Rational. Rhapsody

IBM

API Reference Manual

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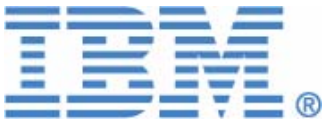


Before using the information in this manual, be sure to read the IBM “Notices” section of the IBM Rational Help.

This edition applies to IBM® Rational® Rhapsody® 7.4 and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

The Rational Rhapsody API

The Rational Rhapsody API allows you write applications that access and manipulate Rational Rhapsody model elements. Two versions of the API are provided with Rational Rhapsody:

- COM
- Java

Information Available to the API

The Rational Rhapsody API facilitates reading, changing, adding to, and deleting from all model elements that are available in the Rational Rhapsody browser. The browser displays the static elements of a model including, but not limited to, the following:

- Model information
- Descriptions and other information within browser forms
- Information describing the model hierarchy, components, and packages
- Configurations and profiles
- Features and properties
- File and directory names
- Diagrams in a form that can be printed or included in external files for printing, such as Microsoft® Word®

Hierarchy of API Interfaces

The class diagram depicts the hierarchical relationships between the API interfaces. The application (`IRPApplication`) is the top-level object of the Rational Rhapsody object model. The hierarchy of the API interfaces is as follows:

```
IRPApplication
IRPASCIIFile
IRPCollection
IRPExternalCodeGenerator
IRPExternalCodeGeneratorInvoker
IRPFlow
IRPGraphElement
   IRPGraphEdge
   IRPGraphNode
IRPGraphicalProperty
IRPModelElement
   IRPAction
   IRPAnnotation
          IRPComment
          IRPConstraint
          IRPRequirement
   IRPAssociationRole
   IRPClassifierRole
   IRPCollaboration
   IRPComponentInstance
   IRPConfiguration
   IRPDependency
          IRPHyperLink
   IRPEnumerationLiteral
   IRPExecutionOccurrence
   IRPFile
   IRPGeneralization
   IRPGuard
   IRPInteractionOccurrence
   IRPInterfaceItem
          IRPEvent
          IRPEventReception
          IRPOperation
   IRPLink
   IRPMessage
   IRPMessagePoint
   IRPStateVertex
          IRPConnector
          IRPState
   IRPStereotype
   IRPSwimlane
   IRPTemplateInstantiation
   IRPTemplateInstantiationParameter
   IRPTransition
   IRPTrigger
   IRPUnit
          IRPClassifier
                 IRPActor
                 IRPClass
                 IRPAssociationClass
                 IRPFlowItem
                 IRPNode
                 IRPType
                 IRPUseCase
```

```
        IRPComponent
        IRPDiagram
               IRPCollaborationDiagram
               IRPComponentDiagram
               IRPDeploymentDiagram
               IRPObjectModelDiagram
               IRPSequenceDiagram
               IRPStatechart
               IRPFlowchart
               IRPStructureDiagram
               IRPUseCaseDiagram
        IRPPackage
               IRPProfile
               IRPProject
        IRPRelation
               IRPInstance
               IRPBlock
               IRPModule
               IRPPort
IRPVariable
       IRPArgument
       IRPAttribute
       IRPTag
       IRPTemplateParameter
```

Rational Rhapsody Java API Basic Concepts

In terms of its capabilities, the Rational Rhapsody Java API is identical to the Rational Rhapsody COM API. The reference material for the COM API can be used to see what you can do with the Java API. The names of the objects, attributes, and methods in the Java API are more or less the same as those in the COM API.

For the details of the Rational Rhapsody Java API, see the Javadoc output for the API, which can be found at [rhapsody installation directory]\Doc\java_api\index.html.

A sample that uses the Java version of the Rational Rhapsody API can be found in the directory:

[Rhapsody installation directory]*Samples\JavaAPI*

A more advanced sample can be found in the directory:

[Rhapsody installation directory]*Samples\CustomCG*
Samples\Statechart_Simplifier_Writer\Statechart_Java_Simplifier

Java API Features

Rational Rhapsody includes a Java version of the Rational Rhapsody API that can be used for working with Rational Rhapsody models. Since the Java API can be used on both Windows and Linux, this API allows you to write cross-platform applications.

Rational Rhapsody provides two files that can be found in the directory [installation directory]Share/JavaAPI:

- Rhapsody.jar—contains the Java classes and interfaces
- Rhapsody.dll (or Rhapsody.so for Linux)—native implementation of the Java interfaces

The .jar file should be included in the CLASSPATH of the Java project, and the .dll (or .so file) should be included in the lib path.

To access the Rational Rhapsody application, you use the object `RhapsodyAppServer`. See the API javadoc output for details.

Java API Differences from COM API

The following are specific differences between the Rational Rhapsody Java API and the Rational Rhapsody COM API:

- Methods in the Java version of the API throw `RhapsodyAPIException` exceptions. You can use the `toString` method to get the description of the exception.
- `IRPCollection` provides a method called toList that returns a native Java list container populated with the elements of the collection. This is the recommended method of iterating over collections with the Java version of the API. (In Java 1.5, you can cast the list to a types list and thus benefit from the for-each iterator.)
- Unlike the COM version of the API, where you have to use the `IDispatch::QueryInterface` method, in the Java version, you can use the native Java operator `instanceOf`.
- To check whether two interfaces point to the same model element, you should use the native boolean Object.equals(Object) method.

Rational Rhapsody Environment Initialization before Using Rational Rhapsody API on Linux

An initialization script called rhp_env (located in the root of the Rational Rhapsody installation directory) must be run before using Rational Rhapsody on Linux.

This is done automatically when Linux users launch Rational Rhapsody as described in the documentation. However, this script must also be run by Linux users who run Java applications that include use of the Rational Rhapsody API.

When you write a Java application that includes use of the Rational Rhapsody API, make sure to inform the users of the application that they must run the initialization script prior to running the Java application.

Alternatively, you can try to automate this process for the users of your application, for example, by having the script run as part of each users Linux startup process, or by including a call to this script in the script file you provide for launching your Java application (provided, of course, that Rational Rhapsody is installed in the same location on each users computer).

COM API Basic Concepts and Examples

The Rational Rhapsody Repository API consists of a set of COM interfaces that supports dual interfaces (COM and automation). This allows access from Visual Basic and any language implemented with COM bindings. COM interfaces allow access from either Visual Basic® or VBScript, even when type information is not available (for example, OLE automation).

Note

See http://www.urc.bl.ac.yu/manuals/vbscript/ch13fi.htm for a comparison of Visual Basic, VBA, and VBScript.

Each interface represents a class in the Rational Rhapsody repository, and the set of interfaces forms the Rational Rhapsody object model. Each instance in the Rational Rhapsody repository returns a reference to a particular COM interface based on its metaclass. For example, access to an event in the Rational Rhapsody repository is via the `IRPEvent` interface.

COM API Tools and Languages

The following sections describe how to use the Rhapsody COM API tools and languages

COM API with Visual Basic

Like all COM-based APIs, two components are required to create Rational Rhapsody automation scripts:

- The Rational Rhapsody COM type library, `rhapsody.tlb`. COM type libraries are self-documenting and easy to browse using COM object viewers.
- A Rational Rhapsody executable providing COM server functionality.

In Visual Basic, attach the `rhapsody.tlb` library to the project by selecting **Project** > **References**. This familiarizes the VB environment with the Rational Rhapsody API interfaces. No further action is required. VB implicitly connects to the Rhapsody server (`rhapsody.exe`) once the VB application is executed.

Example

The following VB program shows an example of how to traverse all the classes and add a serial number property (initialized to 0) to each one.

```
Public Sub SetClassesInPackage(p As IRPPackage)
‘
‘ Routine to add recursively a property to all classes in
‘a package
‘
   Dim allClassifiers As RPCollection
   Set allClassifiers = p.nestedClassifiers
   Dim c As RPClassifier
   For each c in allClassifiers
          isClass = c.isOfMetaClass ‘Class’
          If isClass Then
                 On error resume next
          If not c.addProperty(‘general:class:serialNo’,
                 ‘int’, ‘0’) then
                 If not err.Number then
                 Print ‘class can’t be assigned a
                 property’, c.name
                 end if
          Else ‘ Check for nested packages
                 isPackage = c.isOfMetaClass ‘Package’
                 If isPackage Then ‘ nested package case
                 Dim nestedP as Package
                 Set nestedP = c ‘ cast classifier to package
                 SetClassesInPackage nestedP
                 End If
          End If
   Next
End Sub
‘
‘ The main program
‘
Dim Rph As Object
Dim ProjName As String
Dim Prj As RPProject
Dim Packages As RPCollection

Set Rph = CreateObject("Rhapsody.Application")
ProjName = ‘D:\Rhapsody\Examples\PingPong.rpy’
Rph.OpenProject projName
Set Prj = Rph.activeProject
Packages = Prj.packages
Dim p As RPPackage
For each p in allProjectClassifiers

SetClassesInPackage p
Next
```

COM API with VBScript

Most Rational Rhapsody users on Windows platforms can use the Visual Basic IDE programming environment or VBA, which are not available on a Solaris platform. However, Rational Rhapsody users on Solaris platforms can access the Rational Rhapsody API using VBScript (Visual Basic Scripting edition), a cross-platform development language.

Running VBScript

The setup for running VBScript scripts is done during installation. Note the following:

1. Before running a VBScript script, you must run Rational Rhapsody at least once for registration of the COM interfaces in the registry.
2. Run the `VBS` script located in the Rational Rhapsody home directory.
3. Use the `vbstest` program by Mainsoft™ to run vbs programs.

VBScript samples are available in the `Samples/Vbs` directory of the Rational Rhapsody installation.

Writing Files from VBScript

Some of the elements of Visual Basic are not included in VBScript, such as file input/output functions. Rhapsody compensates for this with the addition of a `File` object to the Rational Rhapsody COM library to facilitate reading and writing to files. To write to files, use code similar to the following in your script:

```
rem Create a rhapsody object.
    .
    .
    .
rem Create and open a file object.
Set F = CreateObject("Rhapsody.RPASCIIFile")

rem Use it to open a file.
F.open "/tmp/show.txt"

rem Use is to write to the file with VB script commands.
F.write "Succeeded in opening project " + vbLf

rem Close the file when finished with it.
F.close
```

Example VBScript

The following VBScript script dumps packages, classes, and events. It is included in the Rhapsody installation.

```
Dim rappl
Dim appl
Dim p
Dim s
Dim c
Dim pack
Dim F
Set rappl = CreateObject("Rhapsody.Application")
Set F = CreateObject("Rhapsody.RPASCIIFile")
F.open "/tmp/show.txt"
F.write "Succeeded in opening project " + vbLf

MsgBox "Started Rhapsody"+rappl.version

s = "/disk1/RP/Samples/Pingpong/pingpong.rpy"
rappl.openProject s
Set p = rappl.activeProject

Set c = p.components
For Each pack In c
   MsgBox pack.Name
Next

dim NextPack, NextOperation


rem Lets send them to a file

level=1
ShowPackages p, level

F.close
MsgBox "Done listing the Project"


sub ShowPackages(p, levelPack)
   CallLevelPack = levelPack + 1
   Set Pk = p.packages
   For Each Pack In Pk
          PrintSpace levelPack
          F.write"Package:"+pack.Name+vbLf
          ShowClasses Pack, CallLevelPack
          CallLevelClass = levelClass + 1
          ShowEvents Pack, CallLevelPack
   Next
End Sub


sub ShowClasses(Pack, levelClass)
   CallLevelClass = levelClass + 1

set NextPack = Pack.Classes
   PrintSpace levelClass
   F.write"Classes::"+vbLf
   For Each Class In NextPack
          PrintSpace levelClass
          F.writeClass.Name+"::"+vbLf
```

```
          ShowOperations Class, CallLevelClass
          CallLevelClass = levelClass + 1
          ShowAttributes Class, CallLevelClass
   Next
End Sub


sub ShowOperations(Class, levelOperation)
   CallLevelOperation = levelOperation + 1
   set NextOperation = Class.Operations
   PrintSpace levelOperation
   F.write"Operations::"+vbLf

for Each Operation in NextOperation
          PrintSpace CallLevelOperation
          F.write"::"+Operation.name+vbLf
          CallLevelClass = levelOperation + 1
   Next
End Sub



sub ShowAttributes(Class, levelAttribute)
   CallLevelAttribute = levelAttribute + 1
   set NextAttribute = Class.Attributes
   PrintSpace levelAttribute
   F.write"Attributes::"+vbLf
   for Each Attribute in NextAttribute
          PrintSpace CallLevelAttribute
          F.write"::"+Attribute.name+vbLf
Next
End Sub



sub ShowEvents(Pack, levelEvent)
   CallLevelEvent = levelEvent + 1
   set NextEvent = Pack.Events
   PrintSpace levelEvent
   F.write"Events::"+vbLf
   for Each RHPEvent in NextEvent
          PrintSpace CallLevelEvent
          F.write"::"+RHPEvent.name+vbLf
   Next
End Sub



sub PrintSpace (levelPrint)
   For x = 1 to levelPrint
          F.write ""
   Next
End sub
```

Setting Up the COM Interface for Visual C++

Like all COM-based APIs, two components are required to create Rational Rhapsody automation scripts:

- The Rational Rhapsody COM type library, `rhapsody.tlb`. COM type libraries are self-documenting and easy to browse using COM object viewers. One such viewer is provided in the `Share` directory of the installation.
- A Rhapsody executable providing COM server functionality.

The class wizard can create Rhapsody proxy objects by attaching to the `rhapsody.tlb` library. This requires the VC++ project also to be COM-enabled.

The important steps in setting up the COM interface are as follows:

1. Include an `#import` statement. For example:

   ```
   #import "C:\Rhapsody\rhapsody.tlb" no_namespace
   named_guids
   ```

   This statement makes C++ recognize the various interfaces as C++ classes.

2. Invoke the `rhapsody.application` object. For example:

   ```
   IRPApplication apl = NULL;
   hr = CoCreateInstance(CLSID_RPApplication,
   NULL,CLSCTX_ALL, IID_IRPApplication, (void**)&apl);
   ```

3. Access elements of the `rhapsody.application` object through API methods. For example:

   ```
   // Get project file name
   IRPProjectPtr proj = NULL;
   hr = apl->openProject (projectFileName, &proj);

   // Get count of packages in project
   IRPCollectionPtr collection;
   hr = proj->get_packages(&collection);
   long elementsCollectionCount;
   hr = collection->get_Count(&elementsCollectionCount);
   ```

The following two examples demonstrate how to invoke Rhapsody from a C++ client using direct COM calls to the Rational Rhapsody API interface.

Sample: Reading from the API

The following example is the primary file in a Visual C++ workspace application that reads from a Rational Rhapsody project using the COM API interface.

```
//
// ReadAPI.cpp : Defines the entry point for the console
//application.
//

#include "stdafx.h"
#include <stdio.h>
#include <stdlib.h>
#include <atlbase.h>
// The following depends on the place that Rhapsody is
//installed
#import "F:\Documents\RiCPP_2.3MR1\Rhapsody\rhapsody.tlb"
raw_interfaces_only, no_namespace, named_guids

void printBSTR(BSTR errorMessage)
{
   LPCWSTR tmpName = errorMessage;
   char buf[1000];
   int tmpNameLen = tmpName != NULL ? wcslen(tmpName) :0;
if (tmpNameLen != 0)
   {
          wcstombs(buf, tmpName, (tmpNameLen*2)+1);
          printf(buf);
          printf("\n");
   }
}

void printErrorMessageIfError(HRESULT hr,
   IRPModelElement* modelElement)
{
   if (FAILED(hr))
   {
          BSTR errorMessage;
          HRESULT tmpHr;
          tmpHr = modelElement
>getErrorMessage(&errorMessage);
          printBSTR(errorMessage);
   }
}

int loadProject(const char* rpyFileName)
{
   HRESULT hr;
   CLSID clsid;
   hr = CLSIDFromProgID(OLESTR("Rhapsody.Application"),
   &clsid);

if (FAILED(hr))
   {
          printf(_T("Failed to resolve CLSID. HR =
                 0x%8x"),hr);
          return 0;
   }
   // Create CoClass instance from ClassId, using
dispatch iid
   IRPApplicationPtr apl;
   hr = ::CoCreateInstance( CLSID_RPApplication, NULL,
          CLSCTX_ALL, IID_IRPApplication, (void**)&apl );
```

```
if (FAILED(hr))
    {
          printf(_T("Failed to create instance. HR =
0x%8x"),hr);
          return 0;
    }
    int len = MultiByteToWideChar(CP_ACP, 0, rpyFileName,
          strlen(rpyFileName), NULL, NULL);
    BSTR projectFileName = SysAllocStringLen(NULL, len);
    MultiByteToWideChar(CP_ACP, 0, rpyFileName,
          strlen(rpyFileName), projectFileName, len);
    IRPProjectPtr proj = NULL;
    hr = apl->openProject (projectFileName,&proj);
    SysFreeString(projectFileName);
    IRPCollectionPtr collection;
    hr = proj->get_packages(&collection);
    long elementsCollectionCount;
    hr = collection->get_Count(&elementsCollectionCount);
    BSTR packageName;
    VARIANT r;
    for ( int i = 1; i <= elementsCollectionCount; i++)
    {
          IRPPackagePtr p;
          hr = collection->get_Item(i, &r);
          hr = r.pdispVal->QueryInterface(IID_IRPPackage,
                (void**)&p);
          hr = p->get_name(&packageName);
          printBSTR(packageName);
    }

    hr = apl->quit();
    return 0;
}
void Usage()
{
    printf("Usage: ReadAPI rpyFile\n");
}
// General remark: In the following, in most cases there
// is no check on the returned hr for readability.
int main(int argc, char* argv[])
{
    HRESULT hr;
    hr = CoInitialize(0);
if (FAILED(hr))
    {
          printf(_T("Failed to initialize COM"));
          return 0;
    }
    if (argc == 2)
          loadProject(argv[2]);
    else
          Usage();
//  loadProject("D:\\Temp\\Project.rpy");
    CoUninitialize();
    return 0;
}
```

Sample: Writing to the API

The following example is the primary file in a Visual C++ workspace application that writes to a Rational Rhapsody project using the COM API interface.

Note

Change the `#import` line to match your own project.

```
//
// WriteAPI.cpp : Defines the entry point for the console
// application.

#include "stdafx.h"
#include <stdio.h>
#include <stdlib.h>
#include <atlbase.h>
// The following depends on the place that Rhapsody is
// installed
#import "D:\Rhapsody\rhapsody.tlb" raw_interfaces_only,
    no_namespace, named_guids
void printBSTR(BSTR errorMessage)
{
    LPCWSTR tmpName = errorMessage;
    char buf[1000];
    int tmpNameLen = tmpName != NULL ? wcslen(tmpName) :0;
    if (tmpNameLen != 0)
{
           wcstombs(buf, tmpName, (tmpNameLen*2)+1);
           printf(buf);
           printf("\n");
    }
}
void printErrorMessageIfError(HRESULT hr,
    IRPModelElement* modelElement)
{
    if (FAILED(hr))
    {
           BSTR errorMessage;
           HRESULT tmpHr;
           tmpHr = modelElement->getErrorMessage(
           &errorMessage);
           printBSTR(errorMessage);
    }
}

int createNewProject(const char* userDirectoryName, const
    char* userProjectName)
{
    HRESULT hr;
    hr = CoInitialize(0);
    if (FAILED(hr))
{
           printf(_T("Failed to initialize COM"));
           return 0;
    }
    CLSID clsid;
    hr = CLSIDFromProgID(OLESTR("Rhapsody.Application"),
           &clsid);
    if (FAILED(hr))
    {
           printf(_T("Failed to resolve CLSID. HR =
```

```
                0x%8x"),hr);
            return 0;
    }
    // Create CoClass instance from ClassId, using
    // dispatch iid
    IRPApplicationPtr apl;
    hr = ::CoCreateInstance( CLSID_RPApplication, NULL,
            CLSCTX_ALL, IID_IRPApplication, (void**)&apl );
    if (FAILED(hr))
    {
            printf(_T("Failed to create instance. HR =
                0x%8x"),hr);
return 0;
    }
    IRPProjectPtr proj = NULL;
    int len = MultiByteToWideChar(CP_ACP, 0,
            userDirectoryName, strlen(userDirectoryName), NULL,
            NULL);
    BSTR projectLocation = SysAllocStringLen(NULL, len);
    MultiByteToWideChar(CP_ACP, 0, userDirectoryName,
            strlen(userDirectoryName), projectLocation, len);
    len = MultiByteToWideChar(CP_ACP, 0, userProjectName,
            strlen(userProjectName), NULL, NULL);
    BSTR projectName = SysAllocStringLen(NULL, len);
    MultiByteToWideChar(CP_ACP, 0, userProjectName,
strlen(userProjectName), projectName, len);

hr = apl->createNewProject(projectLocation, projectName);
    hr = apl->activeProject(&proj);
    SysFreeString(projectLocation);
    SysFreeString(projectName);

    IRPPackagePtr package;
    BSTR packageName = SysAllocString(L"myPackage");
    hr = proj->addPackage(packageName, &package);
    SysFreeString(packageName);

    IRPClassPtr newClass;
    BSTR className = SysAllocString(L"myClass");
    hr = package->addClass(className, &newClass);
    SysFreeString(className);

IRPOperationPtr operation;
    BSTR operationName = SysAllocString(L"myOperation");
    hr = newClass->addOperation(operationName,
            &operation);
    SysFreeString(operationName);

    IRPAttributePtr attribute;
    BSTR attributeName = SysAllocString(L"myAttribute");
    hr = newClass->addAttribute(attributeName,
            &attribute);
    SysFreeString(attributeName);

    hr = proj->save();
    hr = apl->quit();
    CoUninitialize();
    return 0;
}

void Usage()
{
    printf("Usage: WriteAPI directoryName projectName\n");
}
```

```
// General remark: In the following, in most cases there
// is no check on the returned hr for readability.
int main(int argc, char* argv[])
{
   HRESULT hr;
   hr = CoInitialize(0);

   if (FAILED(hr))
   {
          printf(_T("Failed to initialize COM"));
          return 0;
   }

   if (argc == 3)
          createNewProject(argv[2], argv[3]);
   else
          Usage();
//  createNewProject("D:\\temp\\Project", "Project");
   CoUninitialize();
   return 0;
}
```

Manipulating Project Elements

The following sections describe how to create, modify, and delete Rhapsody project elements.

Creating a Project Element

There are two ways to add a new Rhapsody element:

- Add a new object while the project is still open in Rational Rhapsody using the method **addNewAggr** on an owner object, supplying the metatype, name, and receiving the newly created object.

  The syntax for the call is as follows:

  ```
  owner.addNewAggr(metaType, name);
  ```

  In this call, `metaType` and `name` are `String` expressions for the type and name of an object with which to form an aggregation relation with an owner object.

  For example, if a package `p` is present in your open model, you can execute the following code in Visual Basic:

  ```
  Dim c as RPClass
  c = p.AddNewAggr("Class","C");
  ```

  When finished, the new class `c` is added to package `p`.

- There are also `addObject` methods available for every object. For example:

  ```
  Dim cl as RPClass
  Dim attr as RPAttribute
  Set cl = Package.AddClass("C");
  Set attr = Class.AddAttribute("att");
  ```

  The objects created are connected to their owner. Even a new project can be created using a special method.

  Note: Do not use the VB methods `createObject` or `createInstance` to create new elements. The only correct way to create new elements is with the **addNewAggr** method or the specific `addObject` methods.

Modifying an Element

When you attempt to modify an object through an API method, you call the appropriate method, such as `setName(newName)`. Rhapsody checks the permissions, and returns one of the values listed in the following table.

Return State	Description
YES	The operation is performed and returns without error. For example, you want to name a class “A”.
NOOP	The operation is not performed and returns without error. For example, you want to name a class “A”, but it already has that name.
NO	The operation is not performed and returns with an error. For example, you want to name a class “A”, but it is read-only, or there is already a class named “A” present. The error message `RP_CANT_MODIFY` is returned as the error message for this method.
WARNING	You can choose from two working modes: • Force mode on? WARNING is regarded as YES. • Force mode off? WARNING is regarded as NO.
MERGE	The operation is not performed as if a NO is returned. Merge routines are available.

Deleting an Element

The method **deleteFromProject** deletes an object from its package. In addition, there are `DeleteXXXX` methods that delete elements of a core object.

In the following examples, `cl` and `att` are wrappers to their core objects.

```
Package.DeleteClass(cl);
Class.DeleteAttribute(att);
```

Only `cl` = `NULL` and `att` = `NULL` in a Visual Basic application will delete the wrapper itself.

Handling Properties Using the API

Rhapsody model elements can have name/value pairs, known as properties, that extend the model in some way. They provide, for example, instructions for code generation, additional application-dependent properties, and so on.

The name (or key) part of the name/value pair is a string that must consist of three qualifying fields separated by a period. For example:

```
<lang>_CG.Configuration.Environment
```

The first of the three fields designates a subject, such as code generation, reverse engineering, and so on. The second field designates the metaclass (or stereotype) to which the property applies. The third field designates the name of the property.

The value part of the name/value pair is a string that can be interpreted as either a string value, an integer, a Boolean, or an enumerated type. For example, “Microsoft” is one of the enumerated values “Microsoft, MicrosoftDLL, VxWorks, Solaris2, Borland, MSStandardLibrary, PsosX86, PsosPPC, MicrosoftWinCE, OseSfk, Linux, Solaris2GNU, QNXNeutrinoGCC, QNXNeutrinoCW, OsePPCDiab” for the key `<lang>_CG.Configuration.Environment`.

For a given property name, a Rhapsody model element can have either a specific value (a value given to it by either a user or Rhapsody), or a default value, which it finds by searching a predefined search path. For some keys, it is possible to have no value at all.

Propagation of Default Property Values

To facilitate assignment of values to groups of model elements rather than a single model element each time, Rhapsody implements a propagation mechanism where property values propagate along the containment hierarchy. The propagation originates at the `factory.prp` file, continues to the project through the `site.prp` file, and then on to the configuration and model containment hierarchy.

For example, consider a class `C1` that is nested in a package `P11` that is nested in a package `P1`. Class `C1` is denoted by the expression `P1::P11::C1`. Assume that for all the classes in `P11` the statecharts should not be implemented (generated). To do this, the property `CG.Class.ImplementStatechart` should be set to `False` for package `P11`. By default, all classes within `P11` (recursively) “inherit” this value, unless overridden. If this behavior is required for the entire project, this property should be set to `False` at the project level.

Note

The propagation mechanism referred to resembles inheritance, although the word “inheritance” is intentionally not used to avoid confusion.

Methods for Manipulating Properties

The API provides a number of functions that enable you to add or modify `Rhapsody` properties. These methods belong to the `IRPModelElement` interface and include the following:

- **addProperty**
- **getPropertyValue**
- **getPropertyValueExplicit**
- **removeProperty**
- **setPropertyValue**

You can use properties set in the `site.prp` file to create customized documentation. These properties can also be accessed by the API and changed as required.

Error Handling

All COM methods return a status of `HRESULT` indicating the success status of the method. In Visual Basic (VB), `HRESULT` is not visible and a failure status raises a VB error condition that, if not handled, aborts the calling program.

Most of the API functions do not create side effects, and therefore there is no reason for them to flag an error. However, the API might flag errors if permission on an update is not given.

The following table lists the methods that flag errors and might require error handling.

Method	Member Of
addProperty	IRPModelElement
getPropertyValue	IRPModelElement
getPropertyValueExplicit	IRPModelElement
removeProperty	IRPModelElement
setPropertyValue	IRPModelElement
save	IRPProject
saveAs	IRPProject

Catching an Error Condition in VB

Catching an error condition in VB is performed using an On Error statement. A practical way to handle errors flagged by method calls is demonstrated by the following example:

```
On Error Resume Next
getSelectedElement.getPropertyValue("no.property.exists")
Dim s As String
getSelectedElement.getErrorMessage s
MsgBox s
```

In this example:

- `Resume Next` makes the program continue to execute at the statement immediately following the one that caused the error.
- The method `getErrorMessage`, defined for every model element, fetches a message of the most recent error occurrence. This message can be displayed to diagnose the error, as shown in the example.

Error Codes

A return value of zero indicates success. The following table lists the non-zero values that represent Rhapsody API error codes.

Error	Description
RP_CANT_ADD_AGGREGATE	Could not add the element.
RP_CANT_MODIFY	The item cannot be modified.
RP_CANT_DELETE	The item cannot be deleted.
RP_NO_OPEN_PROJECT	There is no open project with which to interface.
RP_DELETED_OBJECT_ERROR	Indicates a reference to a deleted object.
RP_BAD_ENUMERATED_VALUE	The enumerated type used does not exist.
RP_BAD_PROPERTY_KEY_ERROR	Illegal property key syntax (not in `<subject>.<metaclass>.<name>` format).
RP_MISSING_PROPERTY_ERROR	The property requested does not exist.
RP_PROPERTY_EXISTS_ERROR	Attempt to add a property that already exists.
RP_CONFIGURATION_NOT_IN_COMPONENT_ERROR	Attempt to set an active configuration a nonexistent one.
RP_OPERATION_FAILED_ERROR	Applying an operation that cannot be handled by certain objects, although defined by its base interface. An example is `addProperty`, which is defined for all model elements, but currently generalization and reception cannot apply it.
RP_SAVE_FAILED_ERROR	The save or save as operation failed, probably because of lack of file writing privileges.
RP_CANNOT_WRITE_TO_FILE_ERROR	The provided file name cannot be opened for writing. Currently, this applies to the `getPicture` method of `IRPDiagram`.

Installing Custom Helpers

Helpers are custom programs that can be attached to Rhapsody to extend it. Helpers can be either external programs (executables) or VBA macros:

- An external program helper is typically either a VB or a C++ program that uses the COM API and connects to the Rhapsody instance via the `GetObject` COM service.

  Note: Currently, `GetObject` is not supported on Linux systems.

- A VBA macro helper is a VBA macro defined in a VBA module promoted to be a helper.

Helpers are attached to the Tools menu of Rational Rhapsody using the **Customize** option.

Adding Helpers to Rational Rhapsody

To add a helper, select **Tools > Customize** in Rational Rhapsody. The Helpers dialog box is displayed. This dialog box is similar to the Visual Studio external tools menu. You manipulate the menu and create new entries using the toolbar at the top of the dialog box, which includes the following tools:

- New
- Delete
- Move Up
- Move Down

Rational Rhapsody API Interface

Rational Rhapsody includes a interface tool for users who want to programmatically interact with their Rational Rhapsody projects for useful applications such as the preparation of custom reports. This interface is referred to as the Rational Rhapsody application programming interface (Rational Rhapsody API or simply API).

Without going into excessive detail, this lesson describes how to use the Visual Basic® API examples that come with Rational Rhapsody to make your own Visual Basic API applications.

This chapter describes how to perform the following tasks:

- Generate a report using RPYReporter.
- Generate a model tree using RPYExplorer.
- View the Visual Basic source code for RPYReporter and RPYExplorer.

The Rational Rhapsody API functions through a set of methods and attributes that act as a set of Microsoft COM interfaces. Using these methods and attributes, users of languages with COM bindings such as C++, Java, and Visual Basic (VB) can programmatically access a Rational Rhapsody project and all its model elements. Currently, access is restricted to read-only access for model elements and write access for model properties.

Rational Rhapsody API Examples

The Rational Rhapsody distribution includes two example applications prepared in Visual Basic that access Rational Rhapsody projects through the Rational Rhapsody API. The following sections describe these examples in detail.

Running the RPYReporter Example

to run the RPYReporter example:

1. Double-click on the executable file `RPYReporter.exe` in the `Samples\CppSamples\Api\RPYReporter` directory under your Rational Rhapsody installation directory. The RPY Project Reporter dialog box is displayed.
2. Click **Load Project** and browse for the `Dishwasher` project you completed in the tutorial.
3. Select your `Dishwasher` project, then click **OK**. Rational Rhapsody displays a wait screen while the project is being loaded.
4. Click **Report on Project**.

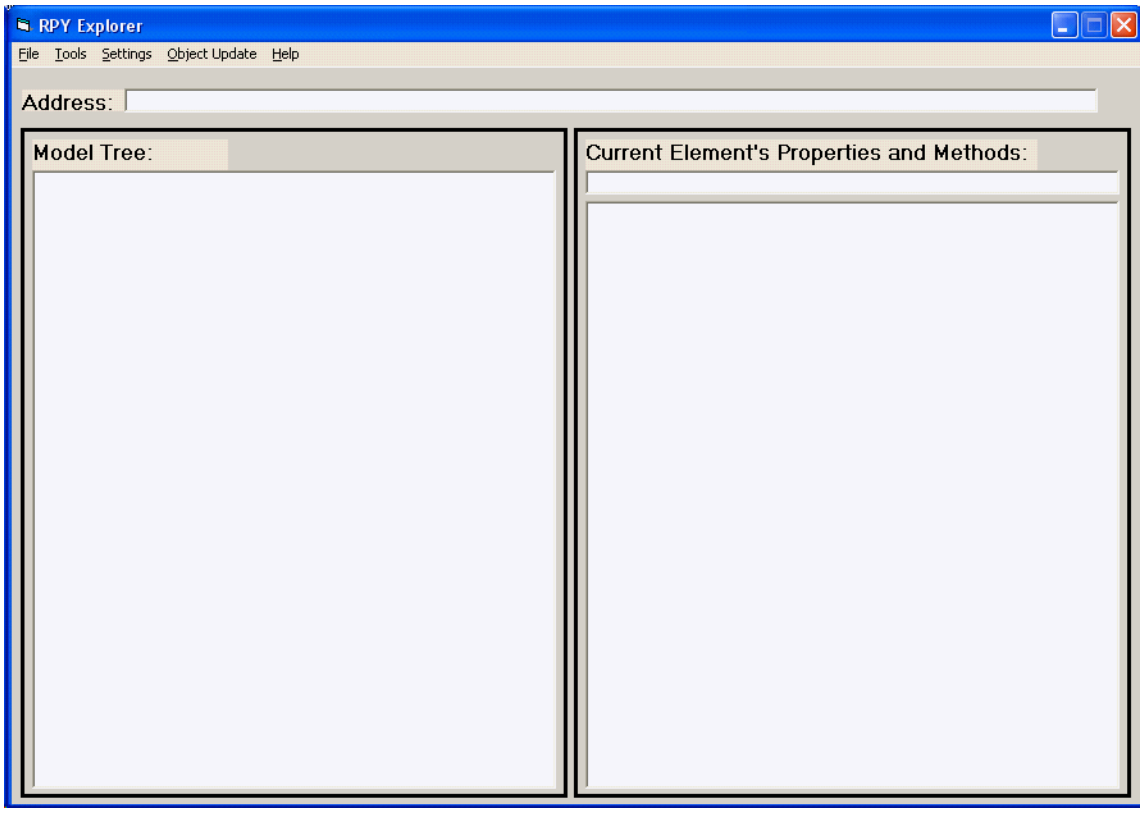
   After preparing the report, the application displays the name and location of the text file containing the report so you can access it at any time.
5. Click **OK** to display the report in Notepad.

   The report contains detailed information about your model, including data types used, stereotypes, names of events, classes, operations, and so on.
6. Click **File > Exit** to close Notepad.
7. Click **Exit** to exit the application.
8. Click **Yes** when asked if you really want to quit.

Running the RPYExplorer Example

To run the RPYExplorer example, follow these steps:

1. Double-click the executable file `RPYExplorer.exe` in the `Samples\CppSamples\API\RPYExplorer` directory under your Rational Rhapsody installation directory. Rational Rhapsody displays the RPY Explorer window, as shown in the following figure.



2. In the window, select **File > Load RPY Project**.
3. In the resultant dialog box, browse for your `Dishwasher` project, then click **Open**. The root of an expandable `Dishwasher` tree is displayed, with a plus sign in front of it.
4. Click the plus sign to expand the `Dishwasher` project.

   At the categories level, expandable segments appear for Packages, Object Diagrams, Sequence Diagrams, and so on.

5. Expand each category to reveal its contents.

6. To expand individual elements of a category, simply select them.

   The RPYExplorer example has a browser similar to the Rational Rhapsody browser. Information for each highlighted model element is displayed on the right-hand side of the dialog box.

Tools Menu Options

The Tools menu options provide the following capabilities:

- Get, set, add and remove project properties using property dot notation (`Subject.MetaClass.Property`).
- Get nested elements recursively for a selected element. For example, if you highlight a component and select **Get Nested Elements Recursive** from the Tools menu, you receive a small report on all configurations and files in the component.
- Save a report of an element's properties and methods to a text file.
- Report on a model.
- View diagrams. You can view a diagram only after storing a diagram as an `.emf` file.

Storing and Viewing Diagram Files

To store and view diagram files, follow these steps:

1. Highlight an individual diagram in the tree. The properties and methods for the diagram are displayed in the right-hand pane.

   When you highlight a diagram in the VB browser, VB automatically creates an `.emf` file of the diagram in your system's temporary directory (for example, `C:\TEMP`). VB displays the message "getPicture: see metaFile in your TMP folder" in the right-hand panel.

2. To save the file to a different location (in addition to the one in your temporary directory), select **Tools> Create EMetaFile from the RPDiagram**. You are prompted for the name and location of a file in which to store the diagram.

3. To view a stored diagram file, select **Tools > RPDiagram Viewer**.

4. In the resultant dialog box, highlight the appropriate `.emf` file, then click **View Selected RPDiagrams**. The diagram is displayed.

Running RPYReporter in Visual Basic

The intent of this lesson is to describe how the examples were prepared so you can create your own applications.

The RPYReporter and RPYExplorer examples were created in the Microsoft Visual Basic 6.0 IDE (Interface Development Environment). Although the intent of this lesson is not to instruct you in Visual Basic, the features are explained as encountered in order to see how the examples were prepared. Note that although this tutorial uses Visual Basic version 6.0, version 5.0 is also compatible.

Do the following:

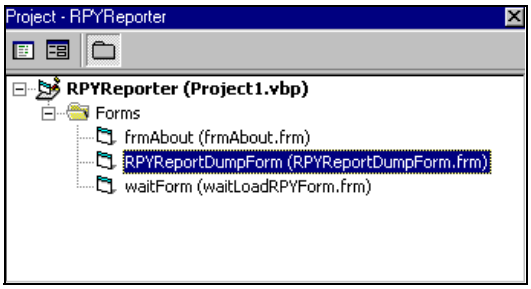
1. Start Microsoft Visual Basic 6.0 IDE using the Windows Start menu or from within Rational Rhapsody by selecting **Tools > VBA > Visual Basic Editor**.

2. In the New Project dialog box, select **Standard EXE** and click **Open**. The Microsoft Visual Basic design window is displayed with an empty, default project.

3. Select **File > Open Project** and browse for the RPYReporter project file, `Project1.vbp`, located in the subdirectory `Samples\CppSamples\API\RPYReporter` of the Rational Rhapsody installation directory. This is the same directory with the executable `RPYReporter.exe`.

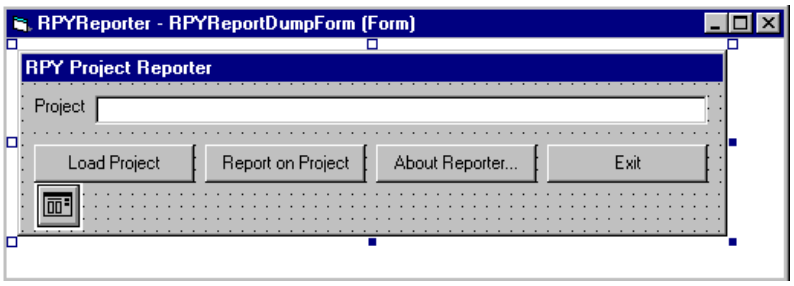
4. Select `Project1.vbp`, then click **OK** to load it.

   When the RPYReporter project is loaded, you should see several open windows in the VB IDE. The Project Explorer window has a browser-like appearance with the window title Project - RPYReporter, as shown in the following figure.



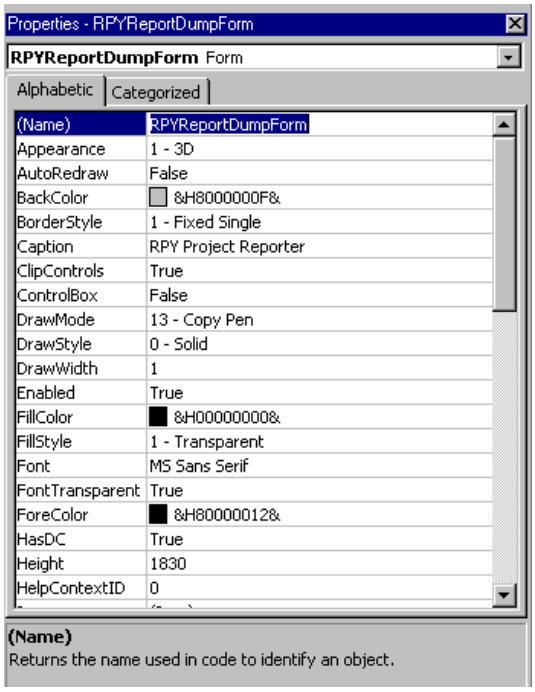
   If this window is not displayed, select **View > Project Explorer** on the VB desktop.

5. In the Project Explorer, double-click on the form **RPYReportDumpForm**. A window containing this form is displayed, as shown in the following figure.



This form is similar to the dialog box in the RPY Report executable.

Another window that should be present on the VB IDE is the Properties window, shown in the following figure.



If this window is not open, select **View > Properties Window**.

VB Forms

Forms are the basis for writing programs in Visual Basic. Each form consists of elements such as buttons, text fields, and pull-downs.

The form and its elements each have properties that are listed in the Properties window. Currently, the Properties window displays the properties for the entire form. You can show the properties of each form element by clicking on an individual element, then examining the Properties window.

Placing Elements on Forms

To place elements on a form, follow these steps:

1. Click the appropriate type of form element in the Form toolbox on the left.
2. Double-click a location for the element, or click and drag to establish its outline.

