



Agile Business Suite Interfaces

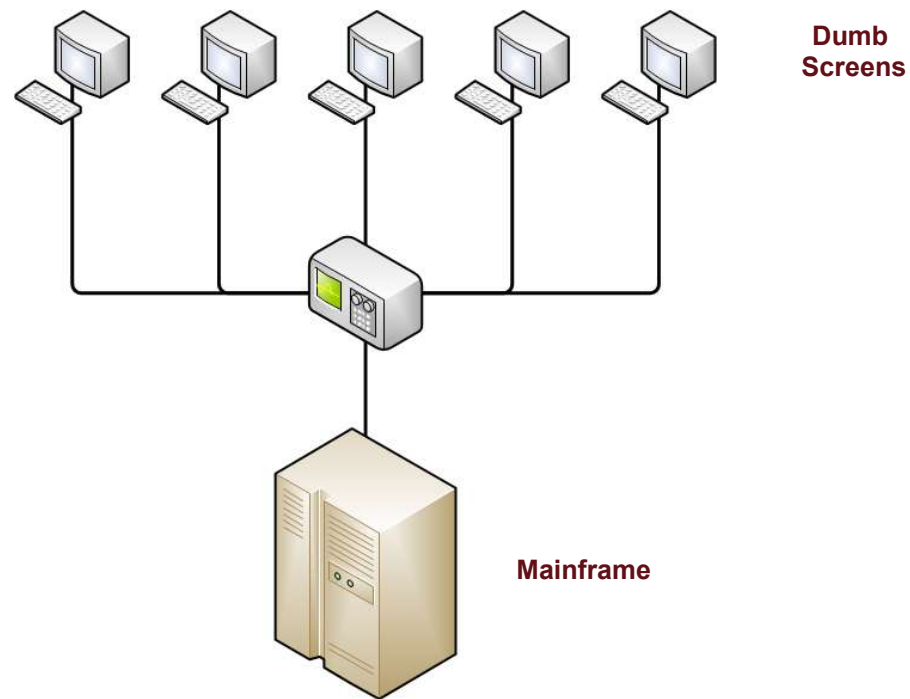
Practical Examples

Nigel.Tunncliffe@Unisys.com

Agenda

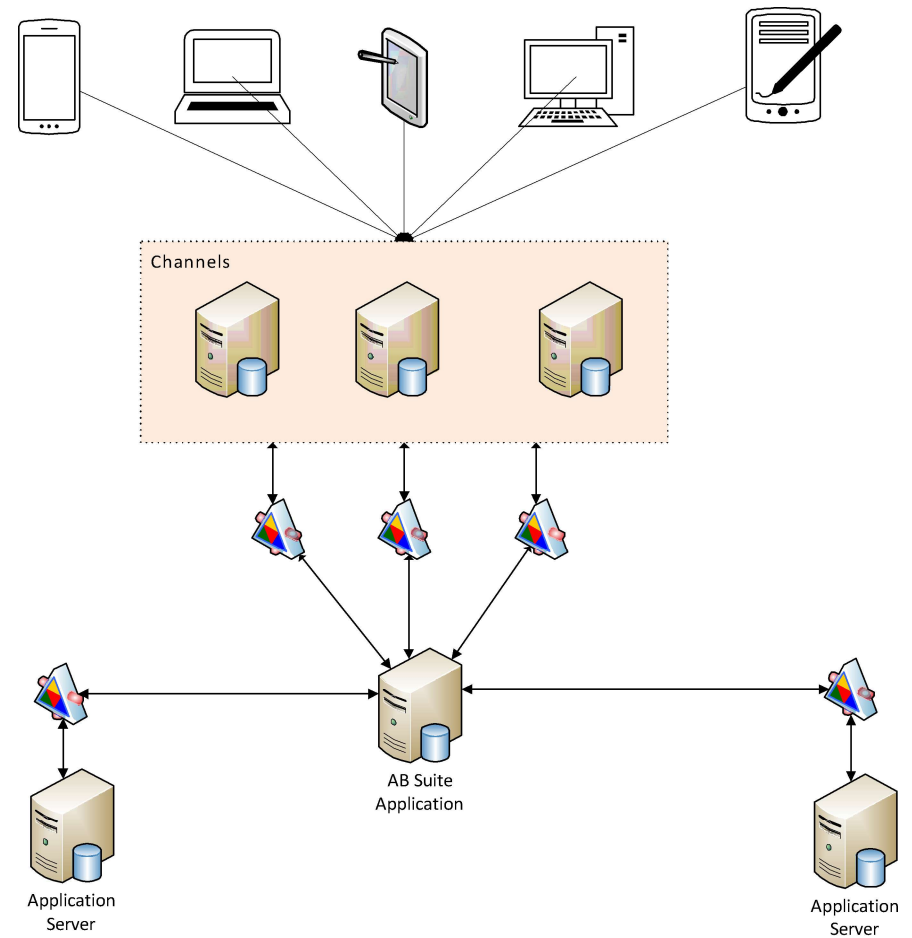
- Review potential interface requirements
- Examine both inbound and outbound options
- Show customer solutions

The good old days



Today

- Many more channels
- Agile Business Suite applications are both the consumer and provider of services





Examples

Leveraging the .Net Framework

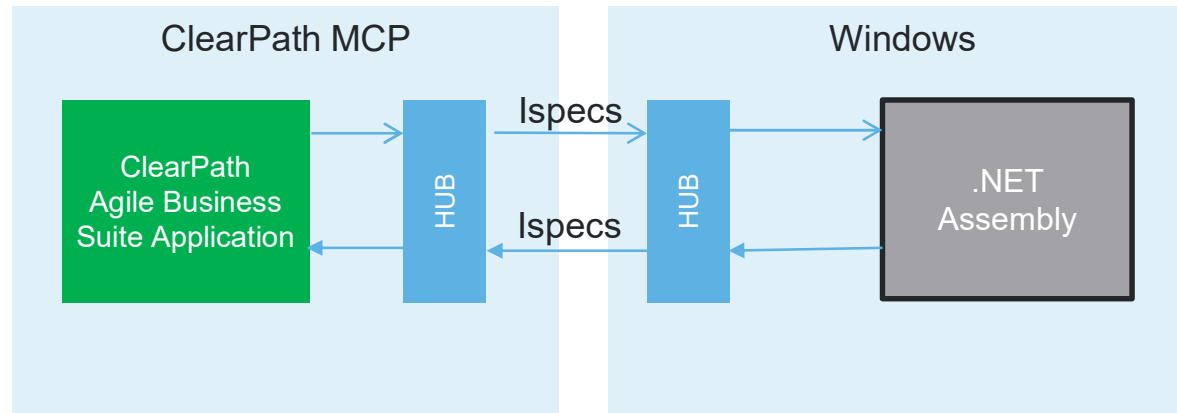
Business Problem

- Invoke .Net Framework from Agile Business Suite
 - E.g. Encrypt data

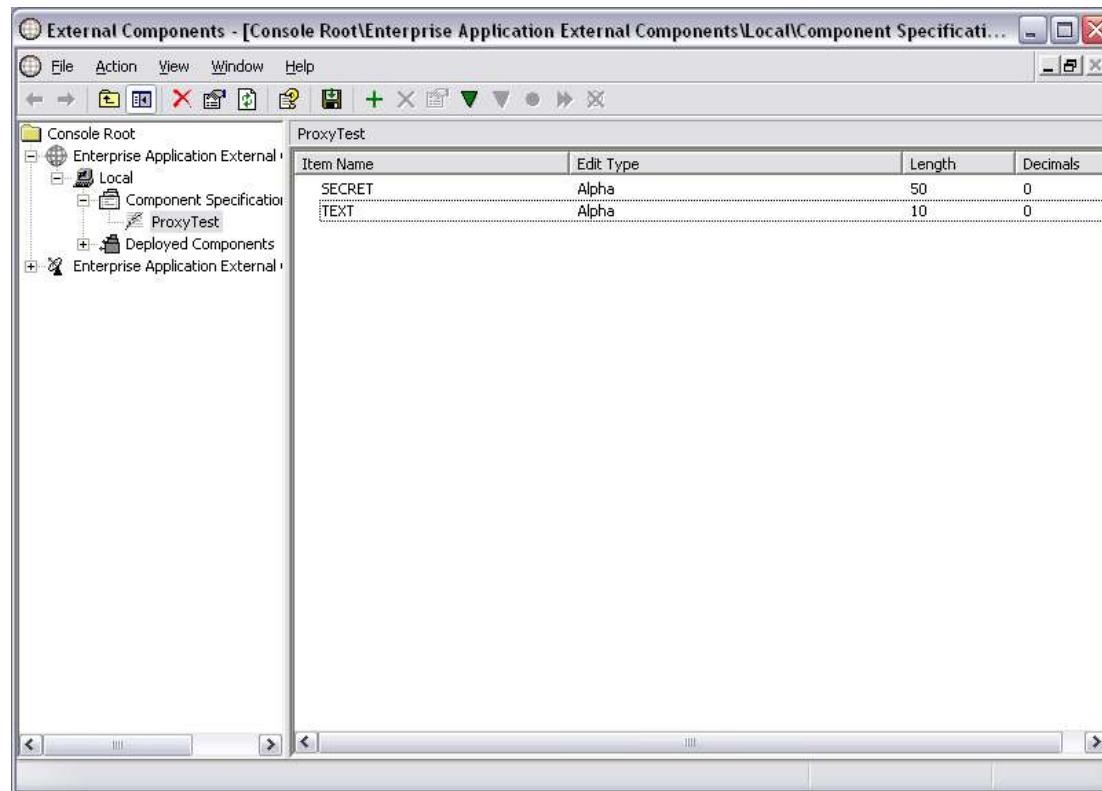
Solution

- Use Business Integrator and the HUB mechanism
- Standard feature of Agile Business Suite

