

# VSAM Access Method or DBMS?



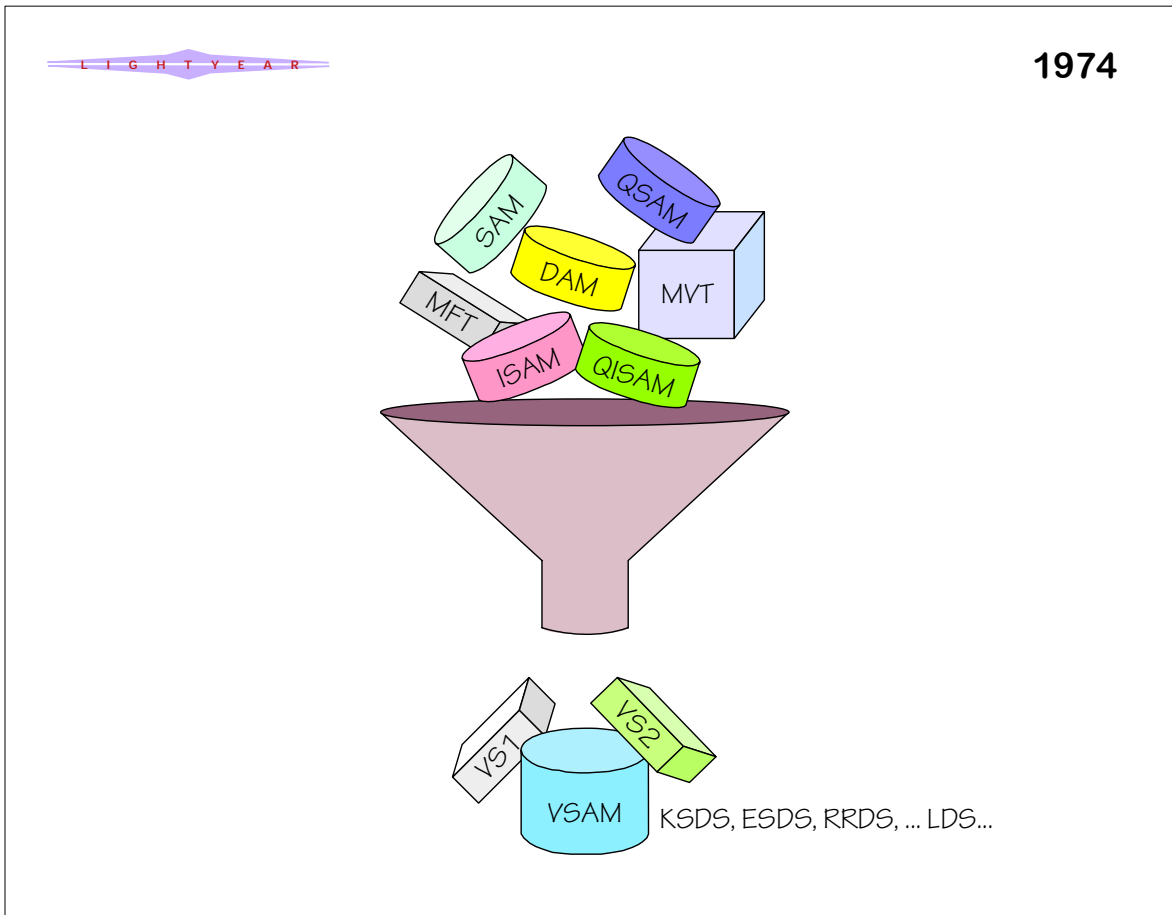
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IBM Certified System Designer

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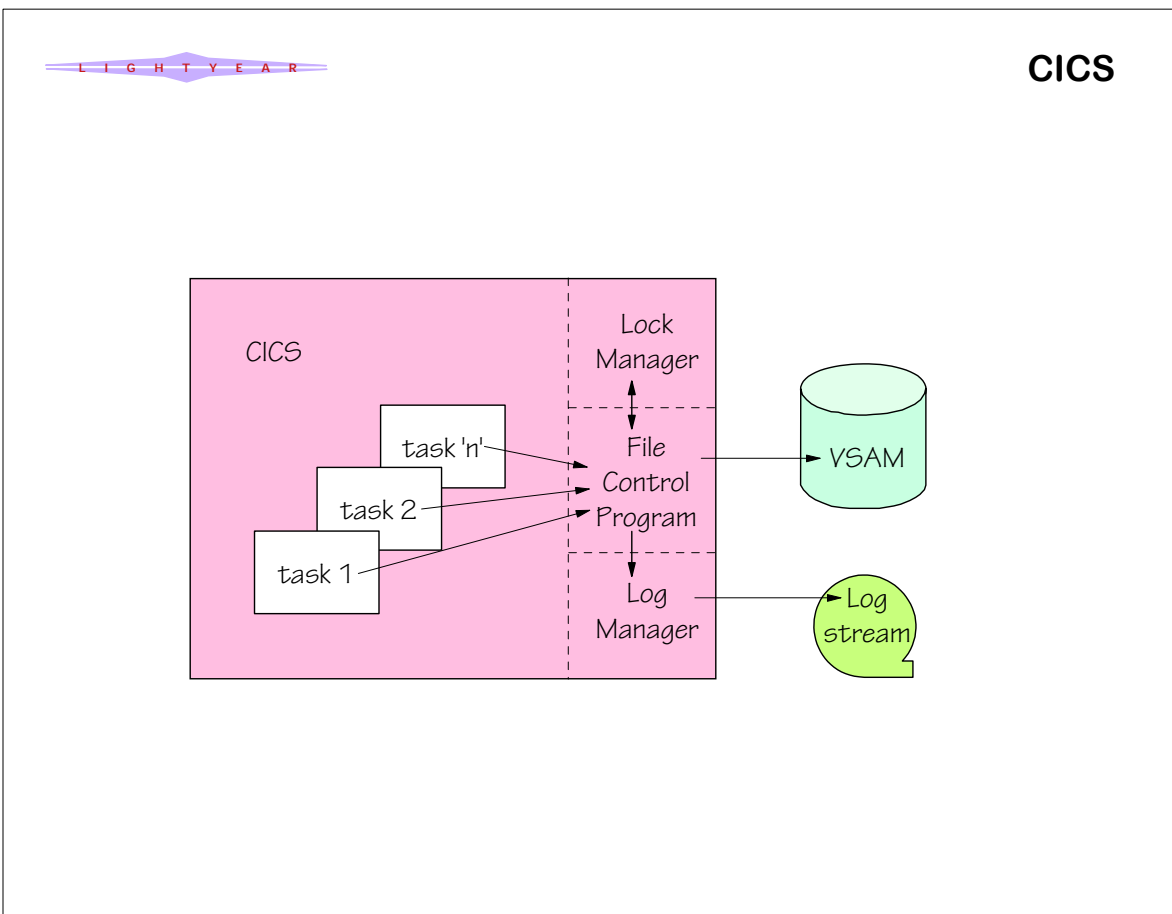
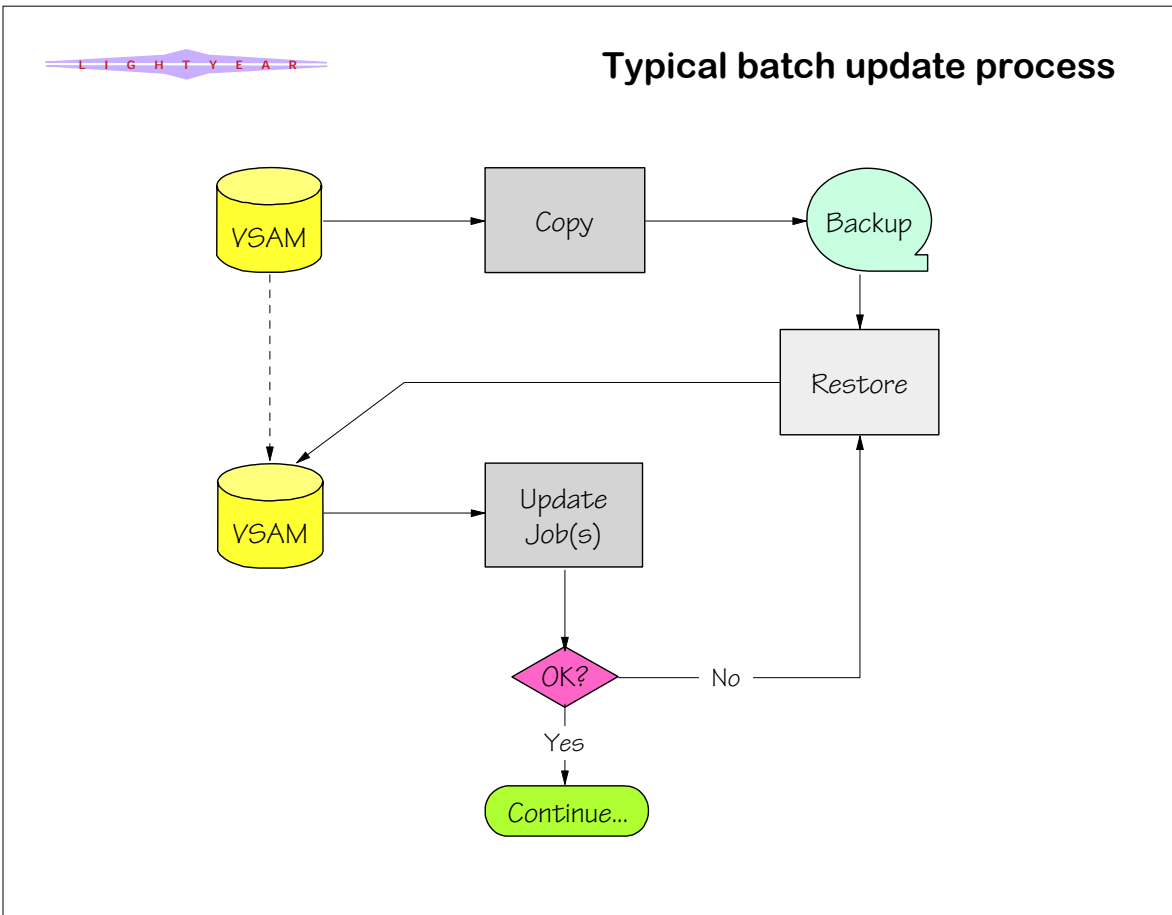
**Access Method vs. DBMS**

