Enterprise Portal Client Framework (EPCF)

HELP.NW_PDK

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Icons in Body Text

Icon	Meaning
⚠	Caution
	Example
	Note
	Recommendation
	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see *Help on Help* → *General Information Classes and Information Classes for Business Information Warehouse* on the first page of any version of *SAP Library*.

Typographic Conventions

Type Style	Description
Example text	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation.
Example text	Emphasized words or phrases in body text, graphic titles, and table titles.
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
`Example text`	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
`Example text`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example text>`	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
`EXAMPLE TEXT`	Keys on the keyboard, for example, `F2` or `ENTER`.

Enterprise Portal Client Framework (EPCF)

The *Enterprise Portal Client Framework* (EPCF) provides an infrastructure for scripting used in iViews and by the Portal.

To keep the application design simple and maintain compatibility to different browsers, Web applications usually avoid scripting. However, there are tasks that make it necessary to use scripting. To name a few:

- Increase user acceptance for example with context sensitive entry helpers
- Enhance response time of the application for example through validation of input values

When a business application uses more than one iView, you need the EPCF service to transfer data between the iViews. The EPCF service provides:

- Mechanisms for *eventing* between iViews.
- A Java object, called *client data bag*, that serves as transient data buffer on the browser.
- Distributed Session Management (DSM) to enhance the performance of the server session management.

The EPCF implementation itself is based on JavaScript and Java applets.

EPCF Levels

The EPCF level defines which functionality of the EPCF service is available to the Web application. The EPCF level affects the size of the generated HTML data is generated, that is sent to the client. A higher level generates more HTML data. The EPCF has the following levels.

0: No EPCF Service

This level generates no JavaScript or Java applet framework functions. Communication between iViews is not possible.

1: JavaScript

This level generates framework functions for JavaScript.

2: JavaScript and Applet

This level generates framework functions for JavaScript and Java applet.

Detailed feature list

Feature	Level	Description
Implicit softening the JavaScript Origin Policy [Page 40]	1	Enables scripting between *IFrames* from the same domain but different hosts.
System function	1	Retrieves the EPCF version, the current EPCF level and client information.
Client eventing	1	Client communication service for iViews.

Predefined Client Events	1	Collection of useful client events.
Automatic Server Session Termination [Page 40] (ASST)	1* / 2	Support of the *SAP Internet Session Protocol* (SISP) that allows session management with connectionless HTTP.
Client Data Bag	1* / 2	Buffer for the client that stores JavaScript data as long as the Portal session exists.
Client Data Channel	2	Synchronous HTTP channel between the Portal page on the Web client and the Portal Server.

* : A JavaScript implementation is available since Enterprise Portal version 5.0.1.3.

EPCF API

The EPCF service defines the *Enterprise Portal Client Manager* (EPCM) JavaScript object. With the methods of the EPCM object you can access the EPCF service functions as follows:

```
EPCM.[API_method_name]( [Params]* );
```

iViews can access the EPCM object from every Portal page or *IFrame*. Every iView of the Portal runtime contains the EPCM object. As a result every embedded or isolated iView can use the EPCF service with the method:

```
EPCM.subscribeEvent(, eventName, eventHandler );
```

For details on namespaces, see the glossary chapter Namespaces [Page 41]

Every EPCM object stores the data it receives and delegates them automatically to the registered EPCM objects.

With EPCF level 2 every Portal page and as a result in all isolated iViews, contain a Java applet. The applet serves as a class factory for methods that return references to the intrinsic classes. These classes are implemented as *Singletons* so every class has only a single instance in a Portal session, even when iViews are reloaded. The applet object is instantiated inside every Portal page frame.

The EPCF API has following parts:

- System API

  The system API [Page 7] provides methods to get the version and the level of the EPCF service and information about the client.

- Event API

  The event API [Page 9] , which allows iViews to communicate with each other and with the Portal environment itself on the. This is done by using JavaScript functions on the client which are invoked on client events like *onload*, *onclick* and so on.

- Client Data Bag API

  The client data bag API [Page 11] offers a transient data buffer for iViews. The data remains in the buffer are saved even after the iView or the whole Portal page is reloaded. Depending on the EPCF level, following storage mechanisms are used:

  - EPCF level 1 - JavaScript

Values are stored as cookies in the browser.

- EPCF level 2 – Java Applet

  Values are stored as a Java class attribute.

- WorkProtect API

  The WorkProtect API [Page 13] provides the infrastructure for handling unsaved data in a *stateful* application.

- Navigation API

  The navigation API [Page 14] provides methods to navigate in the Portal.

- Distributed Session Management (DSM) API

  The DSM API [Page 19] is used for session management. The DSM uses this API to access the properties of the *SessInfo* object.

- EPCM Proxy

  The EPCM proxy API [Page 20] allows the EPCF functionality in Portal applications that are rendered in their own IFrame (for example, ITS-based applications and BSP).

System API

With the EPCF system API you have access to the settings of the EPCF service.

EPCM.getVersion()

This method returns the current framework version as type *number*.

Usage

```
<script language="JavaScript">
    var version = EPCM.getVersion();
</script>
```

EPCM.getLevel()

This method returns the current EPCF level as type *number*.

The EPCF level defines which EPCF services are available. The Portal application has to take care, that it uses services which are available at the current EPCF level.

Usage

```
<script language ="JavaScript">
   if (EPCM.getLevel() >= 2) {
       EPCM.storeClientData( "urn:com.sap:myObjects",
                             "person", "Albert Borland" );
   }
```

```
      </script>
```

EPCM.getUAType()

This method returns the client type as type *number*.

Usually this method will be used together with the method `getUAVersion()` and `getUAPlatform()`. The return value can be compared to predefined EPCM-constants:

> **EPCM.MSIE**, **EPCM.NETSCAPE, EPCM.MOZILLA**, **EPCM.OPERA**, **EPCM.NOKIA, EPCM_UP, EPCM_ERICSSON, EPCM_MSPIE, EPCM_PALM EPCM.OTHER**.

Usage

```
     <SCRIPT language ="JavaScript">
          if(EPCM.getUAType() == EPCM.MSIE){/*codingfor       IE*/ }
          if(EPCM.getUAType() == EPCM.MOZILLA){/*codingfor   Mozilla*/ }
      </SCRIPT>
```

EPCM. getUAVersion()

This method returns version of the client as type *number*.

Usage

```
    <SCRIPT language ="JavaScript">
        if(EPCM.getUAType() == EPCM.MSIE){
          if(EPCM.getUAVersion() ==       5.0){/*codingfor MSIE 5.0 */
    }
          if(EPCM.getUAVersion() > 5.5){/*codingfor MSIE 5.0+*/ }
        }
     </SCRIPT>
```

EPCM.getUAPlatform()

This method returns the platform on which the client is running as type *number*.

The return value can be compared to predefined EPCM constants:

> **EPCM.NT_PLATFORM**, **EPCM.WIN_PLATFORM**, **EPCM.MAC_PLATFORM**, **EPCM.LINUX_PLATFORM**, **EPCM.WAP_PLATFORM, EPCM.PDA_PLATFORM**, **EPCM.OTHER_PLATFORM**.

Usage

```
    <SCRIPT language ="JavaScript">
       if(EPCM.getUAPlatform() == EPCM.LINUX_PLATFORM){
```

```
   /* coding that will only be processed if the client runs LINUX
*/
   }
</SCRIPT>
```

getInstanceId() Method

This method returns an unique EPCF instance as type *String*.

The method is used by the EPCF core to distinguish the pages after a page refresh.

Usage

```
<SCRIPT language ="JavaScript">
   document.write("EPCMInstanceId = " + EPCM.getInstanceId() );
</SCRIPT>
```

EPCM.getUniqueWindowId()

This method returns an unique identifier of the *IFrame* as type *String*.

You can use this method to append the returned *IFrame* identifier string to the name you use to define a *client data bag.* This creates a *client data bag* that can only be accessed by a specific *IFrame*.

The method returns *null* when the object returned by *window.top* is not accessible because of security reasons (JavaScript origin policy [Page 40]).

Usage

```
<SCRIPT language ="JavaScript">
    document.write("WindowId = " + EPCM.getUniqueWindowId() );
    ...
    ECPM.storeClientData(
    "com.sap.portal:test",EPCM.getUniqueWindowId()+"Item",myItem);
    ...
 </SCRIPT>
```

Event API

The EPCF event API provides methods for the event handling on the client.

EPCM.subscribeEvent(nameSpace, eventName, eventHandler)

This method assigns an event handler to the specified event.

The method sets the event handler to the subscription list for the event defined by the *nameSpace* and the *eventName*. The combination of *nameSpace*, *eventName* and *eventHandler* must be unique. It is not possible to register the same event handler to several events. See chapter Namespaces [Page 41] for more details.

<Insert note icon here>

Isolated iViews have to subscribe on every page *Refresh* or *Reload*.

