Cedar

BlueStar FXML Architecture

Cedar Software

The BlueStar Company

Bill Chen

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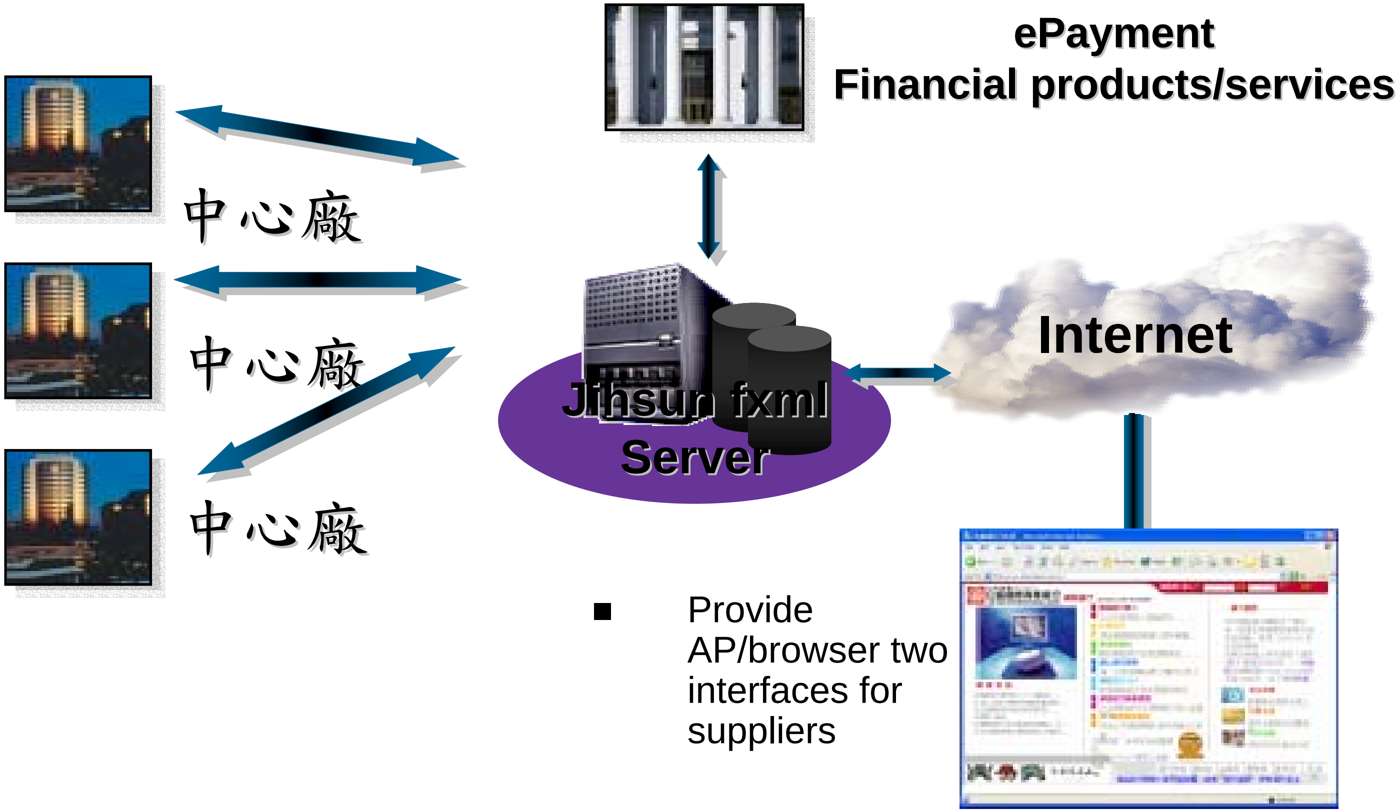
- Execution Architecture

- Development Architecture

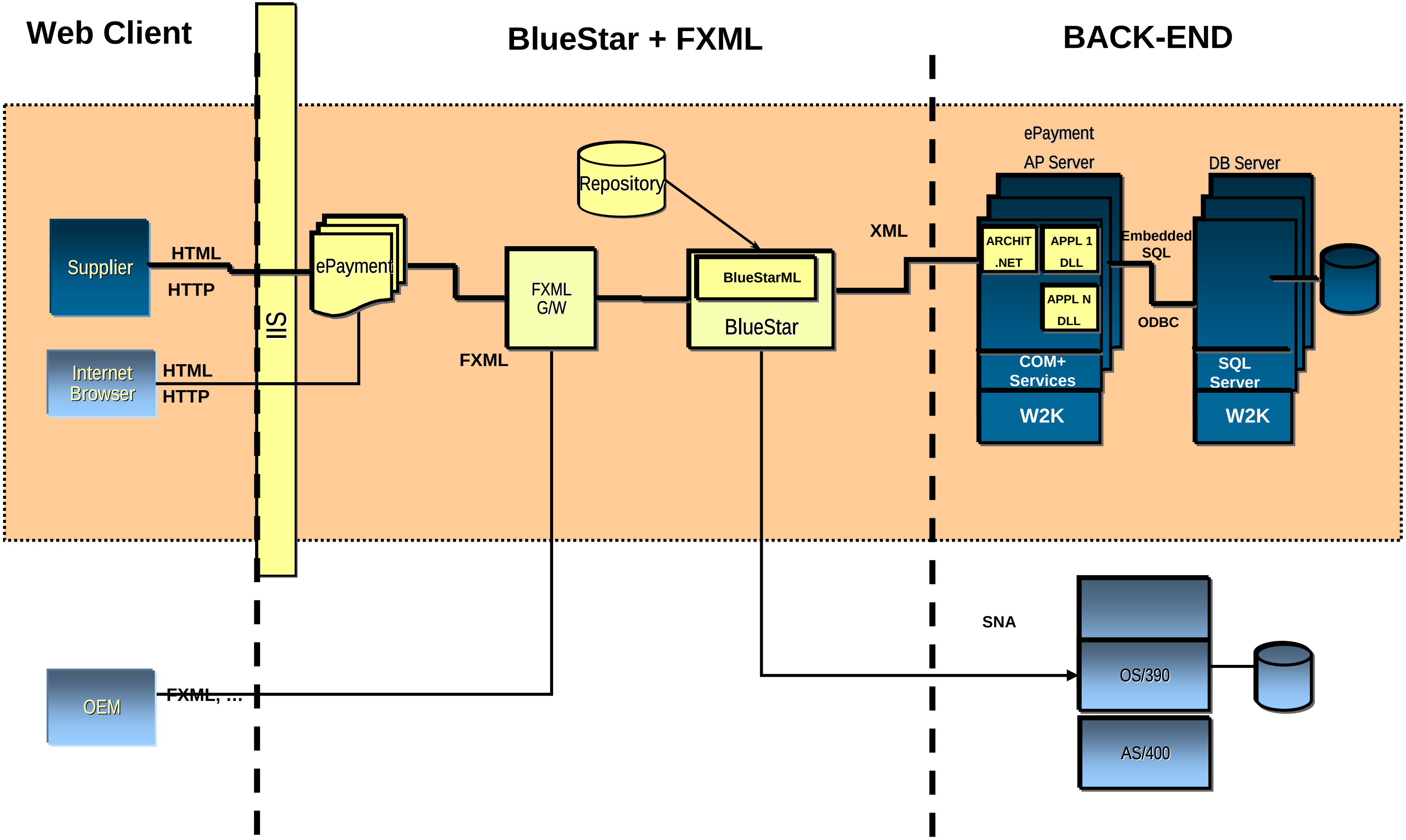
Project Objective

Assisting Jihsun to build up the Plan C on top of BlueStar and provide financial services for clients.



- Provide AP/browser two interfaces for suppliers

Solution Architecture Overview



Overview

- Highly user friendly
  - Advanced GUI by ASP.NET
  - Oriented to the business process, not just to the transaction.
- Components technology (software components)
  - COM+ Components
  - Web Controls
- Simplicity and productivity in the construction of applications
  - Extremely simple and efficient client development
  - Application development model based on PD and templates
  - Highly intuitive component development model
- Reduction in the Total Cost of Ownership
  - Thin Clients which do not require administration
  - High level of standardization
  - Overall simplicity of the model

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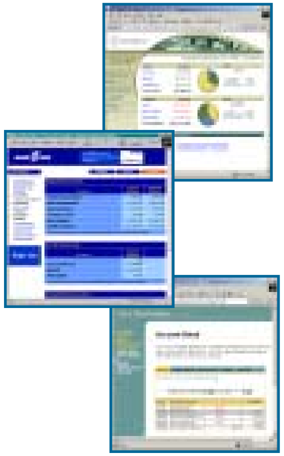
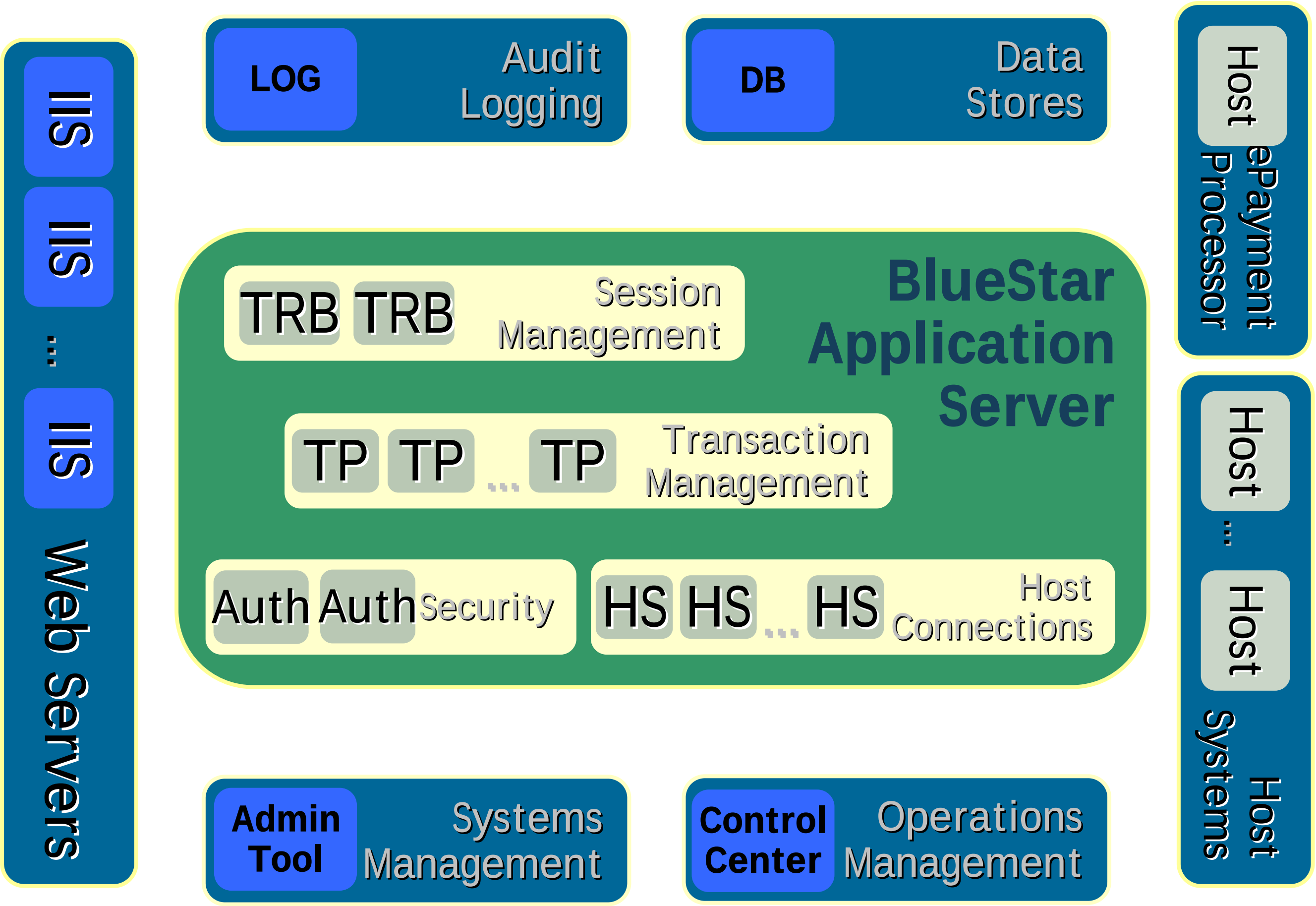
BlueStar Logical Architecture





IIS
IIS
...
IIS
Web Servers

LOG
Audit Logging

DB
Data Stores

BlueStar Application Server

TRB TRB
Session Management

TP TP ... TP
Transaction Management

Auth Auth
Security

HS HS ... HS
Host Connections

Admin Tool
Systems Management

Control Center
Operations Management

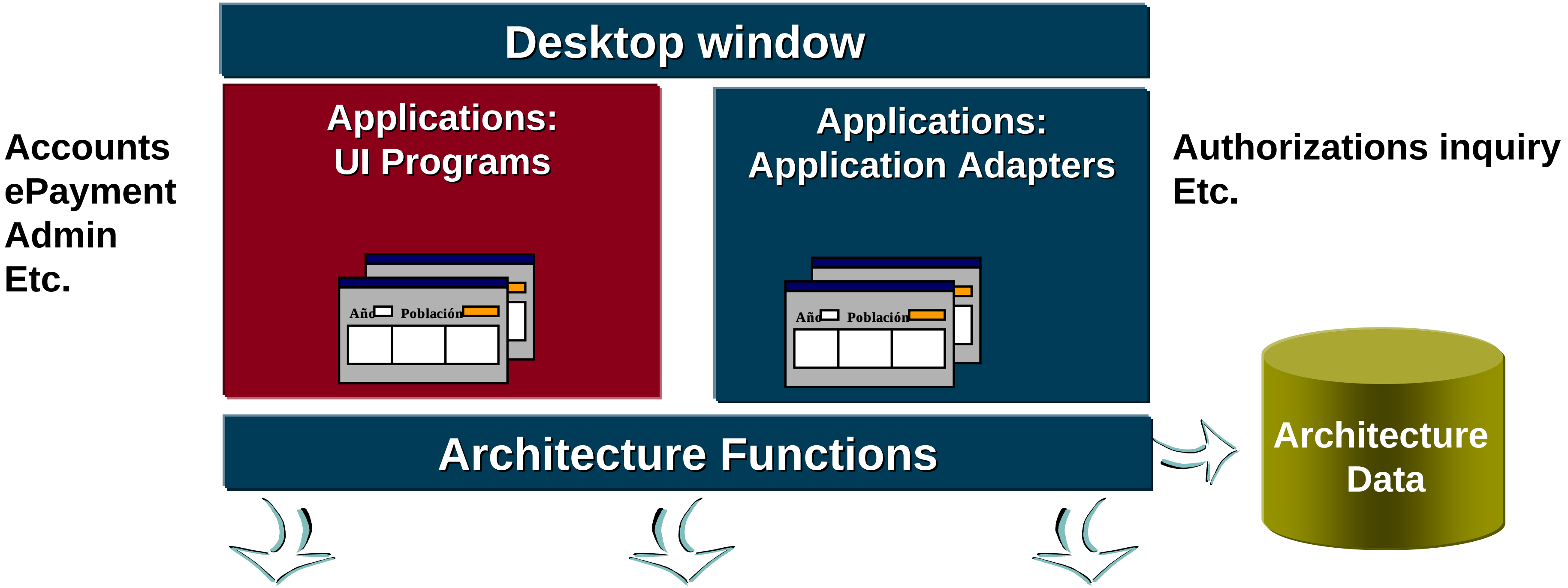
Host
ePayment Processor

Host
...
Host
Host Systems

Cedar

Execution Architecture: Overview

General Outline



Desktop window

Accounts
ePayment
Admin
Etc.

