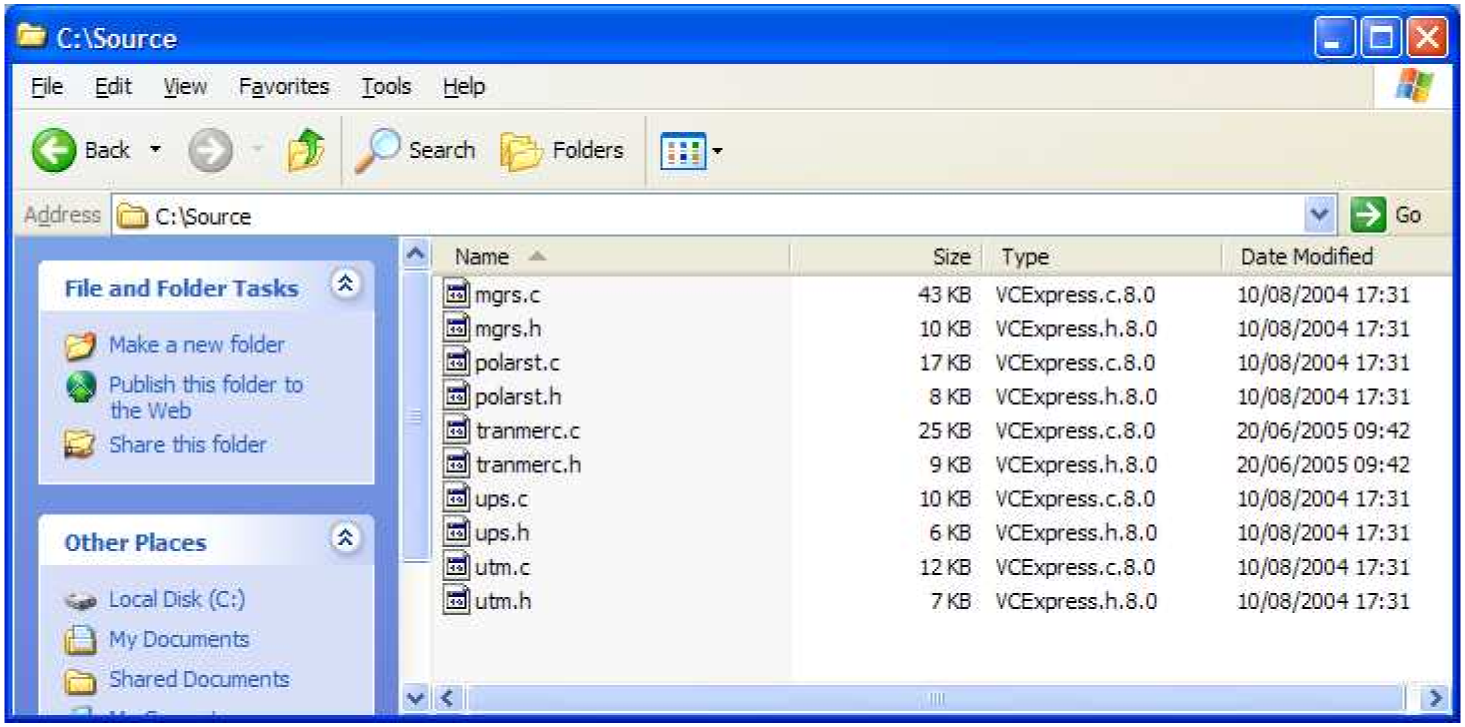
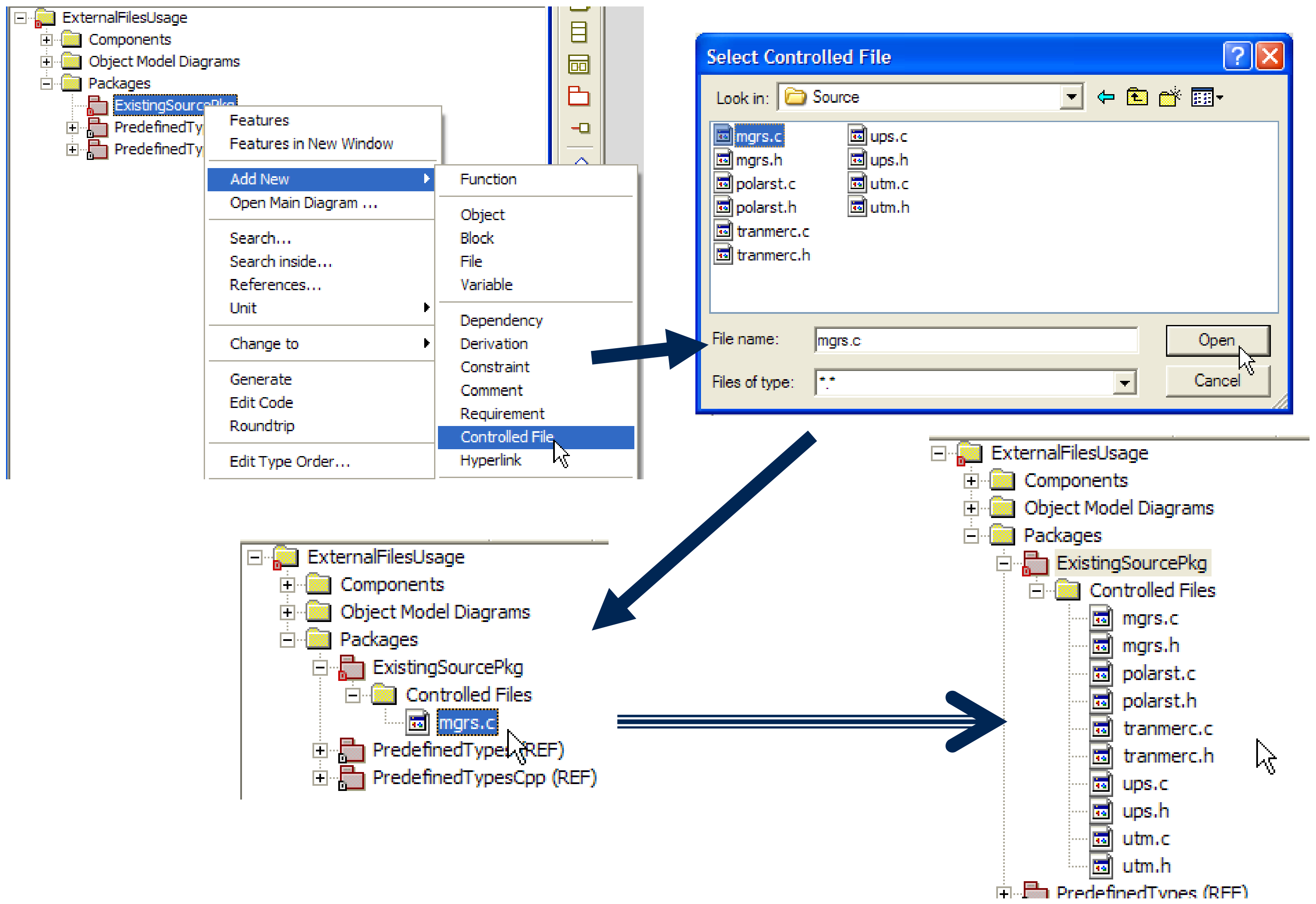
Including External C Files in a Model & Build

