Extending Visual Basic To The Enterprise – T197

HP World 2001

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Agenda

- Introduction
- Demo
- Elements of a multi-tier application
- Live workshop session
- Note – sample code is available at http://www.xformix.com/vbexample/index.html

Introduction

- Who am I?
  - Transformix – software and consulting
  - Mainframe, HP 3000, UNIX and Windows experience
  - In data processing since 1967
  - www.xformix.com
  - Cfinley@xformix.com

The Focus of Host Integration Products and Solutions

- Bring all the power and resources of the host server to the end user desktop.
  - Data
  - Programs or procedures (subroutines)
  - Applications

The Focus of Host Integration Products and Solutions (cont'd)

- Tightly integrate the client software into the desktop environment it is running on.
  - Give Host Applications and modern look and feel
  - Give host directory and file access
  - Single passwords
  - Operations control
  - Printer and spooler control

Tools and Strategies for Legacy Programs and Procedures Access

- When it comes to accessing legacy programs and procedures, there are a few strategies to choose from. Here's a quick guide:
  - **RPC –Remote Procedure Calls**
  - **Sockets**
  - **Screen Scraping**

Tools and Strategies for Legacy Data Source Access

- When it comes to accessing legacy data, there are a few strategies to choose from. Here's a quick guide:
  - **Screen Scraping**
  - **Screen Buffer Processing**
  - **ODBC**
  - **Host Data Replication**.

Demos

- Host-based Terminal HP 3000 application
- Reflection/COM Component Solution
  - Client/Server
  - Web
- ADO – Active Data Object Solution
  - Client/Server
  - Web

Three-tier Model Overview

Tier 1
User Services & Navigation

- User Interface
- Client-side validation

Tier 2
Business Services

- Reusable code (components)
- Business rules
- Interfaces to external programs

Tier 3
Data Services

- Shared data
- Data-based rules, triggers, etc.

Benefits

- Partitioning
- Cross-platform application development
- Universal Data Access
- Component reusability
- Choice of programming languages

Benefits (cont.)

- Scalability
- Fault Tolerance
- Support for standards
- Integrate with 1000s of commercial applications

User Interface Layer

- Thin client
  - Web browser
    - Windows, Netscape, Unix, Mac, Windows CE
  - Programming Languages
    - HTML, JScript, VBScript, J++, XML

User Interface Layer (cont.)

- Formatting of display
- Gathers input from user
- Basic input data validation

Business Services Layer

- Component Object Model (COM)
  - Contain business rules
  - Communications between User Services tier and Data Services tier

Component Object Model (COM)

- ActiveX DLLs (Servers) are based on Microsoft's COM model
- COM basically defines what it means to be an object and how an object is called
- Binary standard
- Versioning

Why Use COM?

- Abstraction of underlying data structures
- Reusable components
  - Centralized business rules
- Scalable
  - Microsoft Transaction Server
- Heterogeneous programming languages

Data Services Layer

- Performs the actual data retrieval
  - Database connectivity using ActiveX Data Objects (ADO)
  - SQL Server Stored Procedures

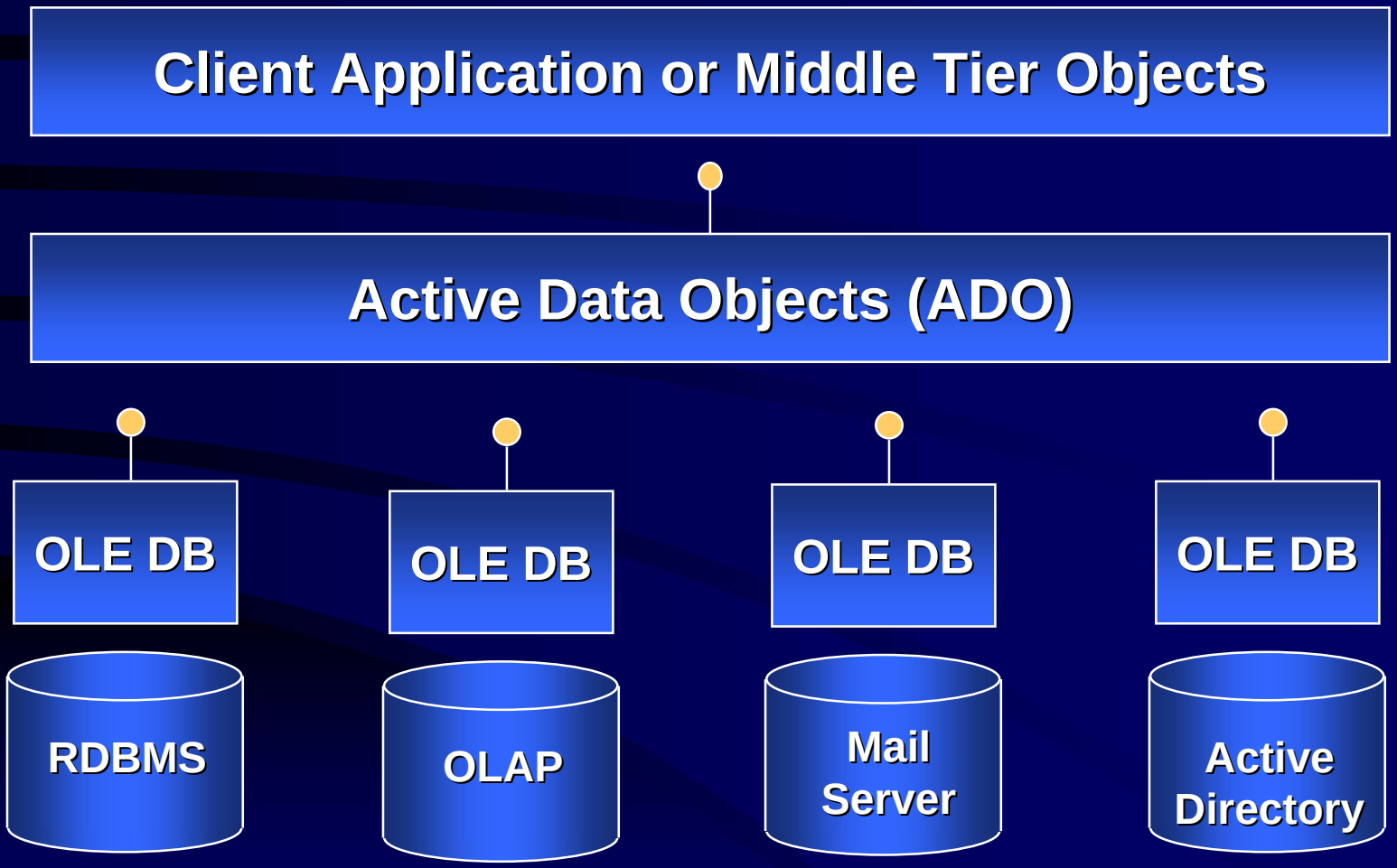
ActiveX Data Objects (ADO)