Applications:
UI Programs

Applications:
Application Adapters

Authorizations inquiry
Etc.

Architecture Functions

Architecture Data

Presentation Functions

- XSL for Form Generation
- Graphic Components
- Multi-language

Adapter Functions

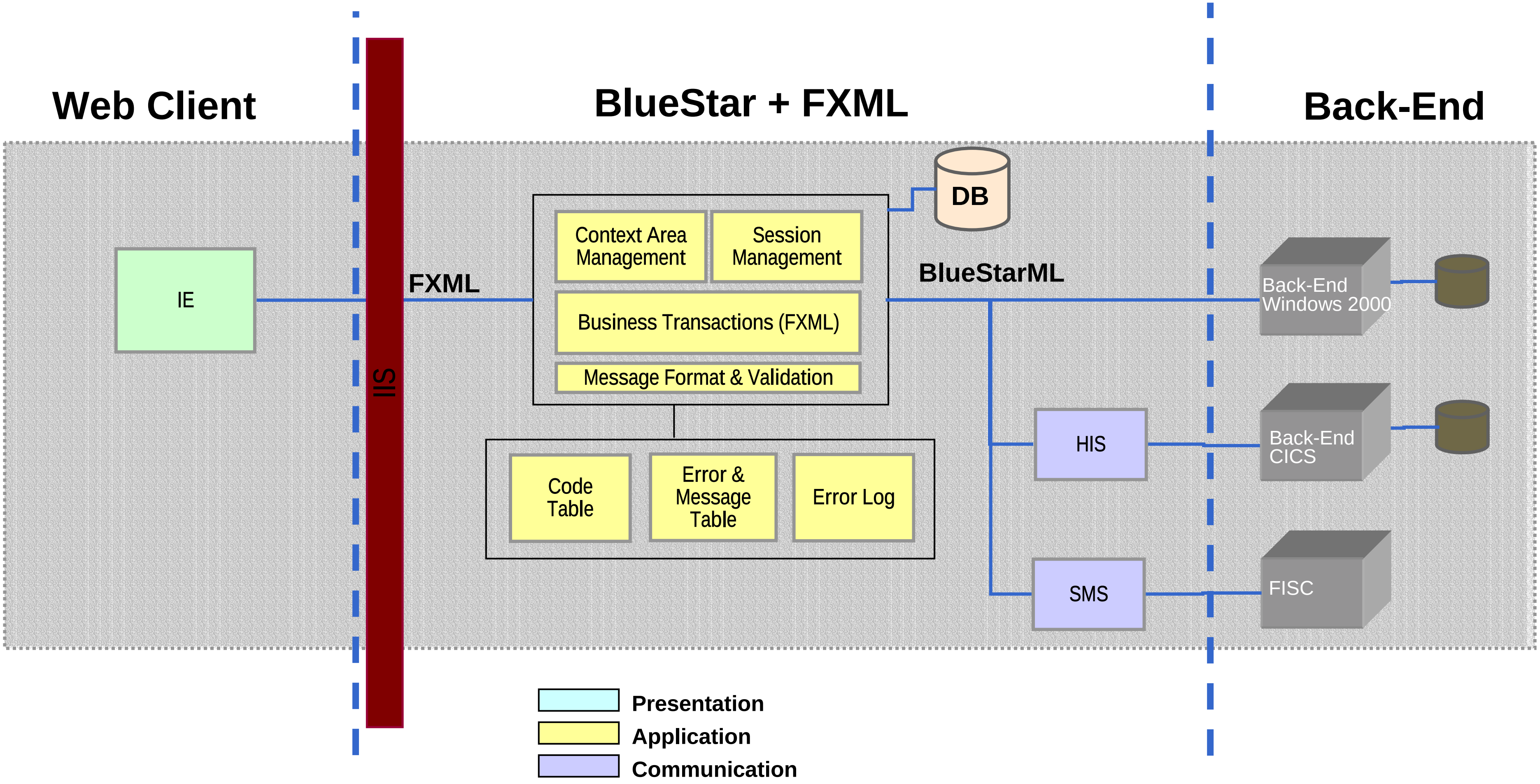
- Host communication management
- Session Management
- Multi-backend

Application Functions

- Message formatting and validation
- Security
- Error handling
- Document formatting
- Decoding and interpretation

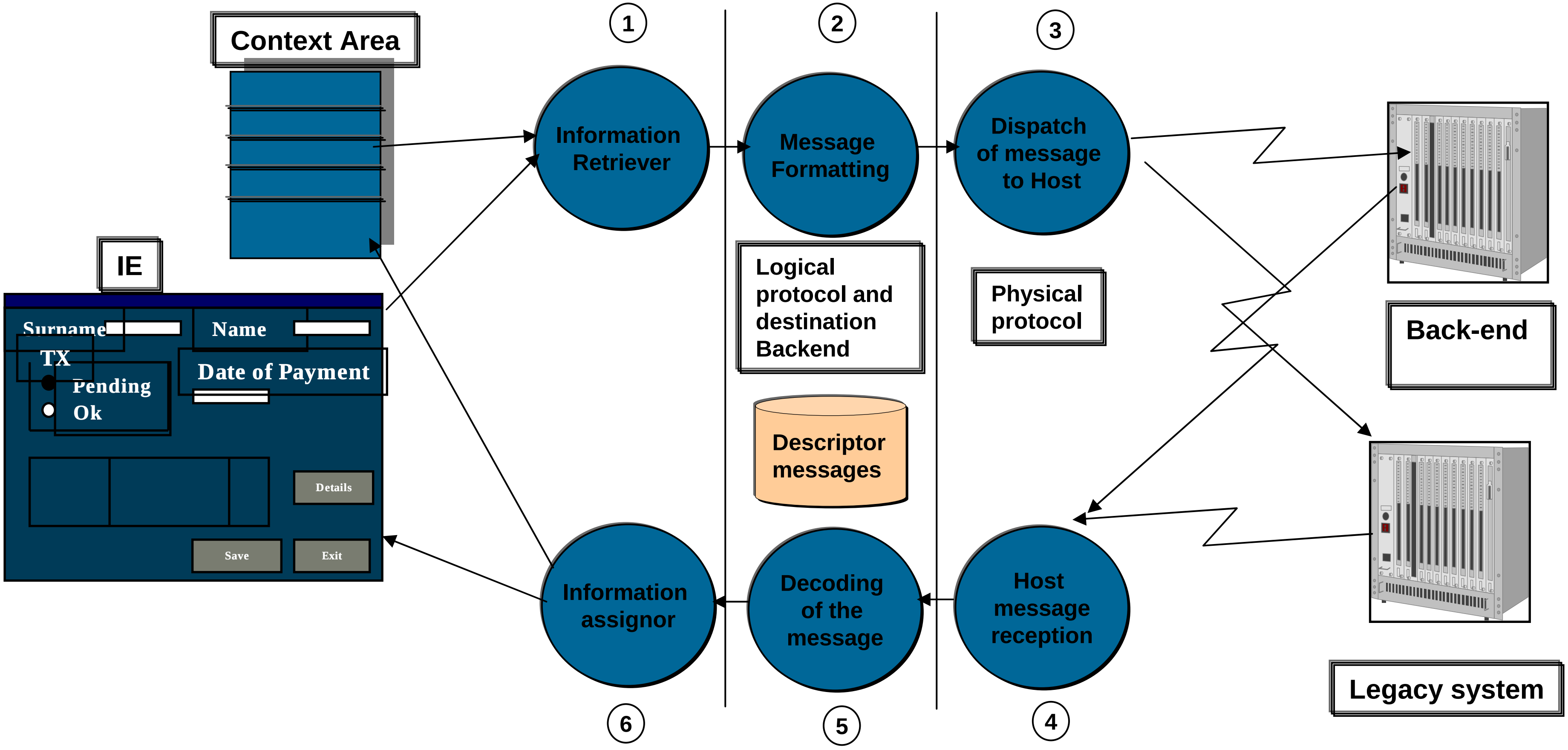
Execution Architecture: Overview

General Outline



Execution Architecture: Adapter Services

Multi-Backend



Multi-backend Message Handling

- 1) Obtain the message fields from the contents of the window and/or from the context areas.
- 2) Format the message using the information obtained above and the descriptor of the transaction where backend destination information is contained. This format is made according to the logical protocol of the backend
- 3-4) Send/receive the message to/from the Applications Server or directly to the Backend using the Physical Protocol which has been set.
- 5-6) Decode and interpret the message returned by taking the appropriate action:
  - Update the application windows.
  - Update the context areas.
  - Notify the application of the error or warning messages.
  - Handle the authorization of operations.

Execution Architecture: Presentation Services

Desktop Window

- Common work area for all users and profiles, integrating all relevant information
- Unique access point to all the functionalities
- Structured in several function areas:
  - Scenarios
  - Business Object
  - Toolbars
  - Operations management
  - Main Work Area
  - Status Bar
  - Transaction Launch
  - …

Execution Architecture: Presentation Services

Multi- Operation and Flow Management

- Desktop window manages the flow between application windows
- Standard data exchange mechanism between applications

Desktop Window Configuration

- Configuration stored in XML files
- User Profile configurations

Message and Error Management

- Error and warning code data will be stored in DB at server side
- The architecture will provide functions in order to use error services at server side.
- It is possible to display the error and the warnings messages in different ways

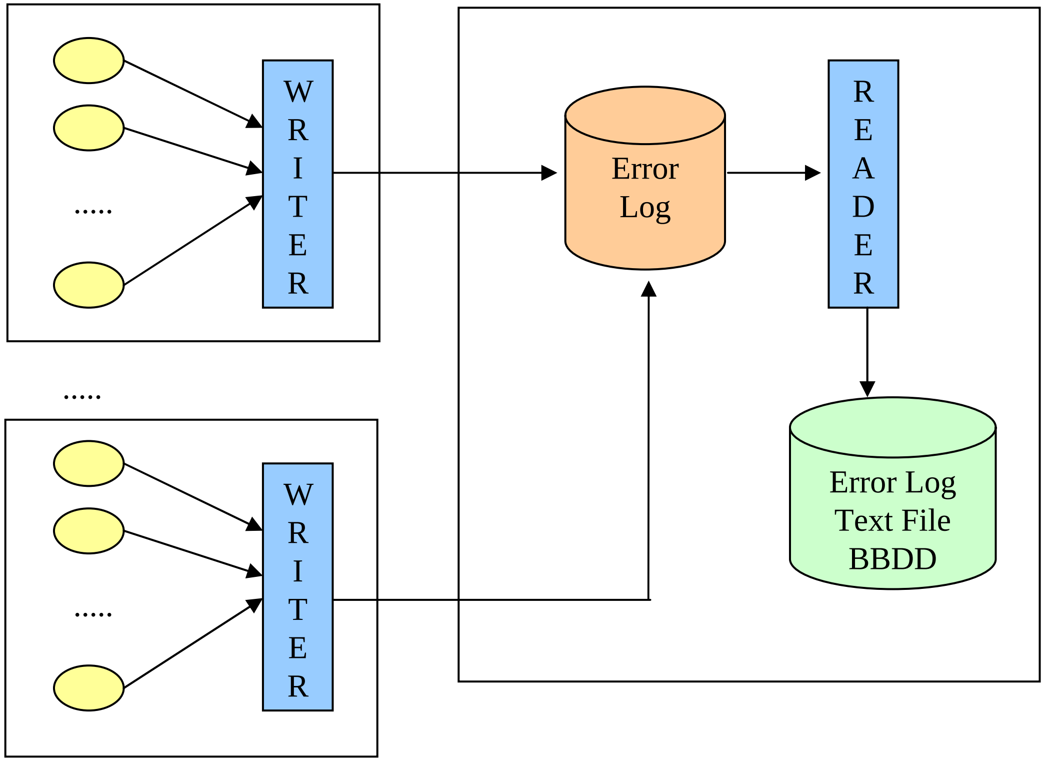
Execution Architecture: Application Services

Tiered Authority

- Controls small business sub-user access
- Access rights maintained by the primary user
- Rights can be granted by:
  - Application
  - Transaction
  - Account
  - $ limit