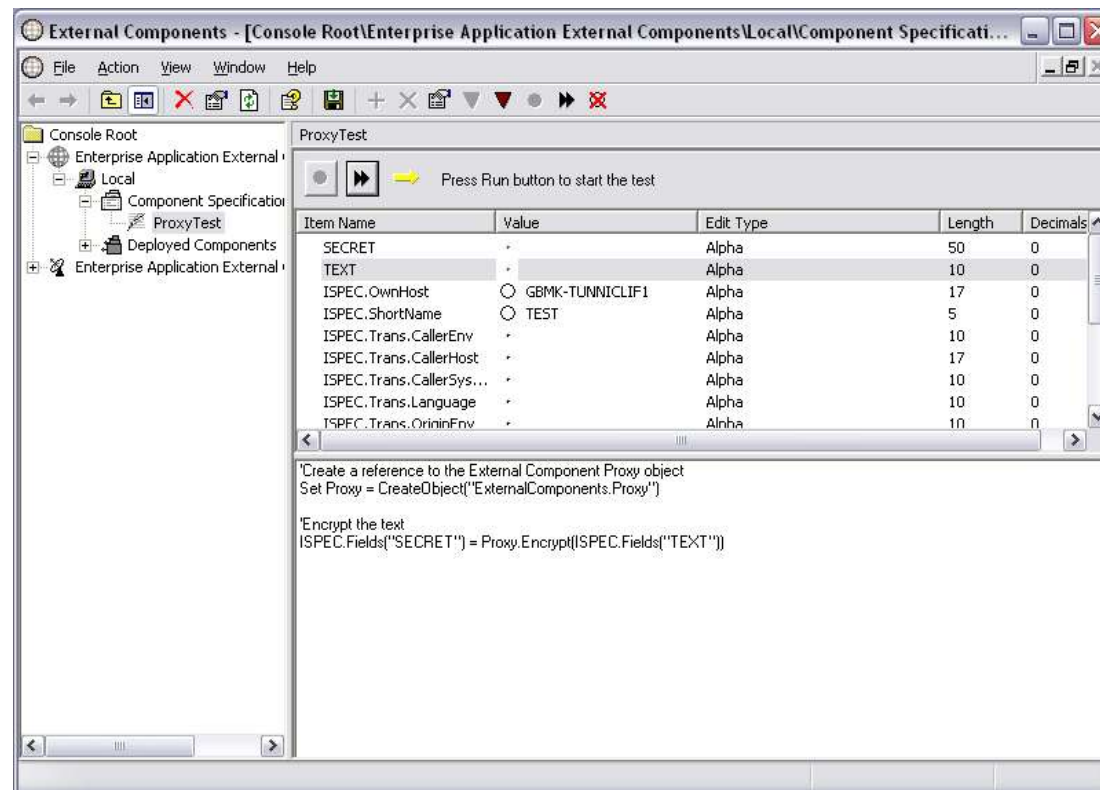
Business Integrator Architecture



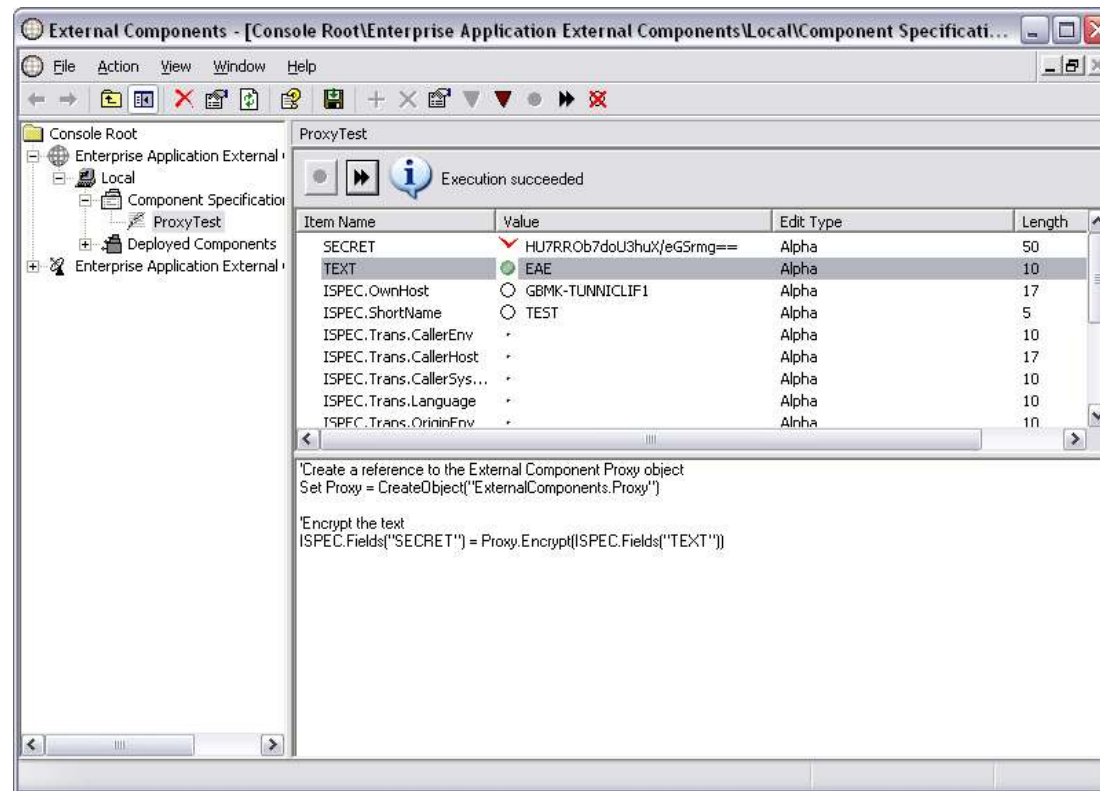
Development Process - Define the Ispec



Development Process - Create the Script



Development Process - Test the Script



Leveraging the .Net Framework

Business Problem

- Invoke .Net Framework from Agile Business Suite on Windows
 - Update custom table in application database
 - Get report status
 - Create fixed width file
 - Parse XML
 - Many more

Solution

- Write an external library in C# or VB.Net
 - Pass Agile Business Suite application variables as parameters
 - Perform any function that can be implemented in .Net

Invoking External Services

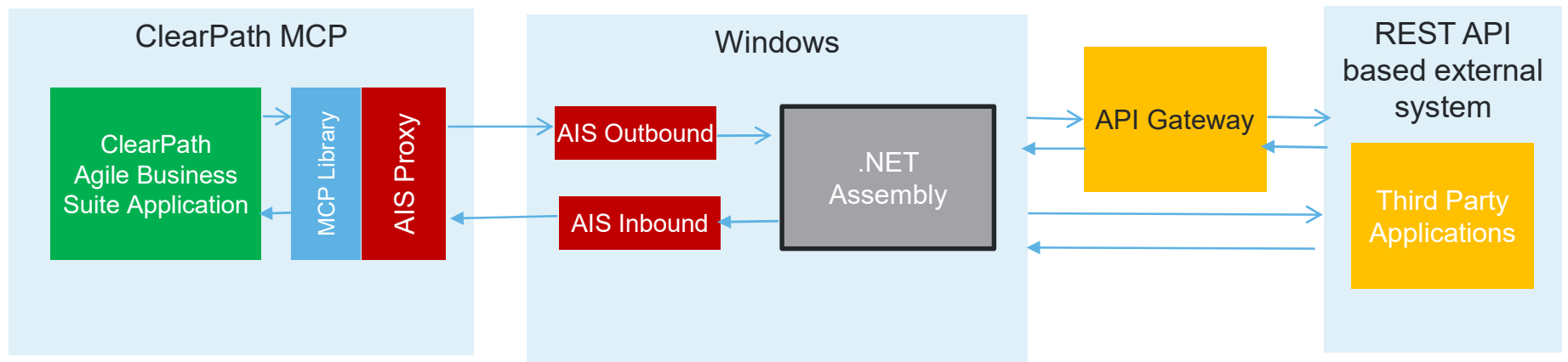
Business Problem

- Invoke an external web service from Agile Business Suite

Solution

- Use ClearPath Application Integration Services (AIS) to autogenerate proxy interface code
- Use ePortal to generate a proxy to invoke the service

Solution - ClearPath Microservices - Outbound using AIS



On-Line Banking System

Business Problem

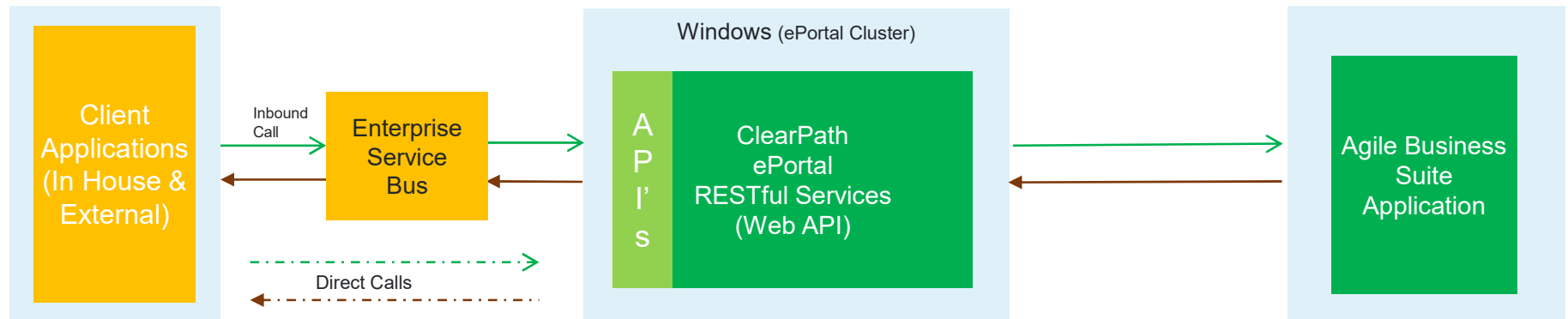
- Expose Ispec functionality as Micro-Services
- Short development timescales
- Small development team

Solution

- Use ClearPath ePortal to automatically create RESTful services from Ispec definitions
 - Automatic scaling and management using ePortal
 - Industry standard API testing tools

