

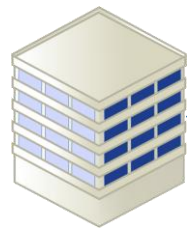
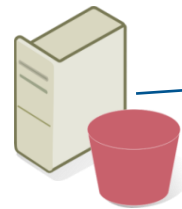
Web Services and the SOA Grid

Cordys BOP 4.1 Fundamentals

CORDYS

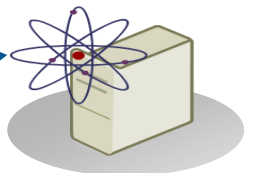
- ◆ SOAP Request Handling
- ◆ SOA Grid Components
- ◆ Routing on the SOA Grid
- ◆ Application Connectors
- ◆ Scalability

Service consumers

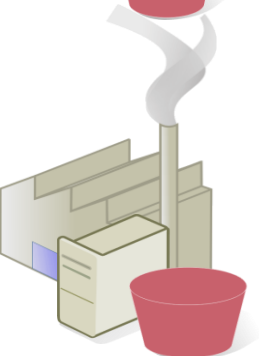


Web Services

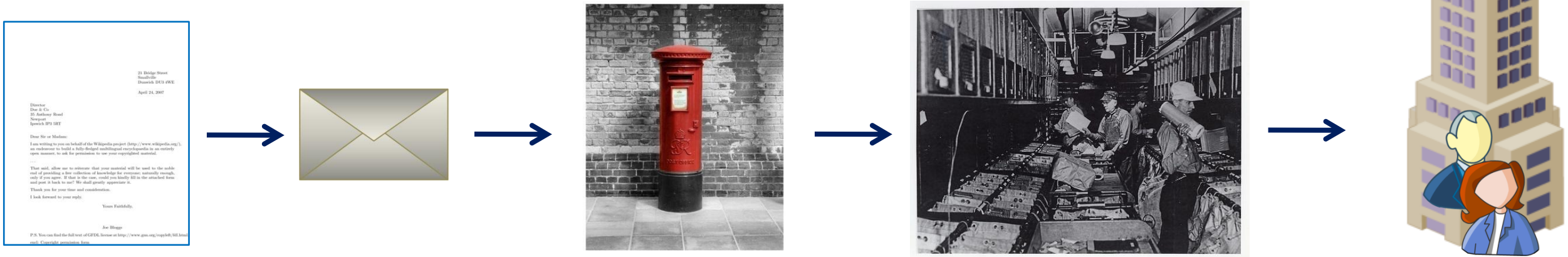
Service providers



Business Logic



Message Handling, an Analogy



Service Consumer
(Client)

Service Provider
(Backend)

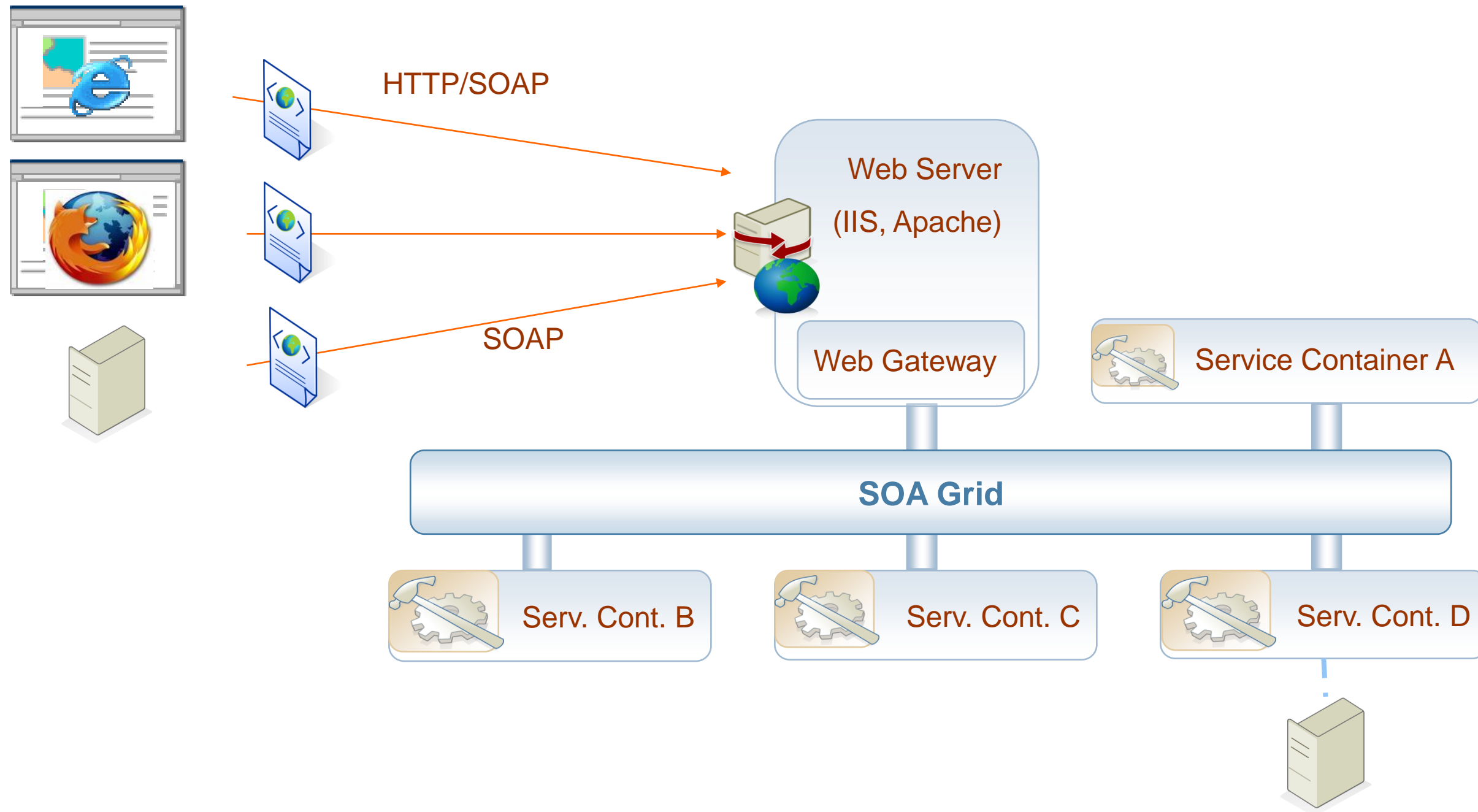
SOAP Request Example

CORDYS

```
<SOAP:Envelope xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP:Header>
    <header xmlns="http://schemas.cordys.com/General/1.0/">
      <sender>
        <component>Test Application</component>
        <reply-to>socket://CORDYSSERVER:4256/</reply-to>
        <user>cn=AJohnson,cn=organizational users,o=ACMI,cn=cordys,cn=DefaultInst,o=cordys.com</user>
      </sender>
      <receiver>
        <component>cn=Northwind service,cn=soap nodes,o=ACMI,cn=cordys,cn=DefaultInst,o=cordys.com</component>
      </receiver>
      <msg-id>a47166eb-0a01-1f22-014e-8cee9a071679</msg-id>
    </header>
  </SOAP:Header>
  <SOAP:Body>
    <GetCustomersObject xmlns="http://schemas.academy.com/northwind/demo">
      <CustomerID>HILAA</CustomerID>
    </GetCustomersObject>
  </SOAP:Body>
</SOAP:Envelope>
```

SOAP Request Handling Cordys

CORDYS



SOAP Request:

```
- <SOAP:Envelope xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
- <SOAP:Body>
  - <GetCustomer xmlns="http://schemas.cordys.com/1.0/demo/northwind">
    <CustomerID>ALFKI</CustomerID>
  </GetCustomer>
</SOAP:Body>
</SOAP:Envelope>
```

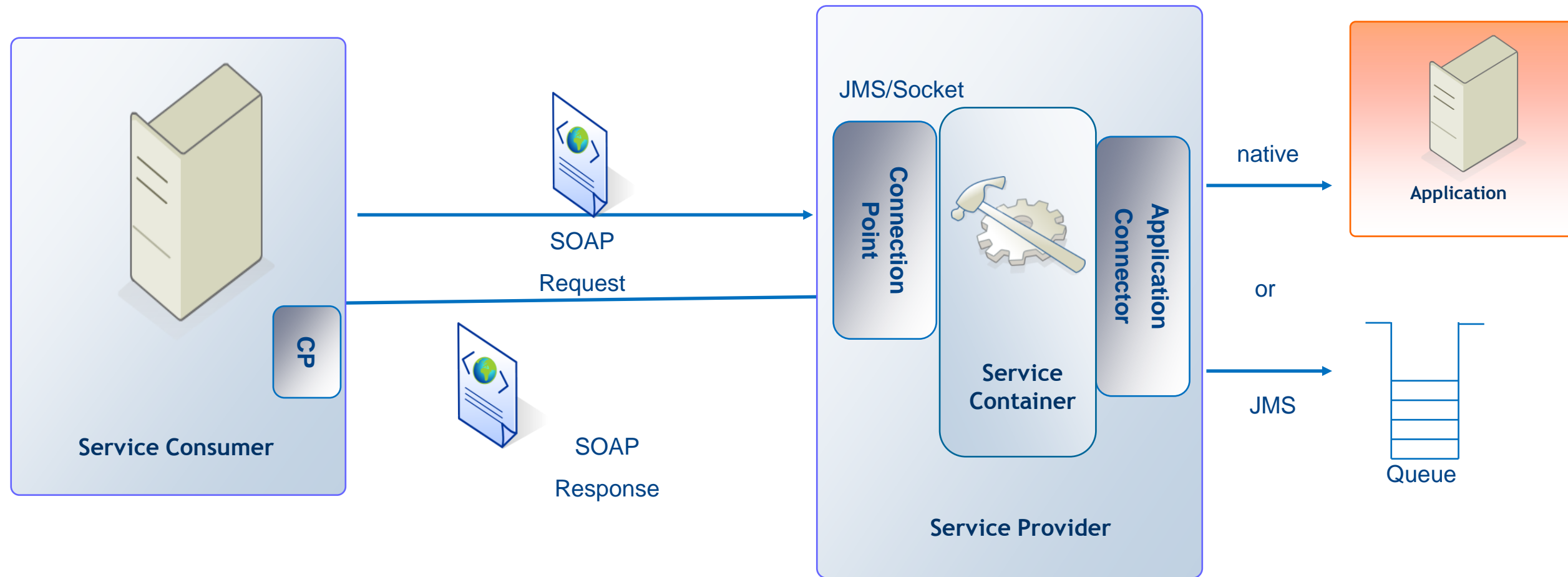
Operation execution combines:

- ◆ [Implementation](#)
- ◆ Input message “ALFKI”

