
OASIS WSIA Technical Committee

Requirements Document Use Case Report: Embedded Producers

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Revision History

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06/Mar/2002	1.0	Renamed to Embedded Producer	Charlie Wiecha
	1.1	Updated flows, added requirements section	Rich Thompson

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Use Case Report: Embedded Producers

1. Definition of the Embedded Producers use case

Definition: Control over selection, configuration, placement of Producers within a Consumer is under manual (i.e. either Administrator or End-user) control. Producers do not publish an interface to the Consumer other than for invocation with generic arguments (not Producer specific). Arguments may include, among other things, user profile, output markup preferences, language, and device preferences. Producer specific configuration is via separate edit pages, i.e. not reflected in the Producer's interface.

1.1 Brief Description

2. Actors

There are three actors in this use case:

- Producer: one or more WSIA web services
- Consumer: a container which instantiates and controls interaction with one or more Producers on behalf of End-Users
- Consumer Administrator: a person who instantiates and configures Producers in one or more Consumers on behalf of End-Users
- End-User: a person who interacts directly with the output of the Consumer

3. Flow of Events

3.1 Basic Flow

While the following discussion is in terms of “portlets”, these should be viewed as a special (and common) case of embedded WSIA services where the Consumer is a portal. This use of portal oriented terminology is for clarity and not intended to restrict the set of actors to the special cases of portals and portlets.

3.1.1 Admin created portlets

[Traveler's checks] Travelers Checks applications as-is within a corporate portal

[Portlet] Consumer Administrator finds remote portlet service in UDDI, places portlet on a page for all users, uses the portlet's edit mode to configure the portlet for the Consumer's page, persistently saves the configured portlet. End-User accesses page and views/interacts with displayed output.

- Pages should be cached to reduce load on remote portlet service.
- End-user entered data is transferred to remote portlet imbedded in parameters or properties of the portlet.
- To facilitate the correct mapping of an End-User interaction to the correct instance of a remote portlet, the URLs contained in the page must be rewritten to both refer to the Consumer and provide it with the information necessary to map the interaction to the properties / operations of the correct remote portlet. One possible means to enable this URL rewriting include:

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- Producer marks all interaction URLs (distinct from reference URLs such as on an in XHTML) with a prefix of “wsia:”. This makes it unambiguous to the Consumer which URLs need to be rewritten.
- Insert an additional parameter (preferably of a well known name such as wsia:mapKey) that will enable the Consumer to locate the correct record in some internal mapping table. This is essential if the Consumer is to correctly identify the Producer for redirecting the interaction.
- The Consumer may also wish to change the operation name to reflect the need to pass through the remapping logic. [OR do the WSIA portTypes want to explicitly expose such an operation and standardize its signature?]
- [Is there any utility in defaulting the operationName to invokeAction (from WSXL)?]
- User profile transferred to remote portlet in parameters or properties.
- Markup type configured by the Consumer at page load time based on End-User profile or device type in use by the End-User.

3.2 Alternative Flows

3.2.1 End-user created portlets

[Portlet] End-user locates a portlet in UDDI or through a search implemented by Consumer, places portlet on a page, optionally uses portlet’s edit mode to configure its output, persistently saves the configured portlet. End-user accesses page and interacts with displayed output.

- The Consumer Administrator may restrict the set of portlets available for placement on a page even when the search is implemented via UDDI. This enables the Consumer Administrator to manage any business issues related to the portlet’s usage.

3.2.2 Output type configurable for different devices

[Multimedia sports portal, Mortgage center] Consumer must indicate to the Producer the device (mime?) type extracted from the End-User connection. Preference would be for this to be a well-known property of all Producers [Perhaps there are a set of these ... all using a ‘wsia:’ prefix].