Error Logging

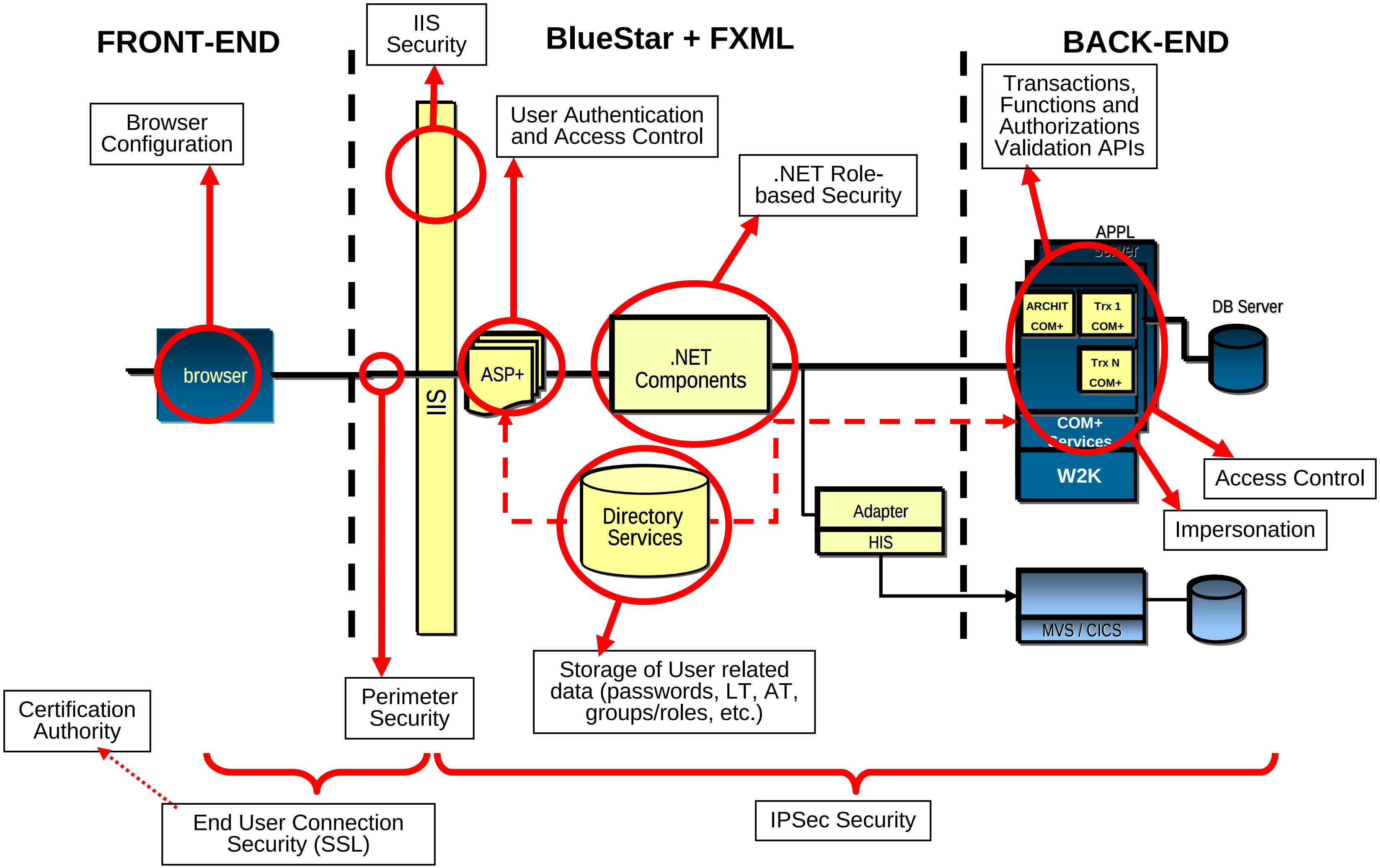
- Errors and warnings will be stored in Windows application event Log
- To improve performance, once an error/warning is detected, it will be write through a log component.



Context Area Management / Session Management

- The context areas concept:
    - used for sharing data between desktop window and applications
    - accesed through architectural utilities
    - accessed from client and server side
    - at client side are managed by the Desktop Window
- The ASP.net technology for Session Management is encapsulated by the architecture through Context Areas.

Security



FRONT-END

BlueStar + FXML

BACK-END

IIS Security

Browser Configuration

User Authentication and Access Control

.NET Role-based Security

Transactions, Functions and Authorizations Validation APIs

Access Control

Impersonation

Certification Authority

Perimeter Security

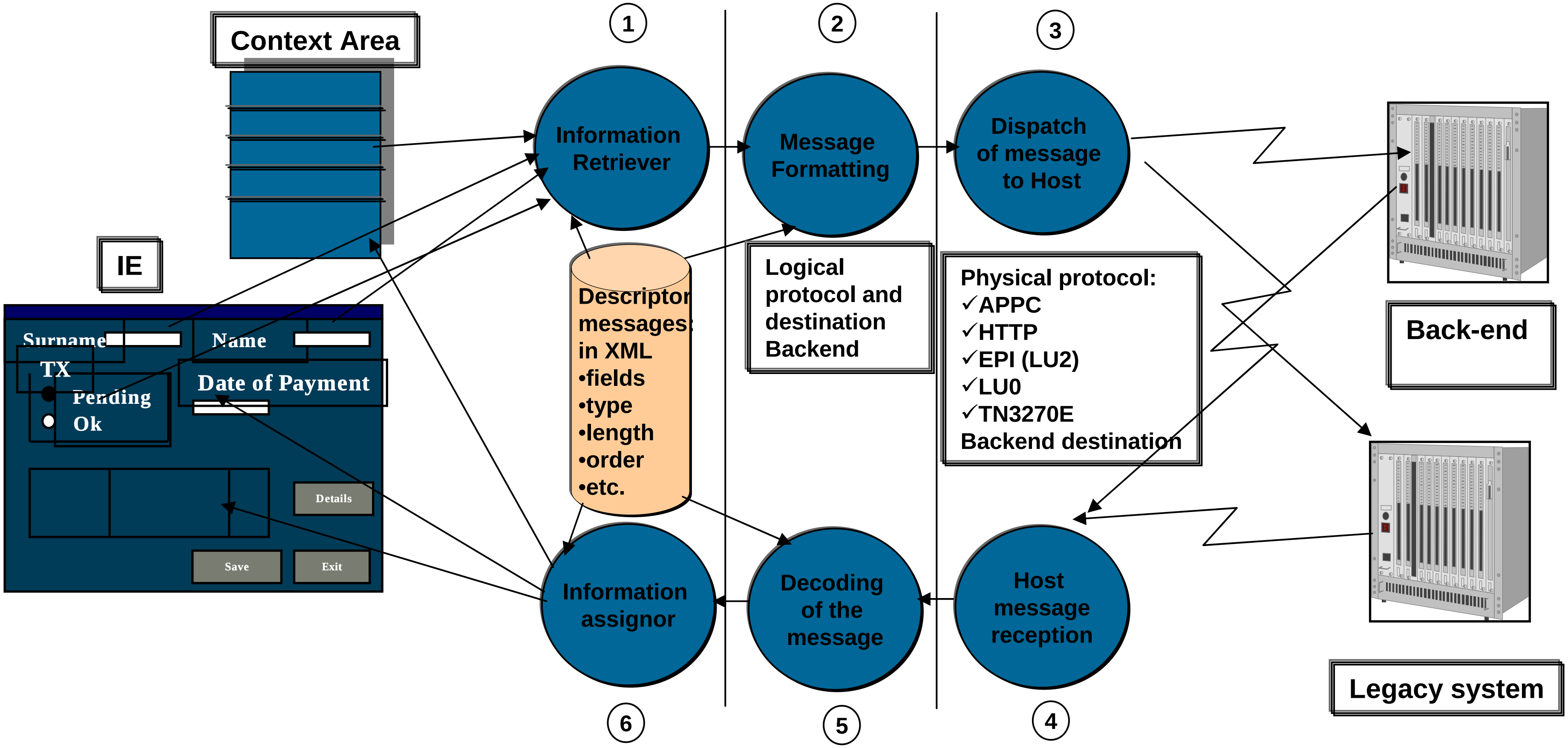
Storage of User related data (passwords, LT, AT, groups/roles, etc.)

End User Connection Security (SSL)

IPSec Security

Execution Architecture: Distribution Services

Message Flow



Context Area

IE

1 Information Retriever

2 Message Formatting

3 Dispatch of message to Host

4 Host message reception

5 Decoding of the message

6 Information assignor

Descriptor messages in XML
- fields
- type
- length
- order
- etc.

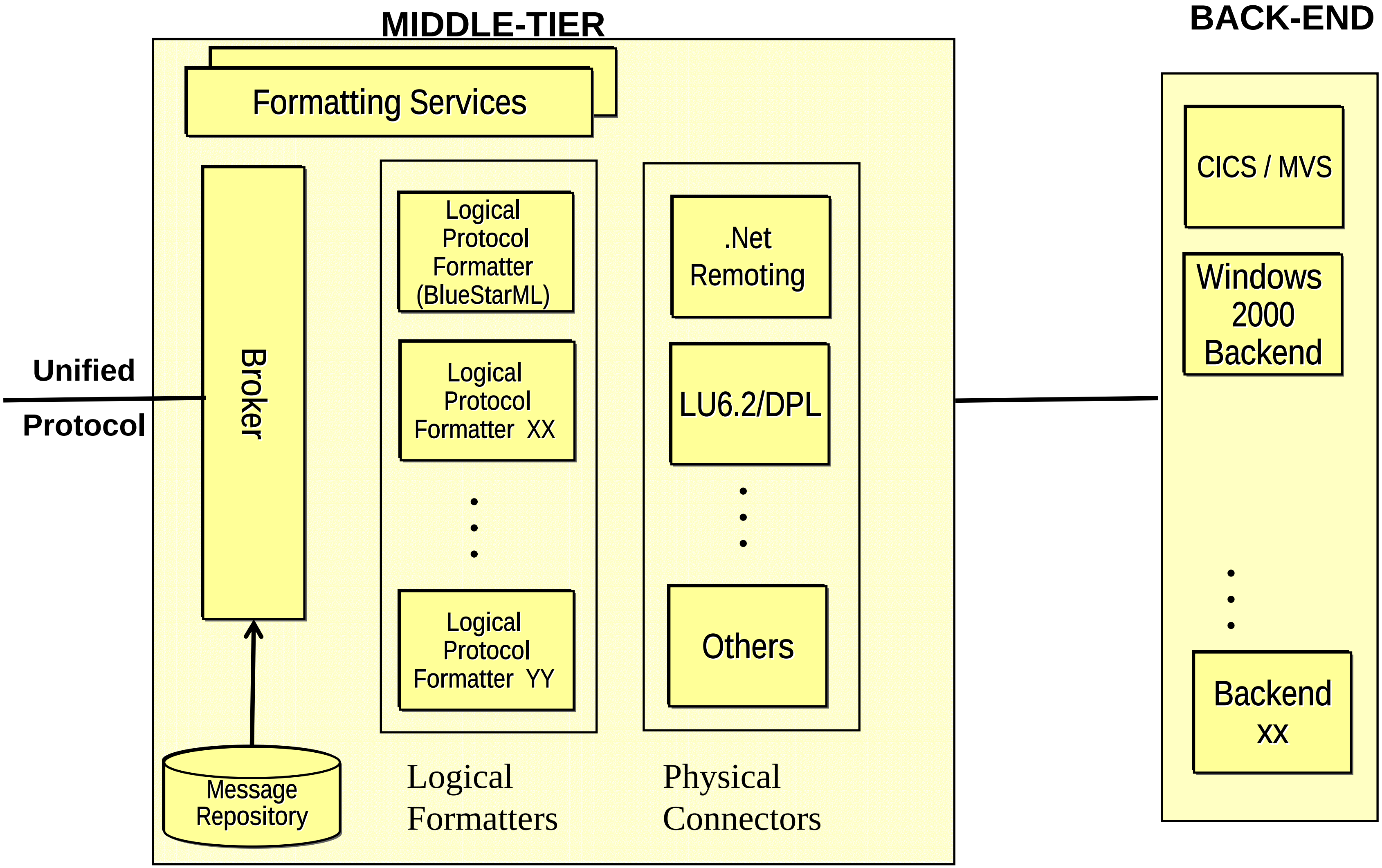
Logical protocol and destination Backend

Physical protocol:
✓APPC
✓HTTP
✓EPI (LU2)
✓LU0
✓TN3270E
Backend destination

Back-end

Legacy system

Execution Architecture: Distribution Services



Execution Architecture: Distribution Services

BlueStar Transforming and formatting

- Support for multiple back-ends (Logical/Physical)

- Based on a message repository (XML-based)
  - Transaction definition
  - Format definition
  - Preformat definition
  - Code tables
  - Error and warning definition

- Unified Protocol to communicate with the Message Broker
- Multi Language support
- Validation mechanisms

