



# Integration Framework of SAP Business One as Platform for Scenario Development

January 2016

Public

# Agenda



Introduction



Scenario Development



Monitoring



# Introduction



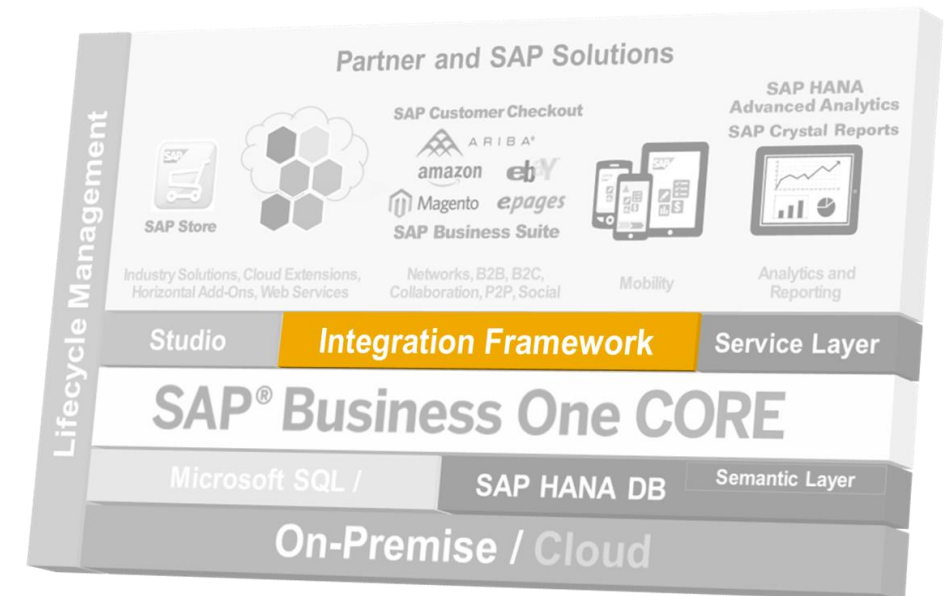
# Overview



The integration framework is an integral part of SAP Business One.  
It connects SAP Business One with other applications, services, and devices.

## Usage:

- ❑ Prerequisite for certain capabilities in the standard shipment of SAP Business One  
e.g. Mobile, SAP Crystal Dashboards, Request for Online Quotation, Web campaign, integration with SAP Customer Checkout, integration with the Ariba Network
- ❑ Prerequisite for SAP's integration solutions  
intercompany integration solution for SAP Business One, SAP Business One integration for SAP NetWeaver
- ❑ Platform for scenario development by partners  
e.g. to connect SAP Business One with an online shop, business networks, social networks



# Key Features



- ❑ Integration framework covers **ALL** integration aspects in **ONE** product
  - Message-oriented middleware
  - Mobile server
  - Lightweight Business Process Management
  - Enables analysis and reporting
- ❑ Web browser-based user interface, **access** it from wherever you are
- ❑ Interacts with **SAP HANA**, Microsoft SQL server and all JDBC databases
- ❑ Runs on premise and in the **cloud**
- ❑ Provides a programming language addressing **integration requirements**
- ❑ **Technical adapters** and **payload type converters** provide connectivity to SAP and non-SAP systems