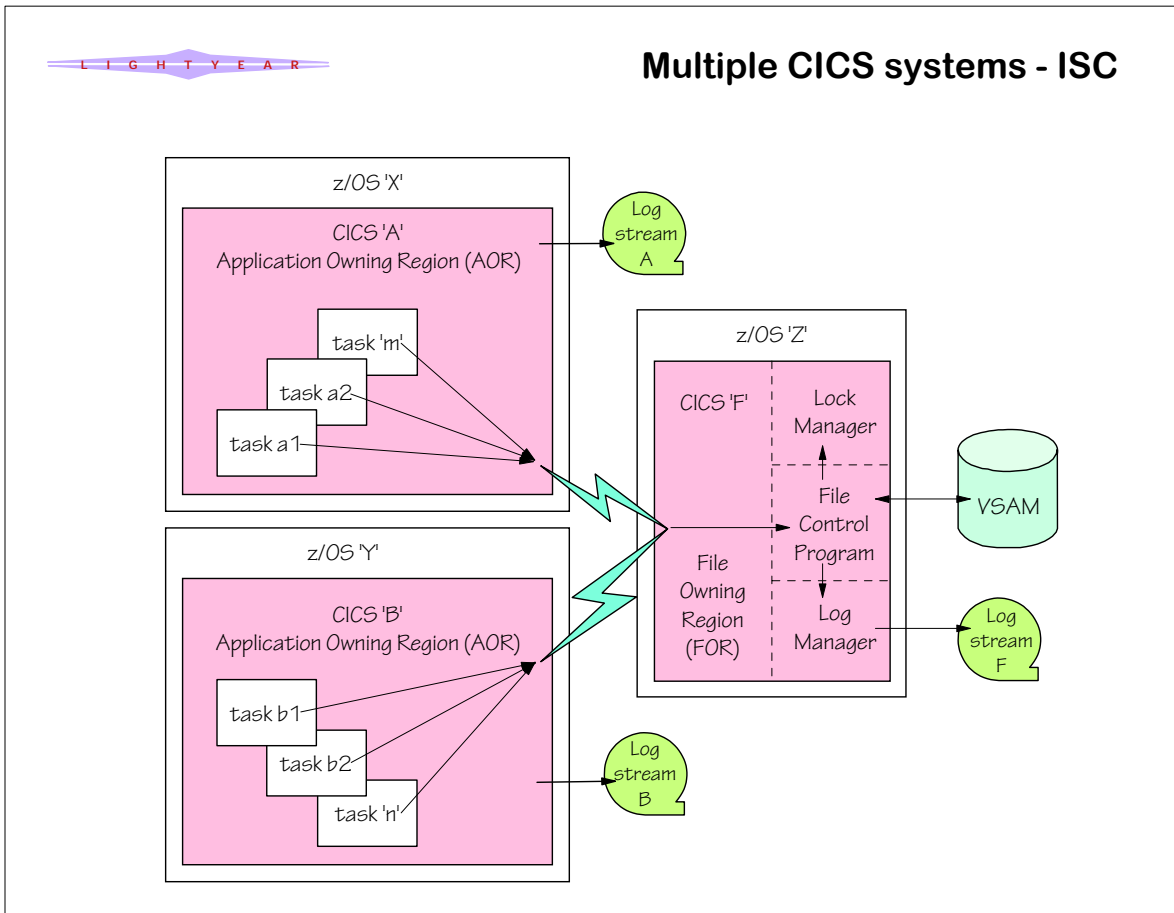
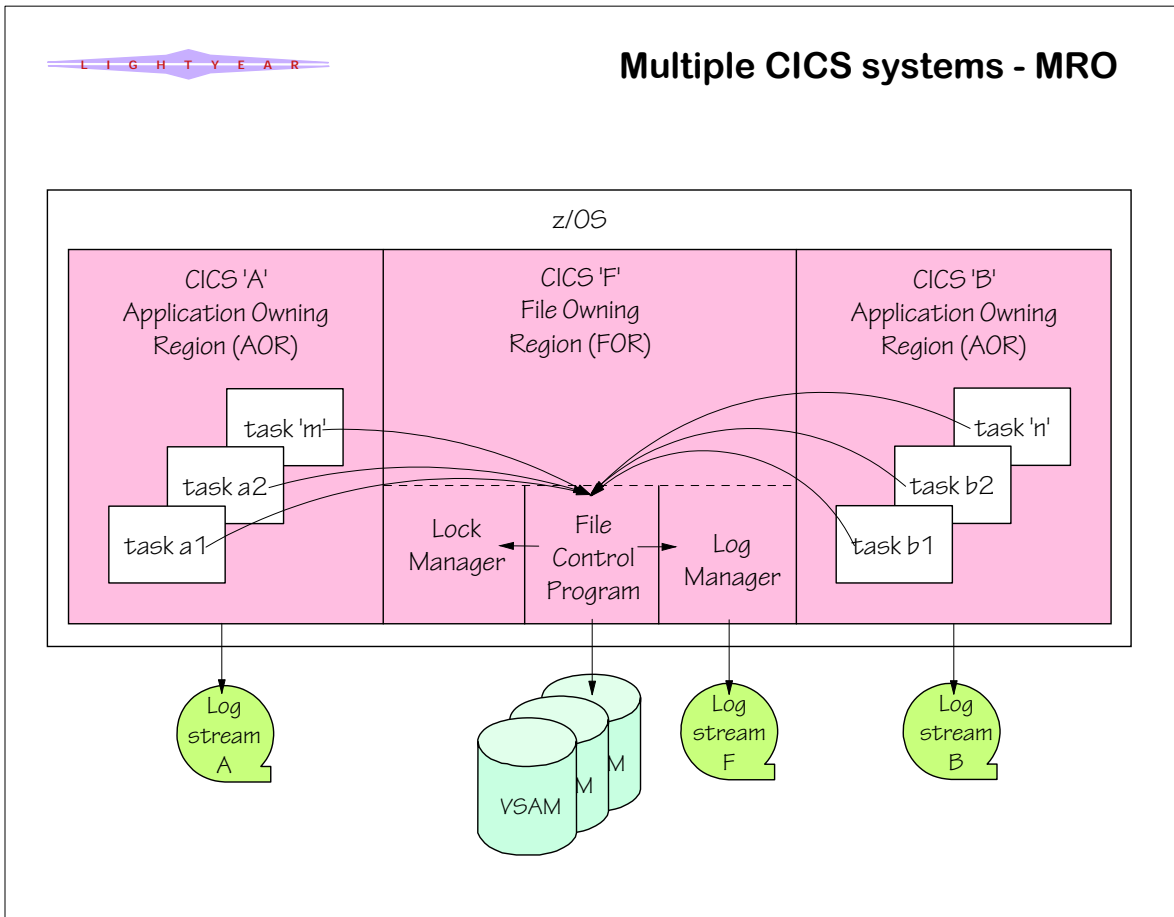
**Access Method:**