Execution Architecture: Distribution Services

Message Brokerage Process

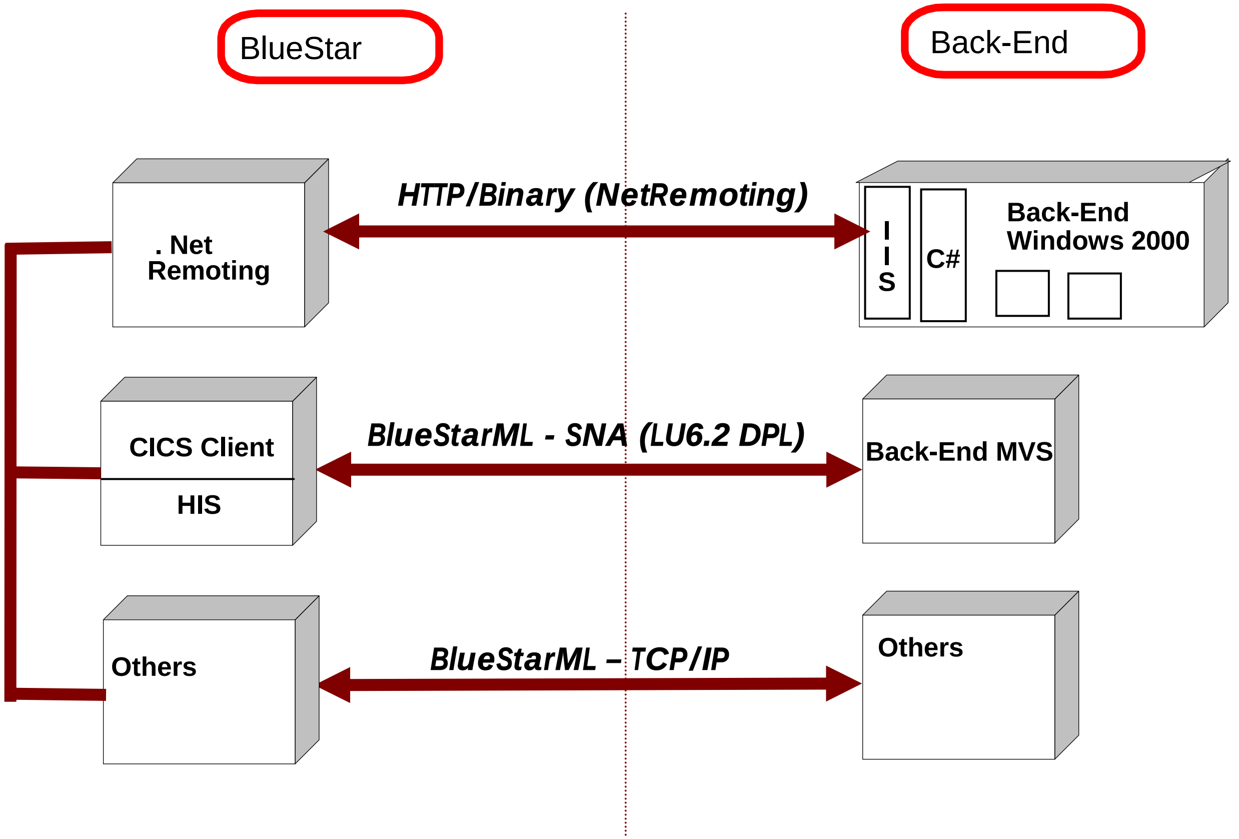
1. The Broker receives the Request
2. It obtains the message information from the Message Repository
3. It validates the information received
4. It invokes the appropriate Logical Formatter to validate and format the message
5. It invokes the appropriate Physical Connector to send the request message to the back-end
6. It receives the response message from the back-end
7. It invokes the appropriate Logical Formatter to Interpret and format the message
8. It sends the response back to the requester

Execution Architecture: Distribution Services

– Web Service Entry Point

- **The Web Service entry point is a mechanism that allows the integration of any type of Front-End using a cross platform standard protocol**
- **Opens BlueStar to the external world**
- **It enables the execution of Multi Back-End Transactions**
- **Unified protocol used**
- **It enables the exposure of a set of Back-End transactions (i.e. B2B,...) in an agreed format message using a Web Service Adapter.**

Back-End Communications



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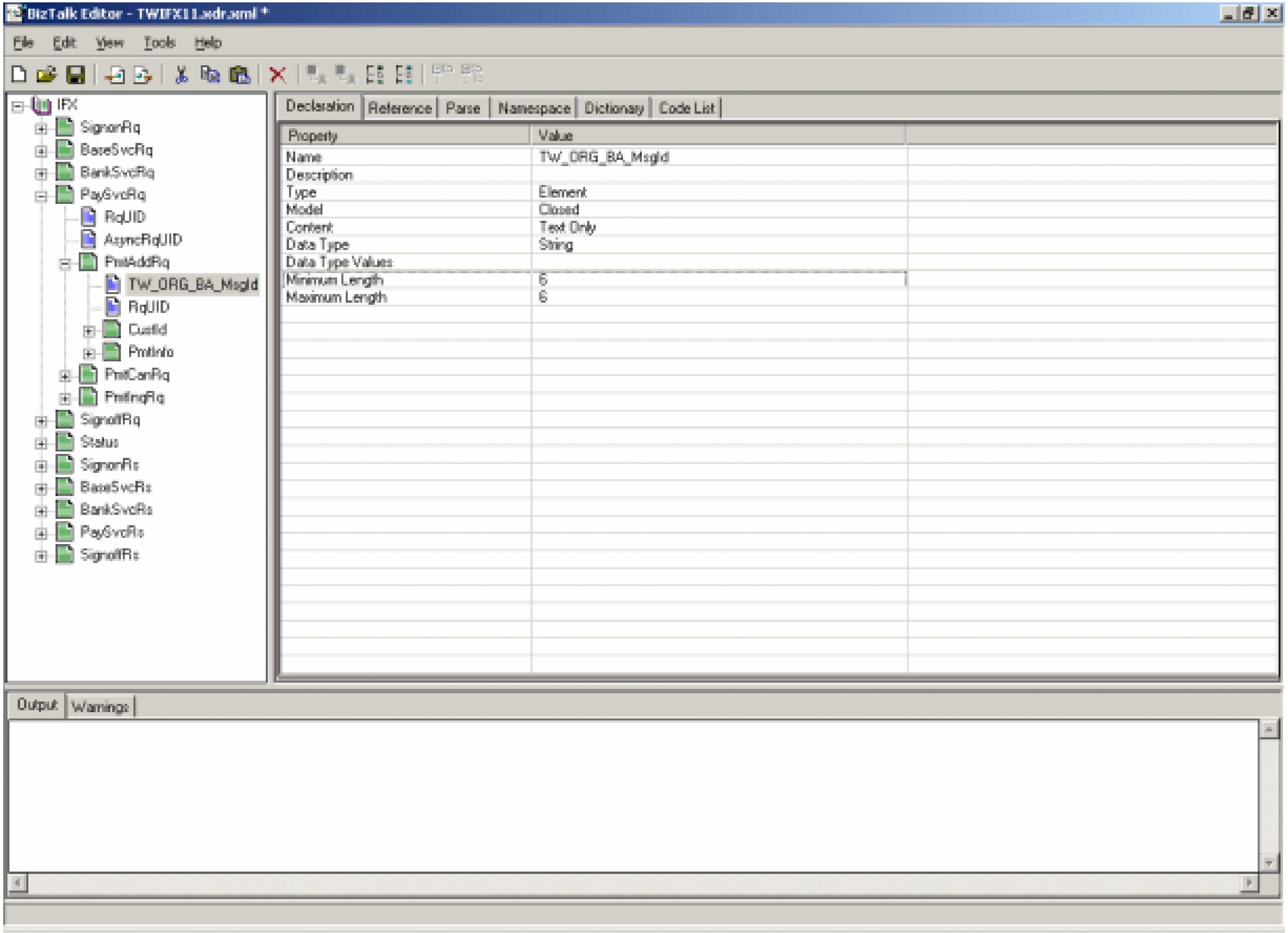
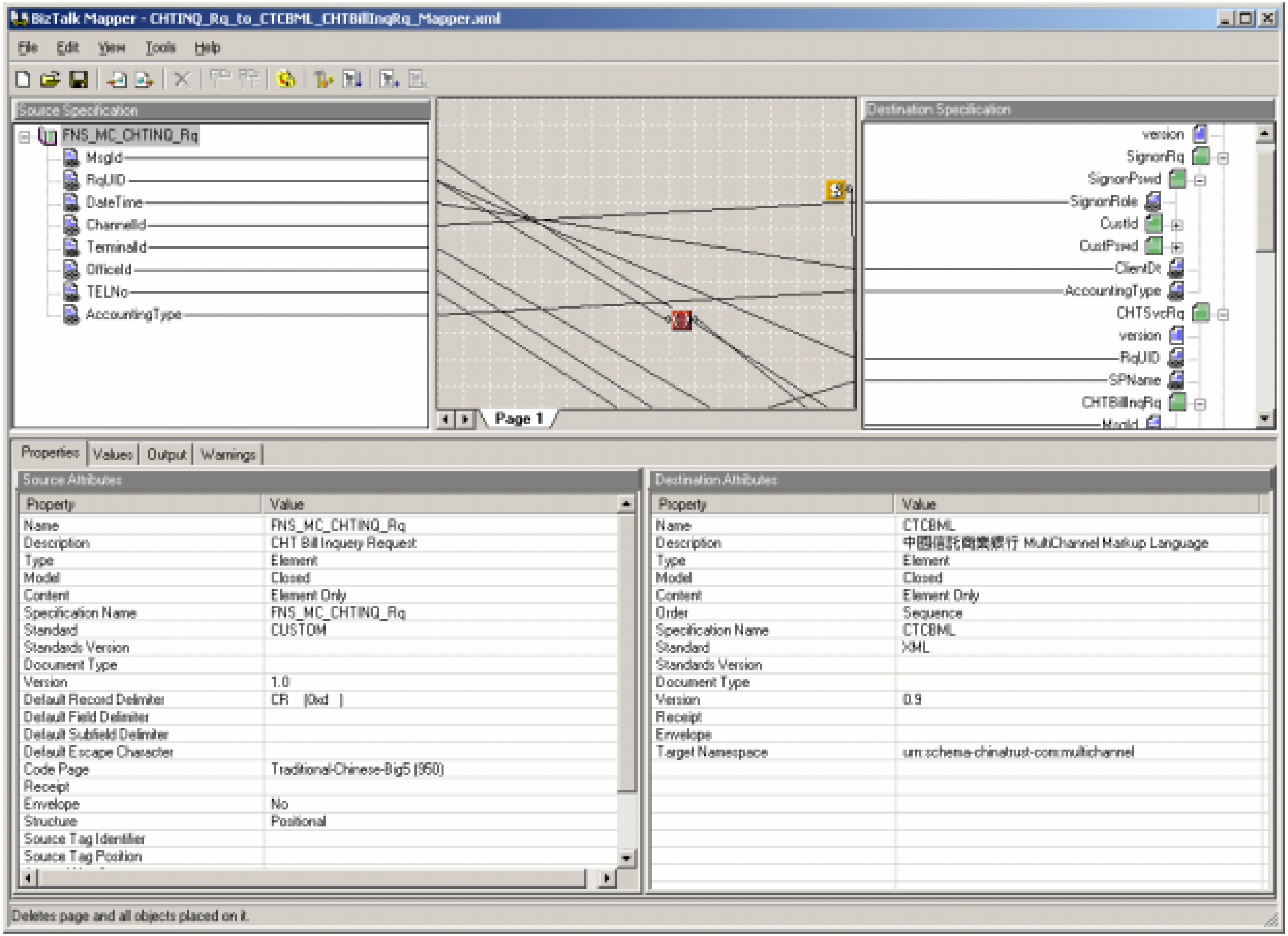
Business Schema - BizTalk WebDAV



Property	Value
Name	TW_ORG_BA_MsgId
Description	
Type	Element
Model	Closed
Content	Text Only
Data Type	String
Data Type Values	
Minimum Length	6
Maximum Length	6

Document Transformation - BizTalk Mapper



Source Attributes

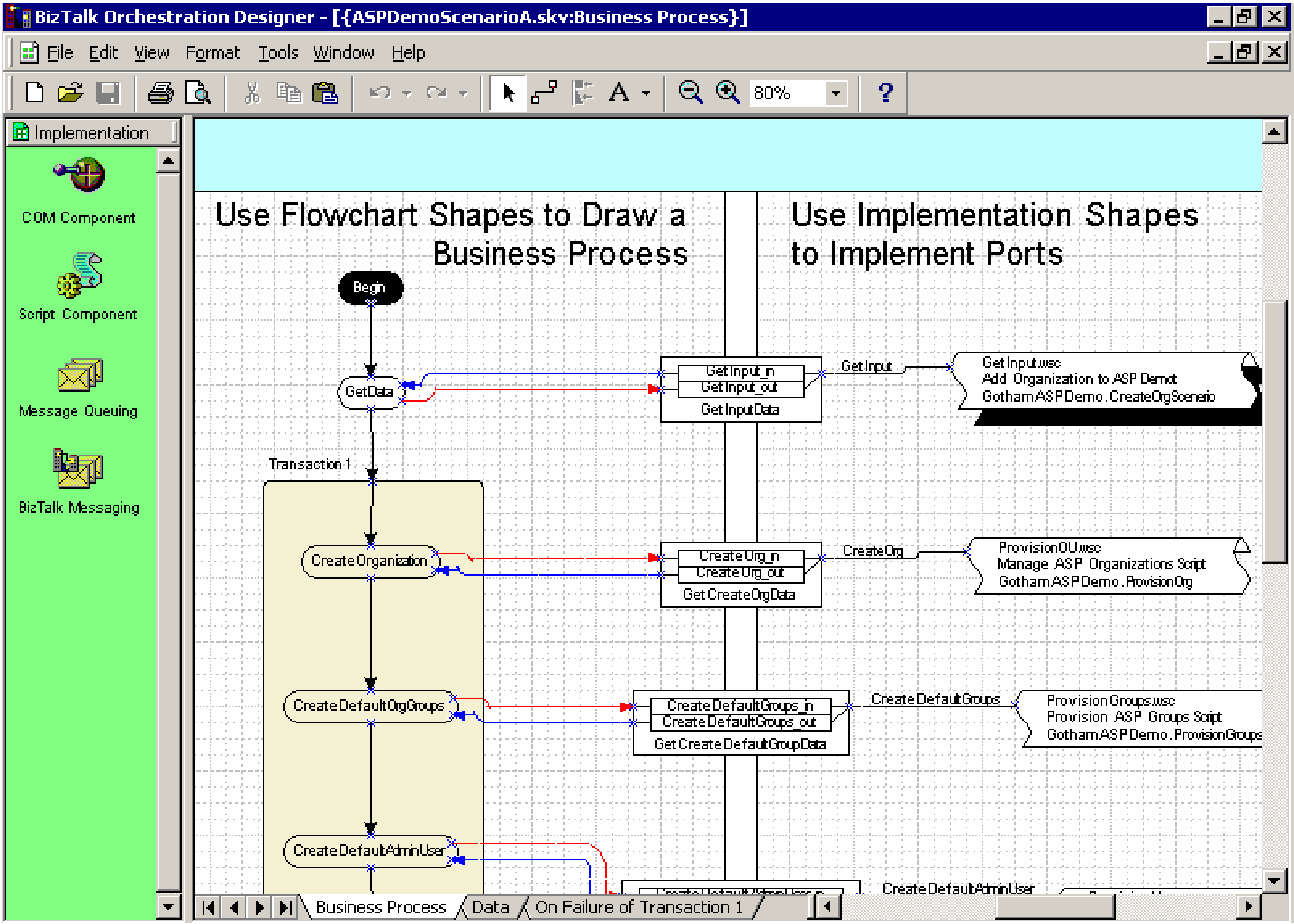
Property	Value
Name	FNS_MC_CHTINQ_Rq
Description	CHT Bill Inquery Request
Type	Element
Model	Closed
Content	Element Only
Specification Name	FNS_MC_CHTINQ_Rq
Standard	CUSTOM
Standards Version	
Document Type	
Version	1.0
Default Record Delimiter	CR (0xd)
Default Field Delimiter	
Default Subfield Delimiter	
Default Escape Character	
Code Page	Traditional-Chinese-Big5 (950)
Receipt	
Envelope	No
Structure	Positional
Source Tag Identifier	
Source Tag Position	

Destination Attributes

Property	Value
Name	CTCBML
Description	中國信託商業銀行 MultiChannel Markup Language
Type	Element
Model	Closed
Content	Element Only
Order	Sequence
Specification Name	CTCBML
Standard	XML
Standards Version	
Document Type	
Version	0.9
Receipt	
Envelope	
Target Namespace	urn:schema-chinatrust-com:multichannel

Deletes page and all objects placed on it.