Viewing the Element Properties and Code

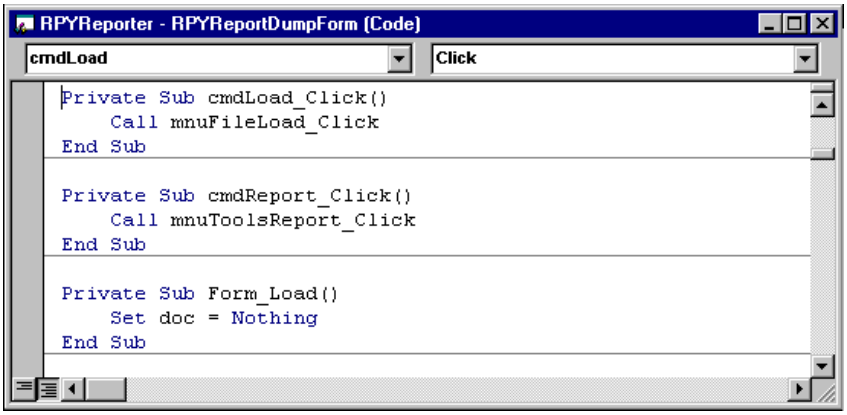
Each element has many properties, such as `Appearance`, `BackColor`, `Caption`, and `Label`. For example, if you click the **Load Project** button, you can see its properties consist of a name (`cmdLoad`), a type (`CommandButton`), and others such as `Caption` (“Load Project”), which labels the button. Note that the name `cmdLoad` begins with the three character prefix “*cmd*” which, by denotes a command button. Note the different prefixes used for the other elements.

Each form element automatically has code associated with it that reacts to different events on the element. The most common of these is the “Click” event. For each element that you can click, there is a Visual Basic subprogram that services that click, whose name is the same as the element’s name with the “*_Click*”suffix.

To view the properties and code associated with an element, follow these steps:

1. Click on each form element and observe the element type and name. These appear in the pull-down box at the top of the Properties window.
2. On the form, double-click the **Load Project** button to see the subprogram `cmdLoad_Click()` in the VB desktop.

   A window appears with all of the code for the RPYReportDumpForm form that has been scrolled so the start of the `cmdLoad_Click()` subprogram is at the top, as shown in the following figure.



Note that the subprogram `cmdLoad_Click()` calls the subprogram `mnuFileLoad_Click()`. You can scroll through the entire contents of this code window to find `mnuFileLoad()`, or select it directly using the left pull-down at the top of the code window. The `mnuFileLoad_Click()` calls the subprogram `loadRPYProject()`, with the argument `projectNameText.Text`.

The RPYReporter example was originally built with menu commands instead of button commands, which is why `cmdLoad_Click()` calls `mnuFileLoad_Click()`. Currently, the menu command elements are invisible and therefore unusable.

To enable them, follow these steps:

1. Select **Tools** > **Menu File Editor**.
2. Check the **Visible** check box for the rows `&File`, `&Tools`, and `&Help`.
3. Uncheck these boxes for now because you do not want to use menus for the application.

Running RPYReporter Step-by-Step

To step through the code of the RPYReporter example, follow these steps:

1. Press the F8 key to begin the RPYReporter example.

   In the RPYReportDumpForm, the first line of the `Form_Load()` subprogram is highlighted. This subprogram loads the form and sets the variable `doc` to the special value of `Nothing`.

   If you scroll to the very top of the code window, you can see the variable `doc` declared as an `Object`. VB enables you to create an object so it can be subsequently used to refer to an actual object. That object will eventually be the Rhapsody API Application object, which you will see later. For now, `doc` is assigned the value of `Nothing`, which keeps it from referencing anything.

Note: The keyword `Private` is used to indicate that a variable or subprogram is available only within the module in which it is declared. Therefore, the variable `doc` is relevant only to this code module, the one accompanying the form RPYReportDumpForm.

2. Press F8 three times until the `Form_Load()` subprogram is ended and the RPYReportDumpForm form is displayed.

3. Click **Load Project** to continue program execution.

   Selecting **Load Project** calls the local subprogram `cmdLoad_Click()`, which is now displayed and highlighted in the code window.

4. Continue pressing F8 to verify that `cmdLoad_Click()` calls the subprogram `mnuFileLoad()`, which calls `mnuFileLoad_Click()`, which calls the subprogram `loadRPYProject()` with the argument `projectNameText.Text.`

5. Press F8 to proceed to the first line of the subprogram `loadRPYProject()`.

   The projectNameText element is the name of the long text box at the top of the RPYReportDumpForm form. This element has a property called `Text`, which is the actual text contents of that text box. The program can designate the contents of the text property using the expression `projectNameText.Text`. Thus, if you typed the project name in the **projectNameText** field, the subprogram `loadRPYProject()` would now have it as an argument. As it is, its value is currently an empty, or blank, string.

   Note: The following steps assume that you have clicked F8 to move to next section of code to be described.

6. The `On Error GoTo CancelHandler line` enables the **Cancel** button on the dialog box. If you click **Cancel**, execution continues at the code line following the line labeled `CancelHandler:`, located at the bottom of the `loadRPYProject()` subprogram that exits the subprogram.

7. `rpyModelName` is a string variable that will hold the name of the project you are loading. Its value is initialized to an empty string.

8. The next few lines involve properties and an operation of the object `RPYModelDlg`. This element, a common dialog box, does not appear on the form during execution until its operation `ShowOpen` is executed.

   The first three `RPYModelDlg` lines change the properties of the dialog for its initial directory, default file search pattern, and the name of the project (which was passed as an argument). Finally, the `ShowOpen` operation of the `RPYModelDlg` object is executed and the Open dialog box is displayed with the appropriate property changes.

9. Browse for your `Dishwasher` project, then click **OK**.

The step `rpyModelName = RPYModelDlg.FileName` is ready for execution. This step sets the string variable `rpyModelName` to the name of the project you selected in the Open dialog box.

10. Press F8.

In the following line, the variable `rpyModelName` is checked to see if it is empty. If so, the `loadRPYProject` subprogram exits. Otherwise, it loads the `waitForm` object, followed by the execution of the `waitForm` object's `Show` operation (`waitForm.show`), which displays the `waitForm` form to tell the user the project is loading.

Before continuing program execution, you need to learn more about the Rational Rhapsody API.

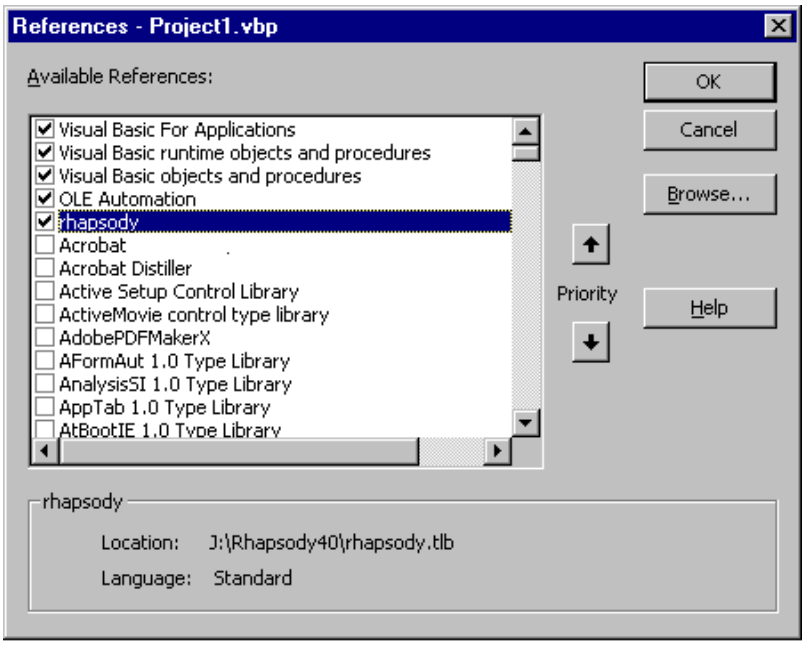
The Rational Rhapsody API: A Closer Look

The Rational Rhapsody API is a set of classes consisting of operations and attributes that enable you to programmatically interact with a Rational Rhapsody project (repository) using a programming environment that supports Microsoft COM (Component Object Model). This allows an application to interface programs using COM, such as Rational Rhapsody. In this way, standard interfaces to obtain system services or provide functionality to other programs can be established.

You can make the Rational Rhapsody API classes available for the RPYReporter project file (`Project1.vbp`) using *references*, which allow the use of objects from other applications.

To see the list of references in this project, follow these steps:

1. Stop execution of the RPYReporter application by selecting **Run > End** in the VB integrated development environment (IDE).
2. Select **Project > References** in the VB IDE. VB displays the References dialog box, as shown in the following figure.

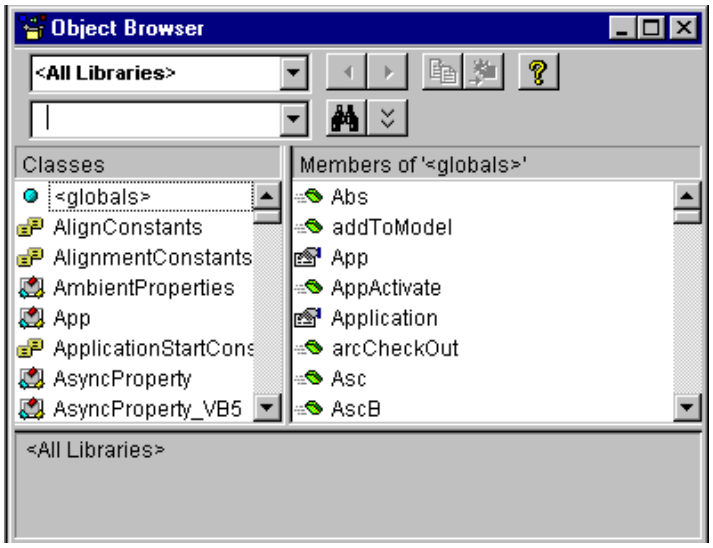


Access to the Rational Rhapsody API classes is made possible by referencing the `RHAPSODY.tlb` library file included in the Rational Rhapsody distribution. Without it, the Rational Rhapsody API is not available. Be sure to check this part of your project if this becomes questionable. When you create a new project to access a Rational Rhapsody model, the very first step is to make sure that your project references `RHAPSODY.tlb`.

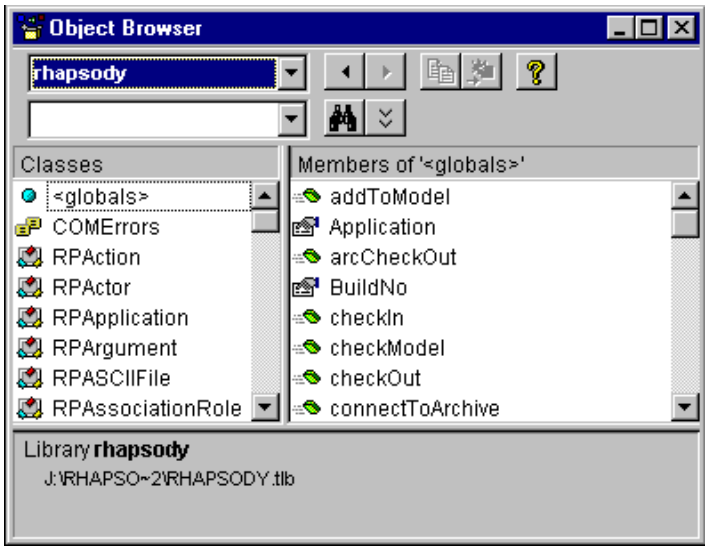
The Rational Rhapsody API classes that come from the `RHAPSODY.tlb` reference, along with their operations and attributes, are visible in the VB design area. In Visual Basic, interface classes are implemented with names that begin with the letter “I.” However, when the interfaces are seen in the VB IDE, they appear without the “I.” For example, the `IRPModelElement` class appears as `RPModelElement`.

To display the Rational Rhapsody API classes and their methods and properties, follow these steps:

1. Select **View > Object Browser**. The Object Browser dialog box is displayed, as shown in the following figure.



2. Select the **rhapsody** library from the pull-down field. VB displays the Rational Rhapsody API classes, as shown in the following figure.



3. Click on one of the API classes to see its attributes and operations.

4. Click on an attribute or operation of the selected API class to view a small report on it at the bottom of the display area.

5. Click the “X” in the upper, right-hand corner to dismiss the dialog box.

Continuing the Step-by-Step Execution of RPYReporter

Now that you have seen how the Rational Rhapsody API is made available to the RPYReporter project, you can continue step-by-step execution of the RPYReporter application to see how it is used.

Continue executing each step of the program, as follows:

1. If you halted execution earlier, press F8 to begin step-by-step execution again.

2. The next execution step in the `loadRPYProject` subprogram calls the `disableAllButtons` subprogram, which sets all the enabled properties of all RPYReportDumpForm buttons to `False`, rendering the buttons unusable (grayed-out). Press F8 to move through the subprogram.

3. The next step compares `Not doc` (recall that `doc` is an object of type `Object`) against the value `Nothing`. Because `doc` was created a few steps ago and was initialized to `Nothing`, execution steps into the `Else` part of the `If-Then-Else` statement that follows it.

4. Because the module-level variable `THE_APPLICATION` has been set to the string "`rhapsody.Application`" (scroll to the top of the window to see the declaration) the line `Set doc = CreateObject(THE_APPLICATION)` makes `doc` a reference to the Rhapsody `Application` object and a stepping stone for upcoming use of the Rhapsody API.

   Note: Rhapsody is started as an application during the execution of the line `CreateObject(THE_APPLICATION)`.

5. Because `doc` is now a reference to the `Application` object, you can use API class operations and attributes through it. Therefore, the line `doc.openProject rpyModelName` actually calls the `openProject` subprogram of the `Application` object referenced by `doc`, and opens the project file you selected.

6. The next line, `Set theProject = doc.activeProject`, calls the `activeProject` method of the `Application` object referenced by `doc` and sets the project you loaded as the active project in Rational Rhapsody.

7. The `unload waitForm` line unloads wait dialog box.

8. The next line, `projectNameText.text` is set to the name and path of the `Dishwasher` model (`rpy` file) you selected.

9. Now that the project is loaded, the program calls `EnableAllButtons` to re-enable all the buttons on the main form. Press F8 to step through each button.

10. Now that a project has been loaded, the property `Enabled` of the `mnuToolsReport` object is set to `True`. The function of this menu item is equivalent to that of the **Report on Project** button.

11. Press F8 to step through the exiting of all subprograms that have been entered as part of project loading. These include, in order:

    a. `loadRPYProject()`

    b. `mnuFileLoad_Click()`

    c. `cmdLoad_Click()`

The program now waits in stasis for the next event to occur through other button clicks on the RPY Project Reporter window.

Code Summary of Loading a Project

The following is a code summary of the project-loading process in VB:

```
Private doc As Object
Private ProjectName As String
Private theProject As RPModelElement
                  ~
' Get project name and store as ProjectName
                  ~
```

```
' Open the Rhapsody API Application Object
Set doc = CreateObject("rhapsody.Application")
doc.openProject ProjectName
Set theProject = doc.activeProject
```

Reporting on a Project

Reporting requires the execution of several important API operations. The following instructions assume that you have performed the previous project loading example and are continuing uninterrupted. However, if you have stopped the program, press F8 to enter the program in step-by-step mode and repeat all steps from the previous section. Otherwise, continue stepping through the program, as follows:

1. In the RPYReportDumpForm form, click **Report on Project**.
2. The subprogram `cmdReport_Click()` is called, which calls the subprogram `mnuToolsReport_Click`.

   Within the `mnuToolsReport_Click` subprogram, the `waitForm` form is loaded and displayed, and the buttons of the RPYReportDumpForm form are disabled.
3. Because the report will be written to a file, the function `getDefaultLogFileName` generates a name for the file using the project name string `rpyModelName` as a base.
4. After the name of the report output file is generated in the variable `logFileName`, it is opened by a call to the VB subprogram `Open`, which opens it for output and assigns it the reference number of `FILE_NUMBER` (set to 1 at the top of the code file) for future calls on this file.
5. Finally, the `subprogram Report_on_Model` is called with the arguments `theProject` and `FILE_NUMBER`. The variable `theProject` has been typed to be an API object type `RPModelElement`.
6. In the `Report_on_Model` subprogram, the calling arguments are passed by value using the keyword `ByVal`, which makes a local copy of them.

   Note that in the diagram for the Rational Rhapsody API hierarchy (see **The Rational Rhapsody API: A Closer Look**) that all the remaining classes, except for the `Application` class, inherit from `RPModelElement`. By using an object of type `RPModelElement`, you can access objects of subclasses corresponding to hierarchical project elements in a generic fashion. Many of the properties of an `RPModelElement` have been developed to make its identification and consequent action possible.

   Before proceeding to other steps in `Report_on_Model`, note the typing of local variables `col` as `RPCollection`, and `e` as `RPModelElement`. An `RPCollection` is a collection of `RPModelElement` objects used for holding and accessing the result of a "get" that obtains multiple or numerous objects satisfying the requirements of the get.

7. After setting the variable tb to an empty string, the second line performs the following get:

```
Set col = aProject.getNestedElementsRecursive()
```

The `getNestedElementsRecursive()` method, a member of object class `RPModelElements`, is called for the current project, `aProject`, and returns a collection of `RPModelElements` that is accessed through the variable `col`. The method `getNestedElementsRecursive()` retrieves all owned elements of the calling object and places the results in a collection. Because the calling object in this case is a project, `getNestedElementsRecursive()` returns all packages, classes, diagrams, and so on that belong to the project.

The remaining code opens the report file and writes a header to it, followed by a large `for` loop over each element in `col` (`for e in col`). Within the loop, each element is analyzed for its type and is reported accordingly. As previously mentioned, a variety of properties of the element identify it (the element's `metaClass` (`e.metaClass`)), making this computed action possible.

Code Summary of Reporting a Project

The following is a code summary of the project-reporting process in VB:

```
Dim col As RPCollection
Dim e As RPModelElement
Private logFileName As String
Private Const FILE_NUMBER As Integer = 1
                    ~
'Open file logFileName: FILE_NUMBER'
                    ~
'Set col = theProject.getNestedElementsRecursive()
                    ~
' Write header to file=FILE_NUMBER
                    ~
for e In col
                    ~
   ' Identify model element e based on e.xxxx properties
                    ~
   ' Write report of e based on e.xxxx properties
                    ~
Next
'Close file=FILE_NUMBER
```

Starting and Saving Your Own VB IDE Work

If you want to use the API, spend some time studying the RPYReporter example and the more complex RPYExplorer example. In conjunction with the examples, you can use the online help, which contains the methods and properties of each API class along with descriptions of required arguments.

If you want to use these Rational Rhapsody API examples as a starting point for your own applications, the following sections describe how to perform some common tasks.

Saving the Examples as New Projects

If you want to create your own applications by modifying one of the supplied examples, a good starting point is to save the appropriate example as a new project in its own directory. Note that VB projects consist of a project file (`.vbp`), a form file for each form (`.frm`), and module files (`.bas`). Use the **File > Save As** options for projects, forms, and modules, and save to a new directory.

Making Your Own New Projects

You might decide to start from scratch and build your own project. When you open Visual Basic, VB displays a default new project environment, complete with a blank form. Alternatively, you can create a new project environment by selecting **File > New Project > Standard EXE** in the VB IDE.

Once you have started a new project or begun working with an existing one, you can add new forms or modules to a project by right-clicking on the forms folder in the VB Explorer window, then select either **Add > Form** or
Add > Module.

Compiling and Making Your Executables

To create your own applications, you must compile and make your projects into executable files.

In Visual Basic 6.0, compiling is seen as part of making so when you make, you compile. Compiling appears as a separate step only when you test run your project in the Visual Basic IDE by selecting **Run > Start With Full Compile**.

To make your application’s executable, select **File > Make [Project].exe**.

Creating Applications with Microsoft Word VB IDE

In addition to the Visual Basic IDE, you can use the Visual Basic editor of Microsoft Word to create applications that use the Rational Rhapsody API.

Follow these steps:

1. Start Microsoft Word.
2. Select **File > New** to start a new document.
3. In the New dialog box, select the template labeled **Blank Document**, then click **OK**.
4. Select **File** > **Save As** and save the new, blank document as `Word_API.doc`.
5. Start a new Word macro by selecting **Tools > Macro > Record New Macro**.
6. In the Record Macro dialog box, follow these steps:
   a. For the **Name** field, type “CountPackages.”
   b. For the **Store macro in** field, select `Word_API.doc` from the pull-down list.
   c. Click the **Keyboard** icon.
7. In the Customize Keyboard dialog box, follow these steps:
   a. If it is not there already, move the cursor to the **Press new shortcut key** field. While holding down the Alt key, type the characters “CP”. When finished, you should see the following entry:

      ```
      Alt+C,P
      ```

   b. In the **Save changes in** field, select `Word_API.doc`.
   c. Click **Assign** and **Close**, in that order.

      A small dialog box (shown below) appears to stop and pause the recording of the macro that you are currently recording.

8. Click the small square to stop recording the macro.

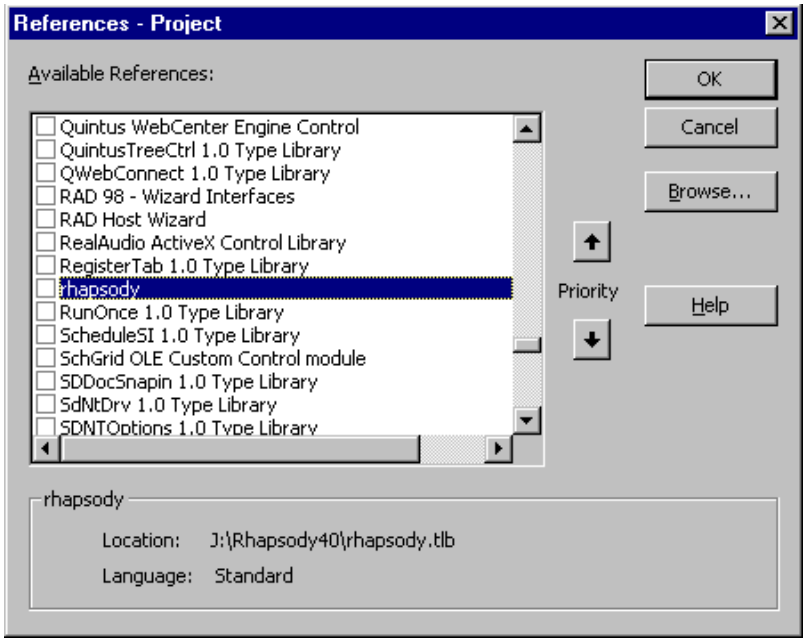
You now have a macro named `CountPackages` saved in the file `Word_API.doc` that you can trigger at any time within this document with the keyboard sequence Alt+C,P. Currently, the macro has no content.

Specifying the Macro Content

To alter the content of the `CountPackages` macro, follow these steps:

1. With the file `Word_API.doc` still loaded in Word, select **Tools** > **Macro** > **Macros**.
2. In the Macros dialog box, follow these steps:
   a. In the **Macros in** field, select `Word_API.doc`.
   b. In the list of available macros, select `CountPackages`.
   c. Click **Edit**.

   The Microsoft Word Visual Basic IDE opens, so you can edit the contents of the macro `CountPackages`.
3. Select **Tools** > **References**.
4. In the Reference - Project dialog box, scroll down until you find the reference **rhapsody**.



5. Mark the **rhapsody** check box, then click **OK**. Its location is reported in a small area at the bottom of the dialog box, referencing the `RHAPSODY.tlb` file located in the Rhapsody installation directory.
6. Insert the following code between the lines `Sub CountPackages()` and `End Sub`, but after the comments that appear identifying the macro, date, and author.

Make sure the `projName` path is correct for your Rational Rhapsody installation.

```
'
' Start Rhapsody
'
Dim rhapApp As Object
Set rhapApp = CreateObject("rhapsody.Application")
'
' Set Project Name String
'
Dim projName As String
projName =
 "C:\Rhapsody40\Samples\CppSamples\Radio\Radio.rpy"
'
' Open Project
'
Dim theProject As RPModelElement
rhapApp.openProject projName
Set theProject = rhapApp.activeProject
'
' Get Packages
'
Dim packages As rhapsody.RPCollection
Set packages = theProject.packages
'
' Report Packages to Current Word Doc (ThisDocument)
'
Dim package As rhapsody.RPPackage
For Each package In packages
    ThisDocument.Range.InsertAfter package.name &
        vbCrLf
Next
'
' Close Application When Finished
'
If Not rhapApp Is Nothing Then rhapApp.Quit
```

7. Run the macro by selecting **Run > Run Sub/UserForm**.

   If you encounter an error, click **Debug** on the error dialog window to see the offending line of code highlighted.

   If the macro works, you will see the packages of the Rhapsody project radio displayed in the document screen of Word. There are three packages:

   - `guiPkg`
   - `hardwarePkg`
   - `radioPkg`

Once you are sure that the macro works, you can execute it in the Word document area by simply typing the macro key sequence (Alt+C,P).

Comments on the Code

The following sequence loads the project:

```
Dim rhapApp As Object
Set rhapApp = CreateObject("rhapsody.Application")
Dim projName As String
projName = "C:\Rhapsody\some_project.rpy"
Dim theProject As RPModelElement
rhapApp.openProject projName
Set theProject = rhapApp.activeProject
```

An alternative sequence is as follows:

```
Dim rhapApp As rhapsody.Application
Set rhapApp = CreateObject("rhapsody.Application")
Dim projName As String
projName = "C:\Rhapsody\some_project.rpy"
Dim theProject As RPProject
rhapApp.openProject projName
Set theProject = rhapApp.activeProject
```

Note the use of `RPCollection` in the following sequence:

```
Dim packages As rhapsody.RPCollection
Set packages = theProject.packages
```

Unlike the RPYReporter example, a “get” method was not used to obtain the elements (in this case, packages). You can use this method for obtaining model elements on one level.

Finally, note the following `for` loop over the packages:

```
For Each package In packages
   ThisDocument.Range.InsertAfter package.name & vbCrLf
Next
```

Printing to the Word document is accomplished through the second line of code. The object called `ThisDocument` is the highest level object of Word, representing the document itself. You can see it in the explorer window in the upper, left-hand corner of the VB desktop. Highlight it to examine some its properties.

Modifying the Example to Print Classes

Suppose that instead of printing the names of all the classes in the radio model, you want to print the names of all the classes for a particular package, such as `radioPkg`. To modify the previous code and save it to another macro, follow these steps:

1. Start a new Word macro by selecting **Tools** > **Macro** > **Record New Macro**.
2. In the Record Macro dialog box, follow these steps:
   a. For the **Name** field, type "CountClassesForPackage."
   b. For the **Store macro in** field, select `Word_API.doc` from the pull-down list.
   c. Click the **Keyboard** icon.
3. In the Customize Keyboard dialog box, follow these steps:
   a. If it is not there already, move the cursor to the **Press new shortcut key** field. While holding down the Alt key, type the "CC" characters. When finished, you should see the following entry:

      ```
      Alt+C,C
      ```

   b. In the **Save changes in** field, select `Word_API.doc`.
   c. Click **Assign** and **Close**, in that order.

      A small dialog box appears to stop and pause the recording of the current macro.
4. Click the small square to stop recording the macro.
5. With the file `Word_API.doc` still loaded in Word, select **Tools** > **Macro** > **Macros**.
6. In the Macros dialog box, follow these steps:
   a. In the **Macros in** field, select `Word_API.doc`.
   b. In the list of available macros, select `CountClassesForPackage`.
   c. Click **Edit**. The focus switches to the VB editor.

      Note the presence of the new, empty `CountClassesForPackage` subprogram. If you scroll up, you can see the code you created for the `CountPackages` macro.
7. Cut and paste the code between the lines `Sub CountPackages()` and `End Sub` in the `CountPackages` macro, but after the comments that appear identifying the macro, date, and author.

8. Replace this section:

```
'
' Report Packages to Current Word Doc (ThisDocument)
'
Dim package As rhapsody.RPPackage
For Each package In packages
   ThisDocument.Range.InsertAfter package.name &
      vbCrLf
Next
'
' Close Application When Finished
'
If Not rhapApp Is Nothing Then rhapApp.Quit
```

With this:

```
'
' Report Classes of Package "radioPkg" to Current
' Document
'
Dim package As rhapsody.RPPackage
For Each package In packages
   If (package.name = "radioPkg") Then
      Dim classes As rhapsody.RPCollection
      Dim class As rhapsody.RPClass
      Set classes = package.classes
      For Each class In classes
      ThisDocument.Range.InsertAfter class.name &
      vbCrLf
      Next
   End If
Next
'
' Close Application When Finished
'
If Not rhapApp Is Nothing Then rhapApp.Quit
```

9. Run the macro by selecting **Run** > **Run Sub/UserForm**.

If you encounter an error, click **Debug** on the error dialog window to see the offending line of code highlighted.

If the macro works, you will see the classes of the `radioPkg` package displayed in the document screen of Word, as follows:

- `Frequency`
- `IDisplay`
- `ITuner`
- `Radio`
- `Waveband`

Rhapsody API Interfaces

This section contains reference information describing the classes and methods that comprise the abstract factory interface. For ease of use, the interfaces are presented in alphabetical order.

Note

Only the public and protected methods are documented.

The reference material for each of the Rhapsody API interfaces is shown in VB-compliant form (except for the interface class names). This means the following:

- Each COM interface has attributes and methods. In Visual Basic, the attributes are identified as properties.
- The actual identity of the interface classes used in the Rhapsody API varies with the language platform of the client application attempting to interface with the Rhapsody repository. In COM, all interface names start with "I", such as `IRPModelElement`. Visual C++ connects directly with the COM tables, which are C++ (or C++-related), and sees the "I". However, Visual Basic (VB) tries to be user-friendly by avoiding the use of the "I" so, for example, the `IRPModelElement` interface is `RPModelElement` in VB. If you open the object browser in the Microsoft Visual Basic IDE, you can see which classes are there and what they are called. Nevertheless, in the reference material, interface objects are identified with the "IRP" prefix and not the "RP" prefix seen in VB.
- Void returns are not shown as `void`—they are simply not shown.
- Pointers are not displayed. In C++, interfaces and collections of interfaces are handled with pointers. VB has no pointers.
- Each method has an implied argument: an instance of its interface referred to as "this." Thus, the reference on a method of `IRPClass` will refer to something done to "this `Class`."
- String returns and arguments are shown as `String`. For C++, this type is `BSTR`.
- There is only one collection object type: `IRPCollection`. In the reference material, however, collections are displayed as "`xxxxs`" where `xxxx` refers to the object type of the collection and the "s" indicates it is a collection.

Access to VB Properties

The COM API interface consists of data and methods. In Visual Basic, the data is identified as properties. These properties are implemented with invisible operations that enable some properties to be read/write (RW). In other words, the property can be used to set a value in a Rhapsody 6.1 model or retrieve it. Thus, if `A` is a read/write property, you can set the model value it points to through an `"A=…"` statement or retrieve it through a `"…=A"` statement.

Note

Not all properties are implemented with write ability. These are identified as read-only (RO).

API Conventions

The Rhapsody Repository API is a set of COM interfaces specified in terms of COM properties and methods, using COM types. The API listings have two syntaxes to describe the various attributes and methods provided by each interface:

- The VB syntax that follows indicates that the function takes a string argument for the property key and then returns a string:

  ```
  getProperty (propertyKey As String) As String
  ```

  The C/C++ prototype for the same function is:

  ```
  HRESULT getProperty (String propertyKey,
     String*** retVal);
  ```

- All interfaces are prefixed with “IRP” (“I” for interface, “RP” for Rhapsody 6.1). For example, the interface for a package is `IRPPackage`.
- Calls returning multiple objects return the equivalent of a VBA “collection.” To enhance readability, collectionsare treated as “typed,” for example, “Collection of `IRPClasses`.” However, in the API, all collections are implemented as “Collection of `IRPModelElements`.”
- Enumerated types are treated as strings. For example, the `getVisibility` method of an attribute returns the string “Public,” “Protected,” or “Private.”

Rhapsody Interfaces

The Rhapsody API interfaces are as follows:

- IRPRequirement Interface
- IRPSequenceDiagram Interface
- IRPState Interface
- IRPStatechart Interface
- IRPStateVertex Interface
- IRPStereotype Interface
- IRPStructureDiagram Interface
- IRPSwimlane Interface
- IRPTag Interface
- IRPTemplateInstantiation Interface
- IRPTemplateInstantiationParameter Interface
- IRPTemplateParameter Interface
- IRPTransition Interface
- IRPTrigger Interface
- IRPType Interface
- IRPUnit Interface
- IRPUseCase Interface
- IRPUseCaseDiagram Interface
- IRPVariable Interface

IRPAction Interface

The `IRPAction` interface represents the action of a transition in a statechart. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
body	`String`	RW	The entered body of this action

IRPActor Interface

The `IRPActor` interface represents Rhapsody actors. It inherits from `IRPClassifier`.

IRPAnnotation Interface

The `IRPAnnotation` interface represents Rhapsody annotations—notes, comments, constraints, and requirements. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
anchoredByMe	`RPCollection`	RO	The list of model elements that are anchored to the annotation
body			Deprecated
body	`String`	RW	The body text of the remark
specification	`String`	RW	The body text for the annotation

Method Summary

addAnchor	Adds an anchor from the annotation to the specified model element.

addAnchor

Read method

Description

The **addAnchor** method adds an anchor from the annotation to the specified model element.

Visual Basic

Syntax

```
addAnchor(target As RPModelElement)
```

Arguments

`target`

`The model element to which to anchor the annotation`

C/C++ Prototype

```
HRESULT addAnchor (IRPModelElement* target)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPApplication Interface

The application is the top-level object of the Rhapsody object model, which represents the Rhapsody application shell. It conceptually provides the functionality available through the Rhapsody menu bars. Initially, the application object exposes the minimal set of functionality required to open a project.

When you use VB or VC++ to interface to the COM API, the `IRPApplication` object needs to be created before any other API interface objects are used. However, if you use the Rhapsody VBA interface, you are automatically connected to the `IRPApplication` object.

VB Properties

Name	Type	Access	Description
BuildNo	`CString`	RO	The current build number
Language	`String`	RW	The current language setting
OMROOT	`String`	RO	The value for OMROOT
SerialNo	`CString`	RO	The serial number
ToolSet	`CString`	RO	The current tool setting (demo, Designer, and so on)

Method Summary

activeProject	Returns a pointer to the active (open) project
addToModel	Adds a Rhapsody unit located in the specified file to the current model with or without descendant elements
addToModelByReference	Adds the Rhapsody unit you specify to your model as a reference.
addToModelFromURL	Adds a Rhapsody unit located at the specified URL to the current model
arcCheckOut	Checks out files from the CM archive into the model
build	Builds the application
checkIn	Checks in the specified unit within the model into the CM archive you have already connected to (using `connectToArchive`)
checkModel	Checks the current model
checkOut	Refreshes a unit in the model by checking it out from the CM archive
connectToArchive	Connects the Rhapsody 6.1 project to the specified CM archive
createNewProject	Creates a new project named *<projectName>* in *<projectLocation>*
enterAnimationCommand	Specifies the command to begin animation
errorMessage	Returns the most recent error message
forceRoundtrip	Forces a roundtrip of the code back into the Rhapsody 6.1 model, and vice versa
generate	Generates code for the active configuration of the active component
getDiagramOfSelectedElement	Retrieves the diagram of the current element

getErrorMessage	Returns the most recent error message
getListOfFactoryProperties	Retrieves the list of properties in the `<lang>_factory.prp` file
getListOfSelectedElements	Returns the collection of model elements
getListOfSiteProperties	Retrieves the list of properties in the `<lang>_site.prp` file
getSelectedElement	Retrieves the current model element
getTheExternalCodeGeneratorInvoker	Retrieves the invoker for the external code generator
highlightByHandle	Highlights an element, given its handle
highLightElement	Highlights the specified element
importClasses	Imports classes according to the reverse engineering setting stored in the current configuration
make	Builds the current component following the current configuration
openProject	Opens a Rhapsody 6.1 project
openProjectFromURL	Opens the Rhapsody 6.1 product at the specified URL
openProjectWithLastSession	Opens the project using the settings from the previous Rhapsody 6.1 session
openProjectWithoutSubUnits	Opens the Rhapsody 6.1 project without subunits
quit	Closes the active Rhapsody 6.1 project
rebuild	Rebuilds the application
refreshAllViews	Refreshes all the views
regenerate	Regenerates the active configuration of the active component
report	Generates a report in ASCII or RTF into the specified file
roundtrip	Roundtrips code changes back into the open model
setComponent	Sets the current component for the open project
setConfiguration	Sets the current configuration for the open project
setLog	Creates a log file that records all the information that is normally displayed in the Rhapsody 6.1 output window
version	Returns the version of Rhapsody 6.1 that corresponds to the current COM API version

activeProject

Read method

Description

The **activeProject** method returns a pointer to the active (open) project.

Visual Basic

Syntax

```
activeProject() As RPProject
```

Return Value

A pointer to the current open project (an `RPProject`)

C/C++ Prototype

```
HRESULT activeProject (IRPProject** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addToModel

Write method

Description

The **addToModel** method adds a Rhapsody unit located in the specified file to the current model with or without descendant elements.

> **Note:** When adding a file with descendants, all the file subunits must be in the unit directory of the project before you issue the command.

Visual Basic

Syntax

```
addToModel (filename As String, withDescendant As Long)
```

Arguments

`filename`

`The full file name of the file that contains the unit to be added`

`withDescendants`

`Specifies whether to bring in descendants of the unit to be added to the model`

C/C++ Prototype

```
HRESULT addToModel (BSTR filename, long withDescendant)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addToModelByReference

The method `addToModelByReference` adds the Rhapsody unit you specify to your model as a reference.

Syntax

```
addToModelByReference (filename As String)
```

Arguments

`filename`

The name of the file that contains the unit to be added. The full path to the file must be specified.

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addJavadocProfile()
	Dim app As Object
	Set app = GetObject(, "Rhapsody.Application")
	On Error GoTo aa
	app.addToModelByReference ("C:\temp\JavaDocProfile.sbs")
	Exit Sub
	aa:
	MsgBox errorMessage
End Sub
```

addToModelFromURL

Write method

Description

The **addToModelFromURL** method adds a Rhapsody unit located at the specified URL to the current model. This method is used to support the Webify Toolkit.

Visual Basic

Syntax

```
addToModelFromURL (url As String)
```

Arguments

`url`

`The URL that contains the unit to be added`

C/C++ Prototype

```
HRESULT addToModelFromURL (BSTR url)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

arcCheckOut

Write method

Description

The **arcCheckOut** method checks out files from the configuration management (CM) archive into the model.

> **Note:** The difference between `arcCheckOut` and `checkOut` is that `arcCheckOut` refers to files in the archive, whereas `checkOut` refers to units in the model. To add new units to the model, use `arcCheckOut`. The method `checkOut` is intended to refresh elements already existing in the model.

Visual Basic

Syntax

```
arcCheckOut (filename As String, label As String,
   isLocked As Long, isRecursive As Long)
```

Arguments

`filename`

Specifies the name of the file.

label

Specifies the revision or label to be checked out. If this is set to NULL, the last revision on the main trunk (the default) will be checked out.

isLocked

Specifies whether the file is locked. The possible values are as follows:

1--Designates that a writable file be checked out and the archive locked from other checkouts of the file.

0--The file is checked out as read-only and the archive not locked to other checkouts.

isRecursive (1 or 0)

If this is set to 1, the file and all the other elements that it contains are checked out.

C/C++ Prototype

```
HRESULT arcCheckOut (BSTR filename, BSTR label,
    long isLocked, long isRecursive)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

build

Note

Currently, this method has not been implemented.

Read method

Description

The **build** method builds the application.

Visual Basic

Syntax

```
build()
```

C/C++ Prototype

```
HRESULT build()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

checkIn

Read method

Description

The **checkIn** method checks in the specified unit within the model into the configuration management (CM) archive you have already connected to (using `connectToArchive`).

Visual Basic

Syntax

```
checkIn (unitName As String, label As String,
   isLocked As Long, isRecursive As Long,
   description As String)
```

Arguments

unitName

The name of the unit.

label

The label to apply when you check in the file to the archive. If it is not needed, set this argument to NULL.

isLocked (1 or 0)

Specifies whether to lock the archive after checkin.

isRecursive

If set to 1, check in the unit and all the elements contained in it.

description

The description to add to the unit when you check it in to the archive.

C/C++ Prototype

```
HRESULT checkIn (BSTR unitName, BSTR label,
    long isLocked, long isRecursive, BSTR description)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

checkModel

Read method

Description

The **checkModel** method checks the current model. This is equivalent to the Rhapsody 6.1 command **Tools > Check Model** for the current configuration.

Visual Basic

Syntax

```
checkModel()
```

C/C++ Prototype

```
HRESULT checkModel()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

checkOut

Write method

Description

The **checkOut** method refreshes a unit in the model by checking it out from the CM archive.

Visual Basic

Syntax

```
checkOut (unitName As String, label As String,
   isLocked As Long, isRecursive As Long)
```

Arguments

`unitName`

The name of the unit.

`label`

The revision or label to be checked out. If you set this to NULL, the last revision on the main trunk (the default) will be checked out.

`isLocked`

Specifies whether to lock the archive after checkout. The possible values are as follows:

1--Designates that a writable unit is to be checked out and the archive locked from other checkouts of the unit.

0--The unit is checked out as read-only and the archive not locked to other checkouts.

`isRecursive`

If this is set to 1, check out the unit and all the elements contained in it.

C/C++ Prototype

```
HRESULT checkOut (BSTR unitName, BSTR label,
   long isLocked, long isRecursive)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

connectToArchive

Read method

Description

The **connectToArchive** method connects the Rhapsody 6.1 project to the specified CM archive.

This operation is necessary only for the following cases:

- There is no current association in the project.
- The association needs to be modified.

Visual Basic

Syntax

```
connectToArchive (archivePath As String)
```

Arguments

`archivePath`

`The path to location of archive`

C/C++ Prototype

```
HRESULT connectToArchive (BSTR archivePath)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

createNewProject

Write method

Description

The **createNewProject** method creates a new project named <*projectName*> in <*projectLocation*>. You should call this operation before a project has been opened, or after a project has been saved.

Note that helper applications might not close the current document. This means that the **createNewProject** method should not be used in a VBA macro that you specify as a helper.

Visual Basic

Syntax

```
createNewProject (projectLocation As String,
   projectName As String)
```

Arguments

`projectLocation`

`The location of the project`

`projectName`

`The name of the project`

C/C++ Prototype

```
HRESULT createNewProject (BSTR projectLocation,
   BSTR projectName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deferredAddToModel

Write method

Description

The **deferredAddToModel** method **TBS**.

Visual Basic

Syntax

```
deferredAddToModel(filename As String,
   withDescendants As Long, orijPrjId As String,
   eraseDir As Long)
```

Arguments

`filename`

`The full name of the file that contains the unit to be added`

`withDescendants`

`Specifies whether to bring in descendants of the unit to be added to the model`

`orijPrjId`

`The project ID`

`eraseDir`

`Specifies whether to delete the directory after the unit has been added to the model`

C/C++ Prototype

```
HRESULT deferredAddToModel (BSTR filename,
   long withDescendants, BSTR orijPrjId, long eraseDir);
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

enterAnimationCommand

Read method

Description

The **enterAnimationCommand** method specifies the command to begin animation.

Visual Basic

Syntax

```
enterAnimationCommand (command As String)
```

Arguments

`command`

`The animation command`

C/C++ Prototype

```
HRESULT enterAnimationCommand (BSTR command)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

errorMessage

Read method

Description

The **errorMessage** method returns the most recent error message.