- Set of high-level automation interfaces over OLE DB data
  - What is OLE DB?
    - Low level COM interfaces
    - Open standard for access to various data stores
      - Databases
      - Message stores
      - LDAP
      - Non-relational data
      - Mainframe ISAM/VSAM
      - Geographical data
      - File system

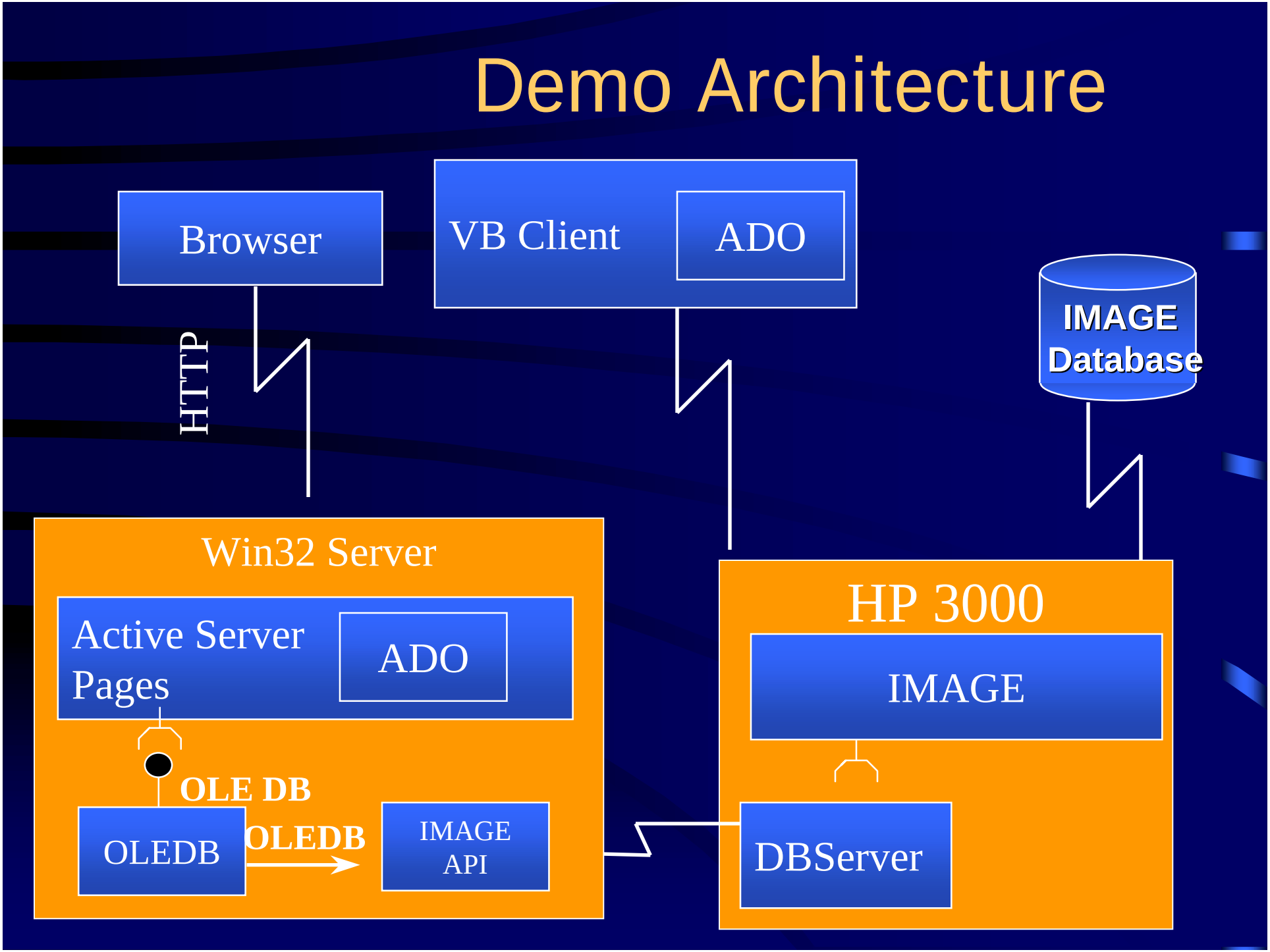
Features of ADO

- Independently instantiable
- Allows customization of objects by designers
- Includes all capabilities of DAO and RDO
- Specification of a set of objects, not a specific implementation

