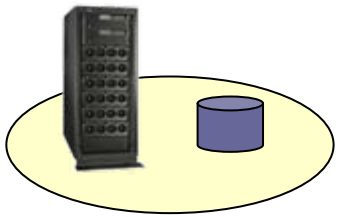
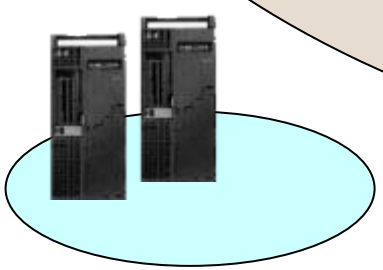
Integrate Your Business With The Most Flexible Messaging And Enterprise Service Bus Infrastructure

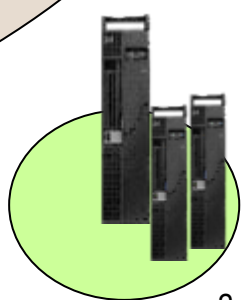
Smarter Solutions Need To Build On Existing Systems



Smarter Solutions

1. Start with a Strong Foundation
2. Automate Business Processes
3. Capture Business Expertise
4. Connect Everything with an Intelligent Bus
5. Make Smarter Decisions with New Intelligence
6. Use the most efficient platform to achieve New Intelligence





Business Challenge

Our payments business is growing fast, our payments network needs to keep up!

Service Oriented Finance CIO

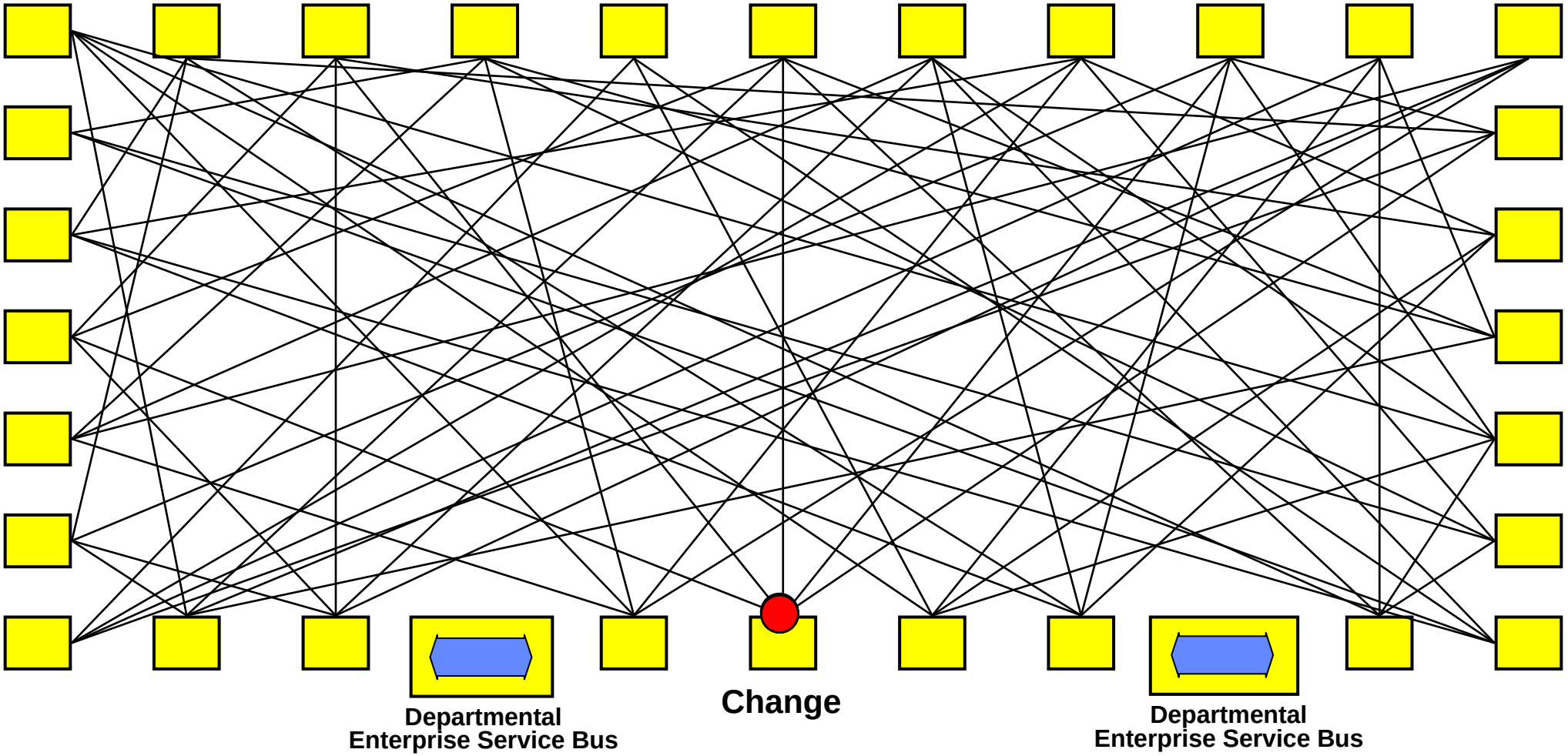
Your payments network is too brittle, making it difficult and costly to improve.

IBM

Service Oriented Finance Payment Systems - Connectivity Requirements

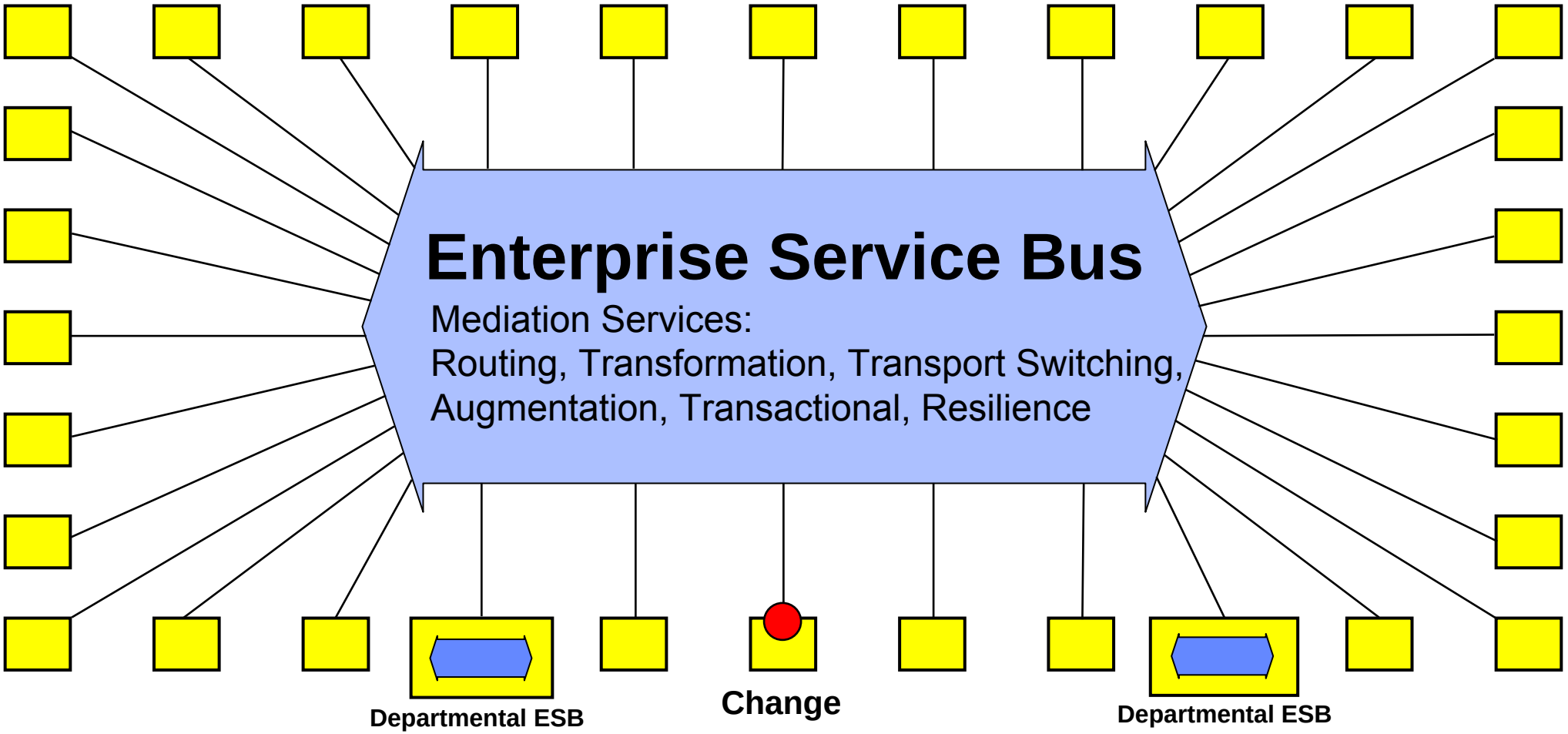
- **Extend the reach of the payment network**
  - Connect to any enterprise resource, using any protocol
  - Integrate with existing departmental connection solutions
  - Use existing applications, regardless of data format
- **High performance**
  - Support increasing demand
- **Transactional**
  - Maintain data integrity
- **Use service lookups for resilient business operations**
  - End points are sometimes not available or not responsive
  - Dynamically select alternatives