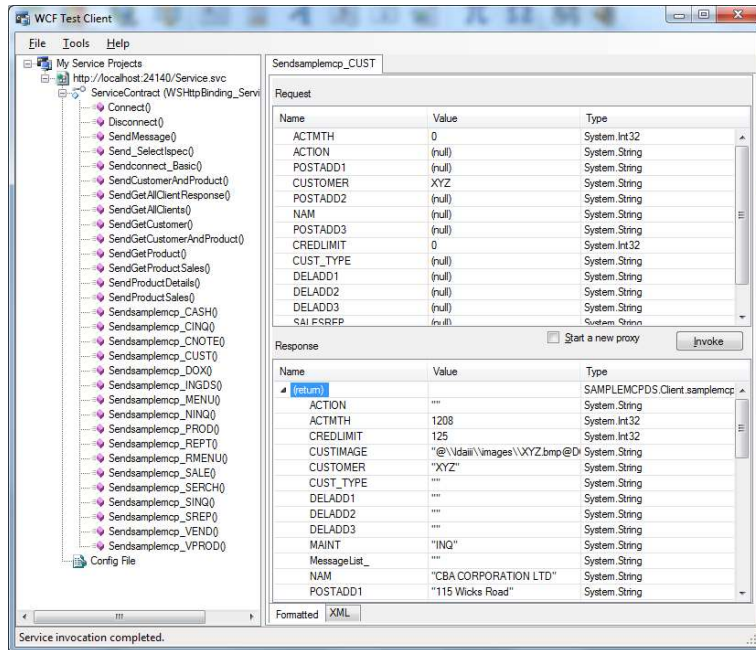
Agile Business Suite and Microservices

Inbound REST Services

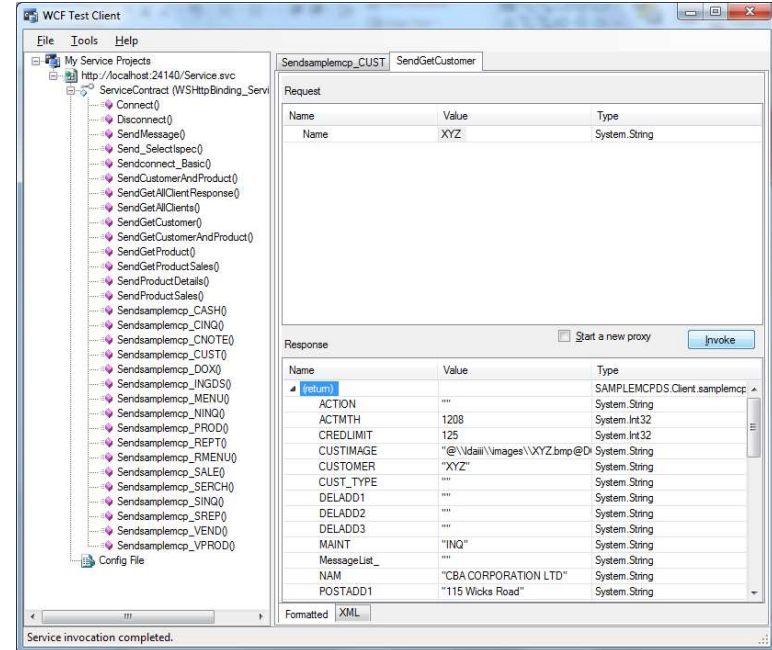


Sample Microservice

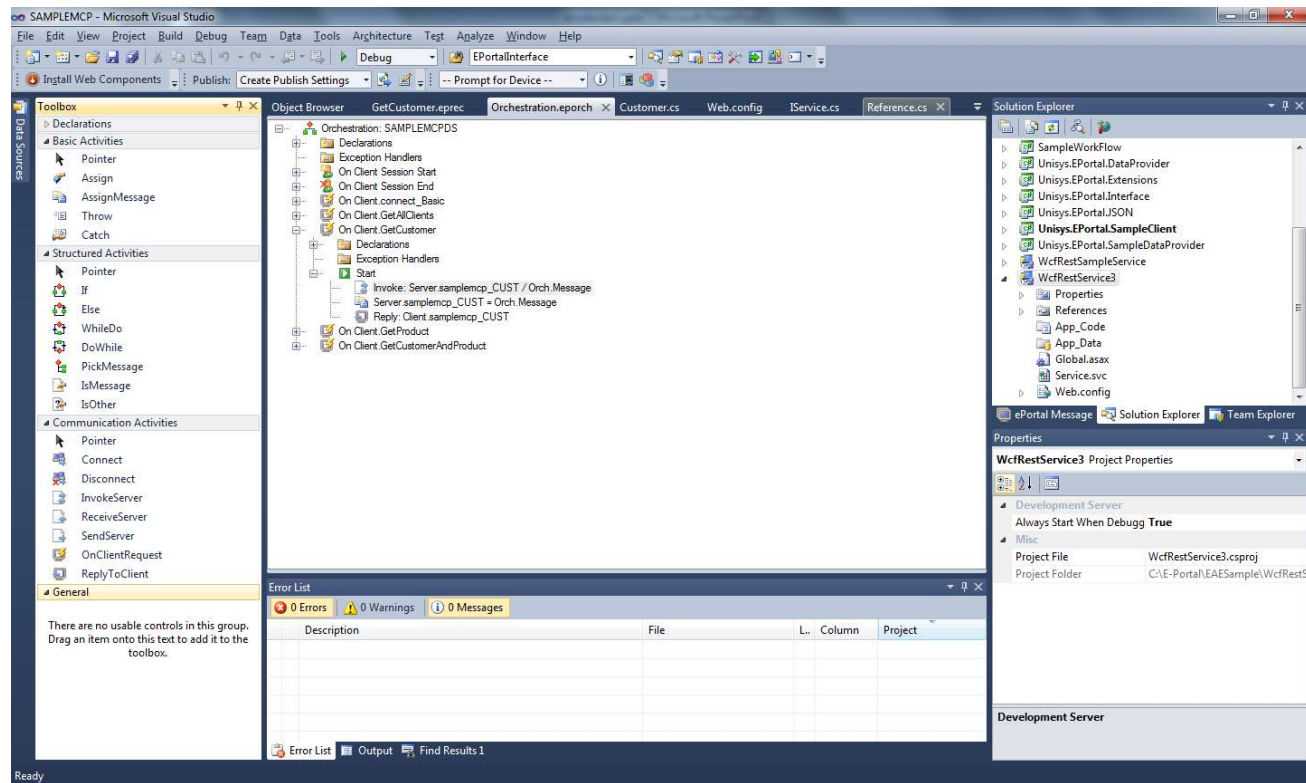
Simple Ispec Service



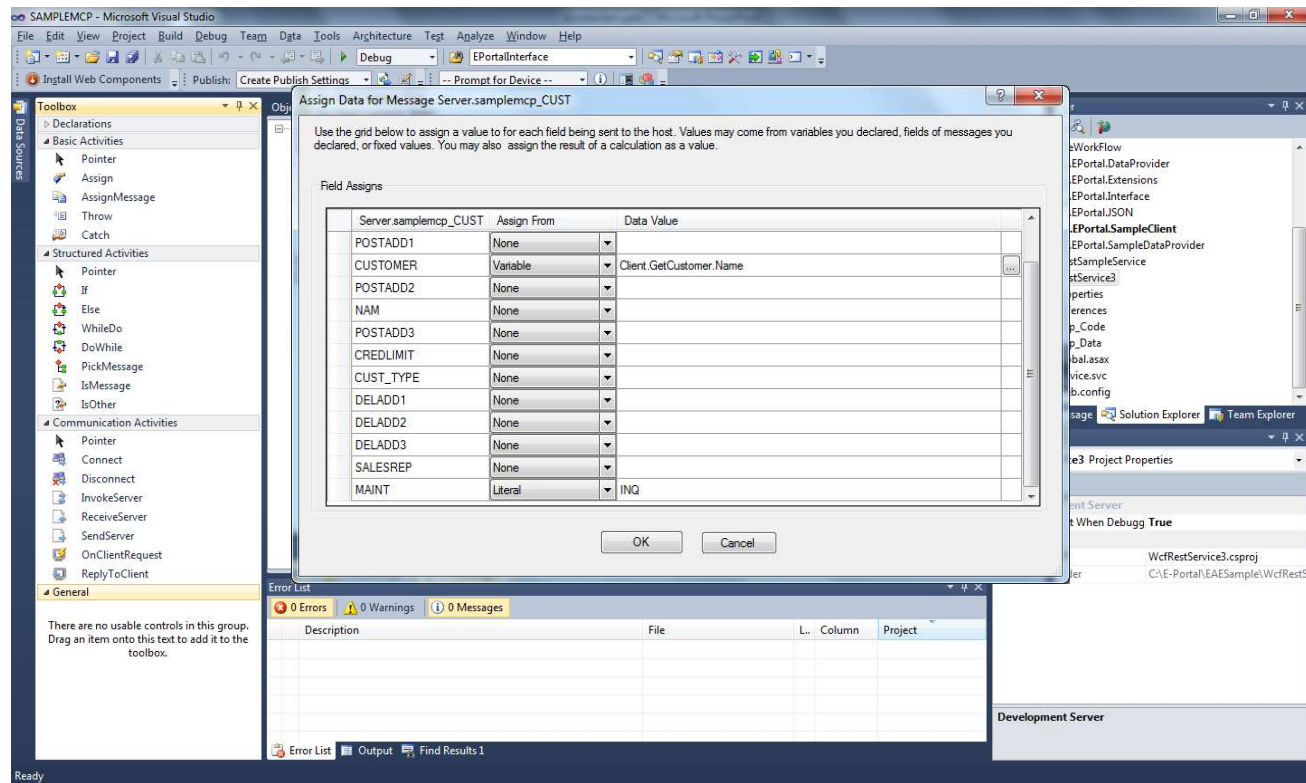
Microservice



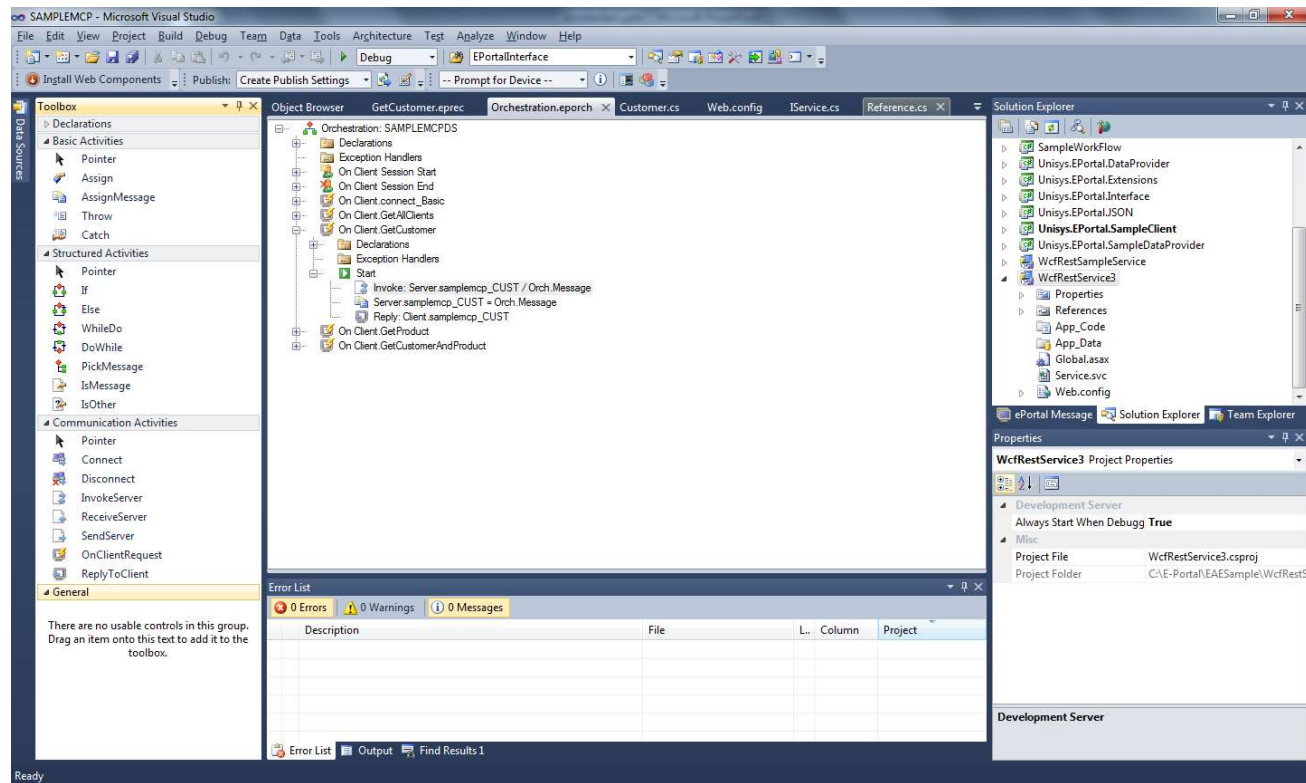
Sample Microservice



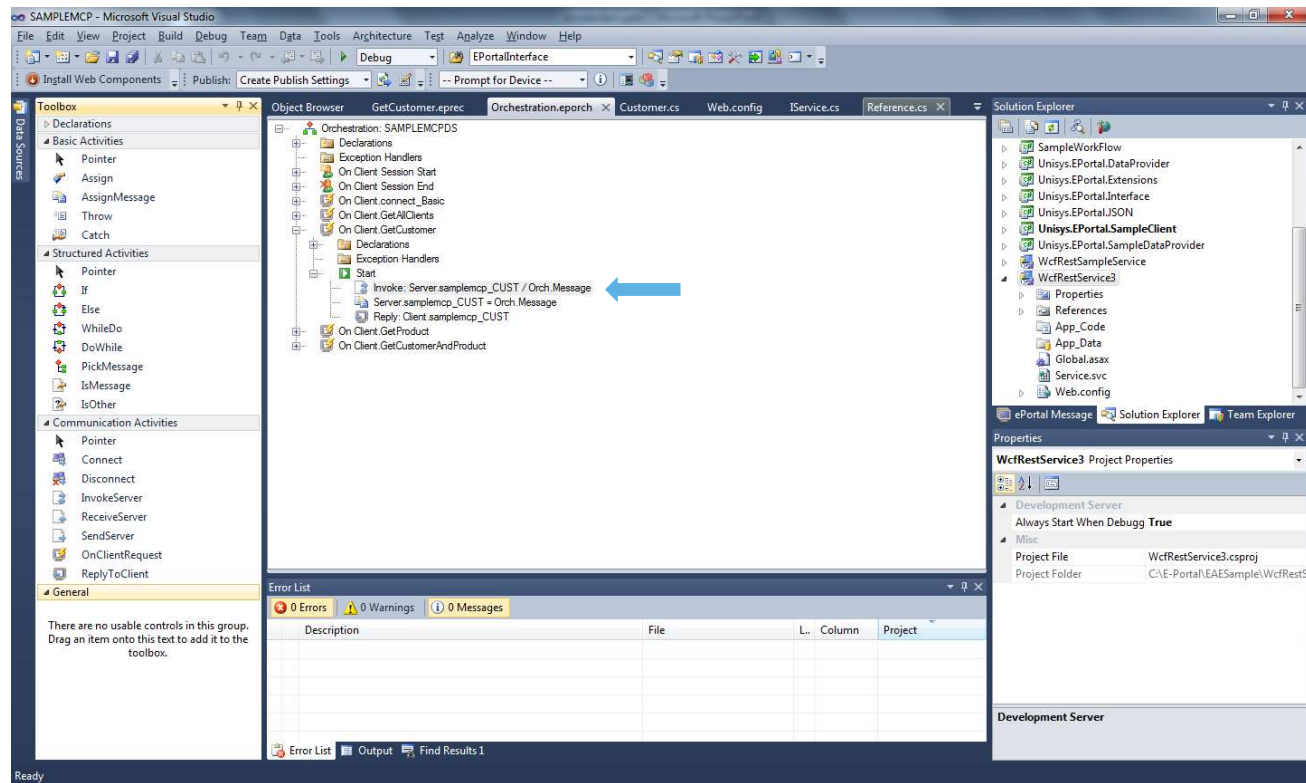
Sample Microservice



Sample Microservice

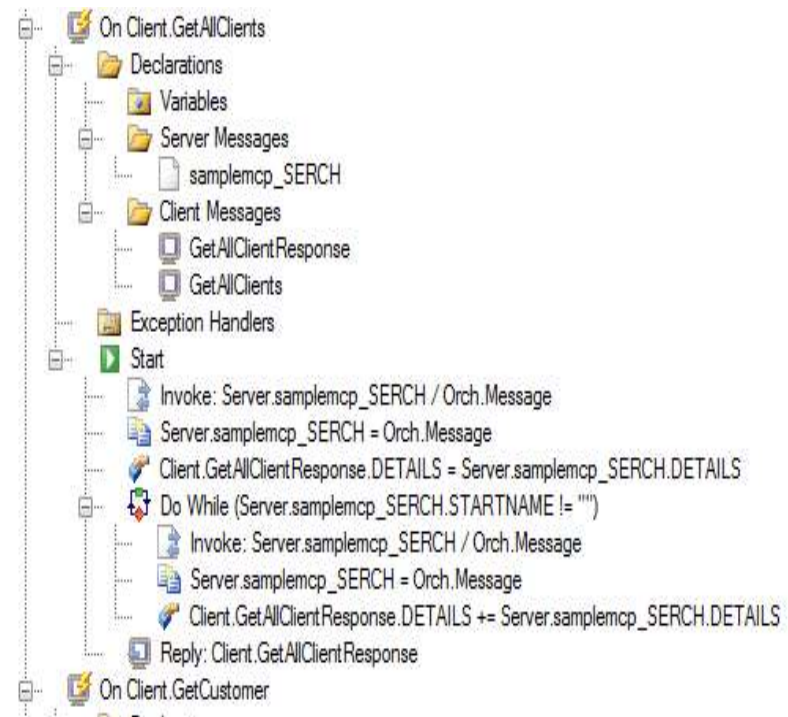


Sample Microservice

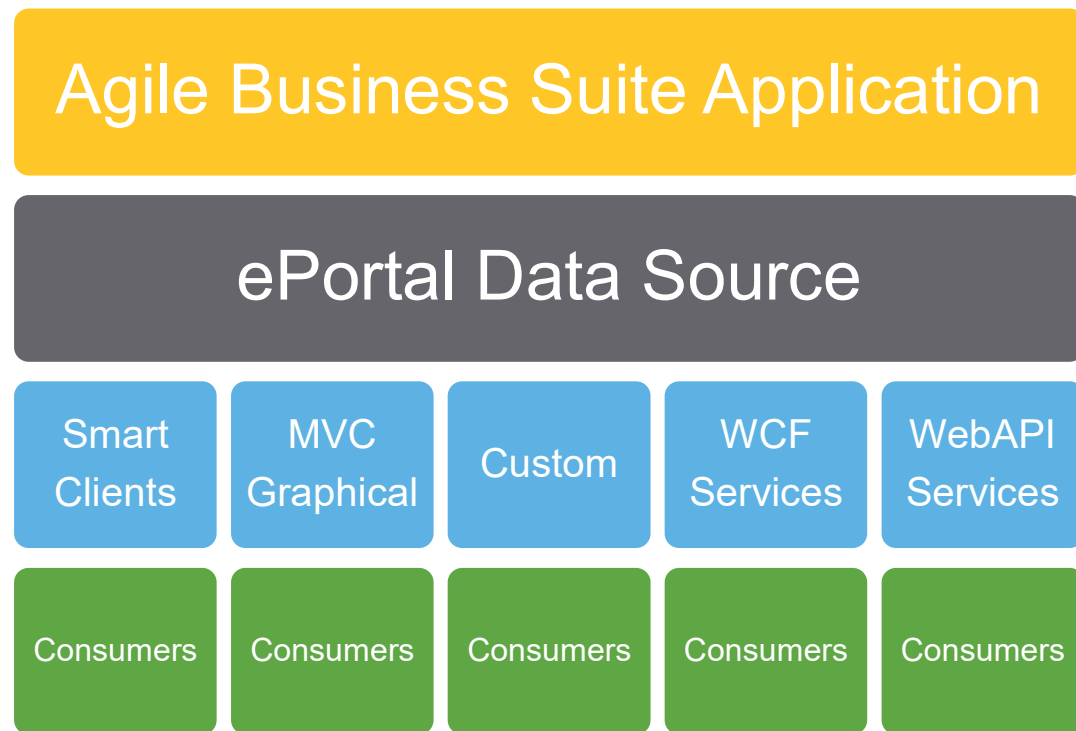


Looping Ispec Workflow

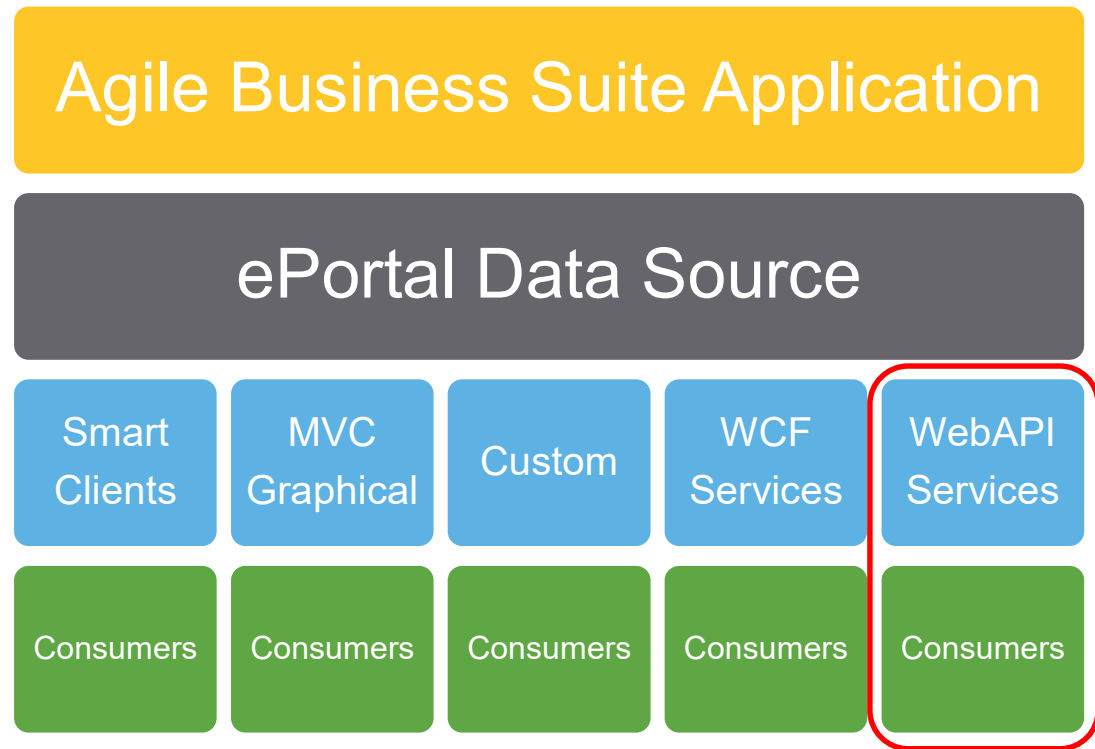
- Derive data from one or more Ispecs
- Create services using data from multiple Ispecs
- Point and Click development












ePortal Architecture



ePortal Architecture



Swagger Documentation

pet Everything about your Pets			Find out more 
POST	/pet/{petId}/uploadImage	uploads an image	
POST	/pet	Add a new pet to the store	
PUT	/pet	Update an existing pet	
GET	/pet/findByStatus	Finds Pets by status	
GET	/pet/findByTags	Finds Pets by tags	
GET	/pet/{petId}	Find pet by ID	
POST	/pet/{petId}	Updates a pet in the store with form data	
DELETE	/pet/{petId}	Deletes a pet	

Sample ePortal MVC System

The screenshot shows a web browser window with the address bar displaying `http://localhost:58331/SchoolSysDataSource/schoolsys_STU`. The browser tab is labeled "Students". The page header features the "ePortal Academy" logo. Below the header is a navigation bar with three tabs: "Student Details" (active), "Documents", and "Other Data". The main content area is titled "School System" and contains a "Student Registration" section. This section is highlighted with an orange background and includes three input fields: "Student Number:", "Student Name:", and "Student Age:" (with the value "0" entered). Below the registration form are three buttons: "Add", "Delete", and "Inquire". At the bottom left of the page, a timestamp "21:33:48:19 INPUT REQUEST" is visible.

Student 1 Details

The screenshot shows a web browser window with the URL `http://localhost:58331/SchoolSysDataSource/schoolsys_STU`. The page title is "ePortal Academy". Below the title is a navigation bar with three tabs: "Student Details" (selected), "Student1.doc", and "Other Data". The main content area has a large heading "School System" and a sub-heading "Student Registration". Below this is a registration form with three input fields: "Student Number" (containing "1"), "Student Name" (containing "Nigel Tunnicliffe"), and "Student Age" (containing "21"). At the bottom of the form are three buttons: "Add", "Delete", and "Inquire". A timestamp "17:07:25:96 INQUIRY REQUEST" is visible at the bottom left of the page.