# Benefits



## Lower TCO

automated processes,  
information sharing

## Easy to use

Business Process Management  
(BPM) approach

## Seamless Solution

SAP as single  
and trusted vendor

## Flexibility & Agility

comprehensive capabilities  
to process messages

## Fast implementation

Out-of-the-box content  
as examples

## Reliable Technology

10,000+ installations

## Community

knowledge exchange among SAP  
partners from 124 countries



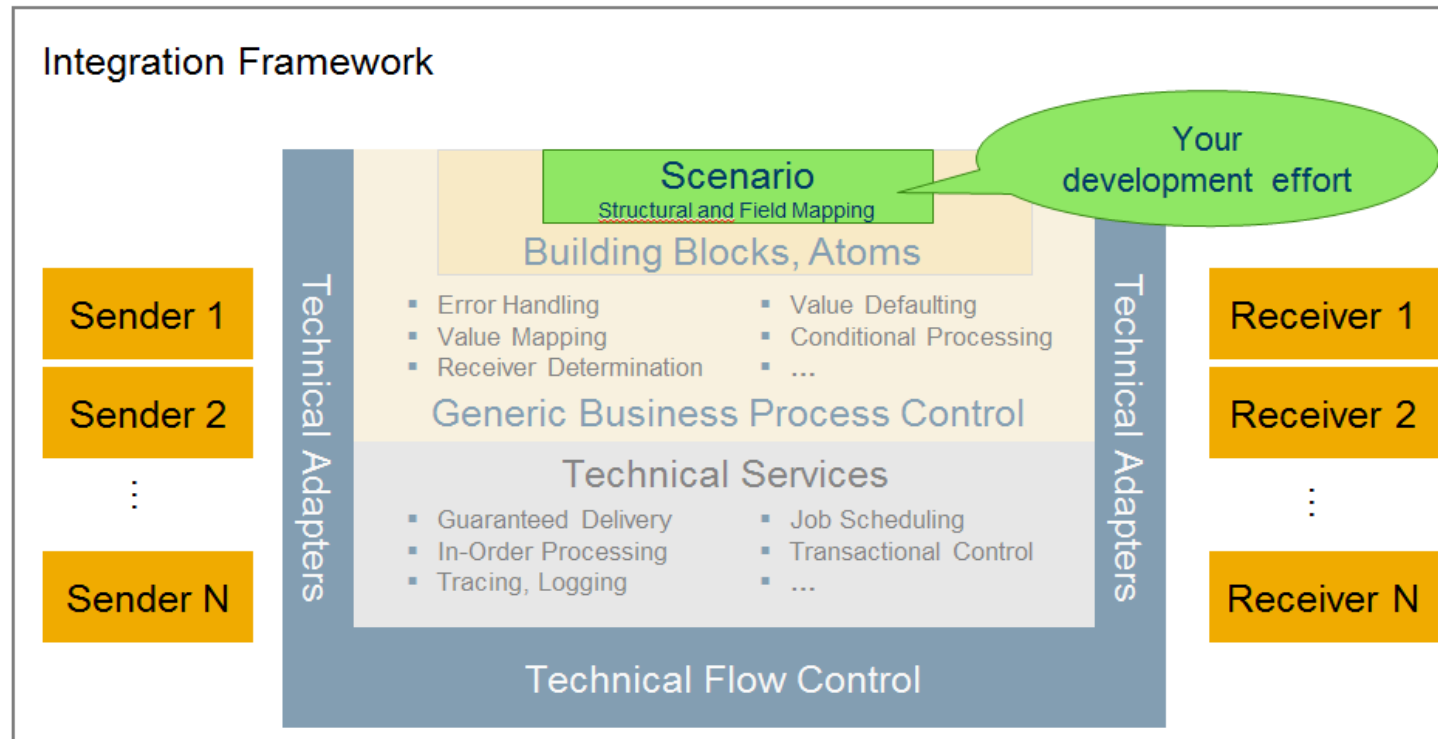
# Scenario Development



# Model-Driven, Declarative Approach



- ❑ Required basic knowledge: XML, XSLT, XPath
- ❑ Minimal implementation effort by focusing on scenarios development





# Scenario Package and Scenario Steps



Major elements in the integration framework:

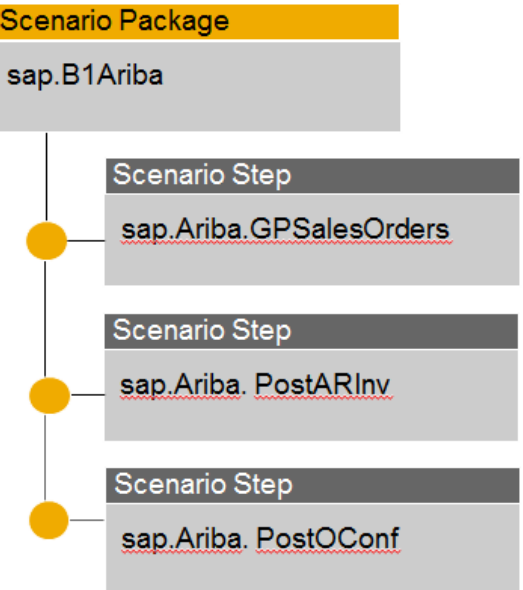
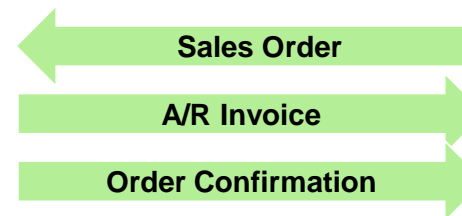
- ❑ **Scenario package**  
consists of one or multiple scenario steps.  
models a business integration scenario
- ❑ **Scenario step**  
is a specific integration flow.  
models an integration process

## Example

A company using SAP Business One has joined Ariba as a supplier (B2B network).

