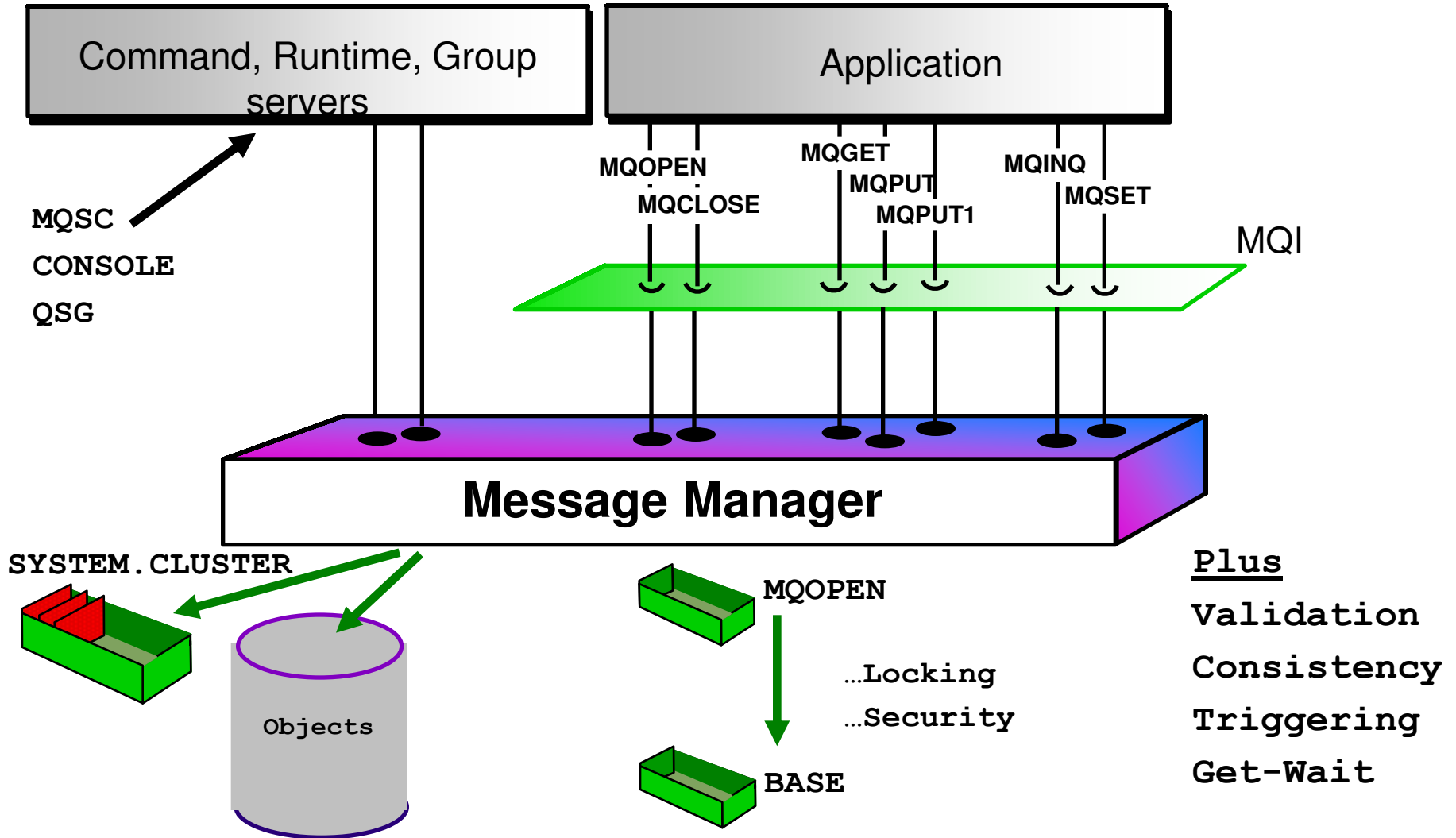
Building Blocks - Resource Managers