Visual Basic

Syntax

```
errorMessage() As String
```

Return Value

A pointer to the most recent error message (a string)

C/C++ Prototype

```
HRESULT errorMessage (BSTR* __MIDL_0016)
```

Arguments

```
BSTR*
A pointer to most recent error message
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

forceRoundtrip

Read method

Description

The **forceRoundtrip** method forces a roundtrip of the code back into the Rhapsody 6.1 model, and vice versa.

Visual Basic

Syntax

```
forceRoundtrip()
```

C/C++ Prototype

```
HRESULT forceRoundtrip()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

generate

Read method

Description

The **generate** method generates code for the active configuration of the active component.

Visual Basic

Syntax

```
generate()
```

C/C++ Prototype

```
HRESULT generate()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getDiagramOfSelectedElement

Read method

Description

The **getDiagramOfSelectedElement** method retrieves the diagram of the current element.

Visual Basic

Syntax

```
getDiagramOfSelectedElement() As RPDiagram
```

Return Value

The `RPDiagram`

C/C++ Prototype

```
HRESULT getDiagramOfSelectedElement (IRPDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getErrorMessage

Read method

Description

The **getErrorMessage** method returns the most recent error message.

Visual Basic

Syntax

```
getErrorMessage(__MIDL_0014 As String) As String
```

Return Value

A pointer to the most recent error message (a string)

C/C++ Prototype

```
HRESULT getErrorMessage (BSTR* _MIDL_0014)
```

Arguments

```
BSTR*
A pointer to most recent error message
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getListOfFactoryProperties

Note

Currently, this method has not been implemented.

Read method

Description

The **getListOfFactoryProperties** method returns the list of properties in the `<lang>_factory.prp` file.

Visual Basic

Syntax

```
getListOfFactoryProperties() As RPCollection
```

Return Value

The list of properties defined in the `<lang>_factory.prp` file

C/C++ Prototype

```
HRESULT getListOfFactoryProperties (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getListOfSelectedElements

Read method

Description

The **getListOfSelectedElements** method returns a collection of model elements.

In Version 4.1, this method was modified as follows:

- If the instance is selected in the context of an OMD, the method returns an `IRPInstance` instead of `IRPClass` or `IRPActor`. See “IRPInstance Interface” for more information on this interface.
- If a link is selected in the context of an OMD, the method returns an `IRPLink` instead of `IRPRelation`. See “IRPLink Interface” for more information on this interface.
- If an instance is selected in the context of a sequence diagram, the method returns an `IRPClassifierRole` instead of `IRPClass`. See “IRPClassifierRole Interface” for more information on this interface.

Visual Basic

Syntax

```
getListOfSelectedElements () As RPCollection
```

Return Value

The collection of elements

C/C++ Prototype

```
HRESULT getListOfSelectedElements (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getListOfSiteProperties

Note

Currently, this method has not been implemented.

Read method

Description

The **getListOfSiteProperties** method returns the list of properties in the `<lang>_site.prp` file.

Visual Basic

Syntax

```
getListOfSiteProperties() As RPCollection
```

Return Value

The list of properties defined in the `<lang>_site.prp` file

C/C++ Prototype

```
HRESULT getListOfSiteProperties (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSelectedElement

Read method

Description

The **getSelectedElement** method retrieves the current model element.

In Version 4.1, this method was modified as follows:

- If the instance is selected in the context of an OMD, the method returns an `IRPInstance` instead of `IRPClass` or `IRPActor`. See “IRPInstance Interface” for more information on this interface.
- If a link is selected in the context of an OMD, the method returns an `IRPLink` instead of `IRPRelation`. See “IRPLink Interface” for more information on this interface.
- If an instance is selected in the context of a sequence diagram, the method returns an `IRPClassifierRole` instead of `IRPClass`. See “IRPClassifierRole Interface” for more information on this interface.

Visual Basic

Syntax

```
getSelectedElement() As RPModelElement
```

Return Value

The current model element

C/C++ Prototype

```
HRESULT getSelectedElement (IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

VBA Example

The following example assumes that a link is selected.

```
Dim m As RPModelElement
Dim link as RPLink
Dim fromCls as RPClass
Dim toCls as RPClass
Dim from as RPInstance
Dim to as RPInstance
Dim rel as RPRelation

Set m = getSelectedElement
If m.metaClass = "Link" then
```

```
    link = m
    from = link.from
    to = link.to
    fromCls = from.otherClass
    toCls = to.otherClass
    rel = link.instantiates

'Variable content:
'link points to the selected link.
'from points to the "source" instance.
'to points to the "target" instance.
'fromCls points to the class of the "source" instance.
'toCls points to the class of the "target" instance.
'rel points to the relation instantiated by the link.


    MsgBox m.name & " is a link from instance " &
           from.name &" of class " + clsFrom.name & " to
           instance " & to.name & " of class " + toCls.name
           & " which instantiates the " & rel.name
           & " relation."
End If
```

getTheExternalCodeGeneratorInvoker

Read method

Description

The **getTheExternalCodeGeneratorInvoker** method returns the invoker for the external code generator.

Visual Basic

Syntax

```
getTheExternalCodeGeneratorInvoker() As
    RPExternalCodeGeneratorInvoker
```

Return Value

The `RPExternalCodeGeneratorInvoker` singleton. The external code generator queries the application for this interface.

C/C++ Prototype

```
HRESULT getTheExternalCodeGeneratorInvoker (
    IRPExternalCodeGeneratorInvoker** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

highlightByHandle

Read method

Description

The **highlightByHandle** method highlights the specified model element, given its handle.

The rules for developing the handle for each element type are as follows:

1. The metaclass in the beginning is the value of the metaClass property.
2. The GUID at the end of the name is the value of the GUID property.
3. The structure of the name is as follows:

```
<Package name>::<Class name>.<Element name>
```

In this syntax:

- <*Package name*> is the full path of the package of the element (for example, `P1::P2`).

– <*Class full name*> is the full path of the class of the element (for example, `C1::C2`).
– <*Element name*> is the name of the element.

See the section “Example” for a code example that uses this method.

Visual Basic

Syntax

```
highlightByHandle (strHandle As String)
```

Arguments

`strHandle`

The handle to the element to highlight. Call the method with this argument using the following string:

```
"(<metaclass>)<FullPathName>(<GUID>)"
```

C/C++ Prototype

```
HRESULT highlightByHandle (BSTR strHandle)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Dim proj As RPProject
Dim m As RPModelElement
Dim str As String

Dim app As Object
set app = GetObject(, "Rhapsody.Application")

On Error GoTo aa

Set proj = getProject
Set m = proj.findNestedElementRecursive("state_0", "State")
str = "(" & m.metaClass & ")" & m.getFullPathName & "(" & m.GUID & ")"
app.highlightByHandle (str)

Exit Sub

aa:

MsgBox errorMessage
```

highLightElement

Read method

Description

Highlights the specified element.

Visual Basic

Syntax

```
highLightElement (val As RPModelElement)
```

Arguments

`val`

`The element to highlight`

C/C++ Prototype

```
HRESULT highLightElement (IRPModelElement* val)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

importClasses

Write method

Description

The **importClasses** method imports classes according to the reverse engineering setting stored in the current configuration. This is equivalent to selecting the Rhapsody 6.1 command **Tools > Reverse Engineering**.

Visual Basic

Syntax

```
importClasses()
```

C/C++ Prototype

```
HRESULT importClasses ()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

make

Read method

Description

The **make** method builds the current component following the current configuration.

Visual Basic

Syntax

```
make()
```

C/C++ Prototype

```
HRESULT make()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

openProject

Read method

Description

The **openProject** method opens a Rhapsody 6.1 project.

Note that helper applications might not close the current document. This means that you should not use the `openProject` method in a VBA macro that you specify as a helper:

Visual Basic

Syntax

```
openProject (filename As String) As RPProject
```

Arguments

`filename`

`The name of the file that contains the project`

Return Value

A pointer to the opened project (an `RPProject`)

C/C++ Prototype

```
HRESULT openProject (BSTR filename, IRPProject** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

openProjectFromURL

Write method

Description

The **openProjectFromURL** method opens the Rhapsody 6.1 product at the specified URL. This method is used to support the Webify Toolkit.

Visual Basic

Syntax

```
openProjectFromURL (url As String)
```

Arguments

`url`

`The URL of the project to open`

C/C++ Prototype

```
HRESULT openProjectFromURL (BSTR url)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

openProjectWithLastSession

Write method

Description

The **openProjectWithLastSession** method opens the project using the settings from the previous Rhapsody 6.1 session.

Visual Basic

Syntax

```
openProjectWithLastSession (filename As String)
   As RPProject
```

Arguments

`filename`

The name of the project to open

Return Value

The `RPProject` that was opened

C/C++ Prototype

```
HRESULT openProjectWithLastSession (BSTR filename,
   IRPProject** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

openProjectWithoutSubUnits

Write method

Description

The **openProjectWithoutSubUnits** method opens the Rhapsody 6.1 project without subunits.

Visual Basic

Syntax

```
openProjectWithoutSubUnits (filename As String)
   As RPProject
```

Arguments

`filename`

`The name of the project to open`

C/C++ Prototype

```
HRESULT openProjectWithoutSubUnits (BSTR filename,
   IRPProject** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

quit

Read method

Description

The **quit** method closes the active Rhapsody 6.1 project.

Note that helper applications might not close the current document. This means that you should not use the `quit` method in a VBA macro that you specify as a helper:

Visual Basic

Syntax

```
quit()
```

C/C++ Prototype

```
HRESULT quit()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

rebuild

Note

Currently, this method has not been implemented.

Read method

Description

The **rebuild** method rebuilds the application.

Visual Basic

Syntax

```
rebuild()
```

C/C++ Prototype

```
HRESULT rebuild()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

refreshAllViews

Read method

Description

The **refreshAllViews** method refreshes the views.

Visual Basic

Syntax

```
refreshAllViews()
```

C/C++ Prototype

```
HRESULT refreshAllViews()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

regenerate

Read method

Description

The **regenerate** method regenerates the active configuration of the active component.

Visual Basic

Syntax

```
regenerate()
```

C/C++ Prototype

```
HRESULT regenerate()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

report

Read method

Description

The **report** method generates a report in ASCII or RTF into the specified file. The report is generated for the elements found in the scope of the current component.

Visual Basic

Syntax

```
report (format As String, outputFileName As String)
```

Arguments

`format`

`The file format. The possible values are as follows:`

`ASCII`

`RTF`

`outputFileName`

`The name of the output file, including the path.`

C/C++ Prototype

```
HRESULT report (BSTR format, BSTR outputFileName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

roundtrip

Write method

Description

The **roundtrip** method roundtrips code changes back into the open model.

Visual Basic

Syntax

```
roundtrip()
```

C/C++ Prototype

```
HRESULT roundtrip()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setComponent

Write method

Description

The **setComponent** method sets the current component for the open project.

Visual Basic

Syntax

```
setComponent (component As String)
```

Arguments

`component`

`The name of component in the project`

C/C++ Prototype

```
HRESULT setComponent (BSTR component)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setConfiguration

Write method

Description

The **setConfiguration** method sets the current configuration for the open project.

> **Note:** This method fails if the configuration is not found within the current component. Therefore, you should call `setComponent` before `setConfiguration`.

Visual Basic

Syntax

```
setConfiguration (configuration As String)
```

Arguments

`configuration`

The name of the configuration in the project. This refers to the simple name of the configuration, not the full name, i.e., not packageA::componentB::configC.

C/C++ Prototype

```
HRESULT setConfiguration (BSTR configuration)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setLog

Write method

Description

The **setLog** method creates a log file that records all the information that is normally displayed in the Rhapsody 6.1 output window.

Visual Basic

Syntax

```
setLog (logFile As String)
```

Arguments

`LogFile`

`The name of the log file, including the path`

C/C++ Prototype

```
HRESULT setLog (BSTR logFile)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

version

Read method

Description

The **version** method returns the version of Rhapsody 6.1 that corresponds to the current COM API version.

Visual Basic

Syntax

```
version() As String
```

Return Value

The version of Rhapsody that corresponds to the COM API version

C/C++ Prototype

```
HRESULT version (BSTR* __MIDL_0015)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPArgument Interface

The `IRPArgument` interface represents an argument of an operation or an event. It inherits from `IRPVariable`.

VB Properties

Name	Type	Access	Description
argumentDirection	`String`	RW	The direction of the argument (In, Out, or InOut)
declaration	`String`	RW	A string that represents an inline declaration of this argument
defaultValue	`String`	RW	The default value of this argument
type	`RPType`	RW	The type of this argument

Method Summary

setTypeDeclaration	Sets the C++ type declaration for this argument

setTypeDeclaration

Write method

Description

The **setTypeDeclaration** method sets the C++ type declaration for this argument.

Visual Basic

Syntax

```
setTypeDeclaration (newVal As String)
```

Arguments

`NewVal`

`The C++ type declaration for this argument`

C/C++ Prototype

```
HRESULT setTypeDeclaration (BSTR newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPASCIIFile Interface

The `IRPASCIIFile` interface represents a disk file that you can open, close, and write to. It is a top-level interface in the Rhapsody 6.1 object model.

Method Summary

close	Closes a file
open	Opens a file
write	Writes to the specified file

close

Write method

Description

The **close** method closes the file.

Visual Basic

Syntax

```
close()
```

C/C++ Prototype

```
HRESULT close
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

open

Write method

Description

The **open** method opens a file.

Visual Basic

Syntax

```
open (filename As String)
```

Arguments

`filename`

`The name of file to open`

C/C++ Prototype

```
HRESULT open (BSTR filename)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

write

Write method

Description

The `write` method writes to the specified file.

Visual Basic

Syntax

```
write (data As String)
```

Arguments

Data

The ASCII string data to write to the disk file

C/C++ Prototype

```
HRESULT write (BSTR data)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

IRPAssociationClass Interface

The IRPAssociationClass interface represents a Rhapsody 6.1 association (bi-directional, directed, composition, or aggregation). IRPAssociationClass inherits from the IRPClass.

VB Properties

Name	Type	Access	Description
end1	RPRelation	RO	The first end of the association line
end2	RPRelation	RO	The second end of the association line

IRPAssociationRole Interface

The IRPAssociationRole interface represents a channel or relation through which objects in a collaboration communicate. This object is meaningful only for collaborations displayed in collaboration diagrams. IRPAssociationRole inherits from the IRPModelElement.

VB Properties

Name	Type	Access	Description
roleType	String	RO	The role type (specified or unspecified)

Method Summary

getClassifierRoles	Returns a collection of IRPClassifierRoles linked by the current association role
getFormalRelations	Returns a collection of IRPRelations for the current association role

getClassifierRoles

Read method

Description

The **getClassifierRoles** method returns a collection of `IRPClassifierRoles` linked by the current association role.

Note that an association role in a collaboration diagram is always bidirectional.

Visual Basic

Syntax

```
getClassifierRoles () As RPCollection
```

Return Value

A collection of classifier roles

C/C++ Prototype

```
HRESULT getClassifierRoles (
    IRPCollection** classifierRoles)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getFormalRelations

Read method

Description

The **getFormalRelations** method returns a collection of `IRPRelations` for the current association role. Pass one of the following values to the method:

- 0—Get the unspecified relations.
- 1—Get the directional relations.
- 2—Get the bidirectional relations.

Visual Basic

Syntax

```
getFormalRelations() As RPCollection
```

Return Value

A collection of `RPRelations`

C/C++ Prototype

```
HRESULT getFormalRelations (
   IRPCollection** classifierRoles)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPAttribute Interface

The `IRPAttribute` interface represents a class attribute. It Inherits from `IRPVariable`.

VB Properties

Name	Type	Access	Description
declaration	String	RW	The declaration of this attribute. For an inline declaration, this is an uninterpreted string.
defaultValue	String	RW	The default value of this attribute, if one has been defined.
isConstant	`Long`	RW	A flag that indicates whether the attribute is read-only or modifiable.
isOrdered	`Long`	RW	A flag that specifies whether the order of the reference type items is significant.
isReference	`Long`	RW	A flag that specifies whether the attribute is referenced as a reference (such as a pointer (*) or an address (&) in C++).
isStatic	`Long`	RW	A flag that indicates whether this attribute is a static class attribute. Static status implies that the attribute belongs to the class as a whole rather than to an individual instance.
multiplicity	`String`	RW	The multiplicity of the attribute. If this is greater than 1, use the `isOrdered` property to specify whether the order of the reference type items is significant.
type	`RPType`	RW	The type of this attribute. For Rhapsody predefined types, this is a reference to that type.
visibility	`String`	RW	The visibility of this attribute (public, protected, or private).

IRPBlock Interface

The `IRPBlock` interface was removed in version 7.2 of Rhapsody.

Use `IRPInstance` instead.

IRPClass Interface

The `IRPClass` interface represents Rhapsody 6.1 classes. It inherits from `IRPClassifier`.

VB Properties

Name	Type	Access	Description
isActive	`Long`	RW	Indicates whether this class is an active class.
isBehaviorOverridden	`Long`	RW	Indicates whether the statechart of the subclass overrides the statechart of this class. A statechart is *not* inherited.
isComposite	`Long`	RO	Indicates whether this class is a composite class.
isReactive	`Long`	RO	Indicates whether this class has a statechart that is, it's a reactive class).

Method Summary

addClass	Adds a class to the current class
addConstructor	Adds a constructor to the current class
addDestructor	Adds a destructor to the current class
addEventReception	Adds an event reception to the current class
addLink	Adds a link between two objects to the current class
addReception	Adds a reception to the current class
addSuperclass	Adds a superclass to the current class
addTriggeredOperation	Adds a triggered operation to the current class
addType	Adds a type to the current class
deleteClass	Deletes a class from the current class
deleteConstructor	Deletes a constructor from the current class
deleteDestructor	Deletes a destructor from the current class
deleteEventReception	Deletes the specified event reception from the current class
deleteReception	Deletes the specified reception from the current class
deleteSuperclass	Deletes a superclass from the current class
deleteType	Deletes a type from the current class

addClass

Write method

Description

The **addClass** method adds a class to the current class.

Visual Basic

Syntax

```
addClass (name As String) As RPClass
```

Arguments

`name`

`The name of the new class`

Return Value

The new class

C/C++ Prototype

```
HRESULT addClass (BSTR name, IRPClass** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addConstructor

Write method

Description

The **addConstructor** method adds a constructor to the current class.

Visual Basic

Syntax

```
addConstructor (argumentsData As String) As RPOperation
```

Arguments

`argumentsData`

`The arguments for the constructor`

Return Value

The new constructor for this class

C/C++ Prototype

```
HRESULT addConstructor (BSTR argumentsData,
   IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addNetwork(c As RPClass)
Dim o As RPOperation
c.addOperation ("serialize")
c.addOperation ("unserialize")
c.addConstructor ("")
On Error Resume Next
c.addDestructor ("")
x = c.addStereotype("G3Network", "Class")
End Sub
```

addDestructor

Write method

Description

The **addDestructor** method adds a destructor to the current class.

Visual Basic

Syntax

```
addDestructor() As RPOperation
```

Return Value

The new destructor for this class

C/C++ Prototype

```
HRESULT addDestructor (IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addNetwork(c As RPClass)
Dim o As RPOperation
c.addOperation ("serialize")
c.addOperation ("unserialize")
c.addConstructor ("")
On Error Resume Next
c.addDestructor ("")
x = c.addStereotype("G3Network", "Class")
End Sub
```

addEventReception

Write method

Description

The **addEventReception** method adds an event reception to the current class.

Visual Basic

Syntax

```
addEventReception (name As String) As RPEventReception
```

Arguments

`name`

`The name of the new event reception for this class`

Return Value

The new event reception

C/C++ Prototype

```
HRESULT addEventReception (BSTR name,
   IRPEventReception** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addLink

The `addLink` method adds a link between two objects to the current class.

Syntax

```
addLink(fromPart As RPInstance, toPart As RPInstance, assoc As RPRelation,
fromPort As RPPort, toPort As RPPort) As RPLink
```

Arguments

`fromPart, toPart`

The objects that are being linked.

`assoc`

Association that is being instantiated (optional).

`fromPort, toPort`

Ports that are being linked (optional).

addReception

Write method

Description

The **addReception** method adds a reception to the current class.

Visual Basic

Syntax

```
addReception (name As String) As RPEventReception
```

Arguments

`name`

`The name of the new reception for this class`

Return Value

The new reception

C/C++ Prototype

```
HRESULT addReception (BSTR name,
   IRPEventReception** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addSuperclass

Write method

Description

The **addSuperclass** method inherits this class from a new superclass.

Visual Basic

Syntax

```
addSuperclass (superClass As RPClass)
```

Arguments

`superClass`

`Specifies the RPClass from which this class will inherit`

C/C++ Prototype

```
HRESULT addSuperclass (IRPClass* superClass)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addTriggeredOperation

Write method

Description

The **addTriggeredOperation** method adds a new triggered operation to the current class.

Visual Basic

Syntax

```
addTriggeredOperation (name As String) As RPOperation
```

Arguments

`name`

`A string that specifies the name of the new trigger`

Return Value

The new trigger for this class

C/C++ Prototype

```
HRESULT addTriggeredOperation (BSTR name,
   IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addType

Write method

Description

The **addType** method adds a type to the current class.

Visual Basic

Syntax

```
addType (name As String) As RPType
```

Arguments

`name`

`The name of the new type`

Return Value

The new type for this class

C/C++ Prototype

```
HRESULT addType (BSTR name, IRPType** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteClass

Write method

Description

The **deleteClass** method deletes a class from the current class.

Visual Basic

Syntax

```
deleteClass (name As String)
```

Arguments

`name`

`The name of the class to delete`

C/C++ Prototype

```
HRESULT deleteClass (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteConstructor

Write method

Description

The **deleteConstructor** method deletes a constructor from the current class.

Visual Basic

Syntax

```
deleteConstructor (constructor As RPOperation)
```

Arguments

`constructor`

The constructor to delete

C/C++ Prototype

```
HRESULT deleteConstructor (IRPOperation* constructor)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteDestructor

Write method

Description

The **deleteDestructor** method deletes a destructor from the current class.

Visual Basic

Syntax

```
deleteDestructor()
```

C/C++ Prototype

```
HRESULT deleteDestructor()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteEventReception

Write method

Description

The **deleteEventReception** method deletes the specified event reception.

Visual Basic

Syntax

```
deleteEventReception (pVal As RPEventReception)
```

Arguments

`pVal`

`The event reception to delete`

C/C++ Prototype

```
HRESULT deleteEventReception (IRPEventReception* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteReception

Write method

Description

The **deleteReception** method deletes the specified reception.

Visual Basic

Syntax

```
deleteReception (pVal As RPEventReception)
```

Arguments

`pVal`

`The event reception to delete`

C/C++ Prototype

```
HRESULT deleteReception (IRPEventReception* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteSuperclass

Write method

Description

The **deleteSuperclass** method deletes the superclass for the current class.

Visual Basic

Syntax

```
deleteSuperclass (superClass As RPClass)
```

Arguments

`superClass`

`The superclass (base class) to delete`

C/C++ Prototype

```
HRESULT deleteSuperclass (IRPClass* superClass)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteType

Write method

Description

The **deleteType** method deletes a type from the current class.

Visual Basic

Syntax

```
deleteType (name As String)
```

Arguments

`name`

`The type to delete`

C/C++ Prototype

```
HRESULT deleteType (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPClassifier Interface

The `IRPClassifier` interface is an abstract interface consisting of all the shared features of classes, actors, use cases, and (data) types. It inherits from `IRPUnit`.

VB Properties

Name	Type	Access	Description
activityDiagram	`RPFlowchart`	RO	The activity diagram
attributes	Collection of `RPAttributes`	RO	A collection of attributes belonging to this classifier
baseClassifiers	Collection of `RPClassifiers`	RO	A collection of classifiers from which this classifier is derived (inherits)
derivedClassifiers	Collection of `RPClassifiers`	RO	A collection of classifiers that derive (inherit) from this classifier
flows	Collection of `RPInformationFlows`	RO	A collection of flows belonging to this classifier
flowItems	Collection of `RPInformationItems`		A collection of flowItems belonging to this classifier
generalizations	Collection of `RPGeneralizations`	RO	A collection of generalizations that generalize this classifier (for which this classifier is a specialization)
interfaceItems	Collection of `RPInterfaceItems`	RO	A collection of operations, events, and event receptions belonging to this classifier
nestedClassifiers	Collection of `RPClassifiers`	RO	A collection of classifiers defined in this classifier
operations	Collection of `RPOperations`	RO	A collection of operations belonging to this classifier
ports	`RPCollection`	RO	A collection of ports belonging to this classifier
relations	Collection of `RPRelations`	RO	A collection of all relations belonging to this classifier
statechart	`RPStatechart*`	RO	The handle to the statechart of this class, if it has one

Method Summary

addActivityDiagram	Adds an activity diagram to the current class
addAttribute	Adds an attribute to the current class
addFlowItems	Adds the specified flowItem to the collection of flowItems
addFlows	Adds the specified flow to the collection of flows
addGeneralization	Adds a generalization to the current class
addOperation	Adds an operation to the current class
addRelation	Adds a symmetric relation between the current class and another one
addStatechart	Adds a statechart to the current class
addUnidirectionalRelation	Adds a directional relation from the current class to another class
deleteActivityDiagram	Deletes the specified activity diagram from the current class
deleteAttribute	Deletes the specified attribute from the current class
deleteFlowItems	Deletes the specified flowItem from the collection of flowItems
deleteFlows	Deletes the specified flow from the collection of flows
deleteGeneralization	Deletes the specified generalization from the current class
deleteOperation	Deletes the specified operation from the current class
deleteRelation	Deletes the specified relation from the current class
deleteStatechart	Deletes the specified statechart from the current class
findAttribute	Retrieves the specified attribute of the classifier
findBaseClassifier	Retrieves a base (parent) classifier of a classifier
findDerivedClassifier	Retrieves the specified derived classifier of a classifier
findGeneralization	Retrieves the specified generalization of a classifier
findInterfaceItem	Retrieves an operation or event reception of the given signature that belongs to a classifier

findNestedClassifier	Retrieves the specified classifier defined within this object
findNestedClassifierRecursive	Retrieves the specified classifier defined in this object and in objects defined within this object
findRelation	Retrieves the specified relation that belongs to the current classifier
findTrigger	Retrieves the specified trigger in the statechart of the current class
getAttributesIncludingBases	Retrieves the attributes defined for this class and the ones inherited from its superclasses
getInterfaceItemsIncludingBases	Retrieves the operations and event receptions defined for this class and the ones it inherited from its superclasses
getRelationsIncludingBases	Retrieves the relations defined for this class and the ones it inherited from its superclasses

Note

Some of the properties and methods are meaningful only for some of the derived interfaces. When meaningless, the call will return nothing (NULL) or an empty collection.

addActivityDiagram

Write method

Description

The **addActivityDiagram** method adds an activity diagram to the current class.

Visual Basic

Syntax

```
addActivityDiagram () As RPFlowchart
```

Return Value

The new activity diagram

C/C++ Prototype

```
HRESULT addActivityDiagram (IRPFlowchart** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addAttribute

Write method

Description

The **addAttribute** method adds an attribute to the current class.

Visual Basic

Syntax

```
addAttribute (name As String) As RPAttribute
```

Arguments

`name`

`The name of the new attribute`

C/C++ Prototype

```
HRESULT addAttribute (BSTR name, IRPAttribute** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFlowItems

Write method

Description

The **addFlowItems** method adds the specified flowItem to the collection of flowItems.

Visual Basic

Syntax

```
addFlowItems (name As String) As RPFlowItem
```

Arguments

`name`

`The name of the new flowItem`

C/C++ Prototype

```
HRESULT addFlowItems (BSTR name, IRPFlowItem** ppItem)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFlows

Write method

Description

The **addFlows** method adds the specified flow to the collection of flows.

Visual Basic

Syntax

```
addFlows (name As String) As RPFlow
```

Arguments

`name`

`The name of the new flow`

C/C++ Prototype

```
HRESULT addFlows (BSTR name, IRPFlow** ppFlow)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addGeneralization

Write method

Description

The **addGeneralization** method adds a generalization to the current class.

Visual Basic

Syntax

```
addGeneralization (pVal As RPClassifier)
```

Arguments

`pVal`

`The generalization to add to this class`

C/C++ Prototype

```
HRESULT addGeneralization (IRPClassifier *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addUi(c As RPClass)
Dim x As Object
Dim p As RPPackage
Dim theClass As RPClass
'all gui objects are derived from GUI.UIBase
c.Description = "gui class"
On Error Resume Next
Set p = pr.findNestedElement("GUI", "Package")
Set theClass = p.findNestedElement("UIBase", "Class")
c.addGeneralization theClass

If Not Err.Number = 0 Then
  MsgBox (errorMessage)
End If

c.addStereotype "G3UI", "Class"
End Sub
```

addOperation

Write method

Description

The **addOperation** method adds an operation to the current class.

Visual Basic

Syntax

```
addOperation (name As String) As RPOperation
```

Arguments

`name`

`The name of the new operation`

Return Value

The operation added to this class

C/C++ Prototype

```
HRESULT addOperation (BSTR name, IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addNetwork(c As RPClass)
Dim o As RPOperation
c.addOperation ("serialize")
c.addOperation ("unserialize")
c.addConstructor ("")
On Error Resume Next
c.addDestructor ("")
x = c.addStereotype("G3Network", "Class")
End Sub
```

addRelation

Write method

Description

The **addRelation** method adds a symmetric relation between the current class and another one.

Visual Basic

Syntax

```
addRelation (otherClassName As String,
   otherClassPackageName As String,
   roleName1 As String, linkType1 As String,
   multiplicity1 As String, roleName2 As String,
   linkType2 As String, multiplicity2 As String,
   linkName As String) As RPRelation
```

Arguments

OtherClassName

The name of the other class involved in the new relation with the current class.

OtherClassPackageName

The name of the package containing the other class.

roleName1

The role name of the other class, from the point of view of the current class.

roleName2

The role name of the current class, from the point of view of the other class.

linkType1

The relation type. The possible values are as follows:

Aggregation

Association

Composition

linkType2

The second relation type. The possible values are as follows:

Aggregation

Association

Composition

multiplicity1

The multiplicity of instances for the other class.

multiplicity2

The multiplicity of instances for the current class.

linkName

The name of the link. This is a descriptive and explanatory field that plays no part in code generation.

Notes

The valid combinations of linkType1 and linkType2 are as follows:

Association/Association--I know you; you know me.

Aggregation/Association--I belong to you; you know me.

Composition/Association--I strongly belong to you; you know me.

Association/Aggregation--I know you; you belong to me.

Association/Composition--I know you; you strongly belong me.

Return Value

The new relation

C/C++ Prototype

```
HRESULT addRelation (BSTR otherClassName,
    BSTR otherClassPackageName, BSTR roleName1,
    BSTR linkType1, BSTR multiplicity1, BSTR roleName2,
    BSTR linkType2, BSTR multiplicity2, BSTR linkName,
    IRPRelation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addStatechart

Write method

Description

The **addStatechart** method adds a statechart to the current class.

Visual Basic

Syntax

```
addStatechart() As RPStatechart
```

Return Value

The new statechart

C/C++ Prototype

```
HRESULT addStatechart (IRPStatechart** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addUnidirectionalRelation

Write method

Description

The **addUnidirectionalRelation** method adds a directional relation from the current class to another class.

Visual Basic

Syntax

```
addUnidirectionalRelation (otherClassName As String,
   otherClassPackageName As String,
   roleName As String, linkType As String,
   multiplicity As String,
   linkName As String) As RPRelation
```

Arguments

OtherClassName

The name of the other class involved in the new relation with the current class.

OtherClassPackageName

The name of the package containing the other class.

roleName

The role name of the other class, from the point of view of the current class.

linkType

The relation type. The possible values are as follows:

Aggregation

Association

Composition

multiplicity

The multiplicity of instances for the other class.

linkName

The name of the link. This is a descriptive and explanatory field that plays no part in code generation.

Return Value

The new relation

C/C++ Prototype

```
HRESULT addUnidirectionalRelation (BSTR otherClassName,
    BSTR otherClassPackageName, BSTR roleName,
    BSTR linkType, BSTR multiplicity, BSTR linkName,
    IRPRelation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteActivityDiagram

Write method

Description

The **deleteActivityDiagram** method deletes the specified activity diagram from the current class.

Visual Basic

Syntax

```
deleteActivityDiagram ()
```

C/C++ Prototype

```
HRESULT deleteActivityDiagram()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteAttribute

Write method

Description

The **deleteAttribute** method deletes the specified attribute from the current class.

Visual Basic

Syntax

```
deleteAttribute (attribute As RPAttribute)
```

Arguments

`attribute`

The attribute to delete

C/C++ Prototype

```
HRESULT deleteAttribute (IRPAttribute* attribute)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFlowItems

Write method

Description

The **deleteFlowItems** method deletes the specified flowItem from the collection of flowItems.

Visual Basic

Syntax

```
deleteFlowItems (pItem As RPFlowItem)
```

Arguments

pFlowItem

The flowItem to delete

C/C++ Prototype

```
HRESULT deleteFlowItems (IRPFlowItem* pItem)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

deleteFlows

Write method

Description

The **deleteFlows** method deletes the specified flow from the collection of flows.

Visual Basic

Syntax

```
deleteFlows (pFlow As RPFlow)
```

Arguments

`pFlow`

`The flow to delete`

C/C++ Prototype

```
HRESULT deleteFlows (IRPFlow* pFlow)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteGeneralization

Write method

Description

The **deleteGeneralization** method deletes the specified generalization from the current class.

Visual Basic

Syntax

```
deleteGeneralization (superClass As RPClassifier)
```

Arguments

`superClass`

`The superclass of the current class to be deleted`

C/C++ Prototype

```
HRESULT deleteGeneralization (IRPClassifier* superClass)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteOperation

Write method

Description

The **deleteOperation** method deletes the specified operation from the current class.

Visual Basic

Syntax

```
deleteOperation (operation As RPOperation)
```

Arguments

`operation`

The operation to delete

C/C++ Prototype

```
HRESULT deleteOperation (IRPOperation* operation)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteRelation

Write method

Description

The **deleteRelation** method deletes the specified relation from the current class.

Visual Basic

Syntax

```
deleteRelation (relation As RPRelation)
```

Arguments

`relation`

`The relation to delete`

C/C++ Prototype

```
HRESULT deleteRelation (IRPRelation* relation)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteStatechart

Write method

Description

The **deleteStatechart** method deletes the specified statechart from this class.

Visual Basic

Syntax

```
deleteStatechart()
```

C/C++ Prototype

```
HRESULT deleteStatechart()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findAttribute

Read method

Description

The **findAttribute** method retrieves the specified attribute of the classifier.

Visual Basic

Syntax

```
findAttribute (name As String) As RPAttribute
```

Arguments

`name`

`The name of the attribute to find`

Return Value

The named attribute of the classifier

C/C++ Prototype

```
HRESULT findAttribute (BSTR newVal, IRPAttribute** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findBaseClassifier

Read method

Description

The **findBaseClassifier** method retrieves a base (parent) classifier of a classifier.

Visual Basic

Syntax

```
findBaseClassifier (newVal As String) As RPClassifier
```

Arguments

`newVal`

`The name of the base classifier`

Return Value

The base classifier of this classifier

C/C++ Prototype

```
HRESULT findBaseClassifier (BSTR newVal,
   IRPClassifier** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findDerivedClassifier

Read method

Description

The **findDerivedClassifier** method retrieves the specified derived classifier of a classifier.

Visual Basic

Syntax

```
findDerivedClassifier (newVal As String) As RPClassifier
```

Arguments

`newVal`

`The name of the derived classifier of this classifier`

Return Value

The derived classifier of this classifier

C/C++ Prototype

```
HRESULT findDerivedClassifier (BSTR newVal,
   IRPClassifier** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findGeneralization

Read method

Description

The **findGeneralization** method retrieves the specified generalization that belongs to this classifier.

Visual Basic

Syntax

```
findGeneralization (newVal As String) As RPGeneralization
```

Arguments

`newVal`

`The name of the generalization`

Return Value

The `RPGeneralization`

C/C++ Prototype

```
HRESULT findGeneralization (BSTR newVal,
    IRPGeneralization** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findInterfaceItem

Read method

Description

The **findInterfaceItem** method retrieves an operation or event reception of the given signature that belongs to a classifier.

Visual Basic

Syntax

```
findInterfaceItem (signature As String)
   As RPInterfaceItem
```

Arguments

`signature`

`The signature of the operation or event reception of this classifier`

Return Value

The operation or event reception

C/C++ Prototype

```
HRESULT findInterfaceItem (BSTR signature,
   IRPInterfaceItem** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findNestedClassifier

Read method

Description

The **findNestedClassifier** method retrieves the specified classifier defined within this object.

Visual Basic

Syntax

```
findNestedClassifier (newVal As String) As RPClassifier
```

Arguments

`newVal`

`The name of the nested classifier`

Return Value

The nested classifier within this classifier

C/C++ Prototype

```
HRESULT findNestedClassifier (BSTR newVal,
   IRPClassifier** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findNestedClassifierRecursive

Read method

Description

The **findNestedClassifierRecursive** method recursively retrieves the specified classifier defined in this object and in objects defined within this object.

Visual Basic

Syntax

```
findNestedClassifierRecursive (newVal As String)
   As RPModelElement
```

Arguments

`newVal`

`The name of the nested classifier (at any level of ownership)`

Return Value

The nested classifier

C/C++ Prototype

```
HRESULT findNestedClassifierRecursive (BSTR newVal,
   IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findNestedGeneralization

Read method

Description

The **findNestedGeneralization** method retrieves the specified generalization relation.

Visual Basic

Syntax

```
findGeneralization (name As String) As IRPGeneralization
```

Arguments

`name`

`A string that specifies the name of the generalization to find`

Return Value

The generalization for this classifier (an `IRPGeneralization`)

C/C++ Prototype

```
HRESULT findGeneralization(BSTR newVal,
    IRPGeneralization** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findRelation

Read method

Description

The **findRelation** method retrieves the specified relation that belongs to the current classifier.

Visual Basic

Syntax

```
findRelation (newVal As String) As RPRelation
```

Arguments

`newVal`

`The name of the relation to find`

Return Value

The classifier’s relation

C/C++ Prototype

```
HRESULT findRelation (BSTR newVal, IRPRelation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findTrigger

Read method

Description

The **findTrigger** method retrieves the specified trigger in the statechart of the current class.

Visual Basic

Syntax

```
findTrigger (name As String) As RPInterfaceItem
```

Arguments

`name`

`The name of the trigger to find`

Return Value

The trigger

C/C++ Prototype

```
HRESULT findTrigger (BSTR name, IRPInterfaceItem** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getAttributesIncludingBases

Read method

Description

The **getAttributesIncludingBases** method retrieves the attributes defined for this class and the ones inherited from its superclasses.

Visual Basic

Syntax

```
getAttributesIncludingBases() As RPCollection
```

Return Value

A collection of class attributes (`RPAttributes`)

C/C++ Prototype

```
HRESULT getAttributesIncludingBases (
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getInterfaceItemsIncludingBases

Read method

Description

The **getInterfaceItemsIncludingBases** method retrieves the operations and event receptions defined for this class and the ones it inherited from its superclasses.

Visual Basic

Syntax

```
getInterfaceItemsIncludingBases() As RPCollection
```

Return Value

A collection of interface items

C/C++ Prototype

```
HRESULT getInterfaceItemsIncludingBases(
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getRelationsIncludingBases

Read method

Description

The **getRelationsIncludingBases** method retrieves the relations defined for this class and the ones it inherited from its superclasses.

Visual Basic

Syntax

```
getRelationsIncludingBases() As RPRelations
```

Return Value

A collection of relations

C/C++ Prototype

```
HRESULT getRelationsIncludingBases (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPClassifierRole Interface

The `IRPClassifierRole` interface represents an object participating in the collaboration. It usually corresponds to some object of a given class or actor. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
formalClassifier	`RPClassifier`	RO	The classifier (NULL (unspecified), systemBorder, or multipleObjects)
referencedSequenceDiagram	`RPSequence Diagram`	RW	The referenced sequence diagram
roleType	`String`	RO	The role type (unspecified, systemBorder, class, actor, or multipleObjects)

IRPCollaboration Interface

The `IRPCollaboration` interface represents the logical collaboration, devoid of any sequence diagram or collaboration diagram graphics. Note that the two diagrams give rise to similar but slightly different `IRPCollaboration` objects. This class inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
activationCondition	`CString`	RO	The activation condition. This can be empty.
activationMode	`CString`	RO	The activation mode (initial, invariant, or unspecified).
associations	`RPAssociationRoles`	RO	A collection of `RPAssociationRoles` in the collaboration diagram. This applies only to collaboration diagram-based `IRPCollaborations`.
classifier	`RPClassifierRoles`	RO	A collection of `RPClassifierRoles` in the collaboration diagram.
messagePoints	`RPMessagePoints`	RO	A collection of `RPMessagePoints`. For sequences, this is the way of obtaining full information about the order of messages in the sequence diagram. For collaborations, each send messagepoint is immediately followed by a receive messagepoint on the same message.
messages	`RPMessages`	RO	A collection of `RPMessages`. For collaborations, this list contains all information regarding the order of elements in the model. For sequences, some information is lost and the message list is ordered by the send time (as opposed to the receive time).
mode	`Cstring`	RO	The mode (existential, universal, or unspecified).

Method Summary

addCancelledTimeout	Adds a cancelled timeout to the diagram
addClassifierRole	Adds a classifier role
addClassifierRoleByName	Adds a classifier role, given its name
addCtor	Adds a constructor
addDestructionEvent	Adds a destruction event to a classifier role in a sequence diagram
addDtor	Adds a destructor
addFoundMessage	Adds a found message to a classifier role in a sequence diagram
addInteractionOccurrence	Adds an interaction occurrence (reference diagram) to the diagram
addInteractionOperator	Adds an interaction operator to a sequence diagram
addLostMessage	Adds a lost message to a classifier role in a sequence diagram
addMessage	Adds a message
addSystemBorder	Adds a system border
addTimeInterval	Adds a time interval to the diagram
addTimeout	Adds a timeout the diagram
generateSequence	Generates the specified sequence diagram
getConcurrentGroup	Retrieves the activation messages
getConcurrentGroup	Retrieves all the messages concurrent with the input message, including the input message itself
getMessagePoints	Returns an ordered collection of all messagepoints occurring on this classifier
getPredecessor	Retrieves the message that precedes the specified message
getSuccessor	Retrieves the message that follows the specified message

addCancelledTimeout

Write method

Description

The **addCancelledTimeout** method adds a cancelled timeout to a collaboration diagram.

