MSBuild Sidekick v4.5

User Manual

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1. What is MSBuild Sidekick?

MSBuild Sidekick offers easy-to-use Graphic User Interface for authoring, building and debugging project files for Microsoft® Build (MSBuild) Engine.
MSbuild Sidekick has built-in support for tasks provided as part of MSBuild Extension Pack, providing user-friendly editors and online help for these tasks.
MSBuild Sidekick can be used with any XML file conforming to MSBuild 2.0, 3.5, 4.0 and 4.5 schema (see also System Requirements below), including but not limited to

- Generic MSBuild projects (*.proj, *.targets, *.msbuild, *.tasks)
- Microsoft Visual Studio 2005/2008 C# and VB .NET projects (*.csproj, *.vbproj)
- Microsoft Visual Studio 2010/2012 all types of projects
- Borland (aka CodeGear) Delphi 2007 projects (*.dproj)
- Microsoft Visual Studio 2005/2008/2010/2012 solutions (*.sln)

2. System Requirements

To install and use MSBuild Sidekick your system must meet the following requirements:

- Microsoft® Windows 7, Microsoft® Windows 8, Microsoft® Windows Server 2008, Microsoft® Windows Server 2012 operating system installed
- Microsoft® .Net 4.5 Framework installed
- 10 Mb of disk space for the program files

3. Installation Instructions

To install MSBuild Sidekick, double-click the MSBuild Sidekick MSI file and follow the installation screens instructions.
To uninstall MSBuild Sidekick,

1. Open the Windows “Control Panel”
2. Open the “Add/Remove Programs” from “Control Panel”
3. Select “MSBuild Sidekick v4.5” from the list of installed applications
4. Click the “Add/Remove” button to uninstall MSBuild Sidekick application and follow the uninstaller screens instructions.

4. Purchasing MSBuild Sidekick

If you have installed MSBuild Sidekick v4.5 without purchasing a license and registering your copy, the trial will expire in 15 days after the installation, and the application functionality will not be available thereafter.
If you wish to purchase license, please visit our web site at http://www.attrice.info/msbuild and follow the purchasing and registration instructions on the site.

5. MSBuild Sidekick Features List

MSBuild Sidekick v4.5 provides the following features:

- View project structure in categorized project tree view
- View project structure in sequential project tree view (elements appear in the same order as in build project)
- Show or hide imported elements in project tree view as desired
- Add new or delete selected elements
- Edit selected element's properties and comments using properties grid
- Edit elements properties in a list (for container elements such as PropertyGroup etc.)
- Edit selected element's properties and comments using raw XML view
- Edit project file using raw XML view
- Add tasks to targets using categorized "Add task" dialog
- Use properties, items and item metadata Intellisense support when editing elements

- Change elements order in sequential project tree view or in elements list (for container elements)
- Perform "intelligent" rename of the elements throughout the project (all relevant elements are renamed)
- Delete elements throughout the project (no "dead" references left behind)
- Navigate between elements and element views (properties, list or raw XML) using backward/forward navigation
- Navigate between elements using "Find Element" dialog
- Navigate between elements using "Jump To" function in element properties
- Use integrated MSDN help (either from locally installed MSDN collection or from online MSDN)
- View targets and tasks execution graph
- Specify global or project-specific properties to be used in build session
- Modify environment properties per project for the build session
- Select targets for the build session
- Build project
- Stop building project. MSBuild API doesn't support stop build functionality by its own therefore MSBuild Sidekick terminates MSBuild process in order to stop build.
- Review build results using console log (similar to command-line MSBuild console log)
- Review build results using errors/warnings log
- Review build results using structured detailed log; navigate to specific elements from the log
- Debug project execution
- Pause debugging by setting breakpoints on Tasks/Targets
- Step-by-step debugging
- Analyze build process by viewing built and skipped Targets/Tasks on Debug Diagram
- View real-time Property and Item Include/Exclude values on Globals window while debugging
- View Property and Item Include/Exclude values changed on previous debug step
- View values of Properties and Items involved in Task execution on Autos window
- Edit MSBuild Extension Pack task property values with task-type specific editors
- View MSBuild Extension Pack tasks online help in Help window

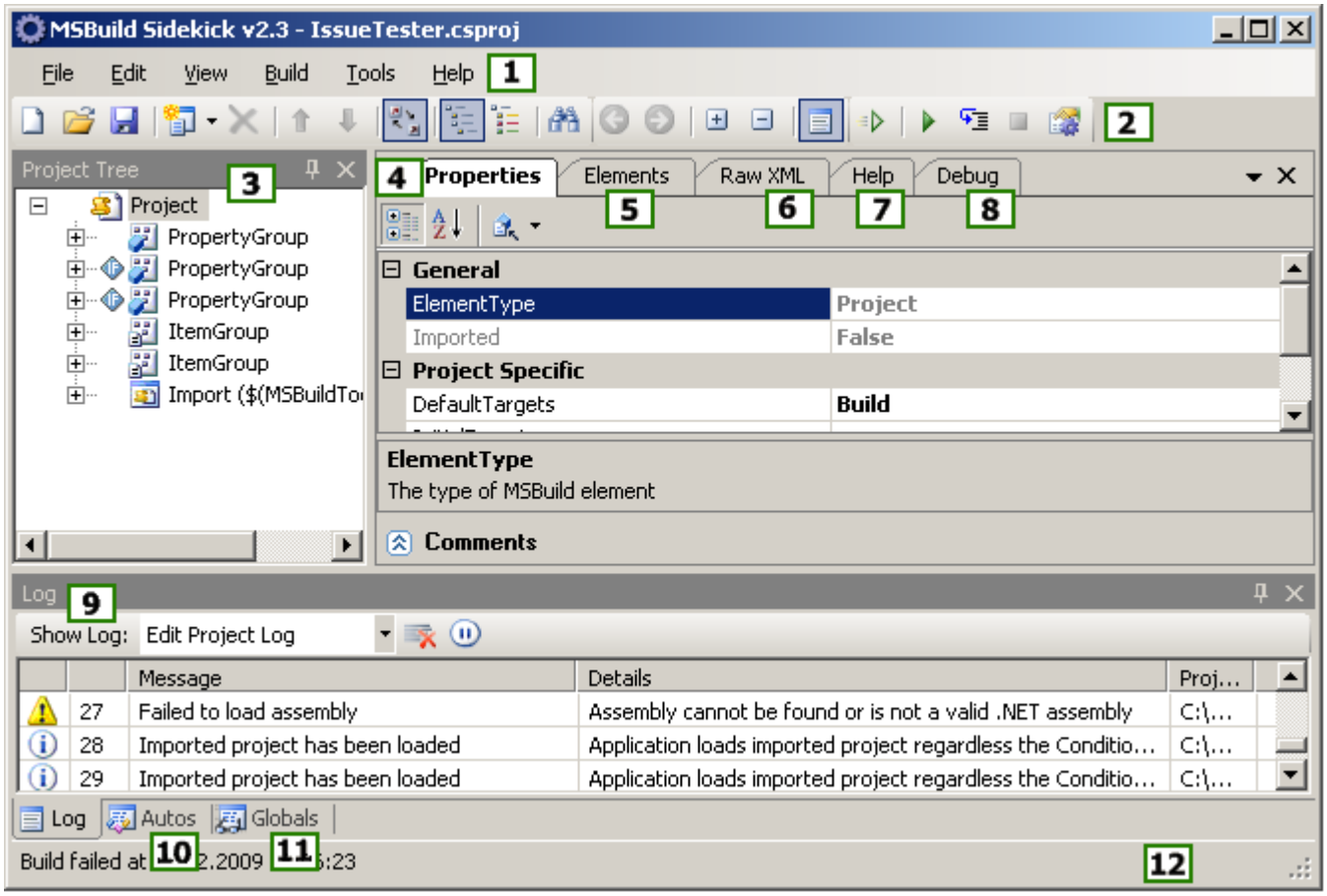
MSBuild Sidekick v4.5 supports all elements in MSBuild 2.0, 3.5, 4.0 and 4.5 schema, namely:

- Project element (ToolsVersion attribute is supported only for MSBuild 3.5 projects)
- ProjectExtensions element
- Choose element
- Import element
- UsingTask element
- PropertyGroup element (can be nested under Target elements for MSBuild 3.5 projects)
- Property element
- ItemGroup element (can be nested under Target elements for MSBuild 3.5 projects)
- Item element (Remove attribute is supported only for MSBuild 3.5 projects)
- Target element
- Task element
- Tasks' Output element
- ItemDefinitionGroupElement (only for MSBuild 3.5 projects)

6. Graphic User Interface Outline

The application's user interface consists of main window menus (labeled 1 on the screenshot below), main window toolbars (labeled 2), status bar (labeled 12) and nine dockable windows: Project Tree window (labeled 3), Properties window (labeled 4), Elements window (labeled 5), Raw XML window (labeled 6), Help window (labeled 7), Debug window (labeled 8), Logs window (labeled 9), Globals window (labeled

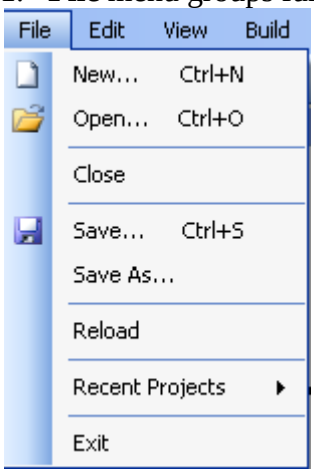
10) and Autos window (labeled 11),. Please note that on the screenshot six windows are docked into tabbed view (windows 5, 6, 7, 8, 10, 11).



6.1 Menus

The main application window menus provide access to the following functional areas.

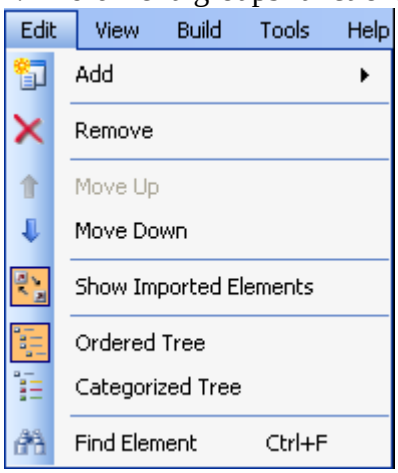
1. **File** menu groups functions related to project files operations, namely:



- **New** menu creates new empty project file
- **Open** menu opens existing project file
- **Close** menu closes currently loaded in the application project file
- **Save** menu saves changes made to currently loaded project file
- **Save As** menu allows saving current project file under a new name
- **Reload** menu reloads currently loaded project file from the disk drive

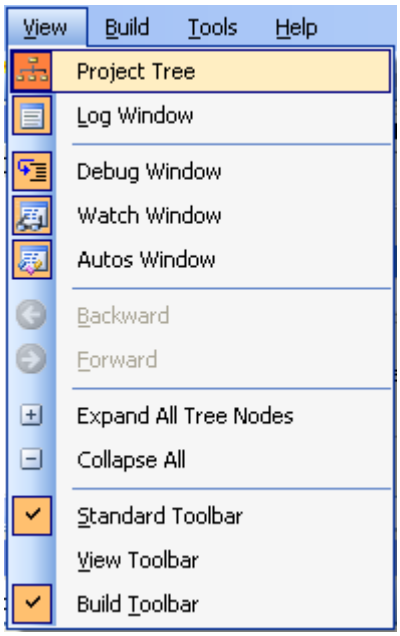
- **Recent Projects** menu provides shortcut to load previously opened project into the application; the list of nine last project paths is maintained
- **Exit** menu exits the application

2. **Edit** menu groups functions related to editing currently loaded project file:



- **Add** menu appends new element to project (user will be able to select new element type based on MSBuild schema version and element currently selected in the project tree)
- **Remove** menu removes selected element and all contained elements from project
- **Move Up** menu moves selected element up in elements order in project XML source
- **Move Down** menu moves selected element down order in project XML source
- **Show Imported Elements** menu shows or hides imported elements in the Project Tree window
- **Ordered Tree** menu switches Project Tree window to ordered mode (see below on the mode description)
- **Categorized Tree** menu switches Project Tree window to categorized mode (see below on the mode description)
- **Find Element** menu opens “Find element” dialog

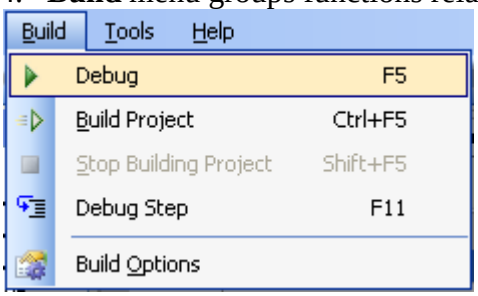
3. **View** menu groups functions related to application look and feel:



- **Project Tree** menu shows or hides Project Tree window
- **Log window** menu shows or hides Log window
- **Debug window** menu shows or hides Debug window

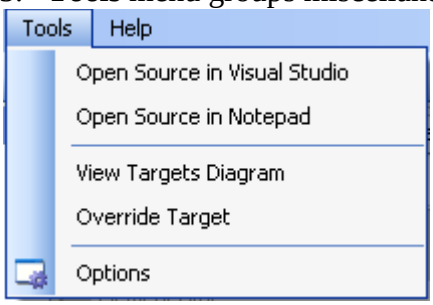
- **Globals window** menu shows or hides Globals window
- **Autos window** menu shows or hides Autos window
- **Backward** menu navigates back in project's navigation history (history includes selected element and element view window)
- **Forward** menu navigates forward in navigation history (history includes selected element and element view window)
- **Expand All Tree Nodes** menu expands all tree nodes in the Project Tree window
- **Collapse All** menu collapses all tree nodes in the Project Tree window
- **Standard Toolbar** menu shows or hides Standard toolbar in the main application window
- **View Toolbar** menu shows or hides View toolbar in the main application window
- r in the main application window

4. **Build** menu groups functions related to building projects:



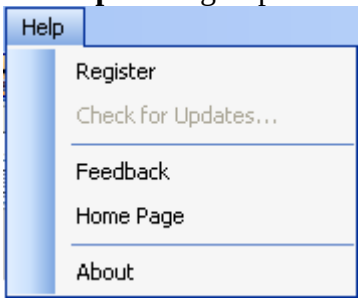
- Debug menu starts debugging for the currently loaded project
- **Build Project** menu starts building for the currently loaded project
- **Stop Building Project** menu stops building/debugging
- **Debug Step menu** executes current Target/Task and highlights next Target/Task to be executed
- **Build Options** menu invokes Build Options dialog

5. **Tools** menu groups miscellaneous functions:



- **Open Source in Visual Studio** menu opens the currently loaded project in Visual Studio if installed
- **Open Source in Notepad** menu opens the currently loaded project in Notepad
- **View Targets Diagram** menu invokes Targets Diagram dialog for the currently loaded project
- **Override Target** menu invokes Override Target dialog for the currently loaded project
- **Options** menu invokes application's Options dialog

6. **Help** menu groups functions related to help and support:



- **Register** menu invokes application registration dialog
- **Check for Updates** menu checks for application updates
- **Feedback** menu invokes default mail client with new email template for the feedback
- **Home Page** menu invokes application web page in user's web browser of choice
- **About** menu invokes About dialog

6.2 Toolbars

The application toolbars provide quick access to the functionality also available in the application menus.