External Files



Name	Size	Type	Date Modified
mgrs.c	43 KB	VCExpress.c.8.0	10/08/2004 17:31
mgrs.h	10 KB	VCExpress.h.8.0	10/08/2004 17:31
polarst.c	17 KB	VCExpress.c.8.0	10/08/2004 17:31
polarst.h	8 KB	VCExpress.h.8.0	10/08/2004 17:31
tranmerc.c	25 KB	VCExpress.c.8.0	20/06/2005 09:42
tranmerc.h	9 KB	VCExpress.h.8.0	20/06/2005 09:42
ups.c	10 KB	VCExpress.c.8.0	10/08/2004 17:31
ups.h	6 KB	VCExpress.h.8.0	10/08/2004 17:31
utm.c	12 KB	VCExpress.c.8.0	10/08/2004 17:31
utm.h	7 KB	VCExpress.h.8.0	10/08/2004 17:31

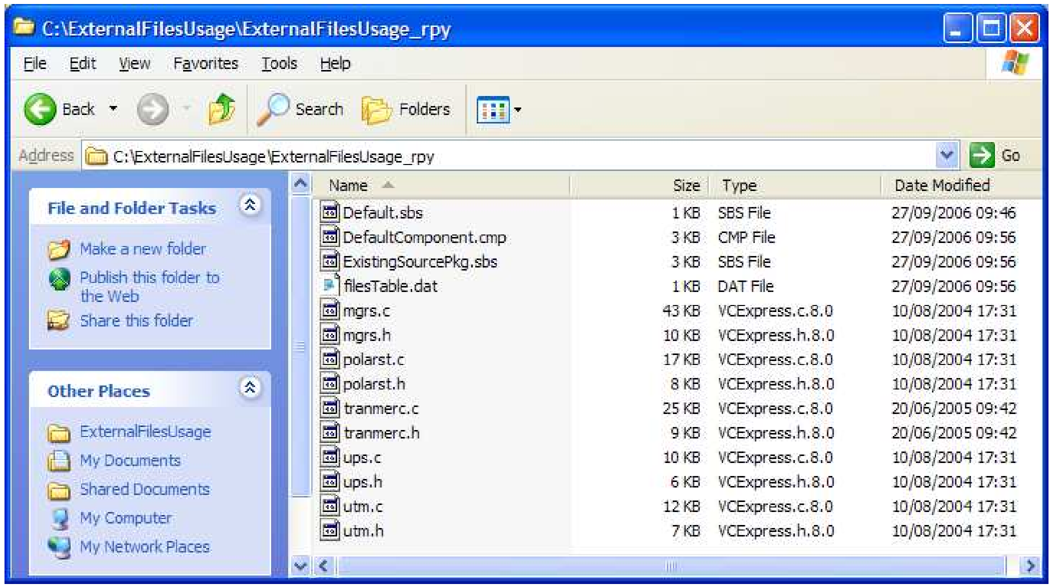
Add to Project as Controlled Files


Look in: Source

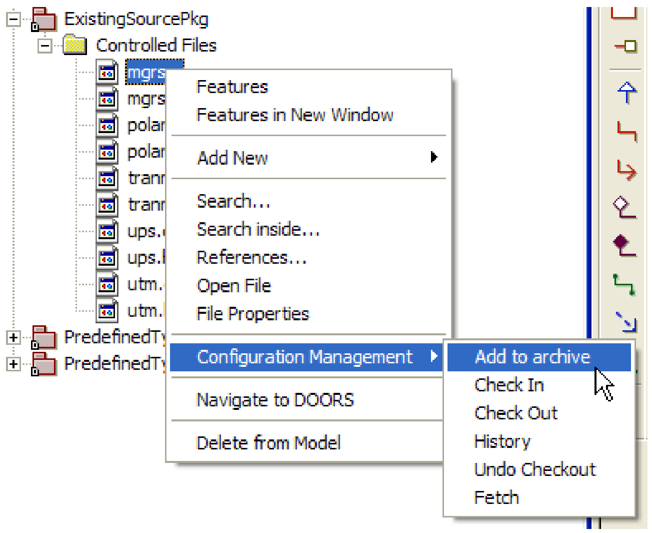
File name: mgrs.c

Files of type: *.*

Controlled Files in Model

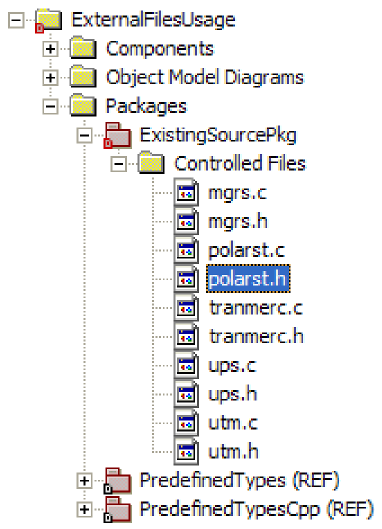

C:\ExternalFilesUsage\ExternalFilesUsage_rpy
File Edit View Favorites Tools Help
Back
Search
Folders
Address C:\ExternalFilesUsage\ExternalFilesUsage_rpy
Go
File and Folder Tasks
Make a new folder
Publish this folder to the Web
Share this folder
Other Places
ExternalFilesUsage
My Documents
Shared Documents
My Computer
My Network Places

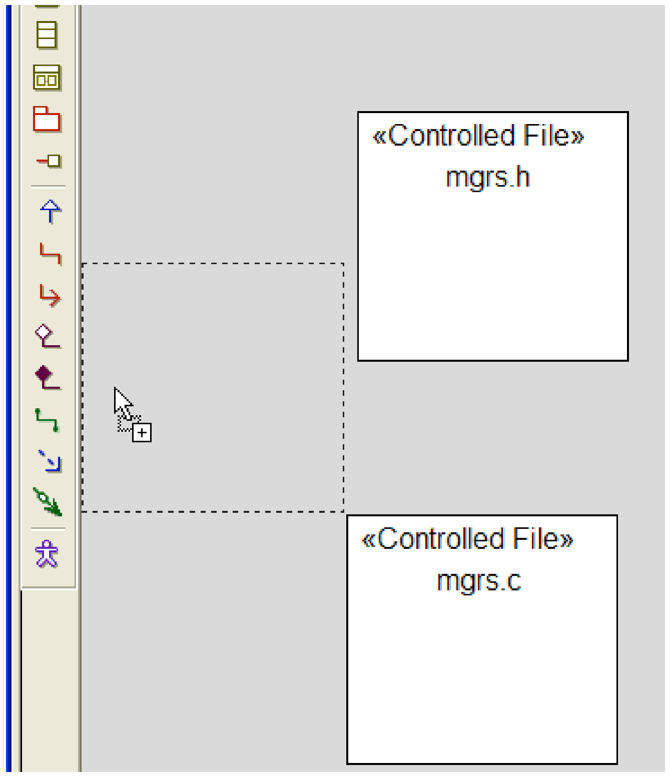
Name	Size	Type	Date Modified
Default.sbs	1 KB	SBS File	27/09/2006 09:46
DefaultComponent.cmp	3 KB	CMP File	27/09/2006 09:56
ExistingSourcePkg.sbs	3 KB	SBS File	27/09/2006 09:56
filesTable.dat	1 KB	DAT File	27/09/2006 09:56
mgrs.c	43 KB	VCExpress.c.8.0	10/08/2004 17:31
mgrs.h	10 KB	VCExpress.h.8.0	10/08/2004 17:31
polarst.c	17 KB	VCExpress.c.8.0	10/08/2004 17:31
polarst.h	8 KB	VCExpress.h.8.0	10/08/2004 17:31
tranmerc.c	25 KB	VCExpress.c.8.0	20/06/2005 09:42
tranmerc.h	9 KB	VCExpress.h.8.0	20/06/2005 09:42
ups.c	10 KB	VCExpress.c.8.0	10/08/2004 17:31
ups.h	6 KB	VCExpress.h.8.0	10/08/2004 17:31
utm.c	12 KB	VCExpress.c.8.0	10/08/2004 17:31
utm.h	7 KB	VCExpress.h.8.0	10/08/2004 17:31



The files are now part of the project. These are copies of the original files from C:\Source. We will no longer use the files in C:\Source. The files can now be CMed from within Rhapsody.