Visual Workflow - BizTalk Orchestration

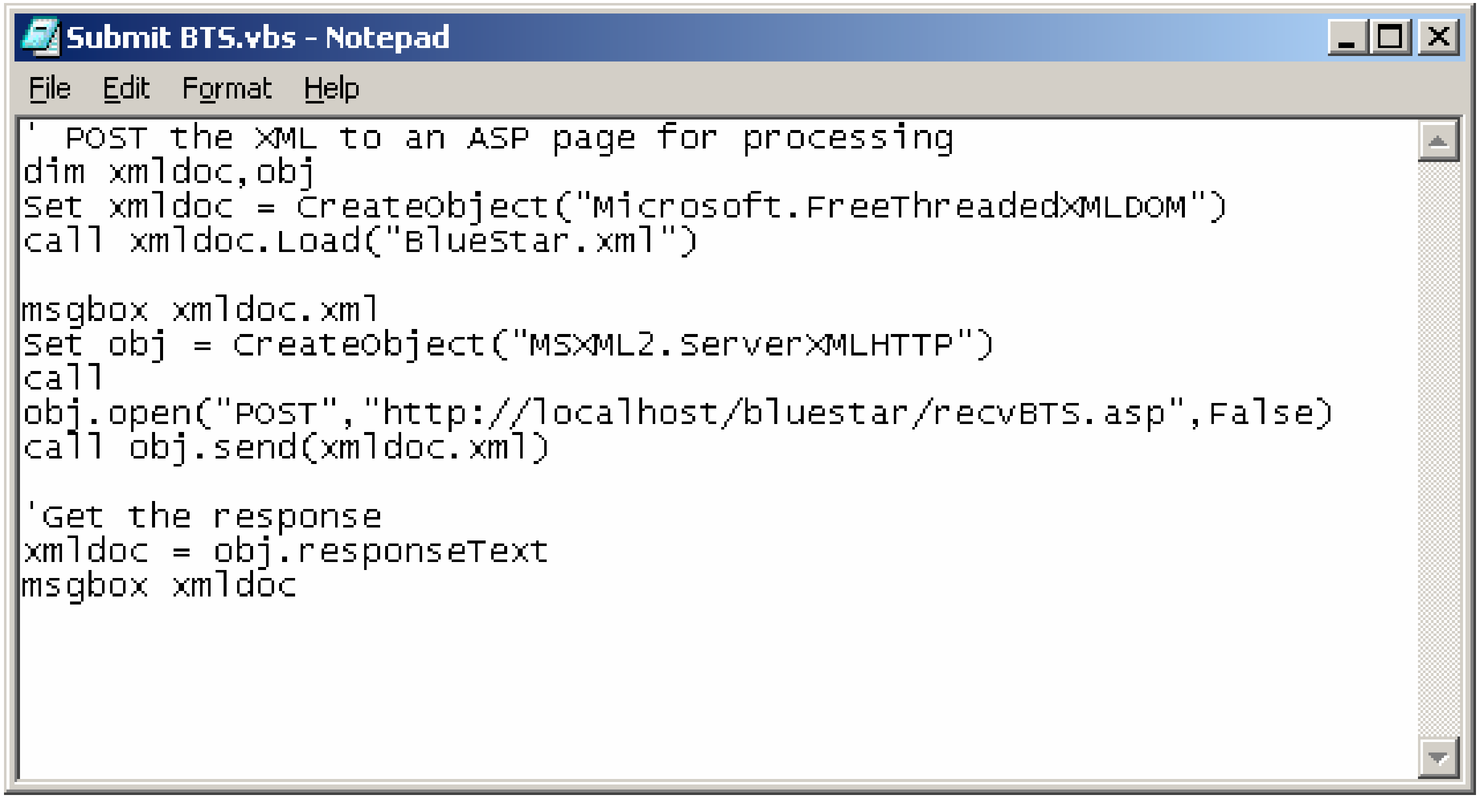


Use Flowchart Shapes to Draw a Business Process

Use Implementation Shapes to Implement Ports

Scripting

- Script Host components for application integration
  - Host the execution of VB/PERL scripts.



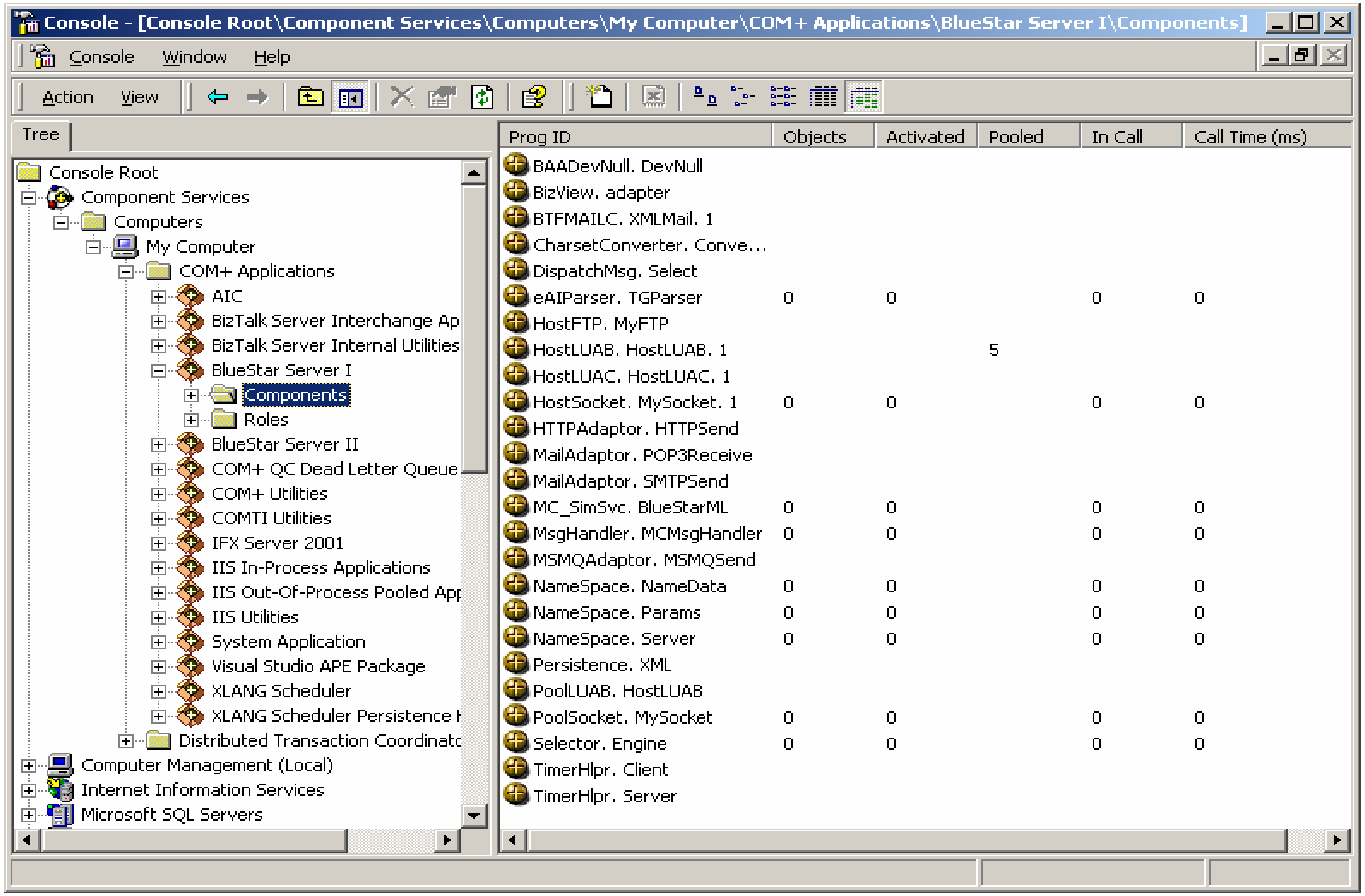
```
' POST the XML to an ASP page for processing
dim xmldoc,obj
Set xmldoc = CreateObject("Microsoft.FreeThreadedXMLDOM")
call xmldoc.Load("BlueStar.xml")

msgbox xmldoc.xml
Set obj = CreateObject("MSXML2.ServerXMLHTTP")
call
obj.open("POST","http://localhost/bluestar/recvBTS.asp",False)
call obj.send(xmldoc.xml)

'Get the response
xmldoc = obj.responseText
msgbox xmldoc
```

Object Pooling - Dynamic host session management

- Using COM+ Object Pooling for application connection
  - Provide the dynamic session management feature
  - Cache the host connection in memory

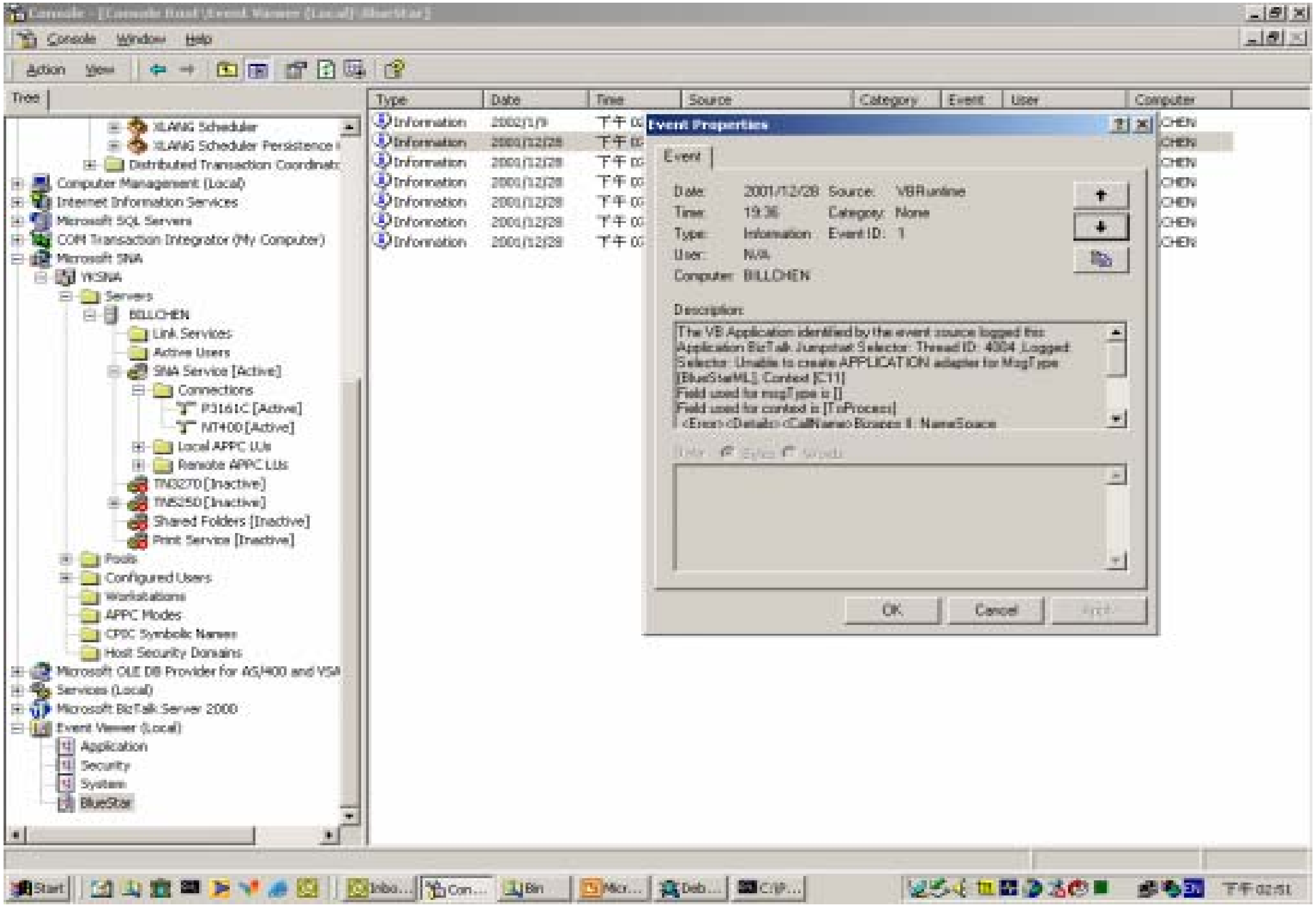

Console - [Console Root\Component Services\Computers\My Computer\COM+ Applications\BlueStar Server I\Components]
Console
Window
Help
Action
View
Tree