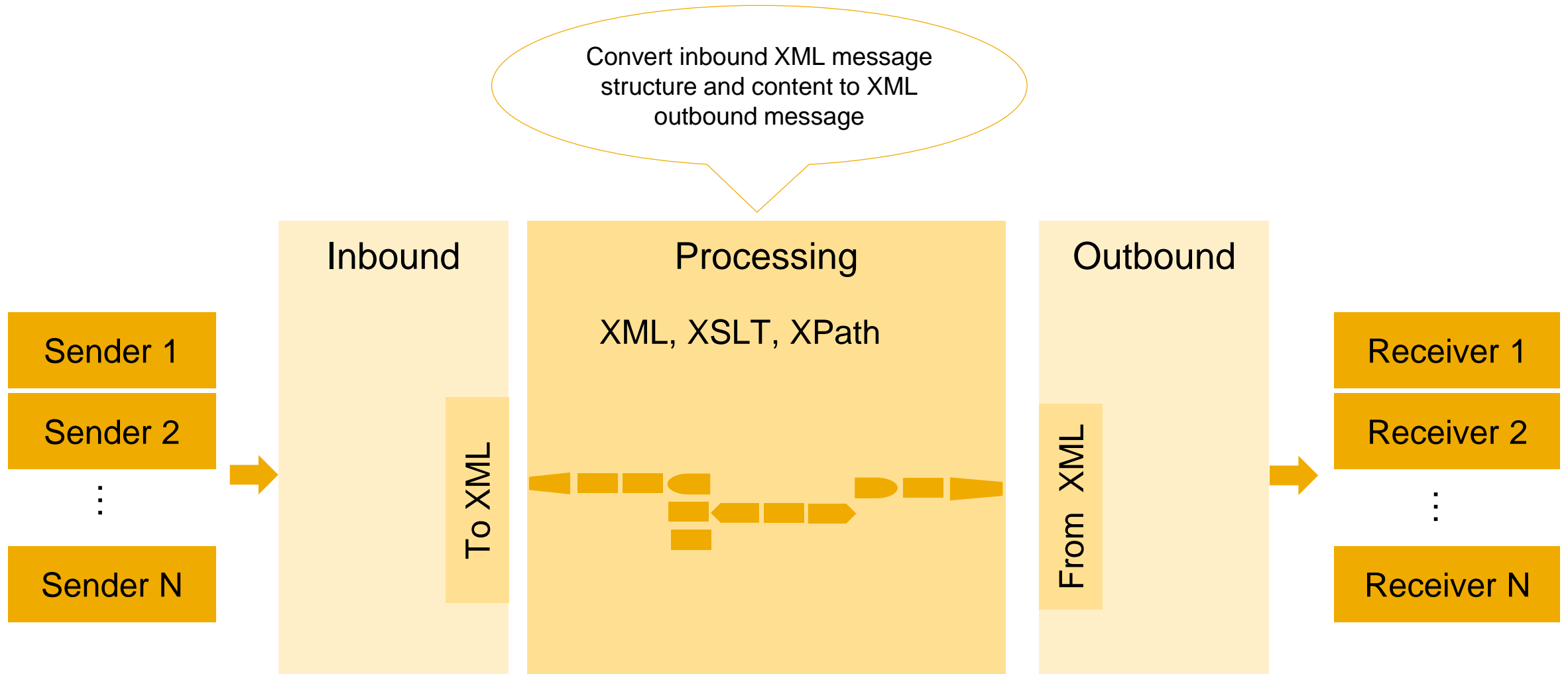
It wants to receive sales orders from Ariba in SAP Business One.

Moreover, it wants to send A/R invoices and order confirmations to Ariba.