SOAP Response:

```
- <SOAP:Envelope xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
+ <SOAP:Header xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
- <SOAP:Body>
  - <GetCustomersObjectResponse xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns="http://schemas.academy.com/northwind/demo">
    - <Customers>
      <CustomerID>ALFKI</CustomerID>
      <CompanyName>Alfreds Futterkiste</CompanyName>
      <ContactName>Bob</ContactName>
      <ContactTitle>Sales Representative</ContactTitle>
      <Address>Obere Str. 57</Address>
      <City>Berlin</City>
    </Customers>
  </GetCustomersObjectResponse>
</SOAP:Body>
</SOAP:Envelope>
```

- ◆ SOAP Requests are processed by Service Containers

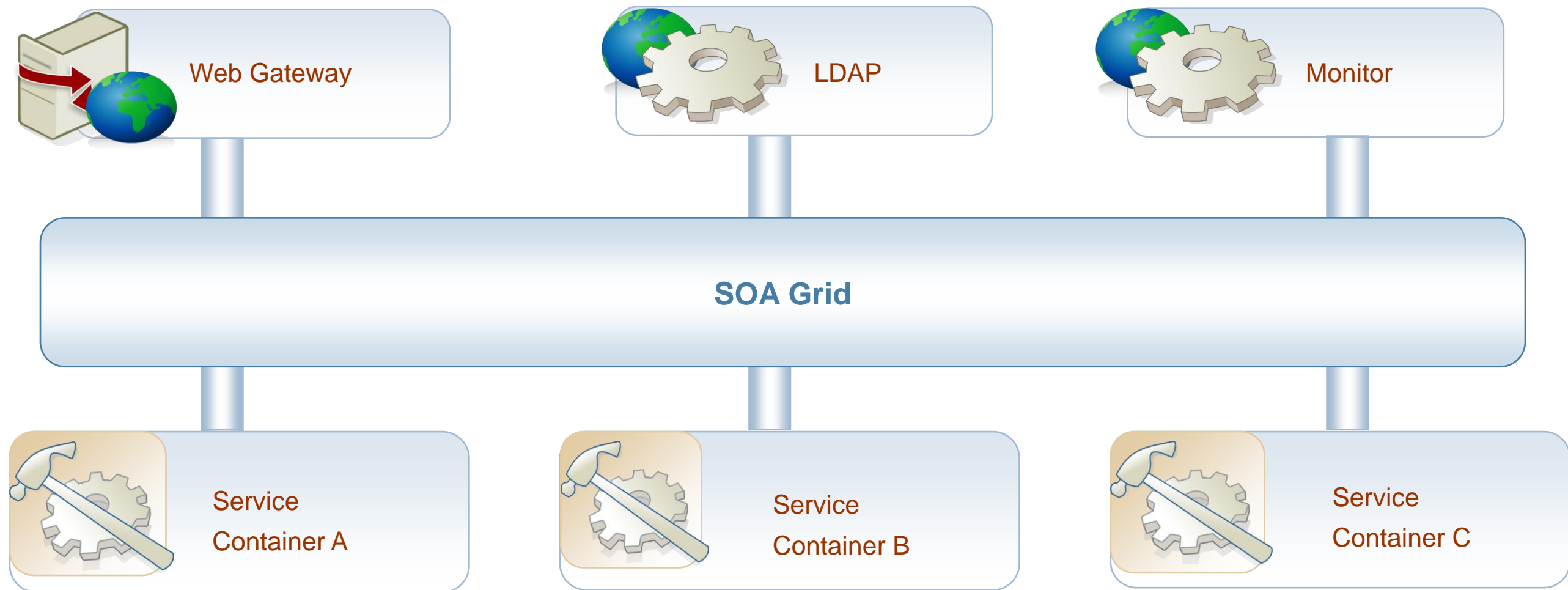


- ◆ Connection Point
 - ◆ Connection address for a service container
- ◆ Service Container
 - ◆ Processes SOAP Requests
 - ◆ Executes internal routing
 - ◆ Logging
- ◆ Application Connector
 - ◆ Provides connection to backend
 - ◆ Executes implementation of a web service operation
 - ◆ Converts XML to native and vice versa

Web Service Operation:

- ◆ is the smallest “action” of a web service
- ◆ is identified by its:
 - ◆ name
 - ◆ namespace
- ◆ has two related documents:
 - ◆ Implementation of the action (Cordys proprietary)
 - ◆ WSDL
- ◆ is implemented by an application connector

- ◆ SOAP Request Handling
- ◆ SOA Grid Components
- ◆ Routing on the SOA Grid
- ◆ Application Connectors
- ◆ Scalability



◆ Web Gateway

- ◆ Authentication
- ◆ Routes the SOAP Request on the bus/grid
- ◆ Conversion service URI in WSDL (`http://server1` \leftrightarrow `http://company.com`)

◆ LDAP Service (Lightweight Directory Access Protocol)

- ◆ Data store for service group information (needed for routing)
- ◆ Data store for users, authentication and authorization

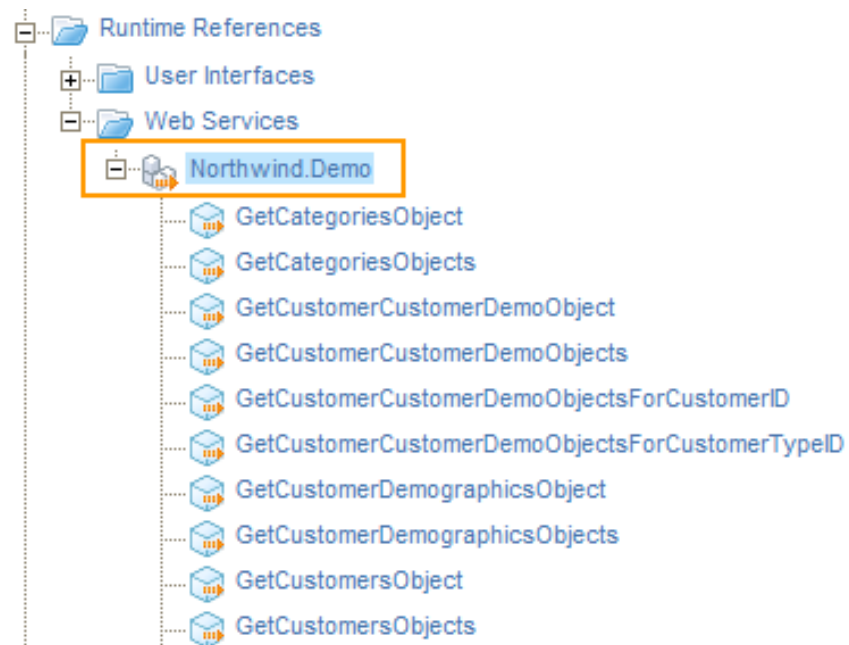
◆ Monitor Service

- ◆ Monitors service container state

- ◆ SOAP Request Handling
- ◆ SOA Grid Components
- ◆ Routing on the SOA Grid
- ◆ Application Connectors
- ◆ Scalability

Web Service Interface:

- ◆ Group of Web Service Operations
- ◆ Web Service Interface has the “namespace(s)” of the Web Service Operations
- ◆ Web Service Interface and Operations are stored in LDAP

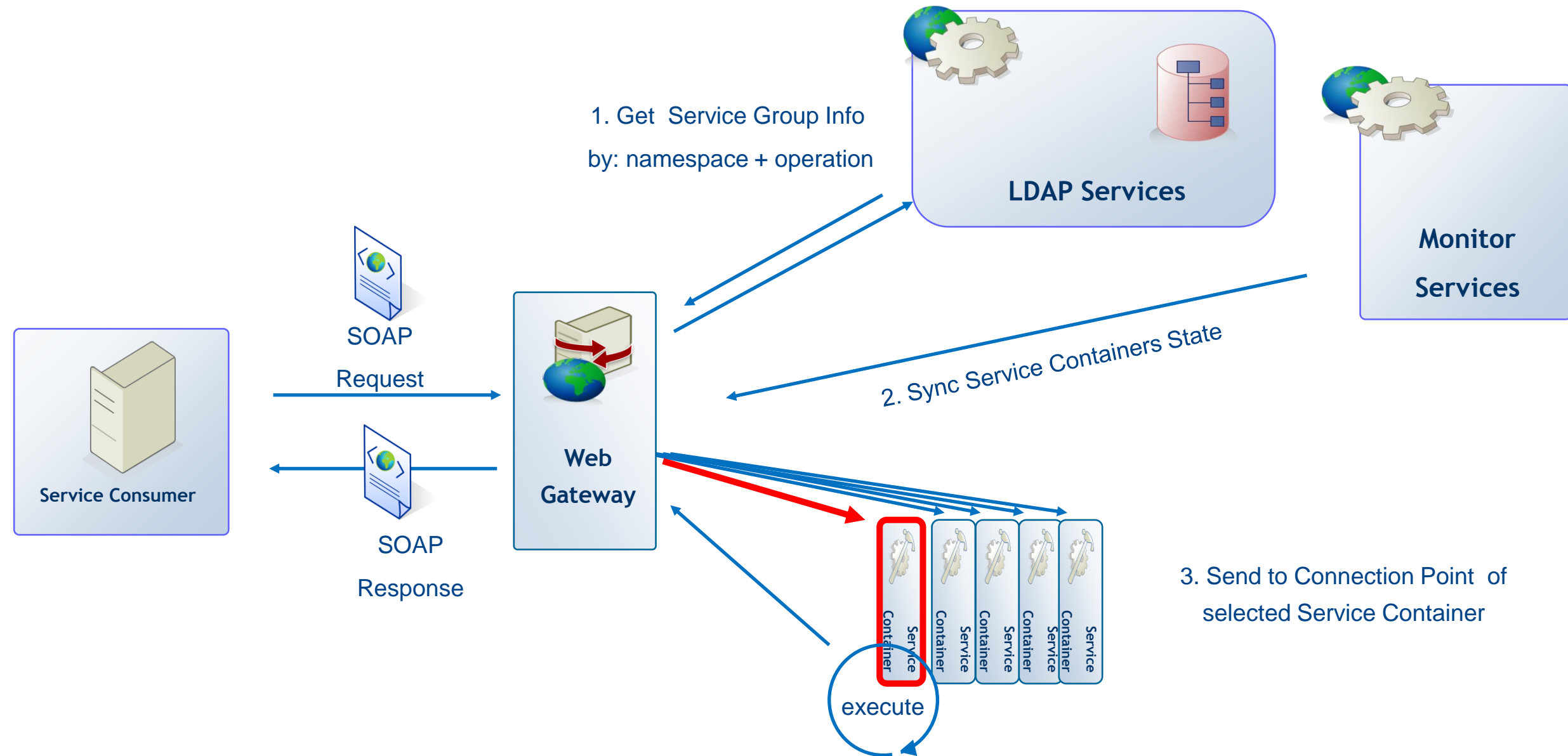


Service Group:

- ◆ Logical entity to group a set of service containers
- ◆ Defines routing algorithm for load balancing
- ◆ Provides services via XML namespaces (web service interfaces)
- ◆ Access Control List (ACL) to allow/disallow access to the service group

Service Container Selection (External Request)

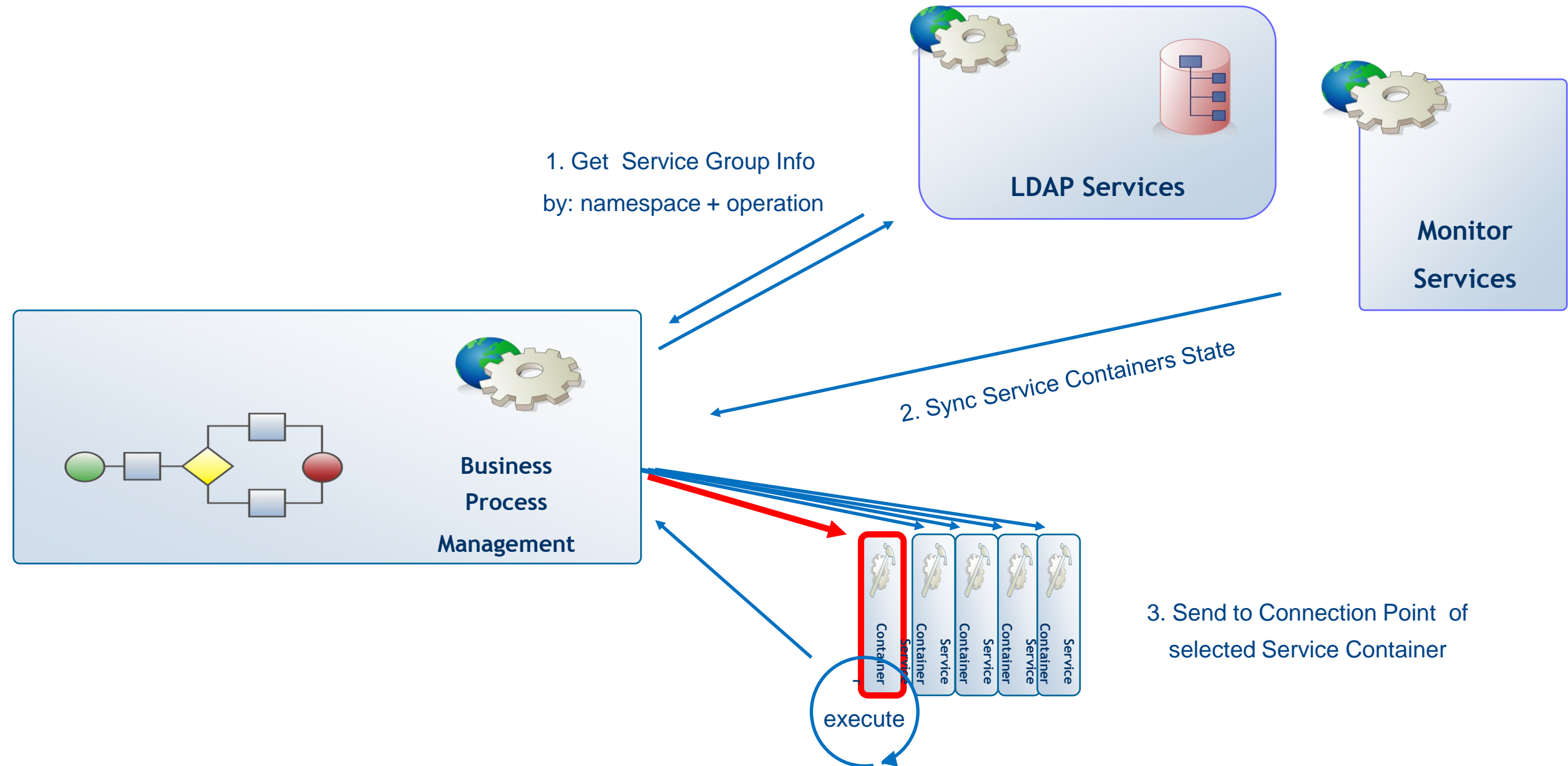
CORDYS



- ◆ A SOAP Request is sent to the Web Server
 - ◆ It contains a namespace and operation name
- ◆ Web Server hands SOAP Request over to the Web Gateway
- ◆ Web Gateway
 - ◆ Searches LDAP for service group based on namespace and operation name
 - ◆ Executes routing algorithm (select 1 service container and get connection point)
 - ◆ Send SOAP Request to URI as defined on connection point
- ◆ Service Container
 - ◆ Reads web service implementation from LDAP
 - ◆ Hand implementation and request over to application connector for execution
 - ◆ Sends the SOAP Response back

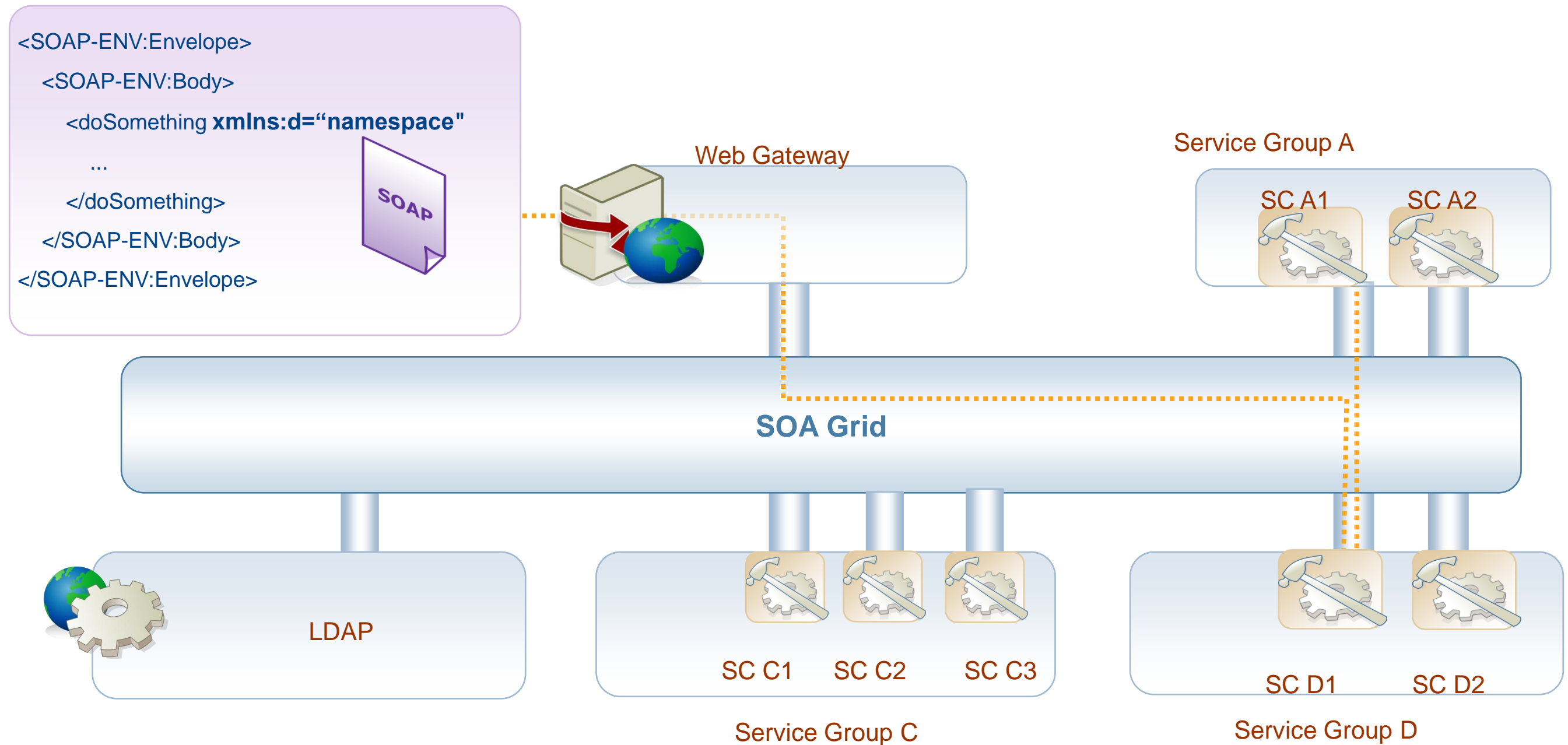
Service Container Selection (Internal Request)