- Console Root
  - Component Services
    - Computers
      - My Computer
        - COM+ Applications
          - AIC
          - BizTalk Server Interchange Ap
          - BizTalk Server Internal Utilities
          - BlueStar Server I
            - Components
            - Roles
          - BlueStar Server II
          - COM+ QC Dead Letter Queue
          - COM+ Utilities
          - COMTI Utilities
          - IFX Server 2001
          - IIS In-Process Applications
          - IIS Out-Of-Process Pooled App
          - IIS Utilities
          - System Application
          - Visual Studio APE Package
          - XLANG Scheduler
          - XLANG Scheduler Persistence I
        - Distributed Transaction Coordinatc
  - Computer Management (Local)
  - Internet Information Services
  - Microsoft SQL Servers

Prog ID	Objects	Activated	Pooled	In Call	Call Time (ms)
BAADevNull. DevNull					
BizView. adapter					
BTFMAILC. XMLMail. 1					
CharsetConverter. Conve...					
DispatchMsg. Select					
eAIParser. TGParser	0	0		0	0
HostFTP. MyFTP					
HostLUAB. HostLUAB. 1			5		
HostLUAC. HostLUAC. 1					
HostSocket. MySocket. 1	0	0		0	0
HTTPAdaptor. HTTPSend					
MailAdaptor. POP3Receive					
MailAdaptor. SMTPSend					
MC_SimSvc. BlueStarML	0	0		0	0
MsgHandler. MCMsgHandler	0	0		0	0
MSMQAdaptor. MSMQSend					
NameSpace. NameData	0	0		0	0
NameSpace. Params	0	0		0	0
NameSpace. Server	0	0		0	0
Persistence. XML					
PoolLUAB. HostLUAB					
PoolSocket. MySocket	0	0		0	0
Selector. Engine	0	0		0	0
TimerHlpr. Client					
TimerHlpr. Server					

Event Monitoring

- Integrated with Windows Event Viewer for BlueStar monitoring
  - Completely auditable with BlueStar system and business objects



Type	Date	Time	Computer
Information	2002/1/9	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN
Information	2001/12/28	下午 0	CHEN

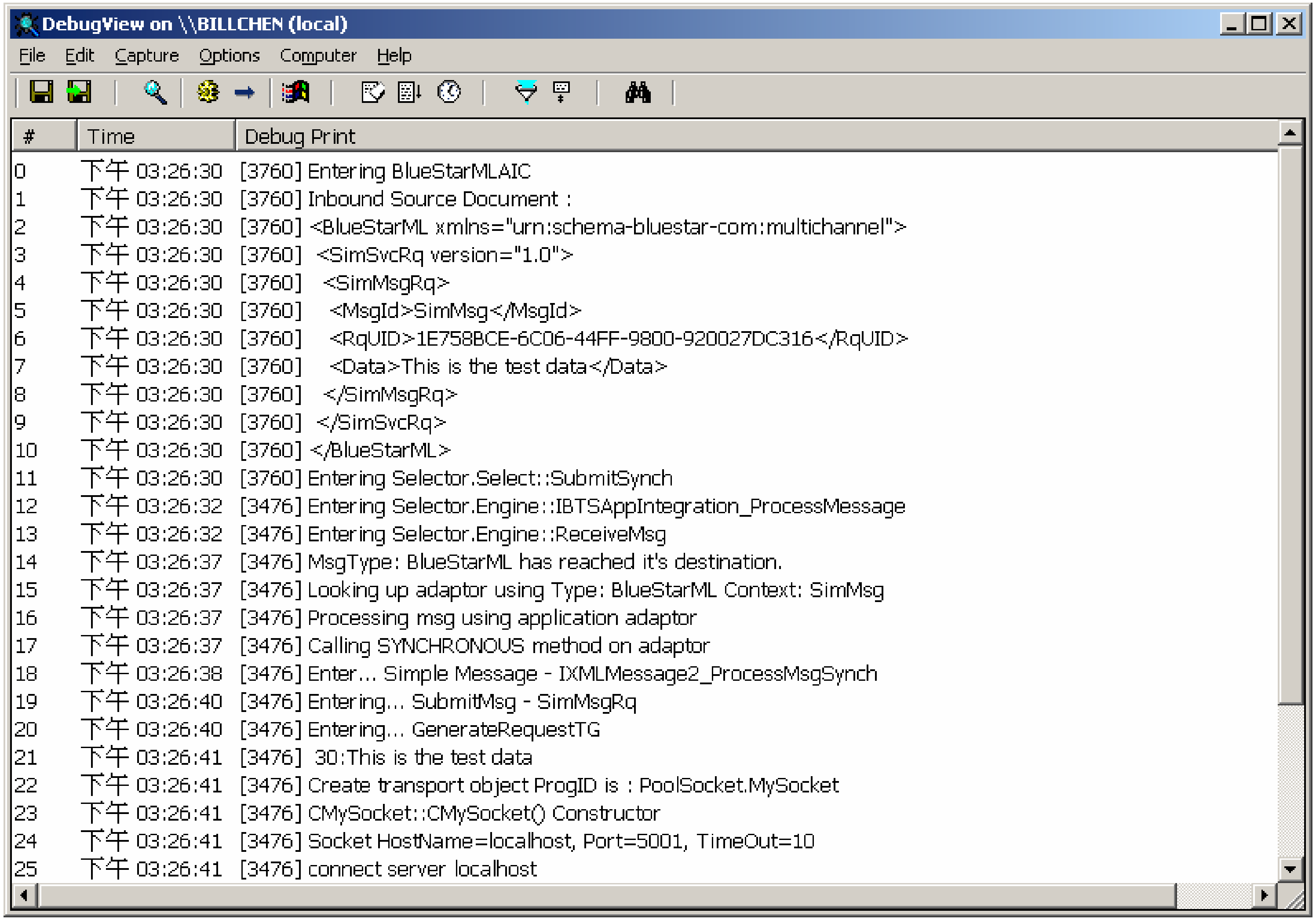
Date: 2001/12/28 Source: VBRuntime
Time: 19:36 Category: None
Type: Information Event ID: 1
User: N/A
Computer: BILLCHEN

Description:

The VB Application identified by the event source logged this Application BizTalk Jumpstart Selector: Thread ID: 4004 ,Logged: Selector: Unable to create APPLICATION adapter for MsgType [BlueStarML]; Context [C11]
Field used for msgType is []
Field used for context is [ToProcess]
<Error><Details><CallName>Bizspec II: NameSpace

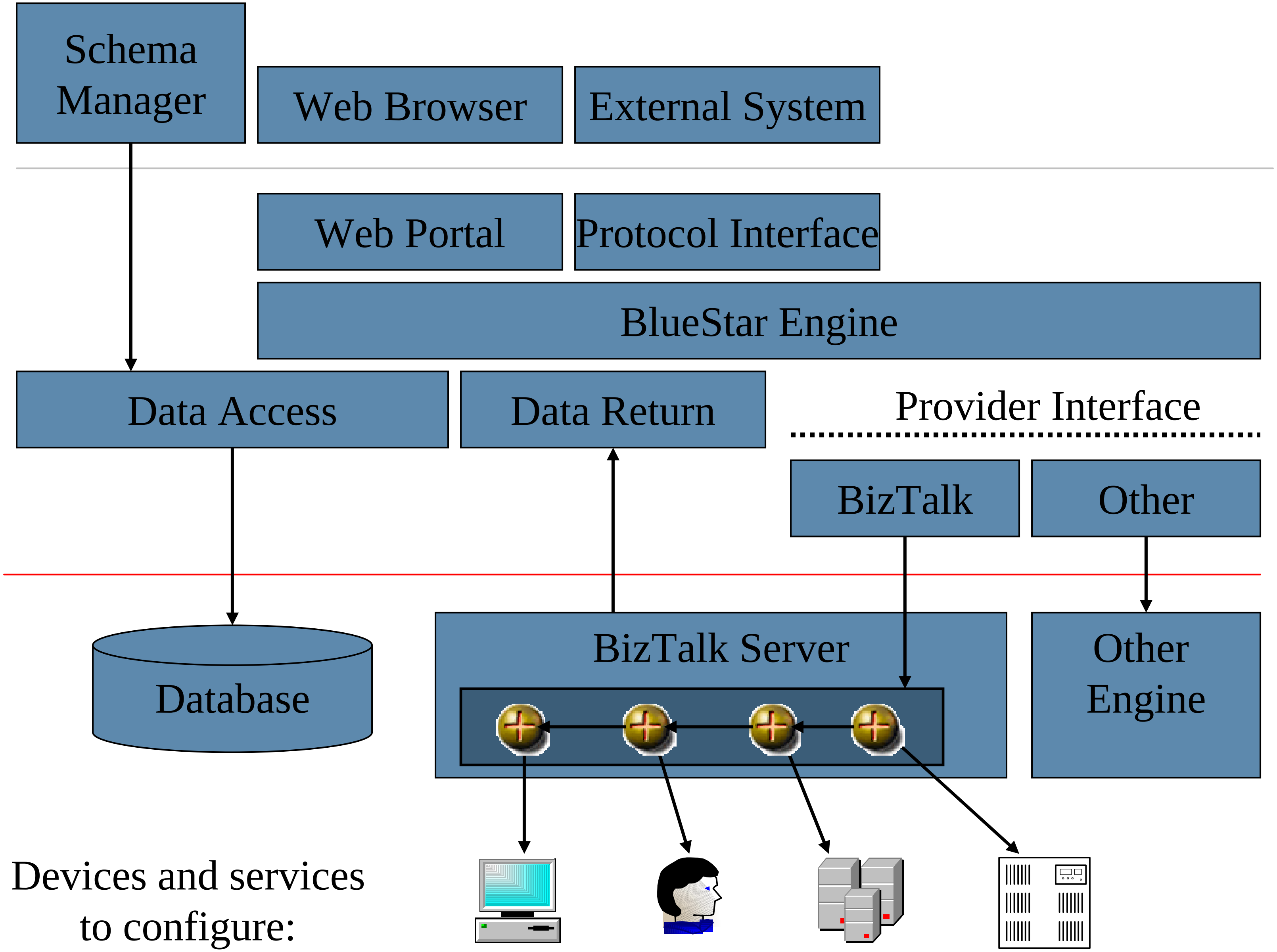
Debugging Tool

- Debugging Tool for application debugging

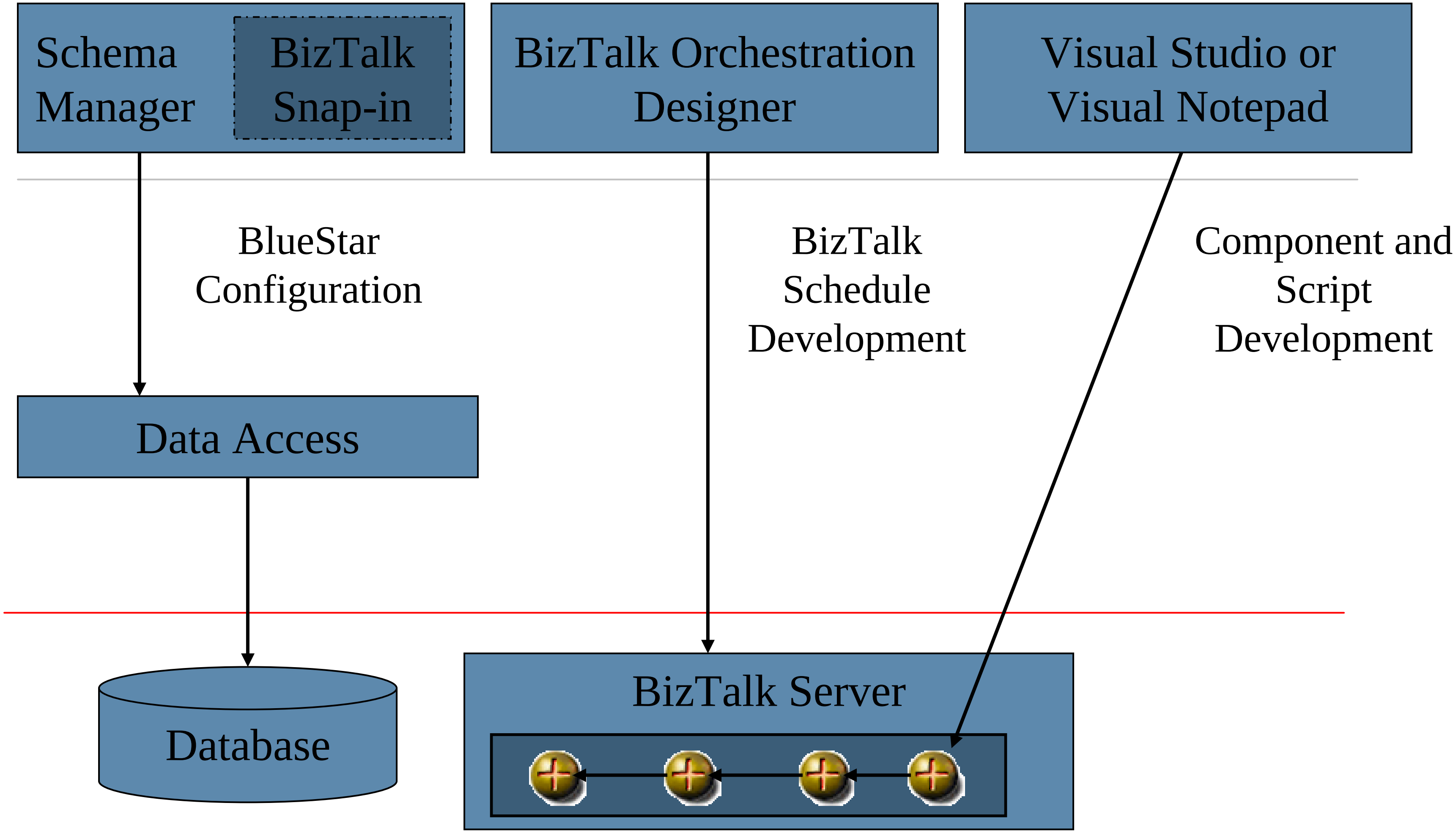


```
#    Time          Debug Print
0    下午 03:26:30  [3760] Entering BlueStarMLAIC
1    下午 03:26:30  [3760] Inbound Source Document :
2    下午 03:26:30  [3760] <BlueStarML xmlns="urn:schema-bluestar-com:multichannel">
3    下午 03:26:30  [3760]  <SimSvcRq version="1.0">
4    下午 03:26:30  [3760]   <SimMsgRq>
5    下午 03:26:30  [3760]    <MsgId>SimMsg</MsgId>
6    下午 03:26:30  [3760]    <RqUID>1E758BCE-6C06-44FF-9800-920027DC316</RqUID>
7    下午 03:26:30  [3760]    <Data>This is the test data</Data>
8    下午 03:26:30  [3760]   </SimMsgRq>
9    下午 03:26:30  [3760]  </SimSvcRq>
10   下午 03:26:30  [3760] </BlueStarML>
11   下午 03:26:30  [3760] Entering Selector.Select::SubmitSynch
12   下午 03:26:32  [3476] Entering Selector.Engine::IBTSAppIntegration_ProcessMessage
13   下午 03:26:32  [3476] Entering Selector.Engine::ReceiveMsg
14   下午 03:26:37  [3476] MsgType: BlueStarML has reached it's destination.
15   下午 03:26:37  [3476] Looking up adaptor using Type: BlueStarML Context: SimMsg
16   下午 03:26:37  [3476] Processing msg using application adaptor
17   下午 03:26:37  [3476] Calling SYNCHRONOUS method on adaptor
18   下午 03:26:38  [3476] Enter... Simple Message - IXMLMessage2_ProcessMsgSynch
19   下午 03:26:40  [3476] Entering... SubmitMsg - SimMsgRq
20   下午 03:26:40  [3476] Entering... GenerateRequestTG
21   下午 03:26:41  [3476]  30:This is the test data
22   下午 03:26:41  [3476] Create transport object ProgID is : PoolSocket.MySocket
23   下午 03:26:41  [3476] CMySocket::CMySocket() Constructor
24   下午 03:26:41  [3476] Socket HostName=localhost, Port=5001, TimeOut=10
25   下午 03:26:41  [3476] connect server localhost
```