# Scenario Step

## Structure



# Scenario Step

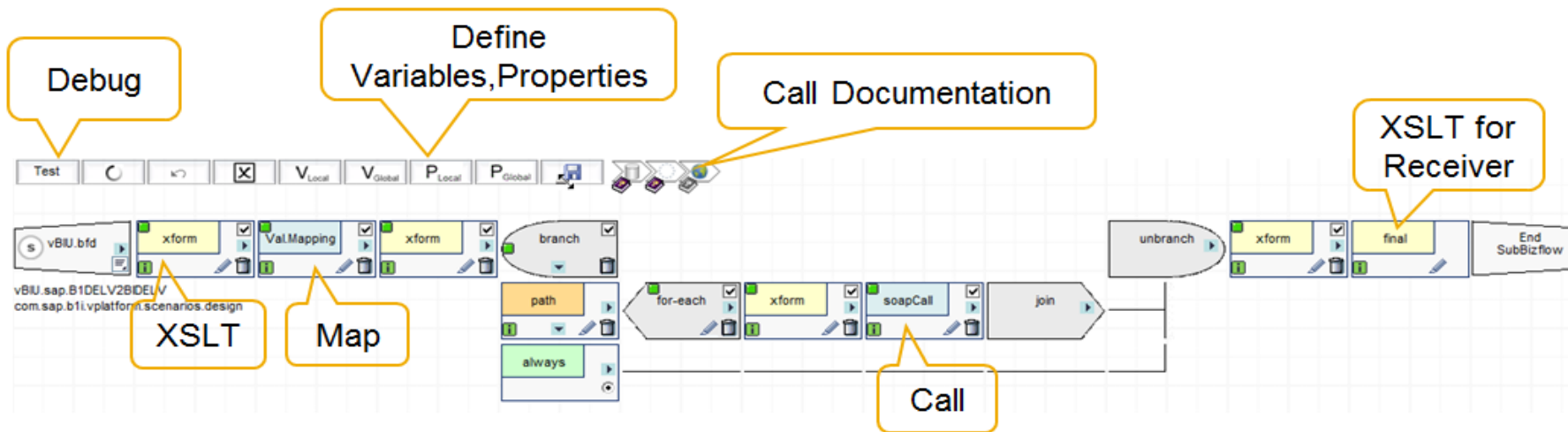
Capabilities to develop and adapt a process step



## Inbound Channels

SAP Business One   SAP ERP   Web Service   HTTP   File   Database   Internal Queue

## Processing Using Atoms

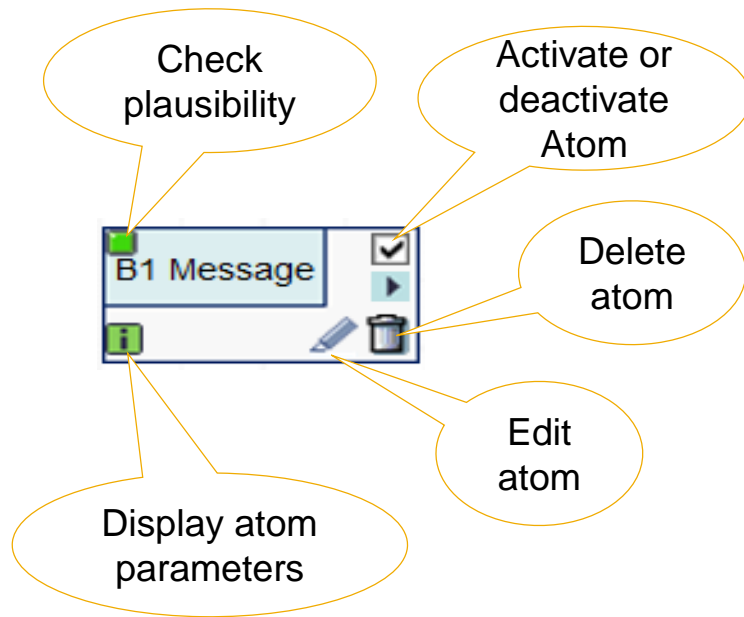


## Outbound

SAP Business One   SAP ERP   Web Service   File   Database

# Scenario Step

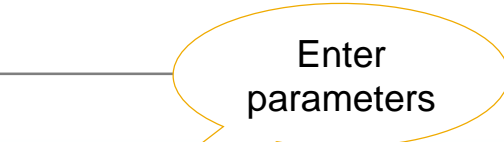
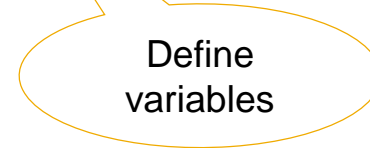
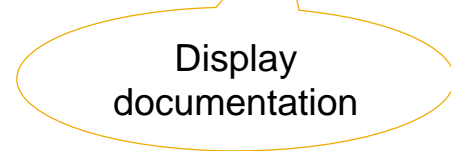
## Atom Example: Send Message to SAP Business One



### Edit B1 Message CALL

Selection Criteria [127.0.0.1:8080]

Scenario Step Identifier	sap.B1item2B1item
Atom Identifier	atom1
Description	call to B1 via DI service API
SysId*	#0010000104
B1 Login*	#Technical User
Stop processing if fails	#false
Subject*	#Test for Internal B1 Message
User Code*	#manager
Send Internal*	#true
MessageText*	/vpf.Msg/vpf.Body/vpf.Payload[./@id=&apos;atom2&apos;]@Dresult
Actions	VarL   VarG   Close