Parameter Description

Argument	Type	Description
`nameSpace`	String	URN [Page 41] of the event namespace.
`eventName`	String	The event name you subscribe to. You can use an asterisk (*) to subscribe for all events of this name-space.
`eventHandler`	Function	Reference to the event handler.

Usage

```
<script language ="JavaScript">
    function onWakeup( eventObj ) {
      alert( "got a wakeup call from " +
             eventObj.sourceId + ": " + eventObj.dataObject );
    }
     ...
      EPCM.subscribeEvent( "urn:com.sap:alarmClock",
                           "morningCall", onWakeup );
      ...
      EPCM.subscribeEvent( "urn:com.sap:alarmClock", "*", onWakeup
);
<script>
```

EPCM.raiseEvent(nameSpace, eventName, dataObject [, sourceId])

This method raises the event defined by *nameSpace* and *eventName*. The EPCF service calls all event handlers which are registered for this event and passes the *event object* on to the event handler.

The *event object* is created by the EPCF service whenever an event is raised. It combines the *dataObject*, the *eventName* and the *sourceId* (which may be null) to a single argument for the event handler.

Parameter Description

Argument	Type	Description
`nameSpace`	String	URN [Page 41] of the event name-space.
`eventName`	String	The event name with which the event is raised..
`dataObject`	Object	An object (*String*, *Number*, *Boolean* or *Object*) that contains a description of the event.
`sourceId` (optional)	String	The component id of the event source, for example, the id defined at design-time. Specify *Null* or no parameter if you do not need the id.

Usage

```
<SCRIPT language ="JavaScript">
    ...
    EPCM.raiseEvent( "urn:com.sap:alarmClock", "morningCall",
           "Good morning ladies and gentlemen", "iView_0815" );
    ...
<SCRIPT>
```

Client Data Bag API

The EPCF *client data bag* API provide methods to store data in a transient data buffer on the client.

EPCM.storeClientData(nameSpace, name, value)

This method saves data in *value* under a key. The key is generated by combining the parameters *nameSpace* and *name.* If the key already exists, the stored data will be overwritten.

Parameter Description

Argument	Type	Description
`nameSpace`	String	URN [Page 41] for the first part of the key under which the data is stored. *nameSpace* will be combined with *name*.
`name`	String	This name, combined with *namespace,* creates the key under which the data is stored.
`value`	String	Data to be stored.

The parameter value must be of type *String*. Primitive data types will be converted to String, complex data types and references are not supported. This restriction is necessary to guarantee that the *client data bag* functionality is working in a JavaScript environment using the browser cookies for clients that have no Java support.

Usage

```
<SCRIPT language ="JavaScript">
  var selectedPerson = "Tim Taylor"
  EPCM.storeClientData( "urn:com.sap.myObjects", "person",
  selectedPerson );
</SCRIPT>
```

EPCM.loadClientData(nameSpace, name)

This method returns the data stored under the specified key as *String*. The key is generated by a combination of the parameters *nameSpace* and *name*. If the key does not exist, the method returns *null*.

Parameter Description

Argument	Type	Description
nameSpace	String	URN [Page 41] for the first part of the key from which the data is reloaded. *nameSpace* will be combined with *name*.
name	String	This name, combined with *namespace,* is the key from which the data is reloaded.

Usage

```
<SCRIPT language ="JavaScript">
  var person=EPCM.loadClientData("urn:com.sap.myObjects",
"person");
  if ( person != null ){
  /* process person */
  }
</SCRIPT>
```

deleteClientData(nameSpace, name)

This method deletes the data stored under the specified key and the key itself. The key is generated by a combination of the parameters *nameSpace* and *name*.

Parameter Description

Argument	Type	Description
nameSpace	String	URN [Page 41] for the first part of the key which is. *nameSpace* will be combined with *name*.
name	String	This name, combined with *namespace,* is the key from which is deleted.

Usage

```
<SCRIPT language ="JavaScript">
```

```
  EPCM.deleteClientData( "urn:com.sap.myObjects", "person" );
</SCRIPT>
```

WorkProtect API

The EPCF *WorkProtect* API provides methods to get the status about unsaved data on the page.

EPCM.setDirty(indicator)

This method sets the status of the *dirty indicator* to *true* or *false*.

Parameter Description

Argument	**Type**	**Description**
`indicator`	boolean	Status of the dirty indicator: *true*: Page contains unsaved data. *false*: Page is clean – no unsaved data.

Usage

```
<SCRIPT language ="JavaScript">
   if  (storedValue != enteredValue){
     changedData["DataKey"] =   enteredValue;
     EPCM.setDirty( true );
   }

   // do other actions ...

   storeArrayToDataBase(changedData);
   ;EPCM.setDirty( true );

</SCRIPT>
```

EPCM.getDirty()

This method returns the current setting of the *dirty indicator* as type *boolean*. The *WorkProtect* feature uses this method to get the *dirty indicator* for the entire Portal page.

Usage

```
<SCRIPT language ="JavaScript">
   var isDirty = EPCM.getDirty( );
   alert("Component " + (isDirty) ? "clean" : "dirty" );
</SCRIPT>
```

EPCM.getGlobalDirty()

This method returns the current setting of the *dirty indicator* as type *boolean*. The difference to the getDirty() method is, that the getGlobalDirty() method checks the *dirty flag* of all iViews on the page and returns a *true* value if at least one of the iViews had a *dirty flag* set to *true*, and *false* otherwise.

Usage

```
<SCRIPT language ="JavaScript">
   var isDirty = EPCM.getGlobalDirty( );
   alert("One component " + (isDirty) ? "clean" : "dirty" );
</SCRIPT>
```

Navigation API

The Navigation API provides the methods to navigate inside the Portal. Refer to chapter Enterprise Portal Navigation [External] for more details about the *navigation service*.

Absolute Navigation

For an *absolute navigation* you have to know the full path name of the component. The full path name starts at the navigation hierarchy root node all the way to the *navigation target*.

EPCM.doNavigate(String target, [int mode, String winFeat, String winName, int history, String targetTitle, String context])

This method triggers the *absolute navigation* on the client. By default, when the parameter *mode* is not specified, the *dirty indicator* of the component is checked by the *WorkProtect* feature and the target is opened in a new window or on the current Portal page depending on the result of the check.

The optional parameters are new in EP 6.0 and can be used when the target is displayed in the new window.

The method always returns *false*, for easier use with event handlers like *onClick.*

Parameter Description

Argument	Type	Description
`target`	String	Navigation target that corresponds to the location in PCD or another structure (see details below)
`mode` (optional)	int	0 or not specified: Depending on the setting of the *WorkProtect* feature the target is opened in a new window or on the current desktop. 1: Open target in a new window, with no a Portal header and navigation bar.

		2: Open target in a new window, with a Portal Header and navigation bar.
`winFeat` (optional)	String	Window feature string when the target is to be opened in the new window. This is a comma separated list of features with no blanks that has the same syntax as the JavaScript method **window.open**. Example: "width=400,height=500".
`winName` (optional)	String	Window title for when the target is opened in a new window.
`history` (optional)	int	history mode 0: Track history entries and allow duplicates. 1: Track history entries and do not allow duplicates. 2: Do not track history entries.
`targetTitle`	String	Title for the page title bar. In case the *navigation target* is sent through an *integrator*, the title will be the *integrator* title. You can specify a specific title for this navigation and optional for the history entry.
`Context`	String	Navigation context URL.