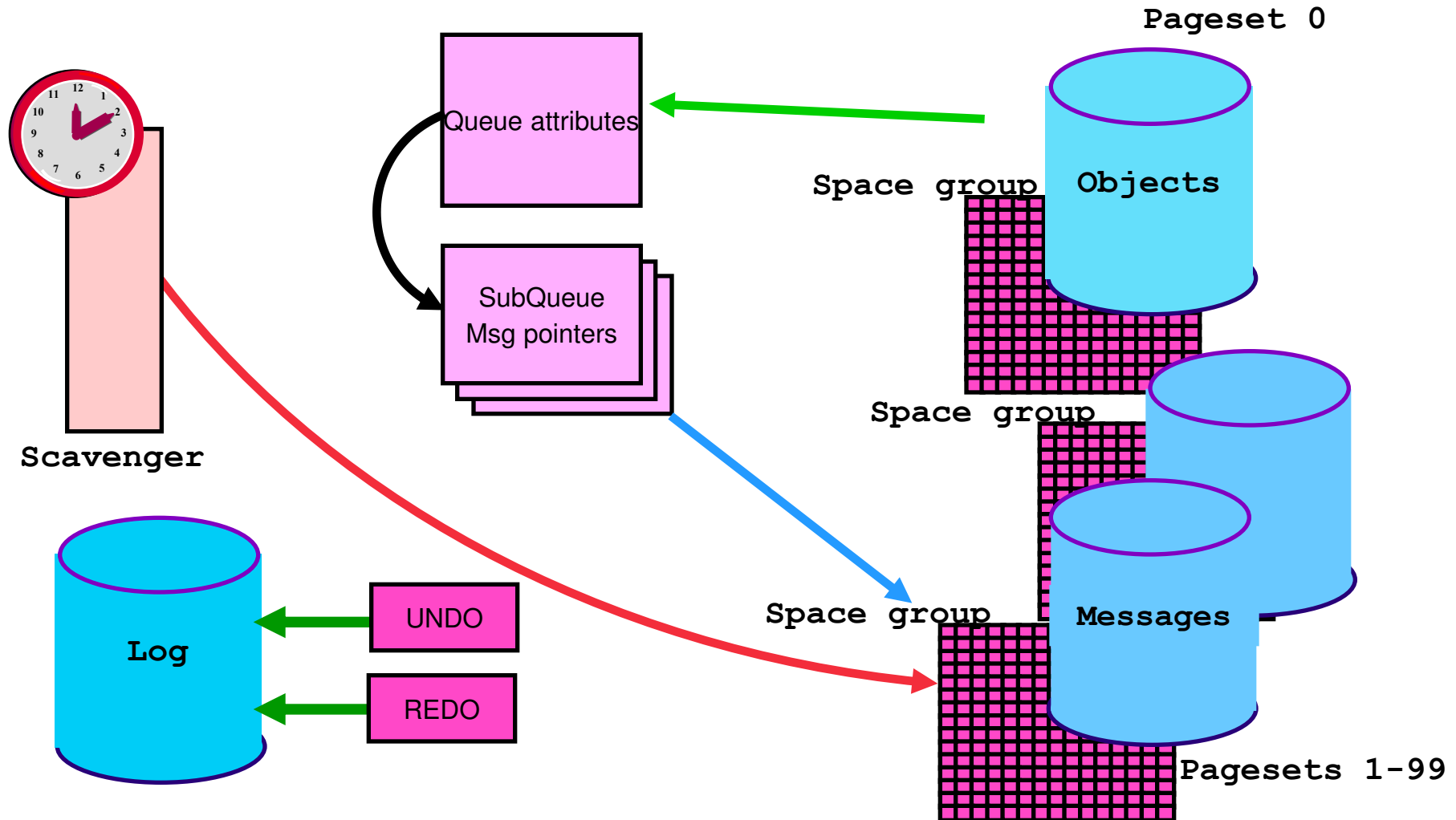
Handling Applications - Connection Manager