# Scenario Step

## Large Variety of Atoms and Functions in Processing



### Control Structures

- Start end
- Conditional processing
- Iteration
- Include
- Branch, split, join
- Map values

### Conversions

- XML ◀ ▶ TXT
- XML ◀ ▶ JSON
- XML ◀ ▶ BIN
- Regex
- Value mappings

### Additional Definitions

- System, local, global, memory, session variables
- Local, global, config, system type properties
- Global tables
- Queues

### Calls

- Call SAP Business One object, function, service, send message, ...
- RFC call
- Call .NET assembly
- Call Java class
- Call Web service
- Call URL
- Call HTTP
- File/FTP read/write, DIR info
- Crystal report
- Send/receive e-mail
- To queue
- ...

# Testing and Debugging within Development Environment



- ❑ Development environment provides a **test** and **debug** mode in the design language
- ❑ **No** design break between design time and runtime
- ❑ Test and debug mode **without involving** sender and receiver systems
- ❑ To dive into the details of your development, click the red arrows.
- ❑ Apply and save necessary changes
- ❑ Rerun the test **no generation required**, 'zero development roundtrip'

rerun TID: 110302070433125179717F0000018E13

vBIU.bfd 7 ms [1] 15533  
vBIU.XXX.PO2SO com.sap.b1i.vplatform.scenarios.design

branch 3 ms [1] 22918

path otherwise

xform 13 ms [1] 24656

xform

unbranch 1 ms [1] 23722

final 13 ms [1] 23821

End SubBizflow

```
<?xml version="1.0" encoding="utf-8" ?>
<Msg xmlns="urn:com.sap.b1i.vplatform:entity" MessageId="120627225039791047840AD337040EA9"
BeginTimeStamp="20120627225039" recording="true" logmsg="0000" SubMessageId="1" status="success"
msglogexcl="false" MessageLog="true">
<Header>
- <Body>
- <Payload Role="T" Type="Call">
<http.user user="" lang="en" provided="false" />
<http.host>10.211.55.4</http.host>
<http.secure>false</http.secure>
<http.header.info id="accept" value="*/ *" />
<http.header.info id="accept-language" value="en" />
<http.header.info id="user-agent" value="Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 6.1;
WOW64; Trident/4.0; SLCC2; .NET CLR 2.0.50727; .NET CLR 3.5.30729; .NET CLR 3.0.30729;
Media Center PC 6.0; InfoPath.3; .NET4.0C; .NET4.0E)" />
<http.header.info id="accept-encoding" value="gzip, deflate" />
<http.header.info id="host" value="melv50804327b:8080" />
<http.header.info id="connection" value="Keep-Alive" />
<urlpar id="querykey.wsaction" value="SaveBPViaHttpXml" />
<urlpar id="querykey.BPCode" value="Z00008" />
<urlpar id="querykey.BPName" value="B1ifRESTful" />
</Payload>
- <Payload Role="S">
- <io xmlns="urn:com.sap.b1i.bizprocessor:izatoms" pltype="ure">
<key name="wsaction" value="SaveBPViaHttpXml" xss_4ELE="SaveBPViaHttpXml"
xss_4ATT="SaveBPViaHttpXml" xss_4JSC="SaveBPViaHttpXml"
xss_4CSS="SaveBPViaHttpXml" />
<key name="BPCode" value="Z00008" xss_4ELE="Z00008" xss_4ATT="Z00008"
xss_4JSC="Z00008" xss_4CSS="Z00008" />
<key name="BPName" value="B1ifRESTful" xss_4ELE="B1ifRESTful" xss_4ATT="B1ifRESTful"
xss_4JSC="B1ifRESTful" xss_4CSS="B1ifRESTful" />
</io>
</Payload>
```

# Software Logistics



## Simple approach

- ❑ Export scenario file from development system
- ❑ Import scenario file in production system

## Benefit

- ❑ Simple handling and distribution of developed scenarios

**Scenario Export**

Selection Criteria [127.0.0.1:8080]

Scenario Package Identifier	Z.test	...
Scenario Step Identifier		...
Add Test Messages	<input type="checkbox"/>	
Add Individual SysType Properties	<input checked="" type="checkbox"/>	
Actions	Package Export	Step Export



**Scenario Import**

Selection Criteria [127.0.0.1:8080]

Scenario Package or Step ZIP File Name	Choose File	Scenario_Export.zip
Actions	Submit	