Usage

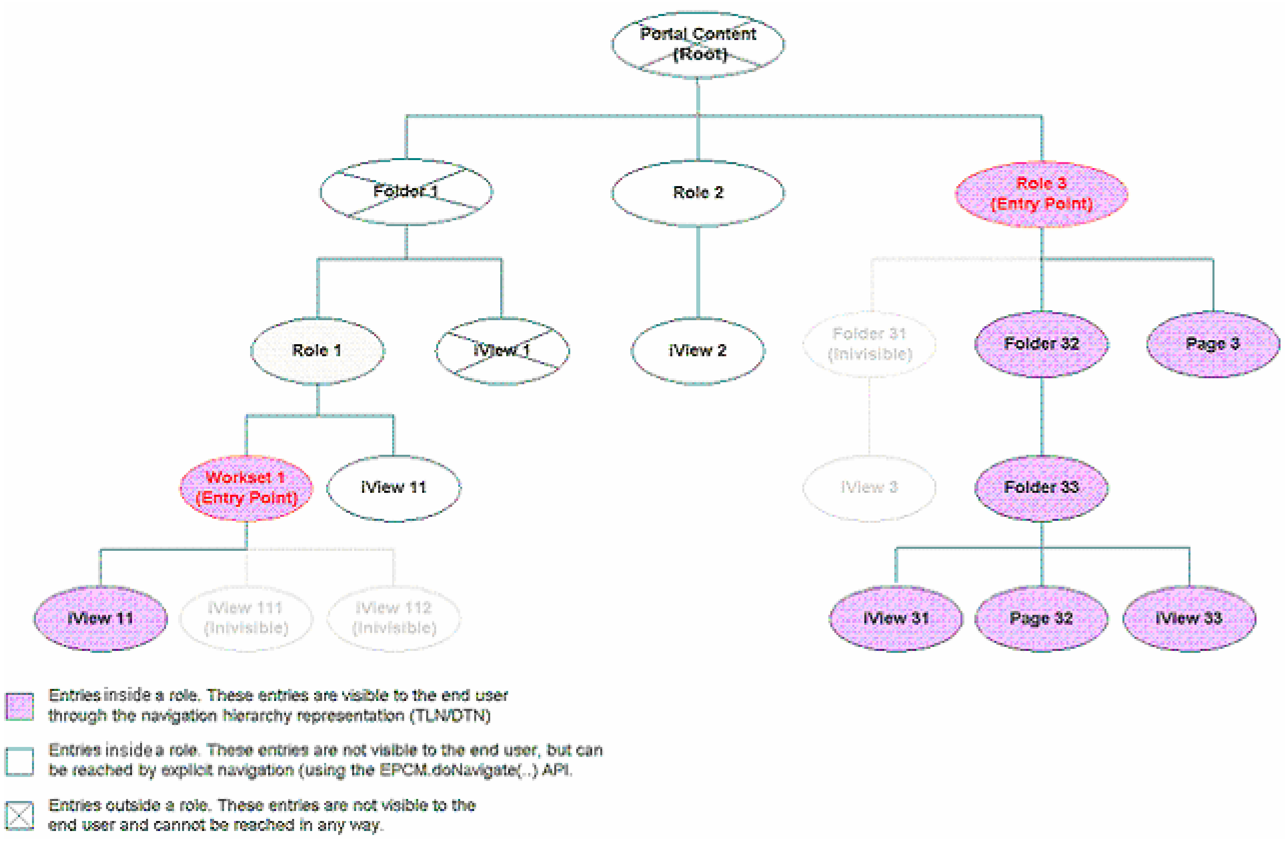
```
<SCRIPT language ="JavaScript">
   // navigate.
   EPCM.doNavigate(
         "ROLES://portal_content/folder1/role1/workset1/iView111")
</SCRIPT>

<A HREF="myLink"
  onclick="return EPCM.doNavigate

('ROLES://portal_content/folder1/role1/workset1/iView111')">
This is an HTML Link
</A>
```

Result

This starts the navigation to the iView 111 under *role* 1.



▨ Entries inside a role. These entries are visible to the end user through the navigation hierarchy representation (TLN/DTN)

☐ Entries inside a role. These entries are not visible to the end user, but can be reached by explicit navigation (using the EPCM.doNavigate(..) API.

⊠ Entries outside a role. These entries are not visible to the end user and cannot be reached in any way.

Figure 1: Navigation hierarchy example

Relative Navigation

For a *relative navigation* you specify the relative location of the *navigation target* to the current *navigation node*.

EPCM.doRelativeNavigate(String basenodename, int level, List pnamesList, int mode, String winFeat, String winName, int history, String targetTitle, String context])

This method triggers the *relative navigation* on the client. You have to know the location of the *navigation target* relative to the current node. That the *navigation model* can create an absolute path, you have to provide at least the `level` or the `pnameslist` parameters in addition to the `basnodename` parameter.

The optional parameters are new in EP 6.0 and can be used when the target is displayed in the new window.

The method always returns *false*, for easier use with event handlers like *onClick.*

Parameter Description

Argument	Type	Description
`basenodeName`	String	Current presented URL – current node.
`level`	int	Number of hierarchy levels to *step up*.
`pnameslist`	List	A list with all the atomic names of the children nodes,

		relative to the node that has been reached by *stepping up* the number of `level`.
`mode`	int	0 or not specified: Depending on the setting of the *WorkProtect* feature the target is opened in a new window or on the current desktop. 1: Open target in a new window, with no a Portal header and navigation bar. 2: Open target in a new window, with a Portal Header and navigation bar.
`winFeat` (optional)	String	Window feature string when the target is to be opened in the new window. This is a comma separated list of features with no blanks that has the same syntax as the JavaScript method **window.open**. Example: "width=400,height=500".
`winName` (optional)	String	Window title for when the target is opened in a new window.
`history` (optional)	int	history mode 0: Track history entries and allow duplicates. 1: Track history entries and do not allow duplicates. 2: Do not track history entries.
`targetTitle`	String	Title for the page title bar. In case the *navigation target* is sent through an *integrator*, the title will be the *integrator* title. You can specify a specific title for this navigation and optional for the history entry.
`Context`	String	Navigation context URL.

Usage

```
<SCRIPT language ="JavaScript">
   // navigate.
   EPCM.doRelativeNavigate(
         "ROLES:// portal_content/role3/Folder32/Folder33", 2,
          {"page3"}, ..., ..., ...);
</SCRIPT>


<A HREF="myLink"
  onclick="return EPCM.doRelativeNavigate
        ('ROLES:// portal_content/role3/Folder32/Folder33', 2,
          {"page3"}, ..., ..., ...)">
This is an HTML Link
```

```
    </A>
```

Result

This starts the navigation from *folder 33* under *role* 3 to *page* 3 under *role* 3. See `figure 1`.

If you do not provide the first parameter, the current *navigation node*, the *navigation model* will find the current *navigation node* itself and add it to the path automatically.

Object Based Navigation

The *object based navigation* allows navigation based on actual business objects from productive back end systems. The *object based navigation* is based on the concept of business objects, that perform certain operations and iViews that can be declared as *implementors* of these operations. Every operation has a priority. When choosing the link of the *object based navigation*, the operation with the highest priority, that has an implementing iView in the user role (the default), will be executed.

EPCM.doObjBasedNavigate(String systemAlias, String businessObjName, String objValue, String operation)

This method allows navigating in a context environment, without a specific URL for a *navigation target*. For more details, see the *Object Base Navigation* description.

The method always returns *false*, for easier use with event handlers like *onClick.*

Parameter Description

Argument	**Type**	**Description**
`systemAlias`	String	The system alias of the business object.
`businessObjName`	String	Business object name for which the operation was defined.
`objValue`	String	Any data that has to be transferred to the *navigation target* when the visualization iView represents relative data. The `objValue` can be any string that is added to the URL of the *navigation target* (after the "?" separator) and the target iView can access the `objValue` via the iView `request` object.
`operation`	String	Operation that should be performed when the business object has more than one operation.

The parameters `businessObjName` and `sytemAlias` define the MetaMatrix name of the *object based navigation* business object.

If the *object based navigation* uses *relation resolving*, the `objValue` parameter is used to transfer the `HRNPLink`.

Data Session Management (DSM) API

The **DSM** uses this API to access the properties of the *SessInfo* object. See chapter Session Management [Page 27] for more details.

EPCM.DSM.init (String url)

This method Initializes the DSM and registers the URL at the *Terminator* component.

Parameter Description

Argument	Type	Description
`url`	String	URL that is registered at the *Terminator* component.

EPCM.DSM.processSession (sessInfo)

This method is the entry point for the session management (handler for **`SAPWP_receiveSessInfo)`**.

Parameter Description

Argument	Type	Description
`sessInfo`	Object	*SessInfo* object.

EPCM.DSM.notifyMonitor (sessInfo)

This method notifies the DSM when the new *SessInfo* object is available.

Parameter Description

Argument	Type	Description
`sessInfo`	Object	*SessInfo* object.

EPCM.DSM.registerSession (sessInfo)

This method registers the *SessInfo* object.

Parameter Description

Argument	Type	Description
`sessInfo`	Object	*SessInfo* object.

EPCM.DSM.removeSessionByGUSID (gusid)

This method removes the *SessInfo* object associated with the *Global Unique Session ID* (GUSID) from the register.

Parameter Description

Argument	Type	Description
`gusid`	String	GUSID.

EPCM.DSM.teminateByGUSID (gusid)

This method terminates the sessions associated with GUSID and removes them from the register.

Parameter Description

Argument	Type	Description
`gusid`	String	GUSID.

EPCM.DSM.teminateAll ()

This method terminates all registered sessions and clears the register.

EPCM.DSM.getAllToArray ()

This method makes a copy of all active *SessInfo* objects in a JavaScript *Array* object. The *SessInfo* objects can be used and processed by the client application.

EPCM.DSM.getSize ()

This method returns the number of registered *SessInfo* objects in the DSM.

EPCM Proxy

The EPCM proxy allows the EPCF functionality in Portal applications that are rendered in their own *IFrame* (for example, ITS-based applications and BSP).