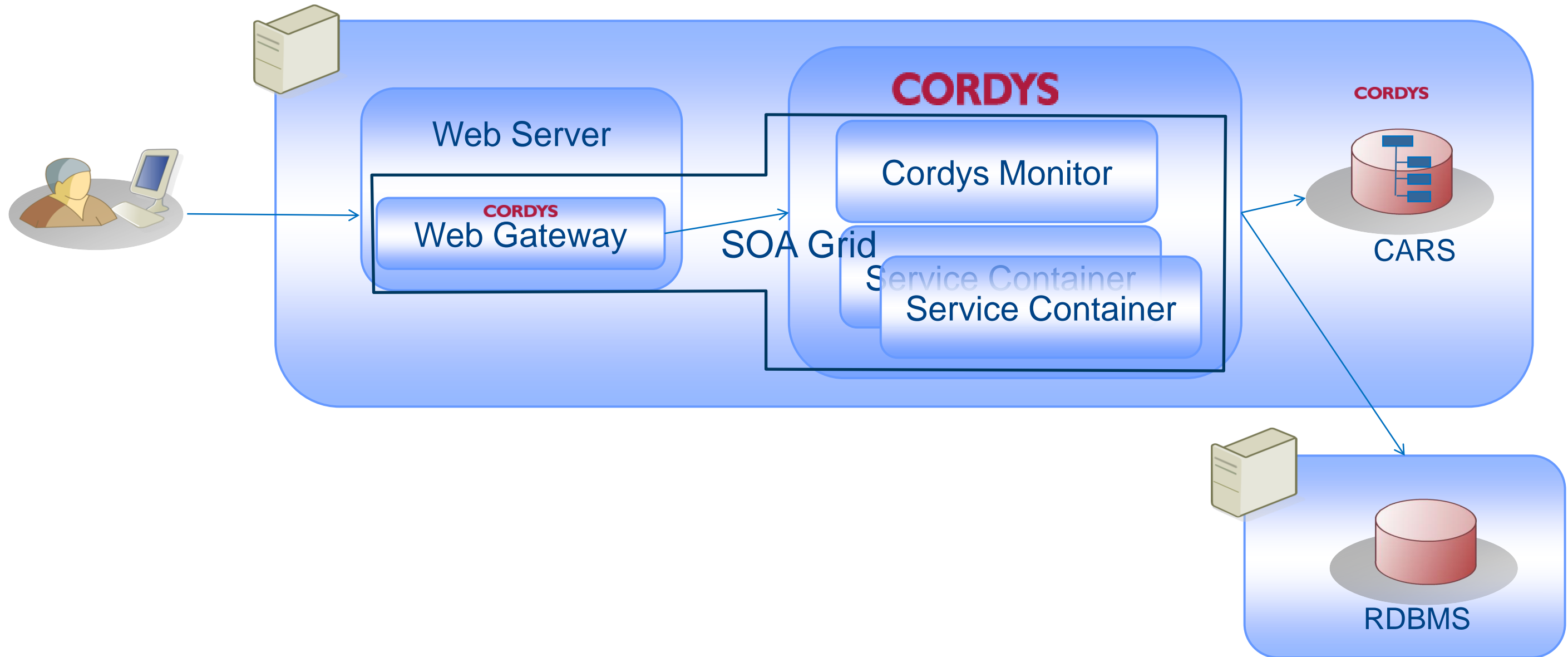
CORDYS



Message Routing

CORDYS

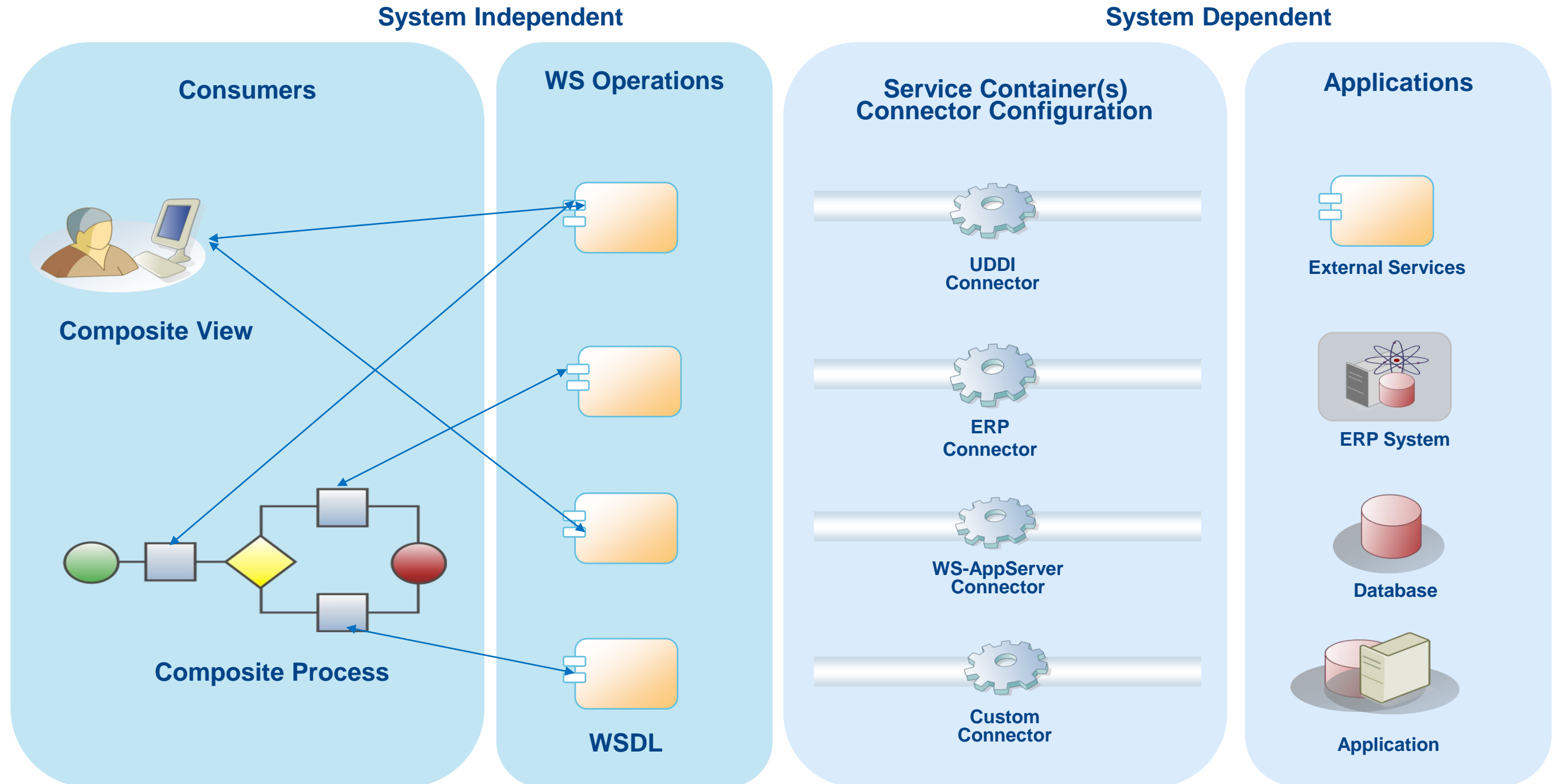




- ◆ SOAP Request Handling
- ◆ SOA Grid Components
- ◆ Routing on the SOA Grid
- ◆ Application Connectors
- ◆ Scalability

Application Connector Configuration

CORDYS



◆ Core Connectors

- ◆ Document Store
- ◆ E-mail
- ◆ FTP
- ◆ Java, DB SQL
- ◆ User Management
- ◆ UDDI
- ◆ WS-AppServer

◆ Connectors of Partners

◆ Custom Connectors

◆ IWay:

- ◆ [Community - Technology Alliance IWay](#)

- ◆ <http://www.iwaysoftware.com/>

◆ Seagull

- ◆ [Community - Technology Alliance Seagull](#)