The screenshot shows a web browser window with the URL `http://localhost:58331/SchoolSysDataSource/schoolsys_STU`. The page title is "ePortal Academy". Below the title is a navigation bar with three tabs: "Student Details", "Student1.doc" (selected), and "Other Data". The main content area has a heading "C# Programming Syllabus" and a sub-heading "[Semester and Year]". Below this is a section titled "Instructor Information" with three columns: "Instructor" (Fred Smith), "Email" ([Email address]), and "Office Location & Hours" ([Location, Hours, Days]). Below this is a section titled "General Information" with a sub-heading "Description" and a paragraph: "To replace any placeholder text (such as [Course Name] above), just click it and type." Below this is a section titled "Expectations and Goals" with a paragraph: "You might love the look of this clean, professional syllabus as much as we do. But it's also easy to get exactly the look you want. On the Design tab of the ribbon, check out the Themes, Colors, and Fonts galleries to preview options right in your document and then click to apply one you like." Below this is a section titled "Course Materials" with a sub-heading "Required Materials" and a paragraph: "Need a heading or a bullet? On the Home tab, in the Styles gallery, choose from all styles used in this syllabus." Below this is a section titled "Optional Materials" with a paragraph: "Want to add more tables to your document that look like the Course Schedule and Exam Schedule tables that follow? Nothing could be easier. On the

Student 2 Details

The screenshot shows a web browser window with the URL `http://localhost:58331/SchoolSysDataSource/schoolsys_STU`. The page title is "ePortal Academy". Below the title is a navigation bar with three tabs: "Student Details" (selected), "Student2.doc", and "Other Data". The main content area has a large heading "School System" and a sub-heading "Student Registration". Below this is a registration form with three input fields: "Student Number" (containing "2"), "Student Name" (containing "Gary Taylor"), and "Student Age" (containing "21"). At the bottom of the form are three buttons: "Add", "Delete", and "Inquire". A timestamp "17:08:51:29 INQUIRY REQUEST" is displayed at the bottom of the page.