Current Service Oriented Finance Payment Network Is Not Flexible



- Many point-to-point connections between applications
- Connectivity logic is coded into applications
- One change requires many other changes
- Existing departmental connection solutions are not integrated

Vision For A New, Flexible Service Oriented Finance Payment Network



- Connect anything to anything using fewer connections
- Use existing applications
- Fewer changes as requirements change
- Work seamlessly with existing departmental ESB solutions

Implementing An IBM Enterprise Service Bus Depends Upon Your Requirements

Requirements	WebSphere ESB	WebSphere Message Broker	WebSphere DataPower
Speed	Fast	Faster	Fastest
Built on WebSphere Application Server	✓		
Rack-Mountable Appliance			✓
Available on Wide Range of Platforms	✓	✓	
Federates Other ESBs	✓	✓	✓
WebSphere Transformation Extender Option	✓	✓	✓
Transactional Mediation Flows	✓	✓	✓
Dynamic Service Lookup at Run Time	✓	✓	✓
Adapters for Enterprise Applications	✓	✓	
Database Read/Write	✓	✓	✓
Non-IBM JMS Messaging Systems	✓	✓	✓
TIBCO Rendezvous		✓	
Mobile and Telemetry Devices		✓	
Multicast Output (Native)		✓	✓

IBM Enterprise Service Bus Extends Reach By Connecting To Your Entire Enterprise

Devices

Telemetry

Mobile

Data Formats

ACORD
COBOL Copybook XML
SWIFT EDIFACT MIME
HIPAA IDoc HL7
C Header X12 TLOG
Custom Binary

Messaging Systems

WebSphere MQ
Sonic MQ
Any JMS TIBCO EMS
TIBCO Rendezvous
WebSphere platform messaging

File Systems

IBM Enterprise Service Bus

Platforms

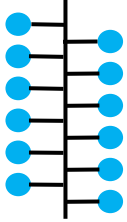
z/OS AIX Linux Appliance
Solaris HP/UX Windows

Databases

DB2 SQL Server
Oracle Sybase

Protocols

SOAP FTP
TCP/IP Sockets
LDAP HTTP
SMTP



Single copy of message delivered simultaneously to many subscribers

Multicast

Enterprise Applications

WebSphere Adapters

SAP
JD Edwards
Oracle PeopleSoft
Siebel

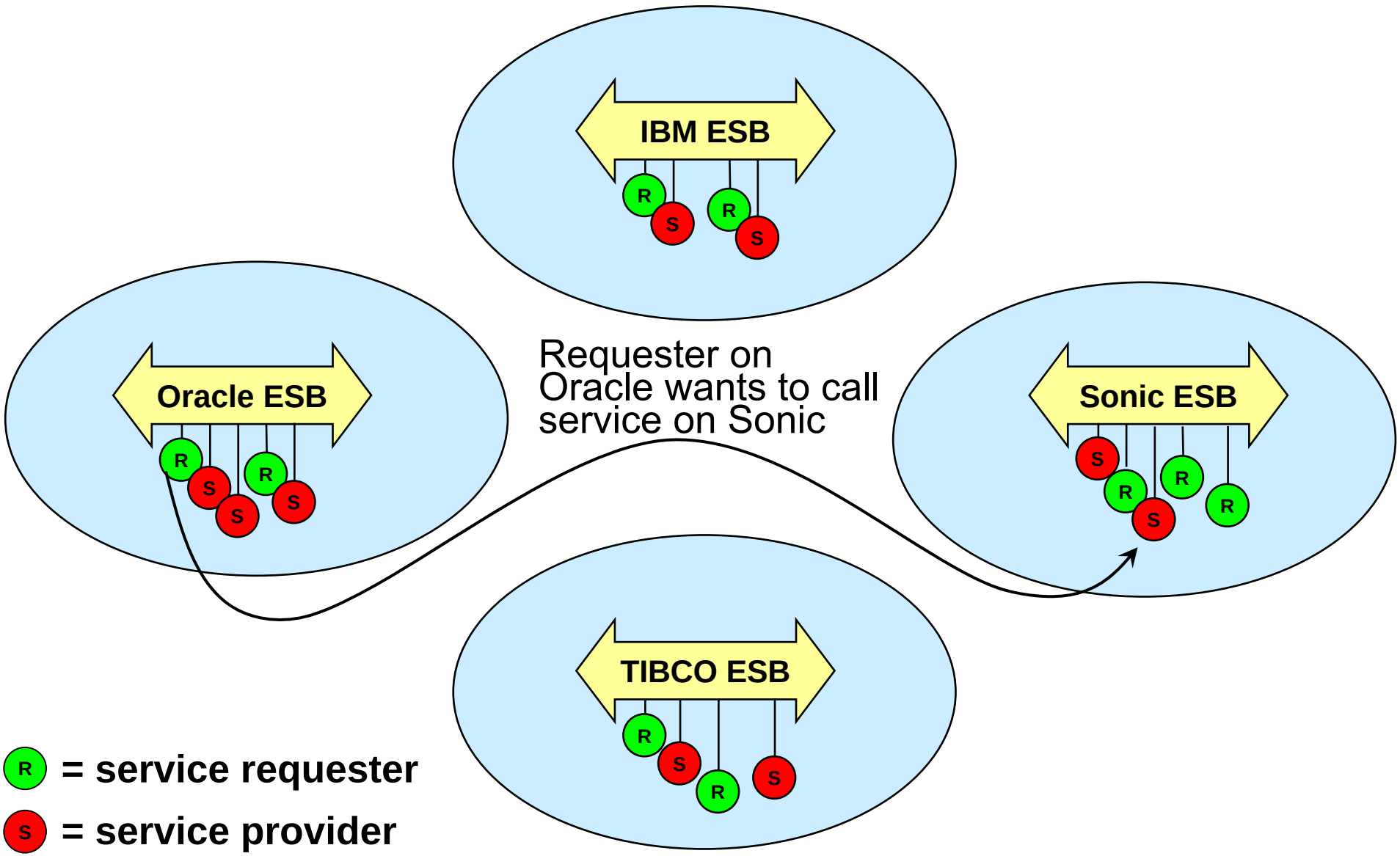
IBM Enterprise Service Bus Connects Anything To Everything

- Oracle Service Bus does not connect to the following:
  - Telemetry and mobile devices
  - TIBCO Rendezvous messaging
  - Database writes (read only)
  - Oracle adapters (Oracle Applications, Siebel, SAP, PeopleSoft)
  - LDAP directories
  - TCP/IP sockets

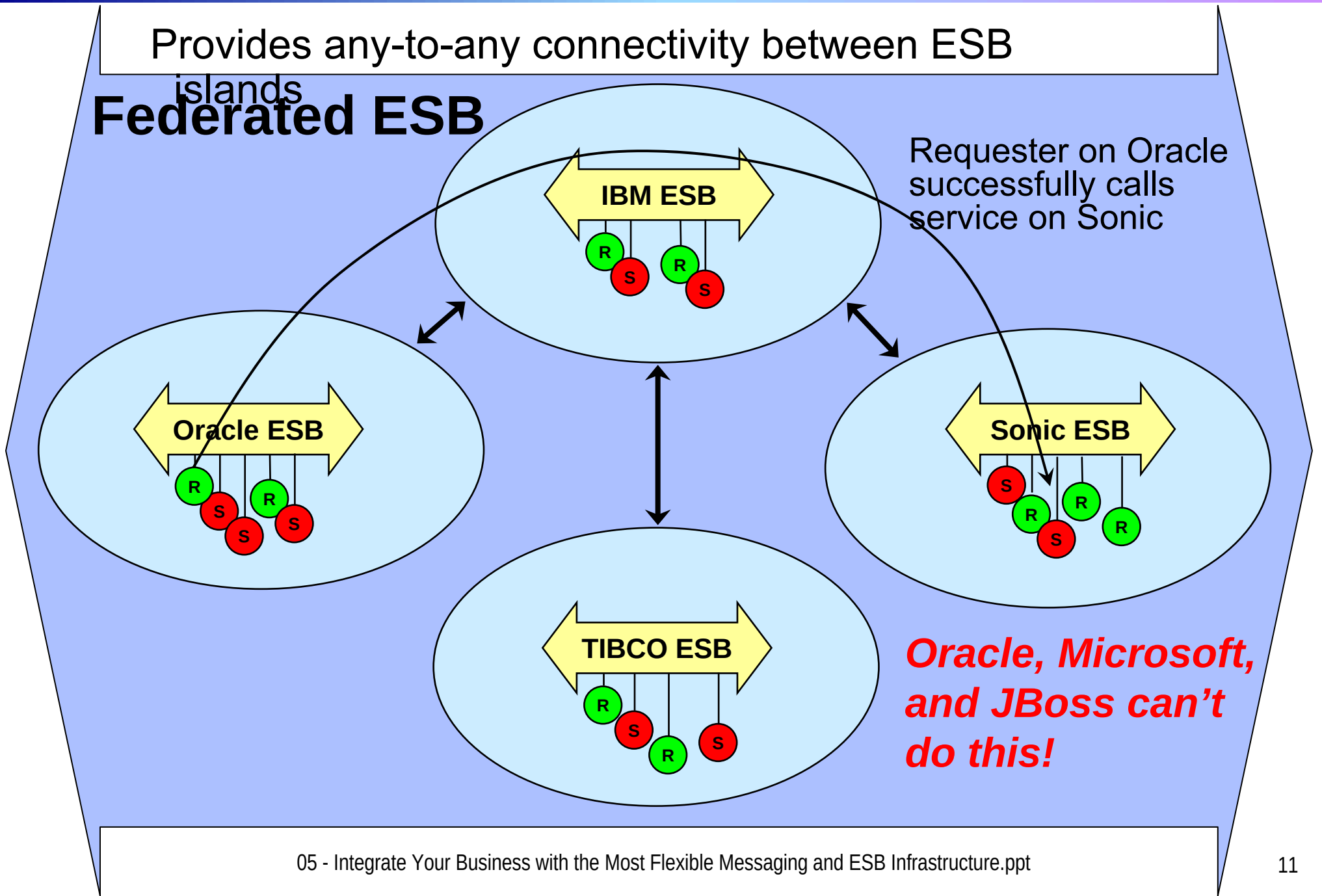
- Microsoft BizTalk does not connect to the following:
  - Telemetry and mobile devices
  - Sonic MQ
  - IBM WebSphere JMS messaging server
  - Oracle WebLogic JMS messaging server
  - LDAP directories
  - TCP/IP sockets