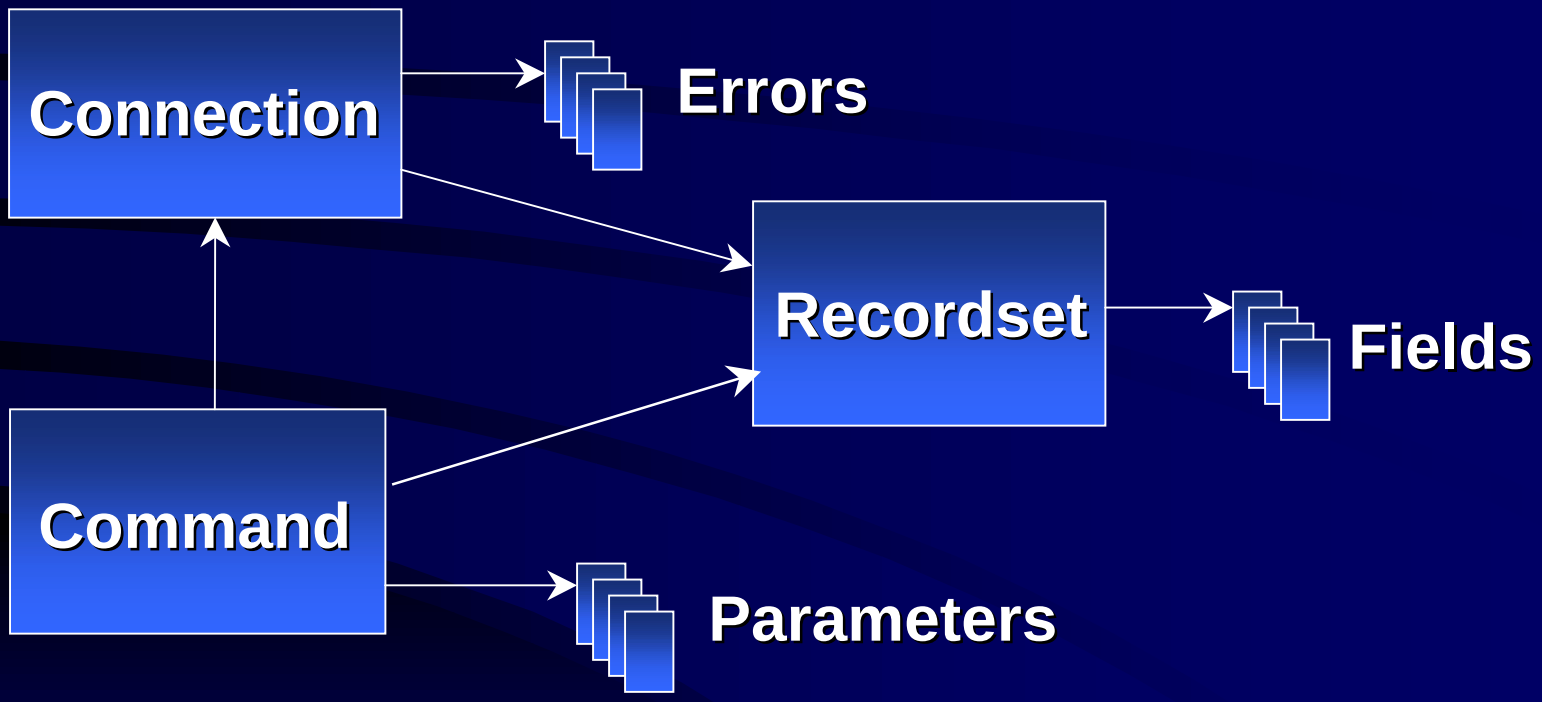
ADO Promotes Universal Data Access



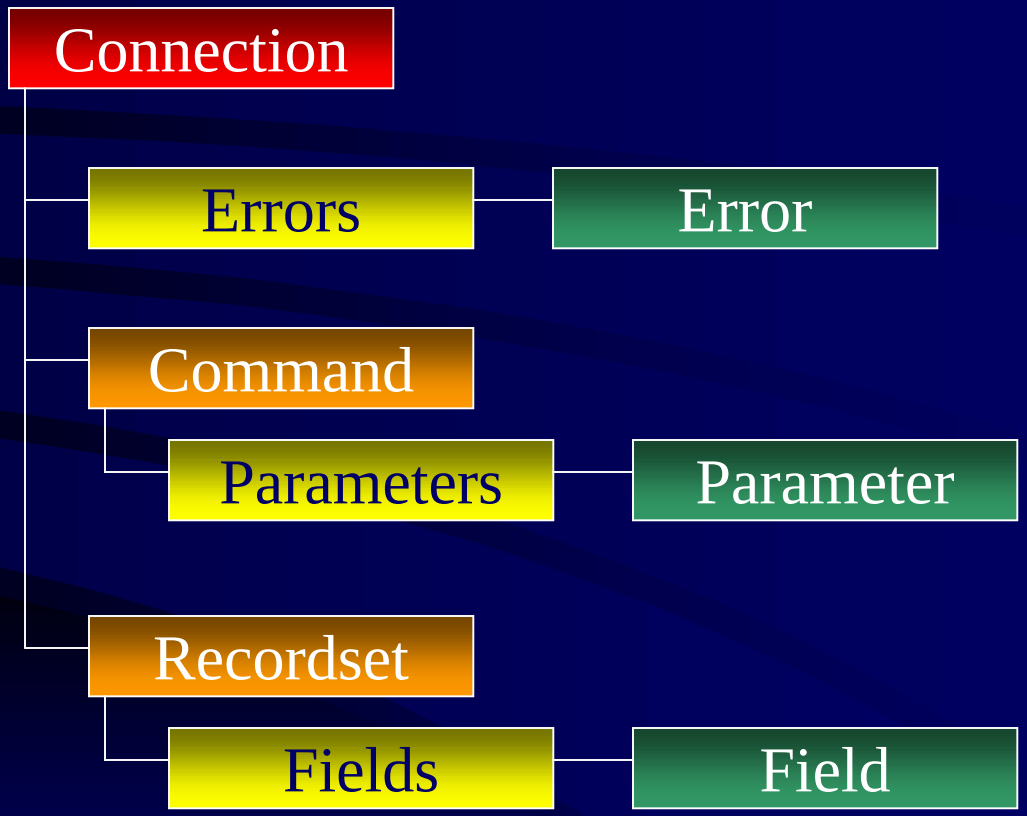
Demo Architecture



ADO Object Model

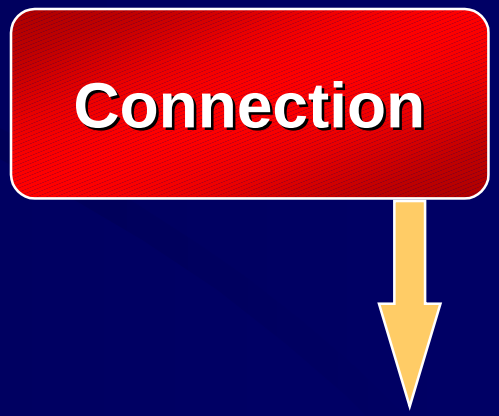


ADO Object Model
(hierarchical view)



ADO Connection Object

```
Dim conn As New ADODB.Connection

conn.Open “<dsn>”
```

