Update to the

VITAL Technical Architecture Guides

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This document provides important changes to the *VITAL Technical Architecture Guides*. The update is divided into six parts, one for each of the following guides:

- *VITAL Fundamentals*
- *VITAL Desktop Integration Guide*
- *VITAL Data Capture Guide*
- *VITAL Data Access Guide*
- *VITAL Systems Infrastructure Guide*
- *VITAL Repository Guide*

Each part contains a list of the changes for that particular guide. A page number (or range of pages) indicates where each change should be made. Following the list, replacement art and lengthy text changes appear individually on separate pages (insert pages). You can place this entire update in the *VITAL Supplement* binder or, if you prefer, you can place the individual insert pages directly in the appropriate locations in the VITAL guides themselves.

The following list contains the changes to *VITAL Fundamentals*. Immediately following the list are individual pages with art and some of the text changes; you can insert these pages in the appropriate places in *VITAL Fundamentals*.

p. viii *In the contents for Chapter 7 under the section "About Repository resources," insert "Directories / 202" after (and at the same level as) "Libraries / 201."*

p. xv *The first name in the list of Core Members should read "Greg Abelar."*

p. xvii *Add Mark Katz to list of Data Access Workgroup Members.*

p. 11 *The beginning of the first line should read:*

Borrowing from John Zachman's landmark . . .

p. 98 *The first line of the first paragraph should read:*

The *sharable data directory* (*SDD;* also known as the *shared resource directory*) is keyed . . .

p. 150 *See insert page 150a.*

p. 153 *See insert page 153a.*

p. 172 *See insert page 172a.*

p. 175 *The first line of the fifth paragraph should read:*

Sharable data directory (SDD) (also known as the *shared resource directory*) Keyed by the . . .

p. 202 *See insert page 202a.*

p. 202 *The description of the sharable data directory should read:*

■ *Sharable data directory (SDD;* also known as the shared resource directory) . . .

p. 239 *The second bulleted item should read as follows:*

■ OSF's DCE RPC

p. 240 *The first line and bulleted list should read as follows:*

The following are examples of transaction-processing monitors suitable for Class D:

■ DEC ACMS/DI
■ IBM CICS
■ IBM DC
■ Transarc's Encina
■ USL's TUXEDO

p. 269 *Add the following index main entry after "shared object libraries":*

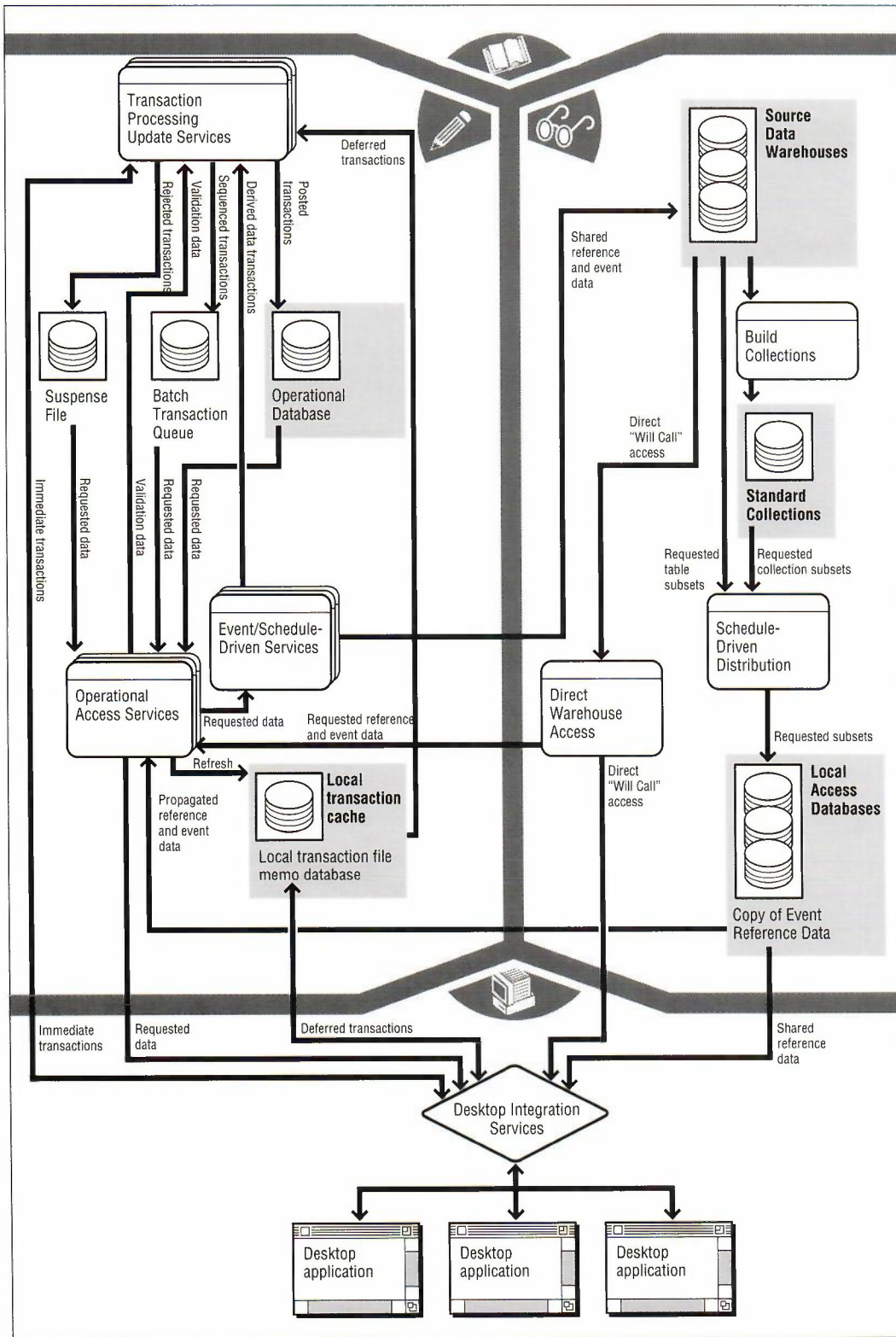shared resource directory. *See* sharable data directory

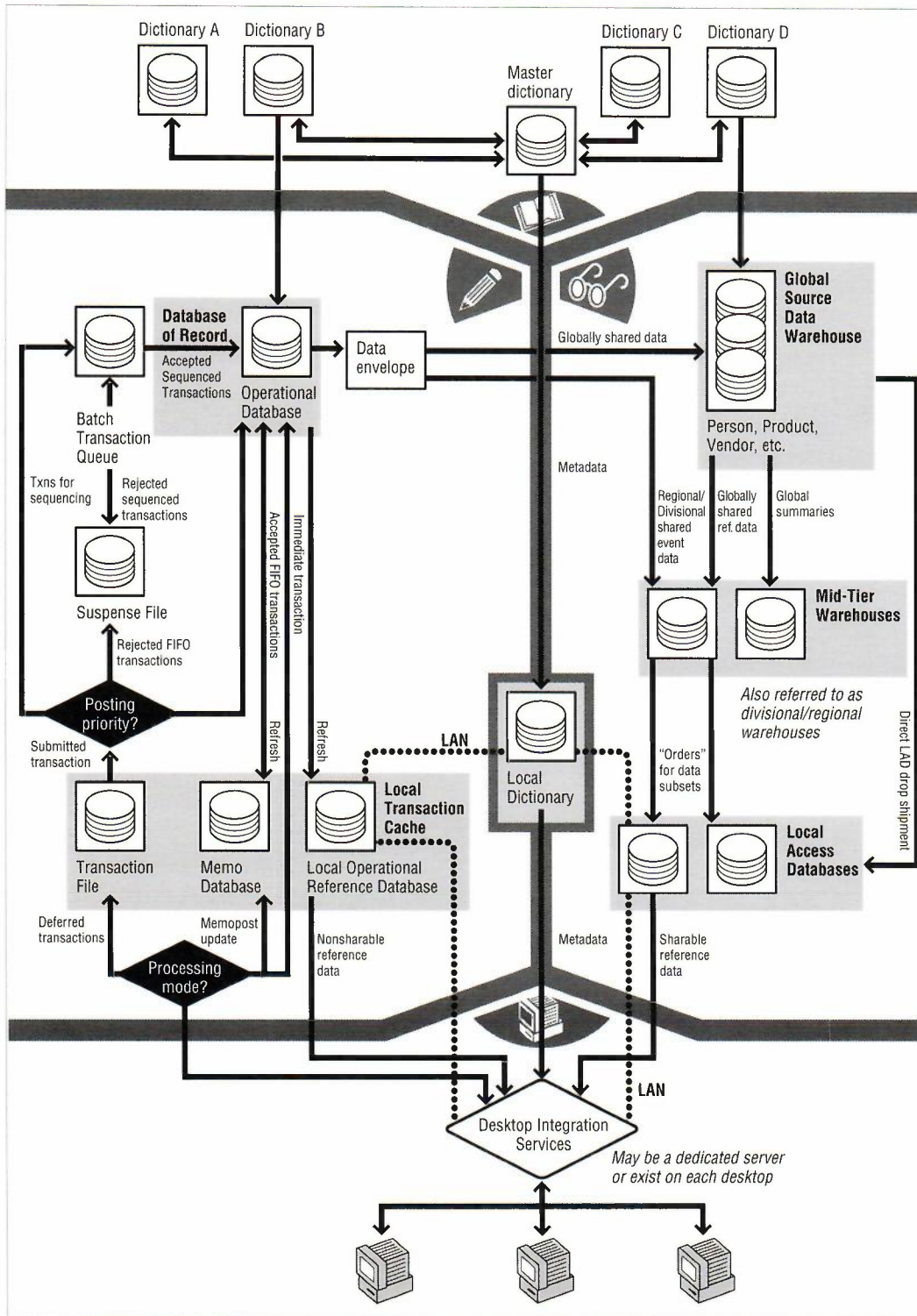**Figure 5-2** Logical view of distributed Data Capture

Dictionary A   Dictionary B

Dictionary C   Dictionary D

Master dictionary

Database of Record
Accepted Sequenced Transactions

Operational Database

Data envelope

Globally shared data

Global Source Data Warehouse

Person, Product, Vendor, etc.