Visual Basic

Syntax

```
addCancelledTimeout (receiver As RPClassifierRole)
   As RPMessage
```

Arguments

`receiver`

`The receiver object for the timeout`

Return Value

The new cancelled timeout

C/C++ Prototype

```
HRESULT addCancelledTimeout (IRPClassifierRole *receiver,
   IRPMessage **pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addClassifierRole

Write method

Description

The **addClassifierRole** method adds a classifier role.

Visual Basic

Syntax

```
addClassifierRole (newVal As String, cls As RPClass)
   As RPClassifierRole
```

Arguments

`newVal`

`The name of the new classifier role`

`cls`

`The name of the class`

Return Value

The new `RPClassifierRole`

C/C++ Prototype

```
HRESULT addClassifierRole (BSTR newVal, IRPClass *cls,
   IRPClassifierRole** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addClassifierRoleByName

Write method

Description

The **addClassifierRoleByName** method adds the specified classifier role.

Visual Basic

Syntax

```
addClassifierRoleByName (newVal As String,
   classFullPath As String) As RPClassifierRole
```

Arguments

`newVal`

`The name of the classifier role to add`

`classFullPath`

`The full path to the class`

Return Value

The new `RPClassifierRole`

C/C++ Prototype

```
HRESULT addClassifierRoleByName (BSTR newVal,
   BSTR classFullPath, IRPClassifierRole** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addCtor

Write method

Description

The **addCtor** method adds a constructor.

Visual Basic

Syntax

```
addCtor (interItem As RPInterfaceItem,
   actualParamList As String, sender As RPClassifierRole,
   receiver As RPClassifierRole) As RPMessage
```

Arguments

`interItem`

`The interface item`

`actualParamList`

`The list of parameters for the constructor`

`sender`

`The RPClassifierRole that acts as the sender`

`receiver`

`The RPClassifierRole that acts as the receiver`

Return Value

`An RPMessage`

C/C++ Prototype

```
HRESULT addCtor (IRPInterfaceItem *interItem,
   BSTR actualParamList, IRPClassifierRole *sender,
   IRPClassifierRole *receiver, IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addDestructionEvent

Write method

Description

The `addDestructionEvent` method is used to add a destruction event to a classifier role in a sequence diagram.

Visual Basic

Syntax

```
addDestructionEvent (classifier As RPClassifierRole) As RPMessage
```

Arguments

`classifier`

`The classifier role to which the destruction event should be added.`

Return Value

`An RPMessage`

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addDtor

Write method

Description

The **addDtor** method adds a destructor.

Visual Basic

Syntax

```
addDtor (interItem As RPInterfaceItem,
   actualParamList As String, sender As RPClassifierRole,
   receiver As RPClassifierRole) As RPMessage
```

Arguments

`interItem`

`The interface item`

`actualParamList`

`The list of parameters for the constructor`

`sender`

`The RPClassifierRole that acts as the sender`

`receiver`

`The RPClassifierRole that acts as the receiver`

Return Value

`An RPMessage`

C/C++ Prototype

```
HRESULT addDtor (IRPInterfaceItem *interItem,
   BSTR actualParamList, IRPClassifierRole *sender,
   IRPClassifierRole *receiver, IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFoundMessage

Write method

Description

The `addFoundMessage` method is used to add a found message to a classifier role in a sequence diagram.

Visual Basic

Syntax

```
addFoundMessage (receiver As RPClassifierRole) As RPMessage
```

Arguments

`receiver`

`The classifier role that receives the message from an unknown sender.`

Return Value

`An RPMessage`

Return Value

- `HRESULT` (0 for success, or a signed integer error code)

addInteractionOccurrence

Write method

Description

The **addInteractionOccurrence** method adds a new interaction occurrence (reference diagram) to the collaboration diagram.

Visual Basic

Syntax

```
addInteractionOccurrence () As RPInteractionOccurrence
```

Return Value

The new interaction occurrence

C/C++ Prototype

```
HRESULT addInteractionOccurrence (
   IRPInteractionOccurrence** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addInteractionOperator

Write method

Description

The `addInteractionOperator` method is used to add an interaction operator to a sequence diagram.

Visual Basic

Syntax

```
addInteractionOperator() As RPInteractionOperator
```

Arguments

`None`

Return Value

`An RPInteractionOperator`

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addLostMessage

Write method

Description

The `addLostMessage` method is used to add a lost message to a classifier role in a sequence diagram.

Visual Basic

Syntax

```
addLostMessage (sender As RPClassifierRole) As RPMessage
```

Arguments

`sender`

`The classifier role that sent the message that did not reach its target.`

Return Value

`An RPMessage`

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addMessage

Write method

Description

The **addMessage** method adds a message.

Visual Basic

Syntax

```
addMessage (interItem As RPInterfaceItem,
   actualParamList As String, sender As RPClassifierRole,
   receiver As RPClassifierRole) As RPMessage
```

Arguments

`interItem`

The interface item

`actualParamList`

The list of parameters for the constructor

`sender`

The `RPClassifierRole` that acts as the sender

`receiver`

The `RPClassifierRole` that acts as the receiver

Return Value

The new message

C/C++ Prototype

```
HRESULT addMessage (IRPInterfaceItem *interItem,
   BSTR actualParamList, IRPClassifierRole *sender,
   IRPClassifierRole *receiver, IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addSystemBorder

Write method

Description

The **addSystemBorder** method adds a system border to the collaboration diagram.

Visual Basic

Syntax

```
addSystemBorder () As RPClassifierRole
```

Return Value

The new system border

C/C++ Prototype

```
HRESULT addSystemBorder (IRPClassifierRole** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addTimeInterval

Write method

Description

The **addTimeInterval** method adds a time interval to the diagram.

Visual Basic

Syntax

```
addTimeInterval (receiver As RPClassifierRole)
   As RPMessage
```

Arguments

`interItem`

`The interface item`

Return Value

`The new time interval`

C/C++ Prototype

```
HRESULT addTimeInterval (IRPClassifierRole *receiver,
   IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addTimeout

Write method

Description

The **addTimeout** method adds a timeout.

Visual Basic

Syntax

```
addTimeout (interItem As RPInterfaceItem,
   actualParamList As String, sender As RPClassifierRole,
   receiver As RPClassifierRole) As RPMessage
```

Arguments

`interItem`

`The interface item`

`actualParamList`

`The list of parameters for the constructor`

`sender`

`The RPClassifierRole that acts as the sender`

`receiver`

`The RPClassifierRole that acts as the receiver`

Return Value

`The new timeout`

C/C++ Prototype

```
HRESULT addTimeout (IRPInterfaceItem *interItem,
   BSTR actualParamList, IRPClassifierRole *sender,
   IRPClassifierRole *receiver, IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

generateSequence

Write method

Description

The **generateSequence** method generates the specified sequence diagram.

Visual Basic

Syntax

```
generateSequence (newVal As String, owner As RPPackage)
   As RPSequenceDiagram
```

Arguments

`newVal`

`The name of the sequence diagram to generate`

`owner`

`The owner package`

Return Value

`The new RPSequenceDiagram`

C/C++ Prototype

```
HRESULT generateSequence (BSTR newVal, IRPPackage* owner,
    IRPSequenceDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getActivator

Read method

Description

The **getActivator** method retrieves the activation messages.

Visual Basic

Syntax

```
getActivator (msg As RPMessage) As RPMessage
```

Arguments

`msg`

`The message to retrieve`

Return Value

A collection of `RPMessages`

C/C++ Prototype

```
HRESULT getActivator (IRPMessage* msg,
   IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getConcurrentGroup

Read method

Description

The **getConcurrentGroup** method retrieves all the messages concurrent with the input message, including the input message itself. If the message does not have any concurrent messages because it is sequential, the method returns only the message itself.

Visual Basic

Syntax

```
getConcurrentGroup (message As RPMessage) As RPMessages
```

Arguments

`message`

The group of messages to retrieve

Return Value

A collection of `RPMessages`

C/C++ Prototype

```
HRESULT getConcurrentGroup (IRPMessage* message,
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getMessagePoints

Read method

Description

The **getMessagePoints** method returns an ordered collection of all messagepoints occurring on this classifier.

Visual Basic

Syntax

```
getMessagePoints (classifier As RPClassifierRole)
   As RPCollection
```

Arguments

`classifier`

The `RPClassifier` whose messagepoints you want to retrieve

Return Value

A collection of `RPMessagePoints`

C/C++ Prototype

```
HRESULT getMessagePoints (IRPClassifier* classifier,
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getPredecessor

Read method

Description

The **getPredecessor** method retrieves the message that precedes the specified message.

Visual Basic

Syntax

```
getPredecessor (message As RPMessage) As RPMessage
```

Arguments

`message`

`The message whose predecessor you want`

Return Value

The message that precedes the specified message

C/C++ Prototype

```
HRESULT getPredecessor (IRPMessage *message,
   IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSuccessor

Read method

Description

The **getSuccessor** method retrieves the message that follows the specified message.

Visual Basic

Syntax

```
getSuccessor (message As RPMessage) As RPMessage
```

Arguments

```
message
```

The message whose successor you want

Return Value

The message that follows the specified message

C/C++ Prototype

```
HRESULT getSuccessor (IRPMessage *message,
   IRPMessage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPCollaborationDiagram Interface

The `IRPCollaborationDiagram` interface represents a collaboration diagram. It inherits from `IRPDiagram`.

Method Summary

getLogicalCollaboration	Retrieves the logic behind the collaboration diagram

getLogicalCollaboration

Read method

Description

The getLogicalCollaboration method retrieves the logic behind the collaboration diagram.

Visual Basic

Syntax

```
getLogicalCollaboration() As RPCollaboration
```

Return Value

The collaboration diagram

C/C++ Prototype

```
HRESULT getLogicalCollaboration (IRPCollaboration** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPCollection Interface

The `IRPCollection` interface is a utility class used to return collections of `IRPModelElements`. Methods and attributes that need to return more than one element always return a pointer to an `IRPCollection`.

`IRPCollection` also supports VB iteration via the following construct:

```
For Each obj in col
```

VB Properties

Name	Type	Access	Description
Count	`Long`	RO	The number of elements currently in the collection
Item(long i)	`RPModelElement*`	RO	The *i*th element in the collection

Method Summary

addItem	Adds an item to the collection

addItem

Write method

Description

The **addItem** method adds an item to the collection.

Visual Basic

Syntax

```
addItem (newVal As RPModelElement)
```

Arguments

`newVal`

`The new item to add`

C/C++ Prototype

```
HRESULT addItem (IRPModelElement* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPComment Interface

The `IRPComment` interface represents Rhapsody comments. It inherits from `IRPAnnotation`.

IRPComponent Interface

The `IRPComponent` interface represents a code generation component. It inherits from `IRPUnit`.

VB Properties

Name	Type	Access	Description
additionalSources	`String`	RW	The additional source files to be compiled with the component.
buildType	`String`	RW	The build type (library or executable).
configurations	Collection of `RPConfiguration`	RW	The configurations of this component.
files	Collection of `RPFiles`	RO	The files of this component.
includePath	`String`	RW	The path to standard headers to be linked with the component.
libraries	`String`	RW	The libraries to be linked with the component (for example, `"x.lib, y.lib, z.lib"`).
nestedComponents	Collection of `RPComponent`	RO	The components nested in this component.

path(fullPath)	`String(path)`
	
	`Boolean(fullPath)`
		RO	The string containing the path to the component.If `fullPath` is `True`, the full path is returned:
			`<drive>:\`
			`<model dir>\`
			`<component dir>\`
			`<config dir>)`
			If fullPath is `False`, the path relative to the project is returned:
			`<component dir>\`
			`<config dir>`

Name	Type	Access	Description
scopeElements	Collection of `RPModelElement`	RO	The logical elements allocated to this component.
standardHeaders	`String`	RW	The standard header files to be linked with the component.

Method Summary

addConfiguration	Adds a configuration to this component
addFile	Adds an empty file to the current component
addFolder	Adds an empty folder to the current component
addNestedComponent	Adds a component to the current component
addScopeElement	Places a model element within the scope of the current component
addToScope	Places the specified file, classes, and packages within the scope of the current component
allElementsInScope	Places all model elements within the scope of the current component
deleteConfiguration	Deletes the specified configuration from the current component
deleteFile	Deletes the specified file from the current component
findConfiguration	Retrieves the specified configuration in the current component
getConfigByDependency	Retrieves the appropriate configuration to use in the component on which the current component depends
getFile	Returns the file in which the specified classifier will be generated
getFileName	Retrieves the name of the file to which the specified classifier will be generated in this component
getModelElementFileName	Gets the file name of the specified model element
getPackageFile	Returns the package file
removeScopeElement	Deletes a scope element
setPath	Sets the path of the application built for this component

addConfiguration

Write method

Description

The **addConfiguration** method adds a configuration to the current component.

Visual Basic

Syntax

```
addConfiguration (name As String) As RPConfiguration
```

Arguments

`name`

`The name of the new configuration`

Return Value

The new configuration

C/C++ Prototype

```
HRESULT addConfiguration (BSTR name,
   IRPConfiguration** configuration)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFile

Write method

Description

The **addFile** method adds an empty file to the current component.

Visual Basic

Syntax

```
addFile (name As String) As RPFile
```

Arguments

`name`

`The name of the new file`

Return Value

The file added to the component

C/C++ Prototype

```
HRESULT addFile (BSTR name, IRPFile** file)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFolder

Write method

Description

The **addFolder** method adds an empty folder to the current component.

Visual Basic

Syntax

```
addFolder (name As String) As RPFile
```

Arguments

`name`

`The name of the new folder`

Return Value

The folder added to the component

C/C++ Prototype

```
HRESULT addFolder (BSTR name, IRPFile** file)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addNestedComponent

Write method

Description

The **addNestedComponent** method adds a component to the current component.

Visual Basic

Syntax

```
addNestedComponent (name As String) As RPComponent
```

Arguments

`name`

`The name of the component to add`

Return Value

The component added to the current component

C/C++ Prototype

```
HRESULT addNestedComponent (BSTR name,
   IRPComponent** pval)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addScopeElement

Write method

Description

The **addScopeElement** method places a model element within the scope of the current component.

Visual Basic

Syntax

```
addScopeElement (pVal As RPModelElement)
```

Arguments

`pVal`

The `RPModelElement` to place in the scope of the current component

C/C++ Prototype

```
HRESULT addScopeElement (IRPModelElement* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addToScope

Write method

Description

The **addToScope** method places the specified file, classes, and packages within the scope of the current component.

Visual Basic

Syntax

```
addToScope (file As RPFile,
   classes As RPCollection, packages As RPCollection)
```

Arguments

`file`

`The file to place in scope of the current component`

`classes`

`The classes to place in scope of the current component`

`packages`

`The packages to place in scope of the current component`

C/C++ Prototype

```
HRESULT addToScope (IRPFile* file,
   IRPCollection* classes, IRPCollection* packages)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

allElementsInScope

Write method

Description

The **allElementsInScope** method places all model elements within the scope of the current component.

Visual Basic

Syntax

```
allElementsInScope()
```

C/C++ Prototype

```
HRESULT allElementsInScope()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteConfiguration

Write method

Description

The **deleteConfiguration** method deletes the specified configuration from the current component.

Visual Basic

Syntax

```
deleteConfiguration (configuration As RPConfiguration)
```

Arguments

`configuration`

`The configuration to delete`

C/C++ Prototype

```
HRESULT deleteConfiguration (
   IRPConfiguration* configuration)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFile

Write method

Description

The **deleteFile** method deletes the specified file from the current component.

Visual Basic

Syntax

```
deleteFile (file As RPFile)
```

Arguments

`file`

`The file to delete`

C/C++ Prototype

```
HRESULT deleteFile (IRPFile* file)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findConfiguration

Read method

Description

The **findConfiguration** method retrieves the specified configuration in the current component.

Visual Basic

Syntax

```
findConfiguration (name As String) As RPConfiguration
```

Arguments

`name`

`The name of the configuration to retrieve`

Return Value

The Rhapsody configuration

C/C++ Prototype

```
HRESULT findConfiguration (BSTR name,
   IRPConfiguration** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getConfigByDependency

Used in cases where there are dependencies between components, this method retrieves the appropriate configuration to use in the component on which the current component depends. The argument required is the name of the dependency between the components.

getFile

Read method

Description

The **getFile** method returns the file in which the specified classifier will be generated.

Visual Basic

Syntax

```
getFile (c As RPClassifier, spec As Long) As RPFile
```

Arguments

```
c
The classifier.
spec (1 or 0)
If this is set to 1, the file is a specification file.
```

Return Value

The file in which the specified classifier is generated

C/C++ Prototype

```
HRESULT getFile (IRPClassifier* c, long spec,
   IRPFile** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getFileName

Read method

Description

The **getFileName** method retrieves the name of the file to which the specified classifier will be generated in this component.

Visual Basic

Syntax

```
getFileName (c As RPClassifier, spec As Long,
   withExt As Long) As String
```

Arguments

`c`

`The classifier.`

`spec (1 or 0)`

`If this is set to 1, the file is a specification file.`

`withExt (1 or 0)`

`If this is set to 1, the file extension is included in the retrieval.`

Return Value

The name of the file that contains the generated classifier

C/C++ Prototype

```
HRESULT getFileName (IRPClassifier* c, long spec,
   long withExt, BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getModelElementFileName

Read method

Description

The **getModelElementFileName** method gets the file name of the specified model element.

Visual Basic

Syntax

```
getModelElementFileName (c As RPModelElement,
    long spec As Long, withExt As Long) As String
```

Arguments

c

The model element.

spec (1 or 0)

If this is set to 1, this is a specification file.

withExt (1 or 0)

If this is set to 1, the extension is included in the returned file name.

Return Value

The file name

C/C++ Prototype

```
HRESULT getModelElementFileName (IRPModelElement *c,
    long spec, long withExt, BSTR *pVal)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

getPackageFile

Read method

Description

The **getPackageFile** method returns the package file.

Visual Basic

Syntax

```
getPackageFile (c as RPPackage, spec As Long spec)
   As RPFile
```

Arguments

c

The model element.

spec (1 or 0)

If this is set to 1, this is a specification file.

Return Value

The file name

C/C++ Prototype

```
HRESULT getPackageFile (IRPPackage* c, long spec,
   IRPFile** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeScopeElement

Write method

Description

The **removeScopeElement** method deletes the scope element.

Visual Basic

Syntax

```
removeScopeElement (pVal As RPModelElement)
```

Arguments

pVal

The element to delete

C/C++ Prototype

```
HRESULT removeScopeElement (IRPModelElement* pVal)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

setPath

Write method

Description

The **setPath** method sets the path of the application built for this component.

Visual Basic

Syntax

```
setPath (path As String)
```

Arguments

`path`

`The path to which this component is built`

C/C++ Prototype

```
HRESULT setPath (BSTR path)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPComponentDiagram Interface

The `IRPComponentDiagram` interface represents a component diagram. It inherits from the `IRPDiagram`.

Currently, `IRPComponentDiagram` does not expose additional functionality to the diagram.

IRPComponentInstance Interface

The `IRPComponentInstance` interface represents a component instance. It inherits from the `IRPComponent`.

VB Properties

Name	Type	Access	Description
componentType	`RPComponent`	RW	The component type
node	`RPNode`	RO	The node

IRPConfiguration Interface

The `IRPConfiguration` interface represents a code generation configuration within a given `IRPComponent`. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
additionalSources	`String`	RW	The additional source files to be compiled with this configuration.

allElementsIn InstrumentationScope	`Long`	RW	A Boolean value that reflects the **All Elements** and **Selected Elements** options of the instrumentation scope.
			The property defines the following accessor and mutator:
			`propget, HRESULT allElementsIn-Instrumentation-Scope ([out, retval] BOOL *pVal);`
			`propput, HRESULT allElementsIn-Instrumentation-Scope ([in] BOOL newVal);`

buildSet	`String`	RW	The build set of this configuration (debug or release).
compilerSwitches	`String`	RW	The compiler switches to be applied to this configuration in addition to those already specified in property `<lang>_CG::<env>::CPPCompileSwitches.`
generateCodeForActors	`Boolean`	RW	If this is TRUE, code is generated for actors when this configuration is generated.
includePath	`String`	RW	The path to standard headers to be linked with the configuration.
initialInstances	`RPCollection`	RO	The initial instances.

Name	Type	Access	Description
initializationCode	`String`	RW	The string containing the initialization code to be added to the main program after any initialization done by Rhapsody and before the main program loop.
instrumentationScope	`RPCollection`	RW	A container of elements in the selected instrumentation scope, if the All Elements option is selected. The property defines the following accessor: `propget, HRESULT instrumentationScope( [out], retval] IRPCollection** pVal);`
instrumentationType	`String`	RW	The type of instrumentation in this configuration (None, Trace, or Animate).
libraries	`String`	RW	The libraries to be linked with the component (for example, `"x.lib, y.lib, z.lib"`).
linkSwitches	`String`	RW	The link switches to be applied to the configuration in addition to those already specified in the property `<lang>_CG::<env>::LinkSwitches.`

path(fullPath)	`String(path)`
	
	`Boolean(fullPath)`
		RO	The string containing the path to the component.If `fullPath` is true, the full path is returned:
			`<drive>:\`
			`<model dir>\`
			`<component dir>\`
			`<config dir>)`
			If `fullPath` is false, the path relative to the project is returned:
			`<component dir>\`
			`<config dir>`

scopeType	`String`	RW	The scope type of the configuration (explicit or derived).

Name	Type	Access	Description
standardHeaders	`String`	RW	The standard header files to be linked with the configuration.
statechartImplementation	`String`	RW	The statechart implementation of the configuration (flat or reusable).
timeModel	`String`	RW	The time model of the configuration (real or simulated).

Method Summary

addInitialInstance	Adds an instance to the list of initial instances for the current configuration
addPackageToInstrumentationScope	Adds a classifier to the instrumentation scope
addToInstrumentationScope	Adds explicit initial instances to the instrumentation scope
deleteInitialInstance	Deletes an instance from the list of build instances for the current configuration
getDirectory	Retrieves the build directory specified for the current configuration
getItsComponent	Retrieves the component to which the current configuration belongs
getMainName	Retrieves the name of the file where the `main()` routine for the current configuration resides
getMakefileName	Retrieves the name of the makefile generated for the current configuration
getTargetName	Retrieves the build name of the file to be generated for the current configuration
removeFromInstrumentationScope	Removes the classifier from the instrumentation scope
removePackageFromInstrumentationScope	Removes the specified package from the instrumentation scope. including all its aggregated classes, actors, and nested packages
setDirectory	Sets the directory for the current configuration
setItsComponent	Sets the owning component for the current configuration

addInitialInstance

Write method

Description

The **addInitialInstance** method adds an instance to the list of initial instances for the current configuration.

Visual Basic

Syntax

```
addInitialInstance (newVal As RPModelElement)
```

Arguments

`newVal`

`The new instance to add to list of initial instances for this configuration`

C/C++ Prototype

```
HRESULT addInitialInstance (IRPModelElement* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addPackageToInstrumentationScope

Write method

Description

The **addPackageToInstrumentationScope** method adds the specified package to the instrumentation scope, including all its aggregated classes, actors, and nested packages.

Visual Basic

Syntax

```
addPackageToInstrumentationScope (pVal As RPPackage)
```

Arguments

`pVal`

`The package to add to the instrumentation scope`

C/C++ Prototype

```
HRESULT addPackageToInstrumentationScope (
   IRPPackage* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addToInstrumentationScope

Write method

Description

The **addToInstrumentationScope** method adds explicit initial instances to the instrumentation scope.

Beginning with Version 5.0, Rhapsody 6.1 does not include explicit initial instances as part of the scope. In other words, in explicit mode, code is not generated for a class just because it is in the list of initial instances for the configuration.

For existing models, Rhapsody 6.1 sets the `CG::Configuration::AddExplicitInitialInstancesToScope` property to `True` at the project level to maintain the old behavior.

This change enables you to use the list of initial instances to create instances that their classes defined in related components (libraries).

Visual Basic

Syntax

```
addToInstrumentationScope (pVal As RPClassifier)
```

Arguments

`pVal`

`The initial instance to add to the instrumentation scope`

C/C++ Prototype

```
HRESULT addToInstrumentationScope (
   IRPClassifier* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteInitialInstance

Write method

Description

The **deleteInitialInstance** method deletes an instance from the list of build instances for the current configuration.

Visual Basic

Syntax

```
deleteInitialInstance (newVal As RPModelElement)
```

Arguments

`NewVal`

`The initial instance to delete from list of initial instances for this configuration`

C/C++ Prototype

```
HRESULT deleteInitialInstance (IRPModelElement* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getDirectory

Read method

Description

The **getDirectory** method retrieves the build directory specified for the current configuration.

Visual Basic

Syntax

```
getDirectory (fullPath As Long, newName As String)
   As String
```

Arguments

`fullPath`

`If this is 1, the returned directory contains the full path.`

`newName`

`Reserved for future use.`

Return Value

The build directory for the current configuration

C/C++ Prototype

```
HRESULT getDirectory (long fullPath, BSTR newName,
   BSTR* retVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getItsComponent

Read method

Description

The **getItsComponent** method retrieves the component to which the current configuration belongs.

Visual Basic

Syntax

```
getItsComponent() As RPComponent
```

Return Value

The component to which this configuration belongs

C/C++ Prototype

```
HRESULT getItsComponent (IRPComponent** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getMainName

Read method

Description

The **getMainName** method retrieves the name of the file where the `main()` routine for the current configuration resides.

Visual Basic

Syntax

```
getMainName() As String
```

Return Value

The location of the file that contains the `main()`

C/C++ Prototype

```
HRESULT getMainName (BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getMakefileName

Read method

Description

The **getMakefileName** method retrieves the name of the makefile generated for the current configuration.

Visual Basic

Syntax

```
getMakefileName (fullPath As Long) As String
```

Arguments

`fullPath`

Set this to one of the following values:

1--Return the full path.

0--Return the path relative to the project directory.

Return Value

The name of the makefile

C/C++ Prototype

```
HRESULT getMakefileName (long fullPath, BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getTargetName

Read method

Description

The **getTargetName** method retrieves the build name of the file to be generated for the current configuration.

Visual Basic

Syntax

```
getTargetName (fullPath As Long) As String
```

Arguments

`fullPath`

`Set this to one of the following values:`

`1--Return the full path.`

`0--Return the path relative to the project directory.`

Return Value

The name of the build file (for example, `BuildName.exe` or `BuildName.lib`)

C/C++ Prototype

```
HRESULT getTargetName (long fullPath, BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeFromInstrumentationScope

Write method

Description

The **removeFromInstrumentationScope** method removes the classifier from the instrumentation scope.

Visual Basic

Syntax

```
removeFromInstrumentationScope (pVal As RPClassifier)
```

Arguments

`pVal`

`The classifier to remove from the instrumentation scope`

C/C++ Prototype

```
HRESULT removeFromInstrumentationScope (
    IRPClassifier *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removePackageFromInstrumentationScope

Write method

Description

The **removePackageFromInstrumentationScope** method removes the specified package from the instrumentation scope. including all its aggregated classes, actors, and nested packages.

Visual Basic

Syntax

```
removePackageFromInstrumentationScope (pVal As RPPackage)
```

Arguments

`pVal`

`The package to remove from the instrumentation scope`

C/C++ Prototype

```
HRESULT removePackageFromInstrumentationScope (
   IRPPackage* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setDirectory

Note

Currently, this method has not been implemented.

Write method

Description

The **setDirectory** method sets the directory for the current configuration.

Visual Basic

Syntax

```
setDirectory (fullpath As Long, newName As String)
```

Arguments

`fullpath (1 or 0)`
`Set this to 1 to include the full directory path.`
`newName`
`The new name for the directory.`

C/C++ Prototype

```
HRESULT setDirectory (long fullpath, BSTR newName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setItsComponent

Write method

Description

The **setItsComponent** method sets the owning component for the current configuration.

Visual Basic

Syntax

```
setItsComponent (newVal As RPComponent)
```

Arguments

`newVal`

The new owner component for this configuration

C/C++ Prototype

```
HRESULT setItsComponent (IRPComponent* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPConnector Interface

The `IRPConnector` interface represents a connector in a statechart diagram. It inherits from `IRPStateVertex`.

VB Properties

Name	Type	Access	Description
connectorType	`String`	RW	The connector type (Termination, History, Condition, Fork, Join, or Unknown)

Method Summary

getDerivedInEdges	Retrieves the incoming transitions for the connector
getDerivedOutEdge	Retrieves the outgoing transition for the connector
getOfState	Returns the state connected to the current connector if it is a history connector
isConditionConnector	Determines whether the current connector is a condition connector
isDiagramConnector	Determines whether the current connector is a diagram connector
isForkConnector	Determines whether the current connector is a fork synch bar connector
isHistoryConnector	Determines whether the current connector is a history connector
isJoinConnector	Determines whether the current connector is a join synch bar connector
isJunctionConnector	Determines whether the current connector is a junction connector
isStubConnector	Determines whether the current connector is a stub connector
isTerminationConnector	Determines whether the current connector is a termination connector
setOfState	Updates the source state of the current connector with a new state

getDerivedInEdges

Read method

Description

The **getDerivedInEdges** method retrieves the incoming transitions for the connector.

Visual Basic

Syntax

```
getDerivedInEdges() As RPCollection
```

Return Value

The incoming transitions

C/C++ Prototype

```
HRESULT getDerivedInEdges (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getDerivedOutEdge

Read method

Description

The **getDerivedOutEdge** method retrieves the outgoing transition for the connector.

Visual Basic

Syntax

```
getDerivedOutEdge() As Transition
```

Return Value

The outgoing transition

C/C++ Prototype

```
HRESULT getDerivedOutEdge (IRPTransition** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getOfState

Read method

Description

The **getOfState** method returns the state connected to the current connector if it is a history connector. This is the state for which the history connector maintains historical state information.

Visual Basic

Syntax

```
getOfState() As RPState
```

Return Value

The state for which the history connector maintains state information

C/C++ Prototype

```
HRESULT getOfState (IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isConditionConnector

Read method

Description

The **isConditionConnector** method determines whether the current connector is a condition connector.

Visual Basic

Syntax

```
isConditionConnector() As Long
```

Return Value

1 if the connector is a condition connector; 0 otherwise

C/C++ Prototype

```
HRESULT isConditionConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isDiagramConnector

Read method

Description

The **isDiagramConnector** method determines whether the current connector is a diagram connector.

Visual Basic

Syntax

```
isDiagramConnector() As Long
```

Return Value

1 if the connector is a diagram connector; 0 otherwise

C/C++ Prototype

```
HRESULT isDiagramConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isForkConnector

Read method

Description

The **isForkConnector** method determines whether the current connector is a fork synch bar connector.

Visual Basic

Syntax

```
isForkConnector() As Long
```

Return Value

1 if the connector is a fork synch bar connector; 0 otherwise

C/C++ Prototype

```
HRESULT isForkConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isHistoryConnector

Read method

Description

The **isHistoryConnector** method determines whether the current connector is a history connector.

Visual Basic

Syntax

```
isHistoryConnector() As Long
```

Return Value

1 if the connector is a history connector; 0 otherwise

C/C++ Prototype

```
HRESULT isHistoryConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isJoinConnector

Read method

Description

The **isJoinConnector** method determines whether the current connector is a join synch bar connector.

Visual Basic

Syntax

```
isJoinConnector() As Long
```

Return Value

1 if the connector is a join synch bar connector; 0 otherwise

C/C++ Prototype

```
HRESULT isJoinConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isJunctionConnector

Read method

Description

The **isJunctionConnector** method determines whether the current connector is a junction connector.

Visual Basic

Syntax

```
isJunctionConnector() As Long
```

Return Value

1 if the connector is a junction connector; 0 otherwise

C/C++ Prototype

```
HRESULT isJunctionConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isStubConnector

Read method

Description

The **isStubConnector** method determines whether the current connector is a stub connector.

Visual Basic

Syntax

```
isStubConnector() As Long
```

Return Value

1 if the connector is a stub connector; 0 otherwise

C/C++ Prototype

```
HRESULT isStubConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isTerminationConnector

Read method

Description

The **isTerminationConnector** method determines whether the current connector is a termination connector.

Visual Basic

Syntax

```
isTerminationConnector() As Long
```

Return Value

1 if the connector is a termination connector; 0 otherwise

C/C++ Prototype

```
HRESULT isTerminationConnector (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setOfState

Write method

Description

The **setOfState** method updates the source state of the current connector with a new state.

Visual Basic

Syntax

```
setOfState (OfState As RPState)
```

Arguments

`OfState`

`The new source state for the connector`

C/C++ Prototype

```
HRESULT setOfState (IRPState* OfState)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPConstraint Interface

The `IRPConstraint` interface represents a constraint in a Rhapsody model. It inherits from `IRPAnnotation`.

VB Properties

Name	Type	Access	Description
body	`String`	RW	The body of the constraint.
constraintsByMe	Collection of `RPModelElements`	RO	The model elements affected by this constraint. For example, if a constraint says that each Airplane must have at least two Pilots, this collection will contain both the Airplane and Pilot classes.

IRPControlledFile

Represents controlled files.

fullPathFileName

Property that represents the full path of the file.

open

Method that can be used to open the controlled file.

IRPDependency Interface

The `IRPDependency` interface represents the dependencies between model elements, for example, in terms of either an include or a friend relationship between classes. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
dependent	`RPModelElement`	RW	The source element in the dependency relation
dependsOn	`RPModelElement`	RW	The target element in the dependency relation

IRPDeploymentDiagram Interface

The `IRPDeploymentDiagram` interface represents deployment diagrams. It inherits from `IRPDiagram`.

IRPDiagram Interface

The `IRPDiagram` interface is an abstract interface that provides the common functionality of Rhapsody diagrams. Currently, the functionality provided by `IRPDiagram` (in addition to `IRPModelElement`) is to render the view as a metafile. This class inherits from `IRPUnit`, because diagrams are also units.

Method Summary

getElementsInDiagram	Returns a collection of all the model elements in the current diagram
getPicture	Renders this diagram into the specified extended metafile
getPictureAs	Saves a Rhapsody diagram in a specific graphic format.
getPictureAsDividedMetafiles	Enables you to split a large diagram into several metafiles when you export it

getElementsInDiagram

Read method

Description

The **getElementsInDiagram** method returns a collection of all the model elements in the current diagram.

Visual Basic

Syntax

```
getElementsInDiagram() As RPCollection
```

Return Value

A collection of all the model elements in the diagram

C/C++ Prototype

```
HRESULT getElementsInDiagram (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getPicture

Read method

Description

The **getPicture** method renders this diagram into the specified extended metafile.

> **Note:** If the file cannot be written, this method flags the error.

Visual Basic

Syntax

```
getPicture (filename As String)
```

Arguments

`filename`

The name of the metafile that will contain the current diagram.The format of the created metafile is `.emf`. The created metafile is used later by the VB function **LoadPicture**, which creates a VB function object that can be used for placing pictures in documents.

C/C++ Prototype

```
HRESULT getPicture (BSTR filename)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getPictureAs

This method can be used to save a Rhapsody diagram in a specific graphic format. The method can also be used to retrieve diagram element information that can be used to create an HTML image map.

The method returns a list of the graphic files created.

```
getPictureAs(firstFileName As String, imageFormat As String, getImageMaps As
Long, diagrammap As RPCollection, fileNames As RPCollection) As RPCollection
```

firstFileName

The naming convention to use for the files that will be created. For a detailed explanation, see **getPictureAsDividedMetafiles**.

imageFormat

The graphic format in which the diagram should be saved. This can be one of the following: EMF, BMP, JPEG, JPG, TIFF.

getImageMaps

Use this argument to indicate whether the function should also return a collection of objects that can be used to construct an HTML image map for the diagram. (Use 1 if you want this information, else use 0.)

diagrammap

The collection to use when returning objects containing the required information for constructing an HTML image map.

fileNames

The collection to use for the names of the graphic files created.

getPictureAsDividedMetafiles

Read method

Description

The **getPictureAsDividedMetafiles** method enables you to split a large diagram into several metafiles when you export it.

This method is influenced by the property `General::Graphics::ExportedDiagramScale`. See the definition provided for the property on the applicable Properties tab of the Features dialog box.

> **Note:** If the file cannot be written, this method flags the error.

Visual Basic

Syntax

```
getPictureAsDividedMetafiles (firstFileName As String)
   As RPCollection
```

Arguments

`firstFileName`

The naming convention for the created files. For example, if you passed the value “Foo” as the `firstFileName`:

If the diagram can be drawn on one page, the name of the metafile is `Foo`.

If the diagram is split into multiple pages, the first file will be named `FooZ_X_Y`. The variables used in the name are as follows:

- `Z`—The number of the created file
- `X`—The number of the page along the `X` vector
- `Y`—The number of the page along the `Y` vector
- For example, the file `Foo2_1_2` means that this is the second metafile created and it contains one page, which is the second page along the `Y` vector (the `X` vector is 1).

All the file names will be inserted in the sent strings list (`fileNames`).

Return Value

A collection that contains the names of the files that were created

C/C++ Prototype

```
HRESULT getPictureAsDividedMetafiles (
    [in] BSTR firstFileName,
    [out, retval] IRPCollection** fileNames)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

VBA Sample

```
Private Sub CommandButton1_Click()
Dim proj As RPProject
Dim d As RPDiagram
Dim col As RPCollection
On Error GoTo aa
Set proj = getProject
Set d = proj.findNestedElementRecursive(
    "Dishwasher Cycle", "SequenceDiagram")
Set col = d.getPictureAsDividedMetafiles(
    "D:\Temp\Diagram.emf")
Exit Sub
aa:
MsgBox errorMessage
End Sub
```

IRPEnumerationLiteral Interface

The `IRPEnumerationLiteral` interface supports the language-independent types introduced in Rhapsody 5.0. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
value	`RPEvent`	RW	An optional value for the literal

IRPEvent Interface

The `IRPEvent` interface represents an event. It derives from `IRPInterfaceItem`.

VB Properties

Name	Type	Access	Description
baseEvent	`RPEvent`	RW	The pointer to the base event (if this event is inherited from it).
superEvent	`RPEvent`	RW	The pointer to the super event (if this event is inherited from it) As a read method, `superEvent()` provides the base event that an event was derived from. Thus, if event B is inherited from event A, `B.superEvent()` returns a pointer to A.As a write method, `superEvent()` inherits or reinherits an event from a new base (super) event. Thus, if you want event B to be inherited from A, set `B.superEvent()` = A.

IRPEventReception Interface

The `IRPEventReception` interface represents a relationship between a class and an event that is part of its interface. It derives from `IRPInterfaceItem`.

Method Summary

getEvent	Returns the event for the current event reception that serves as part of the interface for a class

getEvent

Read method

Description

The **getEvent** method returns the event for the current event reception that serves as part of the interface for a class.