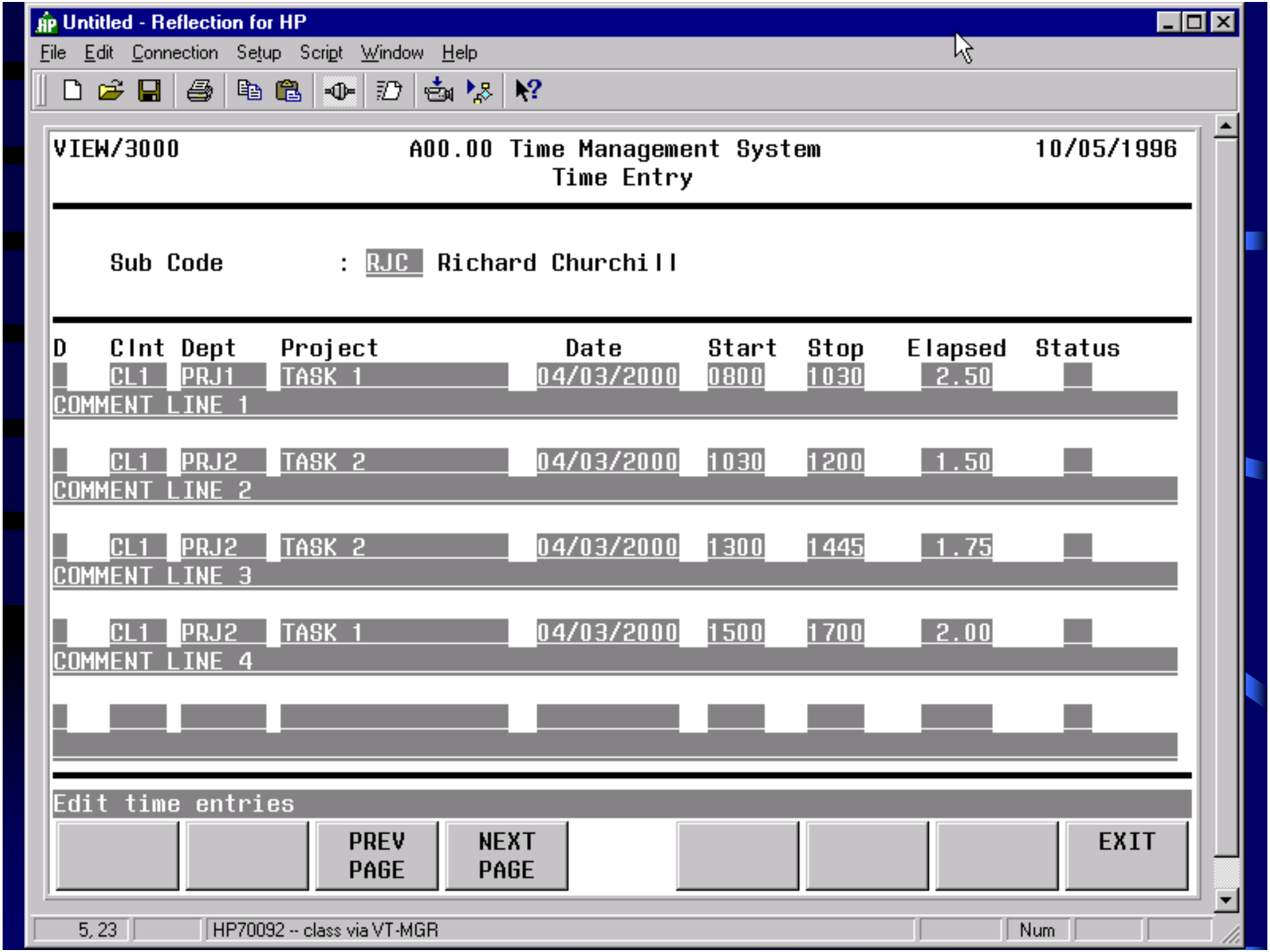


ADO Recordset Object

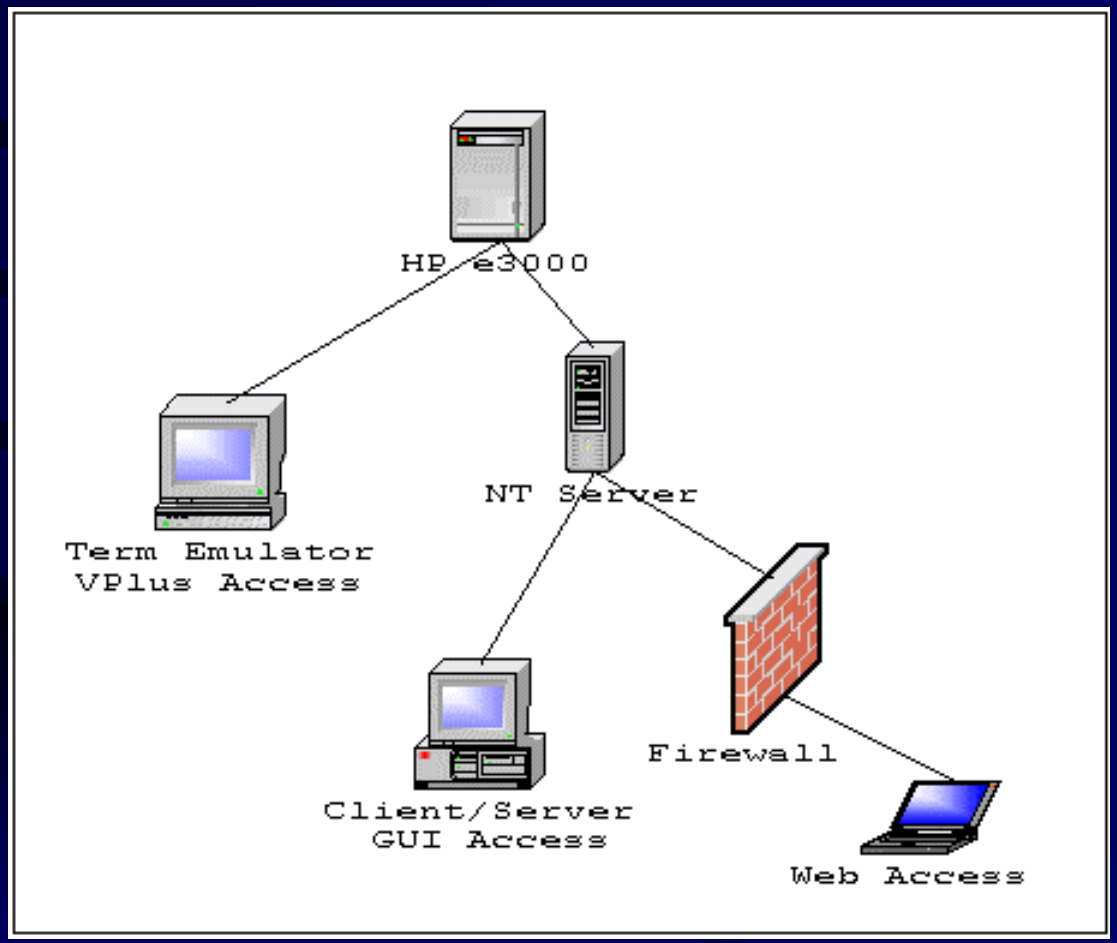
```
Dim rs As New ADODB.Recordset

set rs = conn.Execute(<sql>)

While Not rs.EOF
      …
      rs.MoveNext
Wend
```

Host Integration Examples

- Original COBOL/Vplus/IMAGE application
- Example 1 – COM Object
- Example 2 – ADO