Standard toolbar

- **New** button is identical to **File→New** menu
- **Open** button is identical to **File→Open** menu
- **Save** button is identical to **File→Save** menu
- **Add New Element** button is identical to **Edit→Add** menu
- **Remove Element** button is identical to **Edit→Remove** menu
- **Move Element Up** button is identical to **Edit→Move Up** menu
- **Move Element Down** button is identical to **Edit→Move Down** menu
- **Show Imported Elements** button is identical to **Edit→Show Imported Elements** menu
- **Ordered Tree View** button is identical to **Edit→Ordered Tree** menu
- **Categorized Tree View** button is identical to **Edit→Categorized Tree** menu
- **Find Element** button is identical to **Edit→Find Element** menu

View toolbar

- **Navigate Backward** button is identical to **View→Backward** menu
- **Navigate Forward** button is identical to **View→Forward** menu
- **Expand All Tree Nodes** button is identical to **View→Expand All Tree Nodes** menu
- **Collapse All Tree Nodes** button is identical to **View→Collapse All Tree Nodes** menu
- **Show Log Window** button is identical to **View→Log Window** menu

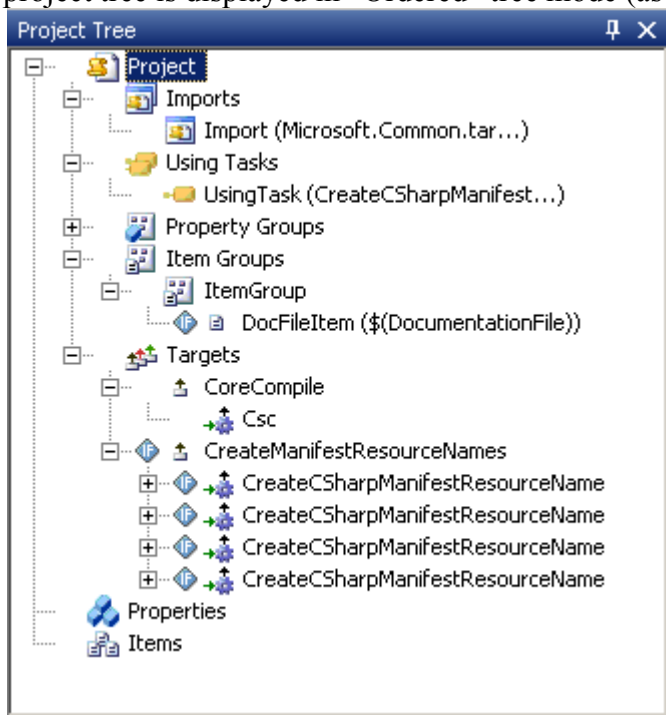
Build toolbar

- **Build** button is identical to **Build→Build Project** menu
- **Debug** button is identical to **Build → Debug**
- **Debug Step** button is identical to **Build → Debug Step**
- **Stop Building Project** button is identical to **Build → Stop Building Project**
- **Build Options** button is identical to **Build→Build Options** menu

6.3 Project Tree Window

The Project Tree window displays elements in currently loaded project either as a hierarchical tree in order of appearance in underlying XML file or categorized by element type. By default, when project is loaded the

project tree is displayed in "Ordered" tree mode (as opposed to "Categorized" tree mode).



The mode can be switched using menu **Edit→Ordered Tree** or **Edit→Categorized Tree** (or corresponding buttons on **Standard** toolbar).

Every element displayed in the tree has an icon associated with it that denotes element type:

Element type	Icon
Project	
Import	
Using task	
Property group	
Property	
Item group	
Item	
Item definition group	
Item metadata	
Target	
Task	
Output	
ProjectExtensions	
Choose	
When	
Otherwise	

In Categorized mode, all elements are grouped by the element type with category icons same as element type icons.

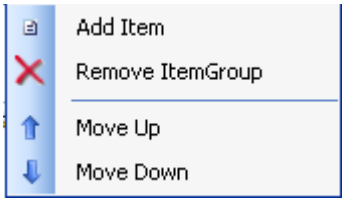
If the element has a condition defined, the condition icon is displayed next to element type icon.

If element is imported, element's type icon will have "imported" indication in left upper corner; for example, icon denotes imported property.

The user may control whether to display imported elements in the tree (in either mode) using **Edit→Show Imported Elements** menu (or corresponding button on **Standard** toolbar).

Clicking the left mouse button on any node in the project tree will select the node and will load into the Properties, Elements, Raw XML and Help windows the data corresponding to the element selected.

Right-clicking the selected node will display the context menu containing the following menu items:

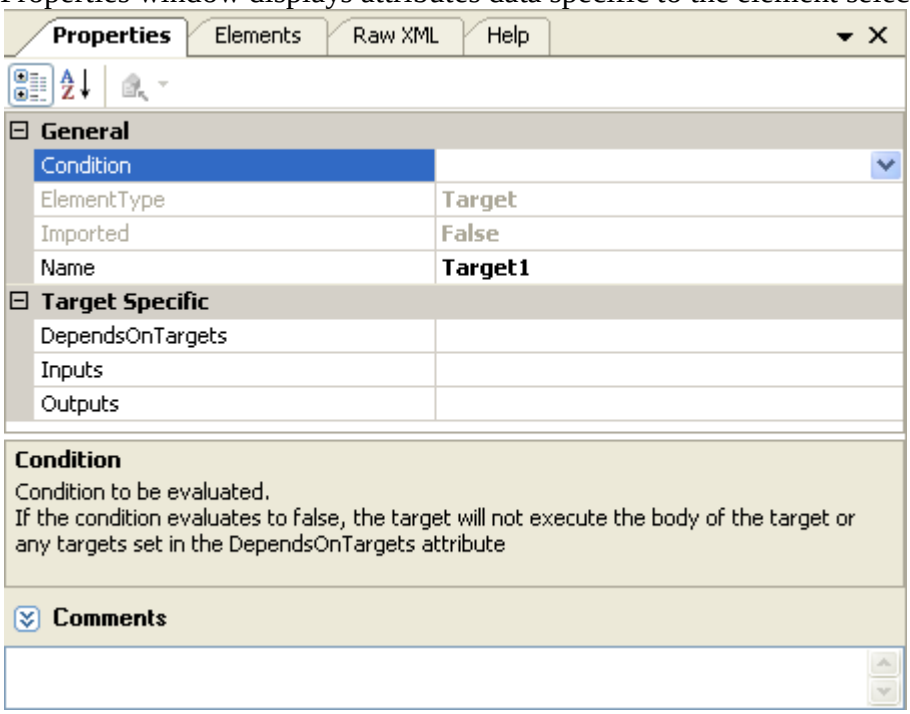


- **Add** (element) menu, where element types that may be added are dependent on the type of the element selected; the menu adds element to currently selected element node
- **Remove** menu removes currently selected element
- **Move Up** menu moves currently selected element up (within parent element)
- **Move Down** menu moves currently selected element down (within parent element)

Additionally, for Project and Import elements, there will appear **Open In New Window** menu, that will open the project file corresponding to the element selected in a new instance of MSBuild Sidekick.

6.4 Properties Window

Properties window displays attributes data specific to the element selected in Project Tree window.

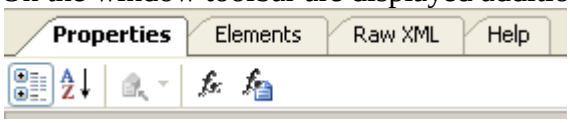


For every element the following properties are displayed:

- Condition defined on the element
- Element type
- Imported indication (whether element is imported or local to the project)
- Element name

The rest of the properties are specific for the element type; if the element is local to the project (not imported) those properties are editable.
In the textbox located under the properties grid the element's comments are displayed; the box can be shown/hid using the button. Similar to the element properties, for the local (not imported) elements the comments are editable.

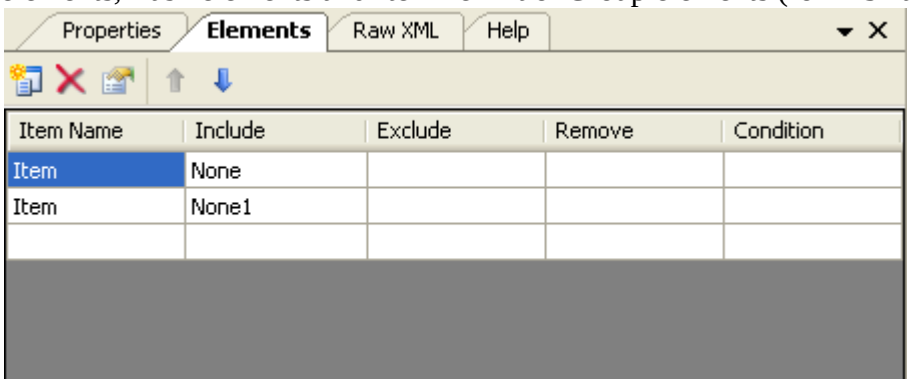
On the window toolbar are displayed additional functional buttons.



First two buttons (and) control the properties display mode – by category or by alphabet correspondingly.
For the properties window for elements of Property elements, there are additional Condition Edit buttons in the toolbar ( ). Using those buttons, the user may quickly specify “property is empty” or “property file exists”.
For elements that contain references to the other items or properties, Jump To button ( ) is enabled, providing shortcut for quick navigation to referenced elements.

6.5 Elements Window

Elements window displays elements contained in the selected element in tabular format. The tab is relevant for the following element type: PropertyGroup elements, ItemGroup elements, Item elements, Target elements, Task elements and ItemDefinitionGroup elements (for MSBuild 3.5 projects).

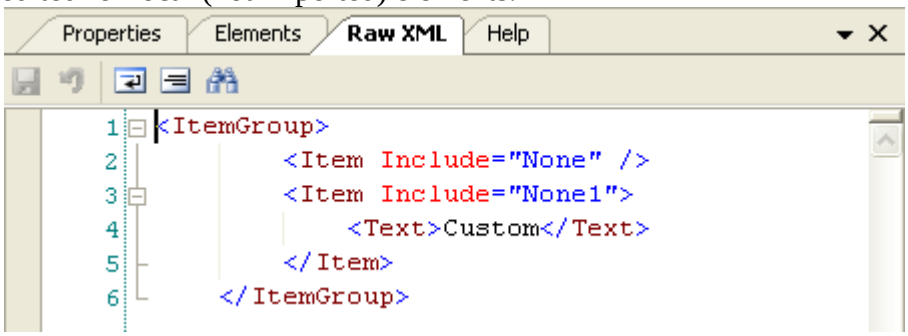


The columns in the table differ depending on the type of the contained element; the data in the columns are editable for local (not imported) elements.
The window toolbar buttons provide the following additional functions:

- Add Element ( ) button opens element adds new element to the table
- Delete button ( )removes selected element(s)
- Properties button ( ) selects the element in the table in the project tree and switches to properties window view for that element
- Move up button ( ) moves selected element up in list and xml
- Move down button ( ) moves selected element down in list and xml

6.6 Raw XML Window

Raw XML window displays raw XML source for the element selected in the project tree. The XML can be edited for local (not imported) elements.

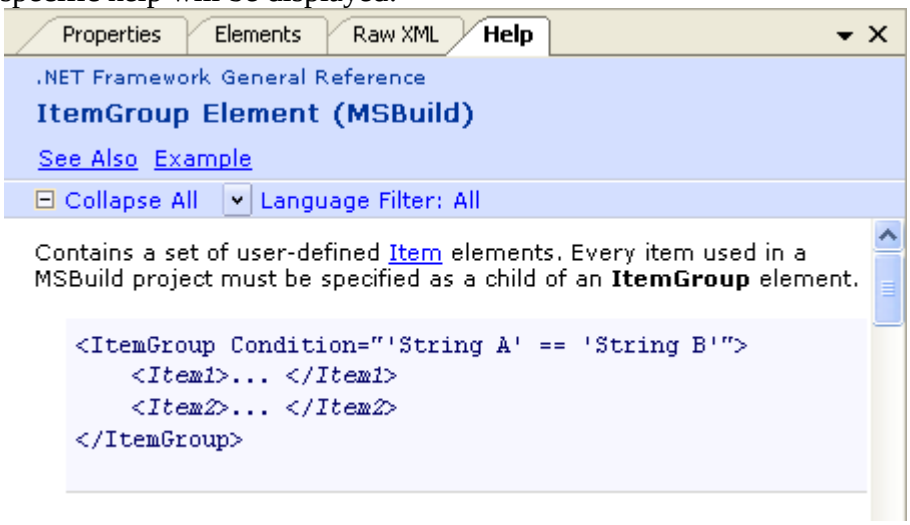


The XML editor provides color coding for XML elements and attributes and supports auto-completion for properties, items and item metadata elements.
The window toolbar buttons provide the following additional functions

- Save button ( ) commits changes performed in raw XML. If changes cannot be saved due to the error, the corresponding message appears in Edit Project Log window
- Undo button ( ) reverts to the original XML contents, undoing the changes made by user
- Word Wrap button ( ) switches word wrap mode to on and off
- Auto-format button ( ) formats XML in the editor with automatic indentation
- Find In XML button ( ) Find In XML dialog to search the XML for specified text

6.7 Help Window

Help window displays MSDN article for the selected MSBuild element type; for Microsoft tasks task-specific help will be displayed.