Many Enterprises Have “Islands” With Multiple ESBs Deployed

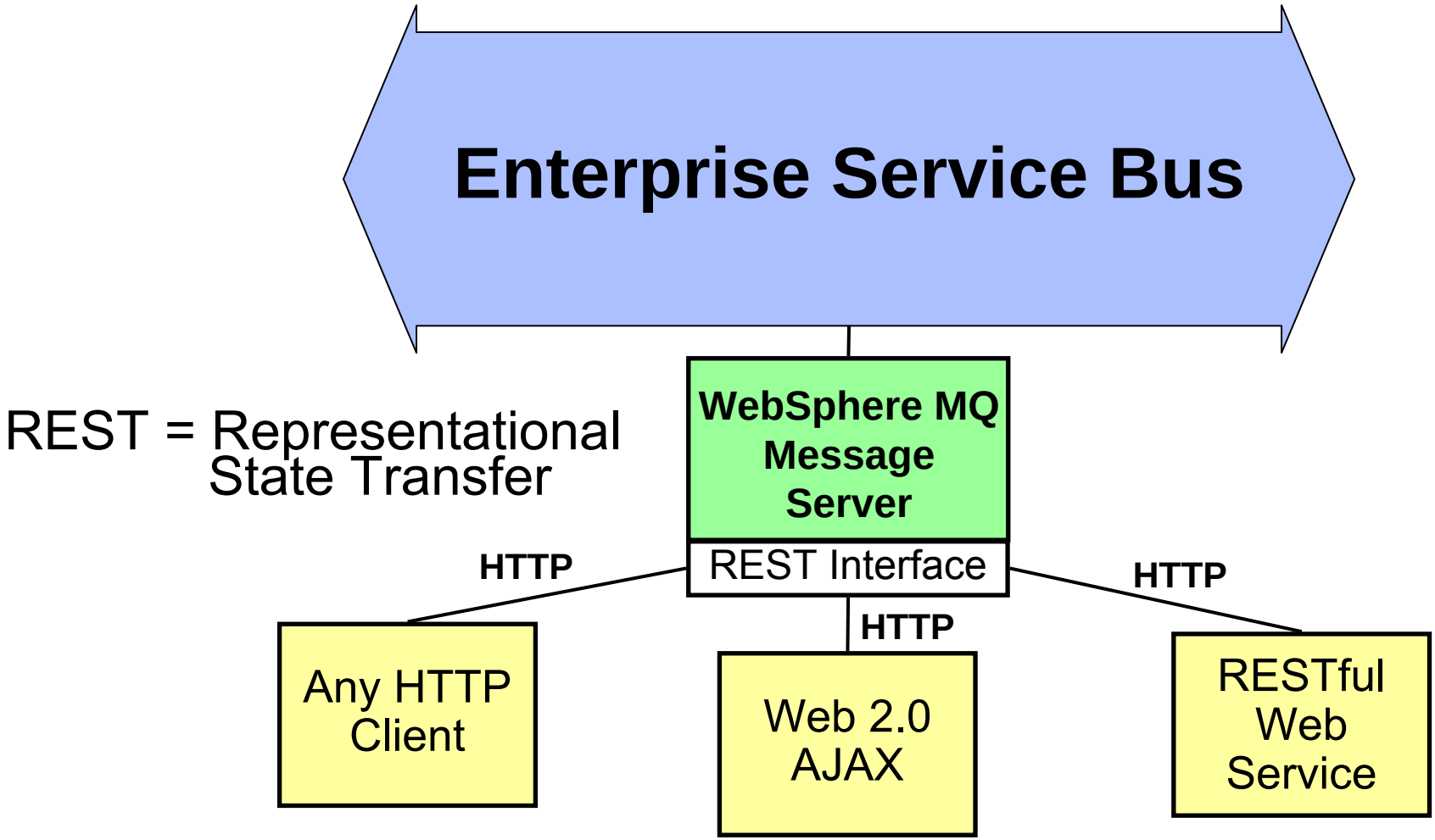
Requesters cannot easily call service providers on other ESB islands