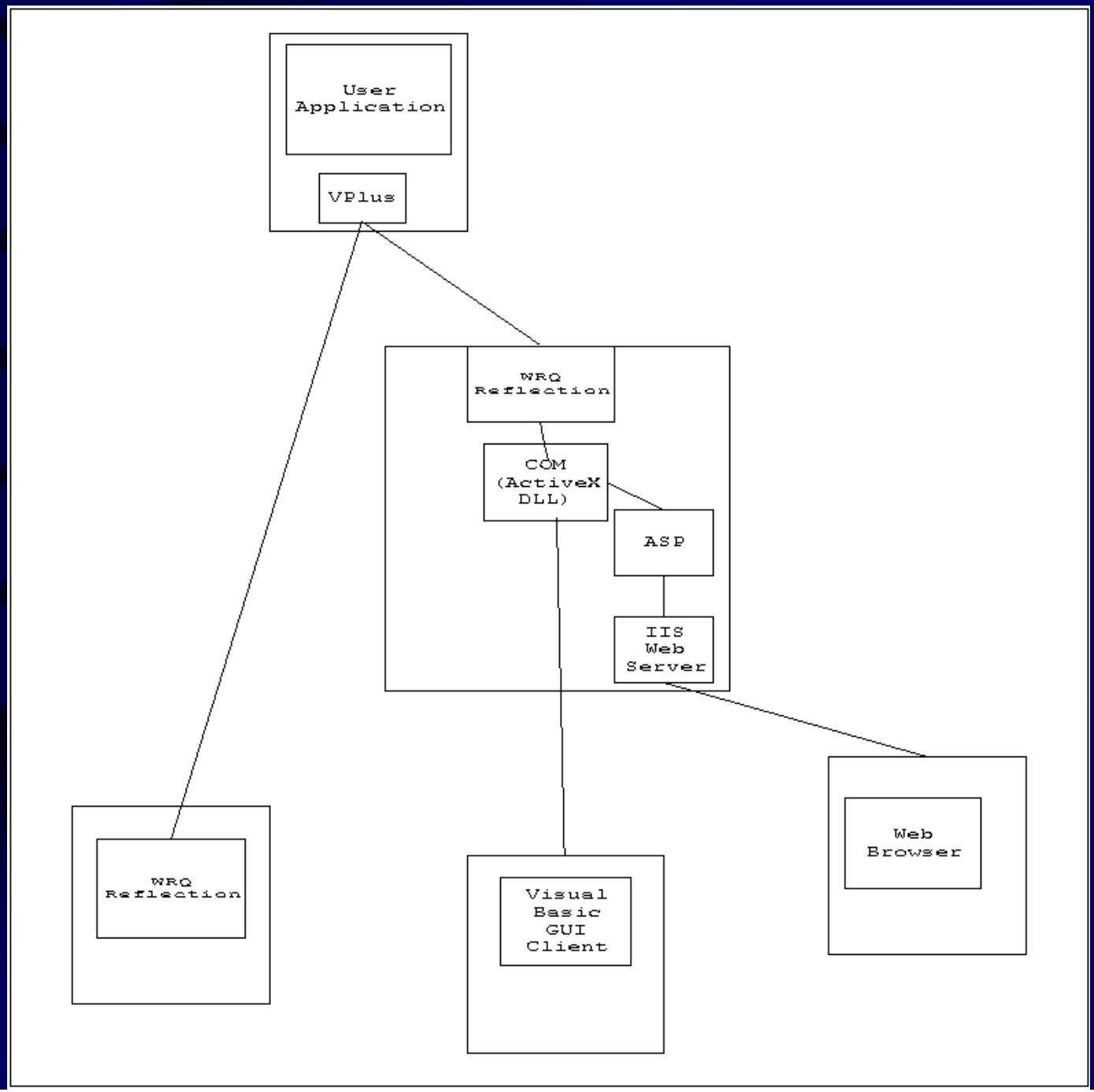

Untitled - Reflection for HP
File Edit Connection Setup Script Window Help
VIEW/3000 A00.00 Time Management System 10/05/1996
Time Entry
Sub Code : RJC Richard Churchill
D Clnt Dept Project Date Start Stop Elapsed Status
CL1 PRJ1 TASK 1 04/03/2000 0800 1030 2.50
COMMENT LINE 1
CL1 PRJ2 TASK 2 04/03/2000 1030 1200 1.50
COMMENT LINE 2
CL1 PRJ2 TASK 2 04/03/2000 1300 1445 1.75
COMMENT LINE 3
CL1 PRJ2 TASK 1 04/03/2000 1500 1700 2.00
COMMENT LINE 4
Edit time entries
PREV PAGE
NEXT PAGE
EXIT
5, 23
HP70092 -- class via VT-MGR
Num