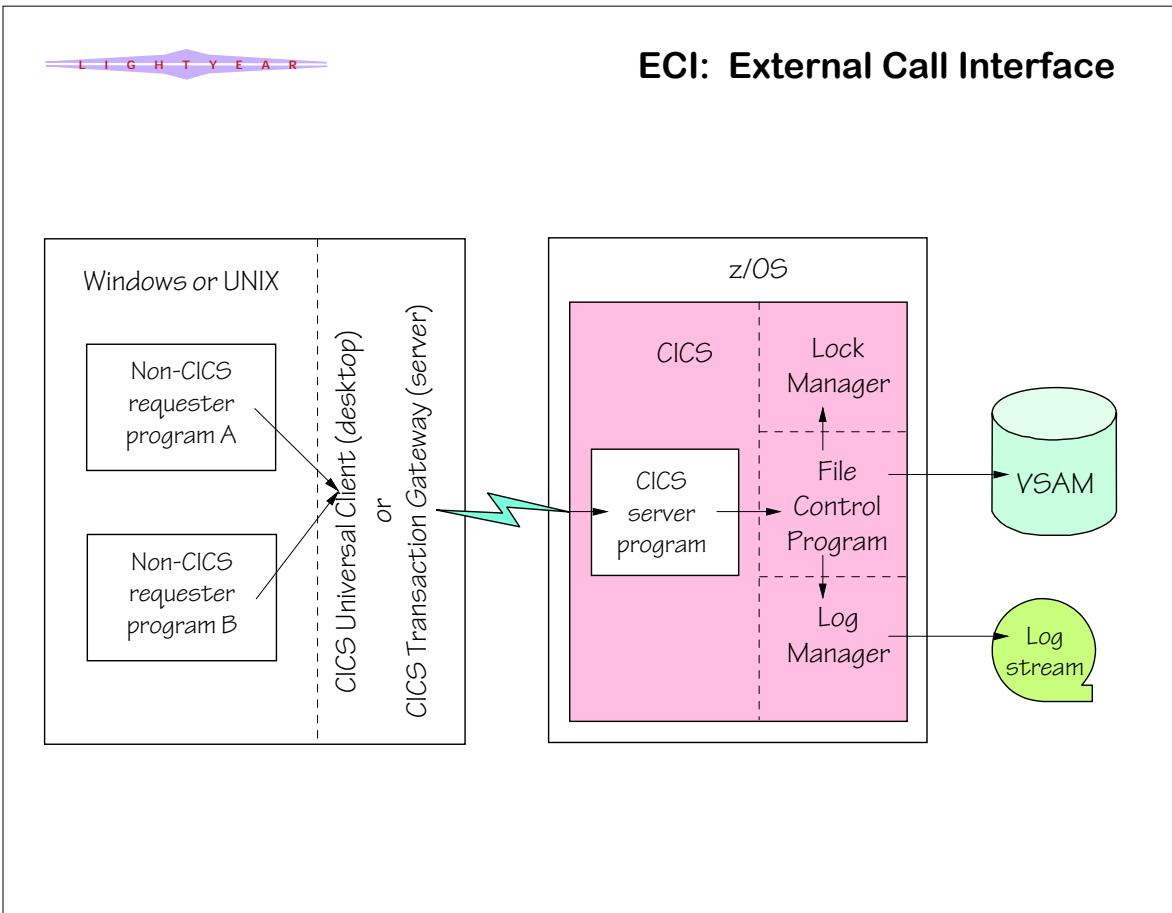
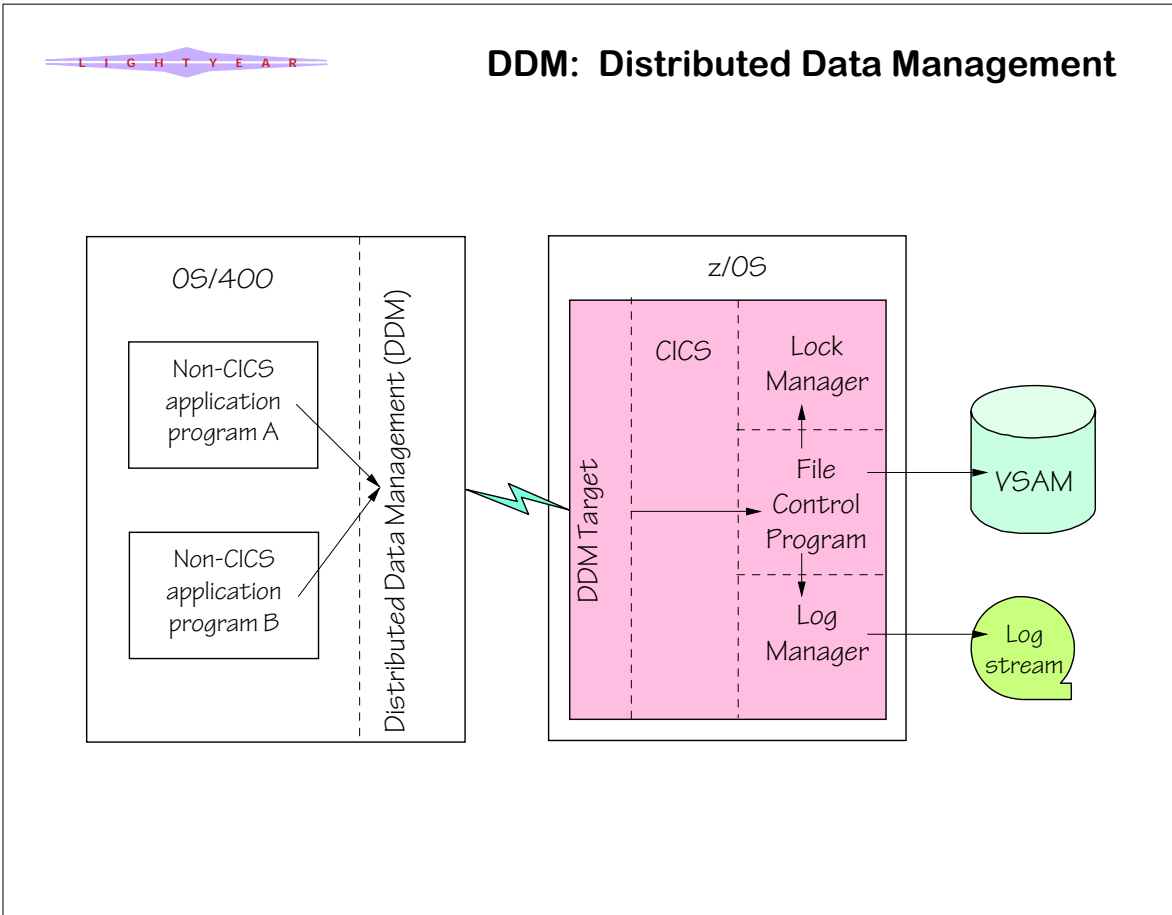
- ▶ A host software component that moves data between main storage and input/output devices.