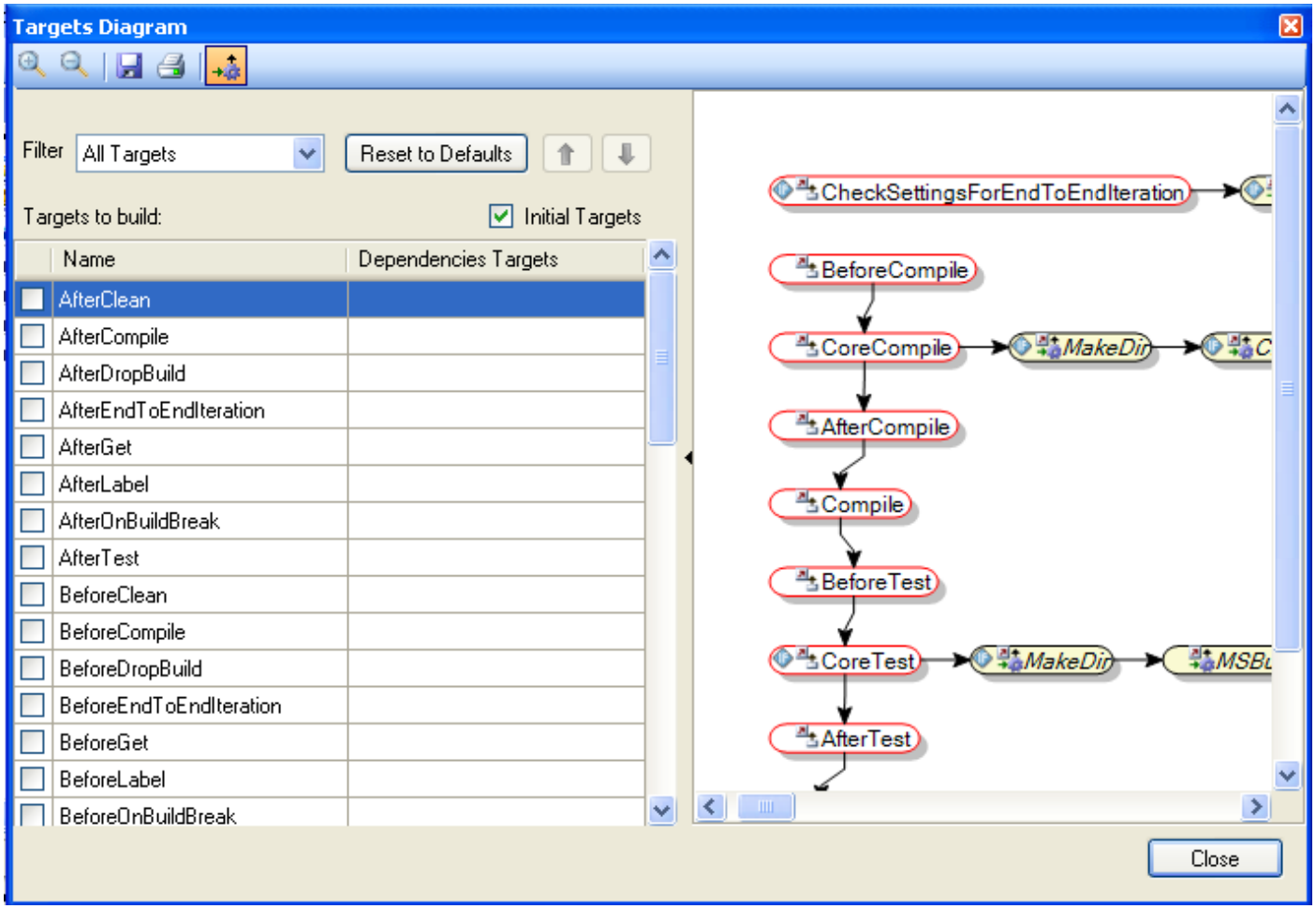


Depending on the application settings (set through **Tools→Options** menu, **Application Configuration** tab, MSDN Help Source property), either local MSDN collection is used or a web version. By default, the application uses the web version.

6.8 Targets Diagram Window

Targets Diagram window displays targets and tasks execution order without actually execution a build. Note that MSBuild Sidekick doesn't evaluate Condition attribute values of various elements whild building Targets Diagram, so actual execution order can only be found on Diagram Window during (or after) build execution.
Targets Diagram window toolbar contains the following controls:

- **Zoom In ( )** button allowing user to zoom in diagram image
- **Zoom Out ( )** button allowing user to zoom out diagram image
- **Save as Image ( )** button that saves diagram as image file on a file system
- **Print ( )** button that prints diagram on a printing device
- **Show/Hide Tasks ( )** button allowing to show/hide Tasks defined under Targets

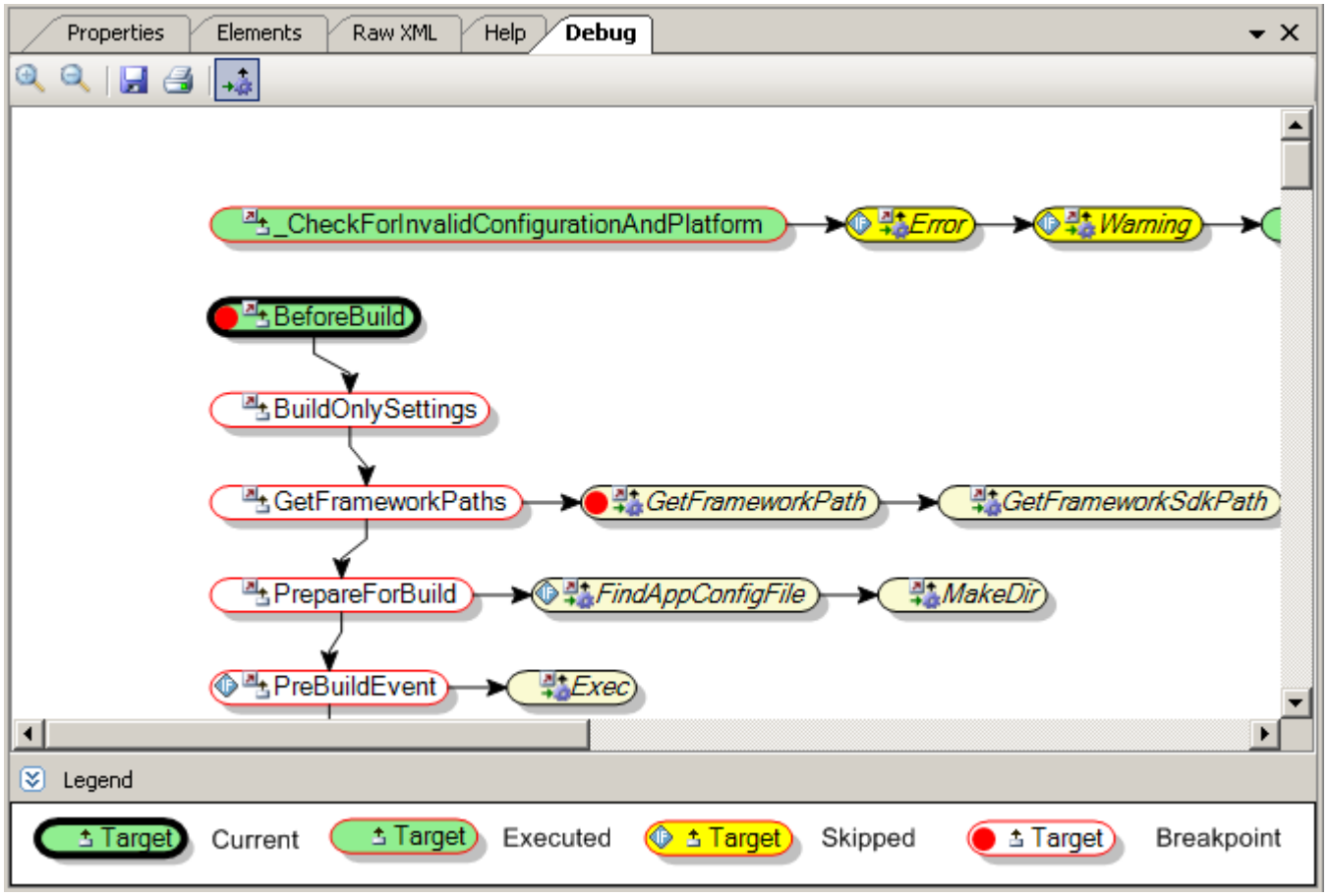


6.9 Debug Window

Debug window displays build diagram with Targets/Tasks defined in project. Debug window allows one to set/remove breakpoints on Targets/Tasks while analyzing build sequence and viewing the diagram. During execution of the build, MSBuild Sidekick colors diagram elements according to their status in build (Built or Skipped).
Debug window toolbar contains the following controls:

- **Zoom In (** **)** button allowing user to zoom in diagram image
- **Zoom Out (** **)** button allowing user to zoom out diagram image
- **Save as Image (** **)** button that saves diagram as image file on file system
- **Print (** **)** button that prints diagram on printing device
- **Show/Hide Tasks (** **)** button allowing to show/hide Tasks defined under Targets

Double click on diagram element jumps to specific Target/Task element in Project Tree window. Using mouse right click context menu new breakpoint can be set or all breakpoints can be removed. Note that MSBuild Sidekick may not stop on a breakpoint if MSBuild engine skips the Target/Task during the build.
To show/hide Task elements “Show/Hide Tasks” button ( ) can be used. Note that debugger won’t stop on breakpoint set on Task if the task is hidden.
In the panel located under Debug diagram all possible diagram icons and status colors are displayed; the panel can be shown/hidden using the button.

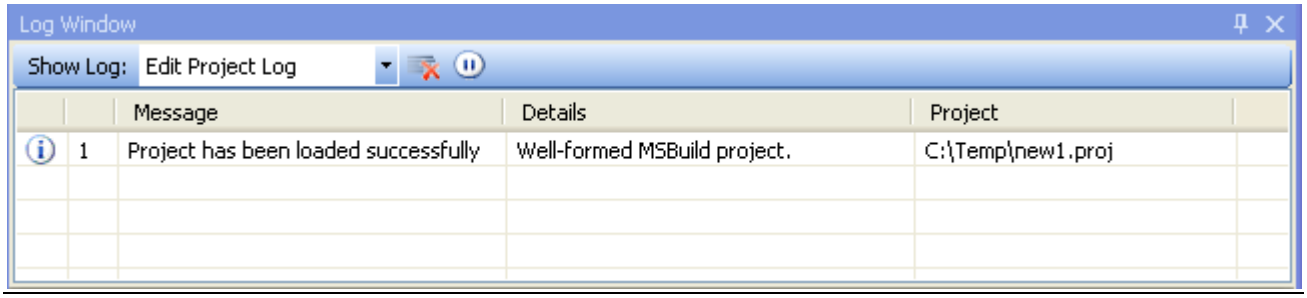


6.10 Logs Window

Logs window displays information related to project editing and build events (such as errors and warning occurring during editing etc.)
Logs window toolbar contains the following controls:

- **Show Log** combo box allowing user to choose the visible log (logs available are Edit Project log, Build Console log, Build Errors/Warnings log and Build Detailed log)
- **Clear Log** button that clears the current log
- **Pause Log** button pauses (or resumes, once paused) the logging output during the build

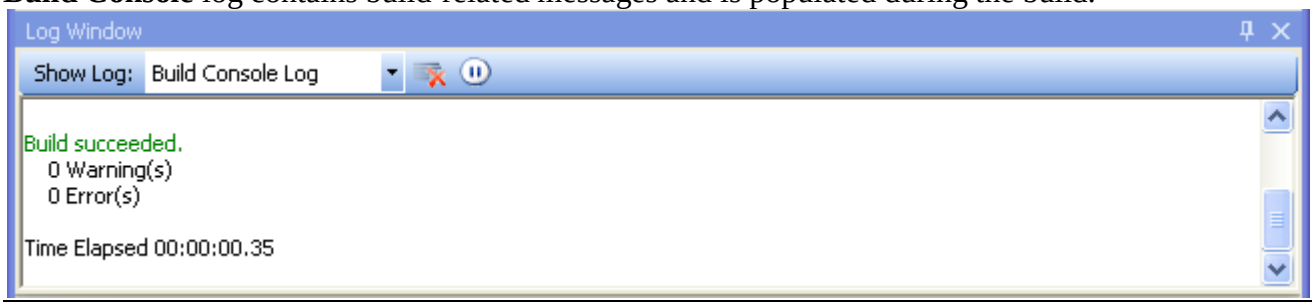
Edit Project log displays editing events starting with project load; the events are either notifications of success



The log data is organized in a table with the following five columns:

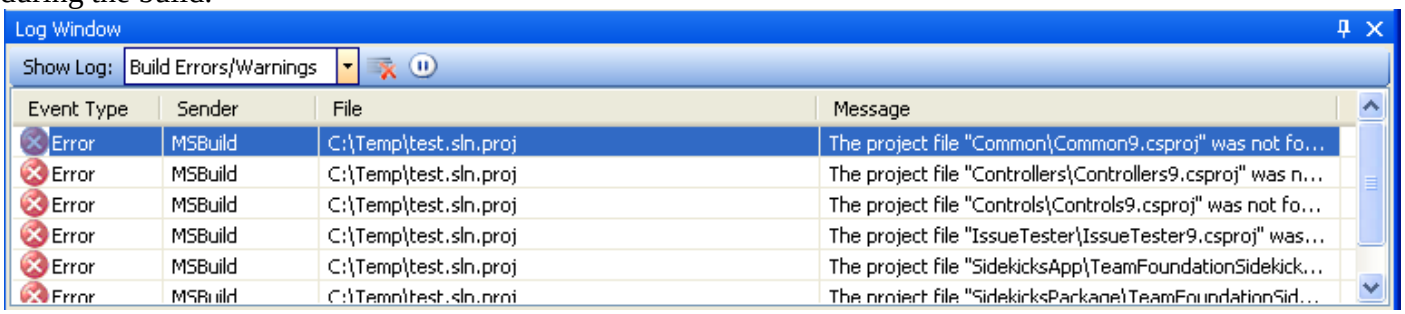
- Event type icon, related to message type (information/warning/critical)
- Event message order number
- Event message
- Event message detailed text
- Filename of the project in which event has occurred

Build Console log contains build-related messages and is populated during the build.