- ◆ <http://www.seagullsoftware.com/>

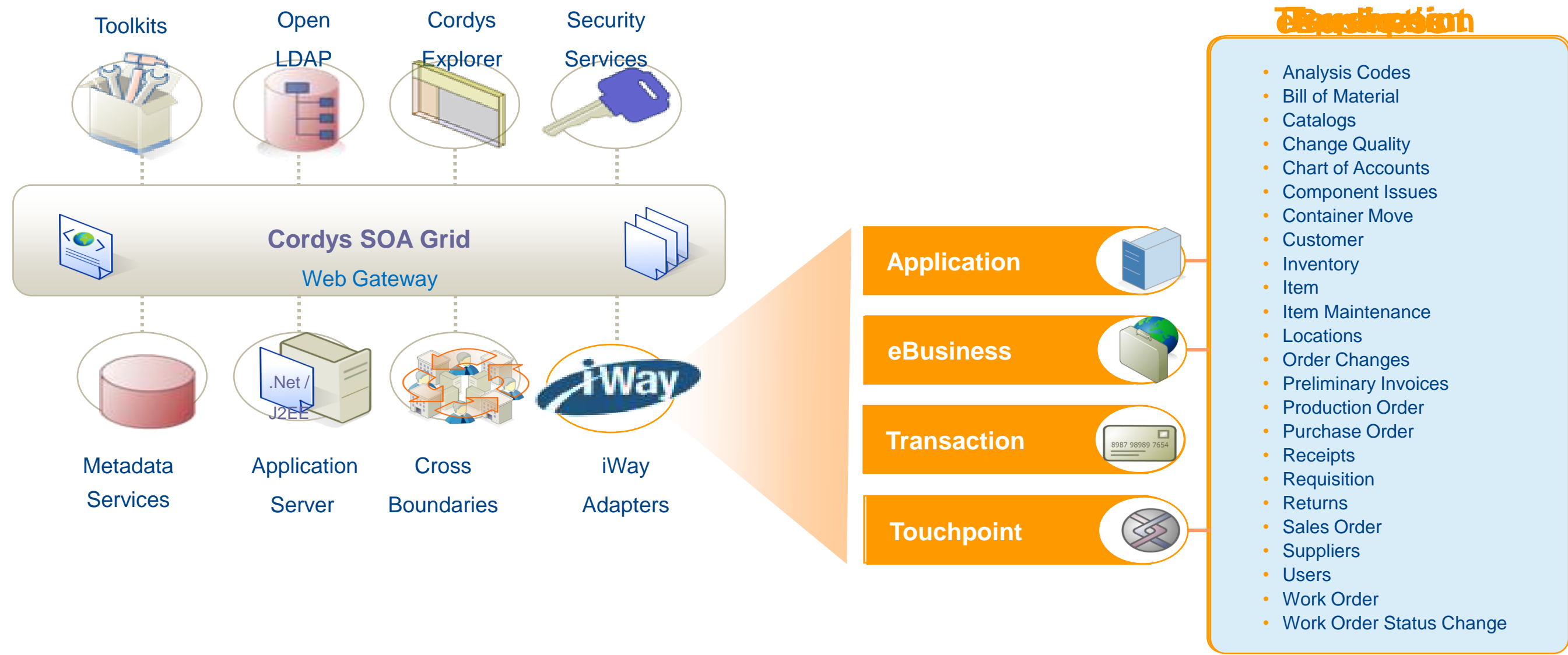
◆ Technology Alliance Home

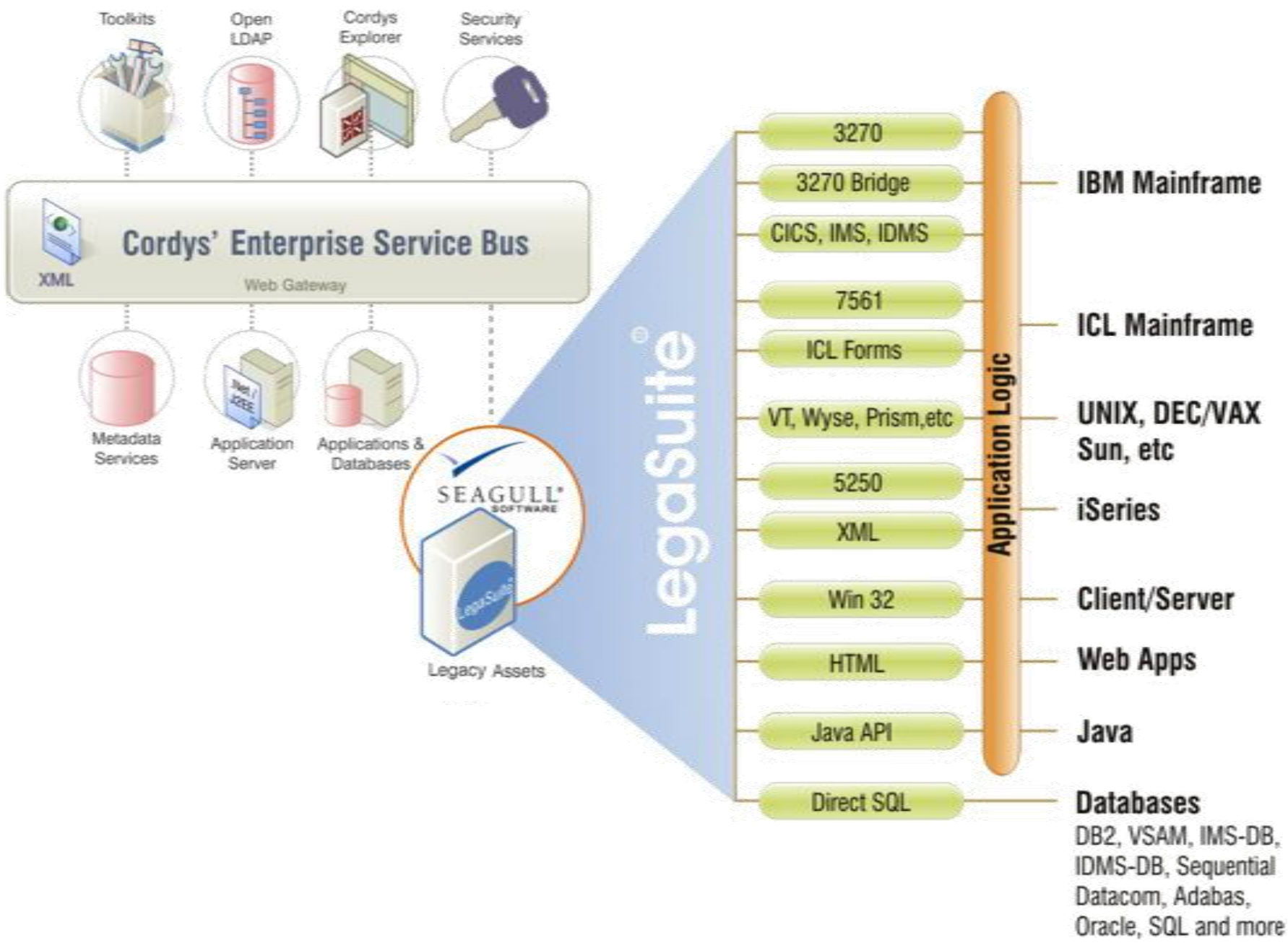
- ◆ [Community - Technology Alliance](#)

◆ Others

Partners: Cordys & iWay

CORDYS





Custom Connectors

◆ Community Connectors

- ◆ Not shipped with Cordys
- ◆ Not supported by Cordys

Community Connectors

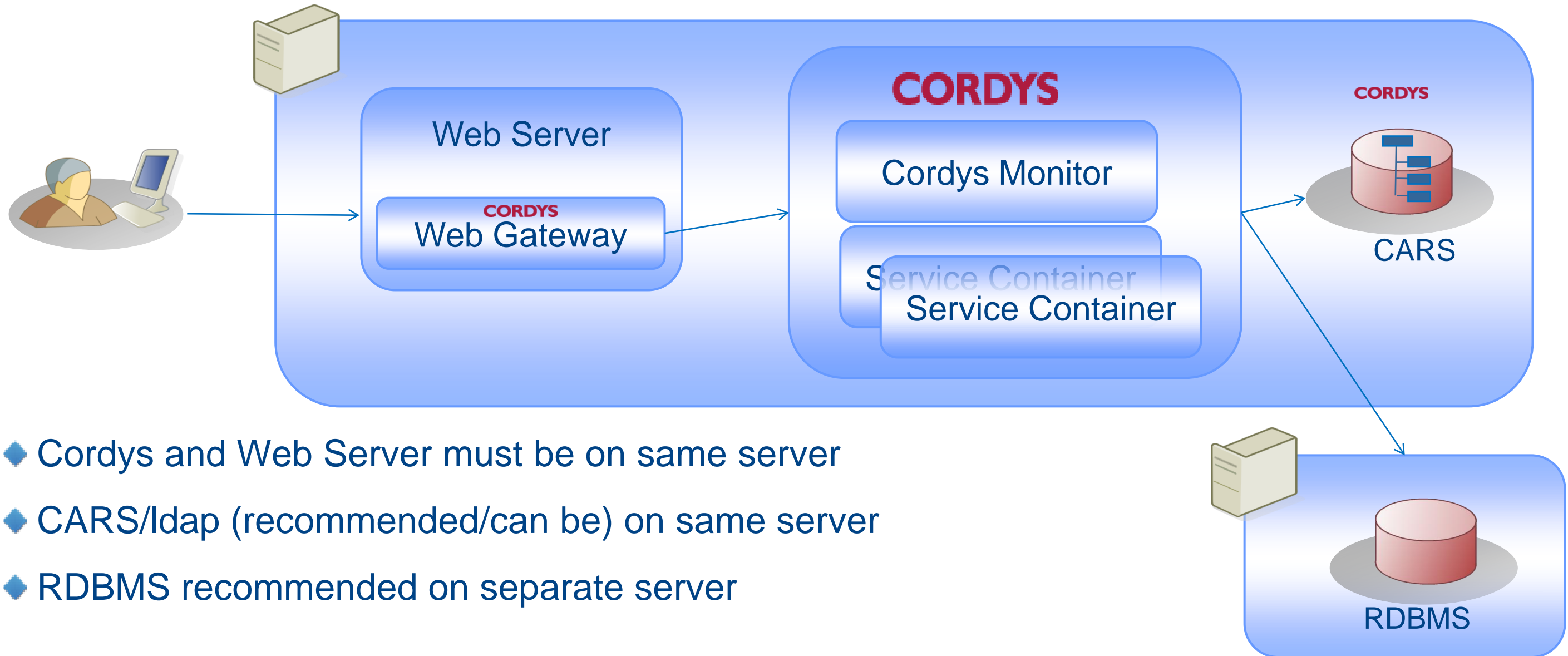
List of Community Connectors

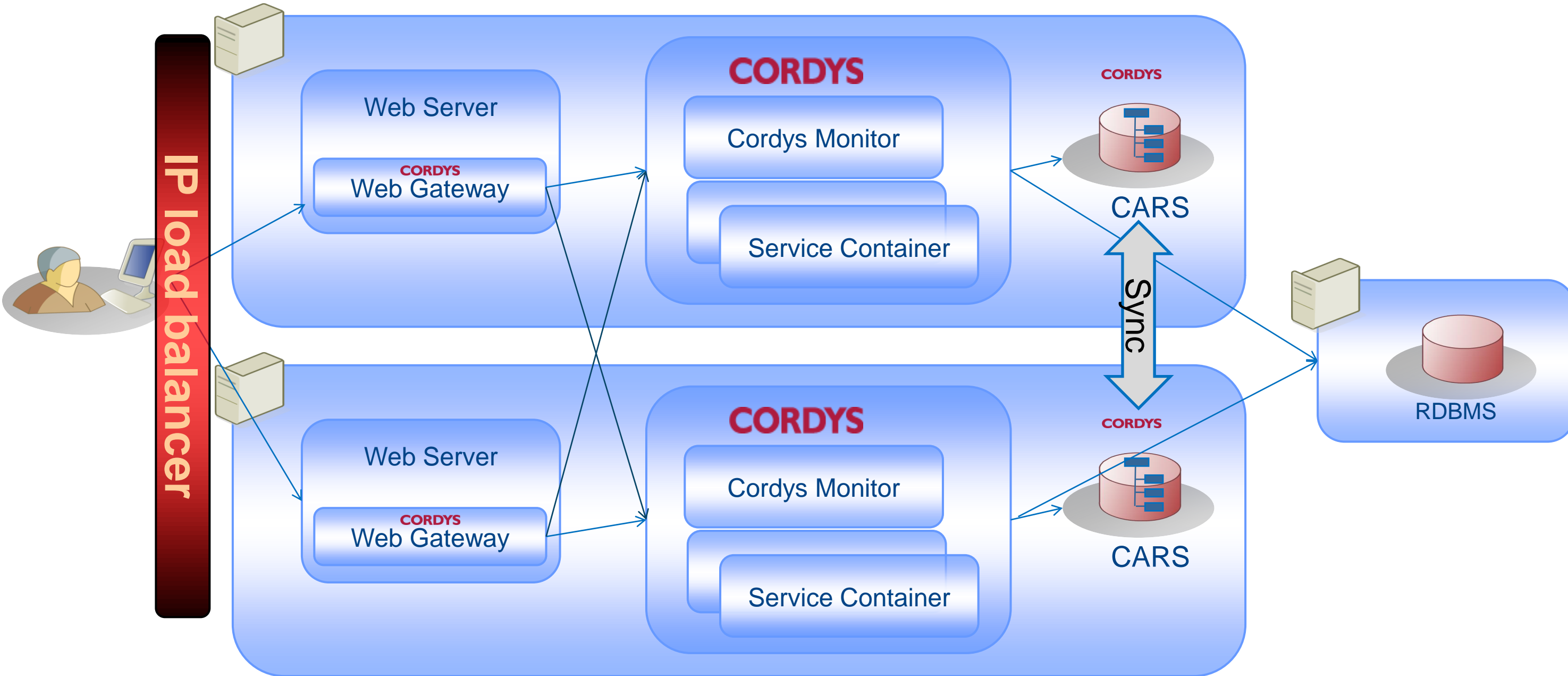
Connector	Developed by CoE NL	Open source
.NET Connector		✓
AS 400 Connector		✗
Axapta Connector		✗
BIRT Reporting Connector		✗
CODA Connector	✓	✗
COMCall Connector		✗
Command Connector	✓	✓
CSC Insurance Connector		✗
EJB Connector	✓	✓
E-mail IO Connector	✓	✓
Excel Connector		✓
Exchange Connector	✓	✓
File Connector	✓	✓
Generic LDAP connector	✓	✓
HTTP Connector	✓	✓
Jasper Report Connector		✗
JMS Connector	✓	✓
JMX Connector		✓
Oracle EBS Connector		✓
Peoplesoft Connector		✗
Process Service	✓	✗
SAP Connector	✓	✓
Script Connector	✓	✓
SFTP Connector	✓	✓
Struts Connector		✗
User Management Connector		✗
Watch Dog Connector	✓	✗
XReports	✓	✗

- ◆ SOAP Request Handling
- ◆ SOA Grid Components
- ◆ Routing on the SOA Grid
- ◆ Application Connectors
- ◆ Scalability

Single Cordys Instance

CORDYS





Thank You

Questions?