Student Number:

Student Name:

Student Age:

17:08:51:29 INQUIRY REQUEST

The screenshot shows a web browser window with the URL `http://localhost:58331/SchoolSysDataSource/schoolsys_STU`. The page title is "ePortal Academy". Below the title is a navigation bar with three tabs: "Student Details", "Student2.doc" (selected), and "Other Data". The main content area has a heading "Agile Business Suite Programming Syllabus" and a sub-heading "[Semester and Year]". Below this is a section titled "Instructor Information" with three columns: "Instructor" (containing "Gary Taylor"), "Email" (containing "[Email address]"), and "Office Location & Hours" (containing "[Location, Hours, Days]"). Below this is a section titled "General Information" with a sub-heading "Description" and a paragraph: "To replace any placeholder text (such as [Course Name] above), just click it and type." Below this is a section titled "Expectations and Goals" with a paragraph: "You might love the look of this clean, professional syllabus as much as we do. But it's also easy to get exactly the look you want. On the Design tab of the ribbon, check out the Themes, Colors, and Fonts galleries to preview options right in your document and then click to apply one you like." Below this is a section titled "Course Materials" with a sub-heading "Required Materials" and a paragraph: "Need a heading or a bullet? On the Home tab, in the Styles gallery, choose from all styles used in this syllabus." Below this is a section titled "Optional Materials" with a paragraph: "Want to add more tables to your document that look like the Course Schedule and Exam Schedule tables that follow? Nothing could be easier. On the".

Agile Business Suite Programming Syllabus
[Semester and Year]

Instructor Information

Instructor	Email	Office Location & Hours
Gary Taylor	[Email address]	[Location, Hours, Days]

General Information

Description

To replace any placeholder text (such as [Course Name] above), just click it and type.

Expectations and Goals

You might love the look of this clean, professional syllabus as much as we do. But it's also easy to get exactly the look you want. On the Design tab of the ribbon, check out the Themes, Colors, and Fonts galleries to preview options right in your document and then click to apply one you like.