The log contents are identical to MSBuild command-line log (and adhere to the same color schema with errors displayed in red etc.). The verbosity of the logging is controlled through **Tools→Options** menu, **Loggers** tab, **Console Logger** Verbosity property (by default Verbosity is set to Normal)

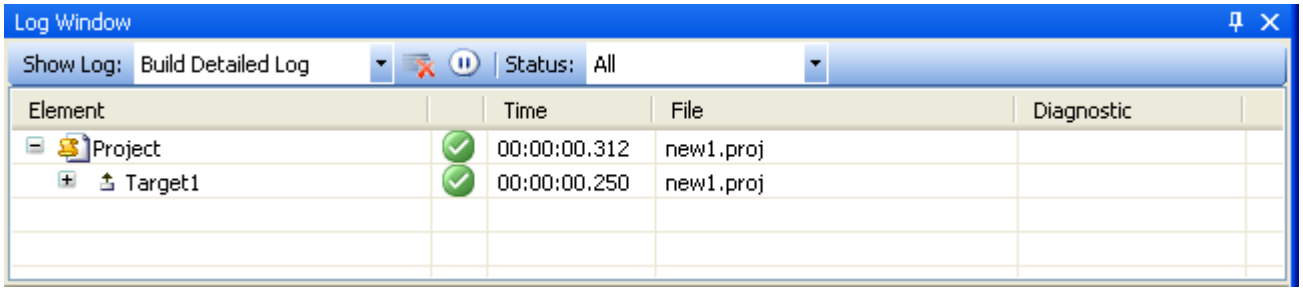
Build Errors/Warnings log contains error and warning messages related to the last build and is populated during the build.



The log data is organized into a table with six columns:

- Event Type icon (either error or warning icon)
- Sender (either MSBuild engine or specific MSBuild task)
- Path to the file in which error/warning occurred
- Error or Warning message

Build Detailed log is populated during the build and provides hierarchical tree view of the targets and tasks executed in the build.



The data in the log are organized into a table with five columns:

- Element type column, containing element type name and the corresponding icon
- Build status icon for the element with the following values
  - Successfully executed ( )
  - Failed ( )
  - Skipped in build ( ); usually occurs due to condition evaluated to false or if the inputs are up-to-date
- Element execution time
- Project file the element belongs to
- Diagnostic message, containing additional information provided by MSBuild Engine

Additional **Status** combo box is located in toolbar, and may be used to filter the elements appearing in the log as following:

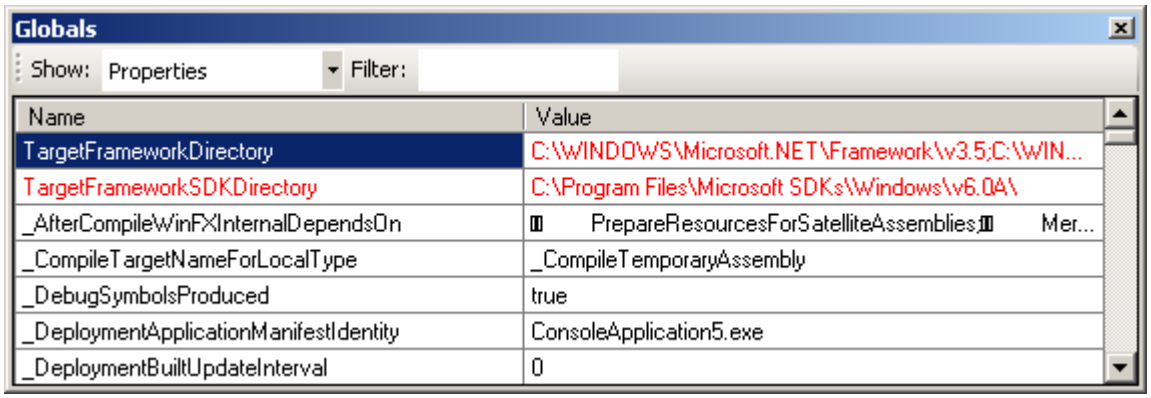
- **All** is equivalent to no filter showing all elements in log
- **Succeeded** filter shows all successfully executed targets and tasks
- **Failed** filter shows all failed targets and tasks
- **Skipped Targets** filter shows only skipped targets

Skipped Tasks filter shows only skipped tasks (and their parent targets)

6.11 Globals window

Globals window displays values for Properties or Items defined in project as they are evaluated during the project debug session.
Globals window toolbar contains the following controls:

- **Show** combo box allows filtering currently visible elements (Properties or Items)
- **Filter** text box allows filtering currently visible elements based on element name (only elements with the name that starts with the text specified are displayed)



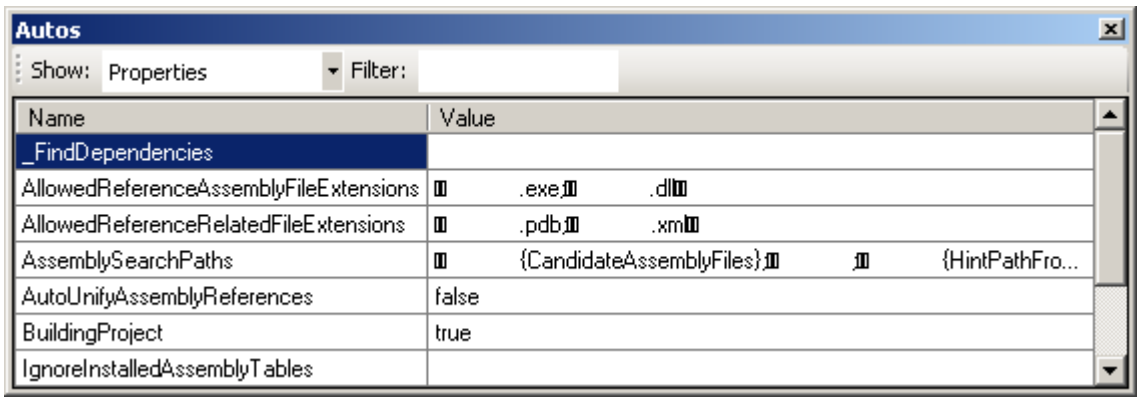
The Globals window data is organized as a table with the following columns:

- Property/Item name (depending on Show combo box selection)
- Property value (if "Properties" is selected in Show combo box)
- Include and Exclude values (if "Items" is selected in Show combo box)

When stepping through the project execution in debug mode, Properties/Items that have been changed on previous step are highlighted in red.

6.12 Autos window

Autos window is similar to Globals window but displays only Properties/Items that are defined as input or output parameters for Target/Task element to be executed at the next step, when stepping through the project execution.



7. How-To Notes

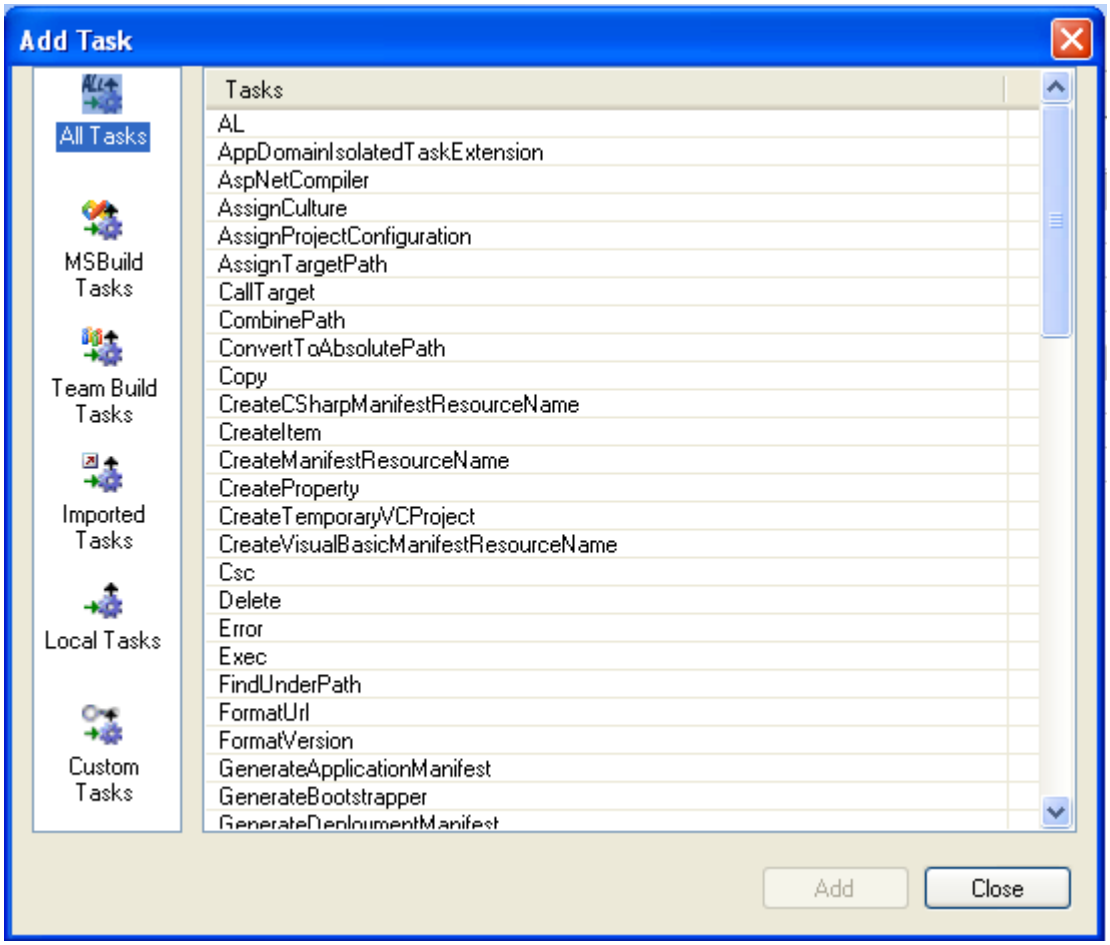
7.1 How To Use Tree Modes Effectively

The project tree window (see *Project Tree Window* section above) displays elements in project either in the order of appearance in the project or grouped by category.
Ordered mode is especially useful when changing a project; new elements are added by default to the end of the file or to the end of currently selected element children elements (for new properties, items and item metadata elements). The order of the element can be changed by using Move Up/Move Down menus/toolbuttons.
But while it provides full control over order of elements in the file, categorized mode is more convenient when viewing build file contents. For example, it provides alphabetically sorted list of all properties, and together with ability to toggle the visibility of imported ones, it becomes very easy to find specific property or view the list of all existing ones.

7.2 How To Add Tasks To Target

To add task to a target, you will usually use Add Task dialog. The dialog displays alphabetically sorted list of tasks for several categories. The task categories available are:

- *All Tasks* list displays all tasks available in different categories combined
- *MSBuild Tasks* list displays tasks from Microsoft.Build.Tasks assembly (MSBuild standard tasks)
- *Team Build Tasks* list displays tasks from Microsoft Team Build tasks assembly
- *Imported Tasks* list displays tasks used throughout imported projects (for currently loaded project)
- *Local Tasks* list displays used in currently loaded project
- *Custom Tasks* list displays tasks from Custom Using tasks assemblies (as configured in **Tools→Options** menu; see *Advanced topics* for details)



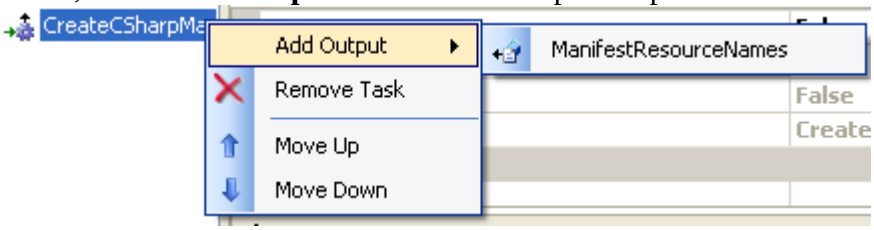
When task is selected in the list, double-clicking the task selected or hitting Add button will add the task to the target. You can add multiple tasks before closing the dialog using Close button (or hitting Escape).