IBM Extends Reach By Federating Multiple ESBs Into A Single, Logical ESB

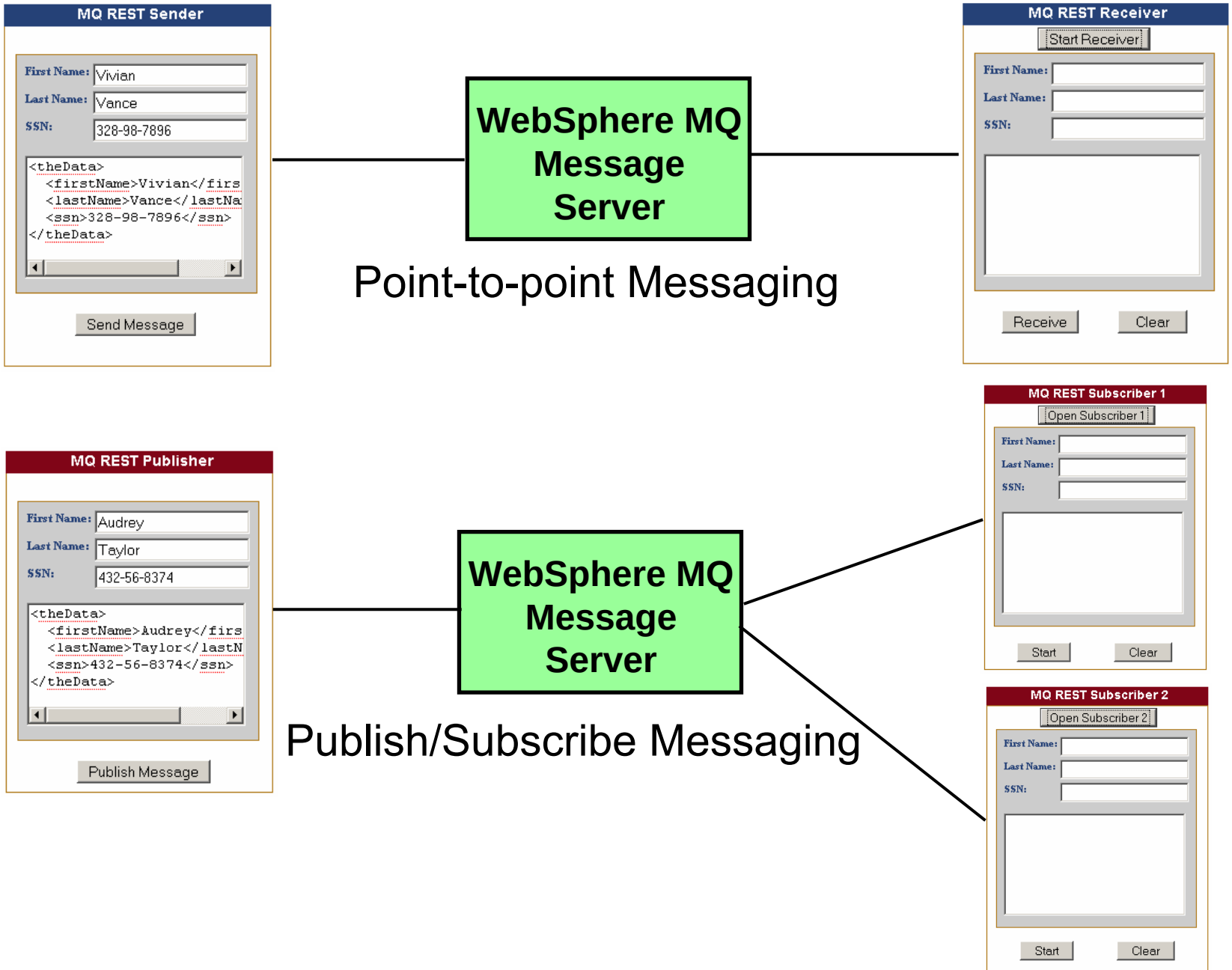


Browsers Can Access The Enterprise Service Bus Via WebSphere MQ REST Interfaces



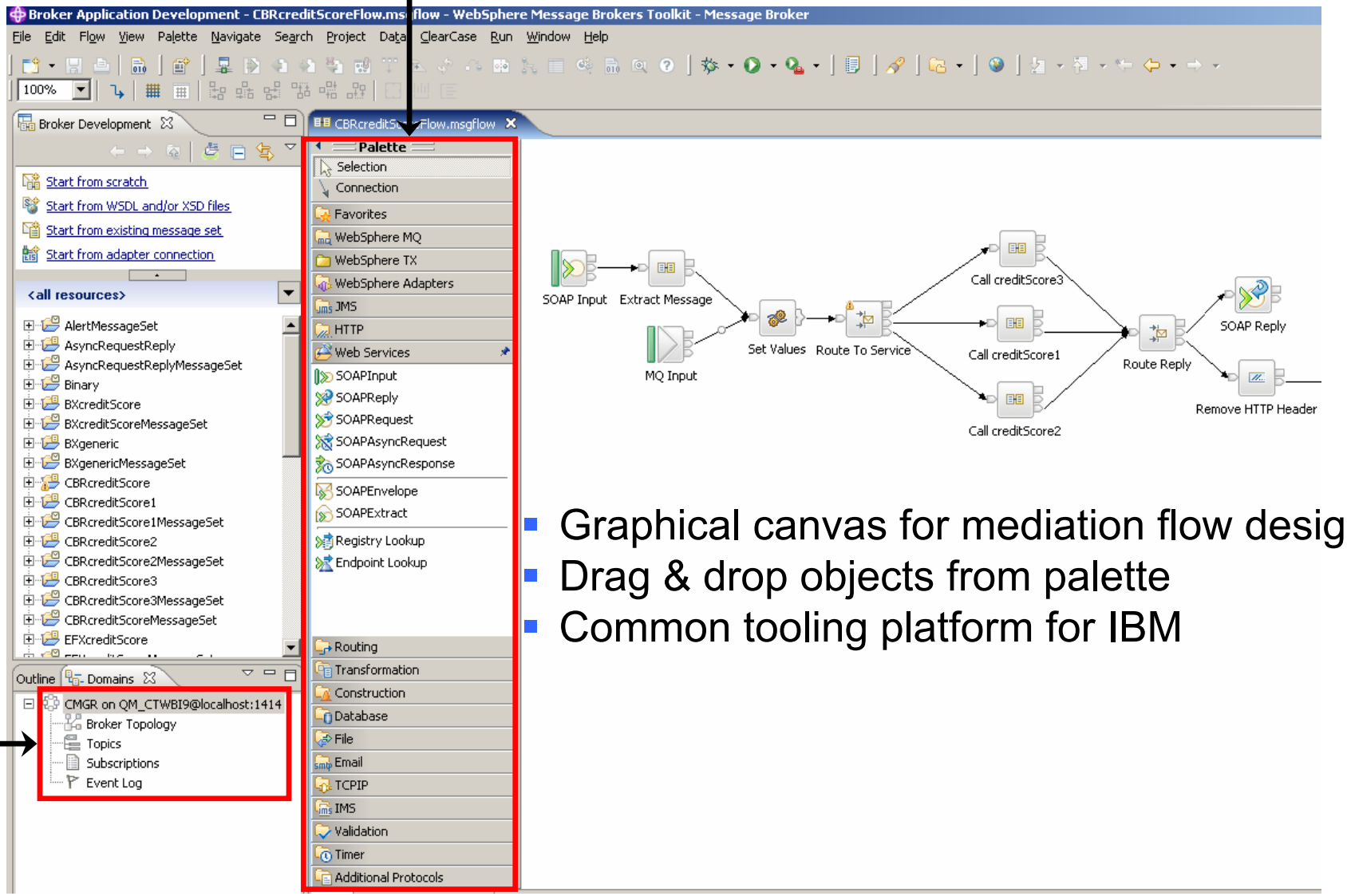
- No client software other than a browser is needed
- Supports both point-to-point and publish/subscribe messaging
- Oracle and Microsoft messaging do not have a REST interface

Demo: Asynchronous Messaging Using WebSphere MQ REST Interface



Eclipse Development Tool Makes Creating ESB Mediation Services Easy

Extensive palette for building mediation services

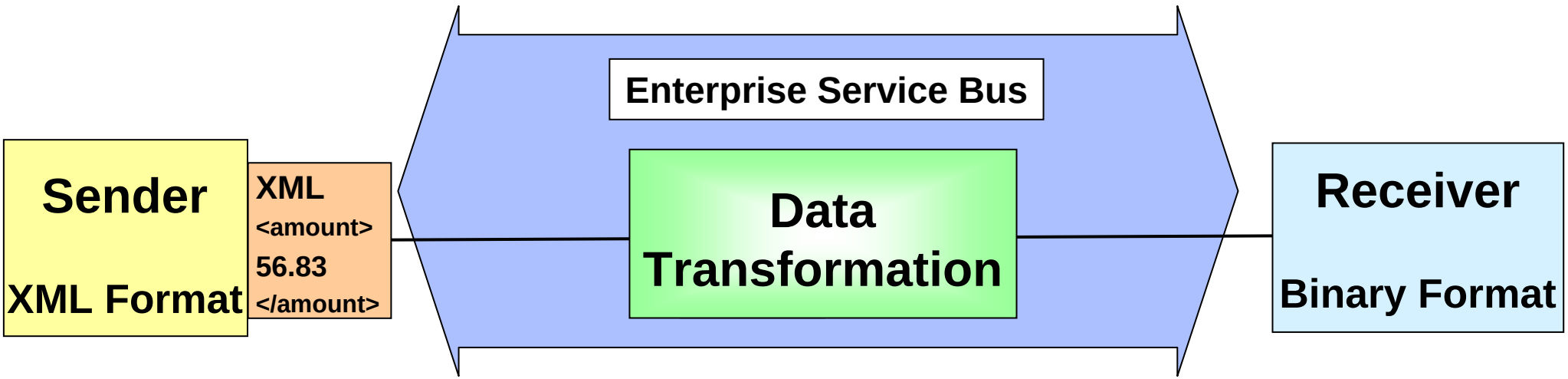


- Graphical canvas for mediation flow design
- Drag & drop objects from palette
- Common tooling platform for IBM

Disconnected development allows you to work anywhere

Transformation Mediation Service

Example: Transform XML to Automated Clearing House format



- Transform message format into any other format
- No changes to existing sender or receiver applications
- Transformations are centralized and re-usable

WebSphere Transformation Extender Makes Creating Data Transformations Even Easier

COPYBOOK

```
01          TP-API-CB.
03          TP-AGAPI-CB.
  05          TP-AGAPI-REQUEST              PIC X(40).
        88      TP-AGAPI-INITIALIZE-REQUEST
                VALUE 'INITIALIZE-MAPPING'.
        88      TP-AGAPI-PERFORM-MAPPING
                VALUE 'PERFORM-MAPPING'.
        88      TP-AGAPI-FINISH-MAPPING
                VALUE 'FINISH-MAPPING'.
  05          TP-AGAPI-VERSION              PIC X(04).
        88      TP-AGAPI-VERSION-VALID      VALUES ARE '0100' '0200'.
        88      TP-AGAPI-VERSION-0100       VALUE     '0100'.
        88      TP-AGAPI-VERSION-0200       VALUE     '0200'.
  05          TP-AGAPI-RESPONSE.
    10          TP-AGAPI-RESPONSE-CODE      PIC 9(04) COMP.
        88  TP-AGAPI-ALL-OKAY              VALUE 0.
        88  TP-AGAPI-REQUEST-ERROR         VALUE 1.
        88  TP-AGAPI-INITIALIZE-ERROR      VALUE 2.
        88  TP-AGAPI-MAP-ERROR             VALUE 3.
        88  TP-AGAPI-FINISH-ERROR          VALUE 4.
        88  TP-AGAPI-UNKNOWN-LOOP-ID       VALUE 5.
        88  TP-AGAPI-NO-ALGORITHM          VALUE 6.
        88  TP-AGAPI-NO-PARTNER            VALUES  7 15.
        88  TP-AGAPI-NO-APPLICATION        VALUE 8.
        88  TP-AGAPI-ALGORITHM-IO-ERROR    VALUE 9.
        88  TP-AGAPI-FATAL-GATEWAY-ERROR VALUE 10.
        88  TP-AGAPI-GATEWAY-WRITE-ERROR   VALUE 11.
        88  TP-AGAPI-PARTNER-IO-ERROR      VALUE 12.
        88  TP-AGAPI-BAD-VERSION           VALUE 13.
        88  TP-AGAPI-BAD-NUMERIC-TYPE      VALUE 14.
        88  TP-AGAPI-NO-ALIAS              VALUE 15.
        88  TP-AGAPI-ACCESS-ERROR          VALUE 16.
    10      TP-AGAPI-RESPONSE-MESSAGE       PIC X(80).
  05          TP-AGAPI-APPLICATION-ID       PIC X(10).
03
01
```