"Reload" Function and Event-Subscription

The EPCF event methods are used by *function reference*. Since the references are kept across the *IFrame* borders, the references become invalid whenever the *IFrame* content is reloaded. To solve this problem, you have to use the second signature of the `EPCM.subscribeEvent` method that references to the current window object.

```
EPCM.subscribeEvent(nameSpace, name, window_reference, method_name)
```

External applications (for example, BSP, BW-Reports) are rendered in their own *IFrame*. The EPCM Object therefore can convert the event handler registration from `[window_reference,method_name]` to `[iframe_name,method_name]`. With this conversion the method keeps the name and not the object/method reference. When the *IFrame* content is reloaded now, the `iframe_name` and `method_name` are still valid and the event handler, that is located inside the *IFrame*, can be called from the EPCM event manager outside the *IFrame* using the following call:

```
window.frames[iframe_name][method_name]( event_data )
```

IncludeProxy

To simplify the implementation, the *EPCMPROXY* object is provided that serves as the proxy. The EPCF calls within the *IFrame* are delegated by the proxy layer to the upper EPCF layer. So instead of *EPCM* calls you use *EPCMPROXY*. THE *EPCMPROXY* object is in the JavaScript file `epcfproxy.js` that comes with the Portal and has to be included into your Portal application.

Usage

Usage of the JavaScript file `epcfproxy.js` in a HTML page:

```
<HTML>
<HEAD>
<TITLE>EPCMProxy test example</TITLE>
<!--
 This is a general proxy to delegate all EPCM method calls to the upper
 frame -->
```

```
<SCRIPT src="epcfproxy.js"></SCRIPT>
<SCRIPT>//
  var lnDotPos = document.domain.indexOf( "." );
  if (lnDotPos > = 0) document.domain = document.domain.substr( lnDotPo
s + 1 );

  function run() {
    // call EPCF method via proxy (transparent for End-User
    EPCMPROXY.subscribeEvent( "urn:com.sapportals.portal.epcmdemo.anima
ls",
         "onAnimalSelect", window, "handleEvent");
    showCurrentAnimal();
  }

  function showCurrentAnimal() {
    var lsAnimal =
      EPCMPROXY.loadClientData("urn:com.sapportals.portal.epcmdemo.anim
als", "animalstored" );
    if (lsAnimal == null){ lsAnimal = "unknown"; }
      document.getElementById( "infoBox" ).innerHTML = lsAnimal;
  }

  function handleEvent( evt ) {
    showCurrentAnimal();
  }

  function showEPCMdata(){
          var data = ""
          data += "\n EPCMPROXY.getUAType = " + EPCMPROXY.getUAType()<
/STRONG > ;
          data += "\n EPCMPROXY.getUAVersion = " + EPCMPROXY.getUAVersi
on()< /STRONG > ;
          data += "\n EPCMPROXY.getUAPlatform = " + EPCMPROXY.getUAPlat
form()< /STRONG > ;
          data += "\n EPCMPROXY.getUAVersion = " + EPCMPROXY.getVersion
()< /STRONG > ;
          data += "\n EPCMPROXY.getInstanceId = " + EPCMPROXY.getInstan
ceId()< /STRONG > ;
          data += "\n EPCMPROXY.getUniqueWindowId = " + EPCMPROXY.getUn
iqueWindowId()< /STRONG > ;
          alert(data);
  }
</SCRIPT>

</HEAD>
<BODY onLoad="run()">
<DIV class="header"> EPCMProxy test component </DIV>
<P>
<BUTTONonClick="location.reload()">reload</BUTTON>
<BUTTONonClick="showEPCMdata()">show EPCM Data</BUTTON>
<DIVid="infoBox"></DIV>
</BODY>
</HTML>
```

There must be *document* - *domain* alignment so that the parent EPCM object can be accessed across the *IFrame* border. See chapter JavaScript Origin Policy [Page 40] for more details.

Use the *object-call-signature*, with the reference to the window object for the `EPCMPROXY.subscribeEvent()` method.

Restrictions

Restrictions for the *EPCFPROXY* object.

- Following APIs are available for the *EPCMPROXY* object:
    - System API [Page 7]
    - Event API [Page 9]
    - Client data Bag API [Page 11]
    - WorkProtect and Cross Navigation API [Page 13]
- The *EPCMPROXY* object delegates the calls up **one** level. If your Portal application uses additional *Framesets* or *IFrames*, the calls inside the *subframes* are not processed.
- To avoid the JavaScript errors, encapsulate the *EPCFPROXY* calls with JavaScript try/catch statements.
- The JavaScript file `epcfproxy.js` is not a part of the Portal core. The file must be stored in the application code repository and delivered with the Portal application.

EPCF Configuration

To configure the EPCF service have to be logged in as administrator.

Configuration steps:

1. Choose the command *System Administration* in the top level navigation.
2. Choose the commands *System Configuration* → *Service Configuration*
3. Choose the *Browse* tag and open the node *Applications*.
4. Open the node *com.sap.portal.epcf.loader*.
5. Open the subnode *Services* and you will see the entry *epcfloader*.
6. Click the *epcfloader* entry with the right mouse key and select *Edit*.

The property page is displayed and you can modify the values. To save the changes, choose the *Save* button.

If you are working in a cluster environment, you have to restart the EPCF service so that the changes take immediate effect on all cluster nodes.

If the EPCF property values are not set correctly, the EPCF service uses the default settings at runtime.

EPCF Properties

Property	Description
`applet.archive = < on | off >`	Defines if the classes of the Java applet are transferred as single class files or in one Java archive (JAR). This setting has only an affect if the `framework.level` property is set to 2. **on:** All classes are loaded from the server to the client in one JAR file. **off:** Every class is loaded from the server to the client individually. For a productive system we recommend the value **on**.
`applet.trace.level = < 0 | 1 | 2 >`	This setting only has an affect if the `framework.level` property is set to 2. The `applet.trace.level` controls the level of error messages displayed. A higher `applet.trace.level` reduces the Portal performance. **0:** Display errors only. **1:** Display errors and warnings. **2:** Display errors, warnings and information. For a productive system we recommend the value **0**.
`framework.level = < 0 | 1 | 2 >`	Defines the EPCF service level in use. Please refer to chapter EPCF Level [Page 5] for more details. The default setting is **2**.

Properties for the Session Release Agent

Property	Description
`dsm.term.custcomp`	Defines the name of a user defined Terminator component [Page 35].
`dsm.term.custurl`	Defines the URL of a user defined Terminator component [Page 35]. The URL can point to any server based component (for example, servlet, JSP, Perl, ASP and so on) that can process the string parameter *TermString*. Example: `http://myserver/MyTerminator.asp`

`dsm.term.mode`	Defines which Terminator component [Page 35] is used: **internal:** The default *Terminator* component *DSMTerminator* is used **custcomp:** The component specified in the property `dsm.term.custcomp` is used as *Terminator* component. **custurl:** The component specified in property `dsm.term.custurl` is used as *Terminator* component.

Related Chapters

Work Protect Mode for EP 6.0 [Page 37]

Properties for EP 5.0 [Page 37]

Terminator Component [Page 35]

Properties for EP 5.0

The EPCF service for EP 5.0 is configured with the property file `config.properties.` You can find the file in the following directory:

```
<TOMCAT_HOME>/cluster/server/services/servlet_jsp/work/jspTemp/
irj/root/WEB-INF/portal/portalapps/com.sap.portal.epcf.loader/
config/config.properties
```

The EPCF service reads the property file at the Portal start up when the services are initialized. Therefore you have to restart the Portal so that the changes take affect, after you have changed the properties. If a property has an invalid value, the EPCF service uses the default value.

General Settings for EP 5.0

framework.level

Sets the EPCF level for the Portal. See chapter EPCF levels [Page 5] for more details.

Beginning with EP version 5.0.1.3 the client data bag [Page 40] and the session management [Page 27] has been implemented in JavaScript. If the Web client has no Java support, the EP switches automatically to this implementation.

```
# ----------------------------------------------------------------
-
# Framework level
#
# framework.level=0 -> disabled EPCF
# framework.level=1 -> enable JavaScript
# framework.level=2 -> enable JavaScript & Java
# ----------------------------------------------------------------
-
framework.level=2
```

script.set

If the EPCF service is running on the level 1 or 2, the appropriate JavaScript will be included automatically in every Portal page that is generated by the Portal page builder. The JavaScript code can be generated in two different ways:

1. Standard

   The default value. The JavaScript code is generated in a *user friendly* form. The code contains comments and is formatted in a way, that it can easily be read, when you select the command *View source* in your browser.