There are several ways to add a new task to the target:

1) Using Add Element button ( ) on Target element
   - Select specific target in the project tree
   - Click on Standard toolbar Add Element button and choose Task from dropdown list
   - In the displayed Add Task dialog select a task. New task will be added to the end of target's task list
2) Using Add Element button ( ) on Task element
   - Select specific task in project tree
   - Click on Standard toolbar Add Element button and choose Task from dropdown list
   - In the displayed Add Task dialog select a task. New task will be added before the task selected in the project tree
3) Using Elements window
   - Select specific target in the project tree
   - Switch to Elements window
   - Click Add Element ( ) button on window's toolbar
   - In the displayed Add Task dialog select a task. New task will be added to the end of target's task list
4) Using Raw Xml
   - Select target in project tree
   - Switch to Raw Xml window
   - Edit xml to add new task
   - Save changes by pressing button

7.3 How To Specify Tasks Output Parameters

When you add a task that has output parameters, only the mandatory output parameters will be added by default. To add optional output parameters, select the task in the project tree view, click the right mouse button, select **Add Output** menu and then specific parameter from the list, as shown on the picture below:



Once the output parameter is added, you will have to specify either property or item to use in output.
Note: There is no need to specify $ or @ qualifiers when specifying item or property names in output parameters.

7.4 How To Add New Elements

There are several ways to add new elements; depending on the element type and the number of the elements to add some of them are more efficient than the others.
Elements of any type may be added using Standard toolbar Add Element button ( ). Clicking on the button arrow will display list of elements that may be added (depending on currently selected element).
To add many properties or items (to property group or item group element correspondingly), one may use Elements window. The table layout of the elements window and the ability to switch between the columns using Tab key allows for fast and convenient addition or modification of similar elements.
And finally, the elements may be added in raw XML window (see below).

7.5 How To Use Raw XML

If you are comfortable with XML syntax for MSBuild, you may want to use raw XML for certain elements editing (such as adding a lot of similar properties to a property group or lots of similar items to an item group).
While editing raw XML it is helpful to keep in mind several things:

- One can always revert to the original XML by using Undo button on window's toolbar
- The changes to XML are committed only after Save button on window's toolbar is pressed
- If the changed XML is not a valid XML conforming to MSBuild schema, the changes will *not* be committed upon Save; the user is supposed to review Project Edit log and fix the problems for the next Save to succeed
- Rename and delete refactoring support (see below) is active for raw XML editing as well; as XML editing may result in names changed/element deletion for several elements at once, the refactoring dialogs will show data for all such elements in one dialog

7.6 How To Use Conditions Edit Shortcuts

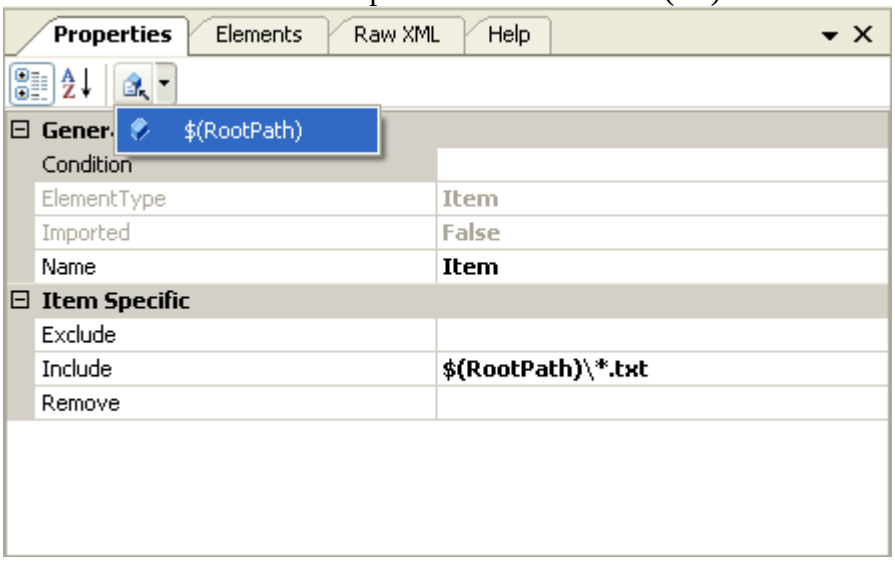
Frequently, the condition set on a property is to check for an empty value or for the existence of the file/folder, specified by the property.
In the Properties window toolbar there are Condition Edit Shortcut buttons that provide convenient shortcuts for specifying such conditions.
For the selected property (e.g. *Property1*), clicking Check For Empty Value button ( ) will add the following condition: *'$(Property1)' == ''*
Clicking Check If File Exists button ( ) will add the following condition: *Exists('$(Property1)')*
Note: when a condition is added using Condition Edit Shortcut buttons, the previous condition value will be erased.

7.7 How To Navigate Around

Application saves navigation history (project tree view mode, tree node selected in the project tree, window for the tree node).
To navigate the history use the following controls:

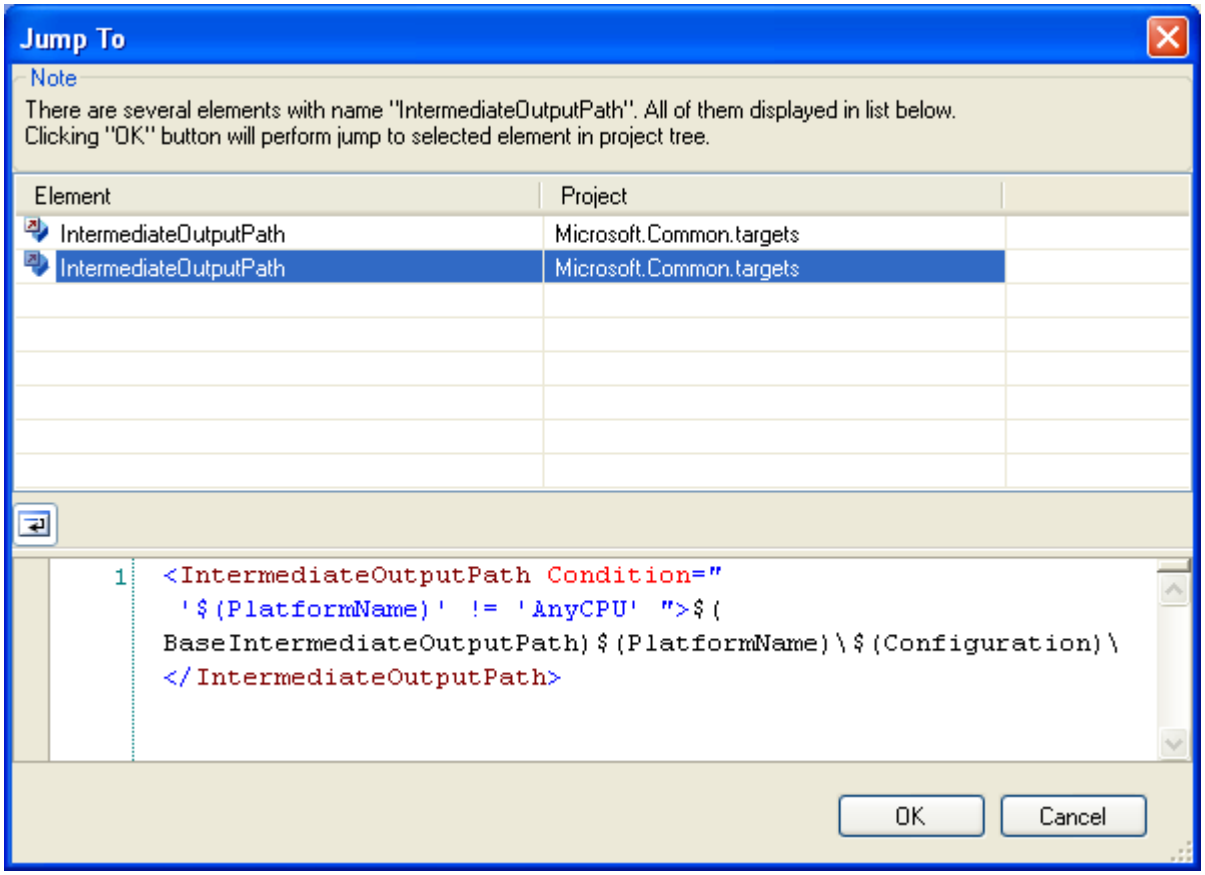
- ***View→Forward*** menu or Standard toolbar Navigate Forward button ( )to navigate forward
- ***View→Backward*** menu or Standard toolbar Navigate Backward button ( ) to navigate backward.

Additionally, it is possible to navigate to Properties, Items or ItemMetadata elements referenced in the selected element attributes. The Jump To Reference button ( ) is located in the Properties window toolbar:



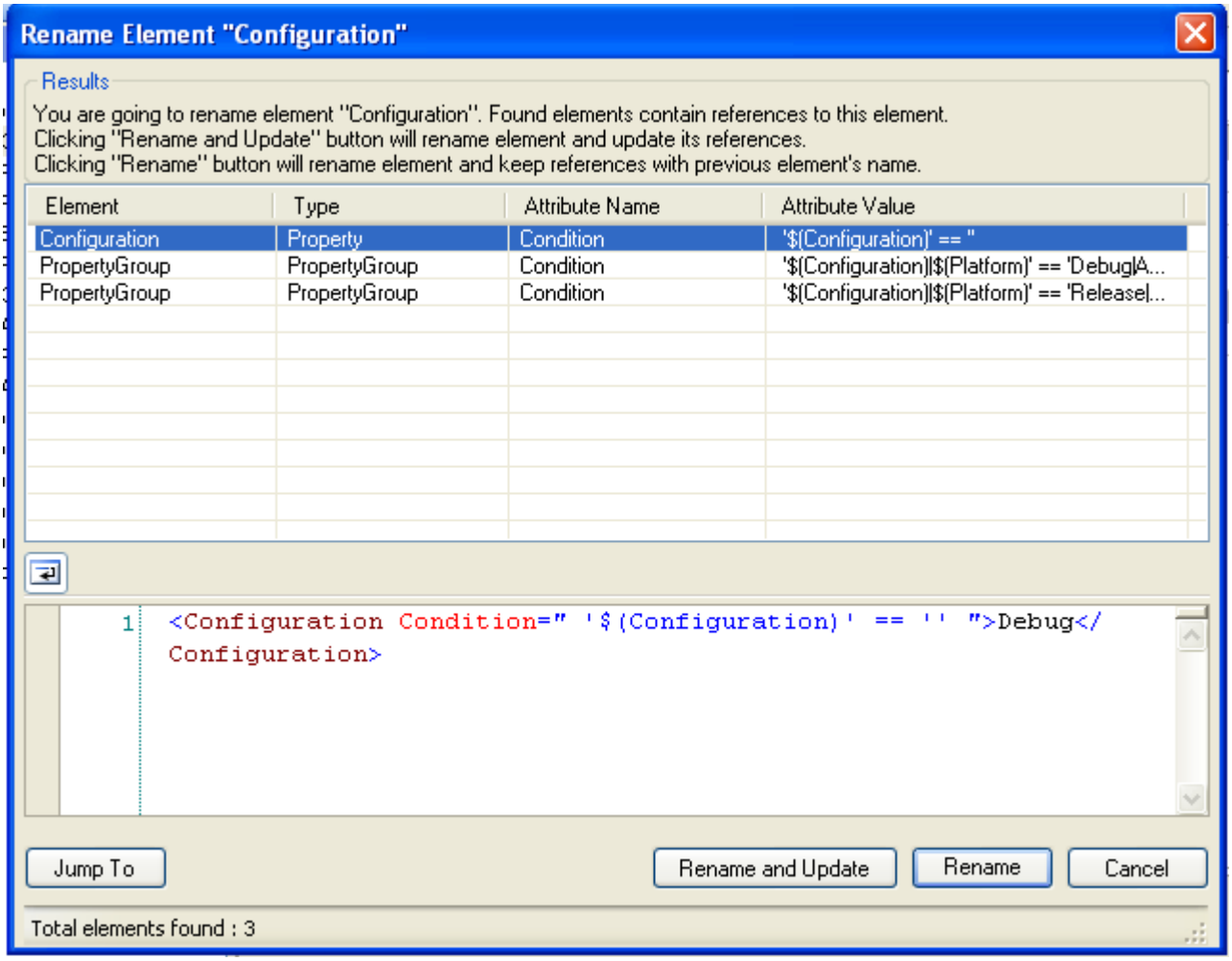
Clicking the button will display the list of referenced elements; selecting the element from list will select the element in the project tree.

Note: if the project contains several elements with same name, Jump To resolution dialog will appear.