Batch Transaction Queue

Txns for sequencing

Rejected sequenced transactions

Suspense File

Rejected FIFO transactions

Posting priority?

Submitted transaction

Accepted FIFO transactions

Immediate transaction

Refresh

Refresh

Metadata

Regional/ Divisional shared event data

Globally shared ref. data

Global summaries

Mid-Tier Warehouses

Also referred to as divisional/regional warehouses

LAN

Local Dictionary

Local Transaction Cache

Transaction File

Memo Database

Local Operational Reference Database

"Orders" for data subsets

Local Access Databases

Direct LAD drop shipment

Deferred transactions

Memopost update

Nonsharable reference data

Metadata

Sharable reference data

Processing mode?

LAN

Desktop Integration Services

May be a dedicated server or exist on each desktop
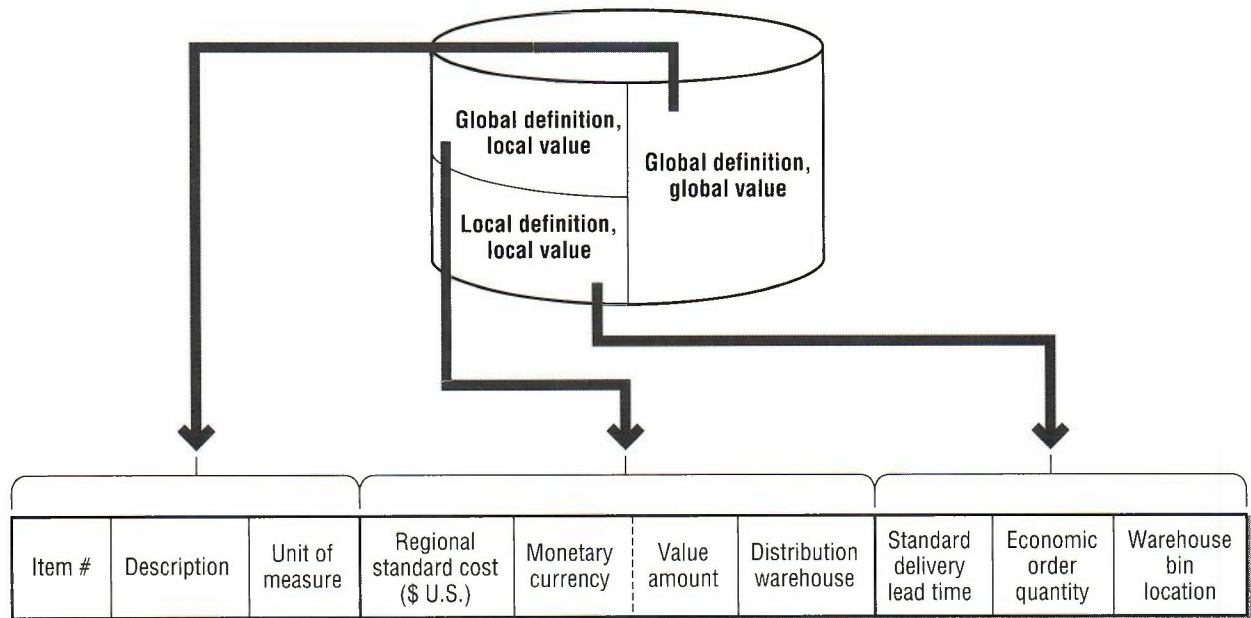
Figure 5-3 Architectural view of Data Capture

Figure 6-4 Logical record view

Before the third paragraph, at the same level as "Libraries" on p. 201, insert the following section:
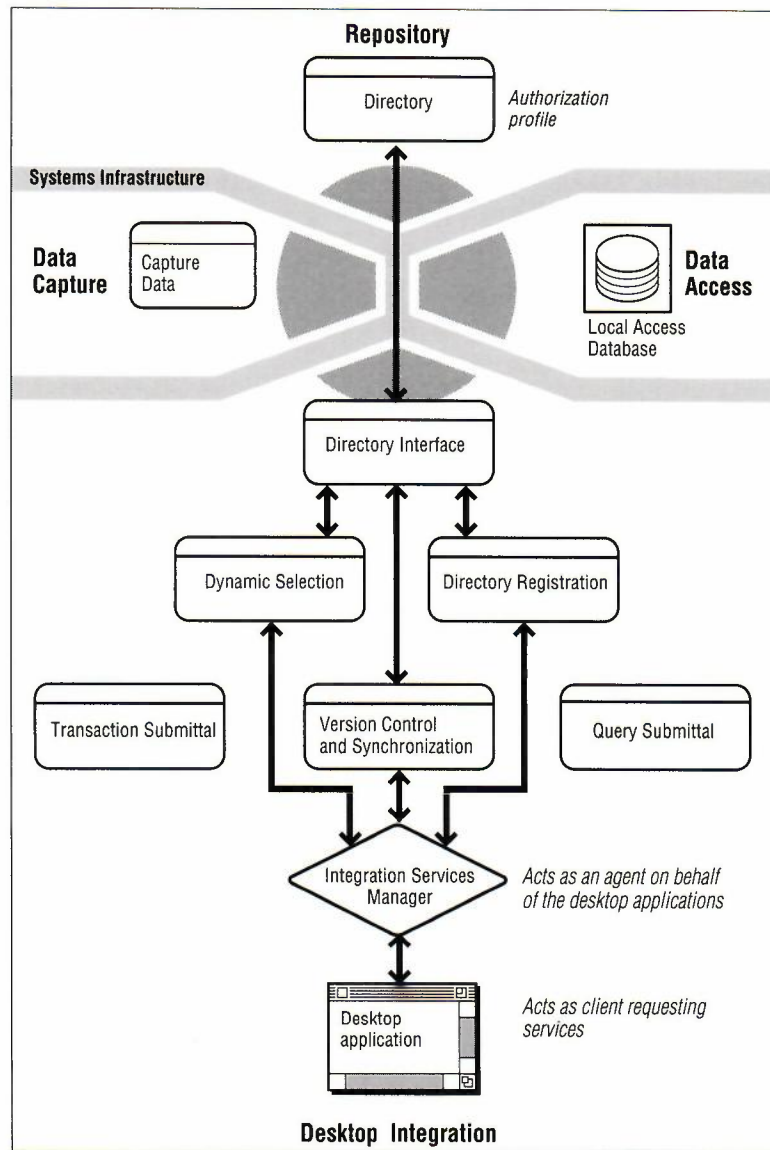
Directories

Directories are high-performance, access-optimized files containing collections of metadata (including profiles) sourced from the master data dictionary. Directories are used for the express purpose of identifying, locating, navigating, and accessing other resources and services. Directories and directory services exist for authorization and authentication; and to identify and register the availability of other services, data resources, users, network connection and routing requirements, hardware platforms, and the existence of other libraries. A *where-used directory* is specially constructed to contain the cross-references among items in each directory including the intersection metadata unique to each interrelationship. Directories are discussed in greater detail in Chapter 2 ("Definitional Metadata in Dictionaries and Libraries") in the *VITAL Repository Guide*.

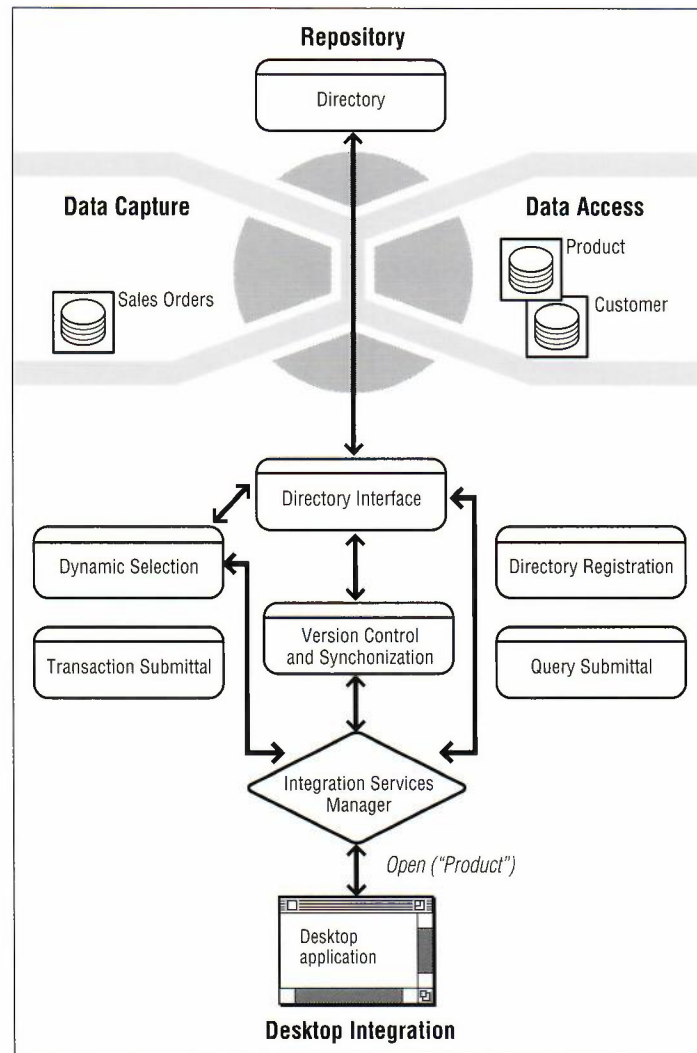# UPDATE | *VITAL Desktop Integration Guide*