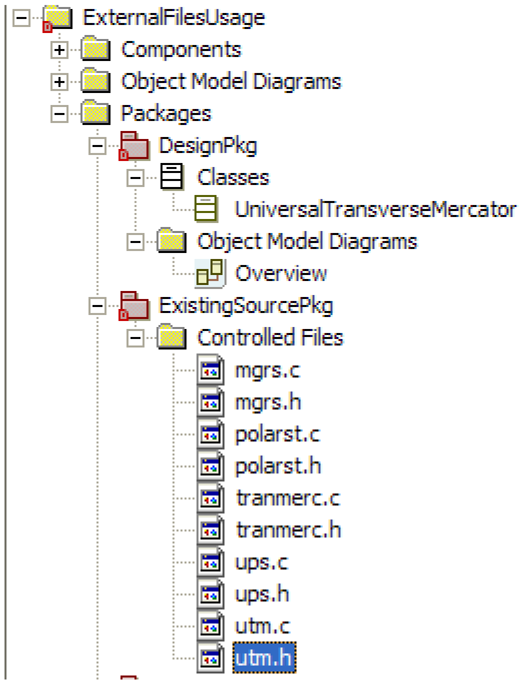
Controlled Files on Diagrams


ExternalFilesUsage
Components
Object Model Diagrams
Packages
ExistingSourcePkg
Controlled Files
mgrs.c
mgrs.h
polarst.c
polarst.h
tranmerc.c
tranmerc.h
ups.c
ups.h
utm.c
utm.h
PredefinedTypes (REF)
PredefinedTypesCpp (REF)

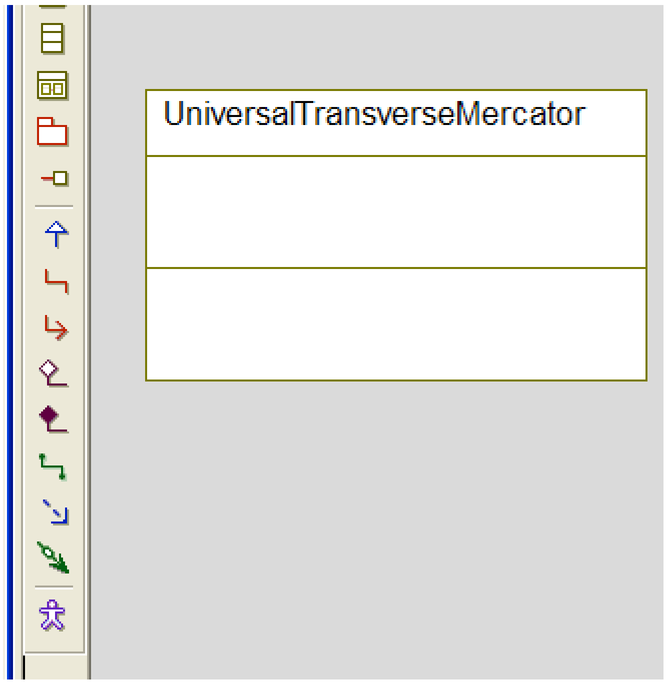


Controlled files can appear on diagrams.

Reverse Engineering as External

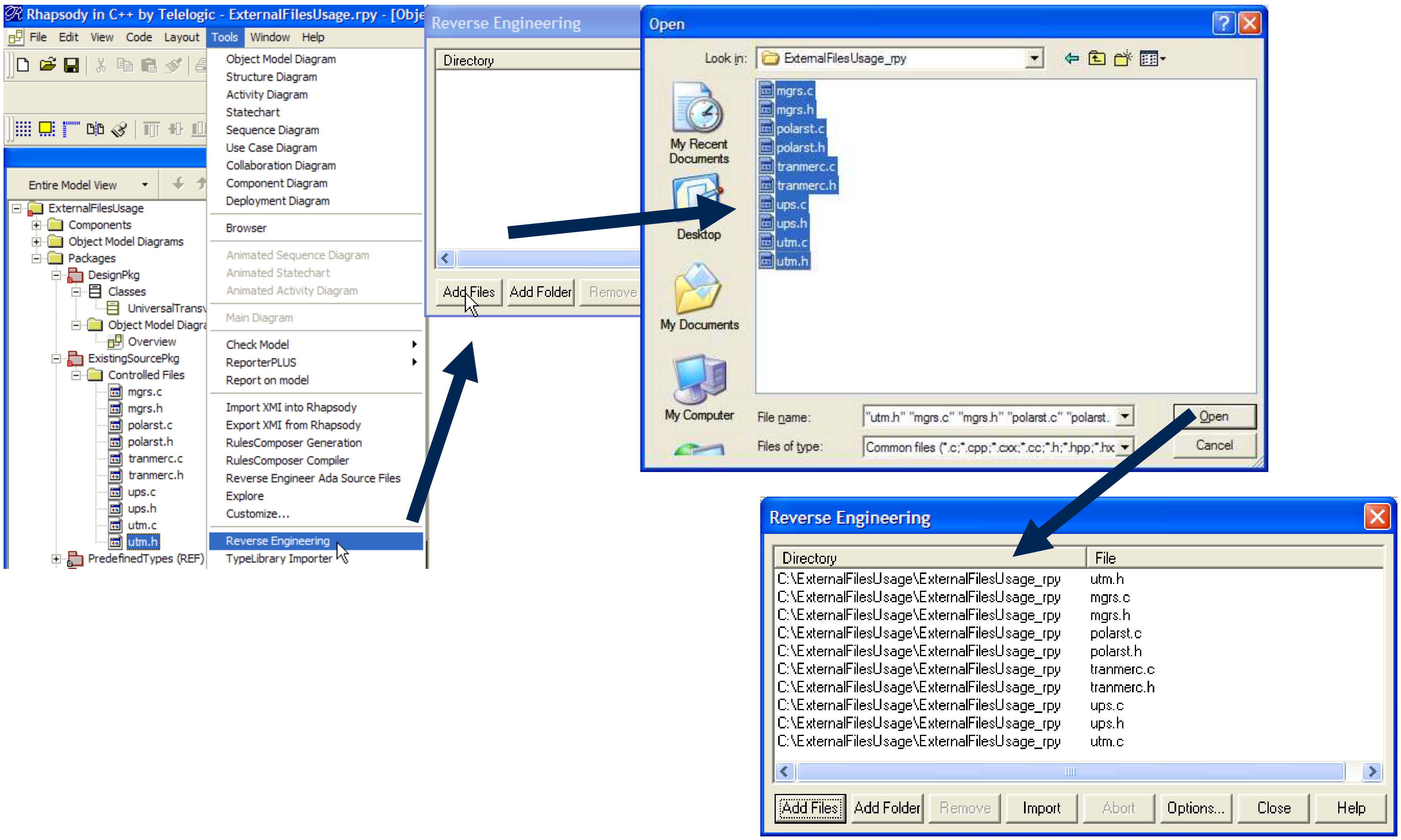


```
ExternalFilesUsage
    Components
    Object Model Diagrams
    Packages
        DesignPkg
            Classes
                UniversalTransverseMercator
            Object Model Diagrams
                Overview
        ExistingSourcePkg
            Controlled Files
                mgrs.c
                mgrs.h
                polarst.c
                polarst.h
                tranmerc.c
                tranmerc.h
                ups.c
                ups.h
                utm.c
                utm.h
```



Our UniversalTransverseMercator class would like to utilise the utm.h header file.