PROPRIETARY

```
DUNS 0123
F046000INV       for 2
months     120799
12   718-339-1700I43989D-2
120799999-b
003000010000
DUNS 4445        P55590
120799499QR
000004004000
```

CASH RECONCILATION

10029847 - $100,000,000.00
13948589 - $679,495,094.98
13950967 - $588,345,058.00
13950968 - $000,000,000.00
14001321 - $098,957,038.12

AAA: HT4459
AAA: B33566
AAA: C4058G
AAB: 948409
AAB: 874931

TABLE

Make	Model	PKG	Extended_Features
Ford	Prefect	3489 0	2984782q, 93847920, 3438084
Ford	Prefect	3489 0	2984782q, 93847920, 3438084
Ford	Prefect	3489 0	2984782q, 93847920, 3438084
Ford	Prefect	3489 0	2984782q, 93847920, 3438084
Ford	Prefect	3489 0	2984782q, 93847920, 3438084

DDA Application Updates

```
<MSG 19934749>
   <ACCT BAL RPT>
      <ACCTNUM><"14001321">
<ENDBALANCE><" $098,957,038.12">
<DEBIT><"103048382$394,394.00">
<DEBIT><"103048383$001,293.65">
<CREDIT><"987463921$928,943.67">
   </ACCTNUM>

</MSG>
```

- Takes any kinds of data from their native formats
- Transforms the data into any desired format
- No coding required for the data map
- Maps can be tested independent of the mediation flow
- Integrates with IBM ESB offerings
- Excellent for advanced transformation maps

BINARY

```
00011110010010011010010
10010010010010010000011
11010100101010110010010
10010010010010001010010
10010010101010101000100
11100010100010010001001
00100100100100101010010
01010100100010010010010
01001001110001010010101
01010101010010010101001
00100010010100101000010
10101010001001010001001
01001010100101010100101
01100101000000000001111
10010010010101110010010
01010101001010101101111
```

WebSphere Transformation Extender Vertical Product Packs Provide Industry Standard Formats

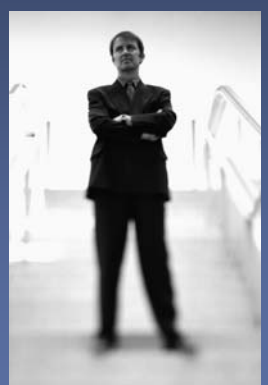
Financial Services

SWIFTNet FIN
SWIFTNet Funds
SEPA
FIX
NACHA
ACORD

Health Care

HIPAA
NCPDP
HL7
Services Solutions
- HealthCare Hub
- Payment Processing
- Clearing House Processing

EDI



X12
EDIFACT
TRADACOMS
ODETTE
EANCOM

Enterprise Applications

SAP
PeopleSoft
Siebel

IBM Leads In ESB Data Transformation

- Built-in graphical mapping tools for typical data transformation requirements
- Optional WebSphere Transformation Extender add-on
  - For advanced data transformation requirements
  - Industry Packs provide **16 standard industry data formats**
  - Plugs into IBM ESB Eclipse design tool
- Oracle provides only basic data transformation
  - Must use either external XQuery tool or self-built XSLT files
  - Only SWIFT, FIX, and SEPA industry data formats
- Microsoft provides only basic data transformation
  - Simple graphical mapping tool, not appropriate for advanced transformations
  - Only SWIFT, RosettaNet, HL7, and HIPAA industry data formats

ESB Performance Is An Important Consideration

We process a lot of payments every hour. How well does your ESB perform?

Service Oriented Finance CIO

We offer the fastest ESB in the industry. This allows you to process more payments on the same hardware compared to other ESB offerings.

IBM

A Transactional ESB Connection Assures Data Integrity

Our payments are logged for audit purposes.

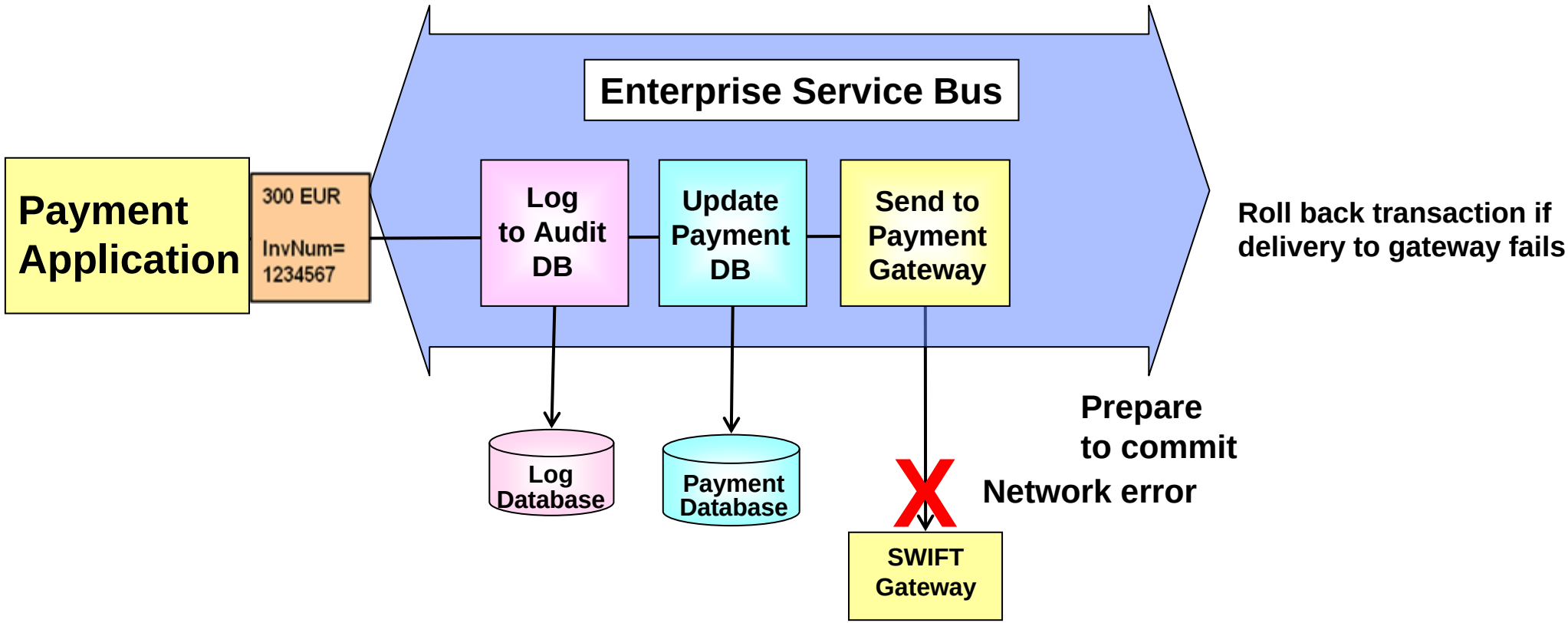
Our logs must be accurate!

Service Oriented Finance CIO

Our ESB can execute mediation flows as distributed transactions. This assures data integrity.