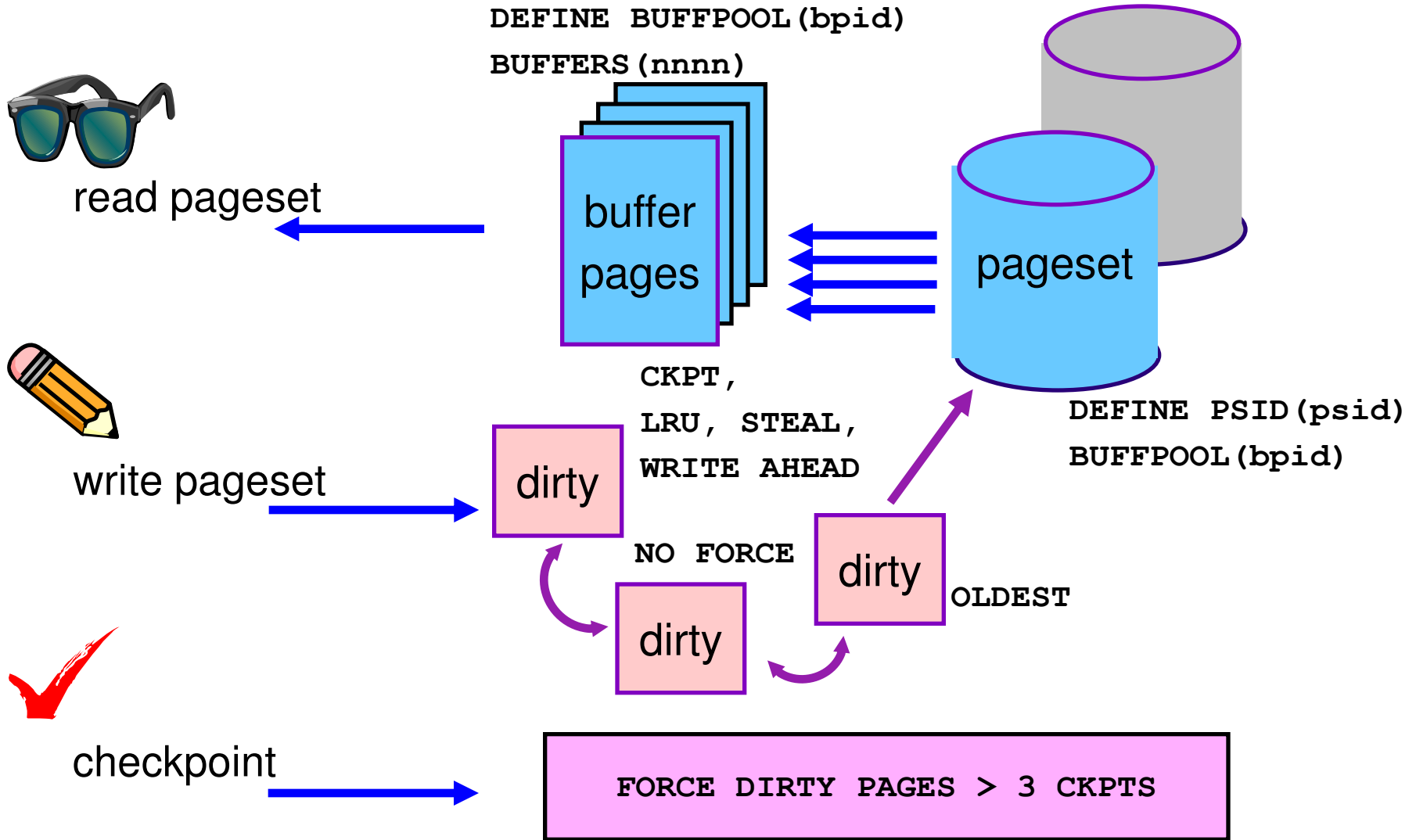
Controlling the MQI and MQSC - Message Manager