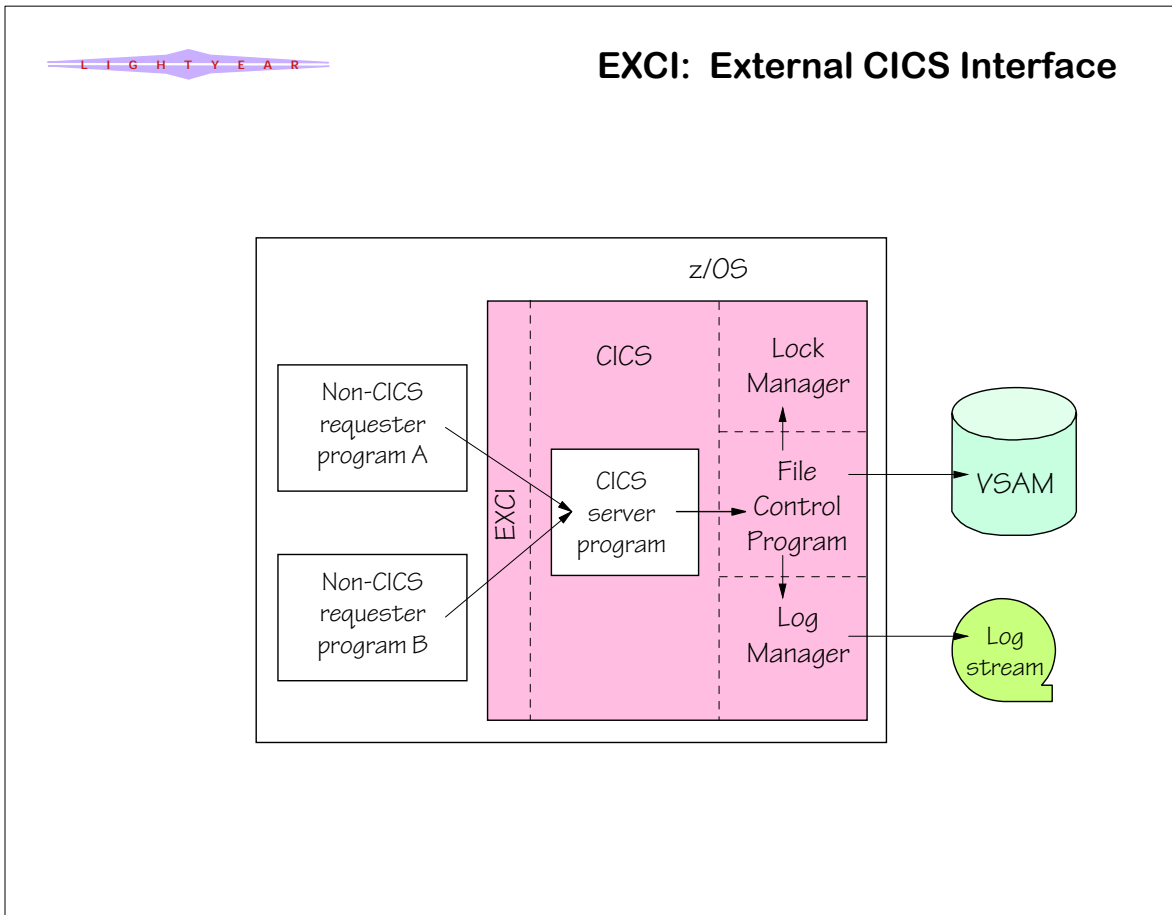
**Database Management System:**

- ▶ A complex set of programs that control the organization, storage, and retrieval of data for many users.





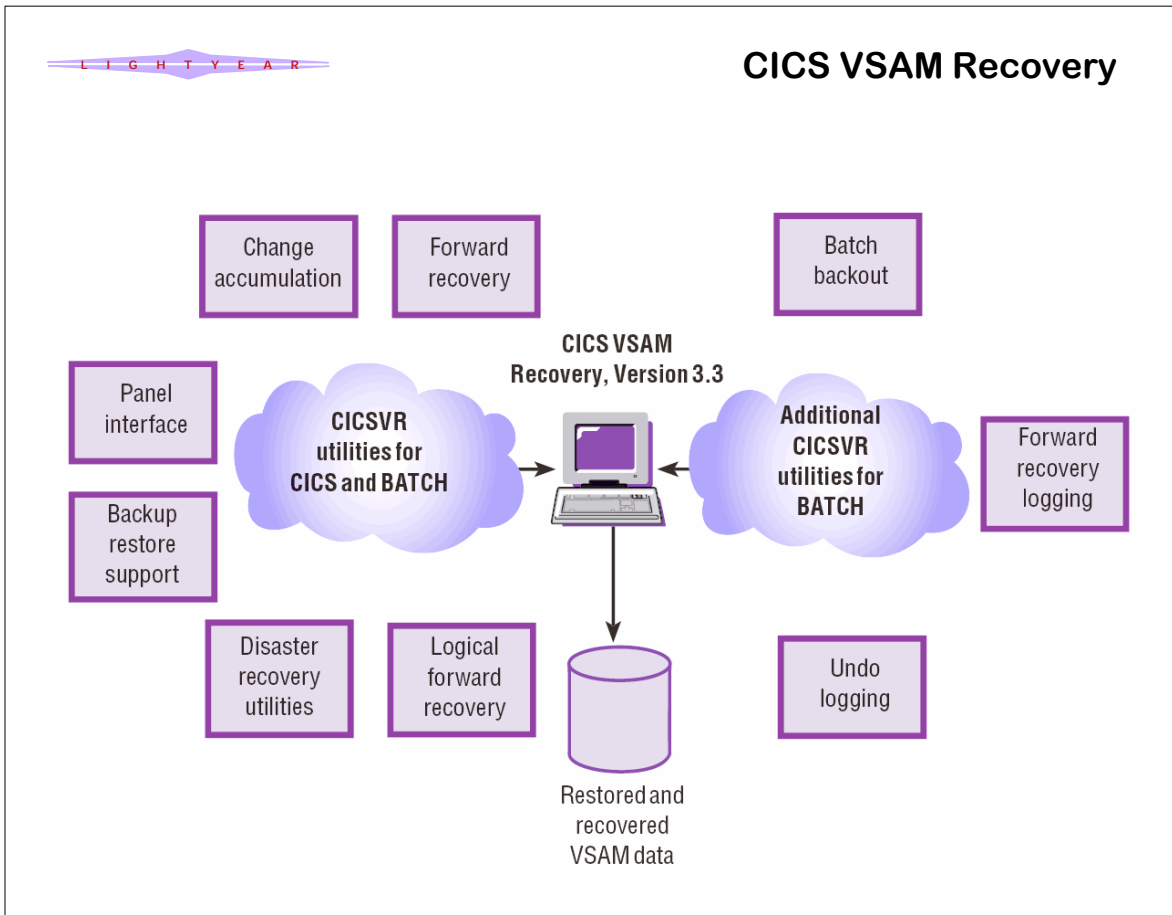




**according to Gray & Reuter...**

- A transaction can be considered a collection of actions with the following properties:

  - ▶ **Atomicity:** A transaction's changes to the state are atomic: either all happen or none happen. CICS ✓
  - ▶ **Consistency:** A transaction is a correct transformation of the state that does not violate any of the integrity constraints associated with the state. This requires that the transaction be a correct program. application ✓
  - ▶ **Isolation:** Even though transactions execute concurrently, it appears to each transaction that others executed either before it or after it, but not both. CICS ✓
  - ▶ **Durability:** Once a transaction completes successfully (commits), its changes to the state survive failures. CICS ✗



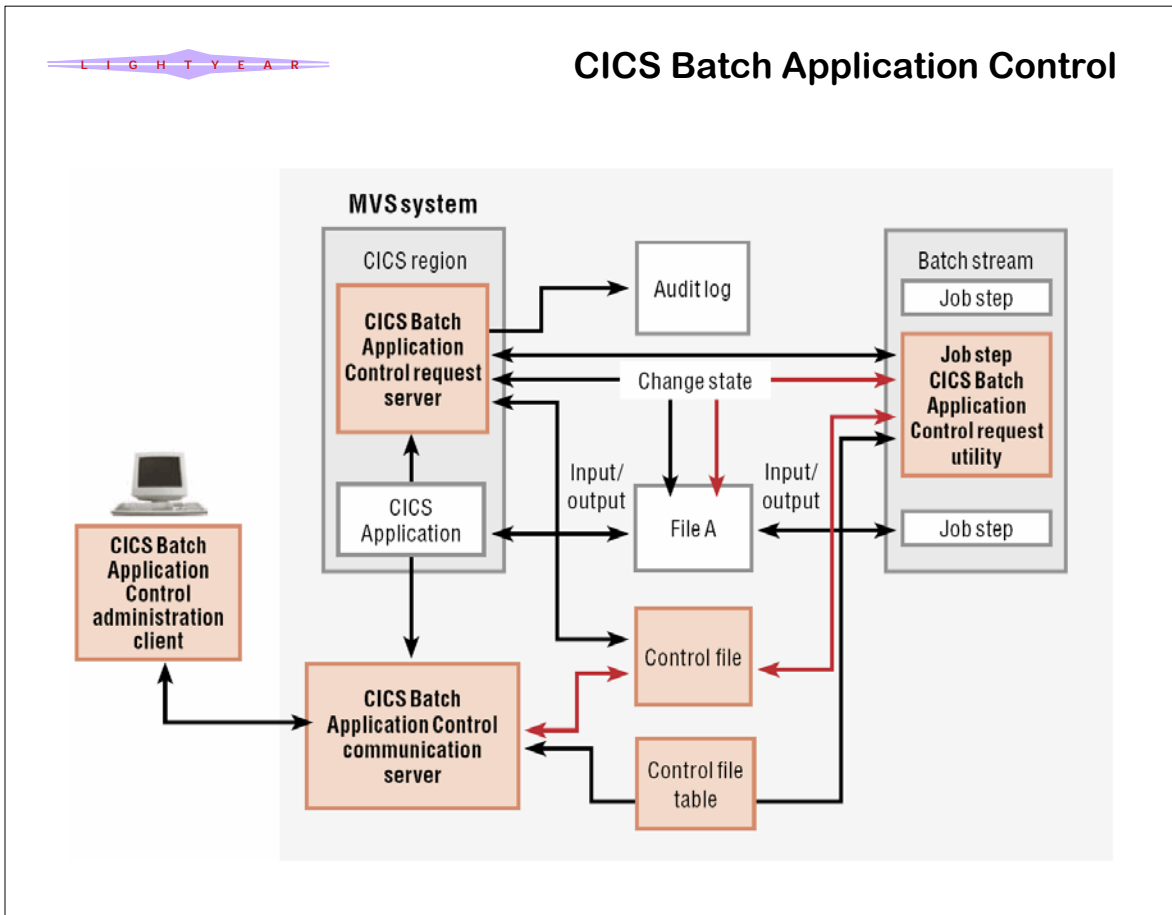
**CICS VR: 5655-H91**

*Faster and more reliable than manual recovery methods*

- + Forward recovery using any copy (including BWO) and CICS logs
- + Selective removal of updates to reverse program/ops errors
- + Batch logging allows less frequent image copying
- + Support for remote site recovery
- + Change accumulation for faster, more efficient recoveries

***New in 3.3:***

- ✓ Batch Backout -- automatic and manual
- ✓ General (non-IBM as well as IBM) copy notification service
- ✓ Usability, availability, & disaster recovery enhancements



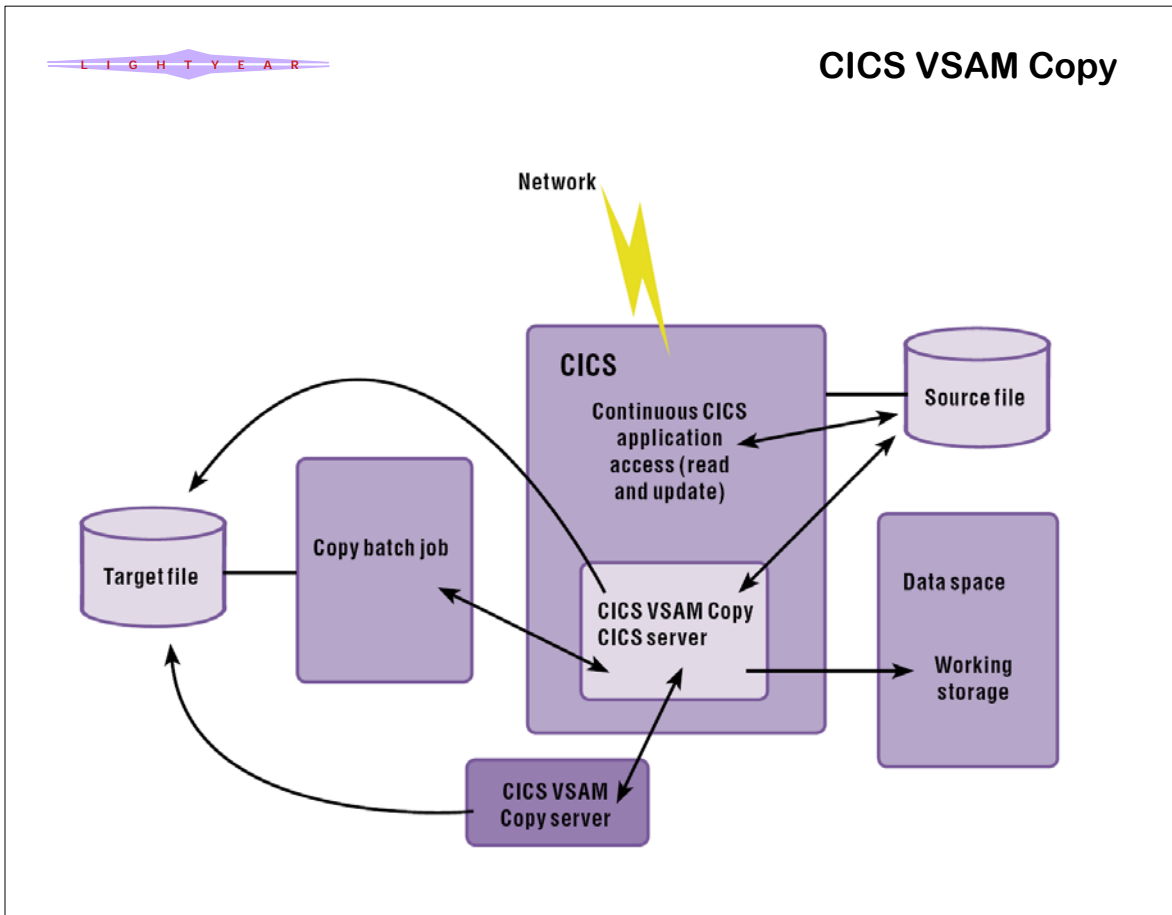
**CICS BAC: 5697-194**

Helps shrink the batch window and get you closer to 24x7

- + Automates resource transitions between batch and online
- + Tracks resource state changes across CICS and batch
- + Enables batch streams to change the state of CICS resources
- + GUI administration client helps reduce manual errors