2. Optimize

   With this setting, the JavaScript code is generated without which discards all the comments and unnecessary white-space characters. The HTML code generated with the *optimize* option is about 30% smaller then generated with the *standard* version. The *optimize* option is recommended for a productive system.

```
# ------------------------------------------------------------------------
# JavaScript settings. It has only effect with framework.level=1,2
#
# script.set=standard -> use standard JavaScript file set
# script.set=optimize -> use size-optimized JavaScript file set
# ------------------------------------------------------------------------
script.set=optimize
```

applet.trace.level

The ECPF service level 2 uses a Java applet that provides the client data bag [Page 40], the data channel [Page 40] and the session management [Page 27] functionality. Log entries are written on the Java console of the Web client Java console to inform about errors. A high trace level generates many messages on the Java console which will slow down the Portal. The Portal administrator can disable messages by lowering the trace level. For a productive system we recommend the value 0.

```
# ------------------------------------------------------------------------
# Applet specific settings. It has affect with framework.level=2 only
#
# applet.trace.level=0 -> display error messages
# applet.trace.level=1 -> display error and warning messages
# applet.trace.level=2 -> display error, warning and information
messages
# ------------------------------------------------------------------------
applet.trace.level=0
```

applet.archive

The Java applet for the EPCF service uses several Java classes. The classes can be loaded from the server in as one file, packed in a Java archive (JAR) file or as single class files. For a productive system, we recommend to set the `applet.archive` option to *on*.

```
#-----------------------------------------------------------------------
# Applet specific settings. It has affect with framework.level=2 only
#
# applet.archive=on -> applet classes accessed via jar-file
# applet.archive=off -> applet classes accessed as singlefiles
# ----------------------------------------------------------------------
applet.archive=on
```

DSM Settings

Distributed session management [Page 27] requires the Terminator component [Page 35] to terminate the server sessions. The *Terminator* component processes the EPCF service request and sends the termination commands to the servers. To customize the *Terminator* component you have following properties:

dsm.term.mode

This property defines which *Terminator* component will be used. Following values are possible:

- internal

  Uses the default Portal component `DSMTerminator.default`, supplied by the Portal.

- custcomp

  Uses a Portal component specified with the property `dsm.term.custcomp`.

- custurl

  Uses the component specified with the property `dsm.term.custurl`.

-

dsm.term.custcomp

The specified Portal component, for example, `myTerminator.default`, will be used as *Terminator* component. The parameter *TermString* is passed on to that component.

dsm.term.custurl

With this property you can specify any server side component (for example, servlet, JSP, Perl, ASP and so on), as *Terminator* component.

Example:

```
    http://myserver/MyTerminator.asp
```

The component is started with the parameter *TermString*.

```
# ----------------------------------------------------------------------
# Distributed session management (DSM)
#
# dsm.term.mode=internal - predefined component DSMTerminator.default
#
# dsm.term.mode=custcomp - customer specific Portal component specified
by
# dsm.term.custcomp = MyTerminator.default
#
# dsm.term.mode = custurl -> customer specific component, specified by
# dsm.term.custurl = http://myserver/MyTerminator.asp
# ----------------------------------------------------------------------
```

Session Management

Business applications use a *stateful* protocol with a dedicated client (GUI). This allows server sessions to be terminated correctly and all server resources (for example, memory) are released when the client closes the session, for example, by logging off from the Portal.

If an application runs on the Web, the *connectionless* HTTP protocol works in request/response cycles and does not check if the client has already terminated the session. In this scenario the server sessions and resources of the business application are usually released after a predefined timeout (about 5-10 minutes). This delay can cause the following situations:

- Servers can become overloaded and run out of resources by sessions that have already been terminated.
- Locks for the application are held until timeout. In some cases an application can be deadlocked even if there are many servers available.

The SAP *Internet Session Protocol* (SISP) included in the SAP Workplace 2.10 overcomes this problem.

How does Session Management Work?

For the explanation we consider a service based on the *Internet Transaction Server* (ITS). The service is started with a *LaunchURL* containing the ITS location, name of the service and a set of parameters (user, password, language and so on).

Example:

```
http://pgwp211a.wdf.sap-ag.de:1080/scripts/wgate/webgui/
!?~transaction=sm04&sapwp_active=1&~client=050&~login=wpdev&~
language=de&~passwd=blue
```

When we enter the *LaunchURL* directly on the client, the content page, that is generated by the ITS, is displayed. Because of the *stateless* connection, the responsible ITS is not informed whether the running ITS session is still valid or should be terminated. That is not a reliable session management. If the user closes the browser, navigates to another location or chooses the *Back* button in the browser, the ITS session is kept alive on the server until the predefined timeout occurs.

To overcome this problem, a main page is created that consists of an *IFrame* (displaying the content from the ITS) and a special JavaScript object called *Distributed Session Manager* (DSM). The DSM is responsible for session management handling in the page. Every content page includes a JavaScript code that is processed on the client after the page has been loaded. This JavaScript code creates a new JavaScript object called *SessInfo* with the unique identification of the ITS session `SessInfo.GUSID` and the callback URL `SessInfo.SessURL`. The callback URL is the address where the SISP commands will be sent to. See chapter SessInfo Object Properties [Page 35] for more details.

After the content page in the *IFrame* has been loaded, the *SessInfo* object is transferred from the content page to the main page and is saved by the DSM. If the user exits the browser, navigates to another location or chooses the *Back* button, the DSM is activated by receiving the browser event *onunload*. DSM sends the termination commands to all registered callback URLs and terminates the ITS sessions on the server.

Following restrictions apply:

- **JavaScript origin policy**

  The *SessInfo* object and script can only be transfer over *IFrame* borders, if both pages (main page and content page) use the same document domain. The main page comes from the Enterprise Portal server, for example, `http://epserver.mycomp.com`, and the content page comes from the ITS server, for example, `http://itsserver.mycomp.com.` Both domains must be aligned to the same denominator, such as `mycomp.com,` to allow scripting. See JavaScript Origin Policy [Page 40] for more details.

- **Browser event** ***onunload***

  The transmission of a termination command from the DSM back to the ITS server must be triggered by a client event. If the DSM simply registers the *onunload* event and tries to send one or more HTTP requests from the JavaScript, there is no guarantee that all requests are transmitted. If the connection is slow, the browser can be terminated before all requests have been sent.

  The browser event *onbeforeunload* solves this problem, but only the Microsoft Internet Explorer supports this event.

  A browser independent solution is, to send the termination commands from a Java applet. Received *SessInfo* objects are collected directly by the applet and the termination commands are sent to the servers in the **`destroy()`** method of the applet. The applet runs in its own JVM and the **`destroy()`** method of the applet is executed independently of the browser JVM, so the applet is still executed, even if the browser is already terminated.

  When the browser has no Java support, the commands can be sent from the *External Window*.

- **Applet origin policy**

  A termination command is HTTP request from the client to the ITS. Since the applet can only connect to the server from which it is loaded, you must have the same applet on every ITS. To overcome this problem the applet code should be loaded from the Workplace Middleware Server. Instead of sending the termination commands from the DSM directly to the ITS, the commands are sent to the dedicated Portal component *Terminator*. The *Terminator* component finally distributes the commands to the ITS.

Components

Server: ITS server/ ITS services

No modifications are necessary for the ITS; the customer can use the existing ITS transactions in Workplace 2.10/Workplace 2.11 and integrate them into the new Portal by customizing the **Launcher** component

Server: Workplace server components/services

EPCM Object (Portal service)

The EPCM object is involved in the page assembly process. It generates page stubs into predefined page locations. It is responsible to place DSM interfaces, DSM applets and the EPCF infrastructure into the header and body of the page.

Launcher (Portal component)

The *Launcher* includes an *IFrame*, with the size of 100% by 100%, on the Portal page with the *LaunchURL*.

Terminator (Portal component)

The *Terminator* is invisible. It receives a list of termination commands from the client and sends them back to the ITS. Every page assembled by the **EPCM Service** includes one URL of the **Terminator** component as the parameter of the applet. See also chapter Terminator Component [Page 35] for more details.

DSM (Portal component)

The DSM is used for testing. If this component is included in the same page as the **Launcher**, the processed *SessInfo* object can be displayed easily and terminated manually.

Client: Scripts & Applet

DSM Interface

The DSM interface is JavaScript code that is fully integrated into the Workplace Client Manager EPCM and therefore automatically included in every Portal page generated by the **EPCM Object**. It provides methods to communicate with the **DSM Applet** and a definition of the function **`SAPWP_receiveSessInfo()`**, which collects the *SessInfo* objects coming from the content *IFrame*. See chapter DSM Interface [Page 19] for more details.

DSM Applet

The DSM applet is integrated with the applet `com.sap.portal.epcf.EPCMfactory`. It implements the saving of the *SessInfo* object in a hash table and a communication channel to the server using *Client Data Channel*. The methods can be accessed using the **DSM Interface**.