IBM

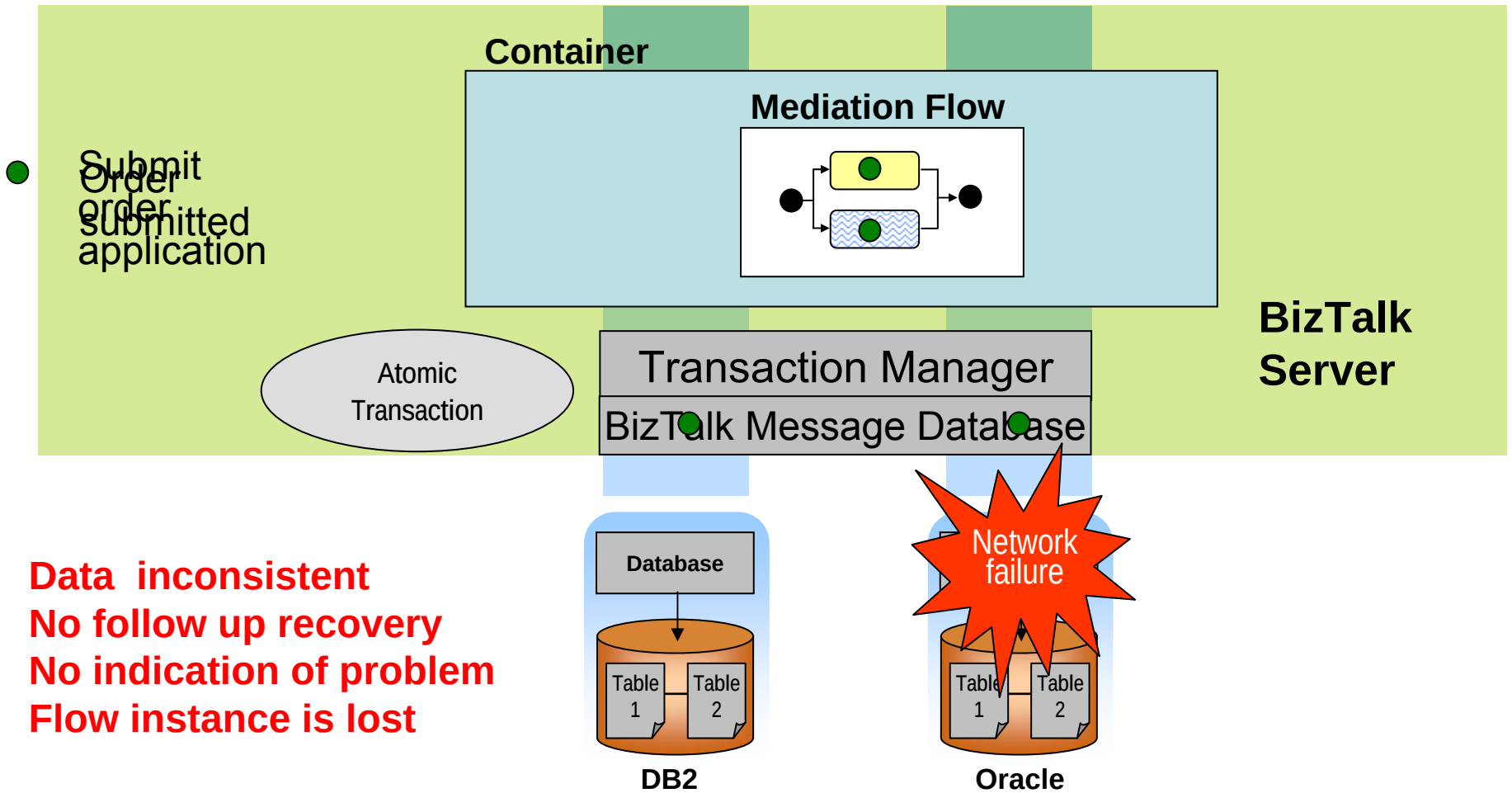
Transactional ESB Mediation Flow Assures Data Integrity



- All updates are either committed or rolled back within a single transaction
  - Including database and messaging operations
- Oracle Service Bus does not support transactional mediation flows
- Oracle Service Bus does not update databases
- Microsoft BizTalk transactional scope does not include end points

Demo: Microsoft Transactional Mediation Flow With Network Failure

- BizTalk's Atomic Transaction support refers to update of its internal message database
- Downstream messages are sent asynchronously, with no follow up tracking or recovery



Data inconsistent
No follow up recovery
No indication of problem
Flow instance is lost

Microsoft fails to maintain data consistency

Service Lookups Ensure Resilient Operation

Our payments network must have resiliency in the event of service outages.

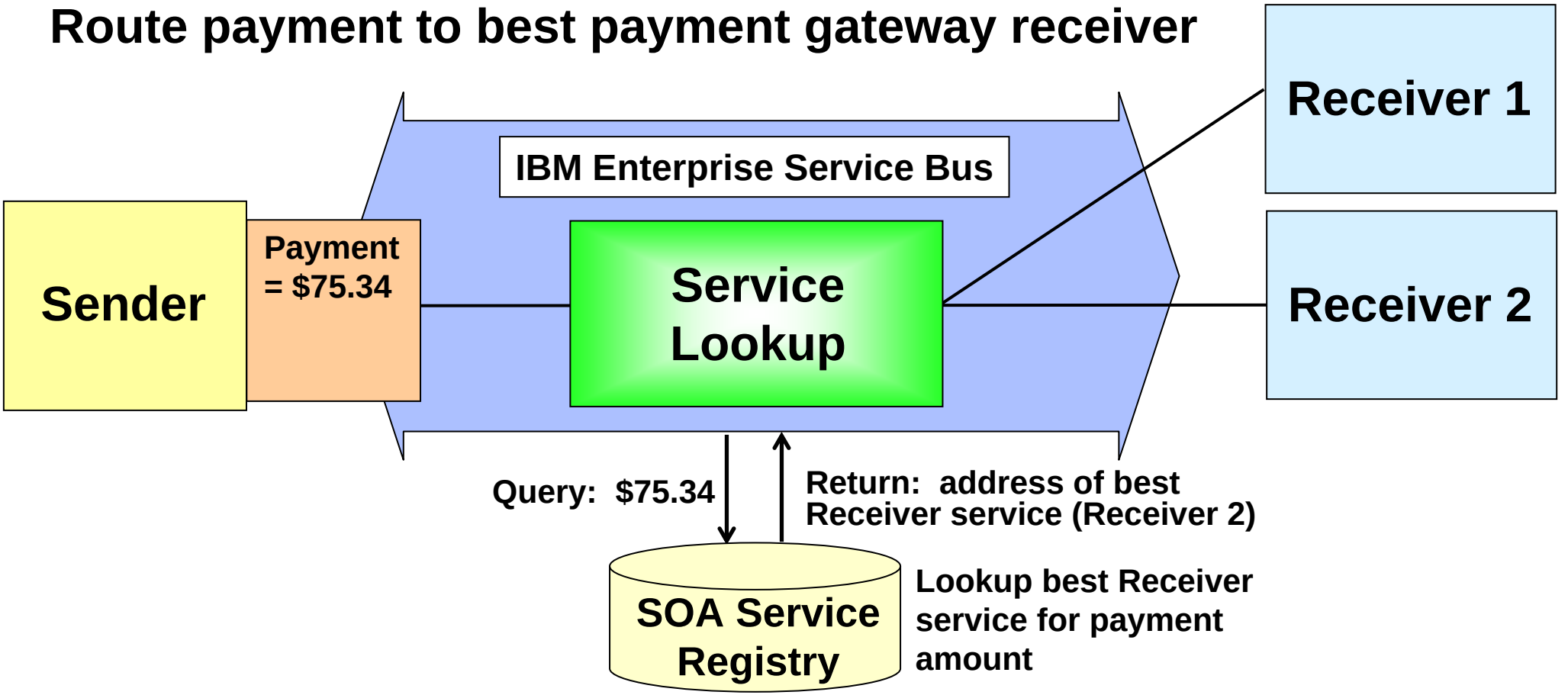
Service Oriented Finance CIO

Our ESB can dynamically route payments based on information about each end point.

IBM

Service Lookup Dynamically Routes Messages To Registered End Point Services

Route payment to best payment gateway receiver



- Payments are not routed to fixed end point destinations
- ESB dynamically selects the best end point service by comparing message content with information about registered end point services
- Fewer mediation design changes are needed as end points change

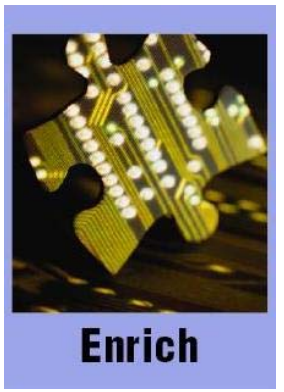
WebSphere Service Registry And Repository (WSRR) Is The IBM SOA Registry