The following list contains the changes to the *VITAL Desktop Integration Guide.* Immediately following the list are individual pages with art and some of the text changes; you can insert these pages in the appropriate places in the *VITAL Desktop Integration Guide.*

p. vii *A new section "Specific variations of Minimal Locking / 135" should appear before "Library Checkout template / 137" (at the same level as "Compare token on host / 132").*

p. 48 *In the last paragraph, delete the last two sentences, from "However, the application profile . . ." to the end of the page.*

p. 57 *The description of the sharable data directory in the middle of the page should read:*

The *sharable data directory (SDD)* (also known as the *shared resource directory*) . . .

p. 84 *See insert page 84a.*

p. 86 *See insert pages 86a and 86b.*

p. 87 *See insert page 87a.*

p. 88 *See insert page 88a.*

p. 89 *See insert pages 89a and 89b.*

p. 107 *See insert page 107a.*

pp. 126–127 *Delete the entire section "Summary Table" including the text at the bottom of page 126 and the table (Table 4-2) at the top of page 127.*

p. 135 *See insert page 135a.*

p. 142 *See insert page 142a.*

p. 144 *See insert page 144a.*

p. 149 *See insert page 149a.*

p. 152 *See insert page 152a.*

p. 156 *See insert page 156a.*
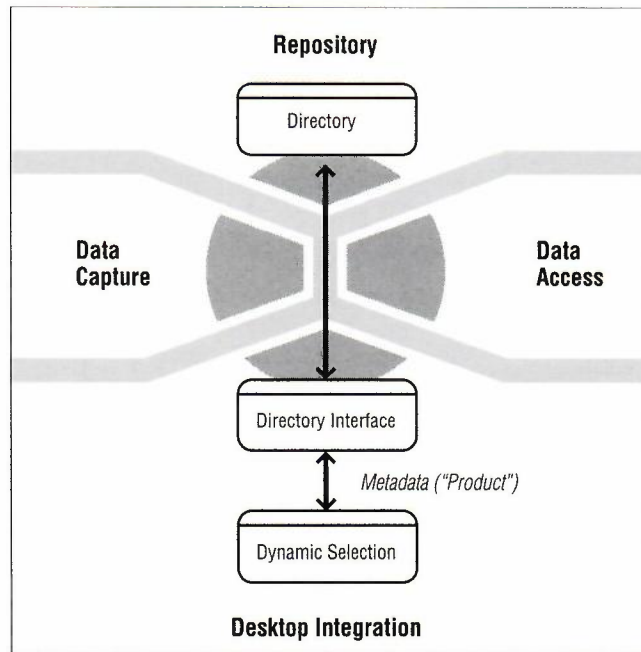
p. 157 *See insert page 157a.*
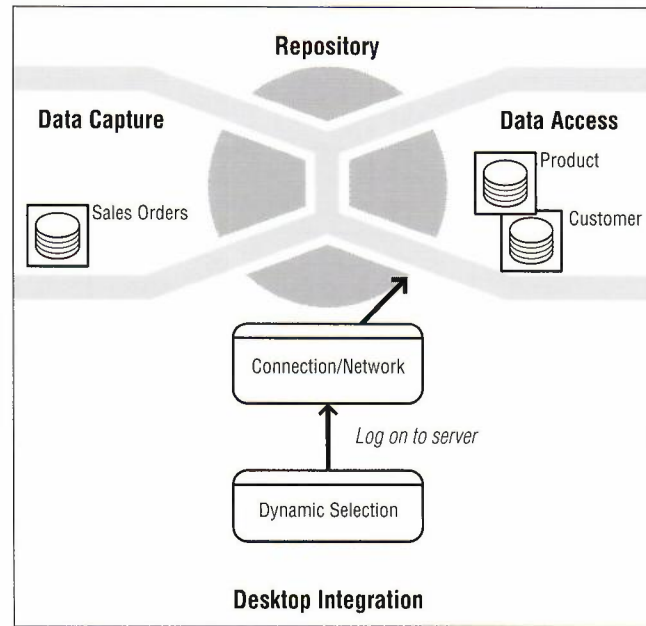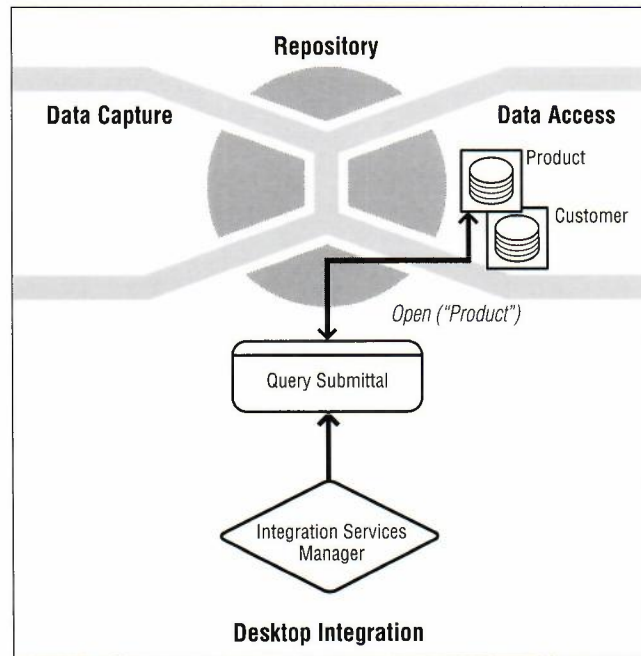
Replace figure with the following art:

Repository

Directory — *Authorization profile*

Systems Infrastructure

Data Capture — Capture Data

Data Access

Local Access Database

Directory Interface

Dynamic Selection

Directory Registration

Transaction Submittal

Version Control and Synchronization

Query Submittal

Integration Services Manager — *Acts as an agent on behalf of the desktop applications*

Desktop application — *Acts as client requesting services*

Desktop Integration

Starting the ISM

Starting the application

Replace figure at bottom of page with the following art:

Repository

Directory

**Data
Capture**

**Data
Access**

Directory Interface

Metadata ("Product")

Dynamic Selection

Desktop Integration

Obtaining metadata

Replace figure with the following art:

Connecting to the node

Replace figure with the following art:

Repository

Data Capture

Data Access

Product

Customer

Open ("Product")

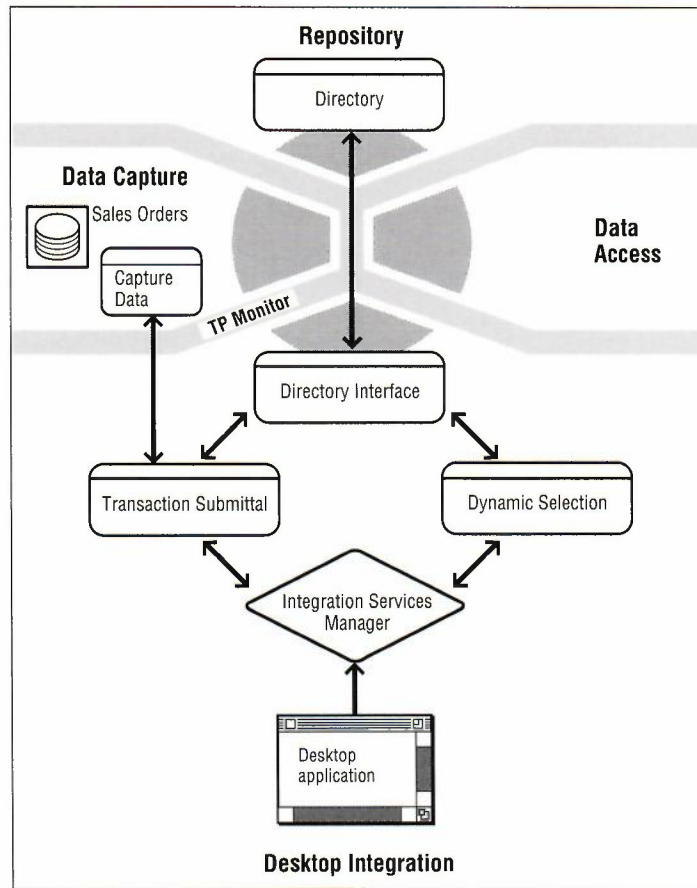Query Submittal

Integration Services
Manager

Desktop Integration

Opening the database

7. **Opening the Sales Orders TP application**

    The desktop application sends a request to the ISM with the required parameters from the application profile to open the Sales Orders TP application (Capture Data service). The ISM requests DSS to select an instance of the Sales Orders TP application. On receiving the request for service from the ISM, the DSS would request metadata information from the Directory Interface service about the Capture Data service identified in the parameters sent to it. The Directory Interface service interacts with the directory server as previously described and retrieves the metadata about the Sales Orders Capture Data service. The metadata information is returned to the DSS. The DSS now has the information to initiate a connection to the server containing the Capture Data service. The DSS should only return valid TSS. The TSS gets physical metadata and opens the connection. The ISM routes the request to the TSS with the IDs to use for the platform where the service resides. The TSS now issues the appropriate commands to invoke the appropriate TP monitor and TP application that supports the Sales Orders entries. The Sales Orders database is opened by the Sales Orders application on the server and a status is returned to the desktop Sales Orders application through the ISM.