Course Materials

Required Materials

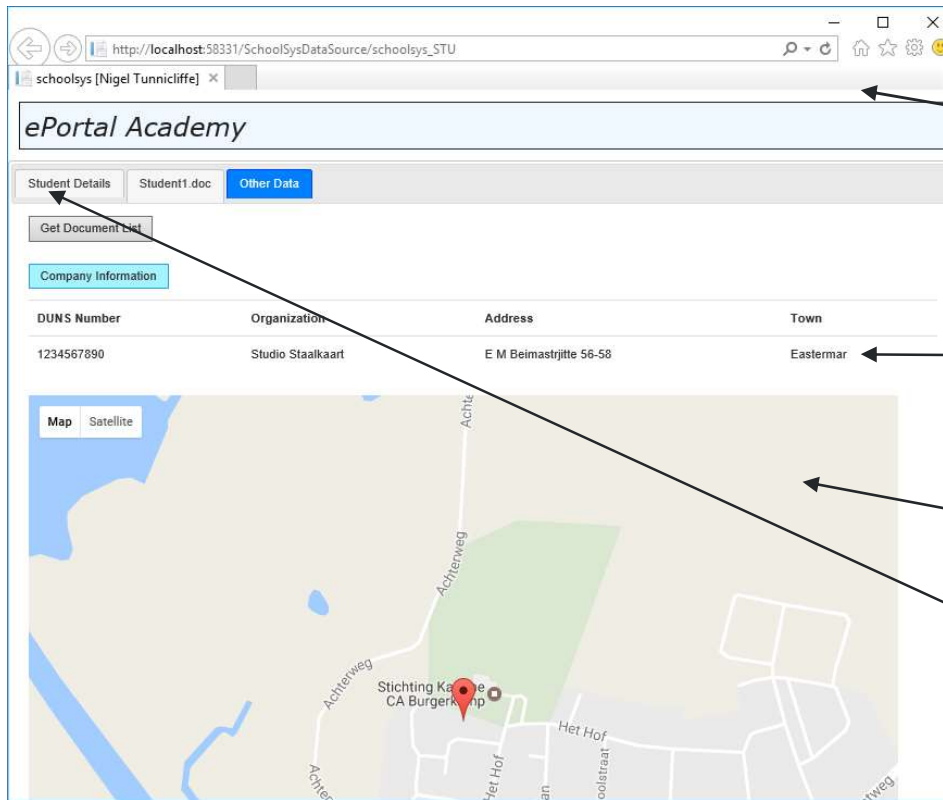
Need a heading or a bullet? On the Home tab, in the Styles gallery, choose from all styles used in this syllabus.

- Click here to add text.
- Click here to add text.

Optional Materials

Want to add more tables to your document that look like the Course Schedule and Exam Schedule tables that follow? Nothing could be easier. On the

ePortal MVC Application



WinForm Interface

The screenshot displays a WinForm application window titled "SchoolSys on LocalHost". The main area features a large heading "School System" and a section titled "Student Registration". Below this, there is a large orange rectangular area containing three input fields: "Student Number:" with the value "1", "Student Name:" with the value "Nigel Tunncliffe", and "Student Age:" with the value "021". At the bottom of this orange area are three buttons: "Add", "Delete", and "Inquire". To the right of the main area is a sidebar titled "Student1.docx" containing a document titled "C# Programming Syllabus". The document content includes sections for "Instructor Information", "General Information", and "Course Materials". At the bottom of the sidebar is a "Send" button.

STU T00000217APR17

School System

Student Registration

Student Number: 1

Student Name: Nigel Tunncliffe

Student Age: 021

Add Delete Inquire Documents

C# Programming Syllabus

[Semester and Year]

Instructor Information

Instructor	Email	Office Location & Hours
Fred Smith	[Email address]	[Location, Hours, Days]

General Information

Description

To replace any placeholder text (such as [Course Name] above), just click it and type.

Expectations and Goals

You might love the look of this clean, professional syllabus as much as we do. But it's also easy to get exactly the look you want. On the Design tab of the ribbon, check out the Themes, Colors, and Fonts galleries to preview options right in your document and then click to apply one you like.

Course Materials

Required Materials

Need a heading or a bullet? On the Home tab, in the Styles gallery, choose from all styles used in this syllabus.

• Click here to add text.

Name	Value
_TOP_LINE_	STU T00000217APR17
ACTMTH	1704
_UserMAINT	INQ
STUDENT	1
NAM	Nigel Tunncliffe
Age	021

Send

Leverage Agile Business Suite application

Business Problem

- Invoke Agile Business Suite method from .Net application
 - E.g. Validate Account Number

Solution

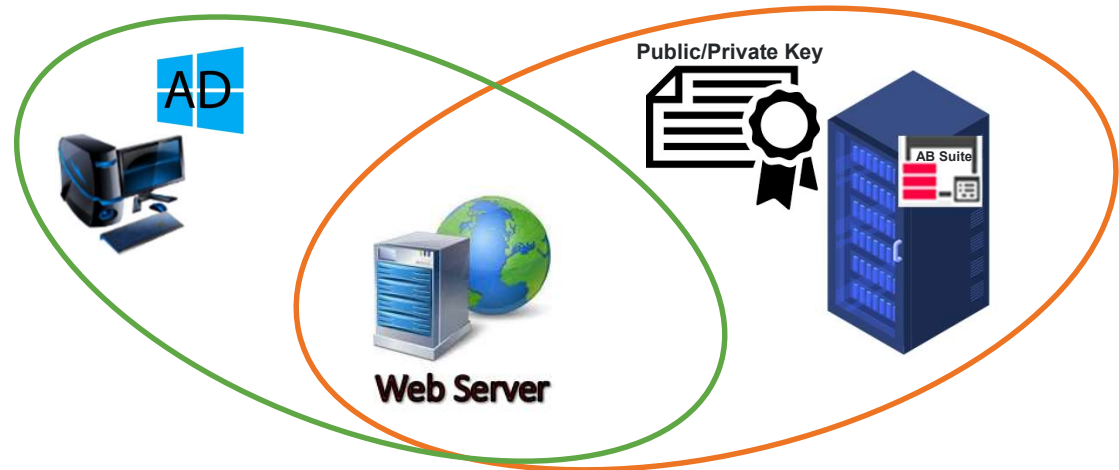
- Expose method as a 'Public Segment Method' and invoke via Client Tools
 - Less overhead than the Ispec cycle
 - Built into ePortal 11.0 and above
- Use Application Integration Services (AIS)

Single Sign On (SSO)

- Problem statement:
 - Clients did not want to log on to workstation and Application
 - Current implementation also required Host level User ID and Password management
 - For Auditing Application had to be able to Identify end user
 - Application runs on Windows and MCP – Client is ASP.Net solution
- Solution SSO
 - But
 - Both Windows and MCP Clients complicated things
 - Could not assume Windows Active Directory available end to end
 - No COTS based SSO solution for AB Suite

SSO Approach

- First Understand what SSO really means
 - In one word Trust
 - Its about trusting that the session is initiated by someone you trust and so you can trust the information they supply
- Solution
 - Active Directory (AD) for Workstation/WebServer trust
 - Public/Private Key Certificate for WebServer/Host trust

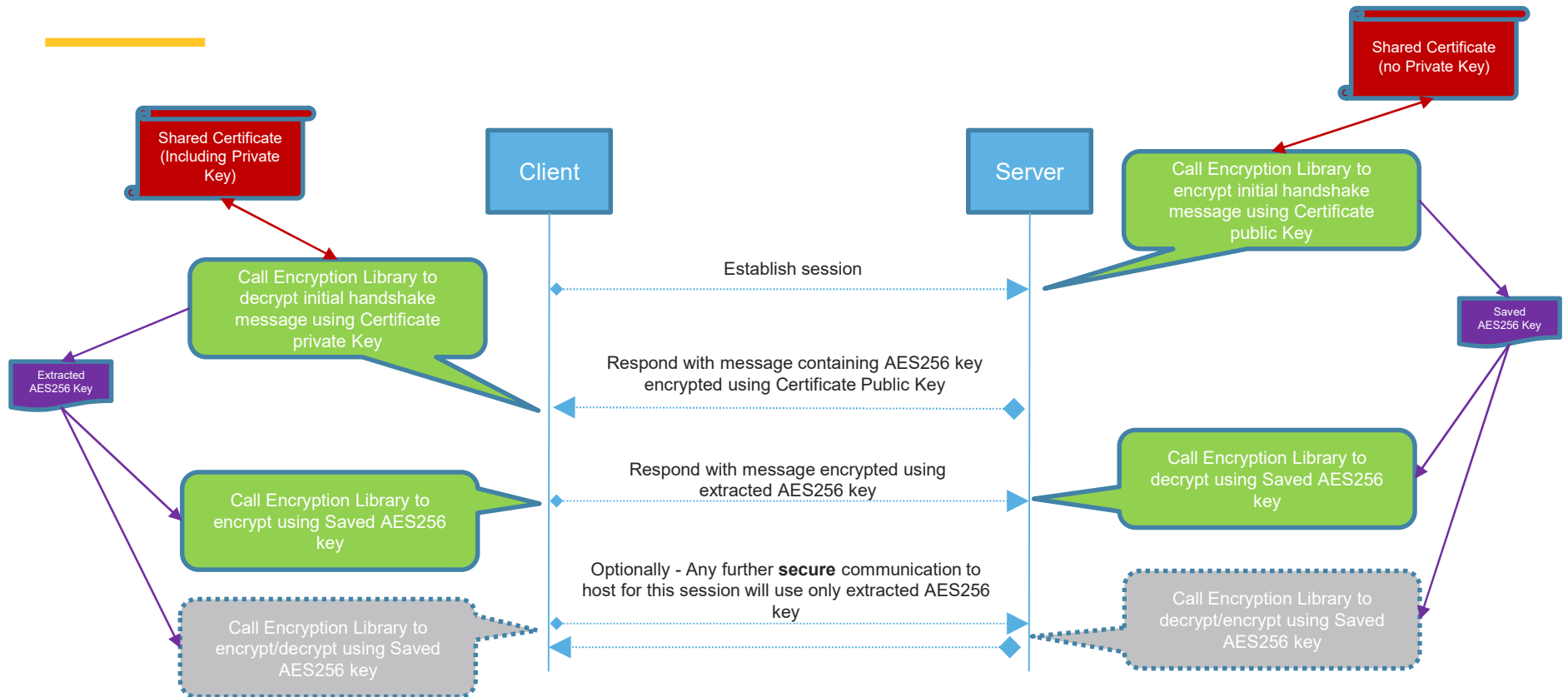


AB Suite Solution

- Both Windows and MCP support Public/Private key encryption
 - Build ALGOL and .Net external Libraries to handle Certificates
 - Create AB Suite Methods to call external routines
- Use AD Trust to Web Server
 - Allows Web Server to use/trust workstation Logon details
- Use Trusted Certificate to provide Trust between Webserver and AB Suite Host
 - Pass Logon details as encrypted message to AB Suite Host Application
 - Using Certificate to Encrypt/Decrypt
 - Performed as handshake at session establishment via Hidden ISPEC not shown to end users
 - Works with standard RATL no need to change anything at AB Suite Product Level
 - Uses Certificate to encrypt generated AES256 key used to encrypt message text
 - Overcomes message length limitations
 - Allows for other encryption uses