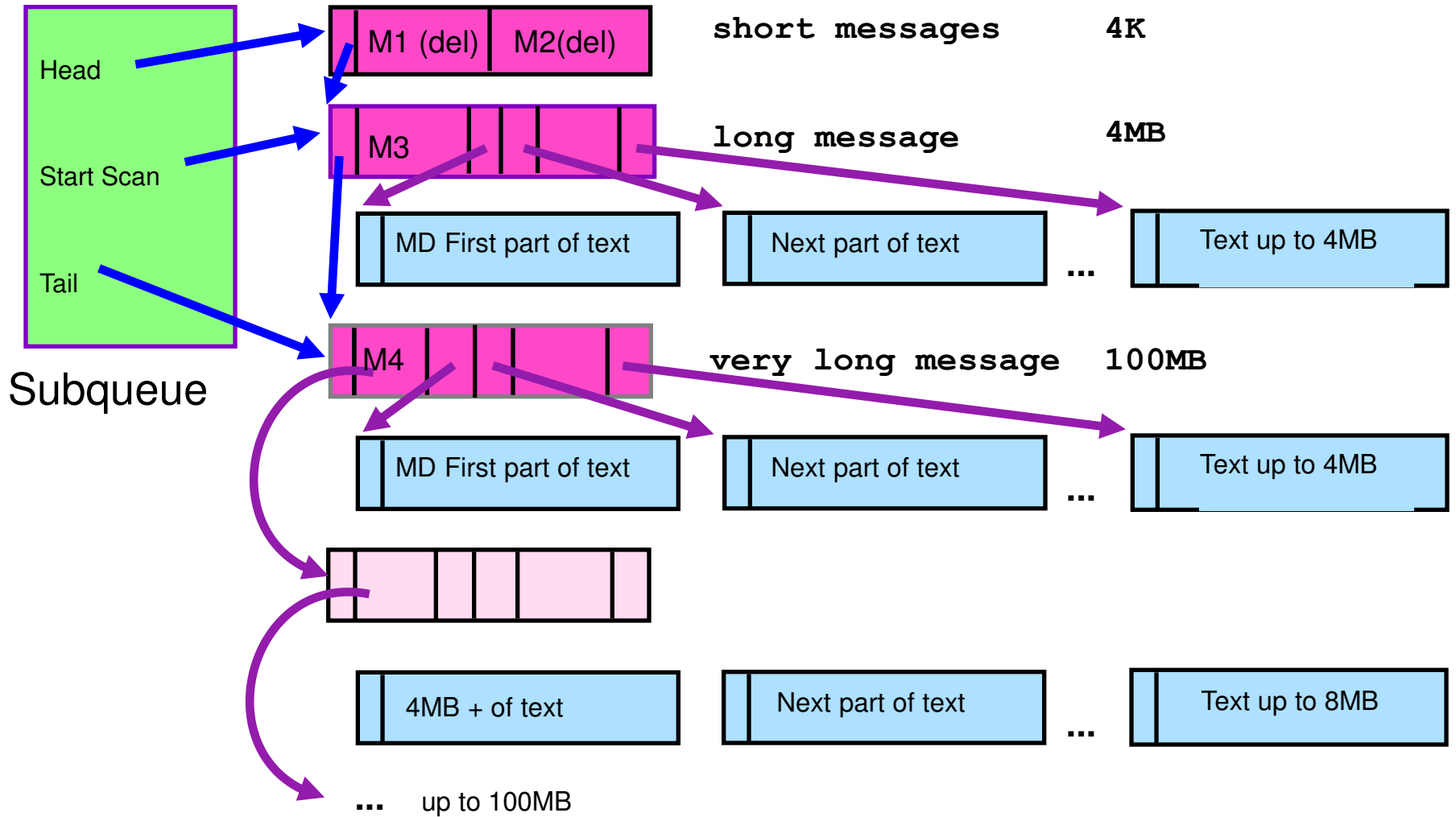
Controlling Messages and Objects - Data Manager



Bringing High Performance - Buffer Manager



Local Message Queue Storage



Handling Transactions - Recovery Manager

TRANSACTION STATES



1 PHASE
COMMIT

BEGIN

IN
FLIGHT

IN
COMMIT

COMMITTED

BACKOUT

BEGIN

IN
FLIGHT

IN
BACKOUT

BACKED OUT

2 PHASE
COMMIT

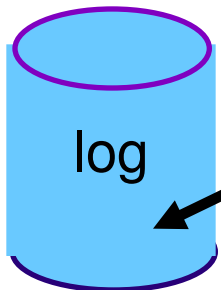
BEGIN

IN
FLIGHT

IN
DOUBT

IN
COMMIT

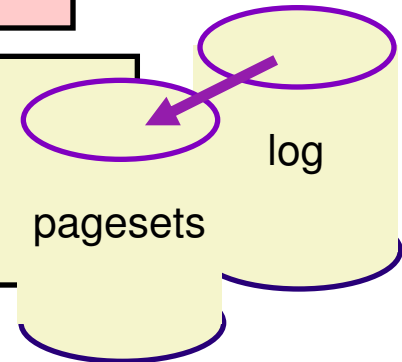
COMMITTED



LOG
LOAD



CKPT



RESTART/RECOVERY

pagesets

log

Providing Logging Interfaces - Log Manager

- Log read and write functions
- Log Shunting
- Multiple active log data sets and archive log datasets
- Archive inventory management
- Duplexed for reliability
- “Bootstrap” file
 - End of log location
 - Archive inventory
- Various Utilities