Repository

Directory

Data Capture

Sales Orders

Capture Data

TP Monitor

Data Access

Directory Interface

Transaction Submittal

Dynamic Selection

Integration Services Manager

Desktop application

Desktop Integration

Opening the Sales Orders TP application

Table 4-1 Selection matrix for Desktop Integration/Data Capture design templates

Row Number	Factors Affecting Template Choice						Templates									
							Minimal Locking		Desktop-driven				Memo Post With Deferred Update	Host-driven		
									Library Checkout		Deferred Update					
	Security Risk	Update-Contention Potential	Data Volatility	Posting Urgency	Posting Priority	Transaction Effectivity Dependence	Attached	Detached	Attached	Detached	Attached	Detached		Immediate	Batch	Memo Post
1	H	H	H	D	Either	E,S						√			*	
2	H	H-M	H-M	I	FIFO	E								*		
3	H	H-M	H-M	I	Seq	E,S							√			*
4	H	M-L	M-L	D	Either	E,S						√				
5	M-L	H	H	I	FIFO	E			√					*		√
6	M-L	H	H	I	FIFO	S			√					*	*	
7	M-L	M	H	I	FIFO	E			√				√	*		√
8	M-L	M	H	I	FIFO	S	*	√						√		
9	M-L	L	H	I	FIFO	E	*	√								
10	M-L	L	H	I	FIFO	S	*	√								
11	M-L	M	M	I	FIFO	E	*	√	√							
12	M-L	M	M	I	FIFO	S	*									
13	M-L	H-M	M-L	D	Either	E		√			√	*	√			
14	M-L	H-M	M-L	D	Either	S		√			√	*	√			
15	M-L	L	M-L	I	FIFO	E	*		√							
16	M-L	L	M-L	I	FIFO	S	√									
17	M-L	M-L	L	I	FIFO	E	*							√		
18	M-L	M-L	L	I	FIFO	S	√									
19	M-L	L	H-L	D	FIFO	E,S			√		√	*	√		√	
20	M-L	H-L	H-L	D	Seq	E,S						*				
21	M-L	H-L	H-L	I	Seq	E,S							*			√

H = high; M = medium; L = low; I = immediate; D = deferred; FIFO = first in, first out; Seq = sequence; E = event; S = submittal; * = preferred template; √ = other possible templates

Update to page 135

Before the second paragraph from the bottom of page (which begins with "Minimal Locking template . . ."), at the same level as "Compare token on host" on p. 132, insert the following section and table:

Specific variations of Minimal Locking

The individual variations of the Minimal Locking technique are similar to each other. They vary in where the collision detection and relevancy checking is done, and whether a token or a before-image/current-image comparison is used for collision detection. Table 4-2 points out some of the distinguishing characteristics of the techniques.

Note: Do not confuse the Minimal Locking techniques A–E with the middleware classes A–E.

In the description of each Minimal Locking technique, the compatible middleware class is also identified.

Table 4-2 Minimal Locking summary table

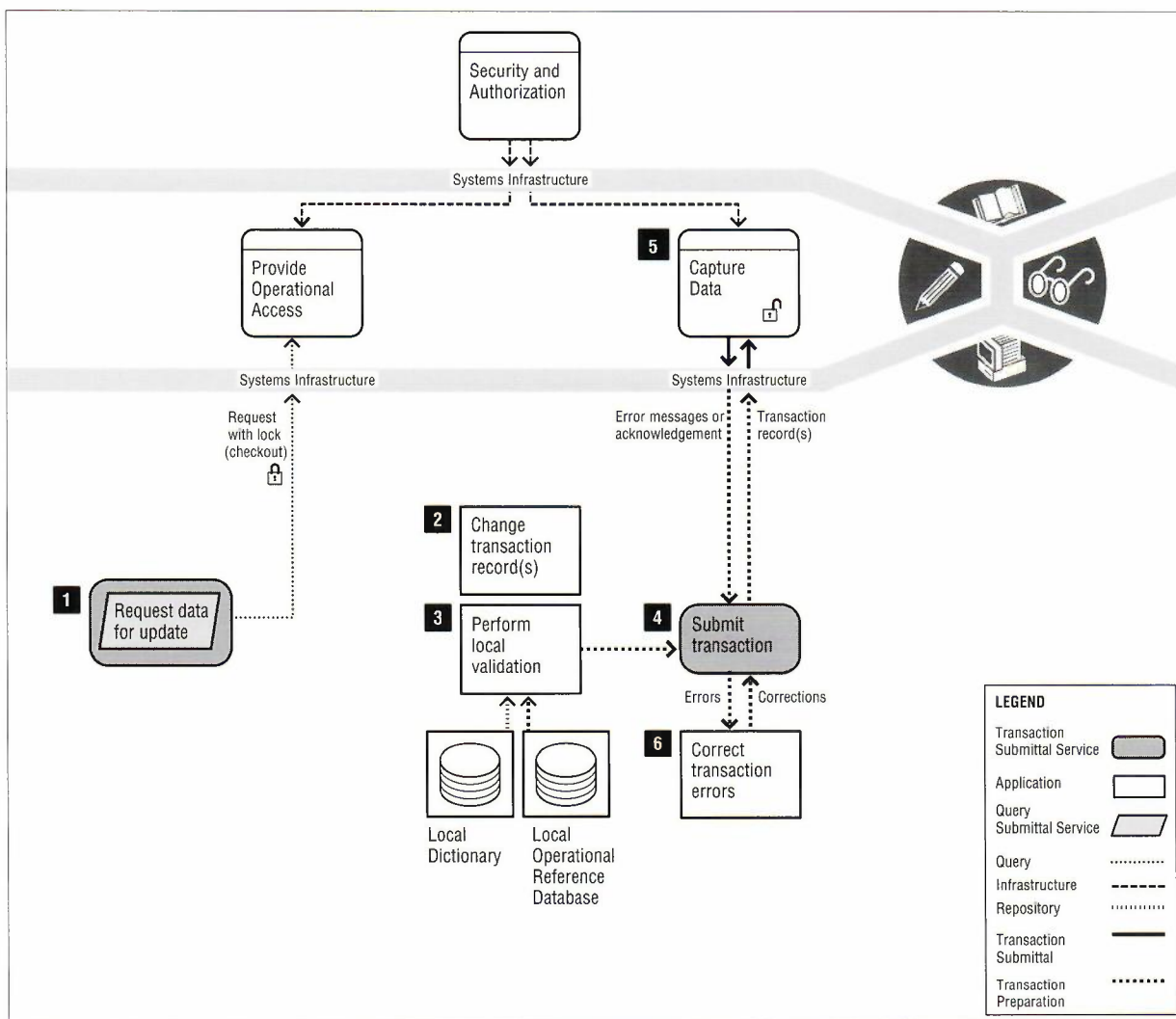| Minimal Locking Technique	A	B	C	D	E
Before image storage	Desk.	Desk.	Desk.	Desk.	Desk.
Tokens used	No	Yes	No	Yes	Yes
Collision detection performed	Desk.	Desk.	Server	Server	Server
Relevancy checking performed	Desk.	Desk.	Server	Desk.	Server
Network overhead	Med.	Med.	Low	Low	Low
Requires server context	No	Yes	No	Yes	Yes