Select the Files

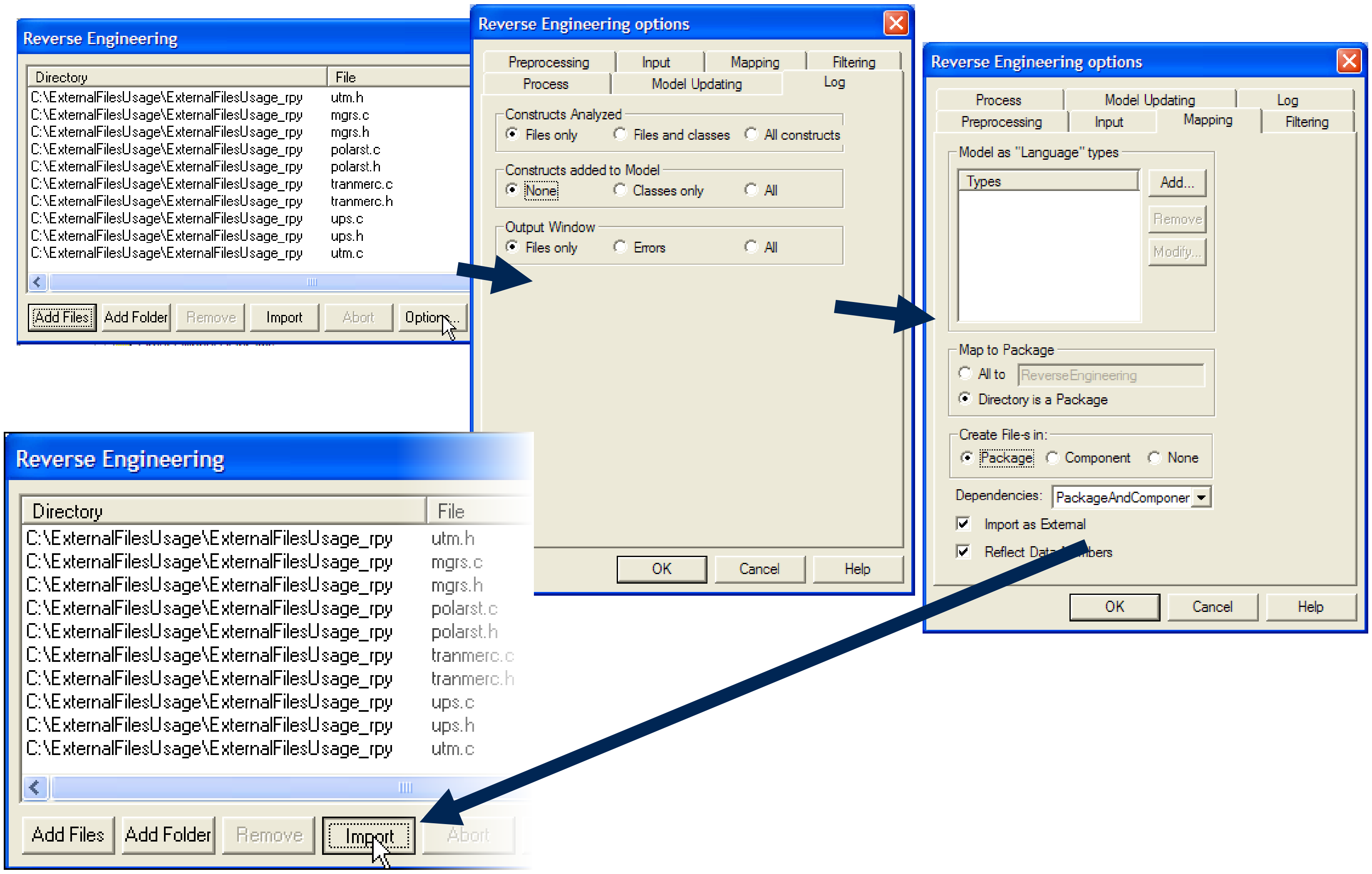


File name: "utm.h" "mgrs.c" "mgrs.h" "polarst.c" "polarst.

Files of type: Common files (*.c;*.cpp;*.cxx;*.cc;*.h;*.hpp;*.hx

Directory	File
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.c

Set the Options



Reverse Engineering

Directory	File
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.c

Reverse Engineering options

Constructs Analyzed: [✓ Files only] Files and classes All constructs

Constructs added to Model: [✓ None] Classes only All

Output Window: [✓ Files only] Errors All

Reverse Engineering options

Model as "Language" types

Map to Package: All to ReverseEngineering [✓ Directory is a Package]