SISP Code generated by the ITS in the content page

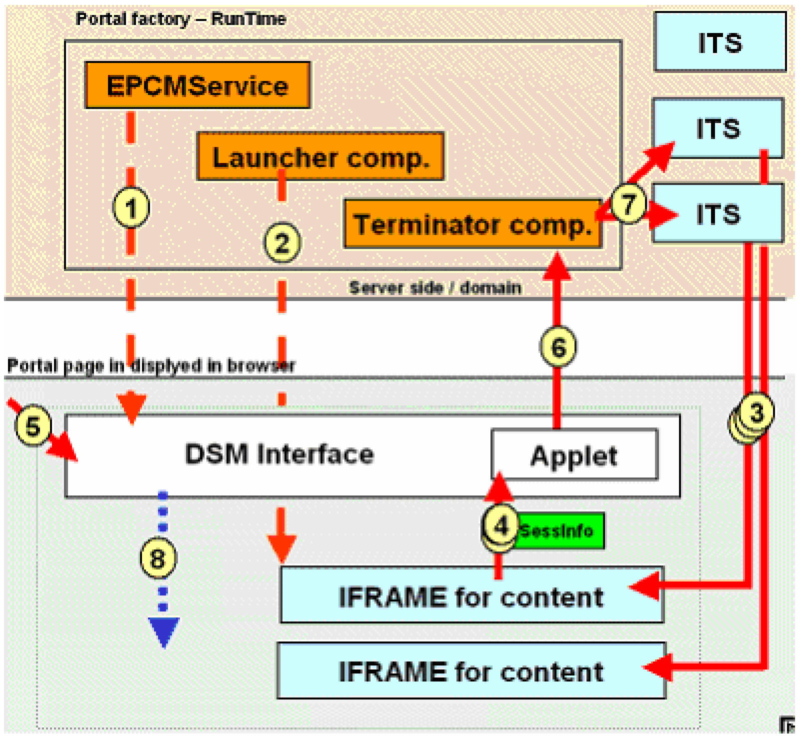
The ITS server generates JavaScript code to create the *SessInfo* object and transfers it to the main page.

External Window

The *External Window* is an additional window to the regular Portal page that is used for browsers with no Java support.

Session Management Step by Step

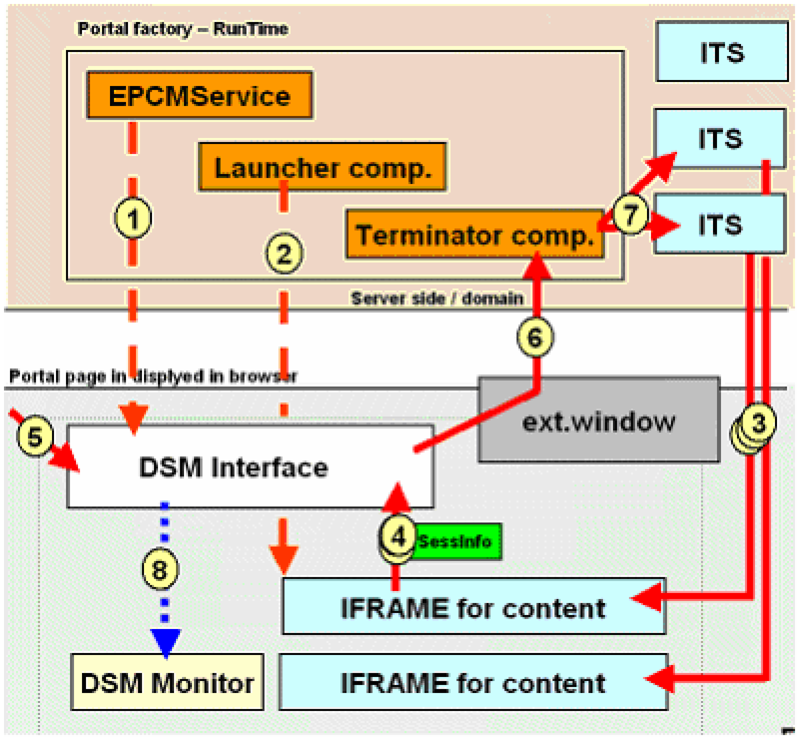
Clients with Java Support



1. The **EPCM Object** includes the **DSM Interface** and **DSM Applet** in the Portal page.

2. The **Launcher** creates the *LaunchURL* for the ITS service and includes the *IFrame* in the Portal page. There is an instance of the **Launcher** in the Portal page for every *IFrame* that points to a different ITS service.
3. The page is processed in the browser. Every *IFrame* generated loads its contents from the ITS. The ITS returns the content page with the generated **SISP Code** as the response to *LaunchURL*. The **SISP Code** creates the *SessInfo* object and transfers it to the main page.
4. *SessInfo* objects are collected by the **DSM Interface,** transferred to the **DSM Applet** and stored in the applet.
5. If the user navigates to another location, closes the browser or chooses the *Back* button in the browser, the registered ITS sessions become invalid and must be terminated. The browser triggers the *unload* event and the **DSM Applet** starts to process its own **`destroy()`** method.
6. The **`destroy()`** method of the **DSM Applet** computes the URL to terminate the sessions on the ITS for every *SessInfo* object stored. All URLs are collected and placed into one single HTTP *post* request (parameter *TermString*) and sent to the **Terminator** component.
7. The **Terminator** component splits the *TermString* parameter from the HTTP request into single URLs and sends the URLs to the different ITS servers with a new URLConnection. The server sessions on the ITS are then terminated.
8. Every *SessInfo* object is reported by the EPCF to the **DSM.**

Clients without Java Support



1. The **EPCM Object** includes the **DSM Interface** on the Portal page. The event handler in the **DSM Interface** is attached to the *onunload* event.
2. The **Launcher** creates the *LaunchURL* for the ITS service and includes the *IFrame* into the Portal page. There is an instance of the **Launcher** in the Portal page for every *IFrame* that points to a different ITS service.

3. The page is processed in the browser. Every *IFrame* generated loads its contents from the ITS. The ITS returns the content page with the generated **SISP Code** as the response to the *LaunchURL*. The **SISP Code** creates the *SessInfo* object and transfers it to the main page.
4. *SessInfo* objects are collected by the **DSM Interface** and stored in a JavaScript array.
5. If the user navigates to another location, closes the browser or chooses the *Back* button in browser, the registered ITS sessions become invalid and must be terminated. The browser fires the *unload* event.
6. The *onunload* event handler creates an **External Window,** in addition to the existing Portal page, with the URL of the **Terminator** component. The browser sends a HTTP *get* request (parameter *TermString*) to the **Terminator**. After the request has been sent the **External Window** can be closed automatically using the JavaScript **`timeout`** function.
7. The **Terminator** component splits the *TermString* parameter from the HTTP request into single URLs and sends the URLs to the different ITS servers with a new *URLConnection*. This terminates the server sessions on the ITS.
8. Every *SessInfo* object is reported by the EPCF to **DSM.**

Scripts

Here are some scripts that are used for the session management. The different examples refer to the steps, for example *Step 1*, shown in the previous chapter *Session Management Step by Step*.

Client scripts

DSM Interface (Step 1)

```
<SCRIPT src=
"/irj/portalapps/com.sap.portal.epcf.loader/script/standard/js13_ep
cf.js"> </SCRIPT>

<SCRIPT>

<!--

 EPCM.init( 2, 2, '8a50298ad8156b33d0445ae7e4f9062e', 1, 5.5, 1 );

 EPCM.DSM.init("http://p45462.wdf.sap-
 ag.de:8080/irj/servlet/prt/portal/prtroot/DSMTerminator.default")
 ; function SAPWP_receiveSessInfo( sessInfo, frameRef ){

 EPCM.DSM.processSession( sessInfo );

 EPCM.DSM.notifyMonitor( sessInfo );

}

//-->

</SCRIPT>
```

DSM Applet as the Part of EPCM Object (Step 1)

```
<APPLET CODEBASE="/irj/services/epcfloader/applet"

        CODE="com.sap.portal.epcf.EPCMfactory"

        ID="_EPCMfactory_"

        NAME="_EPCMfactory_"

        STYLE="POSITION: absolute;"
        WIDTH="0"
        HEIGHT="0"
        MAYSCRIPT>
  <PARAM name="trace.level" value="2">
  <PARAM name="DSM.serverUrl" value="http://p45462.wdf.sap-
ag.de:8080/irj/servlet/prt/portal/prtroot/DSMTerminator.default">
  <PARAM name="DSM.scope" value="8a50298ad8156b33d0445ae7e4f9062e">
</APPLET>
```

IFrame with Content (Step 2)

```
<IFRAME width="100%"height="100%"border="0"
     src="http://pgtlsp4c.wdf.sap-
g.de:1080/scripts/wgate/fielddump/!?
     ~client=001&~language=EN&
     ~logingroup=SPACE&sapwp_active=1&
     ~login=p80000001&passwd=welcome">
</IFRAME>
```

Function **`SAPWP_receiveSessInfo`** is the entry point for every *SessInfo* Object. The *SessInfo* object is transferred to the **DSM Applet** using the method **`EPCM.DSM.registerSession()`** from the **DSM Interface**. The applet parameter *DSM.serverUrl* specifies the URL of the **Terminator** component. The collected termination commands will be sent to this URL (Step 6).