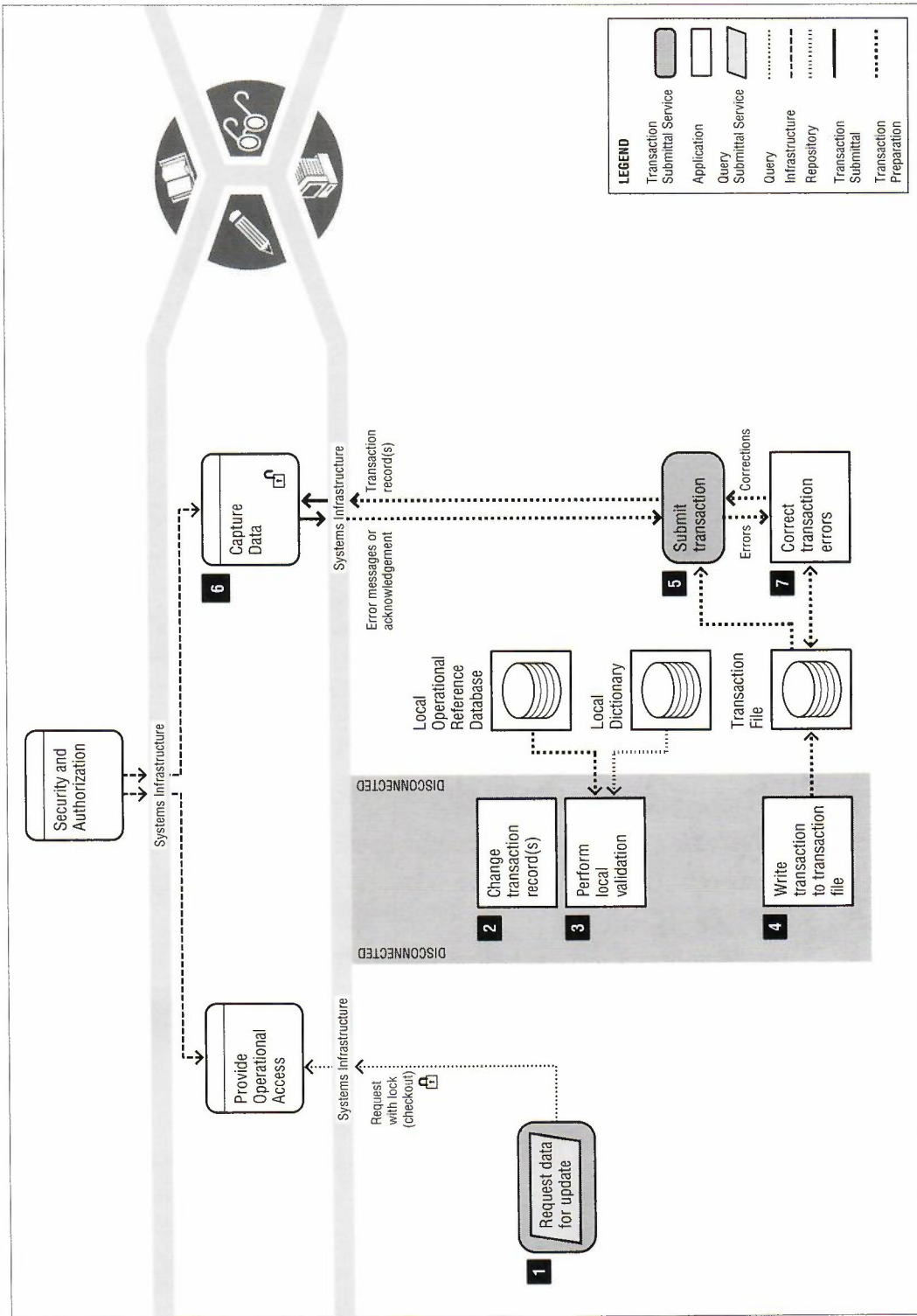**Figure 4-6** Library Checkout—Attached template

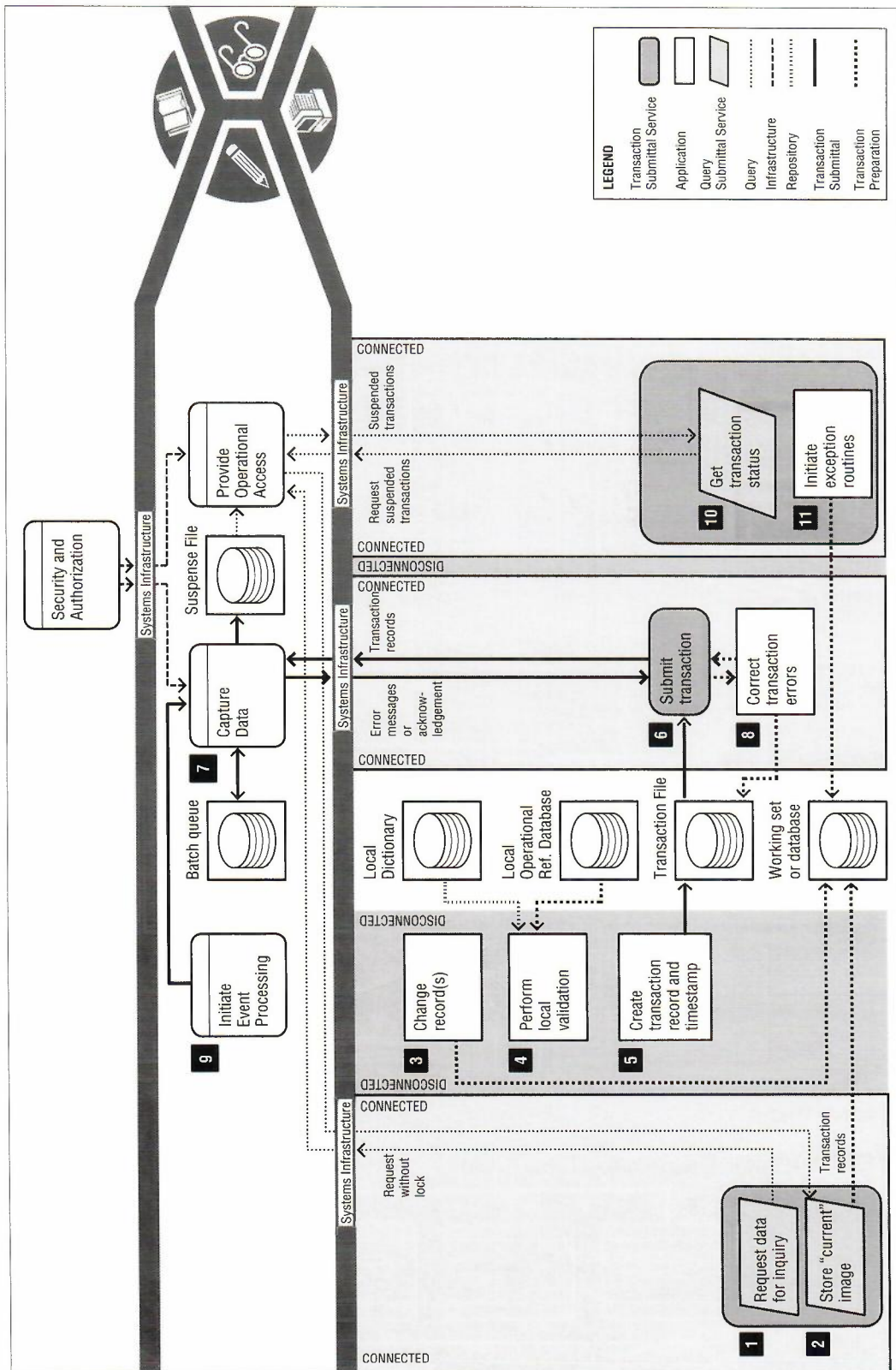**Figure 4-7** Library Checkout—Detached template

Figure 4-8 Deferred Update (without desktop database) design template

Replace the third paragraph (which appears under the heading "Memo Post With Deferred Update Template") with the following text:

The Memo Post With Deferred Update template collects transactions on the desktop and updates a local memo database during a detached session. At a later time, the transactions are submitted for update to the operational database in an attached session through a batch process (deferred update) in the Data Capture environment. With this template, data can be collected concurrently at distributed locations on desktop systems, then cached on local enterprise servers and applied in chronological order to the operational database on the system-of-record at a later time.

At the end of the page, add the following paragraph:

Memo posting refers to the act of updating a locally propagated image copy of the operational database-of-record. The local copy of the memo database is immediately updated interactively to allow the local constituency to perform reference queries of a current record image even though the official database-of-record will be updated from the same transaction at a later time as a deferred transaction. Memo posting is ideal for situations in which a system-of-record is unavailable yet the local business must continue to operate normally. It is also the preferred method for transactions that must be sequenced before being posted to a system-of-record but have business-event effectivity requiring the appearance of immediate posting for query purposes at the local site.

Before step 1, add the following note:

Note: Normally the memo database, local reference data, and locally propagated metadata are resident on a locally attached (LAN-based) mid-tier server (a local enterprise server). Memo databases are usually intended for operational reference by the entire local constituency. Figure 4-9, however, shows a scenario in which the memo database, local reference data, and locally propagated metadata reside on the desktop. Figure 4-9 thus shows an alternative use of memo posting, in this case one that supports mobile-computing transaction processing.
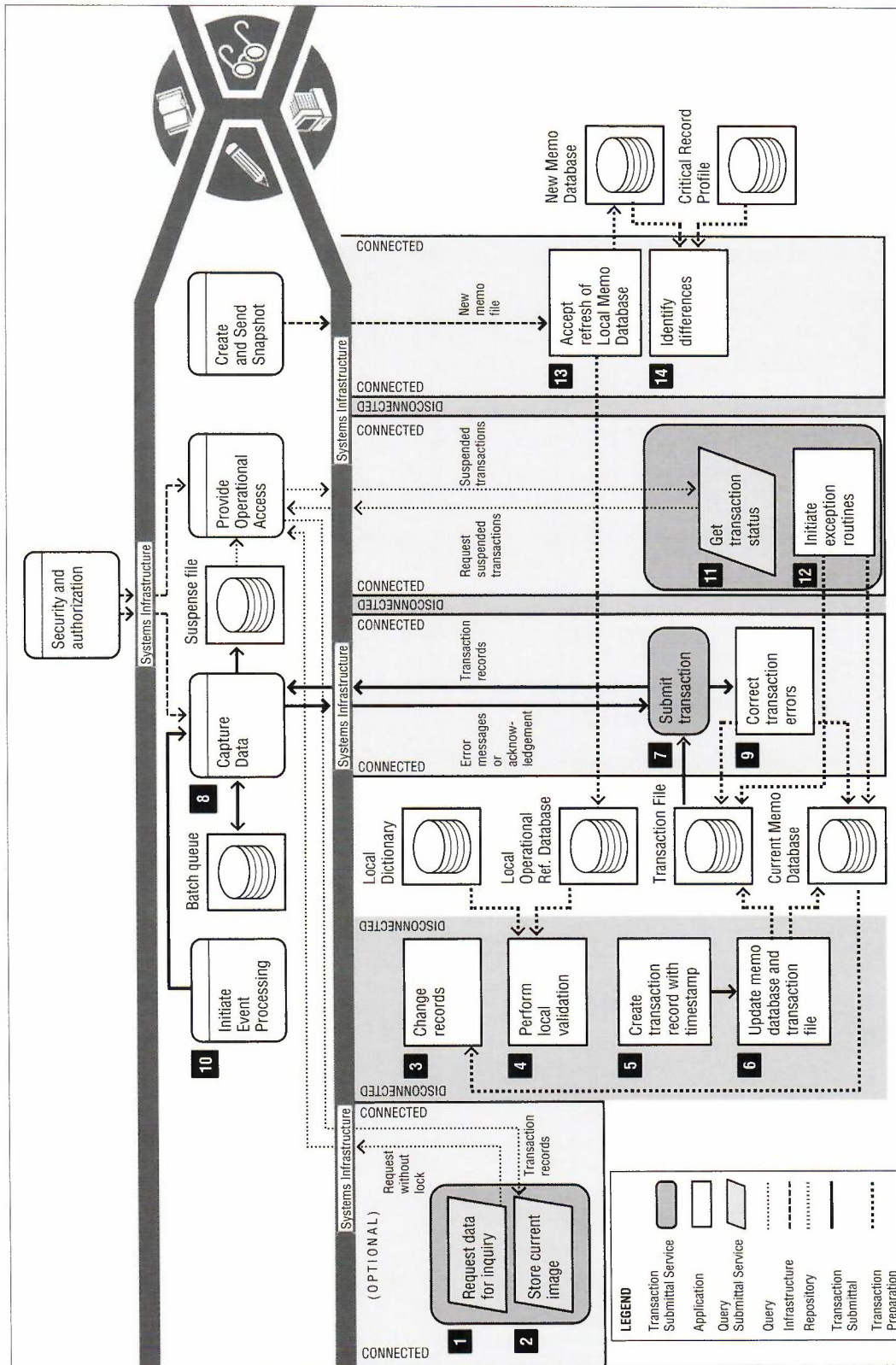
Figure 4-9 Memo Post With Deferred Update design template