Visual Basic

Syntax

```
getEvent() As RPEvent
```

Return Value

The `RPEvent` related to a class through the event reception interface

C/C++ Prototype

```
HRESULT getEvent (IRPEvent** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPExecutionOccurrence Interface

The `IRPExecutionOccurrence` interface represents an execution occurrence in a sequence diagram. It derives from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
message	`RPMessage`	RO	The start message for the execution occurrence

IRPExternalCodeGenerator Interface

The `IRPExternalCodeGenerator` interface is a dispatch interface that defines events that *must* be handled by the external code generator.

The interface inherits from `IDispatch`.

Using an External Code Generator

Beginning with Version 4.1, you can integrate an external code generator with Rhapsody 6.1. The code generator application is loaded when Rhapsody 6.1 is loaded. This code generator should be a full-featured code generator that can generate all the model code. When you specify an external code generator, Rhapsody 6.1 does not generate any code. Rhapsody 6.1 in Ada uses an external code generator.

You can set the environment variable `ExternalGenerator` in the `[codegen]` section of the `rhapsody.ini` file to the path of the external code generator executable. This executable will be loaded when Rhapsody 6.1 is loaded and terminates when Rhapsody 6.1 exits. If you do not set this environment variable, you must manually load your code generator after Rhapsody 6.1 is loaded. Note the following:

- This variable setting applies only to full-featured external code generators.
- If you do not load your external code generator, it cannot display messages in the Rhapsody 6.1 output window.

In addition, you can integrate makefiles generated by a makefile generator other than the Rhapsody 6.1 generator; all other code generation is done by Rhapsody 6.1.

Restrictions

Note the following restrictions:

- Because the active code view uses the annotations generated by Rhapsody 6.1 to find the location of a model element in a source file, searching a file generated by an external code generator (unannotated) might not be accurate. There are other annotation issues concerning roundtrip and error highlighting. Therefore, the external code generator must generate annotations to make all of these features work properly.
- If you specify an external code generator, you cannot use the *CG In Browser* feature to generate code.
- You can integrate a *single* external code generator with *one* instance of a Rhapsody 6.1 application, running on the same machine.
- You can integrate an external code generator with Rhapsody 6.1 on a Solaris platform only if the client supports the COM framework.
- This functionality is supported only by Rhapsody 6.1 Developer Edition as a separate, add-on feature.

Event Handling

When you trigger code generator operations, Rhapsody 6.1 fires events that are handled by the registered, external code generator. The following table lists the different events and when they are fired.

Event	When Fired
generate	When you invoke any kind of generation command (forced or incremental), for selected classifiers, files, or for the entire configuration. The invocation can be explicit or by DMCA. When called, the external code generator generates the elements according to the settings for the active configuration. This method is called with all model elements that need to be generated.
Abort	Is invoked when the user selects the **Abort** option during code generation. When the external code generator receives this event, it stops the code generation process and notifies Rhapsody 6.1 that it is done.
getFileName	Is invoked when Rhapsody 6.1 needs the file name and path of a model element. If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the file name from the external code generator. Note that if the external code generator uses the same file mapping scheme as Rhapsody 6.1, you do not need to implement this event.

Event	When Fired
GetMainFileName	Is invoked when Rhapsody 6.1 needs the main file name and path for a configuration. If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the file name from the external code generator.
GetTargetfileName	Is invoked when Rhapsody 6.1 needs the target name and path for a configuration. If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the makefile name from the external code generator. Note that if the external code generator uses the same file mapping scheme as Rhapsody 6.1, you do not need to implement this event.
WhoAmI	Is invoked to identify the external code generator.
Exit	Is invoked before Rhapsody 6.1 exits. When the external code generator receives this event, it performs the necessary cleanup and terminates its process.

Implementing the External Code Generator

To implement an external code generator, follow these steps:

1. Implement the event handlers for the `IRPExternalCodeGenerator` events:
   - Invoke the code generation process on another thread to return from the call to **generate** as soon as possible.
   - Notify the `IRPExternalCodeGeneratorInvoker` when the generation session has ended.
2. Instantiate your event handler class when the external code generator is loaded.
3. Get the `IRPApplication` object.
4. Get the `IRPExternalCodeGeneratorInvoker` singleton from the `IRPApplication` interface. See the method **getTheExternalCodeGeneratorInvoker** for more information.
5. Register the implemented `IRPExternalCodeGenerator` as the external code generator on the `IRPExternalCodeGeneratorInvoker` interface.
6. Print code generation messages using standard output. For example:

   ```
   cout<<"Generating"<<class_name<<endl;
   ```

7. Terminate the external code generator process when **Exit** is called.

Rhapsody Settings

You must set the following environment variables and properties:

- Set the `ExternalGenerator` environment variable in the `rhapsody.ini` file to the path to the implemented code generator executable. See “Using an External Code Generator”for more information.
- Set the `<lang>_CG::<Environment>::CodeGeneratorTool` property for the configuration that should be generated with the external code generator.
- Set the `<lang>_CG::Configuration::ExternalGenerationTimeout` property with a reasonable time for an average class generation session.

See the definition provided for the property on the applicable Properties tab of the Features dialog box.

Sample

```
//////////////////////////////////////////////////////
// MyCodeGenerator.h: interface for the CMyCodeGenerator
// class.
//////////////////////////////////////////////////////

...

class CMyCodeGenerator:
public
IDispEventImpl<1,CMyCodeGenerator,
   &DIID_IRPExternalCodeGenerator, &LIBID_rhapsody,1,0>
{
   public:
          CMyCodeGenerator();
          virtual ~CMyCodeGenerator();
          void Register();

          //event handlers

          HRESULT __stdcall Generate(
                 IDispatch* configuration,
                 IDispatch* classifiers,IDispatch* files,
                 BOOL genMain,BOOL genMake);
          BSTR __stdcall WhoAmI();
          BSTR __stdcall GetFileName(IDispatch* modelElement,
                 IDispatch* configuration, int pathType,
                 BOOL withExt);
          BSTR __stdcall GetTargetfileName(IDispatch*
                 configuration, int pathType,BOOL withExt);



          BSTR __stdcall GetMainFileName(
                 IDispatch* configuration, int pathType,
                 BOOL withExt);
          BSTR __stdcall GetMakefileName(
                 IDispatch* configuration, int pathType,
                 BOOL withExt);
          VOID __stdcall OnExit();
          VOID __stdcall Abort();
          BEGIN_SINK_MAP(CMyCodeGenerator)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x1, Generate)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x2, OnExit)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x3, GetFileName)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x4, GetTargetfileName)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x5, GetMainFileName)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x6, GetMakefileName)
          SINK_ENTRY_EX(/*nID =*/ 1,
                 DIID_IRPExternalCodeGenerator,
                 /*dispid =*/ 0x7, WhoAmI)
```

```
          SINK_ENTRY_EX(/*nID =*/ 1,
                DIID_IRPExternalCodeGenerator,
                /*dispid =*/ 0x8, Abort)
END_SINK_MAP()
...
```

Method Summary

Abort	Is invoked when the user selects the **Abort** option during code generation
Exit	Is invoked before Rhapsody 6.1 exits
generate	Is invoked whenever a generation command of any kind is invoked
getFileName	Is invoked when Rhapsody 6.1 needs the file name and path of a model element
GetMainFileName	Is invoked when Rhapsody 6.1 needs the main file name and path for a configuration
getMakefileName	Is invoked when Rhapsody 6.1 needs the makefile name and path for a configuration
GetTargetfileName	Is invoked when Rhapsody 6.1 needs the target name and path for a configuration
WhoAmI	Is invoked to identify the external code generator

Abort

Description

The **Abort** event is invoked when the user selects the **Abort** option during code generation. When the external code generator receives this event, it stops the code generation process and notifies Rhapsody 6.1 that it is done.

Visual Basic

Syntax

```
Event Abort()
```

C/C++ Prototype

```
void Abort()
```

Exit

Description

The **Exit** event is invoked before Rhapsody 6.1 exits. When the external code generator receives this event, it performs the necessary cleanup and terminates its process.

Visual Basic

Syntax

```
Event Exit()
```

C/C++ Prototype

```
void Exit()
```

generate

Description

The **generate** event is invoked whenever a generation command of any kind is invoked (including forced or incremental generation for selected classifiers; or files for the entire configuration either explicitly by the user or by DMCA).

When called, the external code generator generates the elements according to the settings for the active configuration.

Visual Basic

Syntax

```
Event generate (activeConfiguration As Object,
   classifiersCollection As Object,
   filesCollection As Object, generateMainFile As Long,
   generateMakefile As Long)
```

Arguments

activeConfiguration

A pointer to the active configuration for this generation session. If this value is not NULL, configuration files (main and make) are generated.

The external code generator queries the activeConfiguration for its RPConfiguration interface.

classifiersCollection

The container of classes and package interfaces to be generated. The container can be NULL if no classifiers need to be generated. Packages in this container are generated without their aggregates (the package's classes).

The external code generator queries the classifiersCollection for its RPCollection interface.

filesCollection

The container of file and folder interfaces (RPFiles) to be generated. The container can be NULL if no files need to be generated.

Model elements that are mapped to a file or folder in the filesCollection container will be added to the classifiersCollection. Therefore, the external generator does not query the file for its mapped classifiers. However, the code generator does check the files for text elements.

The external code generator queries the filesCollection for its RPCollection interface.

generateMainFile (1 or 0)

Set this to 1 to generate the main configuration files.

generateMakefile (1 or 0)

```
Set this to 1 to generate the makefile for the configuration.
```

C/C++ Prototype

```
HRESULT generate (IDispatch* activeConfiguration,
   IDispatch* classifiersCollection,
   IDispatch* filesCollection, long generateMainFile,
   long generateMakefile)
```

Return Value

`S_OK` for success, or an error code. If an error occurs, code generation is aborted.

getFileName

Description

The **getFileName** method is invoked when Rhapsody 6.1 needs the file name and path of a model element.

If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the file name from the external code generator.

> **Note:** If the external code generator uses the same file mapping scheme as Rhapsody 6.1, you do not need to implement this event.

Visual Basic

Syntax

```
Event getFileName (modelElement As Object,
   configuration As Object, pathType As Long,
   withExtensions As Long)
```

Arguments

`modelElement`

The model element whose name you want to retrieve. The model element can be a class, actor, package, event, or file.

The external code generator queries the `modelElement` for its `RPModelElement` interface.

`configuration`

The configuration for which the file name is requested.

The external code generator queries the `configuration` for its `RPConfiguration interface.`

`pathType`

The requested path format. The possible values are as follows:

1. Include the full path. For example: `C:\Project\Component\Config\Class1.h`

2. Include only the name of the file. For example: `Class1.h`

3. Include the path relative from the project directory. For example: `Component\Config\Class1.h`

4. Include the path relative from the active configuration to the requested file.

For example, if the file is located under `C:\Project\Component\Subfolder\Class1.h`, the external code generator includes the following path: `Subfolder\Class1.h`.

`withExtensions`

Specifies whether to include the extension in the returned file name. For example, `Class1.h` instead of `Class1`.

Return Value

The file names of the model elements, separated by commas. If there is more than one file in the list, Rhapsody 6.1 assumes that the first file is the specification file and the others are implementation files.

C/C++ Prototype

```
BSTR getFileName (IDispatch* modelElement,
   IDispatch* configuration, int pathType,
   long withExtensions)
```

GetMainFileName

Description

The **GetMainFileName** method is invoked when Rhapsody 6.1 needs the main file name and path for a configuration.

If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the file name from the external code generator.

Visual Basic

Syntax

```
Event GetMainFileName (configuration As Object,
   pathType As Long, withExtensions As Long)
```

Arguments

`configuration`

The configuration for which the main file name is requested.

The external code generator queries the `configuration` for its `RPConfiguration` interface.

`pathType`

The requested path format. The possible values are as follows:

1—Include the full path. For example: `C:\Project\Component\Config\Class1.h`

2—Include only the name of the file. For example: `Class1.h`

3—Include the path relative from the project directory. For example: `Component\Config\Class1.h`

4—Include the path relative from the active configuration to the requested file.

For example, if the file is located under `C:\Project\Component\Subfolder\Class1.h`, the external code generator will include the following path: `Subfolder\Class1.h`.

`withExtensions`

Specifies whether to include the extension in the returned file name. For example, `mainfile.cpp` instead of `mainfile`.

Return Value

The main file names of the model elements, separated by commas. If there is more than one file in the list, Rhapsody 6.1 assumes that the first file is the specification file and the second is the implementation file.

C/C++ Prototype

```
BSTR GetMainFileName (IDispatch* configuration,
   int pathType, long withExtensions)
```

getMakefileName

Description

The **getMakefileName** method is invoked when Rhapsody 6.1 needs the makefile name and path for a configuration.

If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the makefile name from the external code generator.

Visual Basic

Syntax

```
Event getMakefileName (configuration As Object,
   pathType As Long, withExtensions As Long)
```

Arguments

`configuration`

The configuration for which the file name is requested.

The external code generator queries the `configuration` for its `RPConfiguration` interface.

`pathType`

The requested path format. The possible values are as follows:

1—Include the full path. For example: `C:\Project\Component\Config\Class1.h`

2—Include only the name of the file. For example: `Class1.h`

3—Include the path relative from the project directory. For example: `Component\Config\Class1.h`

4—Include the path relative from the active configuration to the requested file.

For example, if the file is located under `C:\Project\Component\Subfolder\Class1.h`, the external code generator will include the following path: `Subfolder\Class1.h`.

`withExtensions`

Specifies whether to include the extension in the returned file name. For example, `makefile.mak` instead of `makefile`.

Return Value

The name of the makefile

C/C++ Prototype

```
BSTR getMakefileName (IDispatch* configuration,
   int pathType, long withExtensions)
```

GetTargetfileName

Description

The **GetTargetfileName** method is invoked when Rhapsody 6.1 needs the target name and path for a configuration.

If the event is not handled, Rhapsody 6.1 displays an error message stating that it could not get the makefile name from the external code generator.

> **Note:** If the external code generator uses the same file mapping scheme as Rhapsody 6.1, you do not need to implement this event.

Visual Basic

Syntax

```
Event GetTargetfileName (configuration As Object,
   pathType As Long, withExtensions As Long)
```

Arguments

`configuration`

The configuration for which the file name is requested.

The external code generator queries the `configuration` for its `RPConfiguration` interface.

`pathType`

The requested path format. The possible values are as follows:

1—Include the full path. For example: `C:\Project\Component\Config\Class1.h`

2—Include only the name of the file. For example: `Class1.h`

3—Include the path relative from the project directory. For example: `Component\Config\Class1.h`

4—Include the path relative from the active configuration to the requested file.

For example, if the file is located under `C:\Project\Component\Subfolder\Class1.h`, the external code generator will include the following path: `Subfolder\Class1.h`.

`withExtensions`

Specifies whether to include the extension in the returned file name. For example, `target.exe` instead of `target`.

Return Value

The name of the target file

C/C++ Prototype

```
BSTR GetTargetfileName (IDispatch* configuration,
   int pathType, long withExtensions)
```

WhoAmI

Description

The **WhoAmI** event is invoked to identify the external code generator.

Visual Basic

Syntax

```
Event WhoAmI()
```

C/C++ Prototype

```
BSTR WhoAmI()
```

Return Value

A string that identifies the name and version number of the external code generator. It is printed to the output window before the **generate** event is invoked.

IRPExternalCodeGeneratorInvoker Interface

The `IRPExternalCodeGeneratorInvoker` is the interface that invokes the external code generator. The invoker is the object that fires all the events defined by the `IRPExternalCodeGenerator` interface. The external code generator registers the invoker instance to get events, and notifies the `IRPExternalCodeGeneratorInvoker` when a code generation session is over.

This interface inherits from `IDispatch`.

Method Summary

notifyGenerationDone	Is called by the external code generator after a generation session invoked by the **generate** event is done

notifyGenerationDone

Description

The **notifyGenerationDone** method is called by the external code generator after a generation session invoked by the **generate** event is done. You cannot invoke a new code generation session or make any changes to the model between the call to the **generate** and **notifyGenerationDone** events. However, you can set the timeout period using the property `<lang>_CG::Configuration::ExternalGenerationTimeout`. See the definition provided for the property on the applicable Properties tab of the Features dialog box.

> **Note:** The external code generator *must* call this method after a code generation session (invoked by the **generate** event) was done or aborted (by the **Abort** event).

Visual Basic

Syntax

```
notifyGenerationDone()
```

C/C++ Prototype

```
HRESULT notifyGenerationDone()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPFile Interface

The `IRPFile` interface represents a file or folder to be generated during code generation. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
elements	Collection of `RPClassifiers`	RO	The elements to be mapped to the file or folder.
files	Collection of `RPFiles`	RO	If `fileType` is “folder,” `files` is the collection of all files contained in that folder.
fileType	`String`	RW	The file type (“folder,” “implementation,” “specification,” “logical,” or “other”).

path(fullPath)	`String(path)`
	
	`Boolean( fullPath)`
		RO	The string containing the path to the component.If `fullPath` is true, the full path is returned:
			`<drive>:\`
			`<model dir>\`
			`<component dir>\`
			`<config dir>)`
			If `fullPath` is false, the path relative to the project is returned:
			`<component dir>\`
			`<config dir>`

Method Summary

addElement	Adds an element to the current file
addPackageToScope	Adds the specified package to the scope of the file or folder
addTextElement	Adds text to the file
addToScope	Places an element within the scope of the current file or folder
getImpName	Retrieves the name of the current file's implementation file, including its extension and, if specified, its relative path
getSpecName	Retrieves the name of the current file's specification file, including its extension and, if specified, its relative path
isEmpty	Determines whether the current file is empty
setPath	Sets the path to the specified file

addElement

Write method

Description

The **addElement** method adds an element to the current file or folder.

Visual Basic

Syntax

```
addElement (element As RPClassifier,
   fileFragmentType As String)
```

Arguments

`element`

An `RPClassifier` that specifies the new element to be mapped to the current file. The possible values are as follows:

`Actors`

`Classes`

`Data`

`Use cases`

`fileFragmentType`

One of the following strings:

`undefFragment`—The element is not defined.

`textFragment`—The element is text.

`implFragment`—The implementation of the element is added to the file.

`specFragment`—The specification of the element is added to the file.

`moduleFragment`—Both implementation and specification of the element are added to the file.

C/C++ Prototype

```
HRESULT addElement (IRPClassifier *element,
   BSTR fileFragmentType)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addPackageToScope

Write method

Description

The **addPackageToScope** method adds the specified package to the scope of the file or folder.

Visual Basic

Syntax

```
addPackageToScope (p As RPPackage)
```

Arguments

`p`
`The package to add`

C/C++ Prototype

```
HRESULT addPackageToScope (IRPPackage *p)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addTextElement

Write method

Description

The **addTextElement** method adds text to the file.

Visual Basic

Syntax

```
addTextElement (text As String)
```

Arguments

`text`

`The text to add to the file`

C/C++ Prototype

```
HRESULT addTextElement (BSTR text)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addToScope

Write method

Description

The **addToScope** method places an element within the scope of the current file or folder. If the file represents a file, both the implementation and specification of the element are added to the file. If the file represents a folder, the element is added to the folder scope.

Visual Basic

Syntax

```
addToScope (element As RPClassifier)
```

Arguments

`element`

`The element to place in the scope of the file`

C/C++ Prototype

```
HRESULT addToScope (IRPClassifier *element)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getImpName

Read method

Description

The **getImpName** method retrieves the name of the current file's implementation file, including its extension and, if specified, its relative path.

Visual Basic

Syntax

```
GetImpName (includingPath As Long) As String
```

Arguments

```
includingPath (1 or 0)
Set this to 1 to include the relative path in the implementation file
name.
```

Return Value

The name of the implementation file

C/C++ Prototype

```
HRESULT getImpName (long includingPath, BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSpecName

Read method

Description

The **getSpecName** method retrieves the name of the current file's specification file, including its extension and, if specified, its relative path.

Visual Basic

Syntax

```
getSpecName (includingPath As Long) As String
```

Arguments

`includingPath(1 or 0)`

`Set this to 1 to include the relative path in the specification file name.`

Return Value

The name of the specification file

C/C++ Prototype

```
HRESULT getSpecName (long includingPath, BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isEmpty

Read method

Description

The **isEmpty** method determines whether the current file is empty.

Visual Basic

Syntax

```
IsEmpty() As Long
```

Return Value

1 if the file is empty; otherwise 0

C/C++ Prototype

```
HRESULT isEmpty (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setPath

Write method

Description

The **setPath** method sets the path to the specified file.

Visual Basic

Syntax

```
setPath (path As String)
```

Arguments

`path`

`The file path`

C/C++ Prototype

```
HRESULT setPath (BSTR path)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPFlow Interface

The `IRPFlow` interface represents a flow. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
conveyed	`RPCollection`	RO	A read-only collection of information elements conveyed by the flow.
direction	`String`	RW	A string specifying the direction of the flow. The possible values are: • toEnd1 • toEnd2 • bidirectional
end1	`RPModelElement`	RW	An association to a model object that is one of the ends of the flow.
end1Port	`RPPort`	RO	Valid when `end1` is an `RPInstance` that is connected via a port defined by the class of the instance.
end2	`RPModelElement`	RW	An association to a model object that is one of the ends of the flow.
end2Port	`RPPort`	RO	Valid when `end2` is an `RPInstance` that is connected via a port defined by the class of the instance.

Method Summary

addConveyed	Adds an information element to the `conveyed` collection
removeConveyed	Removes an information element to the `conveyed` collection
setEnd1ViaPort	Connects `end1` of the flow to the specified instance via the given port (defined by the instance class)
setEnd2ViaPort	Connects `end2` of the flow to the specified instance via the given port (defined by the instance class)

addConveyed

Write method

Description

The **addConveyed** method adds an information element to the `conveyed` collection.

Visual Basic

Syntax

```
addConveyed (pElement As RPModelElement)
```

Arguments

`pElement`

`The information element to add`

C/C++ Prototype

```
HRESULT addConveyed (IRPModelElement* pElement)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeConveyed

Write method

Description

The **removeConveyed** method removes an information element from the `conveyed` collection.

Visual Basic

Syntax

```
removeConveyed (pElement As RPModelElement)
```

Arguments

`pElement`

`The information element to remove`

C/C++ Prototype

```
HRESULT removeConveyed (IRPModelElement* pElement)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setEnd1ViaPort

Write method

Description

The **setEnd1ViaPort** method connects `end1` of the flow to the specified instance via the given port (defined by the instance class).

Visual Basic

Syntax

```
setEnd1ViaPort (pInstance As RPInstance, pPort As RPPort)
```

Arguments

`pInstance`

`The instance to which to connect end1 of the flow`

`pPort`

`The port used to connect end1 of the flow to pInstance`

C/C++ Prototype

```
HRESULT setEnd1ViaPort (IRPInstance* pInstance,
   IRPModelElement* pPort)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setEnd2ViaPort

Write method

Description

The **setEnd2ViaPort** method connects `end2` of the flow to the specified instance via the given port (defined by the instance class).

Visual Basic

Syntax

```
setEnd2ViaPort (pInstance As RPInstance, pPort As RPPort)
```

Arguments

`pInstance`

The instance to which to connect `end2` of the flow

`pPort`

The port used to connect `end2` of the flow to `pInstance`

C/C++ Prototype

```
HRESULT setEnd2ViaPort (IRPInstance* pInstance,
   IRPModelElement* pPort)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPFlowchart Interface

The `IRPFlowchart` interface represents an activity diagram (formerly referred to as a flowchart). It inherits from `IRPStatechart`.

VB Properties

Name	Type	Access	Description
isAnalysisOnly	`Long`	RW	If this is set to 1 (as opposed to 0), this `IRPFlowchart` is for analysis only.
itsOwner	`RPOperation`	RW	The operation that owns this activity diagram
swimlanes	`RPCollection`	RO	The collection of swimlanes in the activity diagram

Method Summary

addReferenceActivity	Adds a reference activity to the activity diagram
addSwimlane	Adds a swimlane to the activity diagram

addReferenceActivity

Note

Currently, this method has not been implemented.

Write method

Description

The **addReferenceActivity** method adds the specified reference activity to the activity diagram.

Visual Basic

Syntax

```
addReferenceActivity (referenced As RPModelElement)
   As RPState
```

Arguments

`referenced`

`The referenced activity or activity chart`

Return Value

The new reference activity

C/C++ Prototype

```
HRESULT addReferenceActivity (
   IRPModelElement* referenced, IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addSwimlane

Note

Currently, this method has not been implemented.

Write method

Description

The **addSwimlane** method adds the specified swimlane to the activity diagram.

Visual Basic

Syntax

```
addSwimlane (name As String) As RPSwimlane
```

Arguments

`name`

`The name for the new swimlane`

Return Value

The new `RPSwimlane`

C/C++ Prototype

```
HRESULT addSwimlane (BSTR name, IRPSwimlane** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPFlowItem Interface

The `IRPFlowItem` interface represents a flowItem. It inherits from `IRPClassifier`. `IRPFlowItem` is a limited classifier (it cannot own attributes, operations, types, and so on), but the interface does support generalization.

VB Properties

Name	Type	Access	Description
represented	Collection of `RPFlowItems`	RO	A read-only collection of flow items represented by the flowItem

Method Summary

addRepresented	Adds a flowItem to the `represented` collection
removeRepresented	Removes a flowItem from the `represented` collection

addRepresented

Write method

Description

The **addRepresented** method adds a flowItem to the `represented` collection.

Visual Basic

Syntax

```
addRepresented (pElement As RPModelElement)
```

Arguments

`pElement`

`The flow item to add`

C/C++ Prototype

```
HRESULT addRepresented (IRPModelElement* pElement)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeRepresented

Write method

Description

The **removeRepresented** method removes a flowItem from the `represented` collection.

Visual Basic

Syntax

```
removeRepresented (pElement As RPModelElement)
```

Arguments

`pElement`

`The flow item to remove`

C/C++ Prototype

```
HRESULT removeRepresented (IRPModelElement* pElement)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPGeneralization Interface

The `IRPGeneralization` interface represents an inheritance relation between two classifiers (class/use case/actor). It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
baseClass	`RPClassifier`	RW	The base class of the generalization
derivedClass	`RPClassifier`	RW	The derived class of the generalization
extensionPoint	`String`	RW	The extension point
isVirtual	`Long`	RO	A flag that indicates whether the generalization is virtual
visibility	`String`	RO	The visibility of the generalization (public, protected, or private)

The `baseClass` and `derivedClass` properties allow write access to update the generalization. For example, if class `C` is derived from class `A` and you want to derive it from class `B` instead, follow these steps:

```
C.getGeneralization.baseClass = B
```

Here, `getGeneralization` is used as pseudo-operation shorthand for the procedure involved in actually obtaining a `Generalization` object from a class.

Similarly, if class `C` is derived from `A` and you want to derive it from `B` instead, follow these steps:

```
B.getGeneralization.derivedClass = C
```

IRPGraphEdge Interface

The `IRPGraphEdge` interface represents a linear element of a diagram, such as a transition. It represents the UML `GraphEdge` class. `IRPGraphEdge` inherits from `IRPGraphElement`.

VB Properties

Name	Type	Access	Description
source	`RPGraphNode`	RO	The point at which the edge is connected to the source
target	`RPGraphNode`	RO	The point at which the edge is connected to the target

IRPGraphElement Interface

The `IRPGraphElement` interface is the base for all graphical elements on a diagram. It represents the UML `Interchange` `GraphElement` class. `IRPGraphElement` inherits from `IRPDispatch`.

VB Properties

Name	Type	Access	Description
graphicalParent	`RPGraphElement`	RO	The owning object
modelObject	`RPModelElement`	RO	The graphical object

Method Summary

getAllGraphicalProperties	Returns the list of graphical properties for a diagram element
getGraphicalProperty	Returns the specified graphical property for a diagram element
setGraphicalProperty	Allows the setting of graphical properties for a diagram element

getAllGraphicalProperties

Read method

Description

The **getAllGraphicalProperties** method returns the list of graphical properties for a diagram element.

Visual Basic

Syntax

```
getAllGraphicalProperties() As RPCollection
```

Return Value

An `RPCollection` that contains the read-only list of graphical properties

C/C++ Prototype

```
HRESULT getAllGraphicalProperties (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getGraphicalProperty

Read method

Description

The **getGraphicalProperty** method returns the value of the specified graphical property for a diagram element.

Visual Basic

Syntax

```
getGraphicalProperty(name As String)
   As RPGraphicalProperty
```

Arguments

`name`

The name of the property whose value you want to retrieve (note that only the actual property name is required here, there is no need to specify the hierarchy, as is the case with **getPropertyValue**)

Return Value

The value of the specified property, or `null` if the specified key is unsupported or invalid

C/C++ Prototype

```
HRESULT getGraphicalProperty (BSTR name,
   IRPGraphicalProperty **pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setGraphicalProperty

Write method

Description

The `setGraphicalProperty` method allows the setting of graphical properties for a diagram element.

Visual Basic

Syntax

```
setGraphicalProperty(name As String, value As String)
```

Arguments

`name`

The name of the graphical property whose value you want to set (note that only the actual property name is required here; there is no need to specify the hierarchy, as is the case with **setPropertyValue**)

`value`

The value of the specified graphical property

C/C++ Prototype

```
HRESULT setGraphicalProperty([in] BSTR name, [in] BSTR value)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

VBA Sample

```
Dim proj As RPProject
Set d = proj.addNewAggr(“ObjectModelDiagram”, “MyDiagram”)
Dim m As RPModelElement
Dim n1 As RPGraphNode
Dim n2 As RPGraphNode
Dim e As RPGraphEdge
Dim c1 As RPClass
Dim c2 As RPClass
Dim gp As RPGraphicalProperty


On Error GoTo aa

Set proj = getProject
Set d = proj.addNewAggr(“ObjectModelDiagram”, “MyDiagram”)
Set m = proj.findNestedElementRecursive("C", "Class")
Set c1 = m

' Add node for existing element
```

```
Set n1 = d.AddNewNodeForElement(m, 10, 20, 50, 50)
Call n1.setGraphicalProperty("LineColor", "155.230.100")


' Add node with new element
Set n2 = d.AddNewNodeByType("Class", 110, 120, 50, 50)
Set c2 = n2.modelObject
c2.name = "D"

' Add edge for new dependency

Set e = d.AddNewEdgeByType("Dependency", n1, 60, 60, n2, 130, 140)
Set gp = e.getGraphicalProperty("LineStyle")
MsgBox gp.value

Exit Sub

aa:
MsgBox errorMessage
```

IRPGraphicalProperty Interface

The `IRPGraphicalProperty` interface represents a graphical elements on a diagram. It inherits from `IRPDispatch`.

VB Properties

Name	Type	Access	Description
key	`String`	RO	The name of the property
value	`String`	RO	The property value

IRPGraphNode Interface

The `IRPGraphNode` interface represents either a boxed element (for example, a class box) or a point element (for example, a connector) in a diagram. It represents the UML `GraphNode` class. `IRPGraphNode` inherits from `IRPGraphElement`.

IRPGuard Interface

The `IRPGuard` interface represents the guard of a transition in a statechart diagram. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
body	`String`	RW	The body of the guard

IRPHyperLink Interface

The `IRPHyperLink` interface enables you to read the attributes of hyperlink objects.

Note: You cannot create or modify hyperlinks using the COM API.

VB Properties

Name	Type	Access	Description
target	`RPModelElement`	RW	The target for the hyperlink
URL	`String`	RW	The URL for the hyperlink

Method Summary

getDisplayOption	Returns the display option (free text, target name, target label, or tag value) for the hyperlink
setDisplayOption	Sets the display option (free text, target name, target label, or tag value) for the hyperlink

getDisplayOption

Read method

Description

The **getDisplayOption** method returns the display option (free text, target name, target label, or tag value) for the hyperlink.

Visual Basic

Syntax

```
getDisplayOption (pVal As HYPNameType, [pDisplayName As String])
```

Arguments

`pVal`

`The hyperlink`

Return Value

`A string that represents the display option for the hyperlink`

C/C++ Prototype

```
HRESULT getDisplayOption (HYPNameType* pVal, BSTR *pDisplayName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setDisplayOption

Write method

Description

The **setDisplayOption** method sets the display option (free text, target name, target label, or tag value) for the hyperlink.

Visual Basic

Syntax

```
setDisplayOption (pVal As HYPNameType, [pDisplayName AsString])
```

Arguments

`pVal`

`The hyperlink`

`pDisplayName`

`The display type (free text, target name, target label, or tag value)`

C/C++ Prototype

```
HRESULT setDisplayOption (HYPNameType* pVal, BSTR *pDisplayName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPImageMap

Represents diagram element information that can be used to build an HTML image map for the diagram. IRPDiagram's `getPictureAs` method returns a collection of objects of this type.

interfaceName

This property is for future use.

isGUID

Indicates whether the target property is the GUID of the element.

name

Name of the element.

pictureFileName

Name of the image file.

points

String that represents the bounding rectangle for the element in the Rhapsody diagram (for example, "10,10,206,10,206,151,10,151").

shape

This property is for future use.

target

Target for the image map entry.

IRPInstance Interface

The `IRPInstance` interface represents an instance. It is derived from `IRPRelation`, because the instance is a relation between an owner and some class.

VB Properties

Name	Type	Access	Description
instantiatedBy	`RPOperation`	RW	The constructor used to create the instance, as defined by the user within the instance features dialog box

Method Summary

getInLinks	Retrieves the list of incoming links
getListOfInitializerArguments	Retrieves the list of initializer arguments
getOutLinks	Retrieves the list of outgoing links
setInitializerArgumentValue	Sets the value of the initializer argument

getInLinks

Read method

Description

The **getInLinks** method returns the list of links for which the instance is the target instance (identified by the “to” property of the link).

Visual Basic

Syntax

```
getInLinks() As RPCollection
```

Return Value

An `RPCollection` that contains the read-only list of incoming links

C/C++ Prototype

```
HRESULT getInLinks (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getListOfInitializerArguments

Read method

Description

The **getListOfInitializerArguments** method returns the list of arguments for the initializer, as defined by the user in the instance features dialog box.

Visual Basic

Syntax

```
getListOfInitializerArguments() As RPCollection
```

Return Value

An `RPCollection` that contains the values of the arguments passed to the initializer. This list is a read-only list of strings.

C/C++ Prototype

```
HRESULT getListOfInitializerArguments(
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getOutLinks

Read method

Description

The **getOutLinks** method returns the list of links for which the instance is the source instance (identified by the “from” property of the link).

Visual Basic

Syntax

```
getOutLinks() As RPCollection
```

Return Value

An `RPCollection` that contains the read-only list of outgoing links

C/C++ Prototype

```
HRESULT getOutLinks (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setInitializerArgumentValue

Write method

Description

The **setInitializerArgumentValue** method sets the value of the initializer argument.

Visual Basic

Syntax

```
setInitializerArgumentValue(argName As String,
   argValue as String)
```

Arguments

`argName`

`The name of the initializer argument`

`argValue`

`The initial value of the initializer argument`

C/C++ Prototype

```
HRESULT setInitializerArgumentValue (BSTR argName,
   BSTR argValue)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPInteractionOccurrence Interface

The `IRPInteractionOccurrence` interface represents an interaction occurrence (reference sequence diagram). It derives from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
messagePoints	`RPCollection`	RO	The message points of the referenced sequence diagram
referenceSequenceDiagram	`RPSequenceDiagram`	RW	The sequence diagram being referenced

IRPInterfaceItem Interface

The `IRPInterfaceItem` interface represents the commonality of class interface elements. It derives from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
arguments	Collection of `RPArguments`	RO	The arguments of this operation or event
signature	`String`	RO	The signature of this operation. For example: `"f(int x, char *y)"`

Method Summary

addArgument	Adds an argument for the operation to the end of its argument list
addArgumentBeforePosition	Adds an argument for the operation at the specified position in its argument list
getSignatureNoArgNames	Retrieves the signature of the current class interface element without argument names
getSignatureNoArgTypes	Retrieves the signature of the current class interface element without argument types
matchOnSignature	Determines whether the signature of the current class interface element matches that of another `IRPInterfaceItem`

addArgument

Write method

Description

The **addArgument** method adds an argument for the operation to the end of its argument list.

Visual Basic

Syntax

```
addArgument (newVal As String) As RPArgument
```

Arguments

`NewVal`

`The new argument to append to the argument list`

Return Value

The new argument added to the argument list

C/C++ Prototype

```
HRESULT addArgument (BSTR newVal, IRPArgument** argument)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addArgumentBeforePosition

Write method

Description

The **addArgumentBeforePosition** method adds an argument for the operation at the specified position in its argument list.

Visual Basic

Syntax

```
addArgumentBeforePosition (newVal As String, pos As Long)
   As RPArgument
```

Arguments

`newVal`

`The new argument to add to the argument list`

`pos`

`A long that represents the position of the argument in argument list (1,2,3,…n; left to right)`

Return Value

The new argument added to the argument list

C/C++ Prototype

```
HRESULT addArgumentBeforePosition (BSTR newVal, long pos,
   IRPArgument** argument)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSignatureNoArgNames

Read method

Description

The **getSignatureNoArgNames** method retrieves the signature of the current class interface element without argument names.

Visual Basic

Syntax

```
getSignatureNoArgNames() As String
```

Return Value

The signature of the element without argument names. For example:

```
f(string,int)
```

C/C++ Prototype

```
HRESULT getSignatureNoArgNames (BSTR *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSignatureNoArgTypes

Read method

Description

The **getSignatureNoArgTypes** method retrieves the signature of the current class interface element without argument types.

Visual Basic

Syntax

```
getSignatureNoArgTypes() As String
```

Return Value

The signature of the element without argument types. For example:

```
f(x,y)
```

C/C++ Prototype

```
HRESULT getSignatureNoArgTypes (BSTR *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

matchOnSignature

Read method

Description

The **matchOnSignature** method determines whether the signature of the current class interface element matches that of another `IRPInterfaceItem`.

Visual Basic

Syntax

```
matchOnSignature (item As RPInterfaceItem) As Long
```

Arguments

`item`

A pointer to the `RPInterfaceItem` whose signature is being compared to that of the current interface item

Return Value

1 if the two signatures match; otherwise 0

C/C++ Prototype

```
HRESULT matchOnSignature (IRPInterfaceItem* item,
    long *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPLink Interface

The `IRPLink` interface represents a link-end that instantiates a relation. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
end1Multiplicity	`String`	RW	The multiplicity of the first end of the link
end1Name	`String`	RW	The name of the first end of the link
end2Multiplicity	`String`	RW	The multiplicity of the second end of the link
end2Name	`String`	RW	The name of the second end of the link
from	`RPInstance`	RO	The source instance of the link.
instantiates	`RPRelation`	RO	The association the link instantiates.
other	`RPLink`	RO	The pair link. In most cases, this property is redundant.
to	`RPInstance`	RO	The target instance of the link.

IRPMessage Interface

The `IRPMessage` interface represents a message sent between two classifier roles in a collaboration. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
actualParameterList	`String`	RO	A collection of strings that contain parameters.
communication Connection	`RPAssocationRole`	RO	The communication connection. This is always NULL for sequence diagrams.
condition	`Cstring`	RO	This is meaningful only if the message is of type “condition”.
formalInterfaceItem	`RPInterfaceItem`	RO	This can be NULL for timeouts or “default” for CTOR, DTOR, and non-specified methods.
messageType	`Cstring`	RO	The message type (constructor, destructor, event, operation, triggered, timeout, cancelled timeout, condition, or unspecified).
returnValue	`Cstring`	RO	The name of the element that receives the return value.
sequenceNumber	`Cstring`	RO	The number or position in an ordered list. For sequence diagrams, Rhapsody deduces the number.
source	`RPClassifierRole`	RO	Specifies who sent the message.
target	`RPClassifierRole`	RO	Specifies who received the message.
timerValue	`String`	RO	The timer value

Method Summary

getSignature	Retrieves the prototype of the `IRPMessage`

getSignature

Read method

Description

The **getSignature** method retrieves the prototype of the `IRPMessage`.

Visual Basic

Syntax

```
getSignature () As String
```

Return Value

The signature

C/C++ Prototype

```
HRESULT getSignature (BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPMessagePoint Interface

The `IRPMessagePoint` interface represents an event in a sequence diagram. It inherits from `IRPModelElement`.

Note that in a collaboration diagram, all events are send/receive pairs with nothing in between them.

VB Properties

Name	Type	Access	Description
message	`RPMessage`	RO	The message that the current event refers to
type	`String`	RO	“Send' or “receive”

Method Summary

getClassifierRole	Retrieves the classifier role for this message point

getClassifierRole

Read method

Description

The **getClassifierRole** method retrieves the classifier role for this message point. This is the classifier role (object) that received this event and sent back a return message.

Visual Basic

Syntax

```
getClassifierRole() As RPClassifierRole
```

Return Value

The `RPClassifierRole` on which the message occurred

C/C++ Prototype

```
HRESULT getClassifierRole (
   IRPClassifierRole** classifierRole)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPModelElement Interface

The `IRPModelElement` interface is the base abstract interface for all Rhapsody 6.1 metamodel elements. It consists of all the common functionality shared by all the elements in the model (except for the `Application` class). It acts as an abstract interface.

VB Properties

Name	Type	Access	Description
annotations	Collection of `RPAnnotations`	RO	The annotations that belong to this model element.
associationClasses	Collection of `IRPAssociationClasses`	RO	The association classes connected to this model element.
constraints	Collection of `RPConstraints`	RO	The constraints that belong to this model element.
constraintsByHim	Collection of `IRPConstraints`	RO	The constraints that affect this model element.
dependencies	Collection of `RPDependency`	RO	The model elements on which this model element depends.
description	`String`	RW	The description of this model element.
descriptionHTML	`String`	RW	The description of the model element in HTML format.
descriptionRTF	`String`	RW	The description of the model element in RTF format.
displayName	`String`	RW	The display name.
GUID	`String`	RW	The GUID value.
hyperLinks	Collection of `IRPHyperLink-s`	RO	The hyperlinks added to an element.
isOfMetaclass (metaclass)	`Long`	RO	This is equal to 1 (as opposed to 0) if the current model element is a member of this metaclass. Requires the string metaclass.
isShowDisplayName	`Long`	RW	Specifies whether to show the display name.

Name	Type	Access	Description
mainDiagram	`RPDiagram`	RW	The main diagram of this element. Currently, this property is valid only for classes, packages, actors, and use cases.
metaClass	`String`	RO	The metaclass of this model element.
name	`String`	RW	The name of this model element.
ofTemplate	`RPModelElement`	RW	If the model element is an instantiation, this method will return the template used to instantiate it.

owner	`RPModelElement`	RW	The object in which this model element is defined.
			You can use this property to establish ownership. For example, suppose `c` is a class and `p` is a package:
			`Dim c as RPClass`
			`Dim p as RPPackage`
			`set c = ...`
			`set p = ...`
			`c.owner = p`
			This will work for any two objects where one can contain the other.

project	`RPProject`	RO	The project that owns this element.
requirementTraceability Handle	`long`	RW	The handle to this model element used by requirement traceability tools.
stereotype	`RPStereotype`	RW	The stereotype attached to this model element.
templateParameters	Collection of `RPTemplate Parameter`	RO	If this model element is a template, the method returns the template's parameters.

Name	Type	Access	Description
ti	`RPTemplate Instantiation`	RW	If this model element is a template, it instantiates the template into a class as follows: 1. Create a class `c`. 2. Create a template instantiation, `theTi`. 3. Connect the new class with the template instantiation: `c.ti = theTi`

Method Summary

addDependency	Adds a dependency relationship to the specified object
addDependencyTo	Creates a new dependency between two objects
addNewAggr	Used to add a new model element to the current element, for example, adding a class to a package
addProperty	Adds a new property/value pair for the current element
addStereotype	Adds a stereotype relationship to the specified object
becomeTemplateInstantiationOf	Creates a template instantiation of another template (of another template class)
clone	Clones the element
deleteDependency	Deletes a dependency
deleteFromProject	Deletes the current model element from the project open in Rhapsody 6.1
errorMessage	Returns the most recent error message
findElementsByFullName	Searches for the specified element
findNestedElement	Retrieves the specified element nested in a model element
findNestedElementRecursive	Retrieves the specified element from a given model element at any level of nesting within that element
getErrorMessage	Returns the most recent error message

getFullPathName	Retrieves the full path name of a model element as a string
getFullPathNameIn	Retrieves the full path name of a model element as a string
getNestedElements	Retrieves the elements defined in the current object
getNestedElementsRecursive	Recursively retrieves the elements defined in the model element for the object and for objects defined in it
getOverriddenProperties	Retrieves the list of properties whose default values have been overridden
getPropertyValue	Returns the value associated with the specified key value
getPropertyValueExplicit	Returns an explicit value if it has been assigned to the metamodel
getTag	Returns the tag for the specified model element
HighLightElement	Highlights the current model element
openFeaturesDialog	Displays the information for an element in the Features dialog. Depending on parameter provided, opens new dialog or uses an already-open dialog.
removeProperty	Removes the property from the model element
removeStereotype	Removes the stereotype
setPropertyValue	Modifies the value of the specified property
setTagValue	Assigns the specified tag to the model element
synchronizeTemplateInstantiation	Is used to synchronize between a template and a template instantiation parameter

addDependency

Write method

Description

The **addDependency** method adds a dependency relationship to the specified object.

Visual Basic

Syntax

```
addDependency (dependsOnName As String, dependsOnType
   As String) As RPDependency
```

Arguments

`dependsOnName`

`The name of the object that this element depends on`

`dependsOnType`

`The type of object that this element depends on`

Return Value

The newly created dependency

C/C++ Prototype

```
HRESULT addDependency (BSTR dependsOnName,
   BSTR dependsOnType, IRPDependency** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addDependencyTo

Write method

Description

The **addDependencyTo** method creates a new dependency relationship between two objects.

Visual Basic

Syntax

```
addDependencyTo (element As RPModelElement)
   As RPDependency
```

Arguments

`element`

`The name of the object that the current object depends on`

Return Value

The newly created dependency

C/C++ Prototype

```
HRESULT addDependencyTo (IRPModelElement* element,
   IRPDependency** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addNewAggr

Write method

Description

The **addNewAggr** method is used to add a new model element to the current element, for example, adding a new class to a package or adding a new diagram to a project.

Visual Basic

Syntax

```
addNewAggr (metaType As String, name As String)
   As RPModelElement
```

Arguments

`metaType`

The type of element to add (the string to use is the name of the appropriate metaclass).