WSRR provides five capabilities for managing your end point services

Publish completed services to a common registry

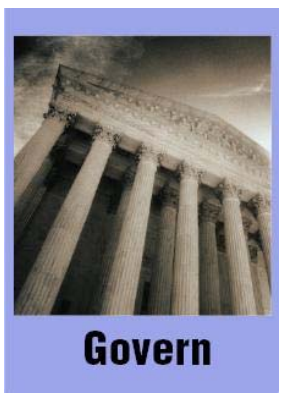
Enable service re-use

Find services based on search criteria



Enables selection of services based on service metadata

Service classification and versioning

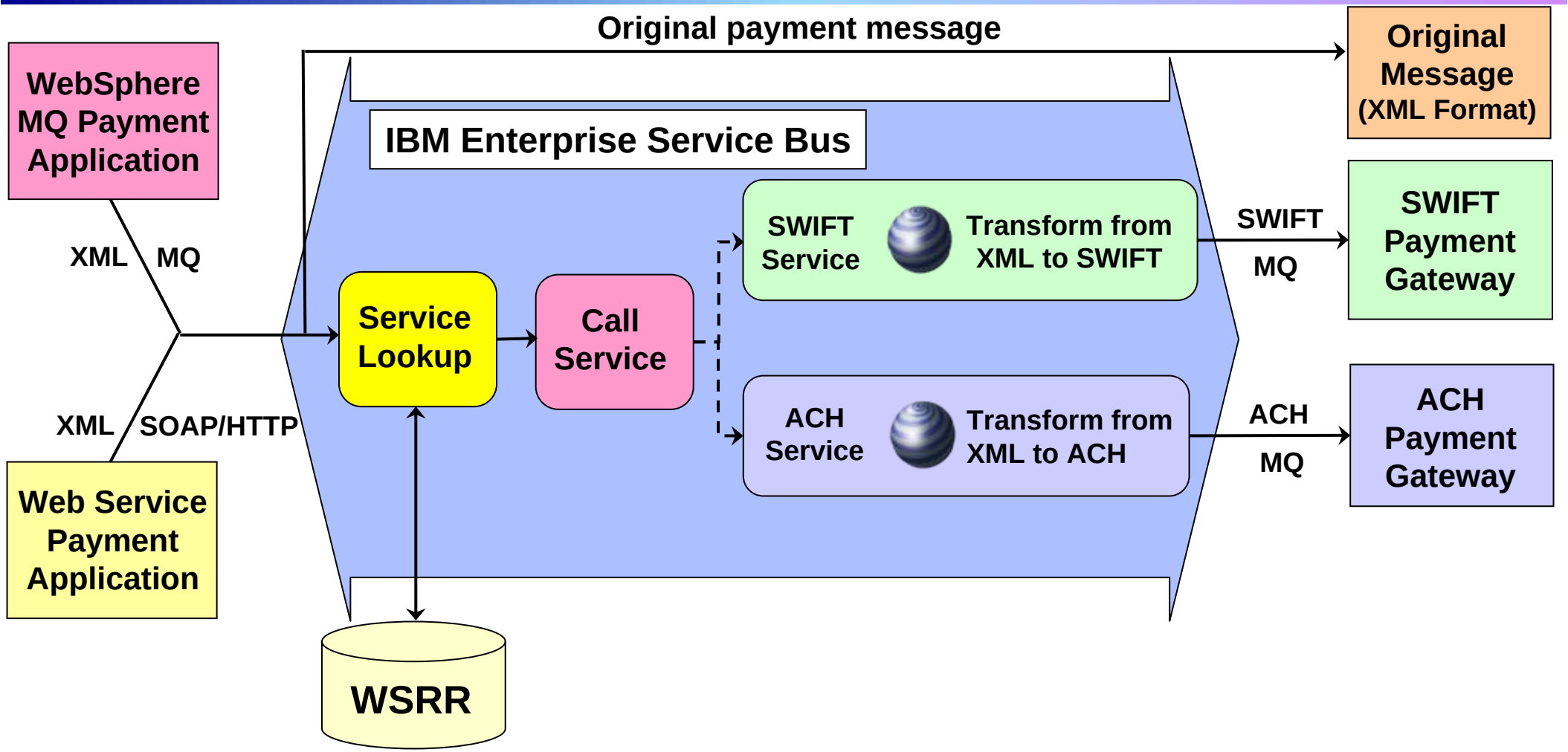


Govern transitions in service life cycle

IBM Enterprise Service Bus Integrates With WebSphere Service Registry And Repository

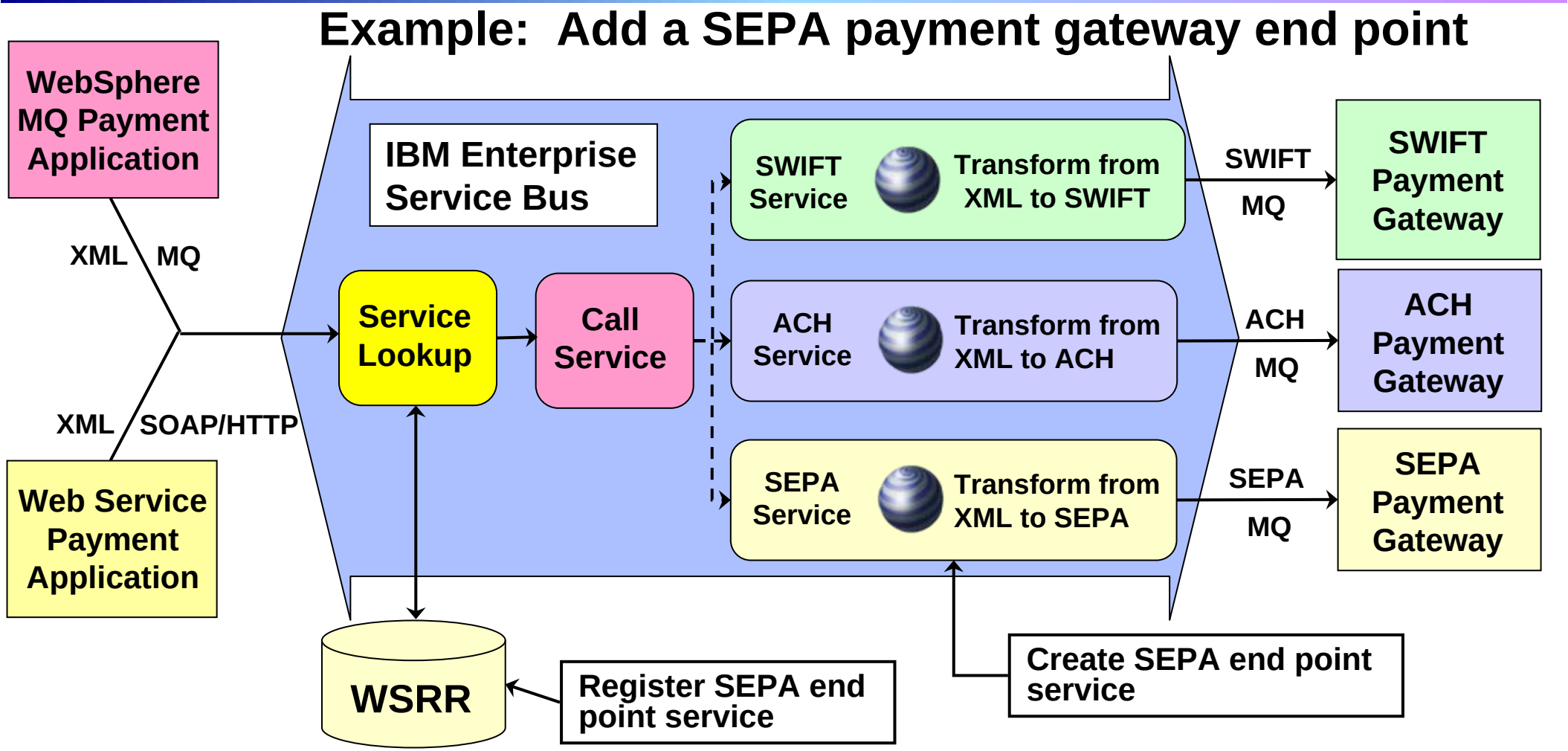
- Design Time
  - Find published end point services in WSRR
    - Search WSRR from within ESB design tool
    - Import service documents (WSDL, XSD, etc.) into design tool
  - Publish ESB mediations as services to WSRR
- Run Time
  - Connection from ESB run time engine to WSRR
  - Lookup information about an individual end point service
  - Query service metadata for all matching end point services
  - Receives end point information for matching services
  - Query results can be cached for higher throughput
- Oracle Service Bus and Oracle Service Registry are not integrated at run time
- Microsoft BizTalk does not integrate with any UDDI registry at run time

Demo: Dynamic, Flexible Routing And Transformation Of Payments Using Service Lookup



- Payments are dynamically routed to end point services by comparing payment amount to payment limits stored in WSRR service metadata
- Transformation from XML to SWIFT and ACH formats using WebSphere TX maps
- Payments are processed exactly the same for both a WebSphere MQ payment application and web service payment application