UPDATE *VITAL Data Capture Guide*

The list below includes changes to the *VITAL Data Capture Guide.* Immediately following the list are individual pages with art and some of the text changes; you can insert these pages in the appropriate places in the *VITAL Data Capture Guide.*

p. 22 *See insert page 22a.*

p. 30 *See insert page 30a.*

p. 38 *See insert page 38a.*

p. 48 *See insert page 48a.*

p. 88 *See insert page 88a.*

p. 93 *See insert page 93a.*

p. 95 *If the first paragraph does not begin with "5. Desktop application . . . ," the next eight pages (page 95–102) were misprinted. You should contact your Apple-authorized dealer for a replacement volume.*
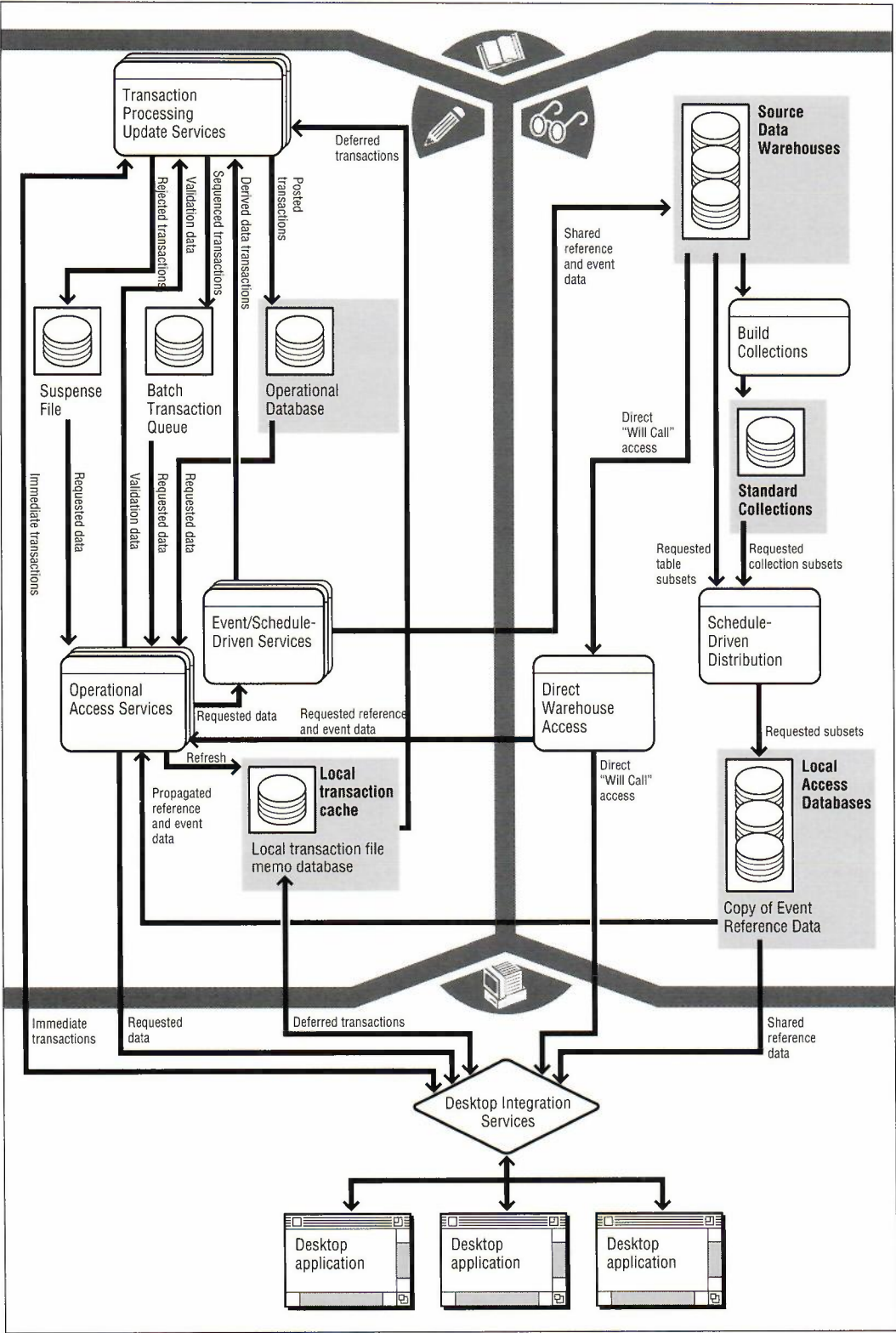
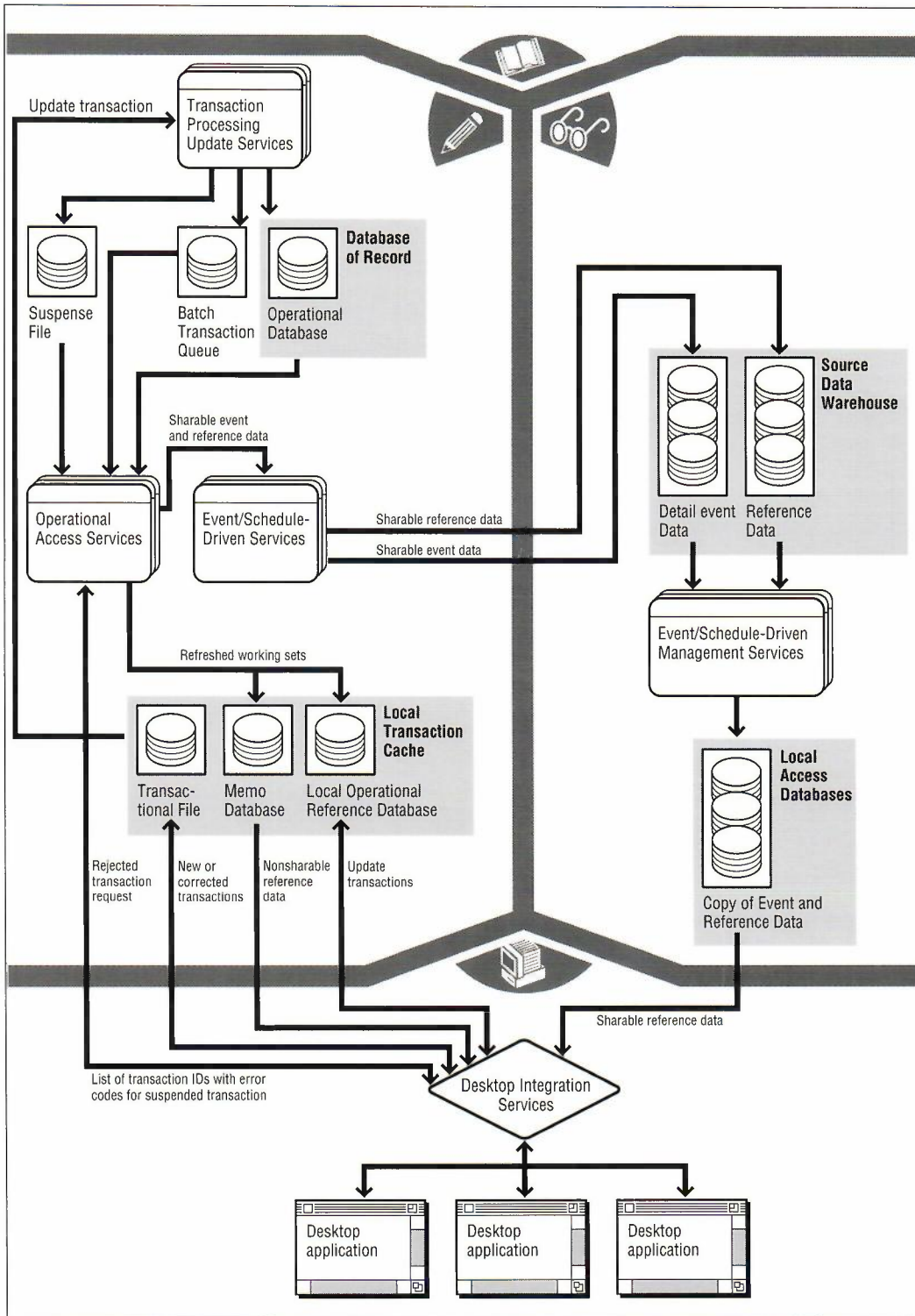**Figure 3-1** Logical view of distributed Data Capture