Create File-s in: [✓ Package] Component None

Dependencies: PackageAndComponen

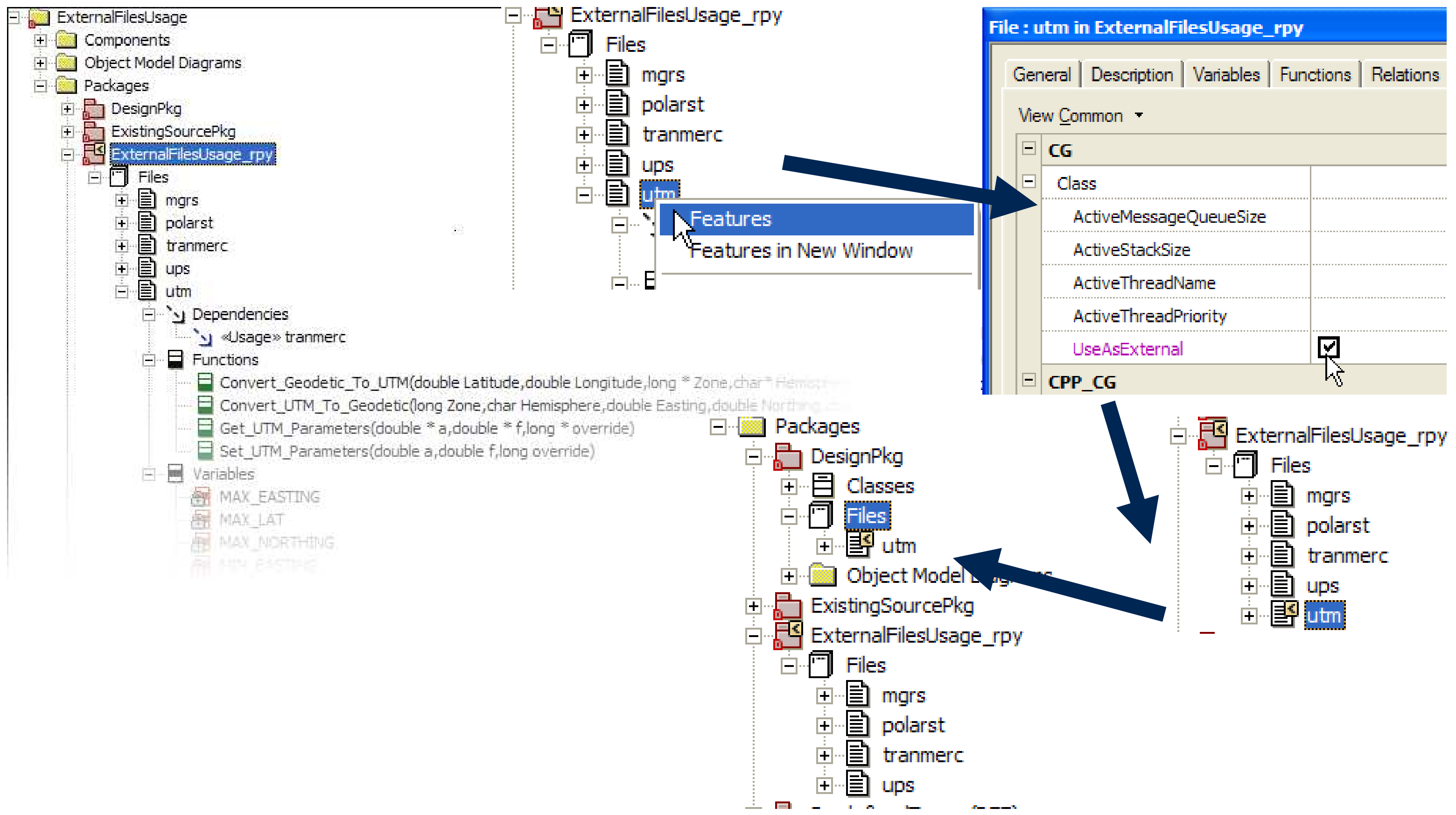
[✓] Import as External

[✓] Reflect Data Members

Reverse Engineering

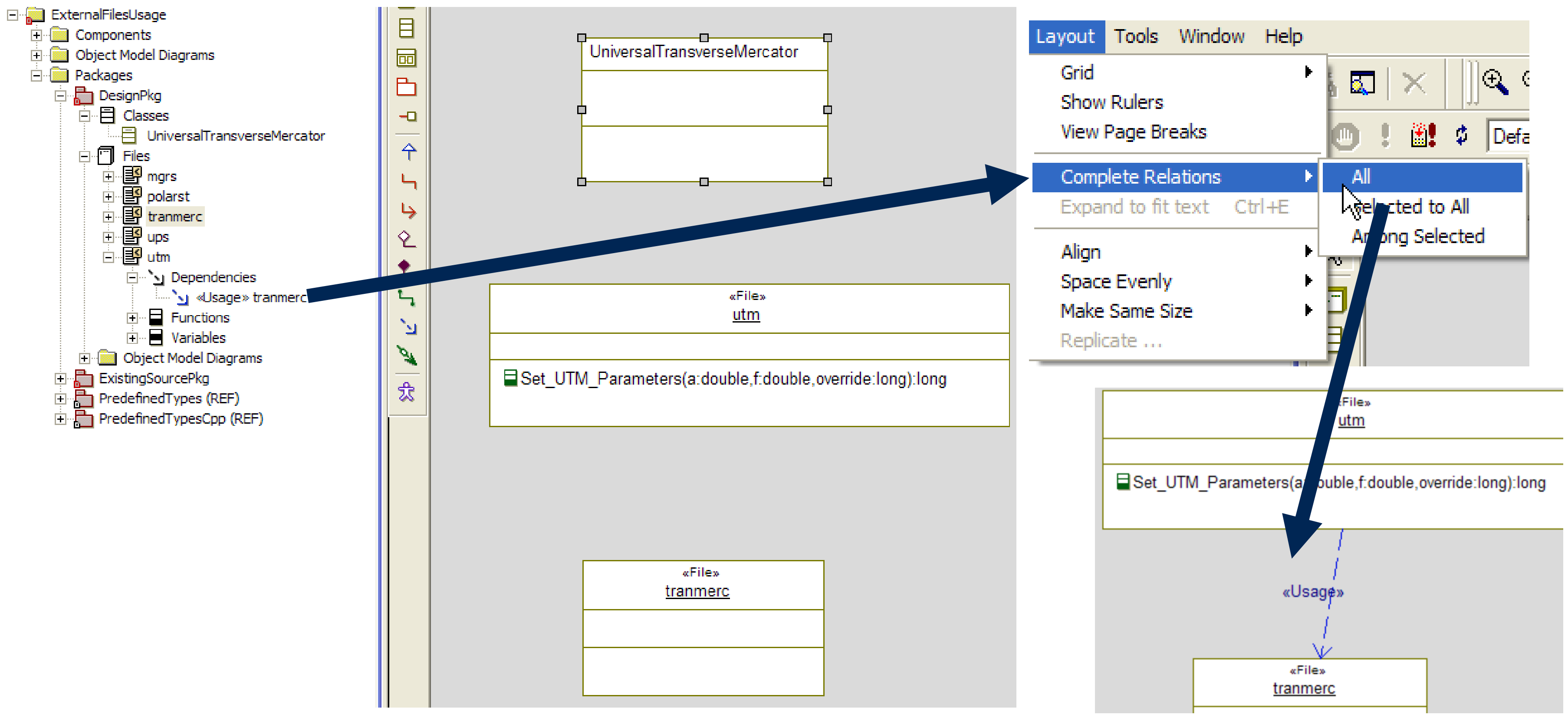
Directory	File
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	mgrs.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	polarst.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	tranmerc.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.c
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	ups.h
C:\ExternalFilesUsage\ExternalFilesUsage_rpy	utm.c

Rearrange Model



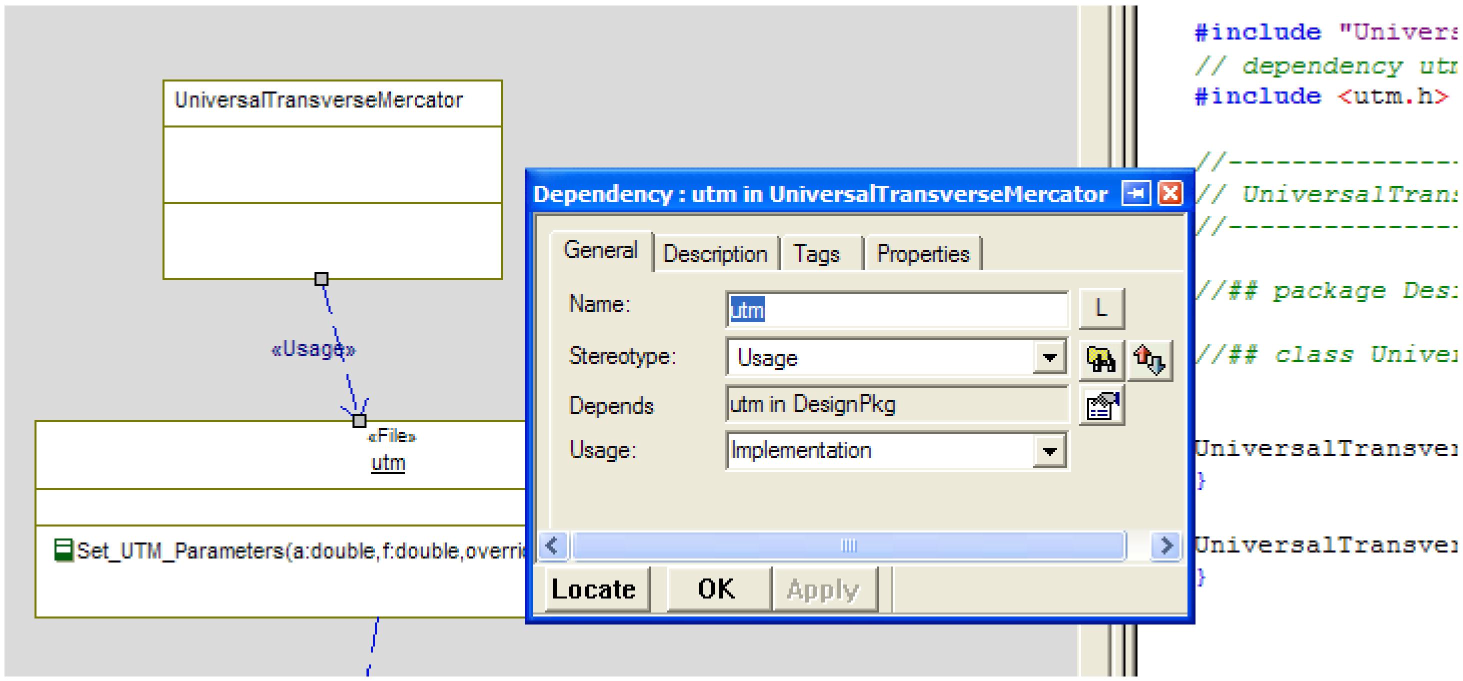
The files have been put in a package named after the directory containing them. We could move the utm file into the Design package but we must first set it as external. This is because DesignPkg is not external.