BlueStar Architecture



Design a BlueStar Scenario



Schema Manager

BizTalk Snap-in

BizTalk Orchestration Designer

Visual Studio or Visual Notepad

BlueStar Configuration

BizTalk Schedule Development

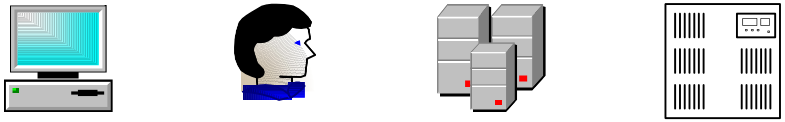
Component and Script Development

Data Access

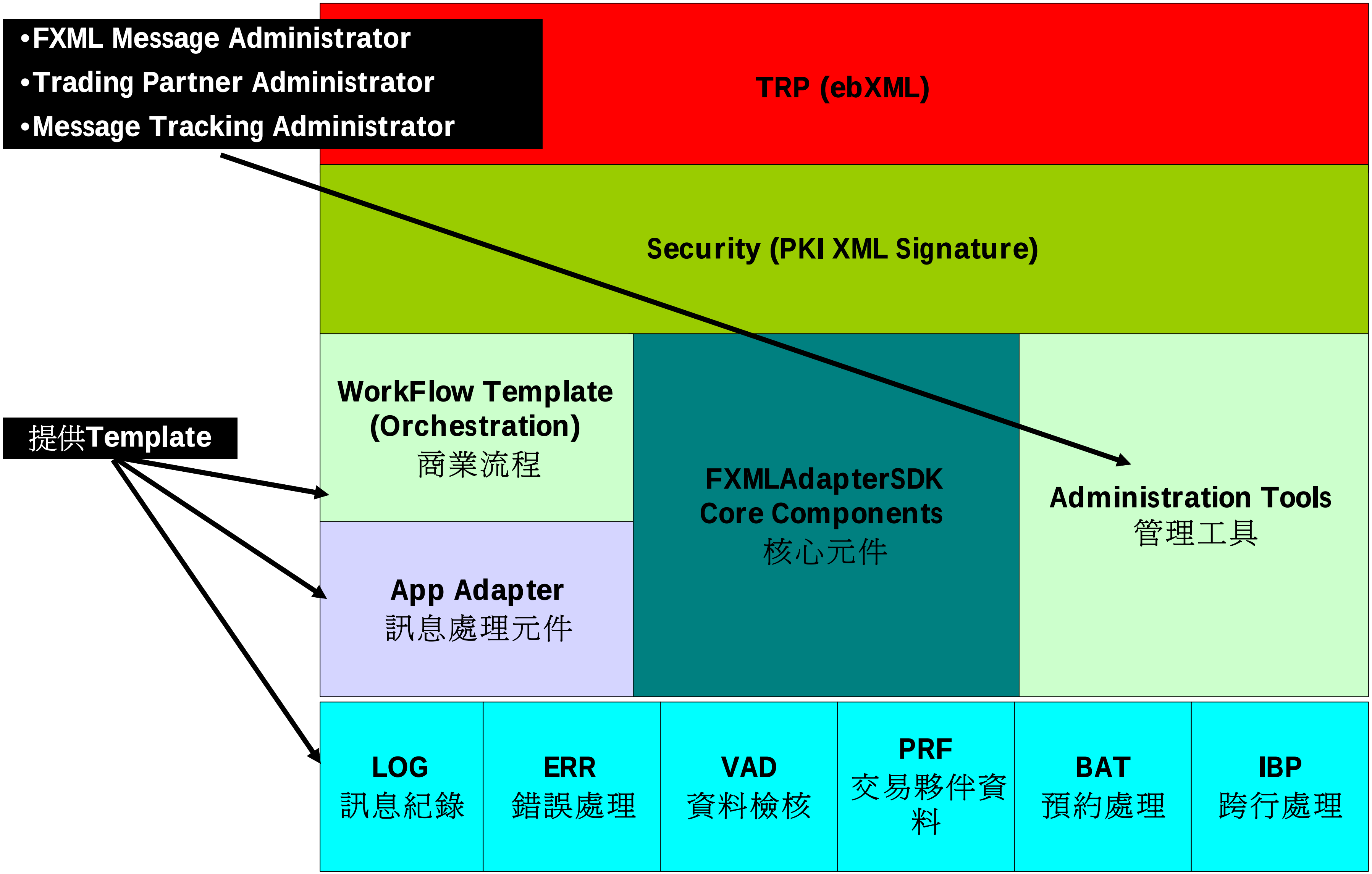
Database

BizTalk Server

Devices and services to configure:



FXML Accelerator Functional Overview



- FXML Message Administrator
- Trading Partner Administrator
- Message Tracking Administrator

TRP (ebXML)

Security (PKI XML Signature)

提供Template

WorkFlow Template
(Orchestration)
商業流程

App Adapter
訊息處理元件

FXMLAdapterSDK
Core Components
核心元件

Administration Tools
管理工具

LOG
訊息紀錄

ERR
錯誤處理

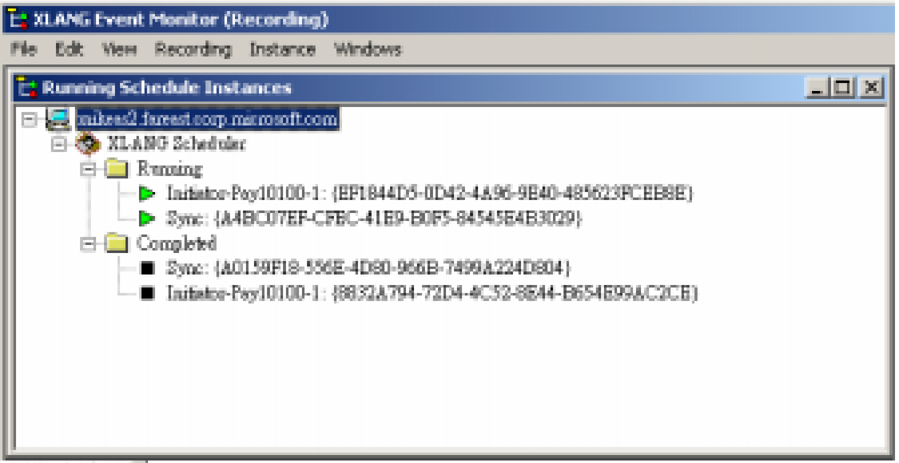
VAD
資料檢核

PRF
交易夥件資料

BAT
預約處理

IBP
跨行處理

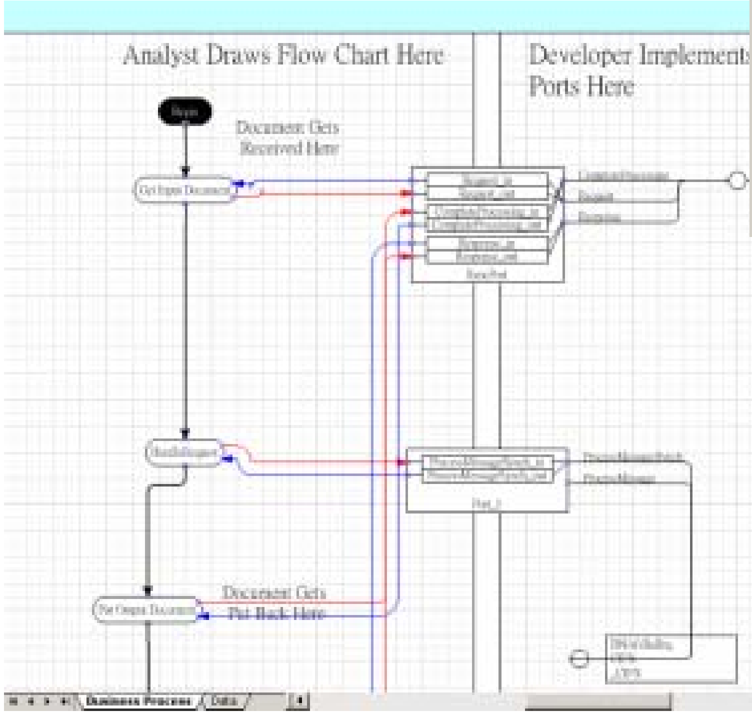
FXML BizTalk Orchestration - FXML Message Work Flow Template



XLANG Event Monitor (Recording)

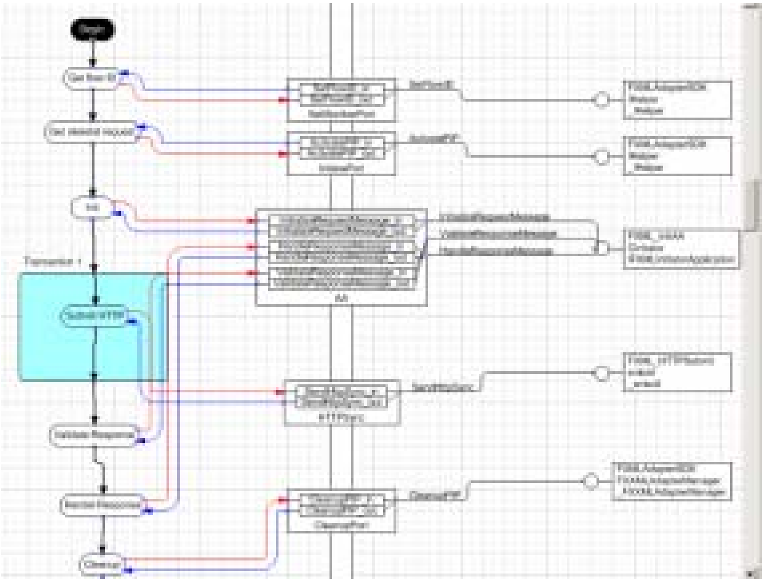
Running Schedule Instances

- mikesn2.fareast.corp.microsoft.com
  - XLANG Scheduler
    - Running
      - Initiator-Pay10100-1: {EF1844D5-0D42-4A96-9E40-485623PCEB8E}
      - Sync: {A4BC07EF-CFEC-41E9-B0F5-84545E4B3029}
    - Completed
      - Sync: {A0159F18-556E-4D80-966B-7499A224D804}
      - Initiator-Pay10100-1: {8832A794-72D4-4C52-8E44-B654E99AC2CE}



Analyst Draws Flow Chart Here
Developer Implements Ports Here
Begin
Document Gets Received Here
Get Input Document
Document Gets Put Back Here
Business Process
Data