New program -- available late November 2004





**CICS VC: 5655-L66**

*Consistent point-in-time VSAM copies, without taking files off-line*

- + Copies include all transactions up to, and in-flight at user-selected point-in-time, and no transactions that start after the p.i.t.
- + Same output format as REPRO
- + Complete or partial copies of one or more datasets to same p.i.t.
- + No restrictions on types of dataset that can be copied together
- + No need to quiesce or close datasets to CICS while copying
- + Finds owning CICS region automatically
- + Automatic output format selection (SAM, VSAM, PDS)
- + Also includes off-line copy capability



## VSAM SHAREOPTIONS

### ▪ SHAREOPTIONS(1):

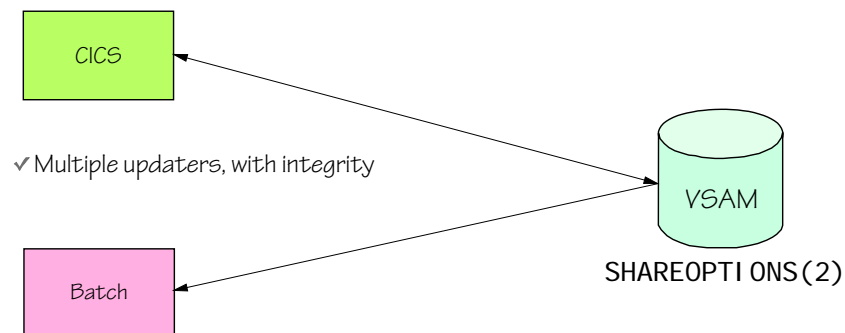
- ✓ One update job at a time
- OR**
- ✓ Multiple read-only jobs

### ▪ SHAREOPTIONS(2):

- ✓ One updater
- AND**
- ✗ One or more 'dirty readers'



## The 'dirty read' exposure

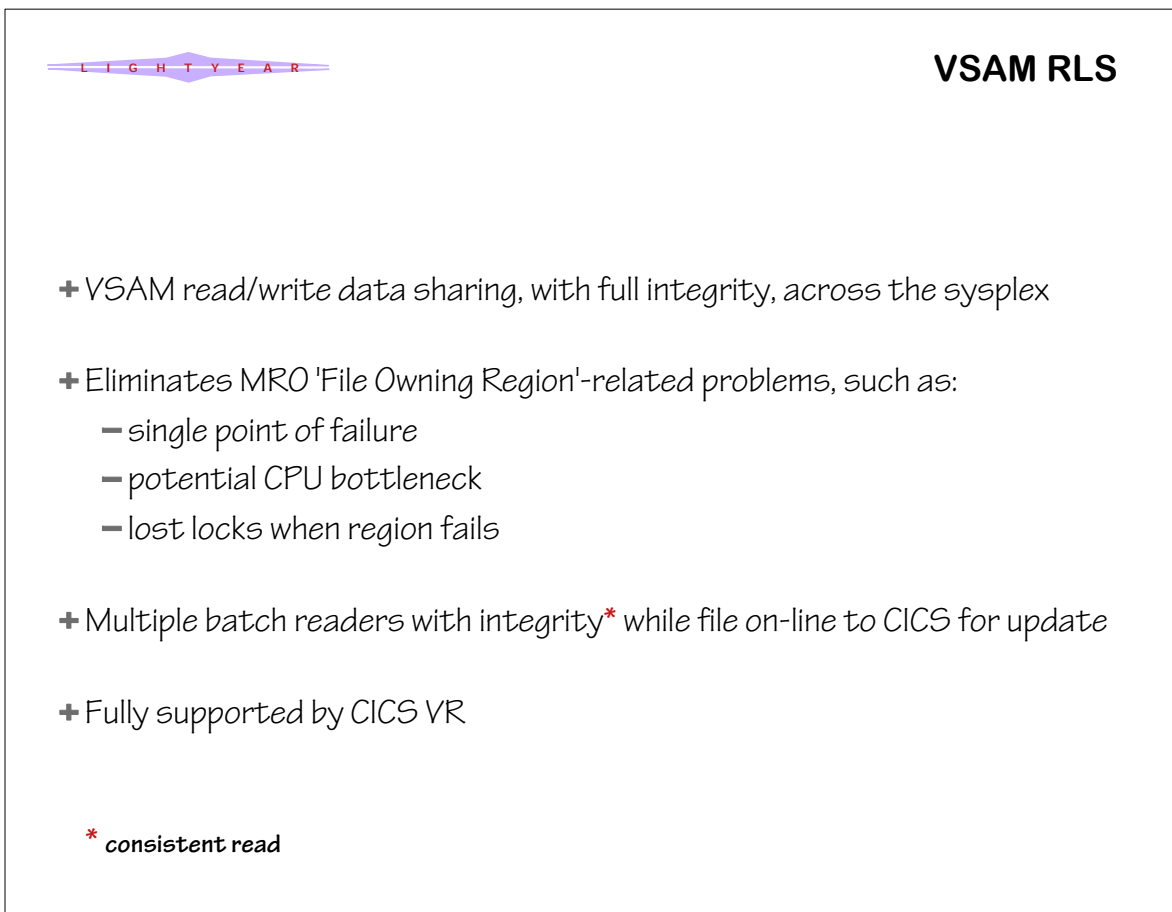
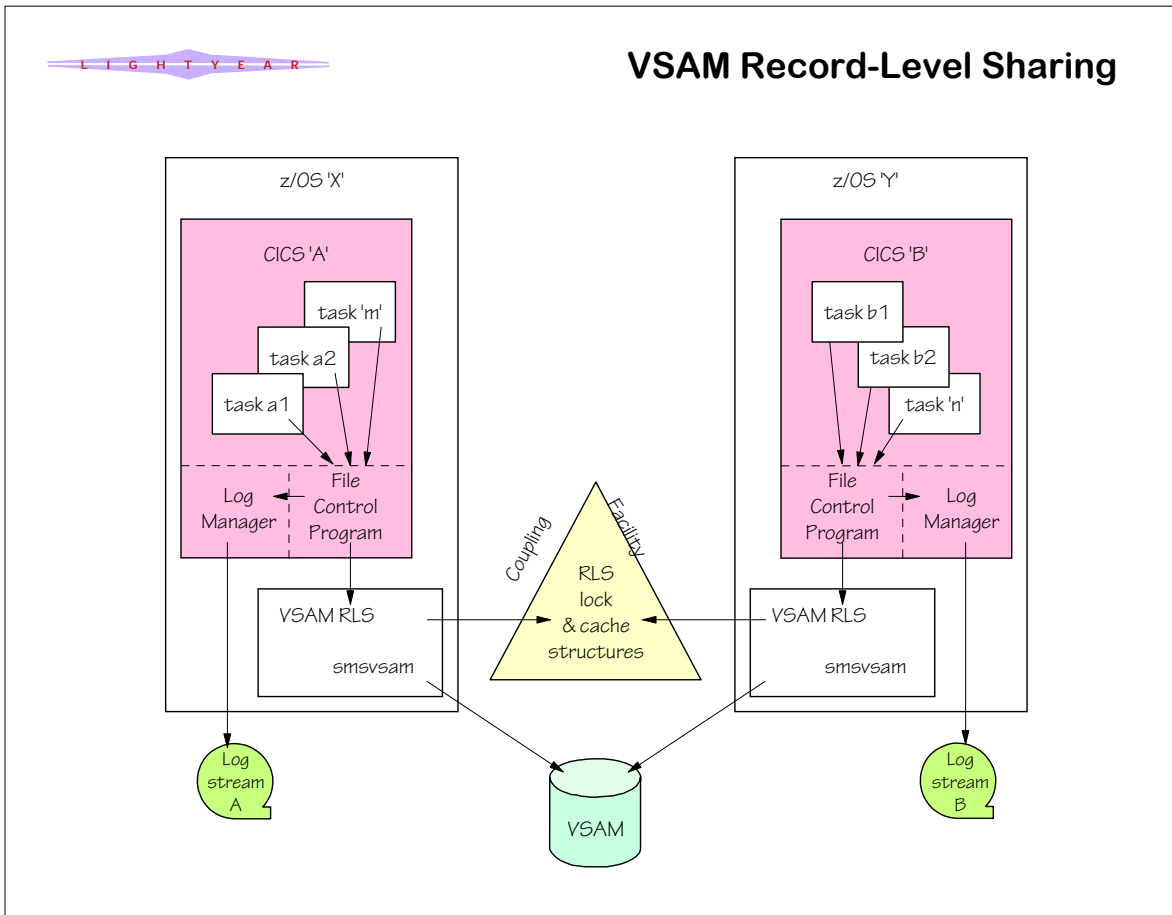