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Examining Transactions - A Log Print

00000000D569 URID(00000000D569) RM(RECOVERY) TYPE(START UR)

**** 00640024 00200001 03000000 0000D569 00000000 D545
0000 00240000 0000D000 00000000 00000700 00000000 00000000 00000000 0000D6C4
0020 D6E6C4C1 4040B5B4 8FA08793 02864040 40404040 4040C2C1 E3C3C840 4040D6C4
0040 D6E6C4C1 40400000 00000000 0000

00000000D5CD URID(00000000D569) RM(DATA) LRID(00000000.00000E01) TYPE(UNDO REDO)

SUBTYPE(DECREMENT BY)

**** 002A0064 0600000F C9000000 0000D569 00000000 D569
0000 00000000 00000E01 00040326 00000001 00000001

00000000D5F7 URID(00000000D569) RM(DATA) LRID(00000001.00000201) TYPE(UNDO REDO)

SUBTYPE(DELETE)

**** 0026002A 06000008 C9000000 0000D569 00000000 D5CD
0000 00000001 00000201 00000000 00000E01

00000000D61D URID(00000000D569) RM(RECOVERY) TYPE(START COMMIT1)

**** 007C0026 00200002 03000000 0000D569 00000000 D5F7
0000 00240000 0000D000 00000000 00000700 00000000 00000000 00000000 00004040
0020 40404040 40400000 00000000 00000000 00000000 00000000 00000000 00000000
0040 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
0060 00000000 0000