Connectivity - Screenshots

Cordys BOP 4.1 Fundamentals

CORDYS

System Resource Manager

Service Groups

Cordys Services Service

Service Containers

Properties - Cordys Services

General

JRE Configuration

Log Settings

Data Transformation Service

Business Process Management

Name

Cordys Services

Computer Name

cordysserver

Startup Type

Automatic

Request Notification TimeOut (ms)

30000

Assign OS Process

-- Select OS Process--

Number Of Attempts For Auto Start

Default

Infinite

Custom

3

Application Connectors

Data Transformation Service

Business Process Management

Name	Computer	Startup-Type	Organization	Status	Process-ID	SOAP-Messages	Processing-Time	Last-Time	VirtualMemory-KB	ResidentMemory-KB
Cordys Services	cordysserver	Automatic	Organization1	started	5263	0	0	0	733904	69932
Auditing	cordysserver	Manual	system							
Business Activity Monitor	cordysserver	Automatic	system	started	5044	0	0			
Business Process Management	cordysserver	Automatic	system	started	4562	0	0			
CoBOC	cordysserver	Automatic	system	started	4562	0	0			
Collaborative Workspace	cordysserver	Automatic	system	started	4836	258	14511	3	1260384	122472
Data Transformation	cordysserver	Automatic	system	started	4562	0	0	0	720556	61996
Event Handling	cordysserver	Automatic	system	started	4579	70	1704	26	716856	62636
Expense Claim System	cordysserver	Automatic	system	started	5269	0	0	0	716368	63740
HRM System	cordysserver	Automatic	system	started	5270	0	0	0	716504	62980
LDAP	cordysserver	Automatic	system	started	4410	2656	7976	2	714204	70408

Properties (SG/SC)

Service Groups

Service Containers

Properties (SG/SC)

CORDYS

Manage Database Configurations - Organization1

+

✕

↺

📄

<input type="checkbox"/>	Name	Description	Organization
<input type="checkbox"/>	Cordys System	Database Configuration f...	system
<input type="checkbox"/>	Cordys Logger	Database Configuration ...	system
<input type="checkbox"/>	Northwind System	Northwind System	system
<input type="checkbox"/>	HRM System	HRM System	system
<input type="checkbox"/>	Expense Claim System	Expense Claim System	system

1 Information

Information

Test Connectivity was successful.

Close

✓

📄

Name

Cordys System

Description

Database Configuration for running Cordys

JDBC

OleDb

JDBC Driver

MySQL

Driver Class

com.mysql.jdbc.Driver

Connection String

jdbc:mysql://cordysserver:3306?useUnicode=true&characterEncoding=UTF-8

JDBC Driver XA Class

com.mysql.jdbc.jdbc2.optional.MysqlXADataSource

Default Database

Cordys_System

DB User

cordys

Password

☐ Use SSL

Web Service Interfaces and Web Service Operations

CORDYS

The screenshot displays two windows from a software application. The left window, titled "Web Service Interface Properties - Northwind.Demo", contains the following fields:

- ISV Package/Organization:** Academy Cordys Fundamentals
- Service Group:** Northwind System Service
- Implementation Class:** com.cordys.cpc.bsf.connector.BsfConnector
- Implementation Type:** (empty field)
- Namespace:** http://schemas.academy.com/northwind/demo
- Web Service Interface DN:** cn=Northwind.Demo,cn=Academy Cordys Fundamentals,cn=cordys,cn=defaultInst,o=cordys.com

The right window, titled "Web Service Operations", shows a list of web service operations. A context menu is open over the "GetCategoriesObject" operation, displaying the following options:

- Delete
- Test
- Implementation
- Show WSDL
- Security
- Publish To UDDI Registry

The list of operations in the right window includes:

- Customers.xsd
- Employees.xsd
- EmployeeTerritories.xsd
- GetCategoriesObject
- GetCategoriesObject
- GetCustomerCustomerDemo
- GetCustomerCustomerDemo
- GetCustomerCustomerDemo
- GetCustomerCustomerDemoObjectsForCustomerTypeID
- GetCustomerDemographicsObject
- GetCustomerDemographicsObjects
- GetCustomersObject
- GetCustomersObjects
- GetEmployeesObject
- GetEmployeesObjects
- GetEmployeesObjectsForReportsTo
- GetEmployeeTerritoriesObject
- GetEmployeeTerritoriesObjects
- GetEmployeeTerritoriesObjectsForEmployeeID
- GetEmployeeTerritoriesObjectsForTerritoryID

Implementation of a Web Service Operation

CORDYS

Custom Method - GetCustomerAddress Implementation

```
<implementation xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/" type="DBSQL">
  <constructor language="DBSQL">
    <query>SELECT "CustomerID","CompanyName","Address","City","Region","Phone" FROM "Customers" WHERE "CustomerID"=:CustomerID</query>
    <parameters>
      <CustomerID dd="Customers.CustomerID" dt="string" />
    </parameters>
  </constructor>
</implementation>
```

cn=GetCustomerAddress,cn=Northwind db.Traders,cn=method sets,o=Organization1,cn=cordys,cn=defaultInst,o=vanenburg.com

GetCategoriesObject - Implementation

```
<implementation type="BsfJavaCall">
  <class>academy.northwind.demo.Categories</class>
  <method scope="out" dt="java:academy.northwind.demo.Categories" ct="tuples" wt="true">getCategoriesObject</method>
  <parameters>
    <CategoryID dt="int" />
  </parameters>
</implementation>
```

cn=GetCategoriesObject,cn=Northwind.Demo,cn=Academy Cordys Fundamentals,cn=cordys,cn=defaultInst,o=cordys.com

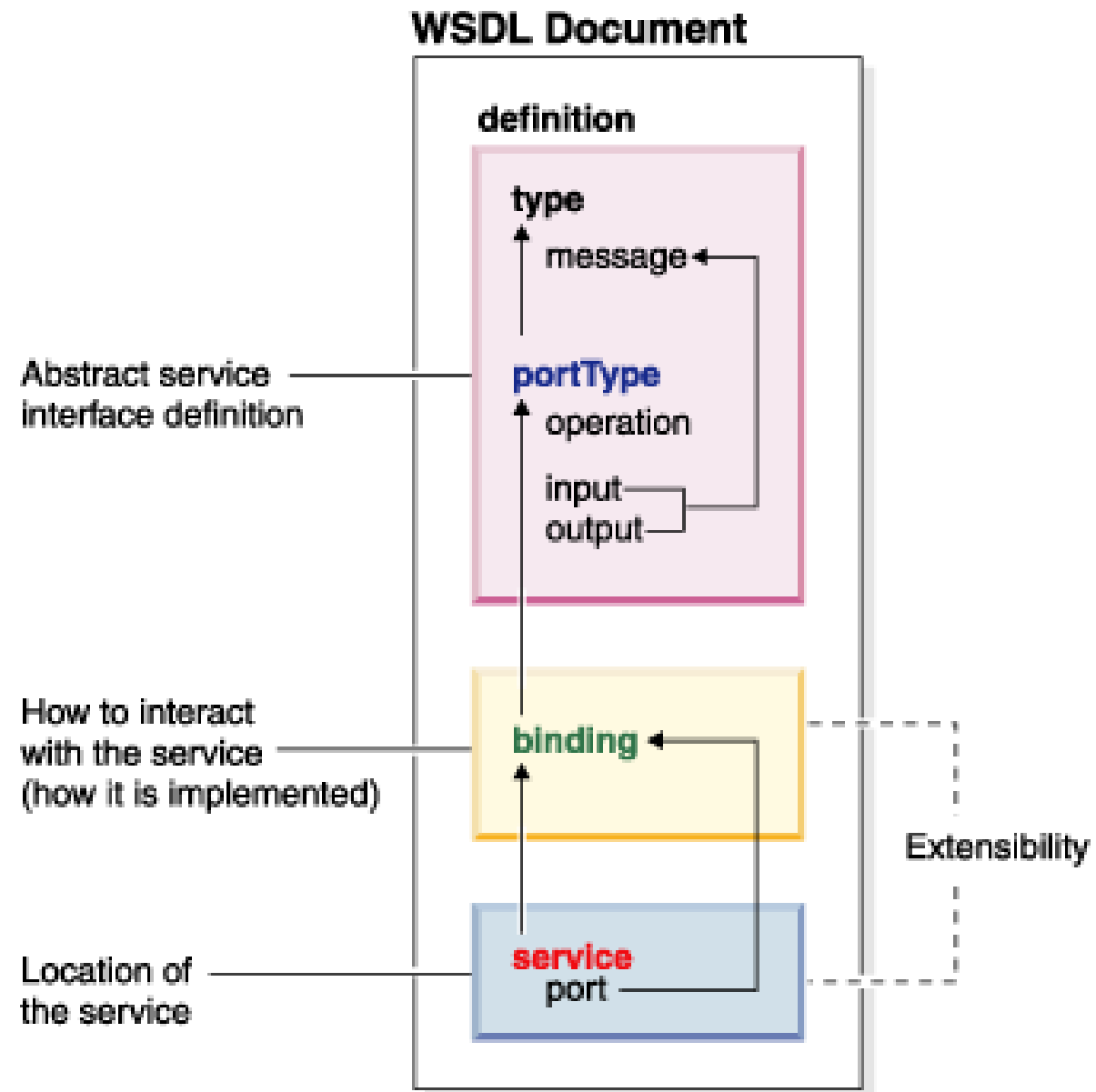


WSDL of a Web Service Operation (Interface)

CORDYS

```
calcSalaryPerPeriod - Interface
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:tns="http://schemas.academy.com/hrm.utils"
  <wsdl:types>
    <xsd:schema xmlns="http://schemas.cordys.com/xmlschema/InlineSchemaDefinition/1.0" xmlns:xsd="http://www.w3
      <xsd:element xmlns="http://schemas.cordys.com/businessobjectdocument/BusinessObjectDocument/1.0" name="ca
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element name="month13th" type="xsd:string" />
            <xsd:element name="holidayPercentage" type="xsd:decimal" />
            <xsd:element name="returnPeriod" type="xsd:string" />
            <xsd:element name="salary" type="xsd:decimal" />
            <xsd:element name="nrPeriods" type="xsd:int" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element xmlns="http://schemas.cordys.com/businessobjectdocument/BusinessObjectDocument/1.0" name="ca
        <xsd:complexType>
          <xsd:all>
            <xsd:element maxOccurs="1" minOccurs="0" name="tuple">
              <xsd:complexType>
                <xsd:all>
                  <xsd:element name="old">
                    <xsd:complexType>
                      <xsd:all>
                        <xsd:element name="calcSalaryPerPeriod">
                          <xsd:complexType>
                            <xsd:all>
                              <xsd:element name="calcSalaryPerPeriod" type="xsd:int" />
                            </xsd:all>
                          </xsd:complexType>
                        </xsd:element>
                      </xsd:all>
                    </xsd:complexType>
                  </xsd:element>
                </xsd:all>
              </xsd:complexType>
            </xsd:element>
          </xsd:all>
        </xsd:complexType>
      </xsd:element>
    </xsd:types>
  </wsdl:definitions>
```