Network Layout for Examples

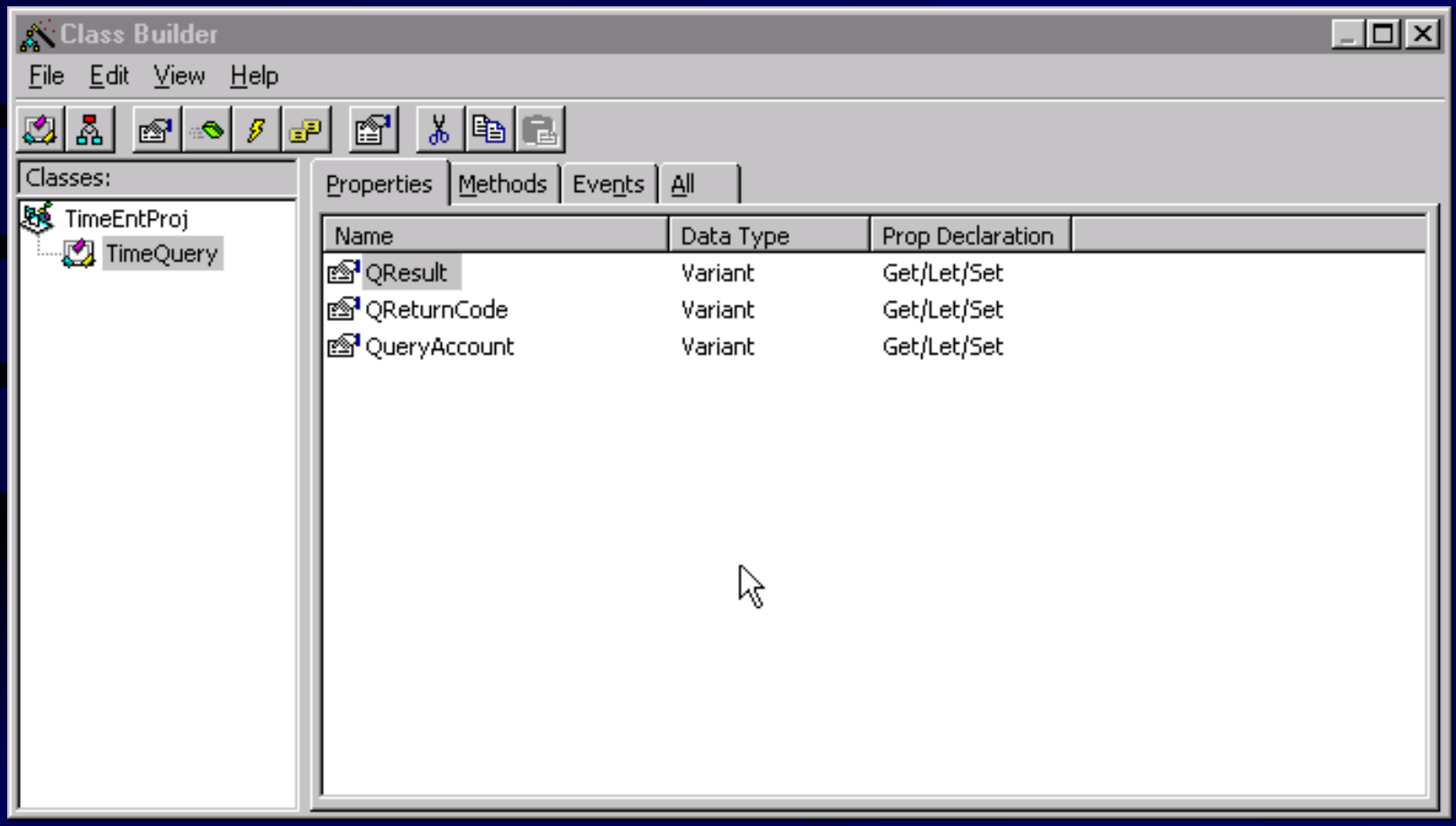


HP 3000 Host Integration Example 1

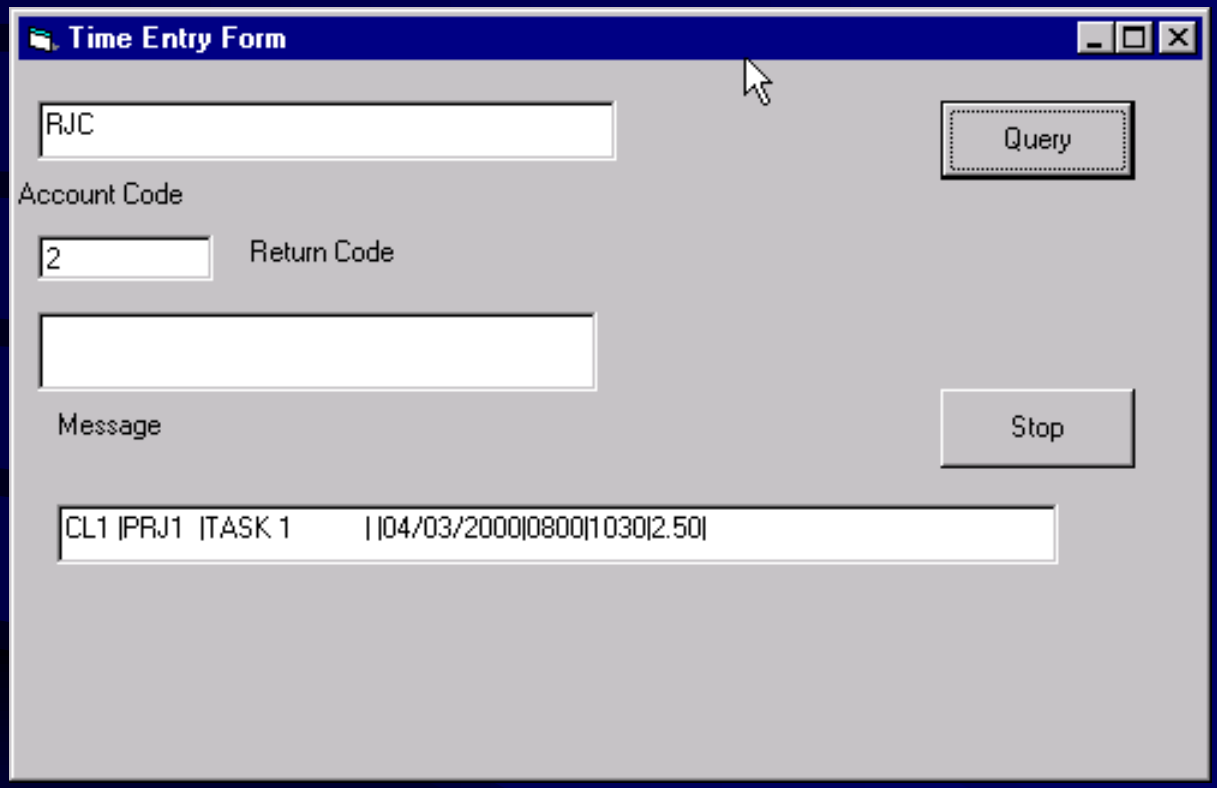
- Using an ActiveX Server-Side (DLL) Component with a Host-Based Application
- Component automates a WRQ Reflection Session using An ActiveX (COM) Server
- GUI Example
- ASP Web Example