7.8 How To Rename Elements

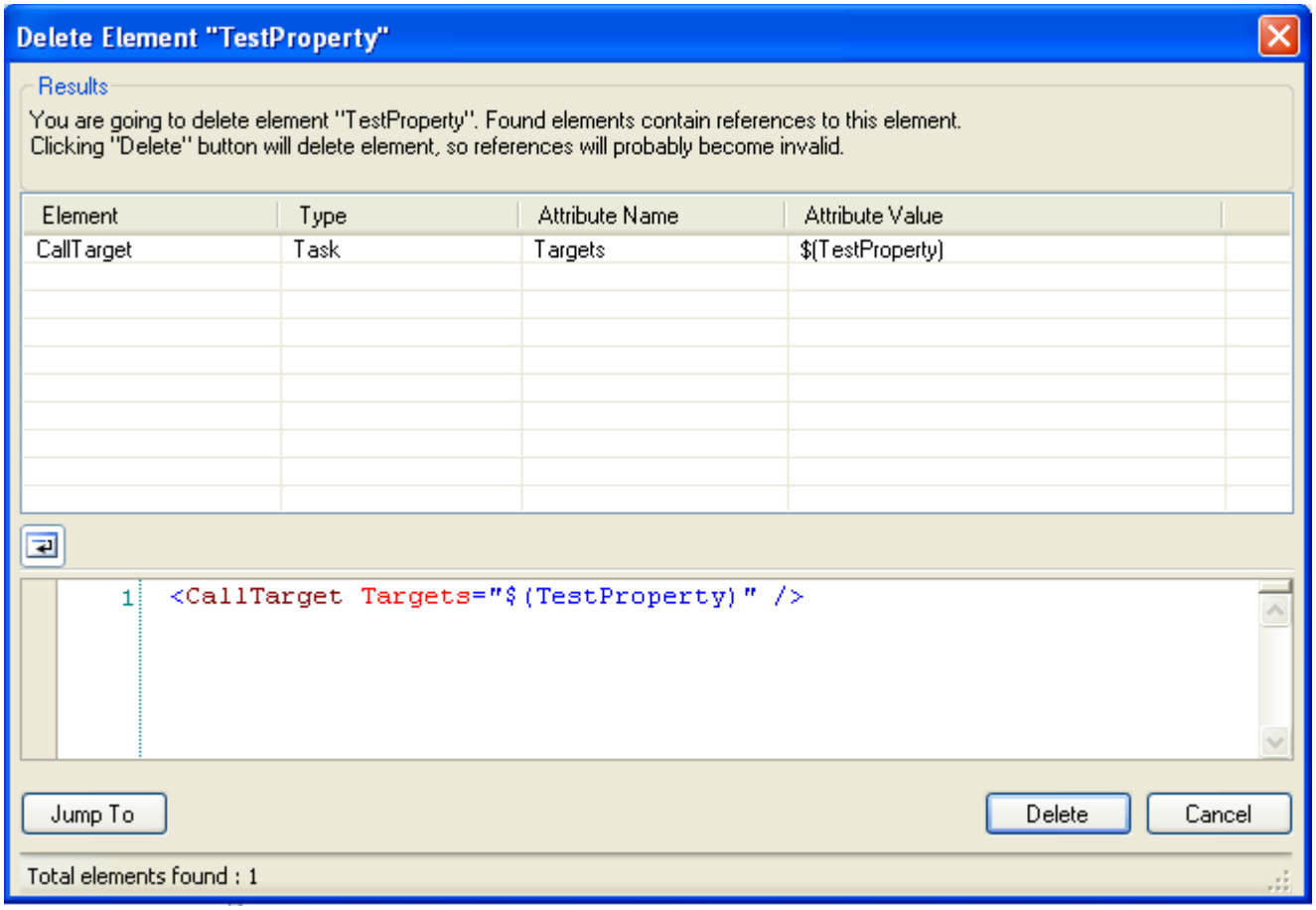
When an element such as property, item, item metadata or target is renamed, the application performs dependency check and displays all references found in “Rename Element” dialog.



Clicking “Rename and Update” button will rename element and update all its references with a new name.
Clicking “Rename” button will rename element and but not the references.
Clicking “Jump To” button will select the reference element in the project tree.

7.9 How To Delete Elements

When an element such as property, item, item metadata or target is deleted, the application performs dependency check and displays all references found in “Delete Element” dialog.

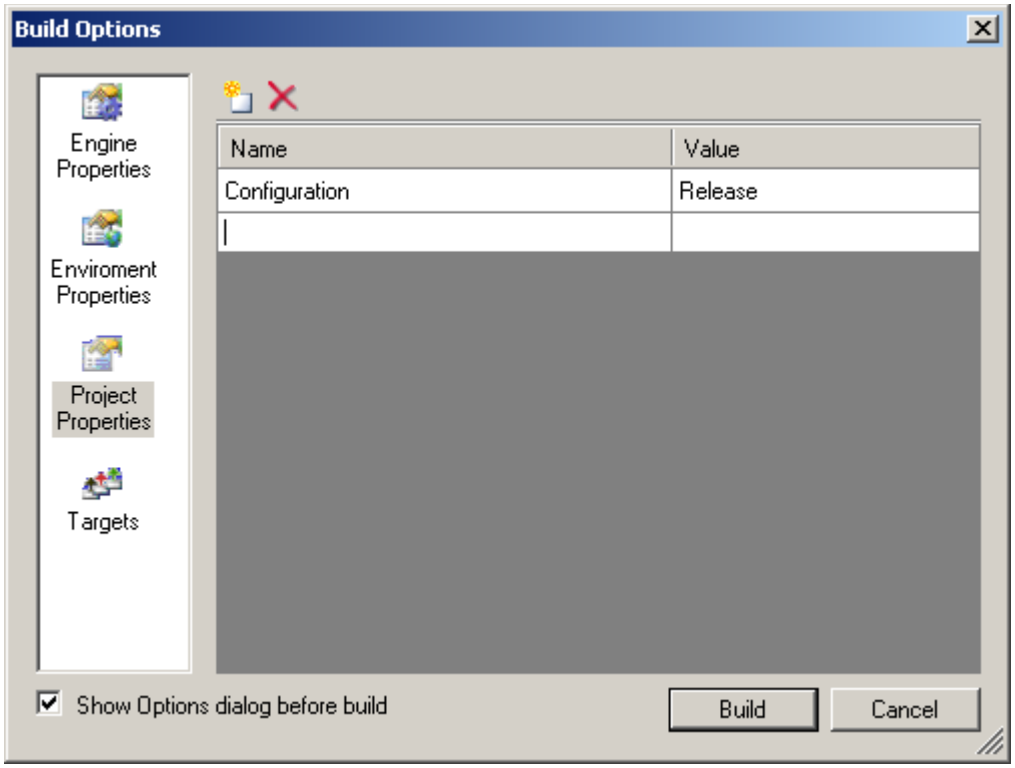


Clicking “Delete” button will delete element, and invalidate the references.
Clicking “Jump To” button will select the reference element in the project tree.

7.10 How To Use Build Options

Setting project properties
To set properties for the project build (similar to command-line MSBuild /p switch) **Build→Build Options**, **Project Properties** tab or **Tools→Options**, **Global Properties** tab may be used. The difference between those properties lists is that Project Properties will apply only to currently loaded project, whereas Global Properties will apply to all projects.
To set property related to currently loaded project:

- Click on **Build→Build Options** menu or Build toolbar **Build Options** button
- Click on **Project Properties** icon and open Project Properties tab

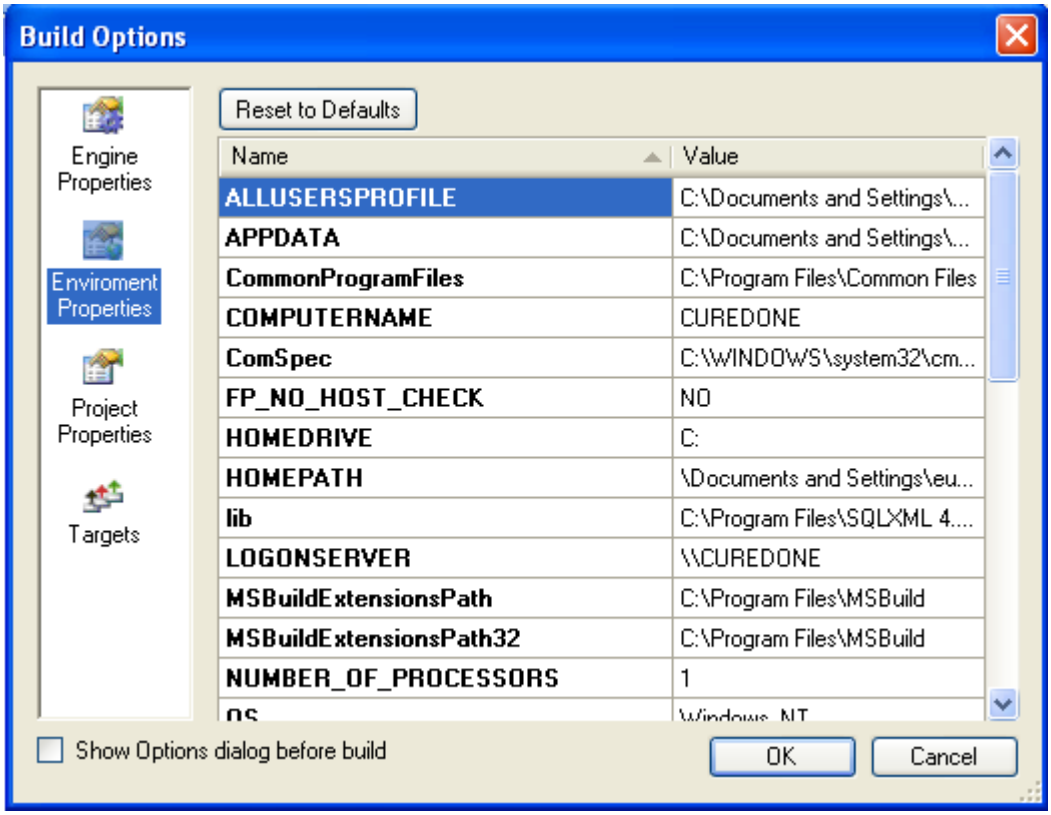


Page contains table of properties names and values, with property name in Name column and property value in Value column. Putting values in new table row will create new property

To delete property, use Remove Property button on Project Properties tab toolbar.

Setting environment properties

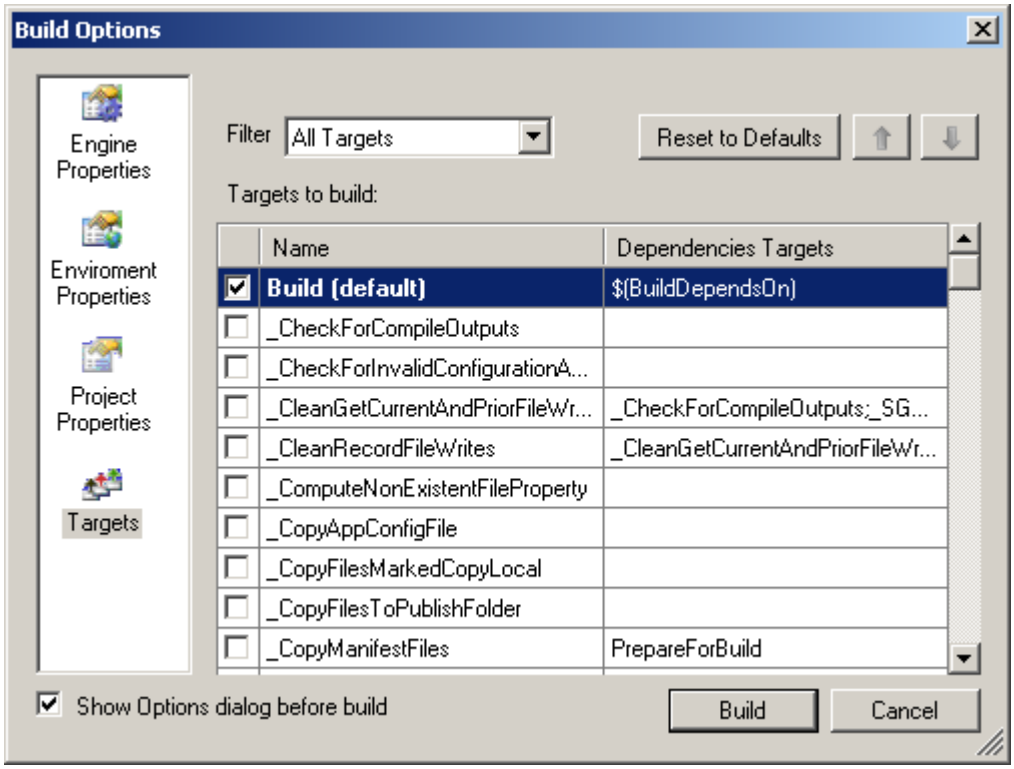
Environment properties values can be redefined using **Build→Build Options** menu, Environment Properties tab.



To change the property value, select property from table and type new property value in Value column
For the redefined property the name will be colored in red.

To reset environment properties to default, click **Reset to Defaults** button on Environment Properties tab.

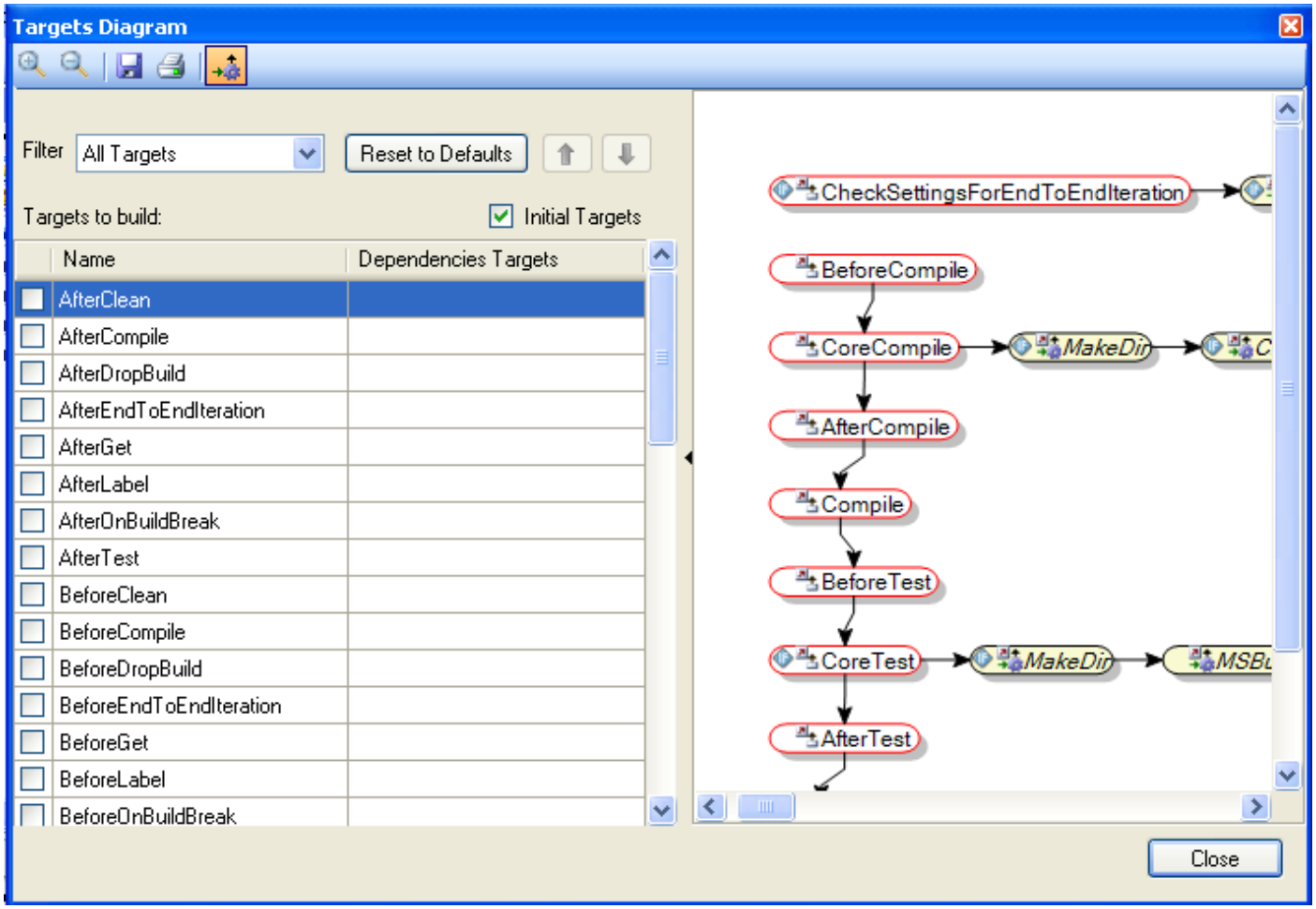
Setting build targets
By default application will build targets defined by project's InitialTargets and DefaultTargets attributes values.