Message flow



Create Modern User Interface

Business Problem

- Create a modern web based interface but without re-writing Agile Business Suite application

Solution

- Use ePortal to create a Microsoft WebAPI solution
 - Core interface generated automatically
 - Additional features added manually
 - Interfaces with external system
- Use Orchestration to create composite screens
 - One-to-Many
 - Many-to-One

Sicop Plus

Home

MENU

Análise de Crédito <

Limite de Crédito <

Pagamentos <

Matrículas <

Home / Consulta de Análise de crédito

Consulta de Análise de Crédito

Filtrar Análises

Análises

Pendentes

Buscar

Lista de Análises

10 resultados por página

Pesquisar

Análise	Matricula	Nome Associado	Situação	Local	Data Emissão	Última Alteração	Aprovação	Opções
29284	215772	JOAO CARLOS PESS	Gerencial	90	04/05/2020	04/05/2020	29/09/2020	
30507	1960738	RHAINE VANZELA R	Gerencial	79	25/08/2020	01/09/2020	16/09/2020	
30549	235260	ALESSANDRO FABRI	Gerencial	121	01/09/2020	28/09/2020	29/09/2020	
30591	112406	DILTO NORBERTO G	Gerencial	42	10/09/2020	15/09/2020	29/09/2020	
30618	1005274	JOAO PAULO RITT	Gerencial	79	14/09/2020	14/09/2020	29/09/2020	

Mostrando de 1 até 5 de 5 registros

Anterior 1 Próximo

Buscar

Consultar Matrícula / Nome

Após (Data)

☒ Pendentes☐ Todas

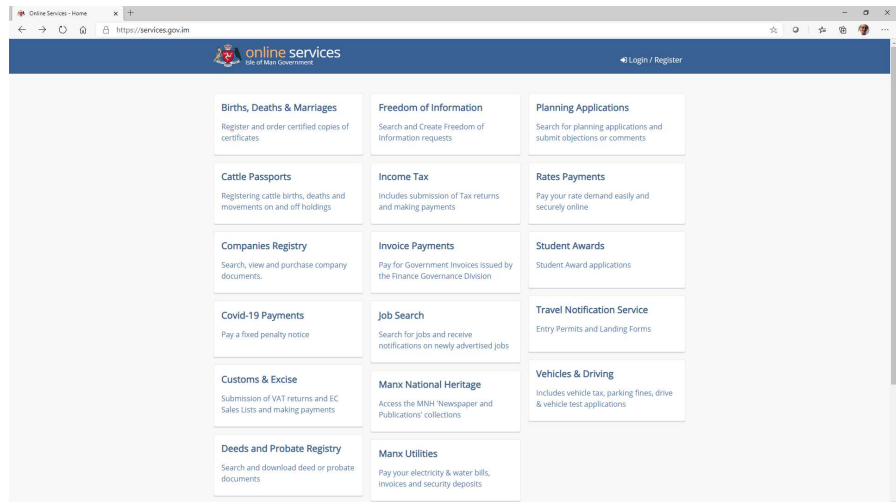
Buscar

Limpar

Common Gateway

- Common gateway to wide variety of back end systems
 - Agile Business Suite application
 - Oracle Application
 - SharePoint
 - Content Management
 - Third party applications
- Common infrastructure
- Common look and feel for all applications

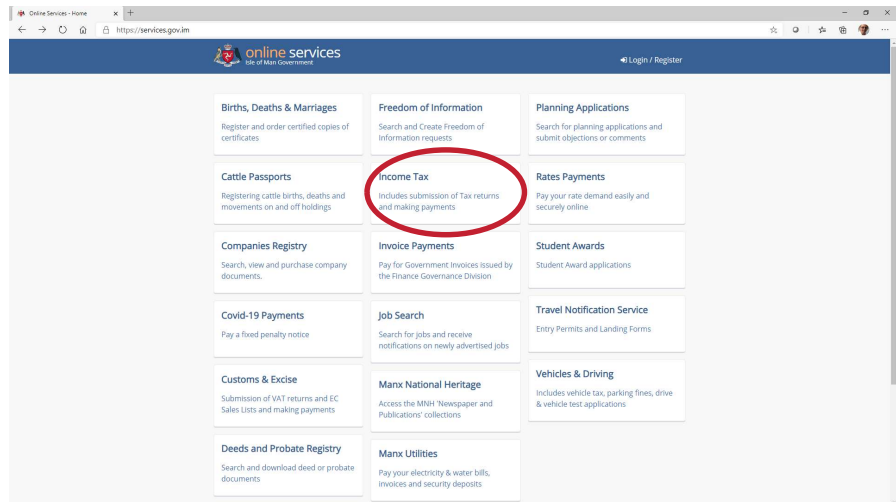
Available On-Line Services



Common Gateway

- Common gateway to wide variety of back end systems
 - Agile Business Suite application
 - Oracle Application
 - SharePoint
 - Content Management
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- Common look and feel for all applications

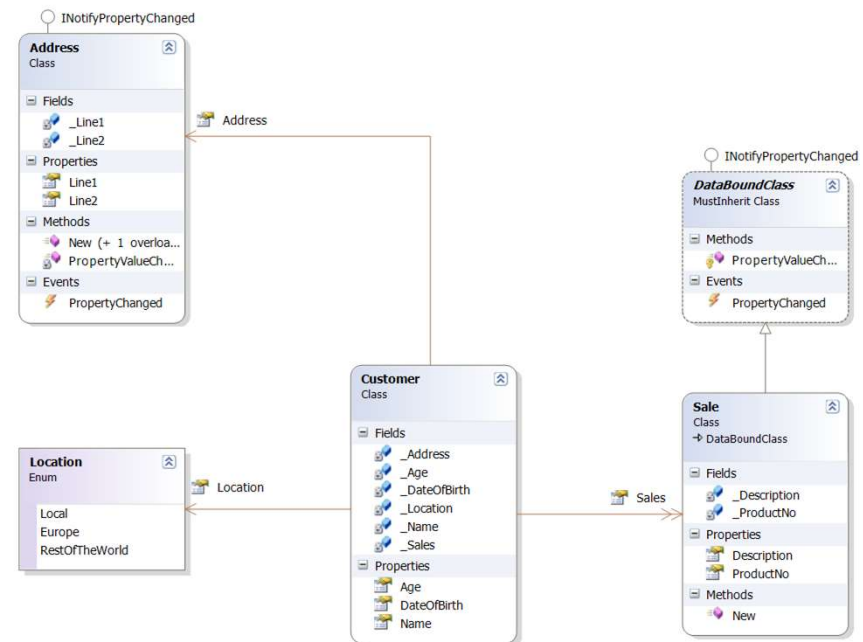
Available On-Line Services



Model based Interface

- Custom solution to map .Net Classes to an Ispec

```
<IspecName("CUST"), .DataContract()> _¶  
Public Class Customer¶  
¶  
...<Class definition>¶  
¶  
End Property¶  
  
<IspecDataItem("CUSTNAM"), .DataMember()> _¶  
Public Property Name() As String¶  
...Get¶  
...Return _Name¶  
...End Get¶  
...Set(ByVal value As String)¶  
..._Name = value¶  
...End Set¶  
End Property¶
```



On-Line Tax Return

Isle of Man - Bank/Building Society Interest - Isle of Man Public Services - Microsoft Internet Explorer

Address: https://vsoneamdev3/treasury/incometax/services/individual/returns/task-son/TaskType=ICM.BankInterest&DataKey=6&ReturnKey=0&ClientReference=05PQz6Tr05t0dM1Y0a19Q%3d%3d&Year=2009&PeriodKey=2074615b

online services + Logged in as **Pastie User 20** / [Logout](#)

HOME RESIDENTS BUSINESS VISITORS GOVERNMENT ISLE OF MAN INFOCENTRE ONLINE SERVICES

You are here: [www.gov.im](#) - [Online Services](#) - [Income Tax](#) - [Individual Tax Services](#) - [Return Details](#) - [Edit Task](#)

ONLINE HELP Account: Pastie User 20 online services

MY ACCOUNT

Administration
Messages (330)
(331)
[Logout](#)

INDIVIDUAL TAX SERVICES

Personal Details
Function Menu
Return Details
Assessments and Charges Details
Payments
Online Services Home

ISLE OF MAN - BANK/BUILDING SOCIETY INTEREST

Name & tax reference: MR RES RES (H341194-63)
Return period: 6 April 2009 to 5 April 2010 (Due date: 6 October 2010)

Bank and building society interest includes any interest received on accounts and products held or taken out with the Isle of Man branch of local and international banks and building societies. UK and overseas accounts and products, for example National Savings, should not be declared here but should be declared in the appropriate overseas income section. You should note that all interest must be declared; there are no minimum limits or exemptions for small amounts.

The table below shows a summary of accounts entered. If the account description is correct, you can use the "Gross Amount" box to enter the amounts of interest received in this period then press "Save as Complete" when you are finished.

» To ADD an account, please click the "Add Account" button below.
» To EDIT an entry, use the "Edit" button against the relevant entry to amend the account details or, if the income ended during the period of this return, to mark the account as closed.

Description	Gross Amount (£)		
Mega Bank 12345678	1000.00	<input checked="" type="checkbox"/> Provisional?	EDIT DELETE
Even Bigger Bank	10	<input type="checkbox"/> Provisional?	EDIT DELETE

[ADD ACCOUNT](#)

If you need to add any supporting documentation, please select "Attachments" from the Task List once you have saved this screen.