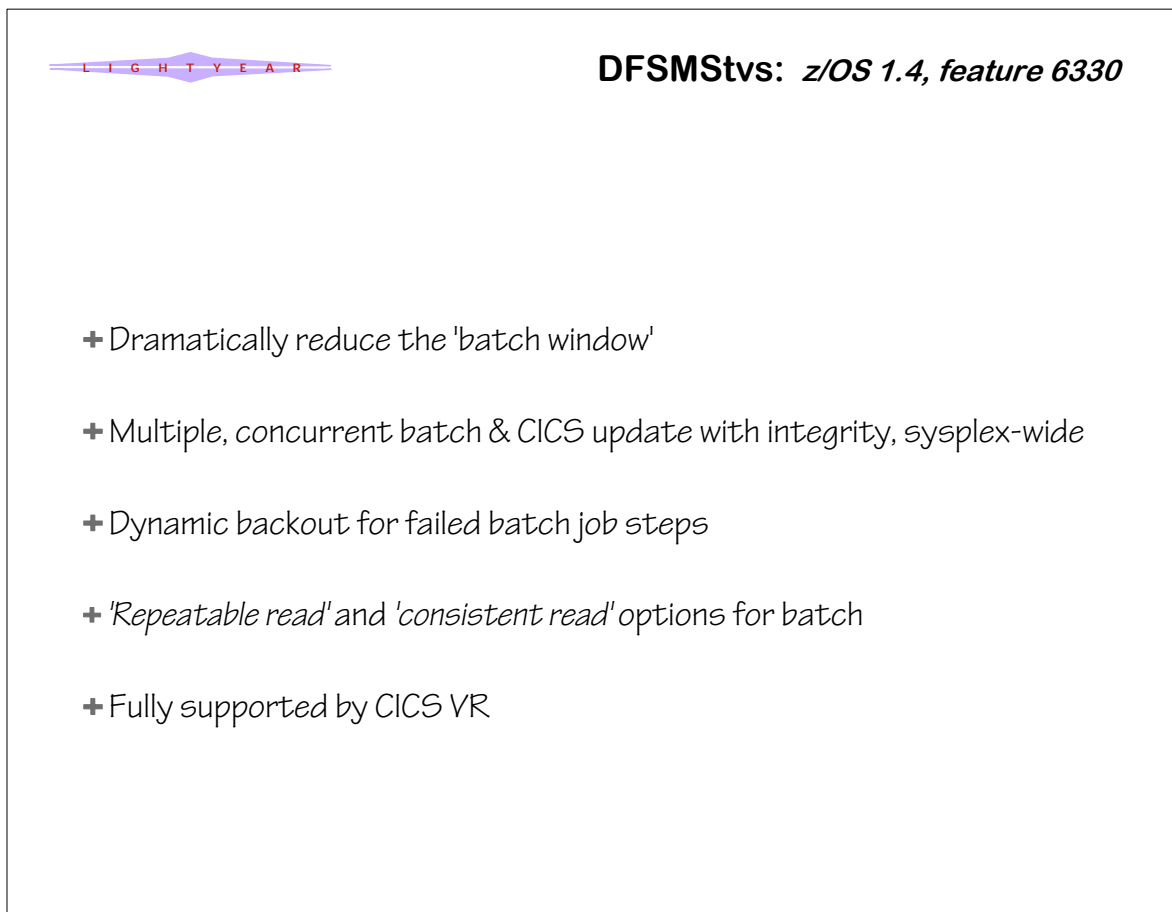
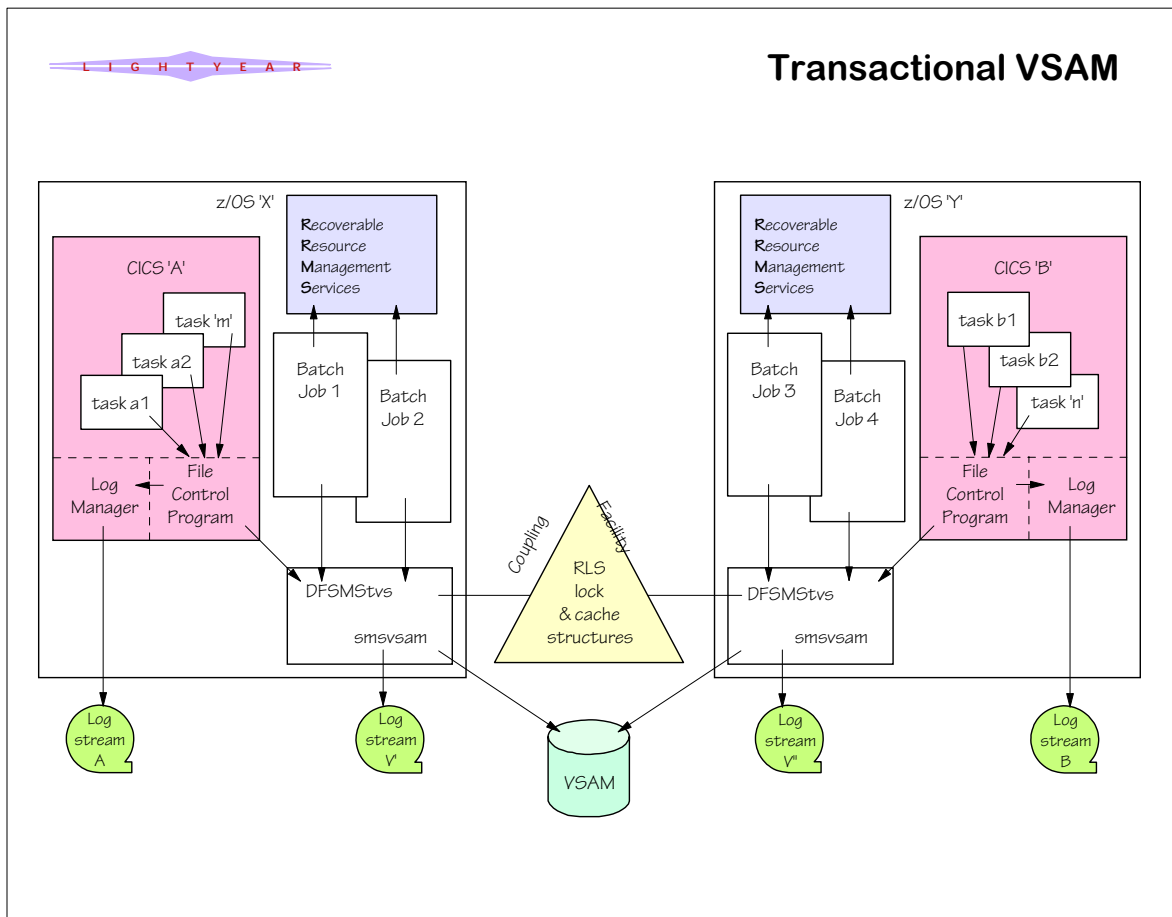
✓ Multiple updaters, with integrity

✗ One or more readers, *without* integrity

- Report events subsequently backed out by CICS
- Batch reports inconsistent with online queries
- Data & index anomalies due to CI & CA splits in on-line regions
- ...