Note

The list of metaclass names that can be used for this argument can be found in the file *metaclasses.txt* in the *Doc* directory of your Rhapsody installation.

`name`

The name to use for the new element

Return Value

The newly created element

C/C++ Prototype

```
HRESULT addNewAggr (BSTR metaType, BSTR name,
   IRPModelElement** newObject)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Set proj = getProject
Set d = proj.addNewAggr("ObjectModelDiagram", "MyDiagram")
```

addProperty

Write method

Description

The **addProperty** method adds a new property/value pair for the current element.

This method is capable of flagging an error. For more information, see **Error Handling**

Visual Basic

Syntax

```
addProperty (propertyKey As String,
   propertyType As String, propertyValue As String)
```

Arguments

`propertyKey`

The name of the new property.

`propertyType`

The property type. The possible values are as follows:

- `Int`
- `String`
- `Enum, <xxx>, <yyy>, <zzz> (i.e., Enum, followed by each of the defined values, for example: Enum,No,Prefix,Suffix)`
- `Bool`

`propertyValue`

The default value of the new property.

C/C++ Prototype

```
HRESULT addProperty (BSTR propertyKey, BSTR propertyType,
   BSTR propertyValue)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addStereotype

Write method

Description

The **addStereotype** method adds a stereotype relationship to the specified object.

Visual Basic

Syntax

```
addStereotype (name As String, metaType As String)
   As RPStereotype
```

Arguments

`name`

`The name of the object in the new stereotype relationship`

`metaType`

`The type of the object in the new stereotype relationship`

Return Value

The newly created stereotype relationship

C/C++ Prototype

```
HRESULT addStereotype (BSTR name, BSTR metaType,
   IRPStereotype** stereotype)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addNetwork(c As RPClass)
Dim o As RPOperation
c.addOperation ("serialize")
c.addOperation ("unserialize")
c.addConstructor ("")
On Error Resume Next
c.addDestructor ("")
x = c.addStereotype("G3Network", "Class")
End Sub
```

becomeTemplateInstantiationOf

Write method

Description

The **becomeTemplateInstantiationOf** method creates a template instantiation of another template (of another template class).

Visual Basic

Syntax

```
becomeTemplateInstantiationOf (newVal As RPModelElement)
```

Arguments

`newVal`

`The template object that the template is an instantiation of`

C/C++ Prototype

```
HRESULT becomeTemplateInstantiationOf (
    IRPModelElement *newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

clone

Write method

Description

The **clone** method clones the element, names it, and adds it to the new owner.

Visual Basic

Syntax

```
clone (name As String, newOwner As RPModelElement)
   As RPModelElement
```

Arguments

`name`

`The name to use for the cloned element`

`newOwner`

`The new owner of the cloned element`

C/C++ Prototype

```
HRESULT clone (BSTR string, IRPModelElement *newOwner,
   IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteDependency

Write method

Description

The **deleteDependency** method deletes a dependency.

Visual Basic

Syntax

```
deleteDependency (dependency As RPDependency)
```

Arguments

`dependency`

`The dependency to delete`

C/C++ Prototype

```
HRESULT deleteDependency (IRPDependency* dependency)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFromProject

Write method

Description

The **deleteFromProject** method deletes the current model element from the project open in Rhapsody 6.1.

Visual Basic

Syntax

```
deleteFromProject()
```

C/C++ Prototype

```
HRESULT deleteFromProject()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

errorMessage

Read method

Description

The **errorMessage** method returns the most recent error message.

Visual Basic

Syntax

```
errorMessage() As String
```

Return Value

The most recent error message (a string)

C/C++ Prototype

```
HRESULT errorMessage (BSTR* __MIDL_0020)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findElementsByFullName

Read method

Description

The **findElementsByFullName** method searches for the specified element.

Visual Basic

Syntax

```
findElementsByFullName (name As String,
   metaClass As String) As RPModelElement
```

Arguments

`name`

`The name of the element to look for`

`metaClass`

`The element's metaclass`

Return Value

The specified element

C/C++ Prototype

```
HRESULT findElementsByFullName (BSTR name,
   BSTR metaClass, IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

Suppose you have a class `A`, under package `P`. The following VBA code will find this class using the `findElementsByFullName` API call:

```
Dim proj As RPProject
Dim m As RPModelElement

Set proj = getProject
Set m = proj.findElementsByFullName("A in P", "Class")
MsgBox m.name
```

Note

This method requires that you use the "full" notation, e.g., "A in P". Otherwise, the method will not return the specified element.

findNestedElement

Read method

Description

The **findNestedElement** method retrieves the specified element nested in a model element.

For example, if *x* is of type `IRPModelElement` (or a type inherited from it), the following call returns an attribute of *x* named *A* (or null if there is no such element:

```
x.findNestedElement('A','Attribute')
```

Visual Basic

Syntax

```
findNestedElement (name As String, metaClass As String)
   As RPModelElement
```

Arguments

`name`

`The name of the element`

`metaClass`

`The name of the metaclass`

Return Value

If found, the retrieved `RPModelElement`; otherwise, NULL

C/C++ Prototype

```
HRESULT findNestedElement (BSTR name, BSTR metaClass,
   IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Sub addUi(c As RPClass)
Dim x As Object
Dim p As RPPackage
Dim theClass As RPClass
'all gui objects are derived from GUI.UIBase
c.Description = "gui class"
On Error Resume Next
Set p = pr.findNestedElement("GUI", "Package")
Set theClass = p.findNestedElement("UIBase", "Class")
c.addGeneralization theClass

If Not Err.Number = 0 Then
```

```
  MsgBox (errorMessage)
End If

c.addStereotype "G3UI", "Class"

End Sub
```

findNestedElementRecursive

Read method

Description

The **findNestedElementRecursive** method retrieves the specified element from a given model element at any level of nesting within that element.

For example, if *x* is of type `IRPModelElement` (or a type inherited from it), the following call returns an attribute named *A* (or null if there is no such element) of *x*, or of any element nested within *x* at any level of ownership:

```
x.findNestedElementRecursive('A','Attribute')
```

Visual Basic

Syntax

```
IRPModelElement findNestedElementRecursive(
   name As String, metaClass As String) As RPModelElement
```

Arguments

`name`

`The name of the element`

`metaClass`

`The name of the metaclass`

Return Value

If found, the retrieved `RPModelElement`; otherwise, NULL

C/C++ Prototype

```
HRESULT findNestedElementRecursive (BSTR name,
   BSTR metaClass, IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getErrorMessage

Read method

Description

The **getErrorMessage** method returns the most recent error message.

Visual Basic

Syntax

```
String getErrorMessage (__MIDL_0019 As String)
```

Return Value

The most recent error message

C/C++ Prototype

```
HRESULT getErrorMessage (BSTR* __MIDL_0019)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getFullPathName

Read method

Description

The **getFullPathName** method retrieves the full path name of a model element as a string with the following format:

```
<package>::<class>
```

Visual Basic

Syntax

```
getFullPathName() As String
```

Return Value

The full path of the model element

C/C++ Prototype

```
HRESULT getFullPathName (BSTR* name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

The following macro checks each transition to see if it has a trigger.

```
Sub checkNullTransitions()
   Dim elem As RPModelElement
   For Each elem In getProject.getNestedElementsRecursive
          If elem.metaClass = "Transition" Then
                 Dim trans As RPTransition
                 Set trans = elem
                 If trans.getItsTrigger Is Nothing Then
                 Debug.Print "The trigger in transition '" +
                 trans.getFullPathName + "' is null!"
                 End If
          End If
   Next elem
End Sub
...
```

getFullPathNameIn

Read method

Description

The **getFullPathNameIn** method retrieves the full path name of a model element as a string in the following format:

```
<class> in <package>
```

Visual Basic

Syntax

```
getFullPathNameIn() As String
```

Return Value

The full path of the model element

C/C++ Prototype

```
HRESULT getFullPathNameIn (BSTR* name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getNestedElements

Read method

Description

The **getNestedElements** method retrieves the elements defined in the current object.

Visual Basic

Syntax

```
getNestedElements() As RPCollection
```

Return Value

A collection of model elements defined in the current object

C/C++ Prototype

```
HRESULT getNestedElements (IRPCollection** __MIDL_0017)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getNestedElementsRecursive

Write method

Description

The **getNestedElementsRecursive** method recursively retrieves the elements defined in the model element for the object and for objects defined in it.

Visual Basic

Syntax

```
getNestedElementsRecursive() As RPCollection
```

Return Value

A collection of model elements defined in the current object and the objects nested within it

C/C++ Prototype

```
HRESULT getNestedElementsRecursive(
   IRPCollection** __MISL__0018)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

The following macro checks each transition to see if it has a trigger.

```
Sub checkNullTransitions()
   Dim elem As RPModelElement
   For Each elem In getProject.getNestedElementsRecursive
          If elem.metaClass = "Transition" Then
                 Dim trans As RPTransition
                 Set trans = elem
                 If trans.getItsTrigger Is Nothing Then
                 Debug.Print "The trigger in transition '" +
                 trans.getFullPathName + "' is null!"
                 End If
          End If
   Next elem
End Sub
...
```

getOverriddenProperties

Read method

Description

The **getOverriddenProperties** method retrieves the list of properties whose default values have been overridden.

Visual Basic

Syntax

```
getOverriddenProperties (recursive As Long)
   As RPCollection
```

Arguments

`recursive`

`Specifies whether to include the properties of ascendants of the unit`

C/C++ Prototype

```
HRESULT getOverriddenProperties (long recursive,
   IRPCollection **pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getPropertyValue

Read method

Description

The **getPropertyValue** method returns the value associated with the specified key value.

This method is capable of flagging an error.

Visual Basic

Syntax

```
getPropertyValue (propertyKey As String) As String
```

Arguments

`propertyKey`

`The name of the property whose value is to be retrieved`

Return Value

The value of a property explicitly assigned to this instance or the default value (the value propagated from the containers of the instance as a default).

Notes

Property-related API calls can cause the following error conditions:

- `RP_BAD_PROPERTY_KEY_ERROR`—Illegal property key syntax (that is, not in a `"<subject>.<metaclass>.<name>"` format).
- `RP_MISSING_PROPERTY_ERROR`—The property requested does not exist.
- `RP_PROPERTY_EXISTS_ERROR`—You are attempting to add a property that already exists.

C/C++ Prototype

```
HRESULT getPropertyValue (BSTR propertyKey,
   BSTR* propertyValue)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

```
Set elt = getSelectedElement
theFileName = elt.getPropertyValue(
    "UserProperties.ExternalFile.FileName")
theFilePath = elt.getPropertyValue(
    "UserProperties.ExternalFile.FilePath")
theFileType = elt.getPropertyValue(
    "UserProperties.ExternalFile.FileType")
```

getPropertyValueExplicit

Read method

Description

The **getPropertyValueExplicit** method is similar to the `getPropertyValue` method, but it does not return a default value. Instead, it returns an explicit value if it has been assigned to the metamodel.

This method is capable of flagging an error. For more information, see **Error Handling**

Visual Basic

Syntax

```
getPropertyValueExplicit (propertyKey As String)
   As String
```

Arguments

`propertyKey`

`The name of the property whose value is to be retrieved`

Return Value

The explicit value of the property, if one has been assigned to the metamodel instance

C/C++ Prototype

```
HRESULT getPropertyValueExplicit (BSTR propertyKey,
   BSTR* propertyValue)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getTag

Read method

Description

The **getTag** method returns the tag for the specified model element.

Visual Basic

Syntax

```
getTag (name As String) As RPTag
```

Arguments

`name`

`The name of the element whose tag you want to retrieve`

Return Value

The tag

C/C++ Prototype

```
HRESULT getTag (BSTR name, IRPTag **pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

openFeaturesDialog

Description

The method `openFeaturesDialog` displays the information for an element in the Features dialog. Depending on the parameter you provide, a new Features dialog will be opened or an already-open Features dialog will be used to display the information:

- 1 - opens a new dialog
- 0 - displays information in already-open dialog; opens a new dialog is there is not a Features dialog currently open.

Syntax

```
openFeaturesDialog(newDialog As Long)
```

Example

The code below displays the information for class C in a new Features dialog. P is the name of the package that contains the class.

```
Dim proj As RPProject
Dim m As RPModelElement
Set proj = getProject
Set m = proj.findElementsByFullName("C in P", "Class")
m.openFeaturesDialog(1)
```

HighLightElement

Read method

Description

The **HighLightElement** method highlights the current element.

Visual Basic

Syntax

```
HighLightElement ()
```

C/C++ Prototype

```
HRESULT highLightElement ()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeProperty

Write method

Description

The **removeProperty** method removes the property from the model element.

This method is capable of flagging an error.

Visual Basic

Syntax

```
removeProperty (propertyKey As String)
```

Arguments

`propertyKey`
`The name of the property to be removed`

C/C++ Prototype

```
HRESULT removeProperty (BSTR propertyKey)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeStereotype

Write method

Description

The **removeStereotype** method removes the stereotype from the model element.

Visual Basic

Syntax

```
removeSterotype (stereotype As RPSterotype)
```

Arguments

`stereotype`

The name of the stereotype to be removed

C/C++ Prototype

```
HRESULT removeStereotype (IRPStereotype* stereotype)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setPropertyValue

Write method

Description

The **setPropertyValue** method modifies the value of the specified property.

This method is capable of flagging an error. For more information, see **Error Handling**

Visual Basic

Syntax

```
setPropertyValue (propertyKey As String,
   propertyValue As String)
```

Arguments

`propertyKey`

`The name of the property whose value is to be set`

Note: When providing the name of the property, the delimiter used should be a period, not a colon, for example, CPP_CG.Attribute.AccessorGenerate.

`propertyValue`

`The value to be assigned to the property`

C/C++ Prototype

```
HRESULT setPropertyValue (BSTR propertyKey,
   BSTR propertyValue)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Sample Code

```
element.setPropertyValue "CPP_CG.Attribute.AccessorGenerate", "True"
```

setTagValue

Write method

Description

The **setTagValue** method assigns the specified tag to the current model element.

Visual Basic

Syntax

```
setTagValue (tag As RPTag, val As String) AS RPTag
```

Arguments

`tag`

`The name of the tag to add to the element`

`val`

`The value of the new tag`

Return Value

The new tag

C/C++ Prototype

```
HRESULT setTagValue (IRPTag *tag, BSTR val,
   IRPTag **pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

synchronizeTemplateInstantiation

Write method

Description

The **synchronizeTemplateInstantiation** method is used to synchronize between a template and a template instantiation parameter. For example, if you add a parameter to a template, this method updates the template instantiation. It is activated on template instantiation.

Visual Basic

Syntax

```
synchronizeTemplateInstantiation ()
```

C/C++ Prototype

```
HRESULT synchronizeTemplateInstantiation ()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPModule Interface

The `IRPModule` interface represents a Rhapsody module. It inherits from `IRPInstance`.

IRPNode Interface

The `IRPNode` interface represents a node. It derives from `IRPClassifier`.

VB Properties

Name	Type	Access	Description
componentInstances	`RPCollection`	RO	The list of component instances
CPUType	`String`	RW	The CPU type

Method Summary

addComponentInstance	Adds a new component instance
deleteComponentInstance	Deletes the specified component instance
findComponentInstance	Retrieves the specified component instance

addComponentInstance

Write method

Description

The **addComponentInstance** method adds a component instance.

Visual Basic

Syntax

```
addComponentInstance (name As String)
   As RPComponentInstance
```

Arguments

`name`

`The name of the new component instance`

Return Value

The new component instance

C/C++ Prototype

```
HRESULT addComponentInstance (BSTR name,
   IRPComponentInstance** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteComponentInstance

Write method

Description

The **deleteComponentInstance** method deletes the specified component instance.

Visual Basic

Syntax

```
deleteComponentInstance (BSTR name)
```

Arguments

`name`

`The name of the new component instance`

C/C++ Prototype

```
HRESULT deleteComponentInstance (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findComponentInstance

Read method

Description

The **findComponentInstance** method retrieves the specified component instance.

Visual Basic

Syntax

```
findComponentInstance (name As String)
   As RPComponentInstance
```

Arguments

`name`

`The name of the component instance to look for`

Return Value

The component instance

C/C++ Prototype

```
HRESULT findComponentInstance (BSTR name,
   IRPComponentInstance** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPObjectModelDiagram Interface

The `IRPObjectModelDiagram` interface represents an object model diagram. It inherits from `IRPDiagram`.

Currently, `IRPObjectModelDiagram` does not expose additional functionality to `IRPDiagram`.

IRPOperation Interface

The `IRPOperation` interface is an abstract class that represents an operation. It derives from `IRPInterfaceItem`.

VB Properties

Name	Type	Access	Description
body	`String`	RW	The body of the operation.
flowchart	`RPFlowchart`	RW	The activity chart of the operation.
initializer	`String`	RW	If this operation is a constructor, this is a string containing the constructor initialization list.
isAbstract	`Long`	RW	This is equal to 1 (as opposed to 0) if the operation is abstract.
isCgDerived	`Long`	RO	This is equal to 1 (as opposed to 0) if this operation is automatically generated by Rhapsody 6.1.
isConst	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is a `const`.
isCtor	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is a constructor.
isDtor	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is a destructor.
isFinal	`Long`	RW	This is equal to 1 (as opposed to 0) if the operation is final (Java only).

Name	Type	Access	Description
isStatic	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is a static.
isTrigger	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is triggered.
isVirtual	`Long`	RO	This is equal to 1 (as opposed to 0) if the operation is virtual.
returns	`RPClassifier`	RW	The return type of this operation. In previous versions, this property was called “returnType”.
returnType	`RPType`	RW	The return type of this operation.
visibility	`String`	RW	The visibility of this operation (public, protected, or private).

Method Summary

deleteArgument	Deletes an argument from the current operation
deleteFlowchart	Deletes an activity diagram from the current operation
getImplementationSignature	Returns a string representing the signature of the operation as it will appear in the generated code.
setReturnTypeDeclaration	Specifies a new value for the return type declaration

deleteArgument

Write method

Description

The **deleteArgument** method deletes an argument from the current operation.

Visual Basic

Syntax

```
deleteArgument (argument As RPArgument)
```

Arguments

`argument`

The argument to be deleted

C/C++ Prototype

```
HRESULT deleteArgument (IRPArgument* argument)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFlowchart

Write method

Description

The **deleteFlowchart** method deletes an activity diagram from the current operation.

Visual Basic

Syntax

```
deleteFlowchart()
```

C/C++ Prototype

```
HRESULT deleteFlowchart()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getImplementationSignature

Returns a string representing the signature of the operation as it will appear in the generated code.

setReturnTypeDeclaration

Write method

Description

The **setReturnTypeDeclaration** method specifies a new value for the return type declaration.

Visual Basic

Syntax

```
setReturnTypeDeclaration (newVal As String)
```

Arguments

`newVal`

`The new value for the return type declaration`

C/C++ Prototype

```
HRESULT setReturnTypeDeclaration (BSTR newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPPackage Interface

The `IRPPackage` interface represents Rhapsody packages, which are essentially definition spaces for diagrams and other model elements. It inherits from `IRPUnit`.

VB Properties

Name	Type	Access	Description
actors	Collection of `RPActors`	RO	The collection of actors defined in this package
classes	Collection of `RPClasses`	RO	The collection of classes defined in this package
collaboration Diagrams	Collection of `RPCollaboration Diagrams`	RO	The collection of collaboration diagrams defined in this package
componentDiagrams	Collection of `RPComponent Diagrams`	RO	The collection of component diagrams defined in this package
deploymentDiagrams	Collection of `RPDeployment Diagrams`	RO	The collection of deployment diagrams defined in the package
events	Collection of `RPEvents`	RO	The collection of events defined in this package
eventsBaseId	Long	RO	The event base identifier
globalFunctions	Collection of `RPOperations`	RO	The collection of global functions defined in the package
globalObjects	Collection of `RPRelations`	RO	The collection of global objects defined in the package
globalVariables	Collection of `RPAttributes`	RO	The collection of global variables defined in the package
flowItems	Collection of `RPFlowItems`	RO	The collection of information items defined in this package
flows	Collection of `RPFlows`	RO	The collection of flows defined in this package
nestedClassifiers	Collection of classifiers	RO	The collection of classifiers defined in this package
nodes	`RPCollection`	RO	The list of package nodes
objectModelDiagrams	Collection of `RPObjectDiagrams`	RO	The collection of object model diagrams defined in this package

Name	Type	Access	Description
packages	Collection of `RPPackages`	RO	The collection of packages nested inside this package
SavedInSeperateDirectory	Long	RW	Determines whether each package is saved in a separate directory
sequenceDiagrams	Collection of `RPSequence Diagrams`	RO	The collection of sequence diagrams defined in this package
types	Collection of `RPType`	RO	The collection of data types defined in this package
useCaseDiagrams	Collection of `RPUseCaseDiagrams`	RO	The collection of use case diagrams defined in this package
useCases	Collection of `RPUseCases`	RO	The collection of use cases defined in this package
userDefinedStereotypes	Collection of `RPStereotypes`	RO	The collection of user-defined stereotypes defined in this package

Method Summary

addActor	Adds the specified actor to the current package
addClass	Adds the specified class to the current package
addCollaborationDiagram	Adds the specified collaboration diagram to the current package
addComponentDiagram	Adds the specified component diagram to the current package
addDeploymentDiagram	Adds the specified deployment diagram to the current package
addEvent	Adds the specified event to the current package
addFlowItems	Adds the specified flowItem to the **flowItems** collection
addFlows	Adds the specified flow to the **flows** collection
addGlobalFunction	Adds the specified global function to this package
addGlobalObject	Adds a global object (instance) to the current package

addGlobalVariable	Adds the specified global variable to the current package
addLink	Adds a link between two objects to the current package
addNestedPackage	Adds a nested package to the current package
addNode	Adds the specified node to the current package
addObjectModelDiagram	Adds the specified OMD to the current package
addSequenceDiagram	Adds the specified sequence diagram to the current package
addType	Adds the specified type to the current package
addUseCase	Adds the specified use case to the current package
addUseCaseDiagram	Adds the specified UCD to the current package
deleteActor	Deletes the specified actor from the current package
deleteClass	Deletes the specified class from the current package
deleteCollaborationDiagram	Deletes the specified collaboration diagram from the current package
deleteComponentDiagram	Deletes the specified component diagram from the current package
deleteDeploymentDiagram	Deletes the specified deployment diagram from the current package
deleteEvent	Deletes the specified event from the current package
deleteFlowItems	Deletes the specified flowItem from the **flowItems** collection
deleteFlows	Deletes the specified flow from the **flows** collection
deleteGlobalFunction	Deletes the specified global function from the current package
deleteGlobalObject	Deletes the specified global object from the current package
deleteGlobalVariable	Deletes the specified global variable from the current package
deleteNode	Deletes the specified node from the current package
deleteObjectModelDiagram	Deletes the specified OMD from the current package
deletePackage	Deletes the current package

deleteSequenceDiagram	Deletes the specified sequence diagram from the current package
deleteType	Deletes the specified type from the current package
deleteUseCase	Deletes the specified use case from the current package
deleteUseCaseDiagram	Deletes the specified use case diagram from the current package
findActor	Retrieves the specified actor, if it belongs to the current package
findAllByName	Searches all the elements and finds the first element of the specified name and metaclass in the current package
findClass	Retrieves the specified class, if it belongs to the current package
findEvent	Retrieves the specified event, if it belongs to the current package
findGlobalFunction	Retrieves the specified global function, if it belongs to the current package
findGlobalObject	Retrieves the specified global object, if it belongs to the current package
findGlobalVariable	Retrieves the specified global variable, if it belongs to the current package
findNode	Retrieves the specified node, if it belongs to the current package
findType	Retrieves the specified data type, if it belongs to the current package
findUsage	Retrieves the usage of the specified element in the current package
findUseCase	Retrieves the specified use case, if it belongs to the current package
recalculateEventsBaseId	Recalculates the events base ID of the package

addActor

Write method

Description

The **addActor** method adds the specified actor to the current package.

Visual Basic

Syntax

```
addActor (name As String) As RPActor
```

Arguments

`name`

`The name of actor to add to this package`

Return Value

The new actor added to the package

C/C++ Prototype

```
HRESULT addActor (BSTR name, IRPActor** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addClass

Write method

Description

The **addClass** method adds the specified class to the current package.

Visual Basic

Syntax

```
addClass (name As String) As RPClass
```

Arguments

`name`

`The name of the class to be added`

Return Value

The class added to this package

C/C++ Prototype

```
HRESULT addClass (BSTR name, IRPClass** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addCollaborationDiagram

Write method

Description

The **addCollaborationDiagram** method adds the specified collaboration diagram to the current package.

Visual Basic

Syntax

```
addCollaborationDiagram (name As String)
   As RPCollaborationDiagram
```

Arguments

`name`

`The name of the collaboration diagram to be added`

Return Value

The new collaboration diagram added to this package

C/C++ Prototype

```
HRESULT addCollaborationDiagram (BSTR name,
   IRPCollaborationDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addComponentDiagram

Write method

Description

The **addComponentDiagram** method adds the specified component diagram to the current package.

Visual Basic

Syntax

```
addComponentDiagram (name As String)
   As RPComponentDiagram
```

Arguments

`name`

`The name of the component diagram to be added`

Return Value

The new component diagram added to this package

C/C++ Prototype

```
HRESULT addComponentDiagram (BSTR name,
   IRPComponentDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addDeploymentDiagram

Write method

Description

The **addDeploymentDiagram** method adds the specified deployment diagram to the current package.

Visual Basic

Syntax

```
addDeploymentDiagram (name As String)
   As RPDeploymentDiagram
```

Arguments

`name`

`The name of the deployment diagram to be added`

Return Value

The new deployment diagram added to this package

C/C++ Prototype

```
HRESULT addDeploymentDiagram (BSTR name,
   IRPDeploymentDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addEvent

Write method

Description

The **addEvent** method adds the specified event to the current package.

Visual Basic

Syntax

```
addEvent (name As String) As RPEvent
```

Arguments

`name`

`The name of the event to be added`

Return Value

The new event added to this package

C/C++ Prototype

```
HRESULT addEvent (BSTR name, IRPEvent** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFlowItems

Write method

Description

The **addFlowItems** method adds the specified flowItem to the **flowItems** collection.

Visual Basic

Syntax

```
addFlowItems (name As String) As RPFlowItem
```

Arguments

`name`

`The name of the flowItem to add to the collection`

Return Value

The new flowItem added to this package

C/C++ Prototype

```
HRESULT addFlowItems (BSTR name,
   IRPFlowItem** ppItem)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addFlows

Write method

Description

The **addFlows** method adds the specified flow to the **flows** collection.

Visual Basic

Syntax

```
addFlows (name As String) As RPFlow
```

Arguments

`name`

`The name of the flow to add to the collection`

Return Value

The new flow added to this package

C/C++ Prototype

```
HRESULT addFlows (BSTR name, IRPFlow** ppFlow)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addGlobalFunction

Write method

Description

The **addGlobalFunction** method adds the specified global function to this package.

Visual Basic

Syntax

```
addGlobalFunction (name As String) As RPOperation
```

Arguments

`name`

`The global function to be added`

Return Value

The new global function added to this package

C/C++ Prototype

```
HRESULT addGlobalFunction (BSTR name,
   IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addGlobalObject

Write method

Description

The **addGlobalObject** method adds a global object (instance) to the current package.

Visual Basic

Syntax

```
addGlobalObject (name As String,
   otherClassName As String,
   otherClassPackageName As String) As RPRelation
```

Arguments

`name`

`The name of the global instance to add`

`otherClassName`

`The name of the class-defining instance`

`otherClassPackageName`

`The name of the package with the class-defining instance`

Return Value

The new global instance in this package

C/C++ Prototype

```
HRESULT addGlobalObject (BSTR name, BSTR otherClassName,
   BSTR otherClassPackageName, IRPRelation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addGlobalVariable

Write method

Description

The **addGlobalVariable** method adds the specified global variable to the current package.

Visual Basic

Syntax

```
addGlobalVariable (name As String) As RPAttribute
```

Arguments

`name`

`The name of the global variable to add`

Return Value

The new global variable added to this package

C/C++ Prototype

```
HRESULT addGlobalVariable (BSTR name,
   IRPAttribute** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addLink

The `addLink` method adds a link between two objects to the current package.

Syntax

```
addLink(fromPart As RPInstance, toPart As RPInstance, assoc As RPRelation,
fromPort As RPPort, toPort As RPPort) As RPLink
```

Arguments

`fromPart, toPart`

The objects that are being linked.

`assoc`

Association that is being instantiated (optional).

`fromPort, toPort`

Ports that are being linked (optional).

addNestedPackage

Write method

Description

The **addNestedPackage** method adds a nested package to the current package.

Visual Basic

Syntax

```
addNestedPackage (name As String) As RPPackage
```

Arguments

`name`

`The name of the nested package to add`

Return Value

The nested package added to this package

C/C++ Prototype

```
HRESULT addNestedPackage (BSTR name, IRPPackage** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addNode

Write method

Description

The **addNode** method adds a node to the current package.

Visual Basic

Syntax

```
addNode (name As String) As RPNode
```

Arguments

`name`

`The name of the node to add`

Return Value

The new node added to this package

C/C++ Prototype

```
HRESULT addNode (BSTR name, IRPNode** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addObjectModelDiagram

Write method

Description

The **addObjectModelDiagram** method adds the specified OMD to the current package.

Visual Basic

Syntax

```
addObjectModelDiagram (name As String)
   As RPObjectModelDiagram
```

Arguments

`name`

`The name of the OMD to add`

Return Value

The OMD added to this package

C/C++ Prototype

```
HRESULT addObjectModelDiagram (BSTR name,
   IRPObjectModelDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addSequenceDiagram

Write method

Description

The **addSequenceDiagram** method adds the specified sequence diagram to the current package.

Visual Basic

Syntax

```
addSequenceDiagram (name As String) As RPSequenceDiagram
```

Arguments

`name`

`The name of the sequence diagram to add`

Return Value

The sequence diagram added to this package

C/C++ Prototype

```
HRESULT addSequenceDiagram (BSTR name,
   IRPSequenceDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addType

Write method

Description

The **addType** method adds the specified type to the current package.

Visual Basic

Syntax

```
addType (name As String) As RPType
```

Arguments

`name`

`The name of the type to add`

Return Value

The new type added to this package

C/C++ Prototype

```
HRESULT addType (BSTR name, IRPType** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addUseCase

Write method

Description

The **addUseCase** method adds the specified use case to the current package.

Visual Basic

Syntax

```
addUseCase (name As String) As RPUseCase
```

Arguments

`name`

`The name of the use case to add`

Return Value

The use case added to this package

C/C++ Prototype

```
HRESULT addUseCase (BSTR name, IRPUseCase** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addUseCaseDiagram

Write method

Description

The **addUseCaseDiagram** method adds the specified UCD to the current package.

Visual Basic

Syntax

```
addUseCaseDiagram (name As String) As RPUseCaseDiagram
```

Arguments

`name`

`The name of the UCD to add`

Return Value

The UCD added to this package

C/C++ Prototype

```
HRESULT addUseCaseDiagram (BSTR name,
   IRPUseCaseDiagram** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteActor

Write method

Description

The **deleteActor** method deletes the specified actor from the current package.

Visual Basic

Syntax

```
deleteActor (actor As RPActor)
```

Arguments

`actor`

`The actor to delete`

C/C++ Prototype

```
HRESULT deleteActor (IRPActor *actor)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteClass

Write method

Description

The **deleteClass** method deletes the specified class from the current package.

Visual Basic

Syntax

```
deleteClass (theClass As RPClass)
```

Arguments

`theClass`

`The class to delete`

C/C++ Prototype

```
HRESULT deleteClass (IRPClass *theClass)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteCollaborationDiagram

Write method

Description

The **deleteCollaborationDiagram** method deletes the specified collaboration diagram from the current package.

Visual Basic

Syntax

```
deleteCollaborationDiagram (name As String)
```

Arguments

`name`

`The name of the collaboration diagram to delete`

C/C++ Prototype

```
HRESULT deleteCollaborationDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteComponentDiagram

Write method

Description

The **deleteComponentDiagram** method deletes the specified component diagram from the current package.

Visual Basic

Syntax

```
deleteComponentDiagram (name As String)
```

Arguments

`name`

`The name of the component diagram to delete`

C/C++ Prototype

```
HRESULT deleteComponentDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteDeploymentDiagram

Write method

Description

The **deleteDeploymentDiagram** method deletes the specified deployment diagram from the current package.

Visual Basic

Syntax

```
deleteDeploymentDiagram (name As String)
```

Arguments

`name`

`The name of the deployment diagram to delete`

C/C++ Prototype

```
HRESULT deleteDeploymentDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteEvent

Write method

Description

The **deleteEvent** method deletes the specified event from the current package.

Visual Basic

Syntax

```
deleteEvent (event As RPEvent)
```

Arguments

`event`

`The event to delete`

C/C++ Prototype

```
HRESULT deleteEvent (IRPEvent *event)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFlowItems

Write method

Description

The **deleteFlowItems** method deletes the specified flowItem from the **flowItems** collection.

Visual Basic

Syntax

```
deleteFlowItems (pItem As RPFlowItem)
```

Arguments

`pItem`

`The name of the flowItem to remove from the collection`

C/C++ Prototype

```
HRESULT deleteFlowItems (IRPFlowItem* pItem)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteFlows

Write method

Description

The **deleteFlows** method deletes the specified flow from the **flows** collection.

Visual Basic

Syntax

```
deleteFlows (pFlow As RPFlow)
```

Arguments

pFlow

The name of the flow to delete from the collection

C/C++ Prototype

```
HRESULT deleteFlows (IRPFlow* pFlow)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

deleteGlobalFunction

Write method

Description

The **deleteGlobalFunction** method deletes the specified global function from the current package.

Visual Basic

Syntax

```
deleteGlobalFunction (operation As RPOperation)
```

Arguments

`operation`

`The global function to delete`

C/C++ Prototype

```
HRESULT deleteGlobalFunction (IRPOperation* operation)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteGlobalObject

Write method

Description

The **deleteGlobalObject** method deletes the specified global object from the current package.

Visual Basic

Syntax

```
deleteGlobalObject (relation As RPRelation)
```

Arguments

`relation`

`The global object to delete`

C/C++ Prototype

```
HRESULT deleteGlobalObject (IRPRelation* relation)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteGlobalVariable

Write method

Description

The **deleteGlobalVariable** method deletes the specified global variable from the current package.

Visual Basic

Syntax

```
deleteGlobalVariable (attribute As RPAttribute)
```

Arguments

`attribute`

`The global variable to delete`

C/C++ Prototype

```
HRESULT deleteGlobalVariable (IRPAttribute* attribute)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteNode

Write method

Description

The **deleteNode** method deletes the specified node from the current package.

Visual Basic

Syntax

```
deleteNode (name As String)
```

Arguments

`name`

`The name of the node to delete`

C/C++ Prototype

```
HRESULT deleteNode (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteObjectModelDiagram

Write method

Description

The **deleteObjectModelDiagram** method deletes the specified OMD from the current package.

Visual Basic

Syntax

```
deleteObjectModelDiagram (name As String)
```

Arguments

`name`

`The name of the OMD to delete`

C/C++ Prototype

```
HRESULT deleteObjectModelDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deletePackage

Write method

Description

The **deletePackage** method deletes the current package.

Visual Basic

Syntax

```
deletePackage()
```

C/C++ Prototype

```
HRESULT deletePackage()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteSequenceDiagram

Write method

Description

The **deleteSequenceDiagram** method deletes the specified sequence diagram from the current package.

Visual Basic

Syntax

```
deleteSequenceDiagram (name As String)
```

Arguments

`name`

`The name of the sequence diagram to delete`

C/C++ Prototype

```
HRESULT deleteSequenceDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteType

Write method

Description

The **deleteType** method deletes the specified type from the current package.

Visual Basic

Syntax

```
deleteType (type As RPType)
```

Arguments

`type`

`The type to delete`

C/C++ Prototype

```
HRESULT deleteType (IRPType *type)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteUseCase

Write method

Description

The **deleteUseCase** method deletes the specified use case from the current package.

Visual Basic

Syntax

```
deleteUseCase (useCase As RPUseCase)
```

Arguments

`useCase`

The use case to delete

C/C++ Prototype

```
HRESULT deleteUseCase (IRPUseCase *useCase)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteUseCaseDiagram

Write method

Description

The **deleteUseCaseDiagram** method deletes the specified use case diagram from the current package.

Visual Basic

Syntax

```
deleteUseCaseDiagram (name As String)
```

Arguments

`name`

`The name of the UCD to delete`

C/C++ Prototype

```
HRESULT deleteUseCaseDiagram (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findActor

Read method

Description

The **findActor** method retrieves the specified actor, if it belongs to the current package.

Visual Basic

Syntax

```
findActor (name As String) As RPActor
```

Arguments

`name`

`The name of the actor to find`

Return Value

If found, the `RPActor`; otherwise, NULL.

C/C++ Prototype

```
HRESULT findActor (BSTR name, IRPActor** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findAllByName

Read method

Description

The **findAllByName** method searches all the elements and finds the first element of the specified name and metaclass in the current package.

Visual Basic

Syntax

```
findAllByName (name As String, metaClass As String)
   As RPModelElement
```

Arguments

`name`

`The name of the element to find`

`metaclass`

`The name of the metaclass to find`

Return Value

The first `RPModelElement` that matches the specified name and metaclass, or NULL if not found

C/C++ Prototype

```
HRESULT findAllByName (BSTR name, BSTR metaClass,
   IRPModelElement** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findClass

Read method

Description

The **findClass** method retrieves the specified class, if it belongs to the current package.

Visual Basic

Syntax

```
findClass (name As String) As RPClass
```

Arguments

`name`

`The name of the class to find`

Return Value

The `RPClass`, or NULL if not found

C/C++ Prototype

```
HRESULT findClass (BSTR name, IRPClass** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findEvent

Read method

Description

The **findEvent** method retrieves the specified event, if it belongs to the current package.

Visual Basic

Syntax

```
findEvent (name As String) As RPEvent
```

Arguments

`name`

`The name of the event to find`

Return Value

The `RPEvent*`, or NULL if not found

C/C++ Prototype

```
HRESULT findEvent (BSTR name, IRPEvent** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findGlobalFunction

Read method

Description

The **findGlobalFunction** method retrieves the specified global function, if it belongs to the current package.

Visual Basic

Syntax

```
findGlobalFunction (name As String) As RPOperation
```

Arguments

`name`

`The name of the global function to find`

Return Value

The `RPOperation`, or NULL if not found

C/C++ Prototype

```
HRESULT findGlobalFunction (BSTR name,
   IRPOperation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findGlobalObject

Read method

Description

The **findGlobalObject** method retrieves the specified global object, if it belongs to the current package.

Visual Basic

Syntax

```
findGlobalObject (name As String) As RPRelation
```

Arguments

`name`

`The name of the global object to find`

Return Value

The `RPRelation`, or NULL if not found

C/C++ Prototype

```
HRESULT findGlobalObject (BSTR name, IRPRelation** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findGlobalVariable

Read method

Description

The **findGlobalVariable** method retrieves the specified global variable, if it belongs to the current package.

Visual Basic

Syntax

```
findGlobalVariable (name As String) As RPAttribute
```

Arguments

`name`

`The name of the global variable to look for`

Return Value

The `RPAttribute`, or NULL if not found

C/C++ Prototype

```
HRESULT findGlobalVariable (BSTR name,
   IRPAttribute** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findNode

Read method

Description

The **findNode** method retrieves the specified node, if it belongs to the current package.

Visual Basic

Syntax

```
findNode (name As String) As RPNode
```

Arguments

`name`

`The name of the node to look for`

Return Value

The `RPNode`, or NULL if not found

C/C++ Prototype

```
HRESULT findNode (BSTR name, IRPNode** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findType

Read method

Description

The **findType** method retrieves the specified data type, if it belongs to the current package.

Visual Basic

Syntax

```
findType (name As String) As RPType
```

Arguments

`name`

`The name of the type to find`

Return Value

The `RPType`, or NULL if not found

C/C++ Prototype

```
HRESULT findType (BSTR name, IRPType** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findUsage

Read method

Description

The **findUsage** method retrieves the usage of the specified element in the current package.

Visual Basic

Syntax

```
findUsage (objToFind As IRPModelElement) As RPCollection
```

Arguments

`objToFind`

`The model element to look for in the current package`

Return Value

The collection of model elements that reference `objToFind` in this package

C/C++ Prototype

```
HRESULT findUsage (IRPModelElement* objToFind,
   IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findUseCase

Read method

Description

The **findUseCase** method retrieves the specified use case, if it belongs to the current package.

Visual Basic

Syntax

```
findUseCase (name As String) As RPUseCase
```

Arguments

`name`

`The name of the use case to find`

Return Value

The `RPUseCase`, or NULL if not found

C/C++ Prototype

```
HRESULT findUseCase (BSTR name, IRPUseCase** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

recalculateEventsBaseId

Write method

Description

The **recalculateEventsBaseId** method recalculates the events base ID of the package.

Visual Basic

Syntax

```
recalculateEventsBaseId() As Long
```

Return Value

The events base ID

C/C++ Prototype

```
HRESULT recalculateEventsBaseId (long *success)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPPin Interface

The `IRPPin` interface represents action pins added to actions, or activity parameters added to action blocks, in an activity diagram. It inherits from `IRPConnector`.

To add an action pin to an action, use `addConnector`, for example:

```
action1.addConnector("InPin")
```

or

```
action1.addConnector("OutPin")
```

VB Properties

Name	Type	Access	Description
isParameter	`long`	RW	Indicates whether the element is an action pin or an activity parameter. If this is equal to 1 (as opposed to 0), the element is an activity parameter.
pinDirection	`String`	RW	The possible values for this property are “In”, “Out”, “InOut”
pinType	`RPClassifier`	RW	Represents the pin’s argument type.

Sample Code

```
Sub action_pin_sample_IRPPin()

Dim currentProject As RPProject
Dim newPackage As RPPackage
Dim newClass As RPClass
Dim newActivityDiagram As RPFlowchart
Dim washingAction As RPState
Dim pinOnWashing As RPPin
Dim intType As RPModelElement

On Error GoTo errorHandlingCode

Set currentProject = getProject
```

```
Set newPackage = currentProject.addPackage("Package_One")
Set newClass = newPackage.addClass("Class_A")
Set newActivityDiagram = newClass.addActivityDiagram

' set to Analysis-only because action pins are only available on analysis-only diagrams
newActivityDiagram.isAnalysisOnly = 1

Set washingAction = newActivityDiagram.rootState.addState("Washing")

' create a pin whose direction is out
Set pinOnWashing = washingAction.addConnector("OutPin")

' set pin type to int
Set intType = currentProject.findNestedElementRecursive("int", "Type")
pinOnWashing.pinType = intType

Exit Sub
errorHandlingCode:
MsgBox errorMessage
End Sub
```

IRPPort Interface

The `IRPPort` interface represents a Rhapsody port. It inherits from `IRPInstance`.

VB Properties

Name	Type	Access	Description
contract	`RPClass`	RW	Specifies the port contract.
isBehavioral	`Long`	RW	Determines whether messages sent to the port are relayed to the owner class.
isReversed	`Long`	RW	If this is equal to 1 (as opposed to 0), the provided interfaces become the required interfaces, and the required interfaces become the provided interfaces.
providedInterfaces	Collection of `RPClasses`	RO	The collection of provided interfaces for the port.
requiredInterfaces	Collection of `RPClasses`	RO	The collection of required interfaces for the port.

Method Summary

addProvidedInterface	Adds the specified interface to the collection of provided interfaces
addRequiredInterface	Adds the specified interface to the collection of required interfaces
removeProvidedInterface	Removes the specified interface from the collection of provided interfaces
removeRequiredInterface	Removes the specified interface from the collection of required interfaces

Example

The following script converts a black-box analysis block to a white-box analysis block, and vice versa. It simply toggles all the ports of a block to behavioral or non-behavioral.