Figure 3-3 Logical view of deferred memo post

Table 4-1 Repository data stores used by Data Capture

Repository Data Stores	Data Capture Services						
	Provide Operational Access	Capture Data	Deliver Transaction	Provide Operational Update	Initiate Event Processing	Create Update Transactions	Create and Send Snapshots
Authorization Profile	√	√			√	√	√
Business Rules	√	√				√	√
Error Text Table		√				√	
Specifications	√	√			√	√	√
Status Text Table		√			√		
Task Identification	√	√		√	√	√	√
Transaction Routing Rules			√				√
Triggered Processing Rules					√		
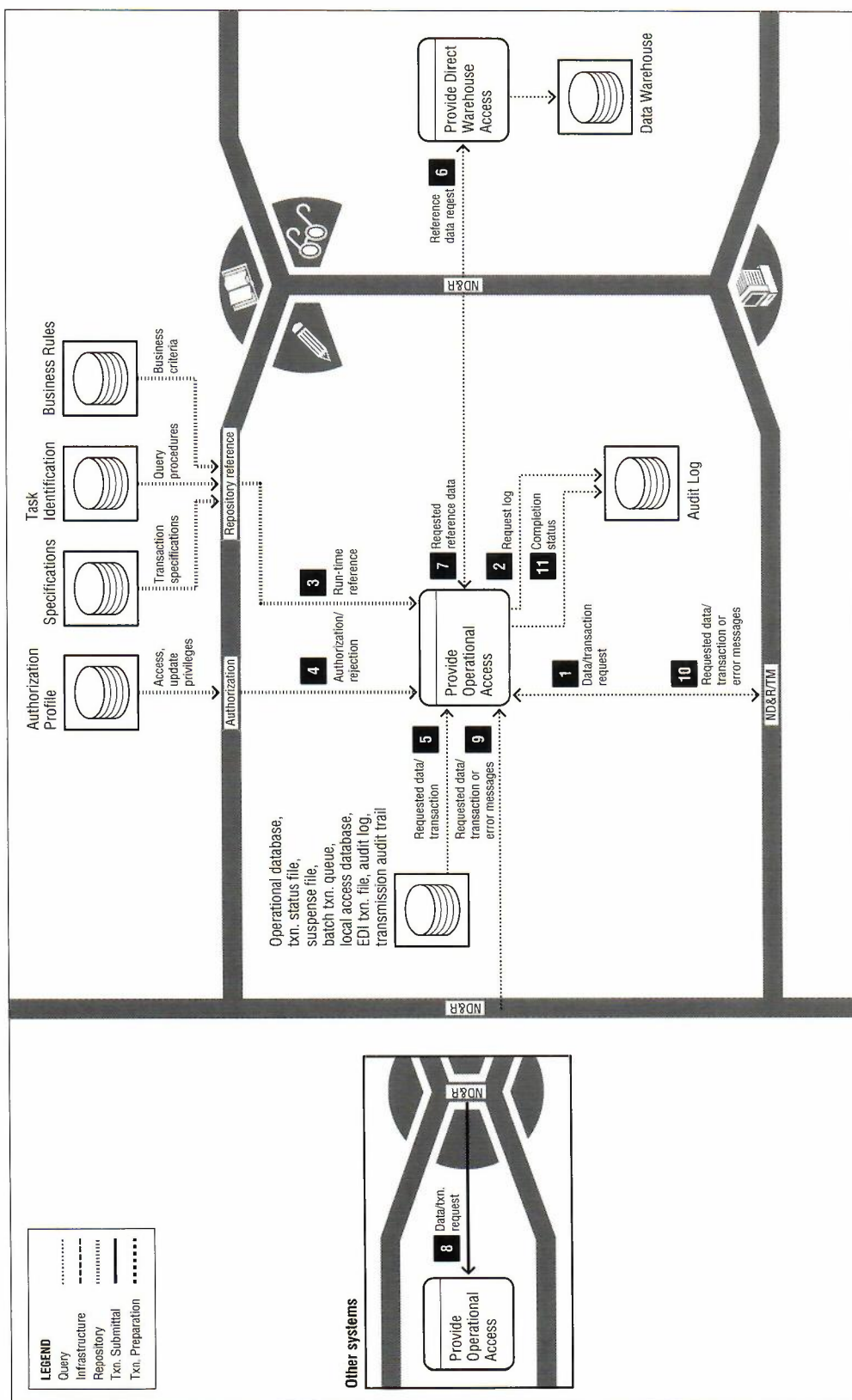
Figure 4-1 Provide Operational Access process diagram