To set build targets different from the defaults, select the targets to build from the list. The list can be filtered to show all/local/imported targets using Filter combo box. To change the order of targets in build, use Move Up/Move Down buttons.
Note: Targets defined by Project's InitialTargets attribute value will be built always regardless of the list selections.
To reset the target selection to defaults, use Reset to Defaults button.

7.11 How To Use Target Diagram

To review the targets (and tasks) execution order without actually execution a build, one may use Target Diagram dialog; the dialog can be invoked using **Tools→Target Diagram** menu.



Once the dialog opens, you may want to specify the targets to review (i.e. the targets initially invoked in the build). If no targets are specified by user, project default targets will be used.
Note: also by default project's initial targets are always displayed; to hide them uncheck Initial Targets checkbox.
Placing the mouse over each element on the diagram will display tooltip window with element details; selecting the element on the diagram and clicking right mouse button will invoke the context menu with ethe following options;

- Jump To menu allows "jumping" to the element in project tree
- Information menu shows elements details as tooltip

When selected, the element on the diagram can also be moved to provide for nicer visual picture.

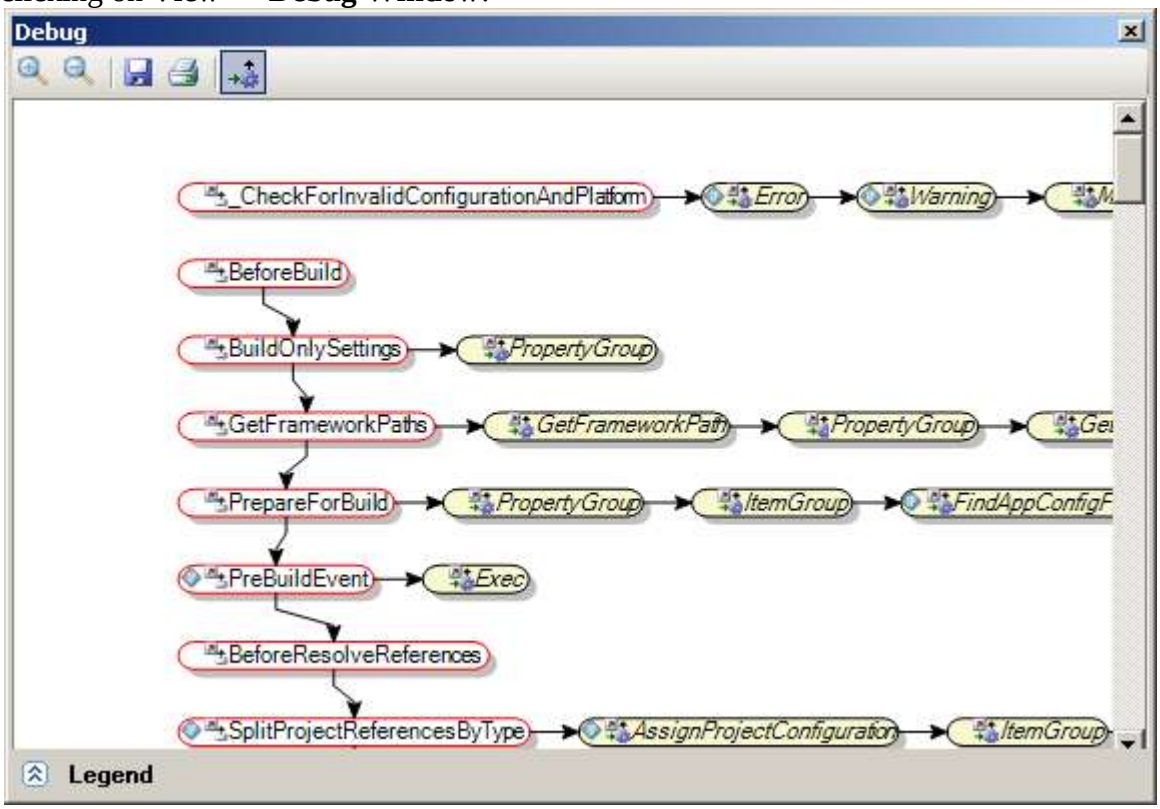
The diagram on the left will display the targets execution order starting with initial targets. By default, the tasks in every target will also be displayed; their display can be turned off using Show/Hide Tasks button on the window toolbar.
Also the toolbar contains the following functions:

- "Zoom In/Zoom Out" buttons may be used to change the zoom ratio of the diagram image
- "Save As Image" button may be used to save the currently displayed diagram into image
- "Print" button may be used to print the currently displayed diagram

The diagram is synchronized with project. If you add new targets to the project, they will be added to targets list automatically. If you add new tasks they will be displayed on the diagram (if corresponding targets are present on the diagram and Show/Hide Tasks button toggled).

7.12 How To Debug Step-by-Step

Build execution can be started in Debug mode. In this mode user may inspect Property and Item values defined in project as well as analyze build sequence. One may start debug in step-by-step mode by using Debug Step function (available as menu item and button) or start debugging from specific location in project by setting breakpoints at certain Targets or Tasks. To monitor build execution order open Debug window by clicking on **View → Debug Window**.



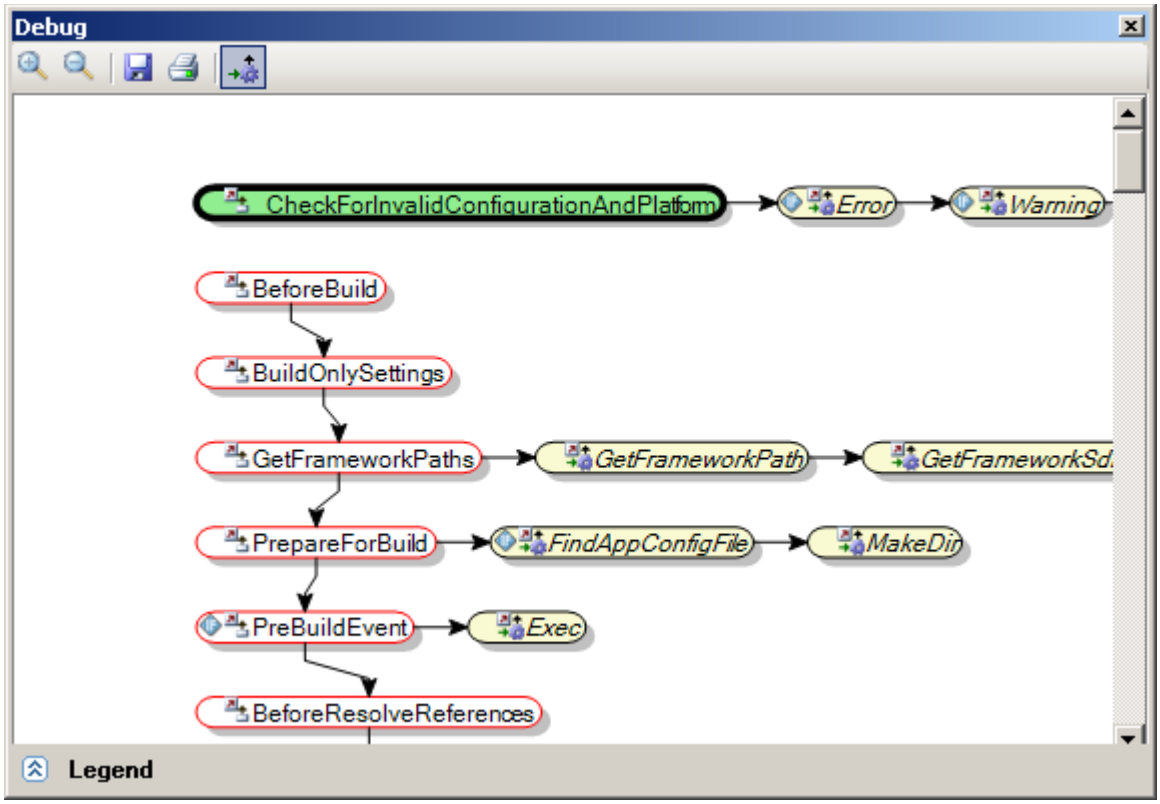
Note that Debug window appears in floating mode when it is opened for the first time. To make Debug window docked drag-n-drop it at desired location onMSBuild Sidekick main application window.

Using Debug Step menu/button/hotkey

Make sure MSBuild Sidekick is in edit mode (project is not being built or debugged). There are three ways to start debug step-by-step mode:

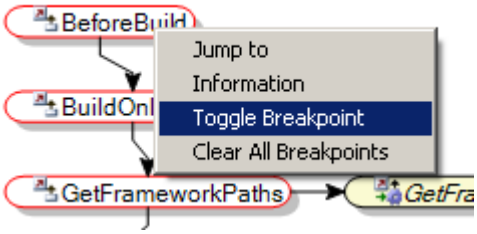
- Click on **Build→ Debug Step** menu
- Click on Debug Step ( ) button at Build toolbar
- Press F11 key on keyboard

Once you perform one of the actions above, MSBuild Sidekick will start execute project in debug mode and initial Target/Task will be highlighted with bold border in Debug window.



Using Breakpoints

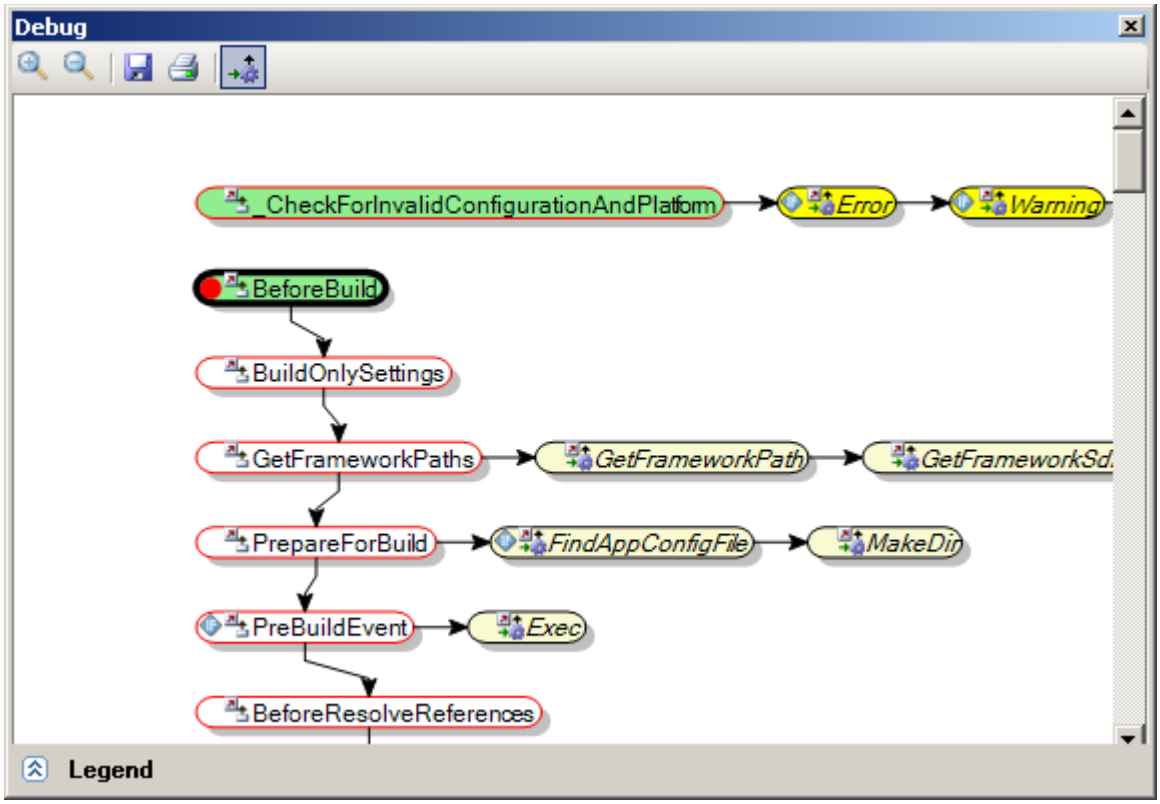
In project edit mode open Debug window, right click on needed Target/Task to display context menu, click on **Toggle Breakpoint** menu item.