```
Public Sub ConvertPortsBB()
Dim curBlock As RPBlock
Dim port As RPPort

Set curBlock = getSelectedElement
For Each port In curBlock.ObjectAsObjectType.ports
port.isBehavioral = 1
Next

End Sub

Public Sub ConvertPortsWB()
Dim curBlock As RPBlock
Dim port As RPPort

Set curBlock = getSelectedElement
For Each port In curBlock.ObjectAsObjectType.ports
port.isBehavioral = 0
Next
End Sub
```

addProvidedInterface

Write method

Description

The **addProvidedInterface** method adds the specified interface to the collection of provided interfaces.

Visual Basic

Syntax

```
addProvidedInterface (newVal As RPClass)
```

Arguments

`newVal`

`The name of the class to add to the collection of provided interfaces for the port`

C/C++ Prototype

```
HRESULT addProvidedInterface (IRPClass* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addRequiredInterface

Write method

Description

The **addRequiredInterface** method adds the specified interface to the collection of required interfaces.

Visual Basic

Syntax

```
addRequiredInterface (newVal As RPClass)
```

Arguments

`newVal`

`The name of the class to add to the collection of required interfaces for the port`

C/C++ Prototype

```
HRESULT addRequiredInterface (IRPClass* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeProvidedInterface

Write method

Description

The **removeProvidedInterface** method removes the specified interface from the collection of provided interfaces.

Visual Basic

Syntax

```
removeProvidedInterface (newVal As RPClass)
```

Arguments

`newVal`

The name of the class to remove from the collection of provided interfaces for the port

C/C++ Prototype

```
HRESULT removeProvidedInterface (IRPClass* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

removeRequiredInterface

Write method

Description

The **removeRequiredInterface** method removes the specified interface from the collection of required interfaces.

Visual Basic

Syntax

```
removeRequiredInterface (newVal As RPClass)
```

Arguments

`newVal`

`The name of the class to remove from the collection of provided interfaces for the port`

C/C++ Prototype

```
HRESULT removeRequiredInterface (IRPClass* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPProfile Interface

The `IRPProfile` interface represents a profile. It inherits from `IRPPackage`.

IRPProject Interface

The `IRPProject` interface represents a Rhapsody project (model). Use the `Application.openProject()` method to obtain a handle to the project. The `IRPProject` object is a singleton instance that aggregates all other instances. This class inherits from `IRPPackage`.

`Project` is a concrete interface that inherits from `IRPPackage`.

VB Properties

Name	Type	Access	Description
activeComponent	`RPComponent`	RW	The active component in the package.
activeConfiguration	`RPConfiguration`	RW	The active configuration in the active component. The setting must be to a configuration from the active component, otherwise an error is flagged.
allStereotypes	Collection of `RPStereotypes`	RO	A collection of all the stereotypes used in the current project.
components	Collection of `RPComponents`	RO	A collection of all the components used in this project.
defaultDirectoryScheme	`String`	RW	The default directory scheme.
profiles	Collection of `RPProfiles`	RO	The collection of profiles used in this project.

Method Summary

addComponent	Adds the specified component to the current project
addPackage	Adds the specified package to the current project

addProfile	Adds the specified profile to the current project
checkEventsBaseIdsSolveCollisions	Checks the values of the events base IDs for all packages in the model, detects collisions between the IDs, and resolves any incorrect values and collisions
close	Closes the current project
deleteComponent	Deletes the specified component from the current project
findComponent	Retrieves the specified component from the current project
GenerateReport	Generates a ReporterPLUS report for the model.
getNewCollaboration	Retrieves the new collaboration for the current project
highlightFromCode	Takes a filename and line number as arguments and then highlights in the Rhapsody browser the element that is associated with the line of code specified.
importPackageFromRose	Imports the specified package from Rational Rose
importProjectFromRose	Imports the specified project from Rational Rose
recalculateEventsBaseIds	Recalculates the events base IDs used by Rhapsody 6.1
save	Saves the current project
saveAs	Saves the current project to the specified file name and location
setActiveComponent	Sets the active configuration for the current project
setActiveConfiguration	Sets the active configuration for the current project

addComponent

Write method

Description

The **addComponent** method adds the specified component to the current project.

Visual Basic

Syntax

```
addComponent (name As String) As RPComponent
```

Arguments

`name`

`The name of the component to add`

Return Value

The `RPComponent` added to the current project

C/C++ Prototype

```
HRESULT addComponent (BSTR name,
   IRPComponent** component)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addPackage

Write method

Description

The **addPackage** method adds the specified package to the current project.

Visual Basic

Syntax

```
addPackage (name As String) As RPPackage
```

Arguments

`name`

`The name of the package to add`

Return Value

The `RPPackage*` added to this project

C/C++ Prototype

```
HRESULT addPackage (BSTR name, IRPPackage** package)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addProfile

Write method

Description

The **addProfile** method adds the specified profile to the current project.

Visual Basic

Syntax

```
addProfile (name As String) As RPProfile
```

Arguments

`name`

`The name of the profile to add`

Return Value

The `RPProfile` added to this project

C/C++ Prototype

```
HRESULT addProfile (BSTR name, IRPProfile** profile)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

checkEventsBaseIdsSolveCollisions

Read method

Description

The **checkEventsBaseIdsSolveCollisions** method checks the values of the events base IDs for all packages in the model, detects collisions between the IDs, and resolves any incorrect values and collisions.

Visual Basic

Syntax

```
checkEventsBaseIdsSolveCollisions()
```

C/C++ Prototype

```
HRESULT checkEventsBaseIdsSolveCollisions()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

close

Read method

Description

The **close** method closes the current project.

Note that helper applications might not close the current document. Therefore, you should not use **close** in a VBA macro that you specify as a helper.

Visual Basic

Syntax

```
close()
```

C/C++ Prototype

```
HRESULT close()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteComponent

Write method

Description

The **deleteComponent** method deletes the specified component from the current project.

Visual Basic

Syntax

```
deleteComponent (component As RPComponent)
```

Arguments

component

The component to delete

C/C++ Prototype

```
HRESULT deleteComponent (IRPComponent* component)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findComponent

Read method

Description

The **findComponent** method retrieves the specified component from the current project.

Visual Basic

Syntax

```
findComponent (name As String) As RPComponent
```

Arguments

`name`

`The name of the component to find`

Return Value

The `RPComponent`, or NULL if not found

C/C++ Prototype

```
HRESULT findComponent (BSTR name, IRPComponent** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

GenerateReport

```
GenerateReport(modelscope As String, templatename As String, docType As
String, filename As String, showDocument As Long, silentMode As Long)
```

Allows you to generate a ReporterPLUS report for the model. (When this method is used to generate a report, the Rhapsody model is saved before the report is generated.)

modelscope—the name of the package for which the report should be generated. If empty, a report is generated for the entire model. (This is similar to the "scope" command-line option for ReporterPLUS.)

templatename—the name of the template to use. If empty, then the ReporterPLUS report generation wizard will be launched and it will display the name of the last template used.

docType—the type of output to generate (doc, html, ppt, txt). If empty, the ReporterPLUS report generation wizard will be launched and it will display the last output type used.

filename—the filename to use for the generated report. If empty, the ReporterPLUS report generation wizard will be displayed and it will display the filename of the last generated report.

showDocument—In general, the user will be asked if they want to view the report after generation only if they have requested this by selecting *View > Options > Ask to open after generating report* from the main menu in ReporterPLUS. However, if the user has specified silent generation mode using the parameter silentMode, this parameter can be used to request that the generated document be displayed. To display the report, set this parameter to 1, otherwise use 0.

silentMode—If the template name, document type, or output file name has not been specified using the appropriate parameter, the ReporterPLUS report generation wizard is displayed so the user can provide the missing information. This is the behavior if this parameter is set to 0. If you want to prevent the wizard from being launched in such cases, you can specify silent generation mode by setting this parameter to 1. If set to silent mode, no report will be generated if one or more of the above parameters was not provided. (The report generation status dialog is displayed regardless of the value of this parameter.)

Sample code:

```
Dim proj As RPProject

Set proj = getProject

proj.GenerateReport "", "C:\Rhapsody\reporterplus\Templates\Class.tpl",
"html", "C:\testreport.html", 0, 0
```

getNewCollaboration

Read method

Description

The **getNewCollaboration** method returns the new collaboration for the current project.

Visual Basic

Syntax

```
getNewCollaboration() As RPCollaboration
```

Return Value

The `RPCollaboration`

C/C++ Prototype

```
HRESULT getNewCollaboration(
   IRPCollaboration** collaboration)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

highlightFromCode

The method `highlightFromCode` takes a filename and line number as arguments and then highlights in the Rhapsody browser the element that is associated with the line of code specified.

The filename argument should consist of the absolute path for the file.

Syntax

```
highlightFromCode(filename As String, lineNumber As Long) As RPModelElement
```

Example

```
Dim proj As RPProject
Dim m As RPModelElement
Set proj = getProject
Set m =
proj.highlightFromCode("C:\Temp\P\DefaultComponent\DefaultConfig\C.cpp", 30)
```

importPackageFromRose

Write method

Description

The **importPackageFromRose** method imports the specified package from Rational Rose into Rhapsody 6.1.

Visual Basic

Syntax

```
importPackageFromRose (projectName As String,
   packageName As String, logFileName As String)
```

Arguments

`projectName`

`The name of the project`

`packageName`

`The name of the package`

`logFileName`

`The name of the log file`

C/C++ Prototype

```
importPackageFromRose (BSTR projectName,
   BSTR packageName, BSTR logFileName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

importProjectFromRose

Write method

Description

The **importProjectFromRose** method imports the specified project from Rational Rose into Rhapsody 6.1.

Visual Basic

Syntax

```
importProjectFromRose (projectName As String,
    logFileName As String)
```

Arguments

`projectName`

`The name of the project`

`logFileName`

`The name of the log file`

C/C++ Prototype

```
HRESULT importProjectFromRose (BSTR projectName,
    BSTR logFileName)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

recalculateEventsBaseIds

Write method

Description

The **recalculateEventsBaseIds** method recalculates the events base IDs used by the project.

Visual Basic

Syntax

```
recalculateEventsBaseIds ()
```

C/C++ Prototype

```
HRESULT recalculateEventsBaseIds ()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

save

Read method

Description

The **save** method saves the current project.

> **Note:** This method flags an error if one occurs.

Visual Basic

Syntax

```
save()
```

C/C++ Prototype

```
HRESULT save()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

saveAs

Read method

Description

The **saveAs** method saves the current project to the specified file name and location.

> **Note:** This method flags an error if one occurs.

Visual Basic

Syntax

```
saveAs (filename As String)
```

Arguments

`filename`

`The name of the file to which to save the project`

C/C++ Prototype

```
HRESULT saveAs (BSTR filename)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setActiveComponent

Write method

Description

The **setActiveComponent** method sets the active component for the current project.

> **Note:** This method flags an error if one occurs.

Visual Basic

Syntax

```
setActiveComponent (name As String)
```

Arguments

`name`

`The name of the active component`

C/C++ Prototype

```
HRESULT setActiveComponent (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setActiveConfiguration

Write method

Description

The **setActiveConfiguration** method sets the active configuration for the current project.

Visual Basic

Syntax

```
setActiveConfiguration (name As String)
```

Arguments

`name`

`The name of the active configuration`

C/C++ Prototype

```
HRESULT setActiveConfiguration (BSTR name)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPRelation Interface

The `IRPRelation` interface represents a relationship between two classes (`ofClass` and `otherClass`). It inherits from `IRPUnit`.

VB Properties

Name	Type	Access	Description
inverse	`RPRelation`	RO	If the relation is symmetric, this is a pointer to the peer relation.
isNavigable	`Long`	RW	A flag indicating whether the relation is navigable.
isSymmetric	`Long`	RO	A flag indicating whether the relation is bidirectional. If this is equal to 1, the Navigability property is set as navigable for both ends. If this is equal to 0, the navigability of the inverse RPRelation is set to None.
multiplicity	`String`	RW	The multiplicity of the relation.
ObjectAsObjectType	`RPClass`	RO	If this relation is a Rhapsody in C object, it is returned as a class. An object (in RiC) plays two roles: as an instance of some class and the class itself. When you get an object (say by querying the package owning it), it comes "wearing" the `IRPRelation` "hat." If you want to use it as a class (`object_type`) invoke this method on it and the return value is the same object "wearing" the `IRPClass` "hat."
ofClass	`RPClassifier`	RW	The source class of the relation.
otherClass	`RPClassifier`	RW	The target class of the relation.
qualifier	`String`	RW	The qualifier of the relation, if one exists.

Name	Type	Access	Description
relationLabel	`String`	RW	The link name given to the relation.
relationLinkName	`String`	RW	The name of the relation link
relationRoleName	`String`	RW	The name of role of the participating elements in the relation. A relation consists of two designations: a role name and a relation name. For example, two people can be in a relation called “marriage” (relation name) with each person designated by their role within the marriage as “spouse” (role name). For `IRPRelation` objects, the relation name is mapped to the `IRPModelElement` property name and the property `relationRoleName` is provided for the relation’s role name.
relationType	`String`	RW	The relation type (Association, Aggregation, or Composition).
visibility	`String`	RW	The visibility of the relation (Public, Protected, or Private).

Method Summary

isTypelessObject	Tests an object to see if it is defined explicitly or implicitly
makeUnidirect	Changes the current relation from a unidirectional (symmetric) one to one that is directional from the `me` of this relation to `me`’s inverse
setInverse	Adds or updates the inverse relation

isTypelessObject

Read method

Description

The **isTypelessObject** method tests an object to see if it is defined explicitly (“object of type X”) or implicitly (“typeless” or “unique”).

Visual Basic

Syntax

```
isTypelessObject() As Long
```

Return Value

1 if the relation is typeless; otherwise 0

C/C++ Prototype

```
HRESULT isTypelessObject (long *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

makeUnidirect

Write method

Description

The **makeUnidirect** method changes the current relation from a unidirectional (symmetric) one to one that is directional from the `me` of this relation to `me`'s inverse.

Visual Basic

Syntax

```
makeUnidirect()
```

C/C++ Prototype

```
HRESULT makeUnidirect()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setInverse

Write method

Description

The **setInverse** method adds or updates the inverse relation. It provides a means for turning a unidirectional relation into a symmetric one.

Visual Basic

Syntax

```
setInverse (roleName As String, linkType As String)
```

Arguments

`roleName`

`The role name for the relation`

`linkType`

`The type of link (unidirectional or symmetric)`

C/C++ Prototype

```
HRESULT setInverse (BSTR roleName, BSTR linkType)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPRequirement Interface

The `IRPRequirement` interface represents a Rhapsody requirement. It inherits from `IRPAnnotation`.

IRPSequenceDiagram Interface

The `IRPSequenceDiagram` interface represents a sequence diagram. It inherits from `IRPDiagram`.

Method Summary

getLogicalCollaboration	Retrieves the logic behind the collaboration diagram
getRelatedUseCases	Retrieves use cases related to the current sequence diagram

getLogicalCollaboration

Read method

Description

The **getLogicalCollaboration** method retrieves the logic behind the collaboration diagram.

Visual Basic

Syntax

```
getLogicalCollaboration() As RPCollaboration
```

Return Value

The collaboration diagram

C/C++ Prototype

```
HRESULT getLogicalCollaboration (
   IRPCollaboration** collaboration)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getRelatedUseCases

Read method

Description

The **getRelatedUseCases** method retrieves use cases related to the current sequence diagram.

Visual Basic

Syntax

```
getRelatedUseCases() As RPCollection
```

Return Value

A collection of use cases related to this sequence diagram

C/C++ Prototype

```
HRESULT getRelatedUseCases (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPState Interface

The `IRPState` interface represents a state in a statechart. It inherits from `IRPStateVertex`.

VB Properties

Name	Type	Access	Description
defaultTransition	`RPTransition*`	RO	The default transition of this state, if there is one.
entryAction	`String`	RW	The actions executed when this state is entered.
exitAction	`String`	RW	The actions executed when this state is exited.
isOverridden	`Long`	RO	If this is equal to 1 (as opposed to 0), the state is overridden. Currently, this property has not been implemented.
isReferenceActivity	`Long`	RO	If this is equal to 1 (as opposed to 0), the state is an activity reference.
itsStateChart	`RPStateChart`	RO	The statechart of this state.
itsSwimlane	`RPSwimlane`	RW	The swimlane of this state. Currently, this property has not been implemented.
nestedStateChart	`RPStateChart`	RO	The statechart nested inside of this state.
referenceToActivity	`RPModelElement`	RW	The referenced activity or activity diagram.

Name	Type	Access	Description
stateType	`String`	RW	The type of this state. The possible values are as follows: • `Or`—state that contains no concurrent states • `And`—state that contains two or more concurrent states • `LocalTermination`—termination state element • `Block`—action block element • `Action`—action element • `SubActivity`—subactivity element • `ObjectFlow`—object node element • `ReferenceActivity`—call behavior element • `CallOperation`—call operation element • `EventState`—send action element
subStateVertices	`RPCollection` of `RPStateVertex`	RO	A collection of transitions and states that connect to this state.

Method Summary

addConnector	Adds a connector to the statechart
addState	Adds a state to the statechart
addStaticReaction	Adds a static reaction to the statechart
addTerminationState	Adds a termination state to the statechart
createDefaultTransition	Creates a default transition in the statechart
createNestedStatechart	Creates a nested statechart
deleteConnector	Deletes the specified connector from the statechart
deleteStaticReaction	Deletes the specified static reaction from the statechart

getFullNameInStatechart	Returns the full text name of this state within its statecharts
getInheritsFrom	Returns the base state from which the current state inherits
getLogicalStates	Retrieves the list of logical states
getStaticReactions	Returns a collection of static reaction transitions originating from the current state
getSubStates	Returns a collection of substates belonging to the current state
isAnd	Determines whether this state is an And state
isCompound	Determines whether the current state is a compound state
isLeaf	Determines whether the current state is a leaf state
isRoot	Determines whether the current state is a root state
overrideInheritance	Overrides inheritance for the current state
resetEntryActionInheritance	Resets the inheritance of the entry action of the current state
resetExitActionInheritance	Resets the inheritance of the exit action of the current state
setStaticReaction	Sets the static reaction for the current state
unoverrideInheritance	Removes the override on inheritance for this state

addConnector

Write method

Description

The **addConnector** method adds a connector to the current state.

Visual Basic

Syntax

```
addConnector (type As String) As RPConnector
```

Arguments

`type`

`The connector type. The possible values are as follows:`

`Condition`

```
Fork
History
Join
Termination
```

Return Value

The new connector

C/C++ Prototype

```
HRESULT addConnector (BSTR type,
   IRPConnector** connector)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addState

Write method

Description

The **addState** method adds a new state to the statechart.

Visual Basic

Syntax

```
addState (name As String) As RPState
```

Arguments

`name`

`The name of the new state`

Return Value

The new state added to the statechart

C/C++ Prototype

```
HRESULT addState (BSTR name, IRPState** state)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addStaticReaction

Write method

Description

The **addStaticReaction** method adds a static reaction to the state.

Visual Basic

Syntax

```
addStaticReaction (trigger As RPInterfaceItem)
   As RPTransition
```

Arguments

```
trigger
```

The trigger to add to the statechart

Return Value

The new static reaction

C/C++ Prototype

```
HRESULT addStaticReaction (IRPInterfaceItem* trigger,
   IRPTransition** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addTerminationState

Write method

Description

The **addTerminationState** method adds a termination state to the statechart.

Visual Basic

Syntax

```
addTerminationState() As RPState
```

Return Value

The new termination state

C/C++ Prototype

```
HRESULT addTerminationState (IRPState** state)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

createDefaultTransition

Write method

Description

The **createDefaultTransition** method creates a default transition.

Visual Basic

Syntax

```
createDefaultTransition (from As RPState) As RPTransition
```

Arguments

`from`

`The default state to which the default transition points`

Return Value

The default transition

C/C++ Prototype

```
HRESULT createDefaultTransition (IRPState* from,
    IRPTransition** transition)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

createNestedStatechart

Write method

Description

The **createNestedStatechart** method creates a nested statechart (substatechart).

Visual Basic

Syntax

```
createNestedStatechart() As RPStatechart
```

Return Value

The nested statechart

C/C++ Prototype

```
HRESULT createNestedStatechart (IRPStatechart** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteConnector

Write method

Description

The **deleteConnector** method deletes the specified connector from the statechart.

Visual Basic

Syntax

```
deleteConnector (connector As RPConnector)
```

Arguments

`connector`

The connector to delete

C/C++ Prototype

```
HRESULT deleteConnector (IRPConnector* connector)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteStaticReaction

Write method

Description

The **deleteStaticReaction** method deletes the specified static reaction.

Visual Basic

Syntax

```
deleteStaticReaction (pVal As RPTransition)
```

Argument

pVal

The static reaction to delete

C/C++ Prototype

```
HRESULT deleteStaticReaction (IRPTransition *pVal)
```

Return Value

HRESULT (0 for success, or a signed integer error code)

entryAction

Write method

Description

The **entryAction** method specifies an entry action for the state.

Visual Basic

Syntax

```
entryAction(body As String)
```

Arguments

body

The entry action

C/C++ Prototype

```
HRESULT entryAction(BSTR body)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

exitAction

Write method

Description

The **exitAction** method defines an exit action for the state.

Visual Basic

Syntax

```
exitAction(body As String)
```

Arguments

`body`

`The exit action`

C/C++ Prototype

```
HRESULT exitAction(BSTR body)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getFullNameInStatechart

Read method

Description

The **getFullNameInStatechart** method returns the full text name of this state within its statecharts.

Dot notation is used to indicate statechart nesting. For example, if statechart `C` is in statechart `B`, which is in statechart `A`, the full text name of the `C` statechart is `A.B.C`.

Visual Basic

Syntax

```
getFullNameInStatechart() As String
```

Return Value

The full textual name of a state within its statecharts

C/C++ Prototype

```
HRESULT getFullNameInStatechart (BSTR* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getInheritsFrom

Read method

Description

The **getInheritsFrom** method returns the base state from which the current state inherits.

Visual Basic

Syntax

```
getInheritsFrom() As RPState
```

Return Value

The base state that this state inherits from

C/C++ Prototype

```
HRESULT getInheritsFrom (IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getLogicalStates

Read method

Description

The **getLogicalStates** method retrieves the list of logical states.

Visual Basic

Syntax

```
getLogicalStates() As RPCollection
```

Return Value

The list of logical states

C/C++ Prototype

```
HRESULT getLogicalStates (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getStaticReactions

Read method

Description

The **getStaticReactions** method returns a collection of static reaction transitions originating from the current state.

Given a transition with a trigger `T`, guard condition `G`, and static reactions `A`, if `T` occurs and `G` is true, the static reactions (also known as reactions in state) are executed while the object is still in its original state.

Visual Basic

Syntax

```
getStaticReactions() As RPCollection
```

Return Value

A collection of the static reaction transitions originating from the current state

C/C++ Prototype

```
HRESULT getStaticReactions (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getSubStates

Read method

Description

The **getSubStates** method returns a collection of substates belonging to the current state.

Typically, this method retrieves the state members of a state (“substates”), unless the state contains a nested statechart. In this case, to see the substates, you must descend further into the nested statechart.

Visual Basic

Syntax

```
getSubStates() As RPCollection
```

Return Value

A collection of nested substates belonging to this state

C/C++ Prototype

```
HRESULT getSubStates (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isAnd

Read method

Description

The **isAnd** method determines whether this state is an And state.

Visual Basic

Syntax

```
isAnd() As Long
```

Return Value

1 if this state is an And state; otherwise 0

C/C++ Prototype

```
HRESULT isAnd (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isCompound

Read method

Description

The **isCompound** method determines whether the current state is a compound state.

Visual Basic

Syntax

```
isCompound() As Long
```

Return Value

1 if this state is a compound state; otherwise 0

C/C++ Prototype

```
HRESULT isCompound (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isLeaf

Read method

Description

The **isLeaf** method determines whether the current state is a leaf state.

Visual Basic

Syntax

```
isLeaf() As Long
```

Return Value

1 if this state is a leaf state; otherwise 0

C/C++ Prototype

```
HRESULT isLeaf (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isRoot

Read method

Description

The **isRoot** method determines whether the current state is a root state.

Visual Basic

Syntax

```
isRoot() As Long
```

Return Value

1 if this state is a root state; otherwise 0

C/C++ Prototype

```
HRESULT isRoot (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

overrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **overrideInheritance** method overrides inheritance for the current state.

Visual Basic

Syntax

```
overrideInheritance()
```

C/C++ Prototype

```
HRESULT overrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

resetEntryActionInheritance

Write method

Description

The **resetEntryActionInheritance** method resets the inheritance of the entry action of the current state.

Visual Basic

Syntax

```
resetEntryActionInheritance() As RPState
```

Return Value

The updated state

C/C++ Prototype

```
HRESULT resetEntryActionInheritance (IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

resetExitActionInheritance

Write method

Description

The **resetExitActionInheritance** method resets the inheritance of the exit action for the current state.

Visual Basic

Syntax

```
resetExitActionInheritance() As RPState
```

Return Value

The updated state

C/C++ Prototype

```
HRESULT resetExitActionInheritance (IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setStaticReaction

Write method

Description

The **setStaticReaction** method sets the static reaction for the current state.

Visual Basic

Syntax

```
setStaticReaction (trigVal As String, guardVal As
   String, actionVal As String)
```

Arguments

`trigVal`

`The new value for the trigger`

`guardVal`

`The new value for the guard`

`actionVal`

`The new value for the action`

C/C++ Prototype

```
HRESULT setStaticReaction (BSTR trigVal, BSTR guardVal,
   BSTR actionVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

unoverrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **unoverrideInheritance** method removes the override on inheritance for the current state.

Visual Basic

Syntax

```
unoverrideInheritance()
```

C/C++ Prototype

```
HRESULT unoverrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

stateType

Read method

Description

The **stateType** method specifies the state type of the current state.

Visual Basic

Syntax

```
stateType(type As String)
```

Arguments

`type`

`The state type. The possible values are as follows:`

- `Or`—state that contains no concurrent states
- `And`—state that contains two or more concurrent states
- `LocalTermination`—termination state element
- `Block`—action block element
- `Action`—action element
- `SubActivity`—subactivity element
- `ObjectFlow`—object node element
- `ReferenceActivity`—call behavior element
- `CallOperation`—call operation element
- `EventState`—send action element

C/C++ Prototype

```
HRESULT stateType(BSTR pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPStatechart Interface

The `IRPStatechart` interface represents a statechart diagram. It inherits from `IRPDiagram`.

Note: You cannot create a statechart using the APIs. The statechart must already exist for you to use the APIs on it.

VB Properties

Name	Type	Access	Description
isOverridden	`Long`	RO	If this is equal to 1 (as opposed to 0), the state is overridden. Currently, this property has not been implemented.
itsClass	`RPClass`	RO	The class of this statechart.
rootState	`RPState`	RO	The default (starting) state of this statechart.

Method Summary

createGraphics	Creates graphics in the Rhapsody statechart
deleteState	Deletes the specified state from the Rhapsody statechart
findTrigger	Determines whether the current statechart has a trigger for the specified class interface element
getAllTriggers	Returns a collection of all the triggers for the current statechart
getInheritsFrom	Returns a pointer to the base statechart from which the current statechart inherits
overrideInheritance	Overrides inheritance for the current state
unoverrideInheritance	Removes the override on inheritance for the current state

createGraphics

Write method

Description

The **createGraphics** method creates graphics in the Rhapsody 6.1 statechart using the information in the COM API methods.

Visual Basic

Syntax

```
createGraphics()
```

C/C++ Prototype

```
HRESULT createGraphics()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteState

Write method

Description

The **deleteState** method deletes the specified state from the statechart.

Visual Basic

Syntax

```
deleteState (state As RPState)
```

Arguments

`state`

`The state to delete`

C/C++ Prototype

```
HRESULT deleteState (IRPState* state)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findTrigger

Read method

Description

The **findTrigger** method determines whether the current statechart has a trigger for the specified class interface element.

Visual Basic

Syntax

```
findTrigger (item As RPInterfaceItem) As Long
```

Arguments

`item`

`The state to check`

Return Value

1 if this statechart has a trigger; otherwise 0

C/C++ Prototype

```
HRESULT findTrigger (IRPInterfaceItem* item, long *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getAllTriggers

Read method

Description

The **getAllTriggers** method returns a collection of all the triggers for the current statechart.

Visual Basic

Syntax

```
getAllTriggers() As RPCollection
```

Return Value

A collection of all the triggers (`RPInterfaceItems`) for this statechart

C/C++ Prototype

```
HRESULT getAllTriggers (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getInheritsFrom

Read method

Description

The **getInheritsFrom** method returns a pointer to the base statechart from which the current statechart inherits.

Visual Basic

Syntax

```
getInheritsFrom() As RPStatechart
```

Return Value

The base statechart from which this statechart inherits

C/C++ Prototype

```
HRESULT getInheritsFrom (IRPStatechart** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

overrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **overrideInheritance** method overrides inheritance for the current state.

Visual Basic

Syntax

```
overrideInheritance()
```

C/C++ Prototype

```
HRESULT overrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

unoverrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **unoverrideInheritance** method removes the override on inheritance for the current state.

Visual Basic

Syntax

```
unoverrideInheritance()
```

C/C++ Prototype

```
HRESULT unoverrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPStateVertex Interface

The `IRPStateVertex` interface represents all model elements that can be connectors or states. It is an abstract interface that inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
parent	`RPState`	RW	The parent state or connector

Method Summary

addTransition	Creates a transition
deleteTransition	Deletes a transition
getInTransitions	Returns a collection of transitions that are directed into the current state or connector
getOutTransitions	Returns a collection of transitions that are directed out of the current state or connector

addTransition

Write method

Description

The **addTransition** method creates a transition.

Visual Basic

Syntax

```
addTransition (to As RPStateVertex) As RPTransition
```

Arguments

`to`

`The “to” state for the transition`

Return Value

The new transition

C/C++ Prototype

```
HRESULT addTransition (IRPStateVertex *to,
   IRPTransition** transition)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteTransition

Write method

Description

The **deleteTransition** method deletes the specified transition.

Visual Basic

Syntax

```
deleteTransition (transition As RPTransition)
```

Arguments

`transition`

The transition to delete

C/C++ Prototype

```
HRESULT deleteTransition (IRPTransition *transition)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getInTransitions

Read method

Description

The **getInTransitions** method returns a collection of transitions that are directed into the current state or connector.

Visual Basic

Syntax

```
getInTransitions() As RPCollection
```

Return Value

A collection of transitions going into this state or connector

C/C++ Prototype

```
HRESULT getInTransitions (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getOutTransitions

Read method

Description

The **getOutTransitions** method returns a collection of transitions that are directed out of the current state or connector.

Visual Basic

Syntax

```
getOutTransitions() As RPCollection
```

Return Value

A collection of transitions going out of this state or connector

C/C++ Prototype

```
HRESULT getOutTransitions (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

parent

Read method

Description

The **parent** method returns the parent state.

Visual Basic

Syntax

```
parent(newVal As RPState)
```

Arguments

`newVal`

`The parent state`

C/C++ Prototype

```
HRESULT parent(IRPState* newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPStereotype Interface

The `IRPStereotype` interface represents a stereotype in the model. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
icon	`String`	RO	The icon string attached to the stereotype
ofMetaClass	`String`	RO	The metaclass to which the stereotype applies

IRPStructureDiagram Interface

The `IRPStructureDiagram` interface represents a Rhapsody structure diagram. It inherits from `IRPDiagram`.

IRPSwimlane Interface

The `IRPSwimlane` interface represents a swimlane in an activity diagram. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
contents	`RPCollection`	RO	A collection of states in the swimlane
represents	`RPModelElement`	RW	The object that implements the swimlane

IRPTag Interface

The `IRPTag` interface represents a tag. It inherits from `IRPVariable`.

VB Properties

Name	Type	Access	Description
tagMetaClass	`String`	RW	The metaclass for the tag
value	`String`	RW	The default value for the tag

IRPTemplateInstantiation Interface

The `IRPTemplateInstantiation` interface represents a global variable in a Rhapsody model. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
templateInstantiationParameters	Collection of `RPTemplate Instantiation Parameters`	RO	A collection of parameters used for instantiation

IRPTemplateInstantiationParameter Interface

The `IRPTemplateInstantiationParameter` interface represents a parameter used in template instantiation in a Rhapsody model. It inherits from the `IRPModelElement`.

VB Properties

Name	Type	Access	Description
argValue	`String`	RW	The argument value for this parameter of a template instantiation

IRPTemplateParameter Interface

The `IRPTemplateParameter` interface represents a parameter for a template in a Rhapsody model. It inherits from `IRPVariable`.

VB Properties

Name	Type	Access	Description
typeName	`RPType`	RW	The type of this template parameter

Method Summary

setClassType	Sets or changes the current template parameter to a class type parameter

setClassType

Write method

Description

The **setClassType** method sets or changes the current template parameter to a class type parameter. For example, parameter `<int X>` becomes `<class X>`.

Visual Basic

Syntax

```
setClassType()
```

C/C++ Prototype

```
HRESULT setClassType()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPTransition Interface

The `IRPTransition` interface represents a transition in a statechart. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
isOverridden	`Long`	RO	If this is equal to 1 (as opposed to 0), the transition is overridden. Currently, this property has not been implemented.
itsLabel	`String`	RO	The transition label for this transition.
itsSource	`RPStateVertex`	RW	The source state of this transition.
itsStateChart	`RPStatechart`	RW	The statechart of this transition.
itsTarget	`RPStateVertex`	RW	The target state of this transition.

Method Summary

getInheritsFrom	Returns the base transition from which the current transition inherits
getItsAction	Returns the action code of the current transition
getItsGuard	Returns the guard condition of the current transition
getItsTrigger	Returns the trigger (event or triggered operation) of the current transition
getOfState	Returns the source state for which this transition is the default transition
isDefaultTransition	Determines whether the current transition is a default transition
isStaticReaction	Determines whether this is a static reaction
itsCompoundSource	Returns a collection of states that act as multiple sources for this single transition
overrideInheritance	Overrides inheritance for the current transition
resetLabelInheritance	Resets the label inheritance
setItsAction	Updates the current transition with a new action

setItsGuard	Updates the current transition with a new guard
setItsLabel	Updates this transition with a new label (trigger[guard]/action)
setItsTrigger	Updates the current transition with a new trigger
unoverrideInheritance	Removes the override on inheritance for the current transition

getInheritsFrom

Read method

Description

The getInheritsFrom method returns the base transition from which the current transition inherits.

Visual Basic

Syntax

```
getInheritsFrom() As RPTransition
```

Return Value

The base transition from which this transition inherits

C/C++ Prototype

```
HRESULT getInheritsFrom (IRPTransition** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getItsAction

Read method

Description

The **getItsAction** method returns the action code of the current transition.

Visual Basic

Syntax

```
getItsAction() As RPAction
```

Return Value

The action code of this transition

C/C++ Prototype

```
HRESULT getItsAction (IRPAction** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getItsGuard

Read method

Description

The **getItsGuard** method returns the guard condition of the current transition.

Visual Basic

Syntax

```
getItsGuard() As RPGuard
```

Return Value

The guard condition of this transition

C/C++ Prototype

```
HRESULT getItsGuard (IRPGuard** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getItsTrigger

Read method

Description

The **getItsTrigger** method returns the trigger (event or triggered operation) of the current transition.

Visual Basic

Syntax

```
getItsTrigger() As RPTrigger
```

Return Value

The trigger of this transition

C/C++ Prototype

```
HRESULT getItsTrigger (IRPTrigger** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

Example

The following macro checks each transition to see if it has a trigger.

```
Sub checkNullTransitions()
   Dim elem As RPModelElement
   For Each elem In getProject.getNestedElementsRecursive
          If elem.metaClass = "Transition" Then
                 Dim trans As RPTransition
                 Set trans = elem
                 If trans.getItsTrigger Is Nothing Then
                 Debug.Print "The trigger in transition '" +
                 trans.getFullPathName + "' is null!"
                 End If
          End If
   Next elem
End Sub
...
```

getOfState

Read method

Description

The **getOfState** method returns the source state for which this transition is the default transition.

Suppose you want to figure out what event sequences lead to a state `A`. One way to retrieve those values is to travel backwards from `A`, looking for all the transitions going into it. If they are normal transitions, you can continue to their source. If they are default transitions, you must find the parent using the method `getOfState`.

Visual Basic

Syntax

```
getOfState() As RPState
```

Return Value

The parent state for which this transition is the default transition. If this transition is the default transition of its statechart, this method returns the parent; otherwise, it returns a NULL value.

C/C++ Prototype

```
HRESULT getOfState (IRPState** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isDefaultTransition

Read method

Description

The **isDefaultTransition** method determines whether the current transition is a default transition.

Visual Basic

Syntax

```
isDefaultTransition() As Long
```

Return Value

1 if this transition is a default transition; otherwise 0

C/C++ Prototype

```
HRESULT isDefaultTransition (long *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isStaticReaction

Read method

Description

The **isStaticReaction** method determines whether this is a static reaction.

Visual Basic

Syntax

```
isStaticReaction() As Long
```

Return Value

1 if this is a static reaction; otherwise 0

C/C++ Prototype

```
HRESULT isStaticReaction (long *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

itsCompoundSource

Read method

Description

The **itsCompoundSource** method returns a collection of states that act as multiple sources for this single transition.

For example, consider a junction connector. There can be many transitions from different states that are resolved into one transition leaving a junction connector. For the transition leaving a junction connector, this method gives all the source states.

Visual Basic

Syntax

```
itsCompoundSource() As RPCollection
```

Return Value

A collection of source states (`RPStateVertexes`) for this transition

C/C++ Prototype

```
HRESULT itsCompoundSource (IRPCollection** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

overrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **overrideInheritance** method overrides inheritance for the current transition.

Visual Basic

Syntax

```
overrideInheritance()
```

C/C++ Prototype

```
HRESULT overrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

resetLabelInheritance

Write method

Description

The **resetLabelInheritance** method resets the label inheritance.

Visual Basic

Syntax

```
resetLabelInheritance() As RPTransition
```

Return Value

The updated `RPTransition`

C/C++ Prototype

```
HRESULT resetLabelInheritance (IRPTransition** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setItsAction

Write method

Description

The **setItsAction** method updates the current transition with a new action.

Visual Basic

Syntax

```
setItsAction (action As String) As RPAction
```

Return Value

The new action for the transition

C/C++ Prototype

```
HRESULT setItsAction (BSTR action, IRPAction** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setItsGuard

Write method

Description

The **setItsGuard** method updates the current transition with a new guard.

Visual Basic

Syntax

```
setItsGuard() As RPGuard
```

Return Value

The new guard for this transition

C/C++ Prototype

```
HRESULT setItsGuard (BSTR guard, IRPGuard** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setItsLabel

Write method

Description

The **setItsLabel** method updates this transition with a new label (trigger[guard]/action)

Visual Basic

Syntax

```
setItsLabel (trigger As String, guard As String,
   action As String)
```

Arguments

`trigger`

`The new trigger value for this transition`

`guard`

`The new guard value for this transition`

`action`

`The new action value for this transition`

C/C++ Prototype

```
HRESULT setItsLabel (BSTR trigger, BSTR guard,
   BSTR action)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setItsTrigger

Write method

Description

The **setItsTrigger** method updates the current transition with a new trigger.

Visual Basic

Syntax

```
setItsTrigger (trigger As String) As RPTrigger
```

Return Value

The new trigger for this transition

C/C++ Prototype

```
HRESULT setItsTrigger (BSTR trigger, IRPTrigger** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

unoverrideInheritance

Note

Currently, this method has not been implemented.

Write method

Description

The **unoverrideInheritance** method removes the override on inheritance for the current transition.

Visual Basic

Syntax

```
unoverrideInheritance()
```

C/C++ Prototype

```
HRESULT unoverrideInheritance()
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPTrigger Interface

The `IRPTrigger` interface represents a trigger of a transition in a statechart. It inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
body	`String`	RW	The body of this trigger

Method Summary

getItsOperation	Returns the event or triggered operation of the current trigger
isOperation	Determines whether the current trigger is an operation (event or triggered operation)
isTimeout	Determines whether the current trigger is a timeout

getItsOperation

Read method

Description

The **getItsOperation** method returns the event or triggered operation of the current trigger.

If the current trigger's transition is labeled `E[C]/A` (where `E` is the event (event or triggered operation) the trigger refers to, `C` is the guard condition, and `A` is the action), this method returns the event `E` to which this trigger refers.

Visual Basic

Syntax

```
getItsOperation() As RPInterfaceItem
```

Return Value

The operation of this trigger

C/C++ Prototype

```
HRESULT getItsOperation (IRPInterfaceItem** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isOperation

Read method

Description

The **isOperation** method determines whether the current trigger is an operation (event or triggered operation).

Visual Basic

Syntax

```
isOperation() As Long
```

Return Value

1 if this trigger is an operation; otherwise 0

C/C++ Prototype

```
HRESULT isOperation (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isTimeout

Read method

Description

The **isTimeout** method determines whether the current trigger is a timeout.

Visual Basic

Syntax

```
isTimeout() As Long
```

Return Value

1 if this trigger is a timeout; otherwise 0

C/C++ Prototype

```
HRESULT isTimeout (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPType Interface

The `IRPType` interface represents Rhapsody 6.1 data types. It inherits from `IRPClassifier`.