[SAVE AS COMPLETE](#) [CANCEL](#)

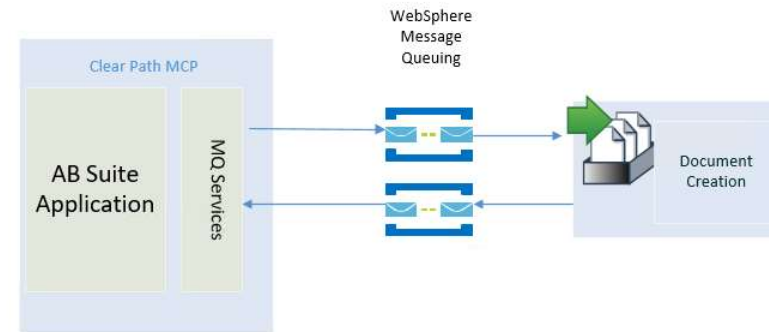
[DisabledGo Information](#) [Terms & Conditions](#) ©2010 Crown Copyright

Microsoft 'Office' interface

- Create pro-forma letters from template
 - User selects appropriate account
 - Selects letter required from drop down list
 - Letter contains a macro which uses Client Tools to extract name and address from Agile Business Suite application
 - Letter saved to document management system
 - E-Mail sent to user informing them of the new letter
 - Agile Business Suite application updated with a reference to the letter
- Benefits
 - Cost saving (no printing or postage)
 - Agile Business Suite application user has a copy of the same letter sent to the end user

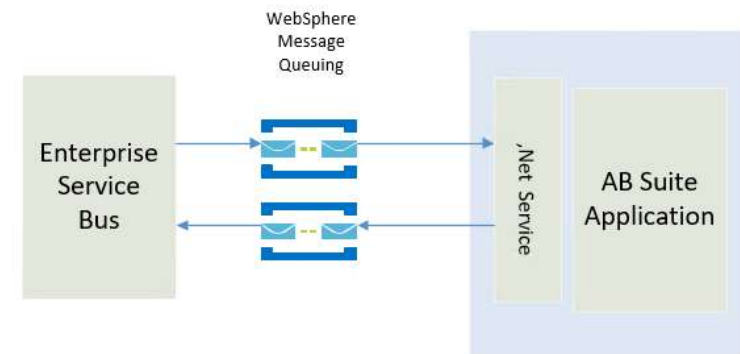
IBM WebSphere Interface (Outbound)

- Agile Business Suite Application creates letter request
 - Request written to IBM MQ Queue
 - Letter created by third party document management system
 - Response written to queue
 - Agile Business Suite application updated via Client Tools

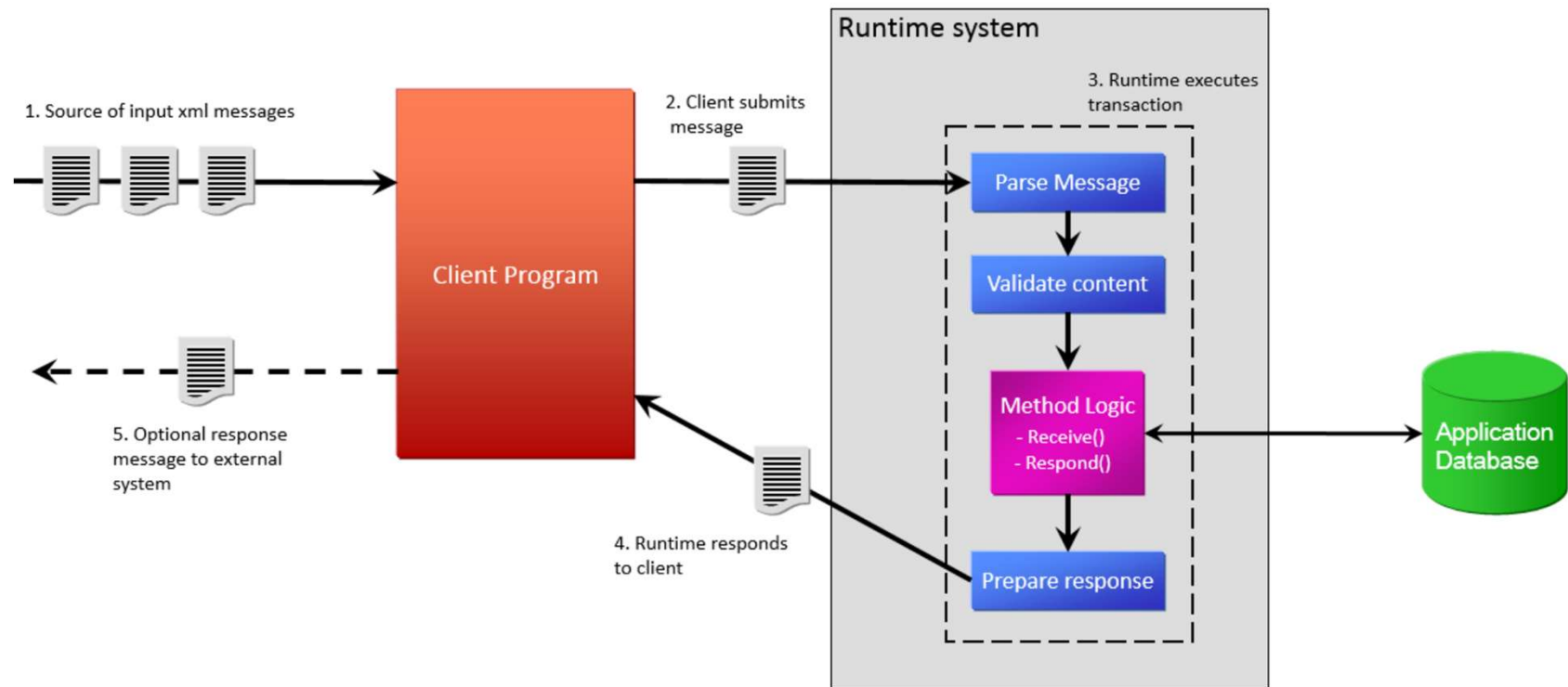


IBM WebSphere Interface (Inbound)

- Variety of channels to Agile Business Suite application
 - Web Pages
 - External systems
 - 'Batch'
- Custom .Net Service to read from MQ Queue and send to Agile Business Suite application
 - Uses 'COMManager' Interface
 - Full access to Specs with a user interface
 - Also NOF and XML interfaces



XML processing in Agile Business Suite on Windows



Create something completely different

Problem Business

- None of the previous options fits your needs

Solution

- Create a custom generator
 - Generate your custom interface as part of the build
 - Samples and documentation included with customization kit

Altova XMLSpy - [CUST.xsd *]

File Edit Project XML DTD/Schema Schema design XSL/XQuery Authentic DB Convert View Browser Tools Window Help

Project Info

CUSTOMER
Customer Number String [10]

NAM
NAM String [30]

CUST_TYPE
Customer Type String [1]

CREDLIMIT
Credit Limit Numeric [6]

POSTADD1
Postal Address 1 String [30]

POSTADD2
Postal Address 2 String [30]

POSTADD3
Postal Address 3 String [30]

SALESREP
Sales Rep Number String [10]

DELADD1
Delivery Addr 1 String [30]

DELADD2
Delivery Addr 2 String [30]

DELADD3
Delivery Addr 3 String [30]

_UserMAINT
_UserMAINT String [3]

Action_Line_ACTION_LINE_ACTL...
ACTION String [5]

```
<xs:element name="_UserMAINT">
  <xs:annotation>
    <xs:documentation>_UserMAINT String [3]</xs:documentation>
  </xs:annotation>
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:enumeration value="ADD"/>
      <xs:enumeration value="CHG"/>
      <xs:enumeration value="PUR"/>
      <xs:enumeration value="INQ"/>
      <xs:enumeration value="FIR"/>
      <xs:enumeration value="BAC"/>
      <xs:enumeration value="NEX"/>
      <xs:enumeration value="LAS"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
```

Components

- element (1)
- complexType (1)
- simpleType (45)

Globals Namespaces Identity constraints

Details

name _UserMAINT

isRef

minOcc 1

maxOcc 1

type xs:string

content simple

derivedBy restriction

default

fixed

nilable

Details SimpleType

Facets

ADD

CHG

PUR

INQ

FIR

BAC

NEX

LAS

Facets Patterns Enumerations Samples

Messages

File C:\MGEM\CE\Classes\com\uniview\eam\mla\wenath\uniview\OIST\ver is valid

Messages XPath/XQuery XSL Outline Find in Files Find in Schemas Find in XBRL Charts

XMLSpy Professional Edition v2016 rel. 2 sp1 Registered to NIGEL TUNNICLIFFE (UNISYS CORPORATION) ©1998-2016 Altova GmbH

CAP NUM SCRL

Altova XMLSpy - [CUST.xsd *]

File Edit Project XML DTD/Schema Schema design XSL/XQuery Authentic DB Convert View Browser Tools Window Help

Project Info

CUSTOMER
Customer Number String [10]

NAM
NAM String [30]

CUST_TYPE
Customer Type String [1]

CREDLIMIT
Credit Limit Numeric [6]

POSTADD1
Postal Address 1 String [30]

POSTADD2
Postal Address 2 String [30]

POSTADD3
Postal Address 3 String [30]

SALESREP
Sales Rep Number String [10]

DELADD1
Delivery Addr 1 String [30]

DELADD2
Delivery Addr 2 String [30]

DELADD3
Delivery Addr 3 String [30]

_UserMAINT
_UserMAINT String [3]

Action_Line_ACTION_LINE_ACTL...
ACTION String [5]

```
"_UserMAINT": {  
  "description": "_UserMAINT String [3]",  
  "type": "string",  
  "minLength": 0,  
  "maxLength": 3,  
  "enum": [  
    "ADD",  
    "CHG",  
    "PUR",  
    "INQ",  
    "FIR",  
    "BAC",  
    "NEX",  
    "LAS"  
  ]  
},
```

Components

- element (1)
- complexType (1)
- simpleType (45)

Globals Namespaces Identity constraints

Details

name: **_UserMAINT**

isRef: ☐

minOcc: 1

maxOcc: 1

type: **xs:string**

content: **simple**

derivedBy: **restriction**

default:

fixed:

nullable:

base:

Details SimpleType

Facets

ADD

CHG

PUR

INQ

FIR

BAC

NEX

LAS

Facets Patterns Enumerations Samples

Messages

File C:\MGEM\CE\Classes\com\univue\eam\mla\wen\h\iame\CIIST\ver is valid

Messages XPath/XQuery XSL Outline Find in Files Find in Schemas Find in XBRL Charts

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CAP NUM SCRL



Conclusions

Conclusions

- Agile Business Suite applications can interoperate with other applications on other platforms
 - Many different ways of implementing the solution
- Come and talk to us about your requirements

Thank You