Rearrange Model Continued



Here we've decided to move all the files into the design package and deleted the original external package. Complete Relations reveals the dependency between utm and tranmerc.

External File <<Usage>>

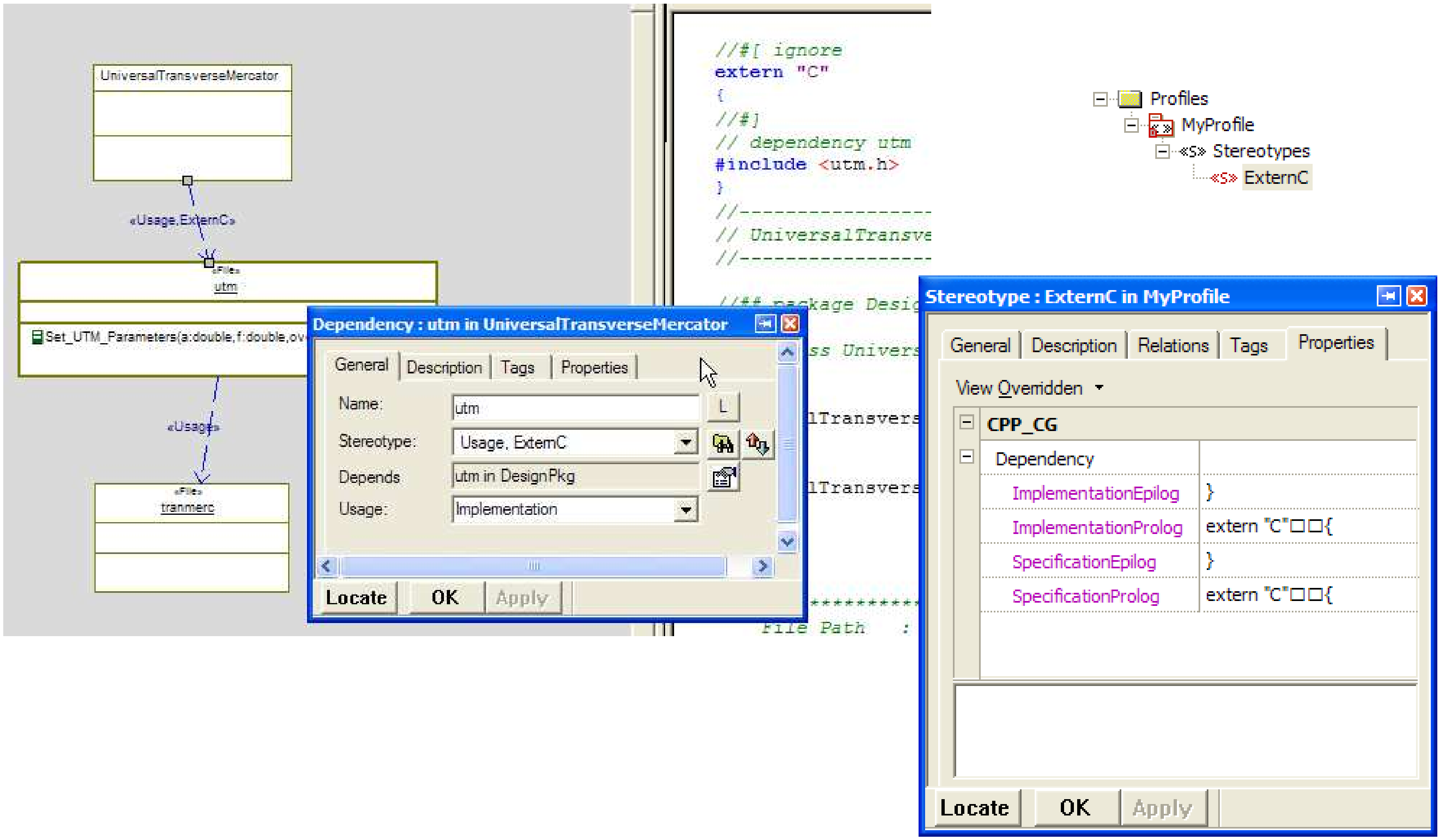

UniversalTransverseMercator
«Usage»
«File»
utm
Set_UTM_Parameters(a:double,f:double,overri
General
Description
Tags
Properties
L
Locate
OK
Apply

Dependency : utm in UniversalTransverseMercator

Name:	utm
Stereotype:	Usage
Depends	utm in DesignPkg
Usage:	Implementation

```
#include "Univers
// dependency utr
#include <utm.h>

//--------------
// UniversalTrans
//--------------

//## package Des
//## class Unive


UniversalTransve
}

UniversalTransve
}
```

extern “C” File <<Usage>>



```
//#[ ignore
extern "C"
{
//#]
// dependency utm
#include <utm.h>
}
//-----------------
// UniversalTransve
//-----------------

//## package Desig

ss Univers

lTransvers

lTransvers

**********
 File Path    :
```

Dependency : utm in UniversalTransverseMercator

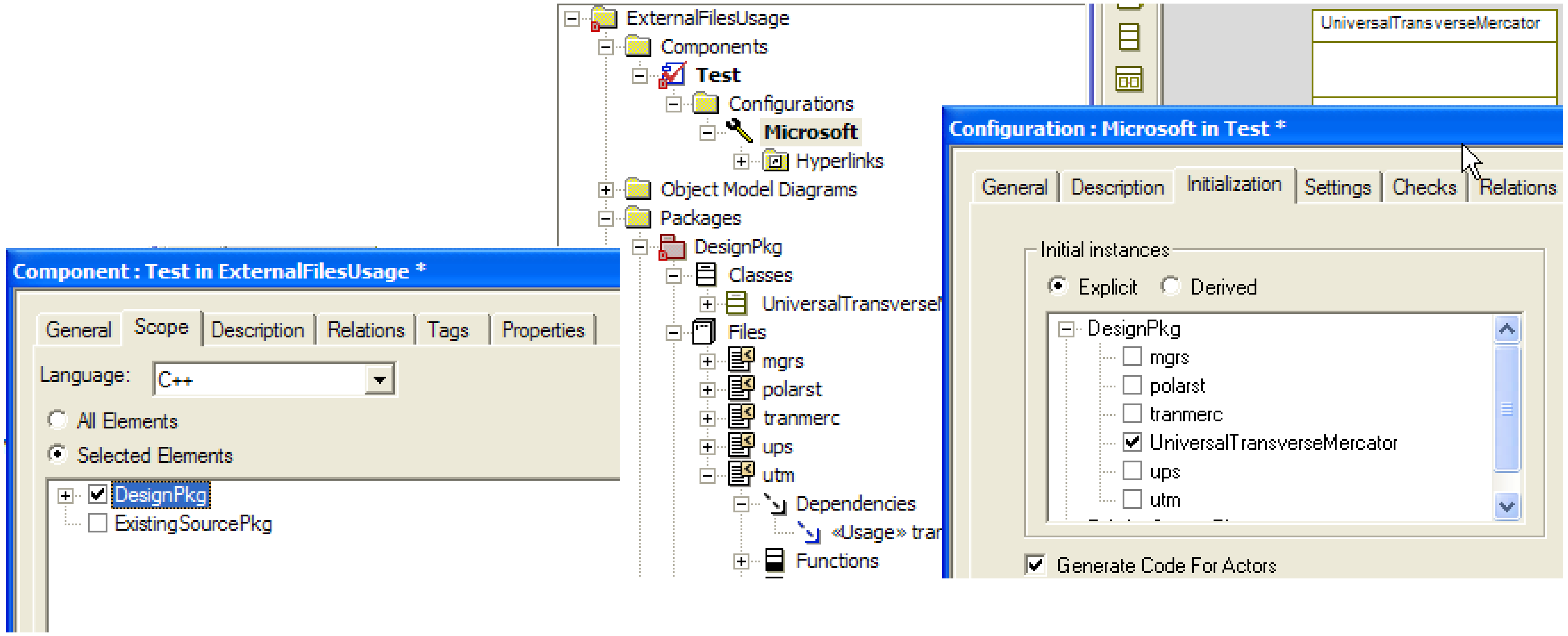
Name:	utm
Stereotype:	Usage, ExternC
Depends	utm in DesignPkg
Usage:	Implementation