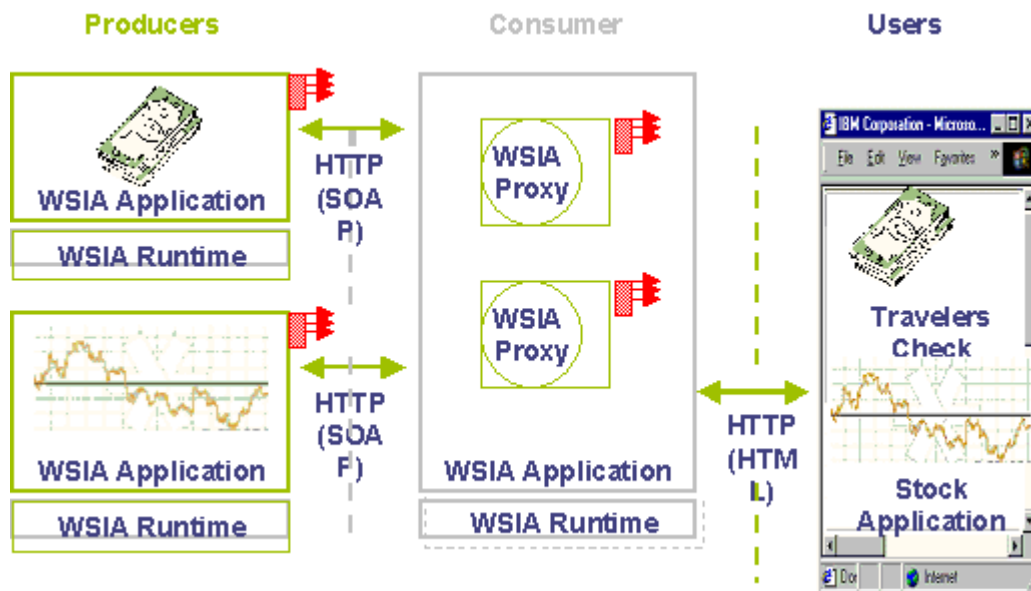
3.2.3 Non-persistent remote portlets

[Portlet] Flow as 3.2.1 above, but with no persistence at the Producer. Configuration state returned to the Consumer for persistent storage. The Consumer is then responsible for supplying this information on any subsequent connections to the Producer.

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4. Diagrams

4.1 Relationship between Producers and Consumers in the Embedded Producers Use Case



4.2 < First special requirement >

5. PreConditions

[A precondition (of a use case) is a textual description of any constraints or dependencies that must be satisfied prior to entry of the use case.]

5.1 < Precondition One >

6. PostConditions

[A postcondition (of a use case) is a textual description of any constraints or dependencies that must be satisfied after termination of the use case.]

6.1 < Postcondition One >

7. Requirements

7.1 Lifecycle management

- A set of LifeCycle operations is needed in order for the Consumer to interact with each Producer in a stateful manner. Considering the stateless nature of the current version of SOAP and WSDL, a reference will need to be carried explicitly in the operations that can be used on the Producer to locate the properties and their values for this session with this Consumer. Since this reference could either be to a particular instance of the Producer's service or to a properties storage mechanism, means are needed both to create and destroy the underlying object are necessary. Possible means include:
 - Explicit operations: This means requires that the Consumer invoke the create operation prior to using other operations in the interface. It also

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becomes incumbent upon the Consumer to explicitly invoke the destroy operation when finished interacting with the Producer. The Producer is still free to use mechanisms such as timeouts as a way of cleaning up after consumers that exit unexpectedly (e.g. network failures), but will need to indicate that the reference is no longer valid by returning a fault message. This permits the Consumer to reinitialize the properties to whatever it prefers prior reinvoking the operation that returned the fault message.

- Implicit creation: This means reduces the overhead of the create / destroy operations by creating the underlying object on any operation invocation with an invalid [or perhaps only for null] reference. This requires the Consumer to send a complete set of properties on each operation invocation in order to deal with the possibility that the Producer may have used a timeout to clean up the underlying object. It also requires the Consumer to look for a new reference in the return message from any operation invocation rather than a single operation.

7.2 URL rewriting

- URLs need to refer to the Consumer in order to allow the correct state and indirections to be applied when processing an interaction from an End-User. Possible means for accomplishing this include:
 - Producer modifications during markup generation based on Consumer supplied information [How does the Producer indicate it is willing to make these modifications?]. The Consumer would need to supply the base URL for referring to itself in a manner that allows for remapping user interactions back to the correct Producer. The Producer would then append information onto this base URL indicating how the interaction should be mapped to it (operationName should use a well-known parameter name such as “wsia:opName” [default value of “invokeAction”?]) and any additional parameters that operation requires.
 - Consumer applied modifications. In this case the Producer marks all interaction URLs (distinct from reference URLs such as on an tag in XHTML) with a prefix of “wsia:”. This makes it unambiguous to the Consumer which URLs need to be rewritten.
 - In both cases there is a need to insert an additional parameter (preferably of a well known name such as wsia:mapKey) that will enable the Consumer to locate the correct record in some internal mapping table. This is essential if the Consumer is to correctly identify the Producer for redirecting the interaction when it arrives from the End-User. The Consumer will need to store any and all information in this mapping table that is needed to invoke the correct operation on the correct Producer.

7.3 Authentication / security

- Other standards efforts are underway for the purpose of defining security and authentication protocols for XML and web services. While WSIA will need to be concerned about these issues, it is expected that concern will be addressed by tracking

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the work of these other efforts.