VB Properties

Name	Type	Access	Description
declaration	`String`	RW	The type declaration.
enumerationLiterals	Collection of `RPEnumerationLiterals`	RO	A container that can be manipulated only if the kind of the type is `Enumerated`
isPredefined	`Long`	RO	A flag that indicates whether this type is a Rhapsody predefined types. Predefined types are defined in the package unit files: `Share\Properties\Predefined<lang>.sbs`
isTypedef	`Long`	RO	A flag that indicates whether this type is defined with a `typedef`
isTypedefConstant	`Long`	RW	A flag that indicates whether the `typedef` is defined as a constant (is read-only, such as the const qualifier in C++)
isTypedefOrdered	`Long`	RW	A flag that indicated whether the order of the reference type items is significant
isTypedefReference	`Long`	RW	A flag that indicates whether the `typedef` is referenced as a reference (such as a pointer (*) or an address (&) in C++)
kind	`String`	RW	Stores the type kind.
typedefBaseType	`RPClassifier`	RW	Specifies the basic type of the `typedef`
typedefMultiplicity	`String`	RW	Specifies the multiplicity of the `typedef`

Method Summary

addEnumerationLiteral	Creates an enumeration literal
isArray	Determines whether the current type is an array
isEnum	Determines whether the current type is an enumerated type
isEqualTo	Tests for equality between the type of the type and the type itself
isImplicit	Determines whether the current type is an implicit type
isKindEnumeration	Determines whether the current type is an enumeration
isKindLanguage	Determines whether the current type is a language declaration type
isKindStructure	Determines whether the current type is a structure
isKindTypedef	Determines whether the current type is a `typedef`
isKindUnion	Determines whether the current type is a union
isPointer	Determines whether the current type is a pointer
isPointerToPointer	Determines whether the current type is a pointer to another pointer
isReference	Determines whether the current type is a reference
isReferenceToPointer	Determines whether the current type is a reference to a pointer
isStruct	Determines whether the current type is a `struct`
isTemplate	Determines whether the current type is a template
isUnion	Determines whether the current type is a union

addEnumerationLiteral

Write method

Description

The **addEnumerationLiteral** method creates an enumeration literal.

Visual Basic

Syntax

```
addEnumerationLiteral (name As String)
   As RPEnumerationLiteral
```

Arguments

`name`

`The name of the enumeration literal to create`

Return Value

The new enumeration literal

C/C++ Prototype

```
HRESULT addEnumerationLiteral (BSTR name,
   IRPEnumerationLiteral** pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isArray

Read method

Description

The **isArray** method determines whether the current type is an array.

Visual Basic

Syntax

```
isArray() As Long
```

Return Value

1 if the type is an array; 0 otherwise

C/C++ Prototype

```
HRESULT isArray (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isEnum

Read method

Description

The **isEnum** method determines whether the current type is an enumerated type.

Visual Basic

Syntax

```
isEnum() As Long
```

Return Value

1 if the type is an array; 0 otherwise

C/C++ Prototype

```
HRESULT isEnum (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isEqualTo

Read method

Description

The **isEqualTo** method tests for equality between the type of the type and the type itself.

Visual Basic

Syntax

```
isEqualTo() As Long
```

Return Value

The method returns 1 if the “type of the type” is equal to the type depended on, otherwise 0.

For example, if the type definition is `typedef x`, the type is equal to the type it depends on. However, if the type definition is `typedef x*`, the type of the type is a pointer, and is therefore different from the type itself.

C/C++ Prototype

```
HRESULT isEqualTo (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isImplicit

Read method

Description

The **isImplicit** method determines whether the current type is an implicit type.

Visual Basic

Syntax

```
isImplicit() As Long
```

Return Value

1 if the type is an implicit type; 0 otherwise

C/C++ Prototype

```
HRESULT isImplicit (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isKindEnumeration

Read method

Description

The **isKindEnumeration** method determines whether the current type is an enumeration.

Visual Basic

Syntax

```
isKindEnumeration() As Long
```

Return Value

1 if the type is an enumeration; 0 otherwise

C/C++ Prototype

```
HRESULT isKindEnumeration (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isKindLanguage

Read method

Description

The **isKindLanguage** method determines whether the current type is a language declaration type.

Visual Basic

Syntax

```
isKindLanguage() As Long
```

Return Value

1 if the type is a language declaration type; 0 otherwise

C/C++ Prototype

```
HRESULT isKindLanguage (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isKindStructure

Read method

Description

The **isKindStructure** method determines whether the current type is a structure.

Visual Basic

Syntax

```
isKindStructure() As Long
```

Return Value

1 if the type is a structure; 0 otherwise

C/C++ Prototype

```
HRESULT isKindStructure (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isKindTypedef

Read method

Description

The **isKindTypedef** method determines whether the current type is a `typedef`.

Visual Basic

Syntax

```
isKindTypedef() As Long
```

Return Value

1 if the type is a `typedef`; 0 otherwise

C/C++ Prototype

```
HRESULT isKindTypedef (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isKindUnion

Read method

Description

The **isKindUnion** method determines whether the current type is a union.

Visual Basic

Syntax

```
isKindUnion() As Long
```

Return Value

1 if the type is a union; 0 otherwise

C/C++ Prototype

```
HRESULT isKindUnion (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isPointer

Read method

Description

The **isPointer** method determines whether the current type is a pointer.

Visual Basic

Syntax

```
isPointer() As Long
```

Return Value

1 if the type is a pointer; 0 otherwise

C/C++ Prototype

```
HRESULT isPointer (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isPointerToPointer

Read method

Description

The **isPointerToPointer** method determines whether the current type is a pointer to another pointer.

Visual Basic

Syntax

```
isPointerToPointer() As Long
```

Return Value

1 if the type is a pointer to a pointer; 0 otherwise

C/C++ Prototype

```
HRESULT isPointerToPointer (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isReference

Read method

Description

The **isReference** method determines whether the current type is a reference.

Visual Basic

Syntax

```
isReference() As Long
```

Return Value

1 if the type is a reference; 0 otherwise

C/C++ Prototype

```
HRESULT isReference (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isReferenceToPointer

Read method

Description

The **isReferenceToPointer** method determines whether the current type is a reference to a pointer.

Visual Basic

Syntax

```
isReferenceToPointer() As Long
```

Return Value

1 if this type is a reference to a pointer; otherwise 0

C/C++ Prototype

```
HRESULT isReferenceToPointer (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isStruct

Read method

Description

The **isStruct** method determines whether the current type is a `struct`.

Visual Basic

Syntax

```
isStruct() As Long
```

Return Value

1 if this type is a `struct`; otherwise 0

C/C++ Prototype

```
HRESULT isStruct (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isTemplate

Write method

Description

The **isTemplate** method determines whether the current type is a template.

Visual Basic

Syntax

```
isTemplate() As Long
```

Return Value

1 if this type is a template; otherwise 0

C/C++ Prototype

```
HRESULT isTemplate (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isUnion

Write method

Description

The **isUnion** method determines whether the current type is a union.

Visual Basic

Syntax

```
isUnion() As Long
```

Return Value

1 if this type is a union; otherwise 0

C/C++ Prototype

```
HRESULT isUnion (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPUnit Interface

The `IRPUnit` interface represents all model elements that can be stored as units for configuration management (CM) purposes. It is an abstract interface that inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
CMHeader	`String`	RW	The CM header of this unit
currentDirectory	`String`	RO	The current directory
filename	`String`	RW	The name of the file that stores the unit
includeInNextLoad	`Long`	RW	Indicates whether or not the unit should be loaded the next time the model is loaded.
isStub	`Long`	RO	Specifies whether this is a stub
structureDiagrams	Collection of `RPStructureDiagrams`	RO	Collection of structure diagrams that can be stored as units

Method Summary

isReadOnly	Determines whether the current unit is read-only
isReferenceUnit	Determines whether the current unit was added to the model as a reference
isSeparateSaveUnit	Determines whether the current unit is saved in its own (separate) file
load	Loads the specified unit
save	Saves the specified unit
setReadOnly	Specifies whether the current unit is read-only
setSeparateSaveUnit	Sets a unit to be stored to its own file

isReadOnly

Read method

Description

The **isReadOnly** method determines whether the current unit is read-only.

Visual Basic

Syntax

```
isReadOnly() As Long
```

Return Value

1 if this unit is read-only; otherwise 0

C/C++ Prototype

```
HRESULT isReadOnly (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isReferenceUnit

Read method

Description

The isReferenceUnit method determines whether the current unit was added to the model as a reference.

Visual Basic

Syntax

```
isReferenceUnit() As Long
```

Return Value

1 if this unit was added to the model as a reference; otherwise 0

C/C++ Prototype

```
HRESULT isReferenceUnit(long* val)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

isSeparateSaveUnit

Read method

Description

The **isSeparateSaveUnit** method determines whether the current unit is saved in its own (separate) file.

Visual Basic

Syntax

```
isSeparateUnit() As Long
```

Return Value

1 if this unit is saved to its own file; otherwise 0

C/C++ Prototype

```
HRESULT isSeparateSaveUnit (long* pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

load

Write method

Description

The load method loads the specified unit.

Visual Basic

Syntax

```
load (withSubs As Long) As RPUnit
```

Argument

`withSubs`

`Set this to 1 to load the unit’s subunits. Otherwise, set this to 0.`

Return Value

The loaded unit

C/C++ Prototype

```
HRESULT load (long withSubs, IRPUnit** ret)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

save

Read method

Description

The **save** method saves the current unit.

Visual Basic

Syntax

```
save (withSubs As Long)
```

Argument

`withSubs`

`Set this to 1 to load the unit's subunits. Otherwise, set this to 0.`

C/C++ Prototype

```
HRESULT save (long withSubs)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setReadOnly

Write method

Description

The **setReadOnly** method specifies whether the current unit is read-only.

Visual Basic

Syntax

```
setReadOnly (pVal As Long)
```

Arguments

`pVal`

`Set this argument to 1 to make the unit read-only; set it to 0 to make the unit read/write.`

C/C++ Prototype

```
HRESULT setReadOnly (long pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

setSeparateSaveUnit

Write method

Description

The **setSeparateSaveUnit** method sets a unit to be stored to its own file.

Visual Basic

Syntax

```
setSeparateSaveUnit (pVal As Long)
```

Arguments

`pVal`

`Set this argument to 1 to have the unit stored to its own file. Otherwise, set it to 0.`

C/C++ Prototype

```
HRESULT setSeparateSaveUnit (long pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPUseCase Interface

The `IRPUseCase` interface represents a Rhapsody use case. It inherits from `IRPClassifier`.

VB Properties

Name	Type	Access	Description
describingDiagrams	Collection of `RPSequenceDiagram`	RO	A collection of sequence diagrams that describe this use case
entryPoints	Collection of strings	RO	A collection of entry points into this use case
extensionPoints	`RPCollection`	RO	A collection of extension points

Method Summary

addDescribingDiagram	Adds a describing diagram for the current use case
addExtensionPoint	Adds an extension point to the current use case
deleteDescribingDiagram	Deletes the describing use case or sequence diagram for the current use case
deleteEntryPoint	Deletes the entry point of the current use case
deleteExtensionPoint	Deletes the specified extension point
findEntryPoint	Deletes the specified entry point
findExtensionPoint	Retrieves the extension point, given the generalization
getDescribingDiagram	Retrieves the use case diagram or sequence diagram linked to the current use case

addDescribingDiagram

Write method

Description

The **addDescribingDiagram** method adds a describing diagram for the current use case.

Visual Basic

Syntax

```
addDescribingDiagram (diagram As RPDiagram)
```

Arguments

```
diagram
The name for the new, describing diagram
```

C/C++ Prototype

```
HRESULT addDescribingDiagram (IRPDiagram* diagram)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

addExtensionPoint

Write method

Description

The **addExtensionPoint** method adds an extension point to the current use case.

Visual Basic

Syntax

```
addExtensionPoint (entryPoint As String)
```

Arguments

```
entryPoint
The name of the new entry point
```

C/C++ Prototype

```
HRESULT addExtensionPoint (BSTR entryPoint)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteDescribingDiagram

Write method

Description

The **deleteDescribingDiagram** method deletes the describing use case or sequence diagram for the current use case.

Visual Basic

Syntax

```
deleteDescribingDiagram (diagram As RPDiagram)
```

Arguments

`diagram`

`The use case or sequence diagram that describes the current use case`

C/C++ Prototype

```
HRESULT deleteDescribingDiagram (IRPDiagram* diagram)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteEntryPoint

Write method

Description

The **deleteEntryPoint** method deletes the entry point of the current use case.

Visual Basic

Syntax

```
deleteEntryPoint (entryPoint As String)
```

Arguments

```
entryPoint
The name of the entry point to delete
```

C/C++ Prototype

```
HRESULT deleteEntryPoint (BSTR entryPoint)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

deleteExtensionPoint

Write method

Description

The **deleteExtensionPoint** method deletes the specified extension point.

Visual Basic

Syntax

```
deleteExtensionPoint (point As String)
```

Arguments

```
entryPoint
The extension point to delete
```

C/C++ Prototype

```
HRESULT deleteExtensionPoint (BSTR entrypoint)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findEntryPoint

Read method

The **findEntryPoint** method returns the specified entry point of the current use case, given the generalization.

Visual Basic

Syntax

```
findEntryPoint (gen As RPGeneralization) As String
```

Arguments

`gen`

`The generalization`

Return Value

`The entry point`

C/C++ Prototype

```
HRESULT findEntryPoint (IRPGeneralization* gen,
   BSTR *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

findExtensionPoint

Read method

The **findExtensionPoint** method returns the specified extension point of the current use case, given the generalization.

Visual Basic

Syntax

```
findExtensionPoint (gen As RPGeneralization) As String
```

Arguments

```
gen
```

```
The generalization
```

Return Value

```
The extension point
```

C/C++ Prototype

```
HRESULT findExtensionPoint (IRPGeneralization* gen,
   BSTR *pVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

getDdescribingDiagram

Read method

Description

The **getDescribingDiagram** method retrieves the use case diagram or sequence diagram linked to the current use case.

Visual Basic

Syntax

```
getDescribingDiagram (name As String) As RPDiagram
```

Arguments

```
name
```

```
The name of the use case diagram or sequence diagram that is linked
(for descriptive purposes) to the current use case
```

Return Value

The diagram of the specified use case

C/C++ Prototype

```
HRESULT getDescribingDiagram (BSTR name,
   IRPDiagram** diagram)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

IRPUseCaseDiagram Interface

The `IRPUseCaseDiagram` interface represents a use case diagram. It inherits from `IRPDiagram`.

Currently, it does not expose additional functionality to `IRPDiagram`.

IRPInternalOEMPlugin

This interface is used for internal purposes only.

IRPVariable Interface

The `IRPVariable` interface represents a variable in a Rhapsody 6.1 model. It represents the UML `TypedElement`.

`IRPVariable` inherits from `IRPModelElement`.

VB Properties

Name	Type	Access	Description
declaration	`String`	RW	The declaration statement for the variable
defaultValue	`String`	RW	The default value for the variable
type	`RPClassifier`	RW	The data type of the variable

Method Summary

setTypeDeclaration	Updates the type declaration for the current attribute

setTypeDeclaration

Write method

Description

The **setTypeDeclaration** method updates the type declaration for the current attribute.

Visual Basic

Syntax

```
setTypeDeclaration (newVal As String)
```

Arguments

`newVal`

`The type declaration for this attribute`

C/C++ Prototype

```
HRESULT setTypeDeclaration (BSTR newVal)
```

Return Value

`HRESULT` (0 for success, or a signed integer error code)

The Callback API

The Callback API consists of a number of methods that can be used to respond to events that occur in Rhapsody. This response can consist of actions taken by an external application and/or preventing Rhapsody from proceeding with a specific action.

Callback API Introduction

The Callback API is implemented as a number of COM connection point interfaces.These callback methods can be used by:

- client applications using the Rhapsody COM or Java APIs, in the following languages:
  - VB
  - VBA
  - C++
  - Java
- client plug-ins to Rhapsody

For the methods that have boolean return values, the client application can return a value of *True* in order to prevent Rhapsody from proceeding with the action connected to the event, for example, preventing a diagram from being opened.

Clients can receive event notification by registering the corresponding COM connection point interface using the standard COM mechanism.

Multiple clients can register for any given callback, however, there is no guarantee that the clients will be notified in a specific order.

In cases where multiple clients have registered, if one client responds by cancelling the associated Rhapsody action, the remaining clients will not be notified of the event.

Rhapsody can log all callbacks invoked. For Rhapsody actions that can be cancelled by clients, it also logs the action taken. For details on enabling logging, see **Callback Logging**.

Callback notification can be disabled completely, or for specific interfaces by adding appropriate entries to the rhapsody.ini file. For details on complete or partial disabling of callback notification, see **Disabling Callback Notification**.

When callback notification is enabled, you have the option of disabling the ability of a client application to prevent Rhapsody from proceeding with an action. This can be done for all cancellable actions or just for specific cancellable actions. For details, see **Disabling Cancellable Actions**.

Events with Callback Methods

The Rhapsody API includes callback methods for the following Rhapsody events:

- project about to be closed
- project closed
- feature dialog about to be opened
- diagram about to be opened
- Rhapsody about to perform roundtrip
- code generation completed

Note

These events can only be responded to by using the Rhapsody API. They are not available as triggers in the *Helpers* dialog (*Tools* > *Customize*).

API Details

This section lists individual Rhapsody APIs with the API format and a description of its uses.

IRPApplicationListener

The IRPApplicationListener API is called before and after Rhapsody closes a project.

BeforeProjectClose

```
BOOL BeforeProjectClose(IRPProject Project)
```

This is called before a project is closed. The argument is the project that is to be closed.

If a client returns *True*, then the project will not be closed.

Points to take into consideration:

- If a client returns *True* to prevent the closing of the project, other clients that have registered will not be notified of the event.
- When multiple projects are to be closed, the method is called separately for each project. If a client prevents the closing of a specific project, this does not affect the calling of the method for the remaining projects.

AfterProjectClose

```
void AfterProjectClose(BSTR ProjectName)
```

This is called after Rhapsody closes a project. The argument is the name of the project that was closed.

Points to take into consideration:

- When multiple projects are closed, the method is called separately for each project.
- This method is not available for VBA clients. (This is because the VBA application is part of the Rhapsody project so it cannot be run after the project is closed.)

OnDiagramOpen

```
BOOL OnDiagramOpen(IRPDiagram Diagram)
```

This is called before a diagram is opened. The argument is the diagram that Rhapsody is about to open.

If a client returns *True*, then the diagram will not be opened.

Points to take into consideration:

- If a client returns *True* to prevent the opening of the diagram, other clients that have registered will not be notified of the event.
- The method is only called when a diagram is explicitly opened using the Rhapsody GUI or the Rhapsody API. It is not called when a diagram is opened as part of the restoration of the previous Rhapsody workspace.

OnFeaturesOpen

```
BOOL OnFeaturesOpen(IRPModelElement ModelElement)
```

This is called before the Features dialog is opened for a given element. The argument is the model element for which the Features dialog is going to be opened.

If a client returns *True*, then the Features dialog will not be opened for the element.

Points to take into consideration:

- If a client returns *True* to prevent the opening of the Features dialog, other clients that have registered will not be notified of the event.
- The method is only called when the Features dialog is explicitly opened using the Rhapsody GUI or the Rhapsody API. It is not called when the Features dialog is opened as part of the restoration of the previous Rhapsody workspace.

IRPRoundTripListener

The IRPRoundTripListener is called before the source code files are roundtripped into the model.

BeforeRoundtrip

```
void BeforeRoundtrip(IRPCollection fileNames)
```

This is called before source code files are roundtripped into the model.

The argument consists of the files that are going to be roundtripped into the model.

IRPCodeGeneratorListener

The IRPCodeGeneratorListener is called after code generation.

CodeGenerationCompleted

```
void CodeGenerationCompleted()
```

This is called after code generation has been completed.

Points to take into consideration:

- Clients should not modify generated code files in the framework of the callback method. This will result in timestamp inconsistency in the model-generated code, creating potential problems.

Callback Logging

By default, Rhapsody does not maintain a log file of callback events. To enable logging of callback events and cancellable actions, add the entry `EnableCallbackLogging` to a section called `[Callback]` in the *rhapsody.ini* file and set it to `TRUE`.

If you enable logging, the events and actions will be logged to a file called *callback_log.txt* in the system temporary directory.

Disabling Callback Notification

Callback functionality can be disabled completely, or for specific interfaces by adding one or more of the following entries to a section called `[Callback]` in the *rhapsody.ini* file:

To disable the callback mechanism for project closing, opening diagrams, and opening the Features dialog, add the entry `EnableApplicationEventListening` and set it to `FALSE`. Rhapsody will not notify registered clients of these events.

To disable the callback mechanism for roundtripping, add the entry `EnableRoundTripEventListening` and set it to `FALSE`. Rhapsody will not notify registered clients of roundtripping events.

To disable the callback mechanism for code generation, add the entry `EnableCodeGenerationEventListening` and set it to `FALSE`. Rhapsody will not notify registered clients of code generation events.

To disable the callback mechanism completely, add the entry `EnableEventListening` and set it to `FALSE`. Rhapsody will not notify registered clients of any of the callback events.

Disabling Cancellable Actions

When callback notification is enabled, you can disable the ability of a client application to prevent Rhapsody from proceeding with an action by adding one or more of the following entries to a section called `[Callback]` in the *rhapsody.ini* file:

To disable the ability to prevent Rhapsody from closing a project, add the entry `CanCancelProjectClose` and set it to `FALSE`.

To disable the ability to prevent Rhapsody from opening a diagram, add the entry `CanCancelOpenDiagram` and set it to `FALSE`.

To disable the ability to prevent Rhapsody from opening the Features dialog for an element, add the entry `CanCancelOpenFeaturesDialog` and set it to `FALSE`.

If you don’t want to allow clients to prevent any of the cancellable actions, add the entry `CanCancelAction` and set it to `FALSE`.

Sample Client Applications

Sample client applications that use the callback API to respond to Rhapsody events can be found in the Rhapsody samples directory ([installation directory]*Samples**ExtensibilitySamples**CallbackAPISamples*).

The samples provided are written in a number of different languages.

Quick Reference

This section lists the Rhapsody API methods and provides a brief description of each. For ease of use, the methods are presented in alphabetical order.

Method Name	Description
Abort	Is invoked when the user selects the **Abort** option during code generation
activeProject	Returns a pointer to the active (open) project
addActivityDiagram	Adds an activity diagram to the current class
addActor	Adds the specified actor to the current package
addAnchor	Adds an anchor from the annotation to the specified model element
addArgument	Adds an argument for the operation to the end of its argument list
addArgumentBeforePosition	Adds an argument for the operation at the specified position in its argument list
addAttribute	Adds an attribute to the current class
addBlock	Adds a block to the current package
addClass	Adds a class to the current class
addClassifierRole	Adds a classifier role
addClassifierRoleByName	Adds a classifier role, given its name
addCollaborationDiagram	Adds a collaboration diagram to the current package
addComponent	Adds the specified component to the current project
addComponentDiagram	Adds a component diagram to the current package
addComponentInstance	Adds a new component instance
addConfiguration	Adds a configuration to this component
addConnector	Adds a connector to the statechart
addConstructor	Adds a constructor to the current class

Method Name	Description
addConveyed	Adds an information element to the conveyed collection
addCtor	Adds a constructor
addDependency	Adds a dependency relationship to the specified object
addDependencyTo	Creates a new dependency between two objects
addDeploymentDiagram	Adds the specified deployment diagram to the current package
addDescribingDiagram	Adds a describing diagram for the current use case
addDestructor	Adds a destructor to the current class
addDtor	Adds a destructor
addElement	Adds an element to the current file
addEnumerationLiteral	Creates an enumeration literal
addEvent	Adds the specified event to the current package
addEventReception	Adds an event reception to the current class
addExtensionPoint	Adds an extension point to the current use case
addFile	Adds an empty file to the current component
addFlowItems	Adds the specified flowItem to the collection of flowItems
addFlows	Adds the specified flow to the collection of flows
addFolder	Adds an empty folder to the current component
addGeneralization	Adds a generalization to the current class
addGlobalFunction	Adds the specified global function to this package
addGlobalObject	Adds a global object (instance) to the current package
addGlobalVariable	Adds the specified global variable to the current package
addInitialInstance	Adds an instance to the list of initial instances for the current configuration
addItem	Adds an item to the collection
addMessage	Adds a message
addNestedComponent	Adds a component to the current component
addNestedPackage	Adds a nested package to the current package
addNewAggr	Used to add a new element to the current element, for example, adding a new class to a package
addNode	Adds the specified node to the current package

Method Name	Description
addObjectModelDiagram	Adds the specified OMD to the current package
addOperation	Adds an operation to the current class
addPackage	Adds the specified package to the current project
addPackageToInstrumentationScope	Adds the specified package to the instrumentation scope, including all its aggregated classes, actors, and nested packages
addPackageToScope	Adds the specified package to the scope of the file or folder
addProperty	Adds a new property/value pair for the current element
addProvidedInterface	Adds the specified interface to the collection of provided interfaces
addReferenceActivity	Adds a reference activity to the activity diagram
addRelation	Adds a symmetric relation between the current class and another one
addRepresented	Adds a flowItem to the `represented` collection
addRequiredInterface	Adds the specified interface to the collection of required interfaces
addScopeElement	Places a model element within the scope of the current component
addSequenceDiagram	Adds the specified sequence diagram to the current package
addState	Adds a state to the statechart
addStatechart	Adds a statechart to the current class
addStaticReaction	Adds a static reaction to the statechart
addStereotype	Adds a stereotype relationship to the specified object
addSuperclass	Adds a superclass to the current class
addSwimlane	Adds a swimlane to the activity diagram
addSystemBorder	Adds a system border to the collaboration diagram
addTerminationState	Adds a termination state to the statechart
addTextElement	Adds text to the file
addTimeInterval	Adds a time interval to the diagram
addTimeout	Adds a timeout
addToInstrumentationScope	Adds explicit initial instances to the instrumentation scope

Method Name	Description
addToModel	Adds a Rhapsody unit located in the specified file to the current model with or without descendant elements
addToModelFromURL	Adds a Rhapsody unit located at the specified URL to the current model
addToScope	Places the specified file, classes, and packages within the scope of the current component
addTransition	Creates a transition
addTriggeredOperation	Adds a triggered operation to the current class
addType	Adds a type to the current class
addUnidirectionalRelation	Adds a directional relation from the current class to another class
addUseCase	Adds the specified use case to the current package
addUseCaseDiagram	Adds the specified UCD to the current package
allElementsInScope	Places all model elements within the scope of the current component
arcCheckOut	Checks out files from the CM archive into the model
becomeTemplateInstantiationOf	Creates a template instantiation of another template (of another template class)
build	Builds the application
checkEventsBaseIdsSolveCollisions	Checks the values of the events base IDs for all packages in the model, detects collisions between the IDs, and resolves any incorrect values and collisions
checkIn	Checks in the specified unit within the model into the CM archive you have already connected to (using `connectToArchive`)
checkModel	Checks the current model
checkOut	Refreshes a unit in the model by checking it out from the CM archive
clone	Clones the element, names it, and adds it to the new owner
close	Closes a file or project
connectToArchive	Connects the Rhapsody project to the specified CM archive
createDefaultTransition	Creates a default transition in the statechart
createGraphics	Creates graphics in the Rhapsody statechart
createNestedStatechart	Creates a nested statechart

Method Name	Description
createNewProject	Creates a new project named <*projectName*> in <*projectLocation*>
deleteActivityDiagram	Deletes the specified activity diagram from the current class
deleteActor	Deletes the specified actor from the current package
deleteArgument	Deletes an argument from the current operation
deleteAttribute	Deletes the specified attribute from the current class
deleteClass	Deletes a class from the current class
deleteCollaborationDiagram	Deletes the specified collaboration diagram from the current package
deleteComponent	Deletes the specified component from the current project
deleteComponentDiagram	Deletes the specified component diagram from the current package
deleteComponentInstance	Deletes the specified component instance
deleteConfiguration	Deletes the specified configuration from the current component
deleteConnector	Deletes the specified connector from the statechart
deleteConstructor	Deletes a constructor from the current class
deleteDependency	Deletes a dependency
deleteDeploymentDiagram	Deletes the specified deployment diagram from the current package
deleteDescribingDiagram	Deletes the describing use case or sequence diagram for the current use case
deleteDestructor	Deletes a destructor from the current class
deleteEntryPoint	Deletes the entry point of the current use case
deleteEvent	Deletes the specified event from the current package
deleteEventReception	Deletes the specified event reception from the current class
deleteExtensionPoint	Deletes the specified extension point
deleteFile	Deletes the specified file from the current component
deleteFlowchart	Deletes an activity diagram from the current operation
deleteFlowItems	Deletes the specified flowItem from the collection of flowItems
deleteFlows	Deletes the specified flow from the collection of flows

Method Name	Description
deleteFromProject	Deletes the current model element from the project open in Rhapsody
deleteGeneralization	Deletes the specified generalization from the current class
deleteGlobalFunction	Deletes the specified global function from the current package
deleteGlobalObject	Deletes the specified global object from the current package
deleteGlobalVariable	Deletes the specified global variable from the current package
deleteInitialInstance	Deletes an instance from the list of build instances for the current configuration
deleteNode	Deletes the specified node from the current package
deleteObjectModelDiagram	Deletes the specified OMD from the current package
deleteOperation	Deletes the specified operation from the current class
deletePackage	Deletes the current package
deleteRelation	Deletes the specified relation from the current class
deleteSequenceDiagram	Deletes the specified sequence diagram from the current package
deleteState	Deletes the specified state from the Rhapsody statechart
deleteStatechart	Deletes the specified statechart from the current class
deleteStaticReaction	Deletes the specified static reaction from the statechart
deleteSuperclass	Deletes a superclass from the current class
deleteTransition	Deletes a transition
deleteType	Deletes a type from the current class
deleteUseCase	Deletes the specified use case from the current package
deleteUseCaseDiagram	Deletes the specified use case diagram from the current package
enterAnimationCommand	Specifies the command to begin animation
errorMessage	Returns the most recent error message
Exit	Is invoked before Rhapsody exits
findActor	Retrieves the specified actor, if it belongs to the current package
findAllByName	Searches all the elements and finds the first element of the specified name and metaclass in the current package

Method Name	Description
findAttribute	Retrieves the specified attribute of the classifier
findBaseClassifier	Retrieves a base (parent) classifier of a classifier
findClass	Retrieves the specified class, if it belongs to the current package
findComponent	Retrieves the specified component from the current project
findComponentInstance	Retrieves the specified component instance
findConfiguration	Retrieves the specified configuration in the current component
findDerivedClassifier	Retrieves the specified derived classifier of a classifier
findElementsByFullName	Searches for the specified element
findEntryPoint	Deletes the specified entry point
findEvent	Retrieves the specified event, if it belongs to the current package
findExtensionPoint	Retrieves the extension point, given the generalization
findGeneralization	Retrieves the specified generalization of a classifier
findGlobalFunction	Retrieves the specified global function, if it belongs to the current package
findGlobalObject	Retrieves the specified global object, if it belongs to the current package
findGlobalVariable	Retrieves the specified global variable, if it belongs to the current package
findInterfaceItem	Retrieves an operation or event reception of the given signature that belongs to a classifier
findNestedClassifier	Retrieves the specified classifier defined within this object
findNestedClassifierRecursive	Retrieves the specified classifier defined in this object and in objects defined within this object
findNestedElement	Retrieves the specified element nested in a model element
findNestedElementRecursive	Retrieves the specified element from a given model element at any level of nesting within that element
findNode	Retrieves the specified node, if it belongs to the current package
findRelation	Retrieves the specified relation that belongs to the current classifier
findTrigger	Retrieves the specified trigger in the statechart of the current class

Method Name	Description
findType	Retrieves the specified data type, if it belongs to the current package
findUsage	Retrieves the usage of the specified element in the current package
findUseCase	Retrieves the specified use case, if it belongs to the current package
forceRoundtrip	Forces a roundtrip of the code back into the Rhapsody model, and vice versa
generate	Generates code for the active configuration of the active component
generateSequence	Generates the specified sequence diagram
getConcurrentGroup	Retrieves the activation messages
getAllGraphicalProperties	Returns the list of graphical properties for the current diagram
getAllTriggers	Returns a collection of all the triggers for the current statechart
getAttributesIncludingBases	Retrieves the attributes defined for this class and the ones inherited from its superclasses
getClassifierRole	Retrieves the classifier role for this message point
getClassifierRoles	Returns a collection of `IRPClassifierRoles` linked by the current association role
getConcurrentGroup	Retrieves all the messages concurrent with the input message, including the input message itself
getDerivedInEdges	Retrieves the incoming transitions for the connector
getDerivedOutEdge	Retrieves the incoming transitions for the connector
getDescribingDiagram	Retrieves the use case diagram or sequence diagram linked to the current use case
getDiagramOfSelectedElement	Retrieves the diagram of the current element
getDirectory	Retrieves the build directory specified for the current configuration
getElementsInDiagram	Returns a collection of all the model elements in the current diagram
getErrorMessage	Returns the most recent error message
getEvent	Returns the event for the current event reception that serves as part of the interface for a class
getFile	Returns the file in which the specified classifier will be generated

Method Name	Description
getFileName	Retrieves the name of the file to which the specified classifier will be generated in this component
getFormalRelations	Returns a collection of `IRPRelations` for the current association role
getFullNameInStatechart	Returns the full text name of this state within its statecharts
getFullPathName	Retrieves the full path name of a model element as a string
getFullPathNameIn	Retrieves the full path name of a model element as a string
getGraphicalProperty	Returns the specified graphical property for the current diagram
getImpName	Retrieves the name of the current file's implementation file, including its extension and, if specified, its relative path
getInheritsFrom	Returns the base state from which the current state inherits
getInLinks	Returns the list of links for which the instance is the target instance (identified by the "to" property of the link)
getInterfaceItemsIncludingBases	Retrieves the operations and event receptions defined for this class and the ones it inherited from its superclasses
getInTransitions	Returns a collection of transitions that are directed into the current state or connector
getItsAction	Returns the action code of the current transition
getItsComponent	Retrieves the component to which the current configuration belongs
getItsGuard	Returns the guard condition of the current transition
getItsOperation	Returns the event or triggered operation of the current trigger
getItsTrigger	Returns the trigger (event or triggered operation) of the current transition
getListOfFactoryProperties	Returns the list of properties in the `<lang>_factory.prp` file
getListOfInitializerArguments	Returns the list of arguments for the initializer, as defined by the user in the instance features dialog box
getListOfSelectedElements	Returns the collection of model elements
getListOfSiteProperties	Returns the list of properties in the `<lang>_site.prp` file
getLogicalCollaboration	Retrieves the logic behind the collaboration diagram

Method Name	Description
getLogicalStates	Retrieves the list of logical states
GetMainFileName	Is invoked when Rhapsody needs the main file name and path for a configuration
getMainName	Retrieves the name of the file where the `main()` routine for the current configuration resides
getMakefileName	Retrieves the name of the makefile generated for the current configuration
getMessagePoints	Returns an ordered collection of all messagepoints occurring on this classifier
getModelElementFileName	Gets the file name of the specified model element
getNestedElements	Retrieves the elements defined in the current object
getNestedElementsRecursive	Recursively retrieves the elements defined in the model element for the object and for objects defined in it
getNewCollaboration	Retrieves the new collaboration for the current project
getOfState	Returns the state connected to the current connector if it is a history connector
getOutLinks	Returns the list of links for which the instance is the source instance (identified by the “from” property of the link)
getOutTransitions	Returns a collection of transitions that are directed out of the current state or connector
getOverriddenProperties	Retrieves the list of properties whose default values have been overridden
getPackageFile	Returns the package file
getPicture	Renders this diagram into the specified extended metafile
getPictureAsDividedMetafiles	Enables you to split a large diagram into several metafiles when you export it
getPredecessor	Retrieves the message that precedes the specified message
getPropertyValue	Returns the value associated with the specified key value
getPropertyValueExplicit	Returns an explicit value if it has been assigned to the metamodel
getRelationsIncludingBases	Retrieves the relations defined for this class and the ones it inherited from its superclasses
getRelatedUseCases	Retrieves use cases related to the current sequence diagram
getSelectedElement	Retrieves the current model element

Method Name	Description
getSignature	Retrieves the prototype of the `IRPMessage`
getSignatureNoArgNames	Retrieves the signature of the current class interface element without argument names
getSignatureNoArgTypes	Retrieves the signature of the current class interface element without argument types
getSpecName	Retrieves the name of the current file's specification file, including its extension and, if specified, its relative path
getStaticReactions	Returns a collection of static reaction transitions originating from the current state
getSubStates	Returns a collection of substates belonging to the current state
getSuccessor	Retrieves the message that follows the specified message
GetTargetfileName	Is invoked when Rhapsody needs the target name and path for a configuration
getTargetName	Retrieves the build name of the file to be generated for the current configuration
getTheExternalCodeGeneratorInvoker	Returns the invoker for the external code generator
highlightByHandle	Highlights an element, given its handle
highLightElement	Highlights the specified element
importClasses	Imports classes according to the reverse engineering setting stored in the current configuration
importPackageFromRose	Imports the specified package from Rational Rose
importProjectFromRose	Imports the specified project from Rational Rose
isAnd	Determines whether this state is an And state
isArray	Determines whether the current type is an array
isCompound	Determines whether the current state is a compound state
isConditionConnector	Determines whether the current connector is a condition connector
isDefaultTransition	Determines whether the current transition is a default transition
isDiagramConnector	Determines whether the current connector is a diagram connector
isEmpty	Determines whether the current file is empty
isEnum	Determines whether the current type is an enumerated type

Method Name	Description
isEqualTo	Tests for equality between the type of the type and the type itself
isForkConnector	Determines whether the current connector is a fork synch bar connector
isHistoryConnector	Determines whether the current connector is a history connector
isImplicit	Determines whether the type is an implicit type
isJoinConnector	Determines whether the current connector is a join synch bar connector
isJunctionConnector	Determines whether the current connector is a junction connector
isKindEnumeration	Determines whether the type is an enumeration
isKindLanguage	Determines whether the type is a language declaration type
isKindStructure	Determines whether the type is a structure
isKindTypedef	Determines whether the type is a `typedef`
isKindUnion	Determines whether the type is a union
isLeaf	Determines whether the current state is a leaf state
isOperation	Determines whether the current trigger is an operation (event or triggered operation)
isPointer	Determines whether the current type is a pointer
isPointerToPointer	Determines whether the current type is a pointer to another pointer
isReadOnly	Determines whether the current unit is read-only
isReference	Determines whether the current type is a reference
isReferenceToPointer	Determines whether the current type is a reference to a pointer
isRoot	Determines whether the current state is a root state
isSeparateSaveUnit	Determines whether the current unit is saved in its own (separate) file
isStaticReaction	Determines whether this is a static reaction
isStruct	Determines whether the current type is a `struct`
isStubConnector	Determines whether the current connector is a stub connector
isTemplate	Determines whether the current type is a template

Method Name	Description
isTerminationConnector	Determines whether the current connector is a termination connector
isTimeout	Determines whether the current trigger is a timeout
isTypelessObject	Tests an object to see if it is defined explicitly or implicitly
isUnion	Determines whether the current type is a union
itsCompoundSource	Returns a collection of states that act as multiple sources for this single transition
load	Loads the specified unit
make	Builds the current component following the current configuration
makeUnidirect	Changes the current relation from a unidirectional (symmetric) one to one that is directional from the `me` of this relation to `me`'s inverse
matchOnSignature	Determines whether the signature of the current class interface element matches that of another `IRPInterfaceItem`
notifyGenerationDone	Is called by the external code generator after a generation session invoked by the `generate` event is done
open	Opens a file
openProject	Opens a Rhapsody project
openProjectFromURL	Opens the Rhapsody product at the specified URL
openProjectWithLastSession	Opens the project using the settings from the previous Rhapsody session
openProjectWithoutSubUnits	Opens the Rhapsody project without subunits
overrideInheritance	Overrides inheritance for the current state
quit	Closes the active Rhapsody project
rebuild	Rebuilds the application
recalculateEventsBaseId	Recalculates the events base ID of the package or project
refreshAllViews	Refreshes all the views
regenerate	Regenerates the active configuration of the active component
removeConveyed	Removes an information element from the `conveyed` collection
removeFromInstrumentationScope	Removes the classifier from the instrumentation scope

Method Name	Description
removePackageFromInstrumentationScope	Removes the specified package from the instrumentation scope. including all its aggregated classes, actors, and nested packages
removeProperty	Removes the property from the model element
removeProvidedInterface	Removes the specified interface from the collection of required interfaces
removeRepresented	Removes a flowItem from the `represented` collection
removeRequiredInterface	Removes the specified interface from the collection of required interfaces
removeScopeElement	Deletes a scope element
removeStereotype	Removes the stereotype from the model element
report	Generates a report in ASCII or RTF into the specified file
resetEntryActionInheritance	Resets the inheritance of the entry action of the current state
resetExitActionInheritance	Resets the inheritance of the exit action of the current state
resetLabelInheritance	Resets the label inheritance
roundtrip	Roundtrips code changes back into the open model
save	Saves the current project
saveAs	Saves the current project to the specified file name and location
setActiveComponent	Sets the active configuration for the current project
setActiveConfiguration	Sets the active configuration for the current project
setClassType	Sets or changes the current template parameter to a class type parameter
setComponent	Sets the current component for the open project
setConfiguration	Sets the current configuration for the open project
setDirectory	Sets the directory for the current configuration
setEnd1ViaPort	Connects `end1` of the flow to the specified instance via the given port (defined by the instance class)
setEnd2ViaPort	Connects `end2` of the flow to the specified instance via the given port (defined by the instance class)
setGraphicalProperty	Allows the setting of graphical properties for a diagram element.
setInverse	Adds or updates the inverse relation
setItsAction	Updates the current transition with a new action

Method Name	Description
setItsComponent	Sets the owning component for the current configuration
setItsGuard	Updates the current transition with a new guard
setItsLabel	Updates this transition with a new label (trigger[guard]/ action)
setItsTrigger	Updates the current transition with a new trigger
setLog	Creates a log file that records all the information that is normally displayed in the Rhapsody output window
setOfState	Updates the source state of the current connector with a new state
setPath	Sets the path of the application built for this component
setPropertyValue	Modifies the value of the specified property
setReadOnly	Specifies whether the current unit is read-only
setReturnTypeDeclaration	Specifies a new value for the return type declaration
setSeparateSaveUnit	Sets a unit to be stored to its own file
setStaticReaction	Sets the static reaction for the current state
setTypeDeclaration	Sets the C++ type declaration for this argument
synchronizeTemplateInstantiation	Is used to synchronize between a template and a template instantiation parameter
unoverrideInheritance	Removes the override inheritance for the current state
version	Returns the version of Rhapsody that corresponds to the current COM API version
WhoAmI	Is invoked to identify the external code generator
write	Writes to the specified file

Index

U

V

W