Stereotype : ExternC in MyProfile

CPP_CG	
Dependency	
ImplementationEpilog	}
ImplementationProlog	extern "C"□□{
SpecificationEpilog	}
SpecificationProlog	extern "C"□□{

Building the Component

The DefaultComponent may have gathered information during reverse engineering which has overridden properties. In this case it's best to delete this component and create a fresh one.



ExternalFilesUsage
- Components
  - Test
    - Configurations
      - Microsoft
        - Hyperlinks
- Object Model Diagrams
- Packages
  - DesignPkg
    - Classes
      - UniversalTransverse
    - Files
      - mgrs
      - polarst
      - tranmerc
      - ups
      - utm
        - Dependencies
          - «Usage» tran
    - Functions

UniversalTransverseMercator

Component : Test in ExternalFilesUsage *

General | Scope | Description | Relations | Tags | Properties

Language: C++

[ ] All Elements [✓ Selected Elements]

- [✓] DesignPkg
- [ ] ExistingSourcePkg

Configuration : Microsoft in Test *

General | Description | Initialization | Settings | Checks | Relations

Initial instances

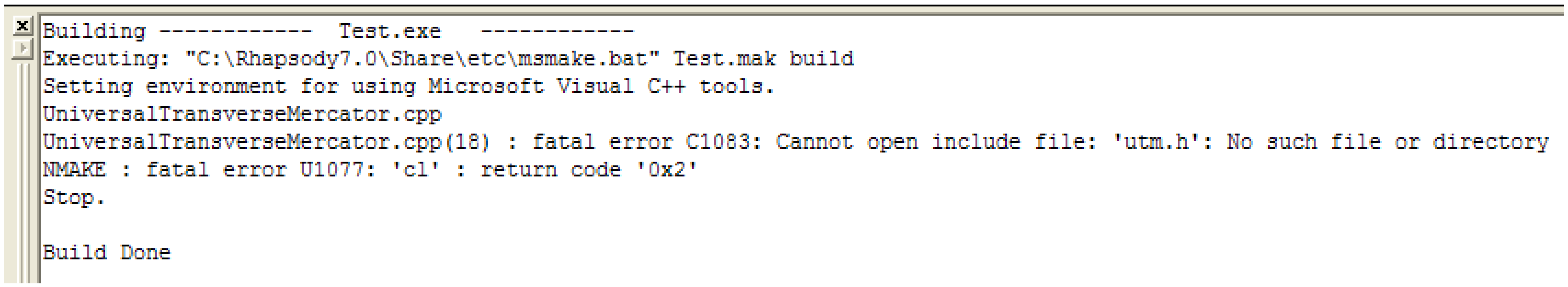
[✓ Explicit] [ ] Derived

- DesignPkg
  - [ ] mgrs
  - [ ] polarst
  - [ ] tranmerc
  - [✓] UniversalTransverseMercator
  - [ ] ups
  - [ ] utm

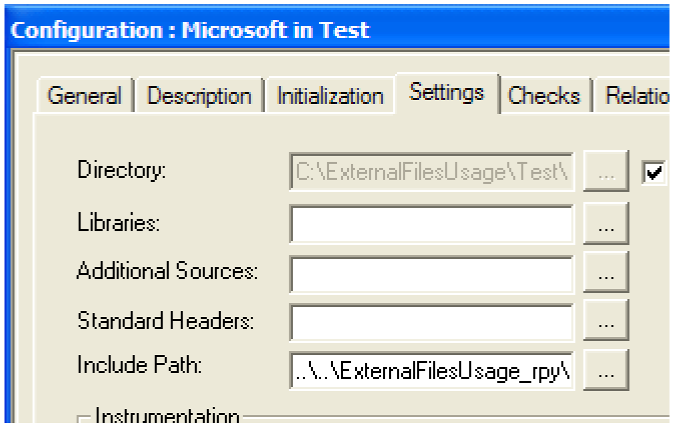
[✓] Generate Code For Actors

Compiling the Component – accessing the .h files

The first error will be due to the fact that the .h files cannot be found.



```
Building ------------  Test.exe   ------------
Executing: "C:\Rhapsody7.0\Share\etc\msmake.bat" Test.mak build
Setting environment for using Microsoft Visual C++ tools.
UniversalTransverseMercator.cpp
UniversalTransverseMercator.cpp(18) : fatal error C1083: Cannot open include file: 'utm.h': No such file or directory
NMAKE : fatal error U1077: 'cl' : return code '0x2'
Stop.

Build Done
```



Configuration : Microsoft in Test

Directory: C:\ExternalFilesUsage\Test\ ✓

Libraries:

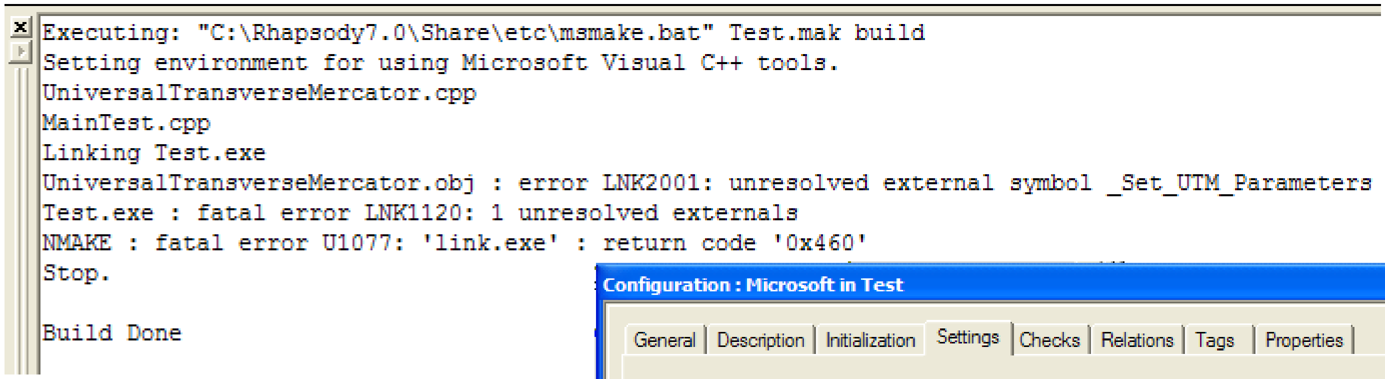
Additional Sources:

Standard Headers:

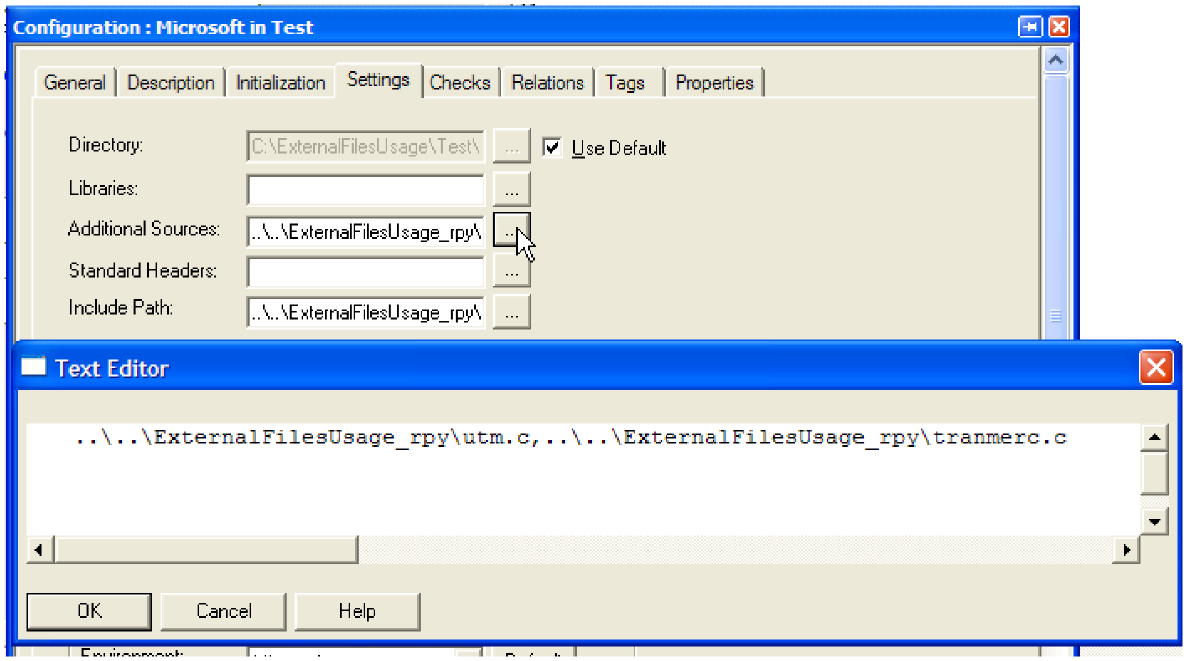
Include Path: ..\..\ExternalFilesUsage_rpy\

Compiling the Component – accessing the .c files

The second error will be due to the fact that the .c files have not been compiled and are therefore not available to the linker.



```
Executing: "C:\Rhapsody7.0\Share\etc\msmake.bat" Test.mak build
Setting environment for using Microsoft Visual C++ tools.
UniversalTransverseMercator.cpp
MainTest.cpp
Linking Test.exe
UniversalTransverseMercator.obj : error LNK2001: unresolved external symbol _Set_UTM_Parameters
Test.exe : fatal error LNK1120: 1 unresolved externals
NMAKE : fatal error U1077: 'link.exe' : return code '0x460'
Stop.

Build Done
```



Configuration : Microsoft in Test

General | Description | Initialization | Settings | Checks | Relations | Tags | Properties

Directory: C:\ExternalFilesUsage\Test\ [✓ Use Default]

Libraries:

Additional Sources: ..\..\ExternalFilesUsage_rpy\

Standard Headers:

Include Path: ..\..\ExternalFilesUsage_rpy\

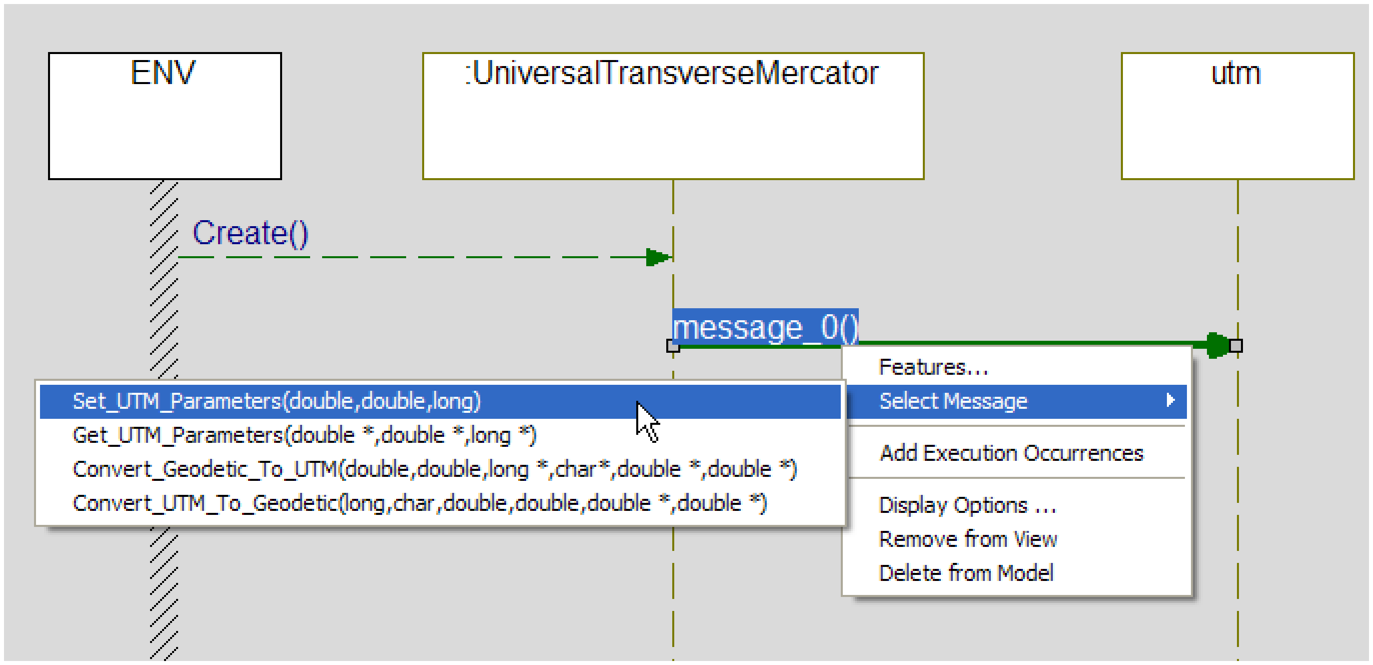
Text Editor

```
..\..\ExternalFilesUsage_rpy\utm.c,..\..\ExternalFilesUsage_rpy\tranmerc.c
```

OK | Cancel | Help

Using External Files on a Sequence Diagram

External files can appear on a sequence diagram as expected. Of course during animation the calls to external files will not appear as the external code will not be annotated.


ENV
:UniversalTransverseMercator
utm
Create()
message_0()
Set_UTM_Parameters(double,double,long)
Get_UTM_Parameters(double *,double *,long *)
Convert_Geodetic_To_UTM(double,double,long *,char*,double *,double *)
Convert_UTM_To_Geodetic(long,char,double,double,double *,double *)
Features...
Select Message
Add Execution Occurrences
Display Options ...
Remove from View
Delete from Model