- **Responder Work Flow Template**



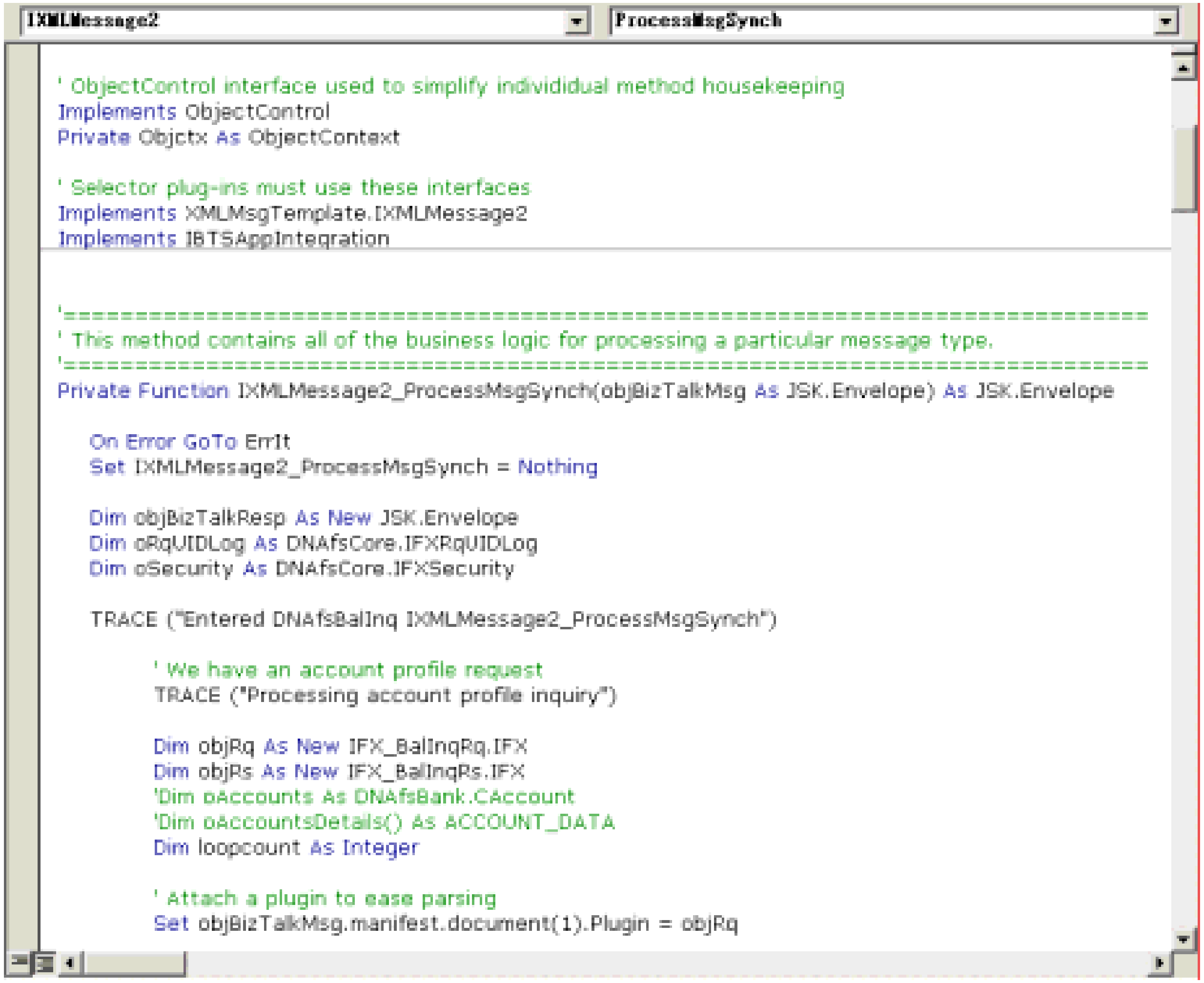
- **Initiator Work Flow Template**

FXML App Adapter

- **Provide App Adapter Code templates for each message pattern**
- **FXML Message Handler : Implements the Real Business Rules of each FXML Message**
- 利用 **BizTalk Server Plugin Generator**產生相對應的**Class**來處理 **FXML Document**
- **A Unified Interface for “ALL FXML” Message’s App Adapter**
- **Each App Adapter needs to implement this interface**

FXML App Adapter - Code Template

- **The interface :**
  - **IXMLMessage2_ProcessMsgSynch**



```
' ObjectControl interface used to simplify individidual method housekeeping
Implements ObjectControl
Private Objctx As ObjectContext

' Selector plug-ins must use these interfaces
Implements XMLMsgTemplate.IXMLMessage2
Implements IBTSAppIntegration


'================================================================================
' This method contains all of the business logic for processing a particular message type.
'================================================================================
Private Function IXMLMessage2_ProcessMsgSynch(objBizTalkMsg As JSK.Envelope) As JSK.Envelope

    On Error GoTo ErrIt
    Set IXMLMessage2_ProcessMsgSynch = Nothing

    Dim objBizTalkResp As New JSK.Envelope
    Dim oRqUIDLog As DNAfsCore.IFXRqUIDLog
    Dim oSecurity As DNAfsCore.IFXSecurity

    TRACE ("Entered DNAfsBalInq IXMLMessage2_ProcessMsgSynch")

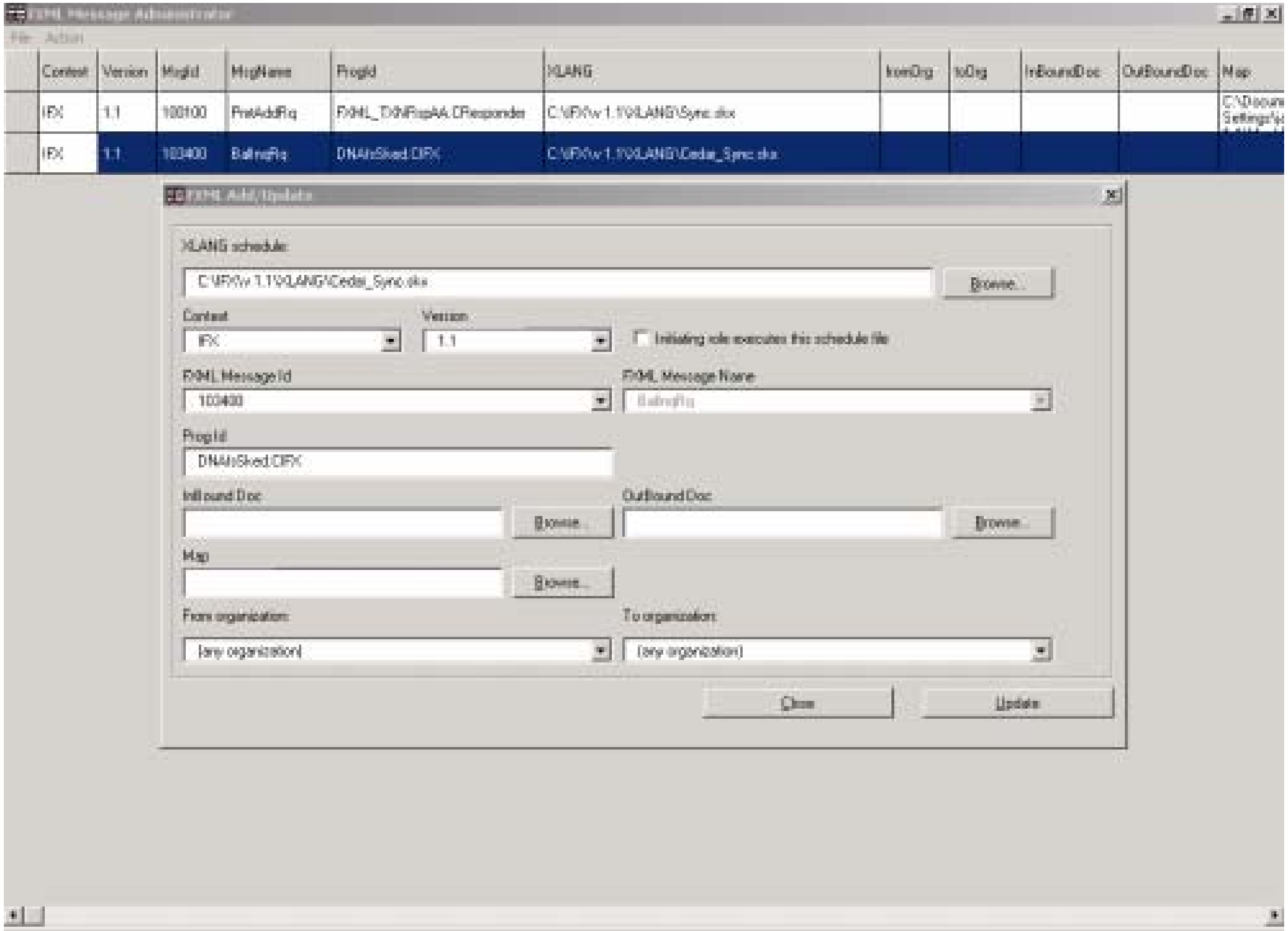
            ' We have an account profile request
            TRACE ("Processing account profile inquiry")

            Dim objRq As New IFX_BalInqRq.IFX
            Dim objRs As New IFX_BalInqRs.IFX
            'Dim oAccounts As DNAfsBank.CAccount
            'Dim oAccountsDetails() As ACCOUNT_DATA
            Dim loopcount As Integer

            ' Attach a plugin to ease parsing
            Set objBizTalkMsg.manifest.document(1).Plugin = objRq
```

Administration Tools : FXML Message Administrator

- Administration Tools for Mapping BizTalk Orchestration App Adapter & FXML MsgId



FXML Message Administrator

Context	Version	MsgId	MsgName	ProgId	XLANG	fromOrg	toOrg	InBoundDoc	OutBoundDoc	Map
IFX	1.1	100100	PmtAddRq	FXML_TXNRspAA.CResponder	C:\IFX\v 1.1\XLANG\Sync.skx					C:\Docum Settings\
IFX	1.1	103400	BalInqRq	DNAInSked.CIFX	C:\IFX\v 1.1\XLANG\Cedar_Sync.skx					

FXML Add/Update

XLANG schedule: C:\IFX\v 1.1\XLANG\Cedar_Sync.skx

Context: IFX

Version: 1.1

☐ Initiating role executes this schedule file

FXML Message Id: 100400

FXML Message Name: BalInqRq

ProgId: DNAInSked.CIFX

InBound Doc:

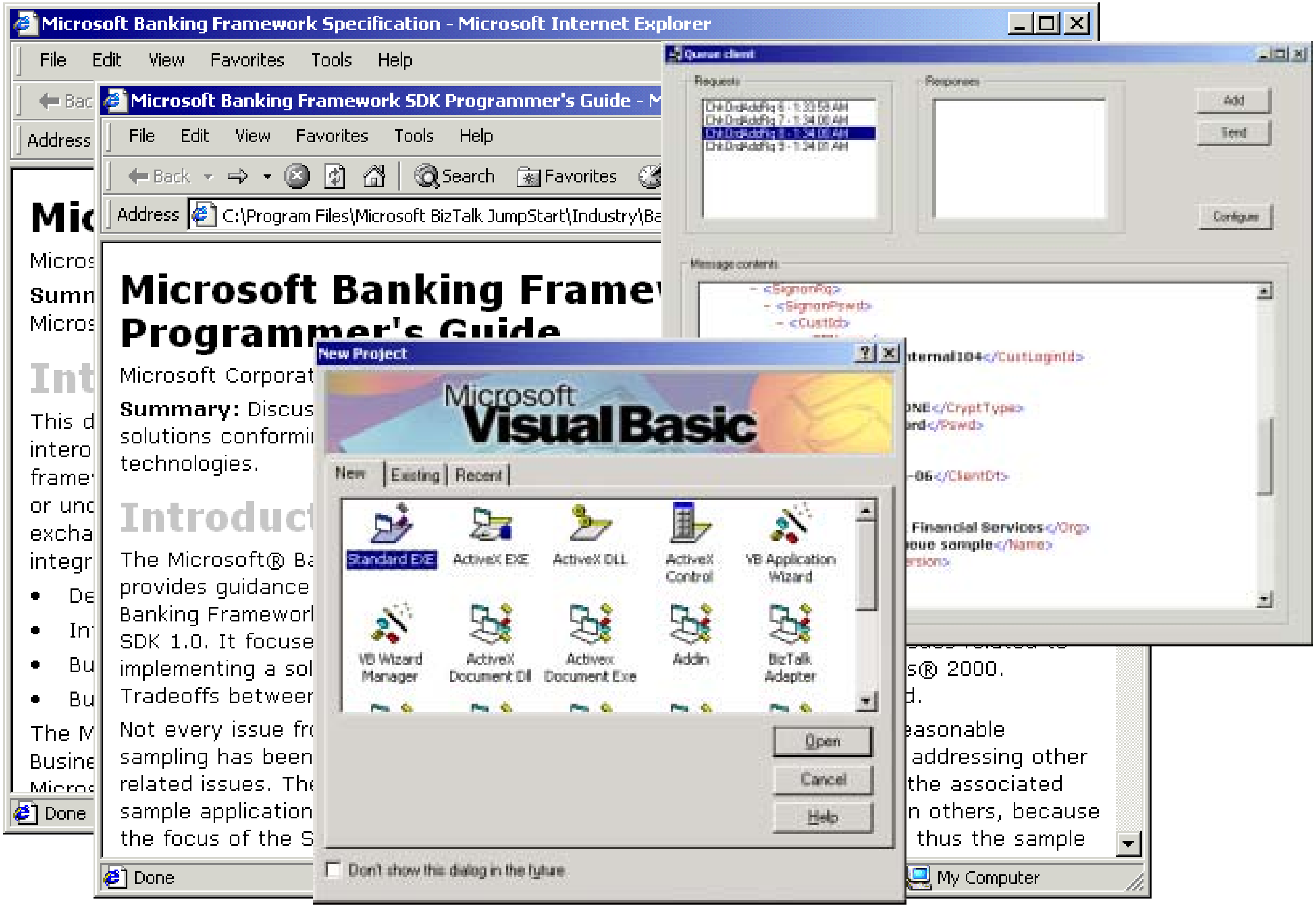
OutBound Doc:

Map:

From organization: (any organization)

To organization: (any organization)

SDK Contents



C:\Program Files\Microsoft BizTalk JumpStart\Industry\Ba

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Microsoft Banking Frame
Programmer's Guide
Microsoft Corporat
Summary: Discus
solutions conformi
technologies.

Introduct

The Microsoft® Ba
provides guidance
Banking Framewor
SDK 1.0. It focuse
implementing a sol
Tradeoffs betwee
Not every issue fr
sampling has been
related issues. The
sample application
the focus of the S

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easonable
addressing other
the associated
n others, because
thus the sample

ChkOrdAddRq 6 - 1:33:58 AM
ChkOrdAddRq 7 - 1:34:00 AM
ChkOrdAddRq 8 - 1:34:00 AM
ChkOrdAddRq 9 - 1:34:01 AM

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- <SignonRq>
  - <SignonPswd>
    - <CustId>
nternal104</CustLoginId>
ONE</CryptType>
ard</Pswd>
-06</ClientDt>
Financial Services</Org>
oue sample</Name>
rsion>
```

Q&A

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Cedar Software

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