SISP Code Example Generated by the ITS (Step 3)

```
<SCRIPT>
// ----------------------------------------------------------------
------------
function SAPWF_sendSessInfo( cltSessInfo ) {
var lsDomain = "";
var liBehindFirstDot = location.hostname.indexOf( "." ) + 1;
if (liBehindFirstDot > 0) {
document.domain = location.hostname.substr( liBehindFirstDot );
}

var loCF = window; // current frame
var loPF = (loCF.opener != null)? loCF.opener: loCF.parent; // pare
nt frame

while (loCF != loPF) { // while top frame not reached
if ("object" == typeof( loPF.document ) ) { // is parent frame scri
ptable?
if (loPF.SAPWP_receiveSessInfo != null) {
// workplace frame found, deliver sessinfo
loPF.SAPWP_receiveSessInfo( cltSessInfo, loCF );
return true;
} else {
// try upper frame
loCF = loPF;
loPF = (loPF.opener != null)? loPF.opener: loPF.parent;
}
} else {
// access to foreign frame denied, stop here
return false;
}
}
// top frame reached, but no workplace frame found
return false;
}


function SAPCLT_SessInfo() {
var prot = ( "off" == "on" ? "https://" : "http://" ) ;
this.protocolVersion = "1.0";
this.sessUrl = prot + "pgtlsp4c.wdf.sap-
ag.de:1080" + "/scripts/wgate" + "/" + "fielddump" + "/?~session="+
"QW2-A:pgwdf062:0000.0040.afa108fd";
this.GUSID = "QW2-A:pgwdf062:0000.0040.afa108fd";
this.lastSessCmd = "USR_OPEN";
this.redirectURL = "";
this.dTimeout = "120";
}

SAPWF_sendSessInfo( new SAPCLT_SessInfo());

</SCRIPT>
```

Testing the Session Management

The Portal has two components to test the session management:

- DSM TestLaunch.

  Creates the docking *IFrame* for the ITS response.

- DSM Monitor

  Allows you to check the Public API functionality and displays the *SessInfo* object list and other information.

Both components must be included on the same Portal page for the test. The *DSMTestLaunch* component properties must be configured to start an ITS service. As already shown in the chapter *Session Management Step by Step* the transfer of the *SessInfo* objects is processed in several steps. The **DSM** component can test Step 4, Step 5 and Step 6 even if the ITS is not available. The **DSM** component can be started in *single component* mode with the following URL:

```
<Portal_URL>/irj/
servlet/prt/portal/prtroot/com.sap.portal.dsm.Monitor
```

The test results of the session termination are displayed on the *Java console* of the browser (browsers with Java support) or on the **External Window** after the resize of the window is done (browsers with no Java support).

Test 1: DSM Displays *SessInfo* Objects

If the session management works correctly, all received *SessInfo* objects are displayed in the **DSM** and you can display all properties of the *SessInfo* objects. If there are no *SessInfo* objects displayed in the DSM following problems are possible:

1. ITS did not include the SISP coding stub into the response

Check if the service parameter `SAPWP_ACTIVE` is set in ITS. You can add to the *LaunchURL* following string: `SAPWP_ACTIVE=1`

2. The ITS server and Workplace server use different domains

   The typical local test installations at SAP do not have a specific IP address. The Workplace Server can be accessed using *localhost* instead of a specific server name or IP address (for example, `http://localhost:8080/irj/servlet/prt/portal`) and the ITS server uses a server name like `itsserver.wdf.sap-ag.de`. This does not comply with the JavaScript origin policy [Page 40] and therefore the DSM can not display a *SessInfo* object.

   To solve this problem, use a specific IP-address for the computer or define a synonym in the *hosts* file of the computer (for example, Windows NT keeps that file at location `C:\WINNT\system32\drivers\etc\hosts`). The entries for the synonym look like that:

   ```
   127.0.0.1 localhost

   127.0.0.1 myhost.wdf.sap-ag.de
   ```

   Now you can access your Portal runtime from your computer locally using the address:

   ```
   http://myhost.mycomp.com/irj/servlet/prt/portal
   ```

   The name `myhost.wdf.sap-ag.de` is only known on your local computer and can not be accessed from another computer.

Test 2: DSM Interface to DSMTerminator Component Connection

SessInfo objects will be processed during the page *unload* event. The termination command is sent by the Java applet to **DSMTerminator** component. The transfer protocol can be displayed on the Java console of your browser. The Java console of the MS Internet Explorer can be enabled as follows:

Tools → *Internet Options* → *Advanced* → *Microsoft VM*

If there is an error message in the Java console, you should first check if the proxy settings `http.proxyHost`, `http.proxyPort` and `http.nonProxyHosts` in your servlet environment are correct.

Test 3: Destroying of ITS Sessions

Every *SessInfo* object represents a session on the ITS. You can directly start the R/3 system to which the ITS server is connected and check with the transaction `SU04` which sessions have been destroyed during the page *unload* event.

Related Chapters

SessInfo Object Properties [Page 35]

DSM API [Page 19]

Terminator Component [Page 35]

SessInfo Object Properties

SessInfo properties defined by the SISP protocol version 1.0.

Properties

Property	**Description**
`GUSID`	Global Unique Session ID.
`sessUrl`	URL where the session commands and termination command is sent to.
`lastSessCmd`	Last session command.
`redirectURL`	URL which can be used for chaining the application (close the current one and start new one with given `redirectURL`).
`dTimeout`	Timeout value for session response.
`Label`	Description of session.
`protocolVersion`	Provides information of the version of the protocol. The current version released is 1.0.

Terminator Component

The *Terminator* component sends HTTP request to servers, to terminate the registered sessions.

Basic functionality

The *Terminator* component receives a HTTP request (either *get* or *post*), with the parameter *TermString*, *TermString* contains *escaped* URLs concatenated with an ampersand (&).The special characters must be *escaped* (see JavaScript functions *escape/unescape*) so that the URLs are transmitted correctly.

Format of the parameter *TermString*:

```
    escaped(escaped(URL1)+"&"+escaped(URL2)+"&"+...escaped(URLn))
```

The *Terminator* component splits und *unescapes* the *TermString* parameter into single URLs and sends for every of them one single HTTP *post* request to the target system (usually ITS).

The Portal uses by default the Portal component *DSMTerminator* as *Terminator* component. You can customize this component or define another component or Portal component as *Terminator* component.

Configuring the DSMTerminator component

The default *Terminator* Portal component *DSMTerminator* can be customized by changing the properties of the iView.

***DSMTerminator* Properties**

Property	**Description**

`validationEnabled=<true|false>`	The *DSMTerminator* component sends requests to the servers it is told to. With this property you can define, if the URL is validated before it is sent. If the property is set to t*rue*, every URL will be validated against the *trustedHost* and *restrictedHost* list.
`trustedHosts=<host_name_list>`	This semicolon separated list specifies the hosts to which the *DSMTermination* component is allowed to connect. A host entry can also be specified as pattern with one wildcard (*). Example: *.myfirm.com;*yourfirm.com
`restrictedHosts=<host_name_list>`	This semicolon separated list specifies the hosts to which the *DSMTermination* component is not allowed to connect. A host entry can also be specified as pattern with one wildcard (*). Example: *.badfirm.com;*anotherbadfirm.com
`cookieThroughEnabled=<true|false>`	Allows that cookies from the incoming requests are passed on to the all requested destinations. This is required when you integrate components based on the BSP (Business Server Pages).

The *DSMTerminator* component can also be used *standalone* by specifying the URL of the *DSMTerminator* component (`<Portal_URL>/irj/servlet /prt/portal/prtroot/DSMTerminator.default`) with following parameters:

***DSMTerminator* Parameter**

Property	**Description**
`TermUrl=<String>`	Optional parameter specifies all URLs to which the requests should be distributed. If the parameter not specified or empty, no request is distributed.
`Autoclose=<positive_Number>`	Optional parameter that specifies the delay before the **External Window** (used for browsers with no Java support) is closed. If not specified, the **External Window** will not be closed.

`Filter=<NOCOPY | ESCAPE | COPY>`	Optional parameter that specifies how the single responses returned after the request distribution should be handled by the *DSMTerminator* component, when the final (collective) response is assembled. COPY The single responses are copied into the collective response. ESCAPE Is similar to COPY but all special characters will be converted (*escaped*) so that the string is properly displayed on the HTML page. NOCOPY The single responses are not copied into the collective response. If the parameter is not specified, the NOCOPY option is selected.

Using Another Terminator Component

You can define another Portal component or an external script or process specified by full qualified URL (for example, servlet or ASP) as *Terminator* component. The specified component has to implement the basic functions of a *Terminator* component. See chapter EPCF Configuration [Page 22] for more details.

WorkProtect Feature for EP 6.0

To match the concept of the *WorkProtect* feature, a Portal application must meet the following requirements:

- Maintain the *dirty indicator*
- Adjust Portal links (This function is currently only supported by CRM).

Maintaining the *Dirty Indicator*

The *dirty indicator* status of a Portal application informs the Portal that there is unsaved data.

The Portal application sets the dirty indicator when the user enters a new value into an input field. The Portal application resets the dirty indicator when the user saves the value (for example when the user chooses the *Save* button).