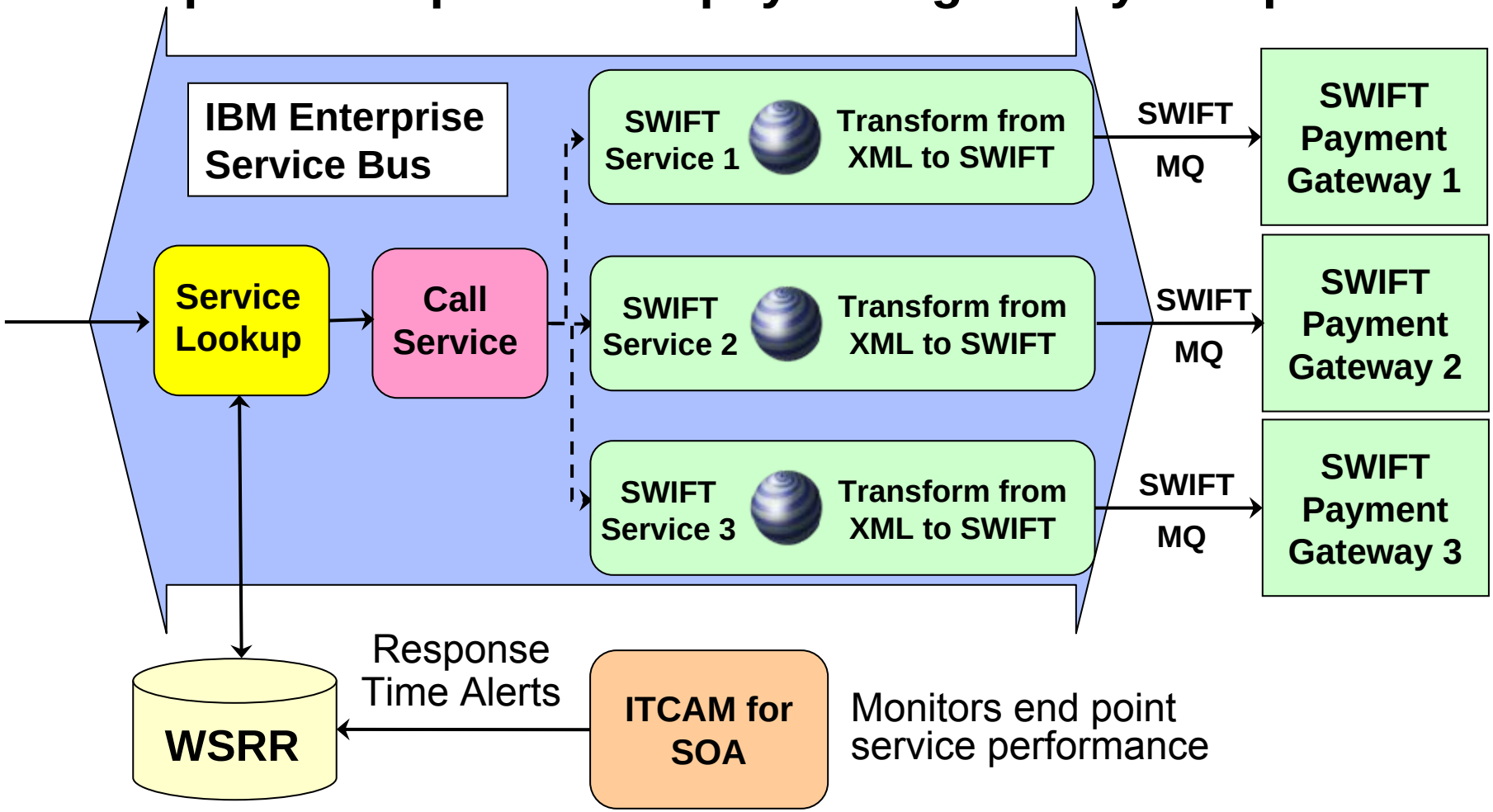
Adding Or Removing An End Point Requires Minimal Changes



- Adding an end point only requires a new end point service
- Removing an end point requires no design changes
- Neither Microsoft nor Oracle have dynamic service lookup

Integration With Service Monitoring Assures That Only Responsive End Points Are Called

Example: Multiple SWIFT payment gateway end points



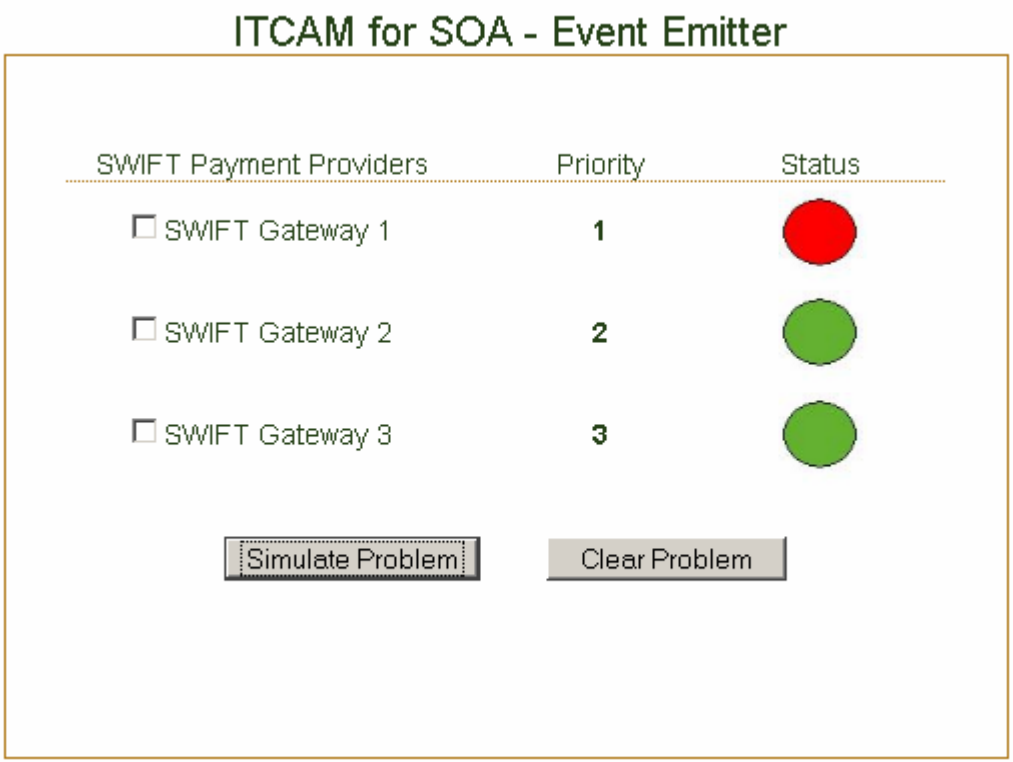
- Service Lookup only returns responsive end point services
- Can use other WSRR service metadata to select from multiple returns
- Oracle and Microsoft do not have monitoring integration with ESB

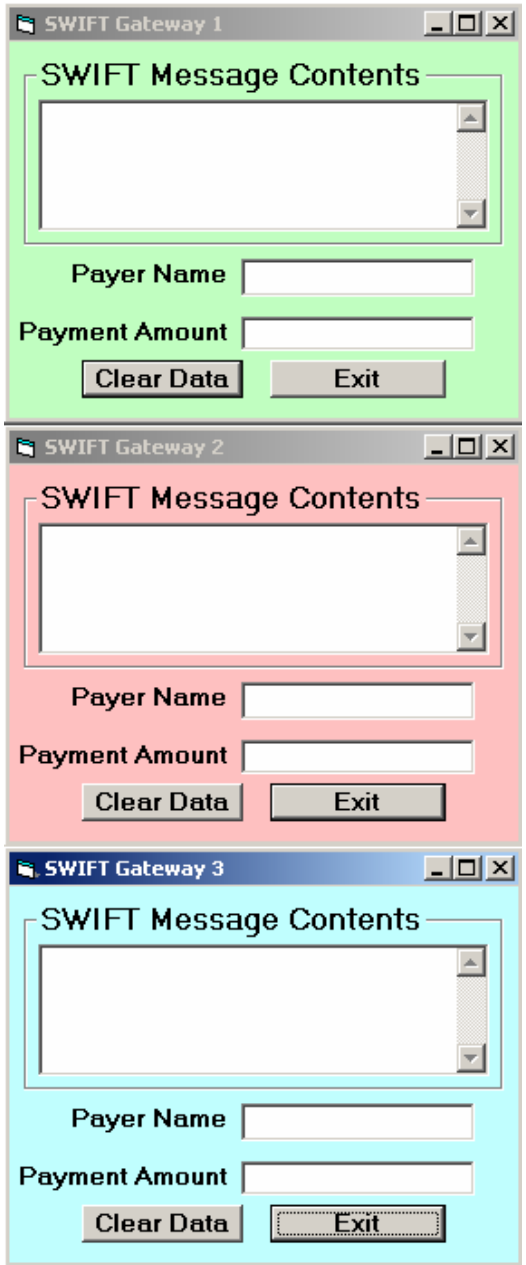
Use Response Time Alert Information In WSRR To Improve Throughput

End Point	Response Time Alert Information in WSRR	Priority	Service Lookup
SWIFT Service 1	Response Time Critical 15.87 sec. response time	1	Not Returned
SWIFT Service 2	None	2	Returned
SWIFT Service 3	None	3	Returned

- Only SWIFT Service 2 and SWIFT Service 3 end point services are returned
- Mediation flow design can then select which end point service to call
  - Example: select end point with highest priority

Demo: Service Lookup Based On Response Time Alerts





- Route payments only to end point services without response time alerts from ITCAM for SOA monitoring
- If multiple end point services are returned, select service with highest priority (lowest priority number)
- An end point can be added or deleted without changing the ESB mediation flow design

IBM Provides Superior Connectivity Solutions For Smarter Planet Solutions

- Reach
- Performance
- Transactional
- Resiliency