Other systems

Capture Data

18 Routed interprocess transaction

ND&R

Operational Database

14 Update database records

13 Direct-routed txn.

Provide Operational Update

15 Delivery and commit status

19 Delivery and commit status

21 Delivery and commit status

20 Routed outbound EDI transaction

ND&R / EDI

Deliver Transaction

16 Routed data warehouse update txn.

Receive Data and Build Collections

Data Warehouse

ND&R

17 Delivery & commit status

12 Validated transactions

22 Transaction update status

9 Prevalidated transactions

23 Acknowledgment/ error messages

ND&R/TM

Capture Data

11 Requested data

10 Data request

3 Data request without lock

4 Requested data

Provide Operational Access

7 Data request with lock

8 Requested data

ND&R/TM

Txn. Submittal Service

2

6

24

Integration Services Manager

1

5

Desktop application

LEGEND
Query
Infrastructure
Repository
Txn. Submittal
Txn. Preparation

Figure 5-2 Minimal Locking

Replace Figure 5-3 with the following art:
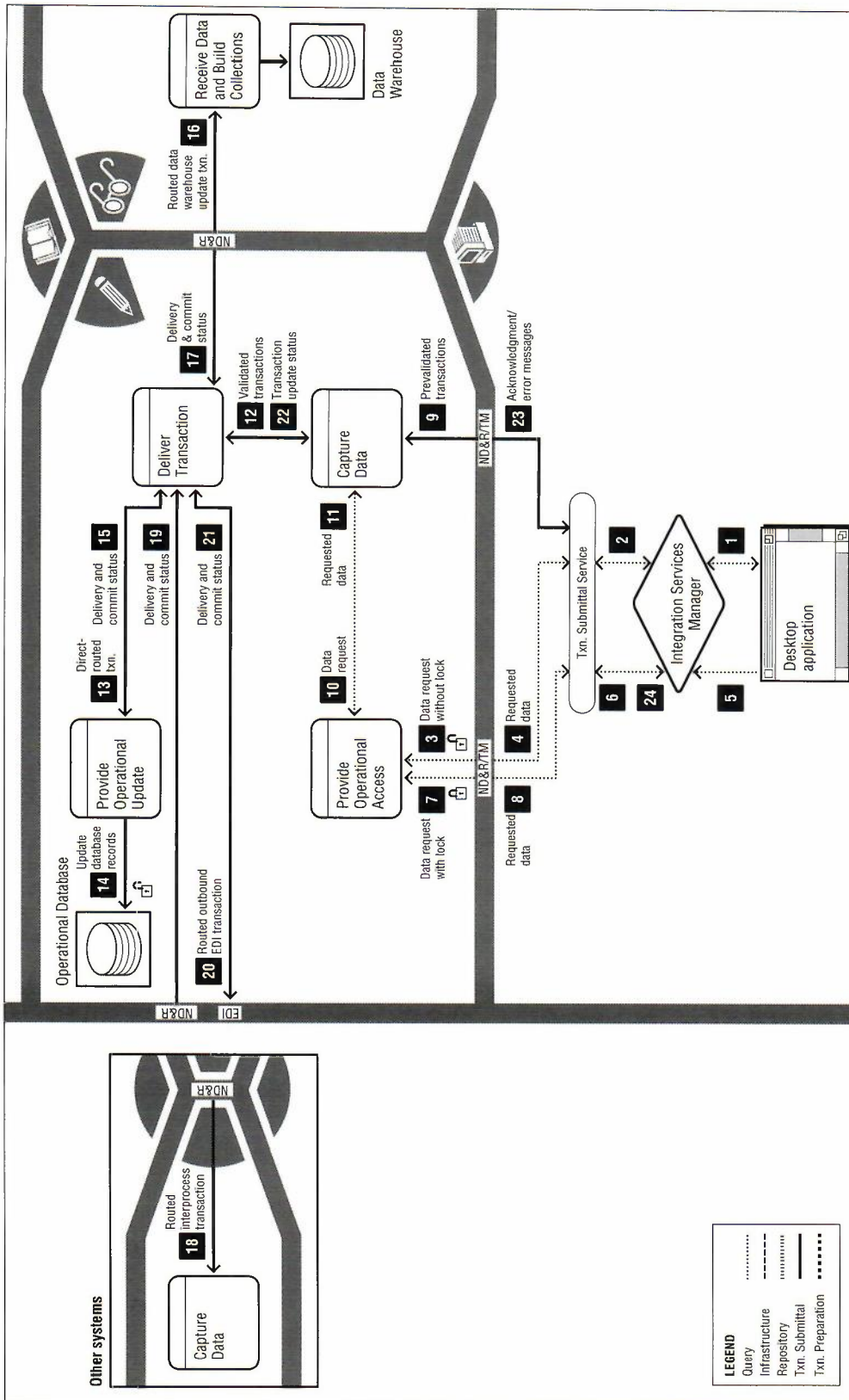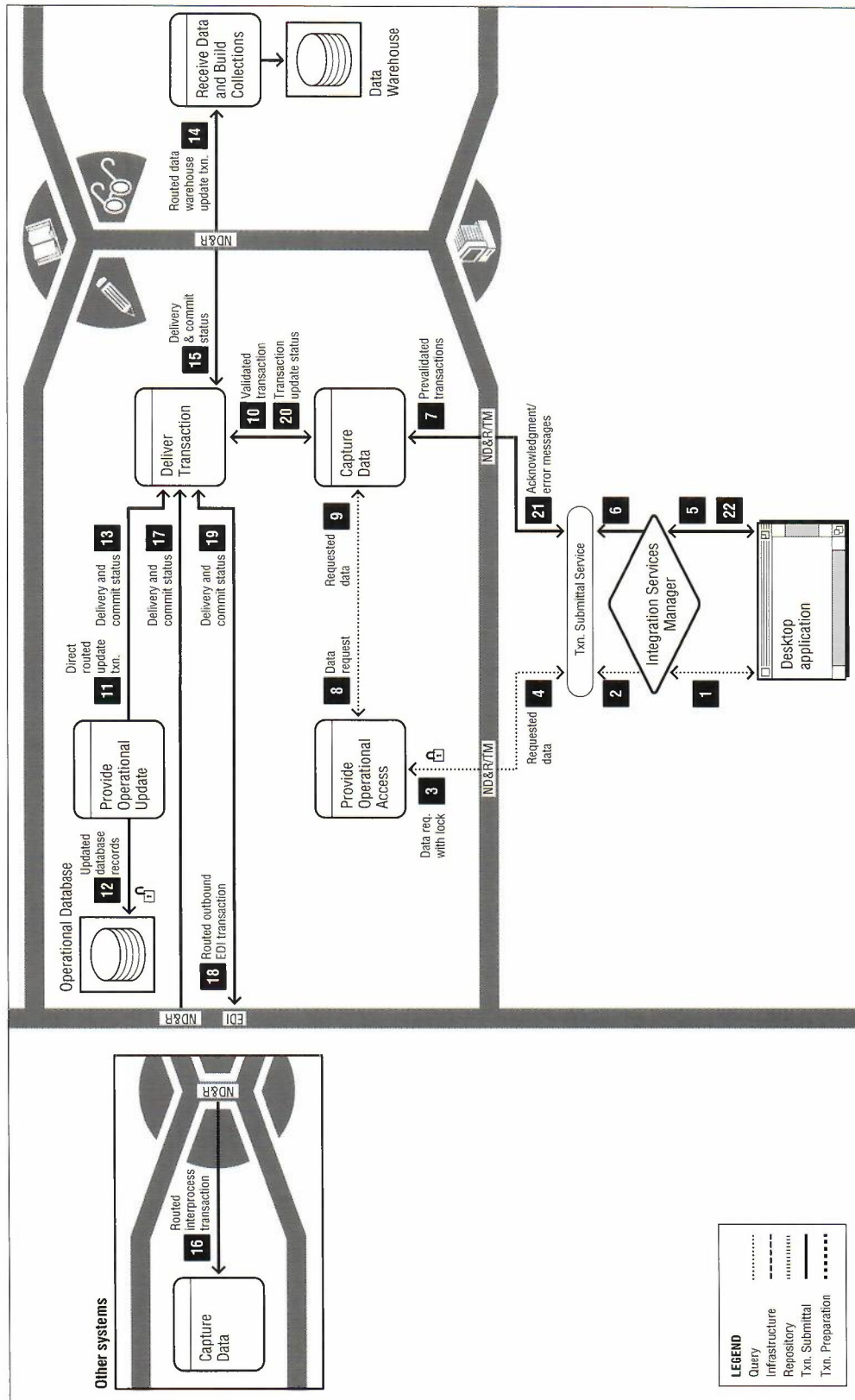

Figure 5-3 Library Checkout

The following list contains the changes to the *VITAL Data Access Guide.* Immediately following the list are individual pages with art and some of the text changes; you can insert these pages in the appropriate places in the *VITAL Data Access Guide.*

p. xix *Add Mark Katz to list of Members.*

p. 15 *The sentence preceding the bulleted list should read:*

The release standard is derived from a distribution engineering study of several variables, including:

p. 19 *See insert page 19a.*

p. 38 *See insert page 38a.*

p. 46 *The second set of bullets should appear as follows:*

- consolidated financials
- global billings and order fill rate
- bookings, billings, and backlog

p. 107 *The last sentence should read:*

The highest-level (level 1) data flow diagram is shown in Figure P-1 (on page xviii).

pp. 219–224 *Disregard Appendix A.*

p. 238 *Insert the following index main entry after "data center enterprise servers":*
data envelope 150, 192, 195
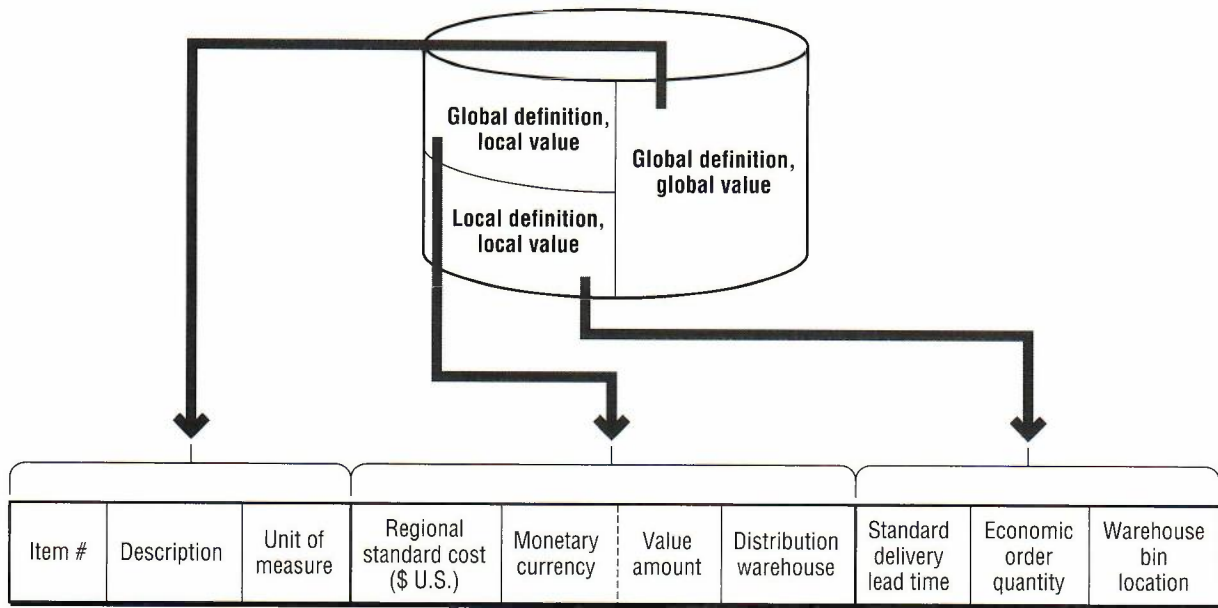
Figure 2-2 Mid-tier warehouse with logical-record view

Replace the first paragraph with the following text:

Refresh latency is sometimes called *propagation delay*. This is similar to in-transit lead time in distribution companies, which is the average time elapsed from the moment inventories are replenished to the moment they are delivered to regional warehouses or drop-shipment points.

The list below includes changes to the *VITAL Systems Infrastructure Guide.*

p. v *"Service directory / 80" should read "Security directory / 80"*

p. x *Last name on page should read "David Willsey."*

p. 38 *Line 7 of the second paragraph should read:*

It can be replicated and propagated to mid-tier data dictionaries where it populates DBMS catalogs.

p. 41 *The description of the sharable data directory should read:*

■ *Sharable data directory (SDD)*—also known as the *shared resource directory;* keyed by the logical name . . .

p. 58 *The bulleted list at the bottom of the page and the sentence that precedes it should read:*

The following are examples of transaction-processing monitors suitable for Class D:

■ DEC ACMS/DI

■ IBM CICS

■ IBM DC

■ Transarc's Encina

■ USL's TUXEDO

p. 80 *The title of the first section on the page should read:*

Security directory

The list below includes changes to the *VITAL Repository Guide.*

p. 31 *The second bulleted item should read:*

- **Sharable data directory (SDD)** (also known as the *shared resource directory*)

p. 117 *Add the following index main entry after "shared data":*

shared resource directory. *See* sharable data directory