Operation Test Tool

Soap Request

```
<SOAP:Envelope xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP:Body>
    <calcSalaryPerPeriod xmlns="http://schemas.academy.com/hrm.utils">
      <month13th>no</month13th>
      <holidayPercentage>8</holidayPercentage>
      <returnPeriod>year</returnPeriod>
      <salary>24050</salary>
      <nrPeriods>12</nrPeriods>
    </calcSalaryPerPeriod>
  </SOAP:Body>
</SOAP:Envelope>
```

☐ Transactional

☐ No Reply

Invoke

Soap Response

Number	Time	Type	Message
1	Friday, August 14, 2009 8:19:13 AM	sent	Request Message1
2	Friday, August 14, 2009 8:19:14 AM	received	Response Message1

Clear Messages

Message Viewer - Response Message1

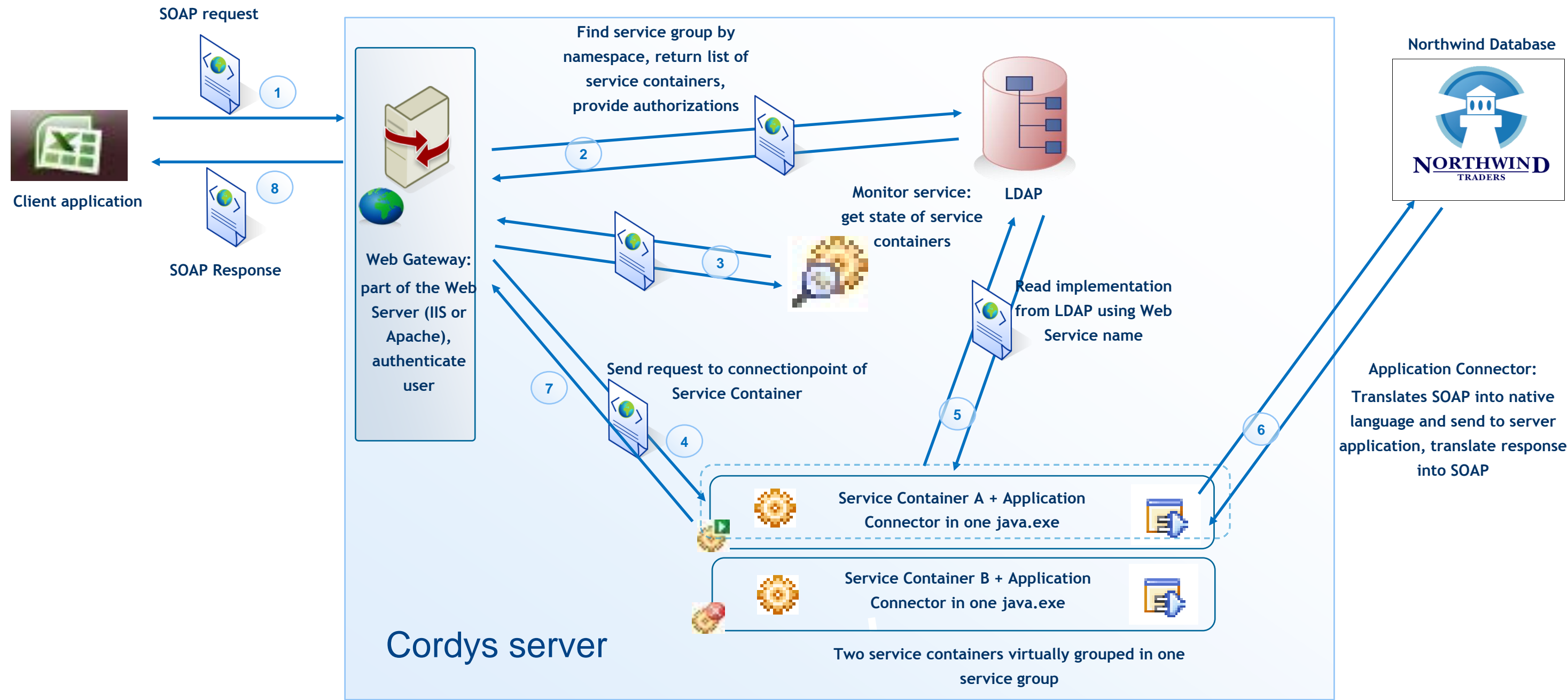
```
<data>
  <calcSalaryPerPeriodResponse xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope"
    xmlns="http://schemas.academy.com/hrm.utils">
    <tuple>
      <old>
        <calcSalaryPerPeriod>
          <calcSalaryPerPeriod>1855</calcSalaryPerPeriod>
        </calcSalaryPerPeriod>
      </old>
    </tuple>
  </calcSalaryPerPeriodResponse>
</data>
```

SOAP Request

Message Details

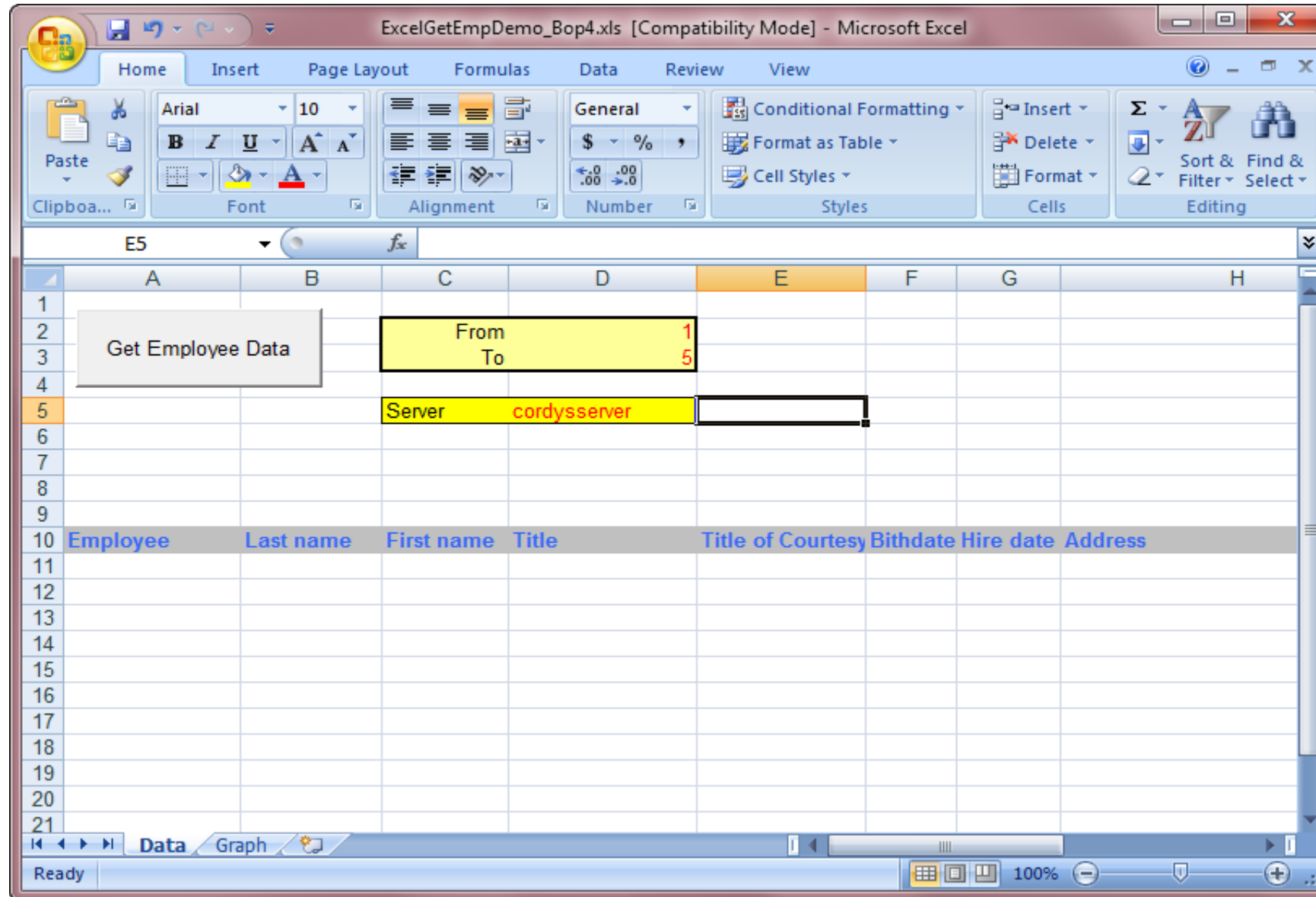
SOAP Request(s)/Response(s)

Routing



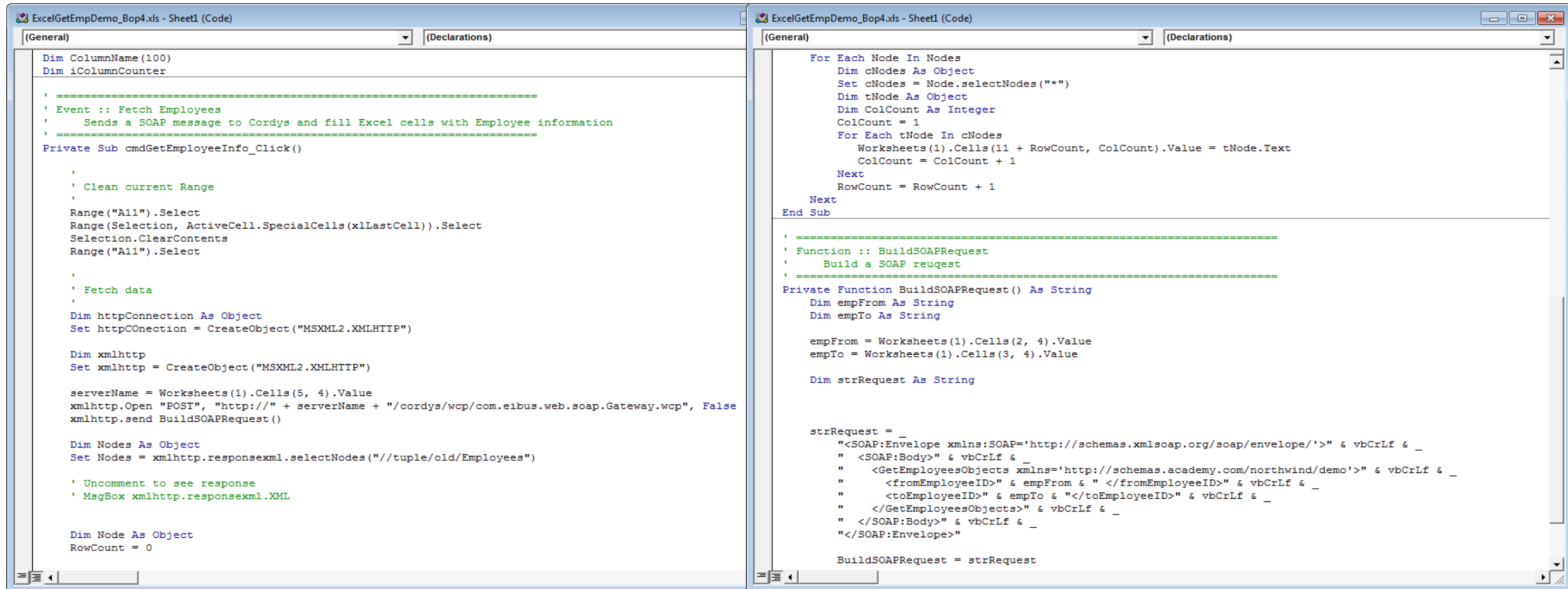
Sample Client Application

CORDYS



Excel Code Calling the Web Service

CORDYS



The image displays two side-by-side screenshots of the Microsoft Excel VBA editor, showing the code for a web service call. Both windows are titled "ExcelGetEmpDemo_Bop4.xls - Sheet1 (Code)".