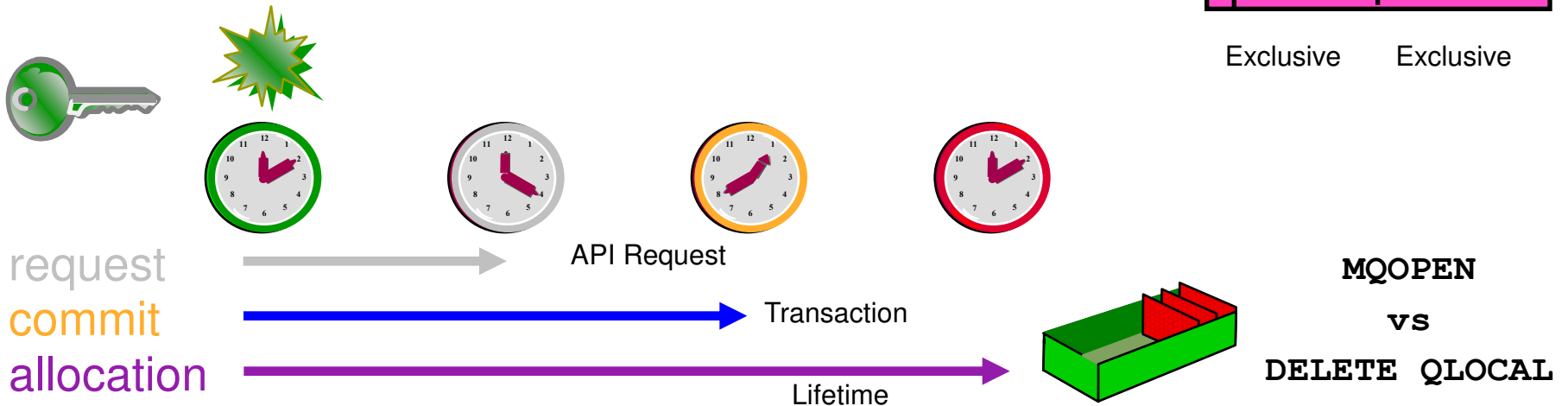
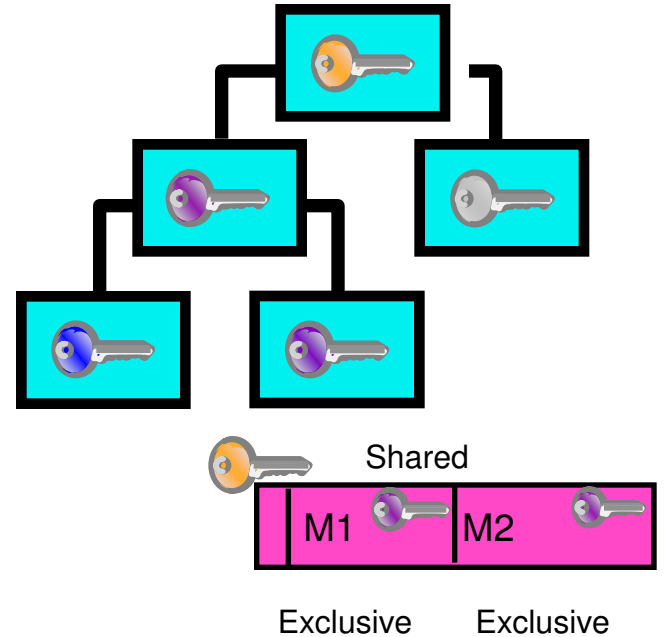
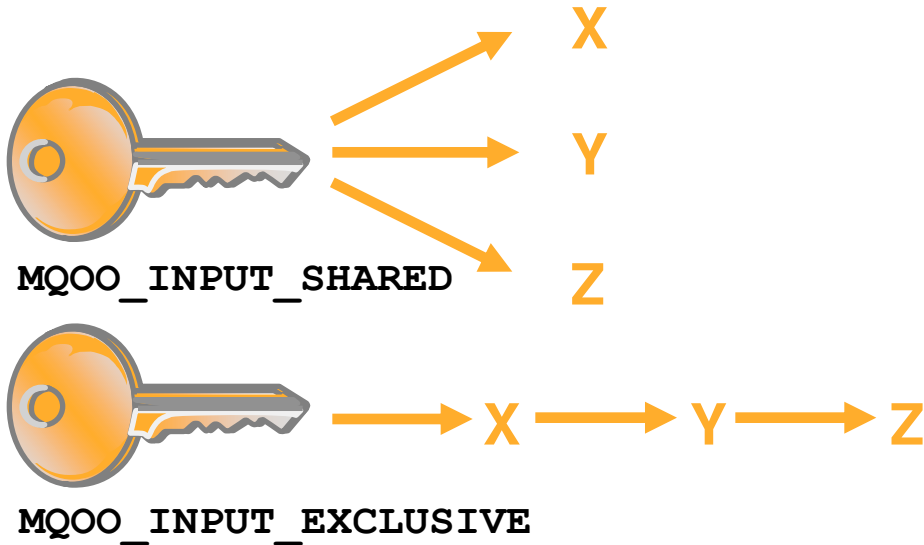
00000000D699 URID(00000000D569) RM(RECOVERY) TYPE(PHASE 1 TO 2)