User Application
VPlus
WRQ Reflection
COM (ActiveX DLL)
ASP
IIS Web Server
WRQ Reflection
Visual Basic GUI Client
Web Browser

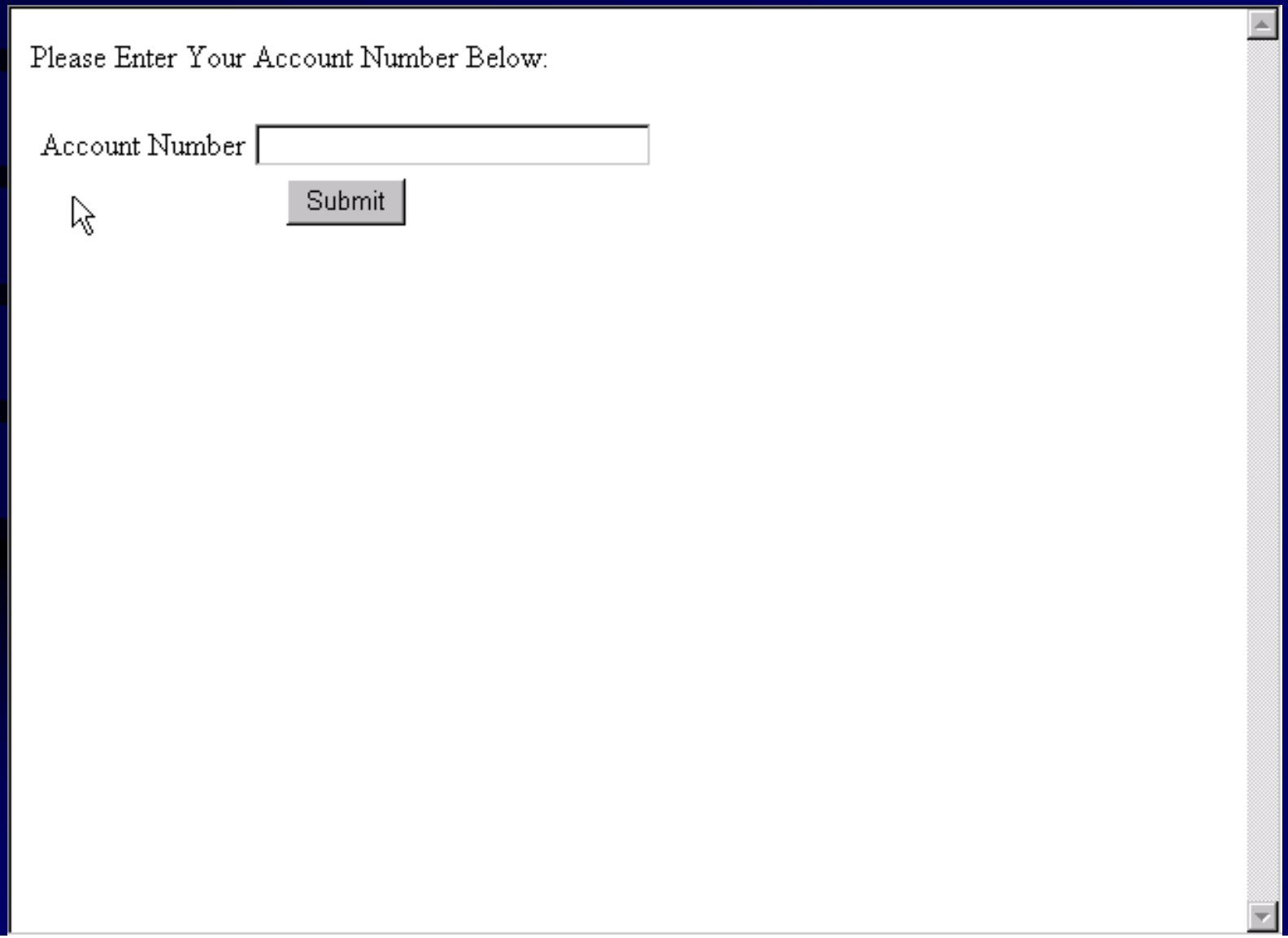
VB Class Design



GUI Screen – Example 1



Web Screen – Example 1



HP 3000 Host Integration Example 2

- Uses ADO (Industry standard Active Data Objects)
- Uses and OLEDB Custom Provider and an IMAGE API on the Win32 computerse
- GUI Example
- ASP Web Example

Summary

- Multi-tiers and the purpose of each
- Component Object Model (COM)
- Active Data Objects
- HP 3000 or UNIX existing terminal based applications
- Presentation and sample apps available at: http://www.xformix.com/vbexample/index.html

References & More Information

- Microsoft Developer Network (MSDN)
  - http://msdn.microsoft.com/developer
- Microsoft Technet
  - http://www.microsoft.com/technet/

References and More Information (cont.)

- Active Data Objects (ADO)
  - http://www.microsoft.com/data
- Visual Studio Web site
  - http://www.microsoft.com/vstudio
- MSDN Online
  - http://www.microsoft.com/msdn
- Newsgroups
  - microsoft.public.ado
  - microsoft.public.oledb
  - microsoft.public.odbc
- Email me at *cfinley@xformix.com*