*...and you may never know about it unless the users notice!*







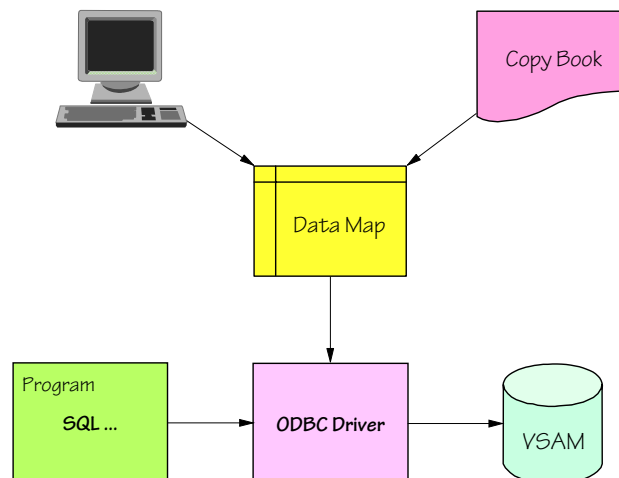
## Element-level data access?

VSAM is 'record-oriented':

- ✓ Low access-cost
- ✗ Data relationships depend on application programming
- ✗ Can't see data elements within records
- ✗ Data mining?
- ✗ SQL-style tools?
- ...



## odbc solutions



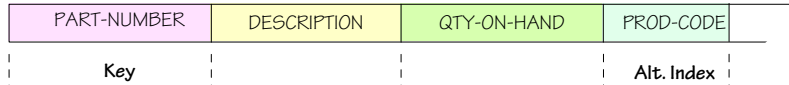
- + No changes to existing files & programs
- + Relatively cheap & easy to implement
- Data types unsuitable for query users
- Flat file structures limit potential
- No normalization
- ...



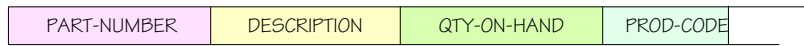
### VS/2 & CICS VT: mapping



#### VSAM record



#### DB2 row

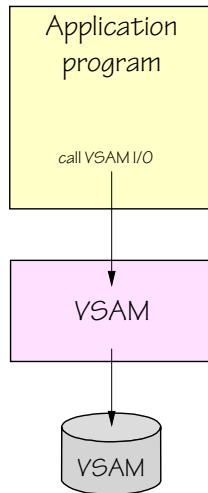


- + VSAM Field to DB2 Column relationship using COBOL copybook
- + Mapping performed automatically or using interactive ISPF dialogues
- + Data types and values can be translated
- + Data structure can be 're-engineered' for relational environment

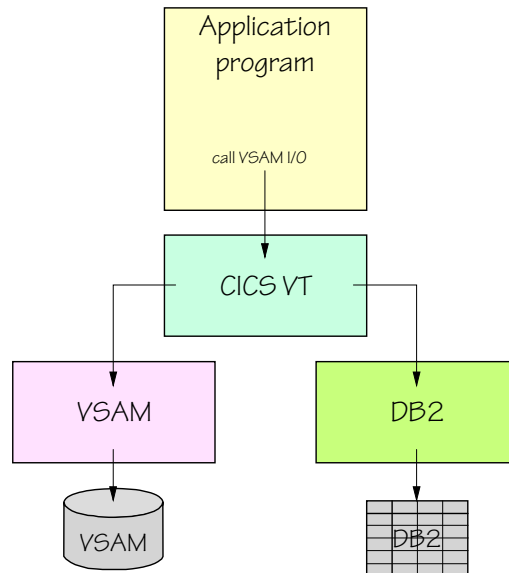


### VS/2 or CICS VT: run-time

#### Without CICS VT



#### With CICS VT





## VS/2 & CICS VSAM Transparency: 5697-176

Take full advantage of relational database capabilities

- + Flexible data mapping, typing, and re-engineering
- + One-time conversion from VSAM to DB2
- + Faster implementation, and significantly lower risk than other solutions;  
proven technique based on >7 years of DL/2 (IMS-DB2) experience
- + Data opened up for flexible reporting and cross-platform access
- + Single source of production data, available to all with consistent quality of service
- + Single DBA skill set; relational skills (DBA & programming) readily available
- + Preserves the investment in legacy application programs
- + New applications can be 100% DB2-based



## Summary

- |  |                                  |
|--|----------------------------------|
| 1. <b>Access Method:</b>                       | <b>VSAM</b>                      |
| 2. On-line sharing:                            | <b>CICS</b>                      |
| 3. Forward Recovery:                           | <b>CICS VR</b>                   |
| 4. Automate batch/on-line resource scheduling: | <b>CICS BAC</b>                  |
| 5. Consistent on-line copy:                    | <b>CICS VC</b>                   |
| 6. Concurrent batch - 'dirty' read:            | <b>SHAREOPTIONS(2)</b>           |
| 7. - 'clean' read:                             | <b>VSAM RLS</b>                  |
| 8. - update with integrity:                    | <b>DFSMSdfs</b>                  |
| 9. Element-level data access:                  | <b>odbc</b>                      |
| 10. <b>DBMS:</b>                               | <b>VS/2 or CICS VT -&gt; DB2</b> |

L I G H T Y E A R

for further information...



- SG24-6563: CICSVR Usage Guide
- SG24-4765: CICS & VSAM RLS Planning Guide
- SG24-4766: Implementation Guide
- SG24-4768: Recovery Considerations
- SG24-6105: VSAM Demystified
- SG24-6971: DFSMS<sub>stvs</sub> Overview and Planning Guide
  
- CICS VC: <http://www-306.ibm.com/software/hcp/cics/vc/>
- CICS BAC: <http://www-306.ibm.com/software/hcp/cics/bac/>
- CICS VT: <http://www-306.ibm.com/software/hcp/cics/vt/>
- VS/2: [http://www.circle-group.com/vs\\_2.htm](http://www.circle-group.com/vs_2.htm)

L I G H T Y E A R

### Lightyear Consulting

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- **Product**
  - ▶ IMS Software
  - ▶ IMS Tools details
  - ▶ IMS Upgrades
- **Services - Classic**
  - ▶ Installation
  - ▶ Migration to IMS and/or from IMS to DB2-with DL/I re-use or rewrite
  - ▶ Tuning services
  - ▶ Data Propagation-IMS to DB2
- **Services - Modern**
  - ▶ Integration Services for MQSeries & WebSphere
  - ▶ Java Development
  - ▶ EAB/IMS wrapping skills
  - ▶ Cobol/IMS to Java rewrite
  - ▶ IMS Web enablement details
  - ▶ e-business profiling
  - ▶ Wireless/PalmOS connectivity to IMS legacy systems
  - ▶ Rewrite Cobol/DL/I applications