See chapter WorkProtect and Cross Navigation API [Page 13] for more details.

Adjusting Portal Links

The Portal can only check the current dirty indicator and perform the navigation without losing data, if the Portal application replaces all the links that can destroy the contents of the content area with links having the following syntax (analogous to New Navigation Model / WorkProtect Mode , section Cross Navigation):

```
<A HREF=myLink onclick=return EPCM.doNavigate('any_PCD_URL')>
```

The parameter `<any_PCD_URL>` specifies the location of a page or an external service in the user role. Constants must be enclosed in quotation marks.

You can find the correct value for the page in the *Role Editor*.

Make sure that you update the corresponding parameter values for the `<PCD_URL>` in the secondary links and navigation targets when you change the role structure.

Configuration Test

Test tool: `com.sap.portal.epcf.loader.Dirty`

The test tool supports the tracing and solving of problems related to the *dirty indicator*. You can find the tool under

`System Administration → Support → Support Desk → Client Framework`

Navigation

The Portal navigation model supports the *navigation* and *WorkProtect* feature. These features allow tight integration of *stateful* applications in the Portal environment and improve the usability of the applications running in the Portal.

Related Topics:

Navigation Service [External]

Navigation API [Page 14]

WorkProtect API [Page 13]

Availability

The JavaScript based API has been introduced in EP 5.0.4.1 (see **SAP Note 543274**) and is compatible to the API in EP 6.0.

Business Case for Navigation

Portal implementations usually have separate areas for handling navigation and displaying content. The navigation area typically visualizes a navigation tree and highlights the selected node. The content area visualizes this selected node, for example, a Portal page, document or Portal application). This model resembles a simple file system browser and works well with *stateless* Portal applications.

However, this approach does not meet all requirements for an enterprise solution, which should be able to handle complex business processes in parallel and switch from one context to another.

Navigation Target

The navigation target specifies the location of an iView or a page in the current user role. The target can be obtained from the Portal catalog as a value that is concatenated by folder id s, roles or other objects.

The navigation target has to be prefixed with the corresponding navigation connector name that is used for retrieving the navigation structure. When accessing iViews and pages in the role from the Portal Content Directory (PCD), you have to add the prefix `ROLES://` to the URL.

Example:

We have created a custom role (`MyRole`) and assigned an iView (`MyIView`) to it:

`portal_content` (root folder) → `MyRole` (folder) → `MyRole` (role) → `MyTest` (folder) → `MyIView` (iView)

The corresponding navigation target is:

```
ROLES://portal_content/MyRole/MyRole/MyTest/MyIView
```

When you change the role structure, you have to update the corresponding values used in secondary links or used as navigation target; always keep both in sync.

Compatibility to EP 5.0

In the Enterprise Portal 5.0 the navigation target to the Portal pages or external services are specified without the prefix for example, `/roles/MyEP50Role/MyEP50Folder/MyEPApp`. These navigation targets are also valid in EP 6.0.

When you have migrated the content from EP5.0 to EP6.0, the migrated content is in folder `portal_content/com.sap.portal.migrated/ep_5.0` . The Portal navigation will check for incomplete navigation targets and it to the new schema automatically.

ROLES://portal_content/com.sap.portal.migrated/ep_5.0/roles/MyEP50Role/MyEP50Folder/MyEPApp

Navigation Features for Navigation Targets

The Enterprise Portal offers the following features for navigation targets:

- Start with Navigation Target

  This feature lets you start the Portal and automatically navigate to any Portal page or iView inside the role.

- Navigation

  This feature allows seamless *navigation* from Portal applications. The primary links in the navigation as well as the secondary links in the content area can be used in a Portal application. The navigation updates the content area correctly and highlights the corresponding node in the navigation tree - for a primary link or another instance.

Start with Navigation Target

The Portal can be started in the browser with an URL that starts the first page assigned in the user role. The URL has the following structure:

```
<your_portal_server>/<portal_alias>
```

This URL can be extended by the navigation target that will be called automatically after the start. You have to specify a valid page (by default, `index.htm`). The extended URL has the following structure:

```
<your_portal_server>/<portal_alias>/<initial_page>?
NavigationTarget=<escaped_NavigationTarget>
```

The <escaped_NavigationTarget> parameter represents the *escaped* location of the page or iView in the role. *Escape* is necessary to avoid conflicts when using special characters. See the JavaScript function *escape* for more details.

Example:

```
http://myportal.wdf.sap.com:8100/irj/index.htm ?

NavigationTarget=ROLES%3A//portal_content/MyRole/MyRole/MyTest/MyIV
iew
```

Navigation

The solution implemented for secondary links in the Portal component uses a combination of a HTML hyperlink and a call of a EPCF service method EPCM.doNavigate() [Page 13].

```
<A HREF="myLink" onclick="return EPCM.doNavigate('target')">
This is HTML Link</A>
```

The *String* parameter `target` represents the location of an iView or a page in the role. The value is available from the Portal content catalog.

Constant *String* values must be enclosed in JavaScript in single quotes.

When the link is activate, the `EPCM.doNavigate()` method informs the Top Level Navigation (TLN) about the required navigation target. The TLN will handle this request it in the same way as any other navigation using primary links.

Glossary

Terms used in the EPCF service description.

Automatic Server Session Termination (ASST)

The Internet protocol HTTP is connectionless. However typical business applications provide information about the user session.

The Enterprise Portal session management controls the session state in an application with the *SAP Internet Session Protocol* (SISP). It avoids locks and also releases objects when the user leaves an application, closes the browser or logs off from the computer. This functionality uses the SISP that has been introduced with Workplace 2.10 and 2.11.

Client Data Bag

The *client data bag* is a transient data buffer for the Web client (browser) which is active as long as the session of the browser. For the Portal that is as long as the user is logged on to the Portal.

An iView can access the *client data bag* with the *Enterprise Portal Client Manager* (EPCM) object.

Client Data Channel

An additional channel to the main communication channel (the browser HTTP connections), that allows independent communication.

JavaScript Origin Policy

The *JavaScript Origin Policy* controls the access to the Document Object Model (DOM) from different frames. Scripting between two frames is permitted only if both frame sources come from the same top level domain.

Example

Frame 1	Frame 2	Scripting permitted
site1.page2.mydomain.com	site2.page3.mydomain.com	Yes
site1.mydomain.com	site2.yourdomain.com	No

The EPCF service automatically sets the document domains to top level.

All browsers support the *JavaScript Origin Policy*, so foreign web sites are unable to retrieve data from the Portal page or the iViews.

An similar origin policy also applies for the *Java Virtual Machine* (JVM). Classes/objects can only interact with classes/objects which are loaded from the same location. Therefore it is impossible for a foreign applet to access the data inside the Client Data Bag or use the Client Data Channel.

Namespaces

The World Wide Web Consortium (W3C) (http://www.w3c.org) defined the naming and addressing standards for Web development. The Enterprise Portal uses these standards in the EPCF service for the events and Client Data Bag [Page 40].

This chapter refers to *Request for Comments* (RFC). The comment for the specified RFC number can be found at http://www.ietf.org/rfc/.

Name Syntax

Some methods, for example, **`EPCM.raiseEvent(...)`**, expect a *Name* as argument. *Name* is a *String* variable with restricted characters.

Valid characters for *Name* are:

Range	Characters
Lowercase characters	a to z
Uppercase characters	A to Z
Numerical characters	0 to 9
Additional characters	Underscore(_), Dash (-)

Namespace Syntax

The namespace definition is compliant with the Unified Resource Name (URN) specification, which is available from the World Wide Web Consortium. Namespaces used in JavaScript functions calls must be compliant to this specification.

Namespaces reserved by the Portal

Reserved name-space	Used for
com.sapportals.portal.*	Portal core development
com.sapportals.*	Portal core development

The namespace must start with the string "urn:" followed by the structure (in *Backus-Naur* form)

```
<URN>::="urn:" <Namespace_identifier> ":"
<Namespace_Specific_String>
```

The tokens **`<namespace_identifier>`** and **`<Namespace_Specific_String>`** must be compliant with the recommendation RFC 2141 and RFC 1630. We recommend that you use only lowercase, uppercase and numerical characters.

Uniform Resource Identifier (URI)

It addresses a resource in the Internet in the following way:

- By name

  This is called *Uniform Resource Name* (URN).
- By location,

  This is called *Uniform Resource Locator* (URL).

Uniform Resource Locator (URL)

It addresses a resource in the Internet. The URL is the address you enter into the address field of your browser. The URL syntax describes a subset of the *Uniform Resource Identifier* syntax.

Uniform Resource Name (URN)

It addresses a resource in the Internet, regardless of its location. The URN syntax follows the rules of the URI. A URN can also be used to define distinct entities without being associated to an existing resource. The name spaces in the Portal make use of this feature. A URN has the prefix: `urn://`. For further information about the syntax, see the description for *RFC 2141* at `www.ietf.org`.