**** 0024007C 0020000C 03000000 0000D569 00000000 D61D
0000 00240000 0000D000 00000000 0000

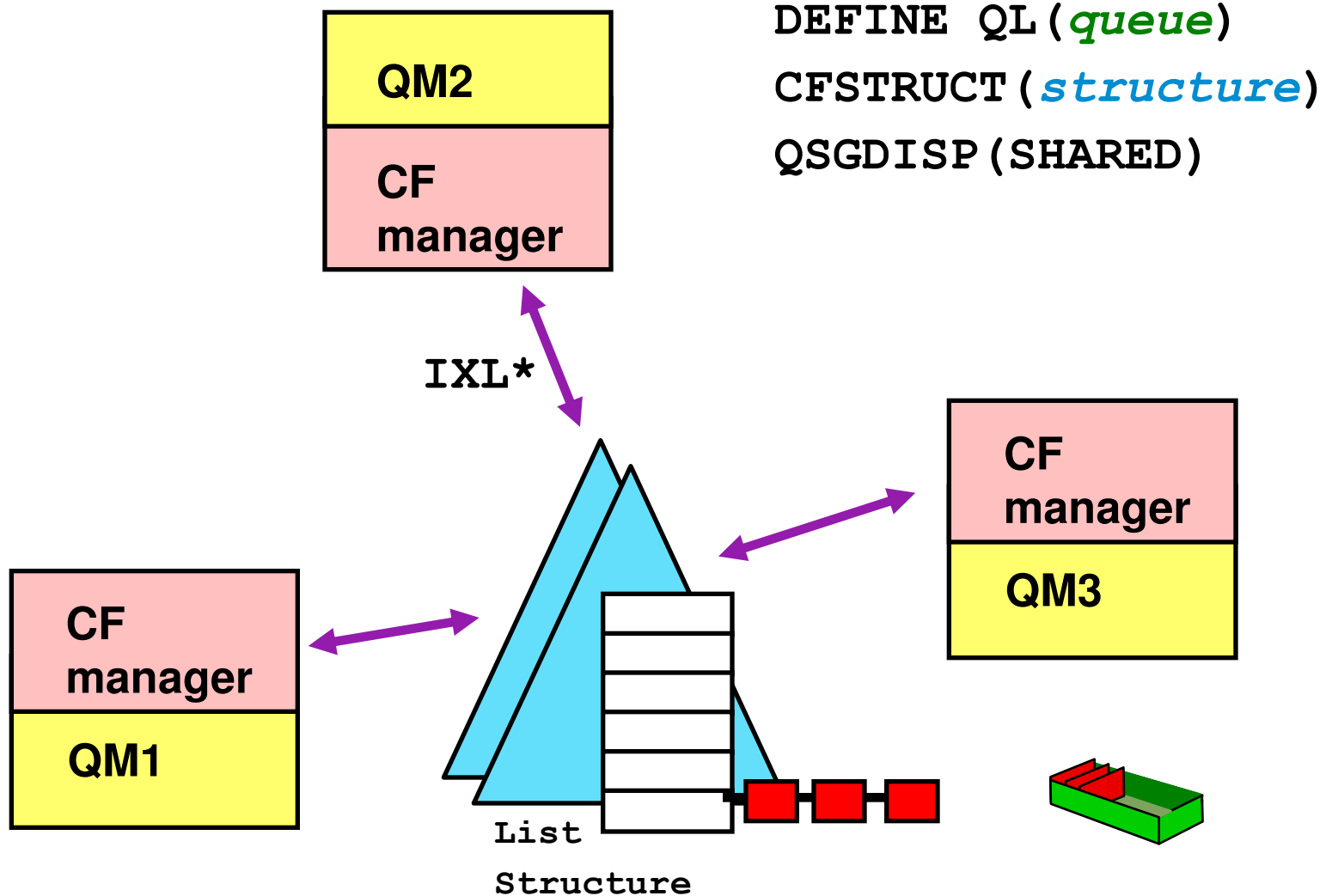
00000000D6BD URID(00000000D569) RM(RECOVERY) TYPE(END COMMIT2)