# Monitoring





# Message Log



Central point to monitor exceptions and errors of active scenarios

- ❑ monitoring by status to detect exceptions and errors
- ❑ search filters to find messages
- ❑ export of message log for support purpose
- ❑ entry point to message debugging

**Message Log Filter**

From(YYYY-MM-DD HH.MM.SS)	2014-08-01	T	00:00:00	To	2014-10-10	T	23:59:59
Sender System	0010000100			Receiver System			
Sender Trigger/Object	BOM			Receiver Object			
Scenario Package				Scenario Step			
Search Key 1				Search Key 2			
Status							

**Message Log Display Options**

Sort by:  Order: DESC Block Size:

**Message Log**

List 1-10 of 10

All(10)												
Actions	Status	Sender System	Sender...	R.	R.	S...	S	Start Date Time	End Date Time	Result Message	Scenario Package	Scenario Ste
		Fin	BOM					2014/08/27 10:54:53	2014/08/27 10:54:54	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/08/27 10:55:33	2014/08/27 10:55:34	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/08/27 11:04:48	2014/08/27 11:04:49	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/08/27 11:07:48	2014/08/27 11:07:49	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/09/03 17:03:36	2014/09/03 17:03:40	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/09/03 17:03:37	2014/09/03 17:03:46	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin	BOM					2014/09/03 17:03:37	2014/09/03 17:03:43	com.sap.b1i.xcellerator.Xc	sap.Test	sap.Fin
		Fin										
		Fin										
		Fin										

**Semantical Error(s)**

Status	Receiver System	Error(s)
	0010000100 - SBODemoUS_S1	0
	0010000101 - SBODemoCL	0
	001sap0001 - SBODemoUS_HQ	10
	001sap0002 - XML File System	0
	001sap0003 - WSforMobile	0
	001sap0004 - HAnyforXelsius	0
	001sap0005 - SBO-COMMON	0

[Technical Error\(s\)](#)

# SAP Business One Event Log



- ❑ allows checking change events sent by SAP Business One with status (success, filtered, failure)
- ❑ check detailed information about the event and the target application that has received the event

The screenshot displays the 'SAP Business One Event Monitor' interface. The page title is 'Integration solution for SAP Business One' with the SAP logo. The breadcrumb trail is 'Integration Framework > Monitoring > SAP Business One Event Monitor'. The interface includes a left sidebar with navigation options: Message Log, Process Control, B1 Event Monitor (selected), Queue Monitor, Authent. Monitor, and Call Monitor. The main area shows the 'SAP Business One Event Monitor' configuration with 'Log' set to 'On', 'Daily Deletion (HH:00)' set to '00', and 'Message Status' set to 'Success'. There are 'Save', 'Delete All', and 'Search/Refresh' buttons. Below the configuration, it states '2 messages found.' and provides pagination controls: 'First Page', 'Previous Page', 'Next Page', and 'Last Page'. The message status is 'success | Page: 1 (Total 1 pages)'. A table lists the event details:

Source Company	Object Id	Object Key(s)	Key Value(s)	Send Date Time	Target Host	Target B1i Application
SBODemoUS_S1	22	DocEntry	303	2011/03/01 00:08:28	local	/vP.0010000100.in_BEAE/com.sap.b1i.vplatfo
SBODemoUS_S1	22	DocEntry	302	2011/03/01 00:08:10	local	/vP.0010000100.in_BEAE/com.sap.b1i.vplatfo

# Process Control



- ❑ gives an overview of all processes in integration framework
- ❑ enables detailed debugging and provides entry point to debugging
- ❑ activate or deactivate processes
- ❑ indicates exceptions in latest processing

**Integration solution for SAP Business One**  
Integration framework for SAP Business One

[127.0.0.1:8080] SLD Maintenance Scenarios Monitoring Control Center Help About Logout

**Integration framework Scenario Report**

[127.0.0.1:8080]

Integration framework - Processes Overview

Clear INCOMMIT Transactions

**Scenario Processes - Inbound**

Activate Deactivate Debug On Debug Off

0010000000	INB_IQ_INTQ_ASYN_QS	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
0010000100	INB_B1_EVNT_ASYN_EVT	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
001sap0005	INB_IQ_INTQ_ASYN_BIU	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
001sap0007	INB_HT_CALL_SYNC_XPT	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
sap.MobileCacheRefresh	INB_AY_TIMR_ASYN_BIU	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
sap.XcelCacheRefresh	INB_AY_TIMR_ASYN_BIU	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception

**Scenario Processes - Processing**

Activate Deactivate Debug On Debug Off

0010000000	PRQ_QS	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
0010000000	PRC_QS	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
sap.XcelCacheRefresh	PRQ_AY	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception

**Scenario Processes - Outbound**

Activate Deactivate Debug On Debug Off

0010000000	VOID	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception
001sap0002	OUT_FILE	Debug	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Debug	<input type="checkbox"/> Exception

**Framework Processes**

<input checked="" type="checkbox"/>	all	APICaller	<a href="#">IPO Log</a>   <a href="#">Call Details</a>
<input checked="" type="checkbox"/>	all	AuditControl	<a href="#">IPO Log</a>
<input checked="" type="checkbox"/>	all	B1AuthCheck	<a href="#">IPO Log</a>

# Queue Monitor



- usually, the queue monitor is empty
- displays processing in integration framework internal queues

**Integration solution for SAP Business One**  
Integration framework for SAP Business One

[127.0.0.1:8080] SLD Maintenance Scenarios Monitoring Control Center Help About Logout

**SAP B1iP DB-Queue Monitor** [127.0.0.1:8080]

Queues [2]	Streams [1]	Messages [2] <a href="#">Clear!</a>										
<ul style="list-style-type: none"><li>Q.B1Event_iApp</li><li>Q.B1Events</li></ul>	<ul style="list-style-type: none"><li>S.B1Events 2</li></ul>	<table border="1"><tbody><tr><td>4</td><td><a href="#">Show</a></td><td><a href="#">Initiator</a></td><td><a href="#">MsgFl.Inq.</a></td><td><a href="#">Delete</a></td></tr><tr><td>5</td><td><a href="#">Show</a></td><td><a href="#">Initiator</a></td><td><a href="#">MsgFl.Inq.</a></td><td><a href="#">Delete</a></td></tr></tbody></table>	4	<a href="#">Show</a>	<a href="#">Initiator</a>	<a href="#">MsgFl.Inq.</a>	<a href="#">Delete</a>	5	<a href="#">Show</a>	<a href="#">Initiator</a>	<a href="#">MsgFl.Inq.</a>	<a href="#">Delete</a>
4	<a href="#">Show</a>	<a href="#">Initiator</a>	<a href="#">MsgFl.Inq.</a>	<a href="#">Delete</a>								
5	<a href="#">Show</a>	<a href="#">Initiator</a>	<a href="#">MsgFl.Inq.</a>	<a href="#">Delete</a>								

# Call Monitor



- gives information about calls
- displays call inbound and outbound messages

**Call Monitor**

Selection Criteria [127.0.0.1:8080]

Report Type: quick run (check the last 100 transactions)

Actions: Call Monitor

---

**Call Monitor Select**

[localhost:8080]

Call Monitor Select

Submit | Select All | Deselect All

<input checked="" type="checkbox"/>	E Mail
<input checked="" type="checkbox"/>	File
<input type="checkbox"/>	FTP
<input checked="" type="checkbox"/>	HTTP
<input checked="" type="checkbox"/>	Queue
<input checked="" type="checkbox"/>	SAP Business One
<input checked="" type="checkbox"/>	SAP ERP
<input type="checkbox"/>	SAP II
<input checked="" type="checkbox"/>	SQL
<input type="checkbox"/>	Void
<input checked="" type="checkbox"/>	Web Service

**Integration Framework Call Monitor**

[localhost:8080]

Call Monitor

Timestamp	Type	Size	Duration	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 14:19:22	SQL	2371		Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 14:00:00	Queue	814	3	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 14:00:00	Queue	806	4	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 13:00:00	Queue	814	5	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 13:00:00	Queue	806	5	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 13:00:00	SAP Business One	770		Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 12:00:00	Queue	814	5	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 12:00:00	Queue	806	8	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:53	SQL	2371	16	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:37	SQL	506	13	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:37	Void	2036	4	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:37	SQL	1866	30	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:37	SQL	894	34	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:38	SQL	836	21	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:38	SQL	719	6	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:38	SQL	945	5	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:38	SQL	892	6	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:38	SQL	822	12	Call Details	Properties	Call Inbound	Call Outbound
2014-05-28 10:42:36	SQL	502	265	Call Details	Properties	Call Inbound	Call Outbound



# Thank you

Contact information:

F name MI. L name

Title

Address

Phone number



# Appendix



# Scenario Step

## Structure Conversion Using XSLT and XPath



- Open documents in XML editor and add coding
- Provide structure conversion information using XSLT
- Access values using XPath

```
Sender Message  
<SNDMsg>  
  <Header>  
    <Field1>value01</Field1>  
    <Field2>value02</Field2>  
  </Header>  
  <Lines>  
    <Line>  
      <LField1>value01</ LField1>  
      <LField2>value02</ LField2>  
    </Line>  
    <Line>  
      <LField1>value03</ LField1>  
      <LField2>value03</ LField2>  
    </Line>  
  </Lines>  
</SNDMsg>
```

```
Receiver Message  
<RCVMsg>  
  <RcvHeaderFieldA>value01</RcvHeaderFieldA>  
  <RcvHeaderFieldB>value02</RcvHeaderFieldB>  
  <LineCount>2</LineCount>  
  <RcvLine pos="1">  
    <First>value01</First>  
    <Second>value02</Second>  
  </RcvLine>  
  <RcvLine pos="2">  
    <First>value03</First>  
    <Second>value04</Second>  
  </RcvLine>  
</RCVMsg>
```



```
XSLT  
<RCVMsg>  
  <RcvHeaderFieldA><xsl:value-of select="SNDMsg/Header/Field1"/></RcvHeaderFieldA>  
  <RcvHeaderFieldB><xsl:value-of select="SNDMsg/Header/Field2"/></RcvHeaderFieldB>  
  <xsl:variable name="linecount" select="count (SNDMsg/Lines/Line)"/>  
  <LineCount><xsl:value-of select="$linecount"/></LineCount>  
  <xsl:if test="$linecount>0">  
    <xsl:for-each select="SNDMsg/Lines/Line">  
      <RcvLine>  
        <xsl:attribute name="pos"><xsl:value-of select="position()"/></xsl:attribute>  
        <First><xsl:value-of select="./LField1"/></First>  
        <Second><xsl:value-of select="./LField2"/></Second>  
      </RcvLine>  
    </xsl:for-each>  
  </xsl:if>  
</RCVMsg>
```





# Integration Framework Message Format



The **XML message** the integration framework processes from one atom to the next consists of a **header** and a **body** section. Each atom contributes to the message payload.

The header contains process control information, the body contains the payload. Inside the body, there are different payload sections available.

The main payload sections are the following:

Payload Section	Description
Payload/@Role='T'	This section contains the information that has triggered the scenario step, for example, a B1 event.
Payload/@Role='S'	Sender message
Payload/@Role='R'	Receiver message
Payload/@Role='C'	This section contains information coming from a call atom, for example, a call SQL atom to enrich the data in the message

# Example

## Integration Framework Message



```
<?xml version="1.0" encoding="utf-8"?>
<Msg xmlns="urn:com.sap.b1i.vplatform:entity" xmlns:b1il="urn:com.sap.b1i.sim:b1ilog"
xmlns:b1im="urn:com.sap.b1i.sim:b1imessage" xmlns:bfa="urn:com.sap.b1i.bizprocessor:bizatoms"
xmlns:jdbc="urn:com.sap.b1i.adapter:jdbcadapter" xmlns:sim="urn:com
xmlns:vpf="urn:com.sap.b1i.vplatform:entity" MessageId="14090
BeginTimeStamp="20140908083650" recording="true" logms
b1status="success" msglogexcl="false" handover2CentralSrv=
BackMessageId="2_2" DelMessageId="2">
  <Header>
  <Body>
    <Payload Role="T" Type="B1Event" add="">
      <Event xmlns="" B1EventFilter="false">
    </Payload>
    <Payload Role="S" Result="0000" Msg="">
      <BOM xmlns="">
    </Payload>
    <Payload Role="C" id="atom1" type="R" action="R" biumeta="BIUMETA.B1_B1.xml">
      <KE xmlns="" id="KE01" Role="RA" calltype="sql.xml" pos="1" Key01="341" internalID="RA.KE01.341">
      <KE xmlns="" id="KE01" Role="RA" calltype="sql.xml" pos="2" Key01="341" internalID="RA.KE01.341">
    </Payload>
    <Payload Role="R" id="atom0" pltype="xml">
      <BOM xmlns="">
    </Payload>
    <Payload Role="R2" Call="object" Type="DIAPI">
      <Envelope xmlns="">
    </Payload>
  </Body>
</Msg>
```

Information, such as, namespaces, ...

Header information such as receiver list, SysType properties, ...

Payload of the B1 event coming from the SEVT table

Sender payload, inbound message

Additional payload from call to enrich data; id contains unique identifier of the payload

Receiver payload handed over to outbound (Payload Role="R2")

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