The left window shows the "General" tab with the following code:

```
Dim ColumnName(100)
Dim iColumnCounter

' =====
' Event :: Fetch Employees
' Sends a SOAP message to Cordys and fill Excel cells with Employee information
' =====
Private Sub cmdGetEmployeeInfo_Click()

    '
    ' Clean current Range
    '
    Range("A11").Select
    Range(Selection, ActiveCell.SpecialCells(xlLastCell)).Select
    Selection.ClearContents
    Range("A11").Select

    '
    ' Fetch data
    '
    Dim httpConnection As Object
    Set httpConnection = CreateObject("MSXML2.XMLHTTP")

    Dim xmlhttp
    Set xmlhttp = CreateObject("MSXML2.XMLHTTP")

    serverName = Worksheets(1).Cells(5, 4).Value
    xmlhttp.Open "POST", "http://" + serverName + "/cordys/wcp/com.eibus.web.soap.Gateway.wcp", False
    xmlhttp.send BuildSOAPRequest()

    Dim Nodes As Object
    Set Nodes = xmlhttp.responsexml.selectNodes("//tuple/old/Employees")

    ' Uncomment to see response
    ' MsgBox xmlhttp.responsexml.XML

    Dim Node As Object
    RowCount = 0
```

The right window shows the "General" tab with the following code:

```
For Each Node In Nodes
    Dim cNodes As Object
    Set cNodes = Node.selectNodes("")
    Dim tNode As Object
    Dim ColCount As Integer
    ColCount = 1
    For Each tNode In cNodes
        Worksheets(1).Cells(11 + RowCount, ColCount).Value = tNode.Text
        ColCount = ColCount + 1
    Next
    RowCount = RowCount + 1
Next
End Sub

' =====
' Function :: BuildSOAPRequest
' Build a SOAP request
' =====
Private Function BuildSOAPRequest() As String
    Dim empFrom As String
    Dim empTo As String

    empFrom = Worksheets(1).Cells(2, 4).Value
    empTo = Worksheets(1).Cells(3, 4).Value

    Dim strRequest As String

    strRequest = _
        "<SOAP:Envelope xmlns:SOAP='http://schemas.xmlsoap.org/soap/envelope/'>" & vbCrLf & _
        "  <SOAP:Body>" & vbCrLf & _
        "    <GetEmployeesObjects xmlns='http://schemas.academy.com/northwind/demo'>" & vbCrLf & _
        "      <fromEmployeeID>" & empFrom & " </fromEmployeeID>" & vbCrLf & _
        "      <toEmployeeID>" & empTo & " </toEmployeeID>" & vbCrLf & _
        "    </GetEmployeesObjects>" & vbCrLf & _
        "  </SOAP:Body>" & vbCrLf & _
        "</SOAP:Envelope>"

    BuildSOAPRequest = strRequest
```

Back

```
<SOAP:Envelope xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP:Body>
    <GetEmployeesObjects xmlns="http://schemas.academy.com/northwind/demo">
      <fromEmployeeID>1</fromEmployeeID>
      <toEmployeeID>5</toEmployeeID>
    </GetEmployeesObjects>
  </SOAP:Body>
</SOAP:Envelope>
```



Finding the Service Group and Service Container(s)

CORDYS

The screenshot shows the LDAP Explorer application window. The left pane displays a tree view of the directory structure. The right pane shows the properties of the selected 'Northwind System Service'.

LDAP Explorer
Browse and edit Cordys Directory

Tree View:

- Data Transformation
- Business Process Manager
- Collaborative Workspace
- Translation
- MDM Hub Publisher
- MDM Service
- Business Activity Monitor
- MDM Spoke Publisher
- Northwind System Service**
 - Northwind System
- HRM System Service
- Expense Claim System Service
- Mail Service
- method sets
- data sources
- Cordys WCP 1.1
- Cordys WCP 1.2

Properties - Northwind System Service

Property	Value
Security	...
cn	Northwind System Service
description	
namespace	+
value	http://schemas.academy.com/northwind/demo x
busmethodsets	+
value	cn=Northwind.Demo,cn=Academy Cordys Fundamentals,cn=cordys,cn=defaultInst,o=vanenburg x
bussoapnodeconfiguration	...
properties-definition	

Service Group Properties

CORDYS

Link Web Service Interface to a Service Group:

ServiceGroup Properties - Northwind System Service

Name:

Routing Algorithm:

Description:

☐ Protocol
☐ Payload
☐ Payload Trim

Web Service Interfaces

	Web Service In...	Organization/ ISV Pa...	Type	Namespace
<input type="checkbox"/>	Northwind.Demo	Academy Cordys Fundame...	WS-AppServer	http://schemas.academy.com/northwind/demo

Finding User Roles and Authentication Settings

LDAP Explorer

Browse and edit Cordys Directory

+

Cordys Business Activity Monitoring

+

Cordys KPI Modeler

+

Cordys BAM Modeler

+

Cordys BAM MDM Model

-

Organization1

organizational users

+

SYSTEM

+

Student1

+

Trainer

+

anonymous

+

organizational roles

+

soap nodes

+

method sets

+

data sources

+

Organization2

+

Organization3

+

Organization4

+

Organization5

Properties - Student1

Property	Value
Security	
cn	Student1
description	Student1
authenticationuser	cn=Student1,cn=authenticated users,cn=cordys,cn=default Inst,o=vanenburg.com
role	
value	cn=everyoneInOrganization1,cn=organizational roles,o=Organization1,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=organizationalAdmin,cn=Cordys ESBServer,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=Developing Processes Trainee,cn=Academy Cordys Developing Processes,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=Developer,cn=Cordys@Work,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=Administrator,cn=Cordys@Work,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=Expense Claim Administrator,cn=Academy Expense Claim,cn=cordys,cn=default Inst,o=vanenburg.com
value	cn=Expense Claim Registration,cn=organizational roles,o=Organization1,cn=cordys,cn=default Inst,o=vanenburg.com
toolbar	
menu	
accesscontrolset	
busextension	
enable	
properties-definition	

```
<workerprocess>
  <status>Started</status>
  <problems/>
  <preference>1 </preference>
</workerprocess>
</processor>
<processor
  name="cn=Northwind System,cn=Northwind System Service,cn=soap nodes,o=system,cn=cordys,cn=defaultIn
  node="cn=Northwind System Service,cn=soap nodes,o=system,cn=cordys,cn=defaultInst,o=vanenburg.com"
  transient="true">
    <workerprocess>
      <status>Started</status>
      <problems/>
      <preference>1 </preference>
    </workerprocess>
  </processor>
  <processor
    name="cn=Logging,cn=Logging,cn=soap nodes,o=system,cn=cordys,cn=defaultInst,o=vanenburg.com"
    node="cn=Logging,cn=soap nodes,o=system,cn=cordys,cn=defaultInst,o=vanenburg.com"
    transient="true">
```



Properties - Northwind System connectionpoint

Property	Value
Security	...
cn	Northwind System connectionpoint
description	
labeleduri	socket://ac-cordysserver:55001
clientconnectionpoint	<input type="checkbox"/>
Private-Point	<input type="checkbox"/>

Implementation of GetEmployeesObjects

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The screenshot displays two windows from the Cordys software. The top window, 'LDAP Explorer', shows a tree view of the directory structure with 'GetEmployeesObjects' selected. The right pane shows the properties of this object, including 'cn' (Get Employees Objects) and 'busmethodimplementation'. The bottom window, 'XML Editor - Edit XML of busmethodimplementation', shows the XML code for the implementation, which is a DBSQL query to select employees within a specific ID range.

LDAP Explorer - Properties - GetEmployeesObjects

Property	Value
Security	...
cn	Get Employees Objects
busmethodimplementation	...
busmethodinterface	...
busmethodwsdl	...
busmethodsingature	...
busmethodreturntype	

XML Editor - Edit XML of busmethodimplementation

```
<implementation xmlns="http://schemas.cordys.com/dbconnectors/DBSQLOperationRealization/1.0" t
  <constructor language="DBSQL">
    <query>select * from Employees where (EmployeeID BETWEEN :fromEmployeeID AND :toEmployee
    <parameters>
      <fromEmployeeID dd="Employees.EmployeeID" dt="i4" />
      <toEmployeeID dd="Employees.EmployeeID" dt="i4" />
    </parameters>
  </constructor>
</implementation>
```

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SOAP Response

CORDYS

```

- <data>
- <GetEmployeesObjectsResponse xmlns:SOAP="http://schemas.xmlsoap.org/soap/envelope/" xmlns="http://schemas.academy.com/northwind/demo" >
- <tuple>
- <old>
- <Employees>
  <EmployeeID>1</EmployeeID>
  <LastName>Davolio</LastName>
  <FirstName>Nancy</FirstName>
  <Title>Sales Representative</Title>
  <TitleOfCourtesy>Ms.</TitleOfCourtesy>
  <BirthDate>1948-12-08T00:00:00.0</BirthDate>
  <HireDate>1992-05-01T00:00:00.0</HireDate>
  <Address>507 - 20th Ave. E. Apt. 2A</Address>
  <City>Seattle</City>
  <Region>WA</Region>
  <PostalCode>98122</PostalCode>
  <Country>U SA</Country>
  <HomePhone>(206) 555-9857</HomePhone>
  <Extension>5467</Extension>
  <Photo>/9j/4AAQSkZJRgABAQEAYABgAAD//gAfTEVBRCBUZWNobm9sb2dpZXMgSW5jLiBWM $4wMQD/2wCEAAUFBQgFCAwHBwwwMCQkJDA0MDAwMDQ0NDQ0NDQ0I
  <Notes>Education includes a BA in psychology from Colorado State University in 1970. She also completed "The Art of the Cold Call." Nancy is a member of
  Toastmasters International.</Notes>
  <ReportsTo>2</ReportsTo>
  <PhotoPath>http://accweb/emmployees/davolio.bmp</PhotoPath>
</Employees>
</old>
</tuple>
+ <tuple>
+ <tuple>
+ <tuple>

```