**** 00240024 00200010 03000000 0000D569 00000000 D699
0000 00240000 0000D000 00000000 0000

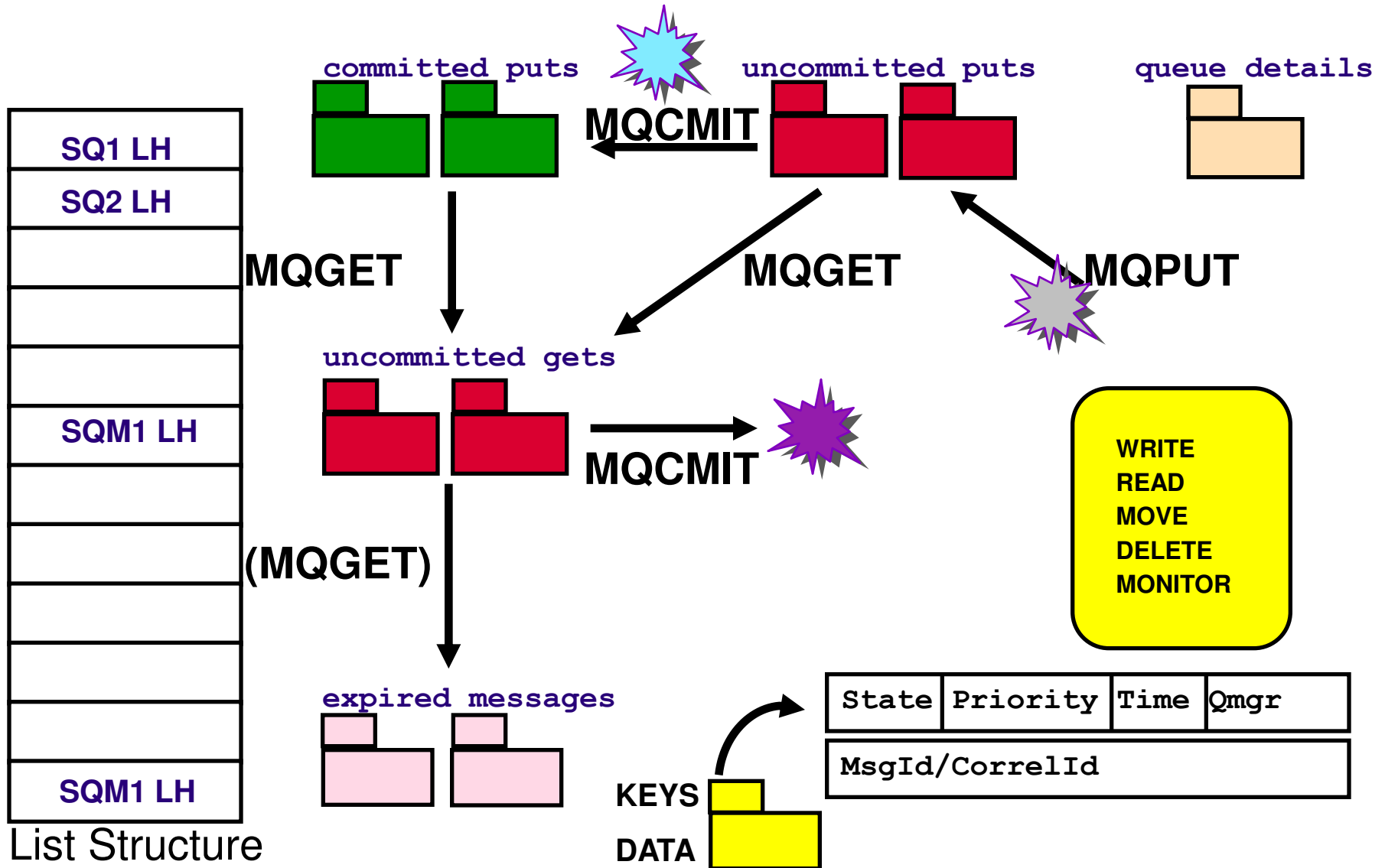
Concurrency and Isolation - Lock Manager



Managing Shared Messages - Coupling Facility Manager



Shared Message Queue Storage Using CF List Structures







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Scenario - MQPut to a Triggered Queue

| <u>Application</u> | <u>Message Manager</u> | <u>Data Manager</u> | <u>Buffer Manager</u> | <u>Recovery Manager</u> | <u>Log Manager</u> | <u>Lock Manager</u> |
|--------------------|--|--|-----------------------|---|--------------------|----------------------|
| MQOPEN | | | | | | |
| |  | | | | | ACQUIRE LOCK |
| | | LOCATE QUEUE IN HASH TABLE | | | | |
| | SECURITY BASE NAME | | | | | |
| | ACQUIRE HANDLE | | | | | |
| MQPUT | | | | | | |
| | USE HANDLE | | | | | |
| | | LOCATE PAGE TO HOLD MSG | | | | |
| | | | BUFFER PAGE | | | |
| | |  | | START UR | LOG RECORDS | |
| | |  | | | LOG RECORDS | |
| | CHECK TRIGGER RULES | | | | | |
| MQCMIT | | | | | | |
| | | | |  | FORCE LOG | |
| | | | | | | RELEASE LOCKS |

Summary

- Delivers transactional messaging
 - Enables robust business applications
- Complex, but well organised
 - Adapters, Address spaces, Resource Managers
- Designed for throughput, availability and scalability
 - Logging, Buffering, Locking, Communications

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