Red circle will appear near the Target/Task name indicating that breakpoint is now set. After specifying desired breakpoints, there are three ways to start debugging:

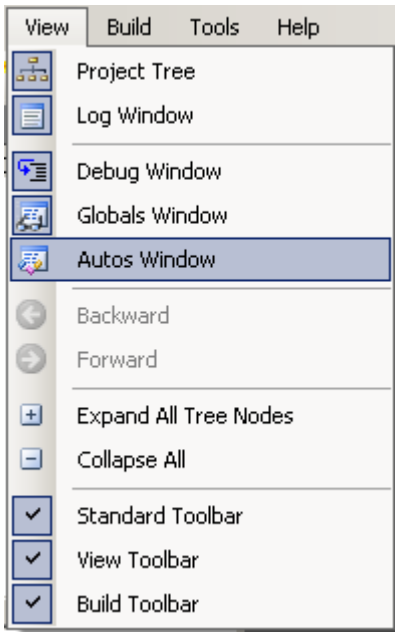
- Click on **Build→ Debug** menu
- Click on Debug ( ) button at Build toolbar
- Press F5 key on keyboard

Once project execution reaches Target/Task with breakpoint set, MSBuild Sidekick will switch into step-by-step debug mode. Current Target/Task will be highlighted with bold border in Debug window.

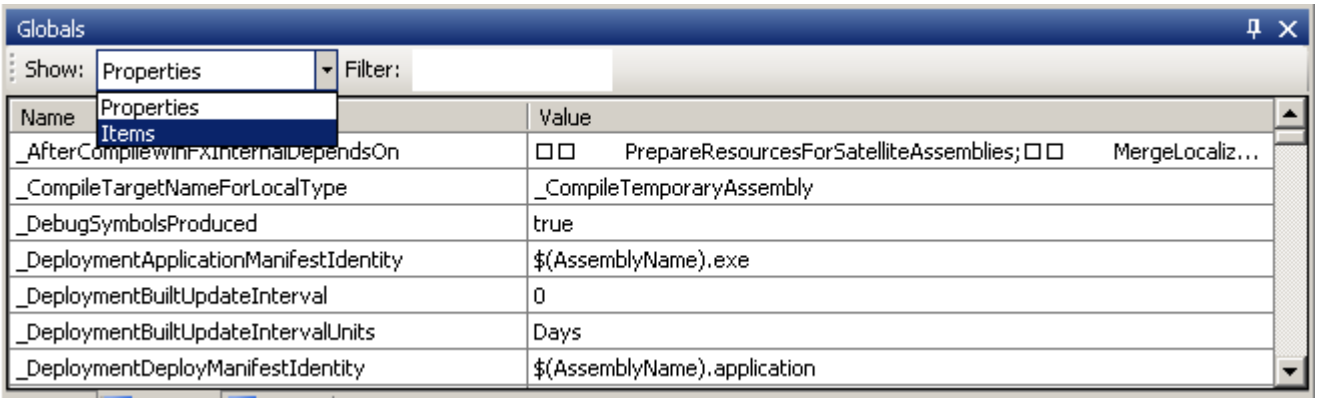


7.13 How To See Property Values When Debugging

In order to see Property values or Item Include/Exclude attribute values start debugging project in step-by-step mode. When Target/Task is selected with bold border in Debug window click on **View → Globals Window** and **View → Autos Window**.



Globals and Autos windows will appear at bottom pane of main application window, displaying Properties and their values by default. To view Item Include/Exclude attribute values select Items in Show combo-box.



Note that Properties/Items that have been changed on previous debug step are highlighted in bold.

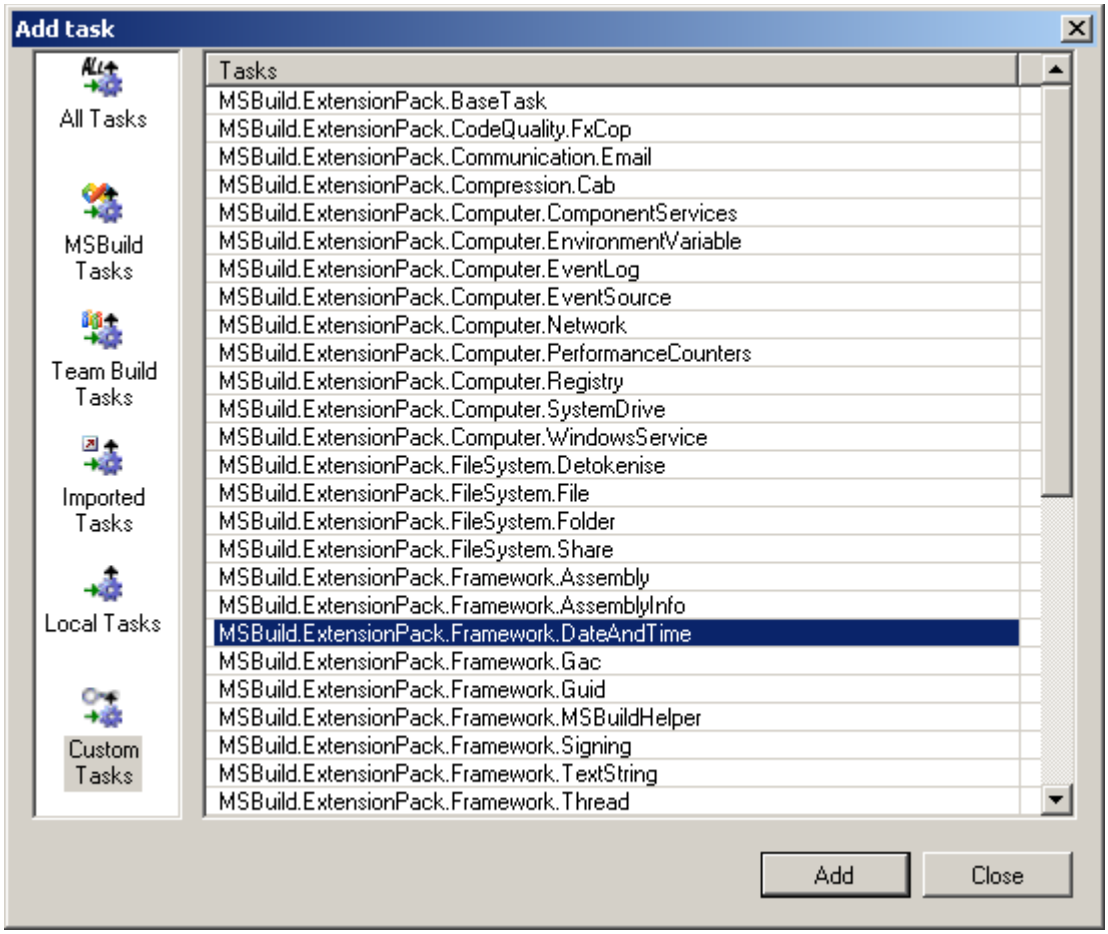
7.14 How To Use MSBuild Extension Pack Tasks

To use MSBuild Extension Pack (MEP) tasks you need the task assemblies need to be installed. The latest version of MEP tasks can be downloaded from http://www.codeplex.com/MSBuildExtensionPack.

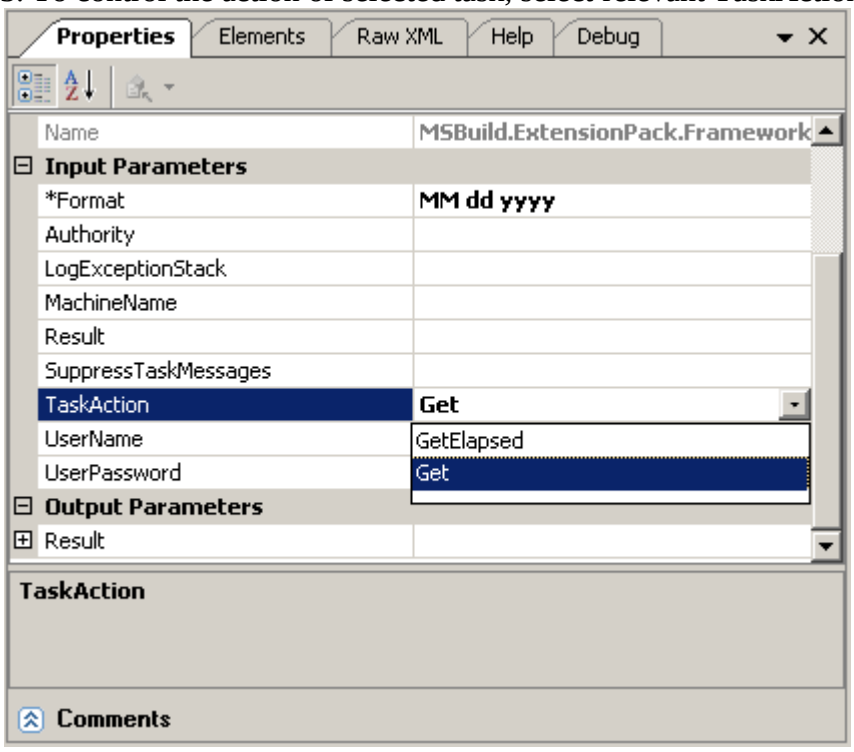
MSBuild Sidekick detects the MEP task assemblies at every start. MEP task assemblies are supposed to be located at the following folders:
[MSBuild installation folder]\ExtensionPack\4.0
or
[MSBuild installation folder]\ExtensionPack

By default [MSBuild installation folder] is C:\Program Files\MSBuild.

Once the tasks are installed, follow the steps below:
1. To use specific task in your project, add Task element and select MSBuild.ExtensionPack.Framework.DateAndTime task on Custom Tasks page.

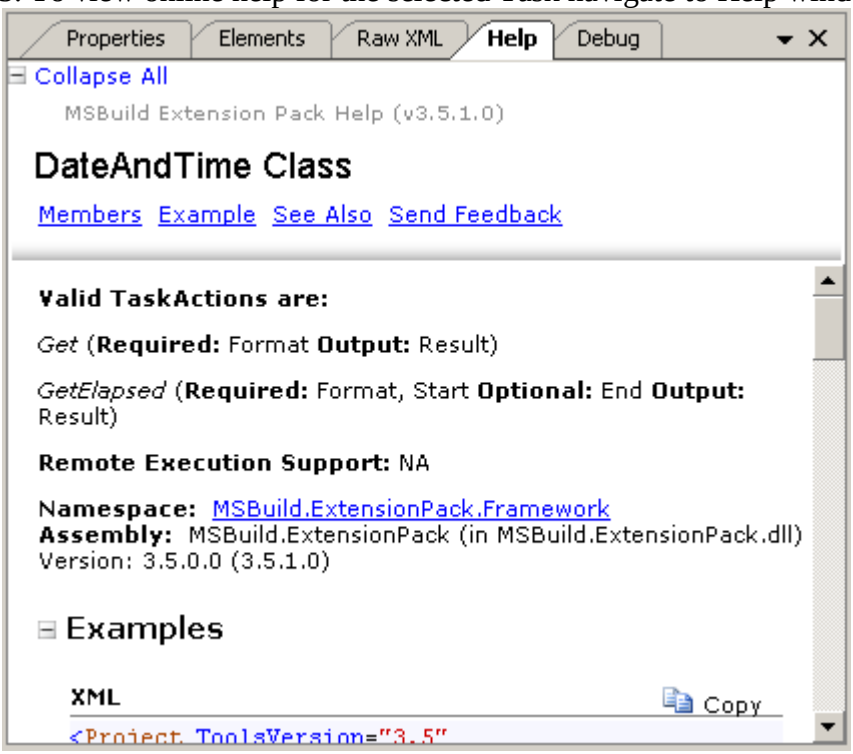


3. To control the action of selected task, select relevant TaskAction in combo-box.



4. Once TaskAction is selected, the task parameters list will be filtered automatically, so only task parameters relevant for the selected TaskAction will be displayed. Required input parameters will be marked with asterisk (see Format parameter on the screenshot above).

5. To view online help for the selected Task navigate to Help window.



8. Configuration

8.1 Application Configuration

The configuration of the application can be changed through Options dialog, which is invoked using **Tools→Options** menu.
Application configuration files and application logs are stored in "%APPDATA%/Attrice Corporation/BuildSidekick/2.0" folder.

8.2 Project Configuration

The project-specific configuration (the configuration for currently loaded project) can be changed through Build Options dialog, which is invoked using **Build→Build Options** menu.
The options for the project are stored in the file <ProjectFileName>.<username> in the same folder where currently loaded project file is located.

9. Advanced topics

9.1 Solution files

Visual Studio solution files are not in MSBuild format. Therefore, to build them MSBuild engine converts the solution file into file in MSBuild format.
When a solution file is opened using MSBuild Sidekick, it is converted to MSBuild format and saved locally in the same folder as the solution file (file <solution name>.sln.cache is generated). As a part of solution conversion process MSBuild Sidekick can also create project metadata files for certain projects (files <project name>.metaproj are generated in project folders).
It is important to understand that when you modify the solution file project in MSBuild Sidekick, you are actually modifying completely separate project generated from the solution file, so any changes made will not propagate to the original solution file.

9.2 Override Target

In order to override targets from imported projects in local project, one may use Override Target dialog. The dialog is invoked using **Tools→Override Target** menu.
Dialog contains list of targets from imported projects, which are not present in currently loaded local project. Add button creates target with the same name as the selected one in he currently loaded project.

9.2 Custom imports

Projects frequently used as imports can be added to the list of Custom Imports using **Tools→Options** menu, **Custom Imports** tab. The project files listed in custom import pre-populate the imports combo box in the Add Import dialog; thus the user will be able to choose an import from the list rather than using Browse button and looking for the project.

9.3 Custom using tasks

Assemblies containing MSBuild tasks that are frequently used in projects can be added to the list of Custom Using Tasks using **Tools→Options** menu, **Custom Using Tasks** tab. The tasks contained in the assemblies specified in Custom Using Tasks list will appear in the Custom Tasks category in Add Task dialog; when task is selected and added, UsingTask element with the reference to the assembly as specified in Custom Using Tasks will be added to the project.

9.4 Loggers

Custom MSBuild loggers can be configured to be used in the application builds using **Tools→Options** menu, **Loggers** tab. The loggers thus setup will be hooked up the MSBuild engine instance during every build performed using MSBuild Sidekick.

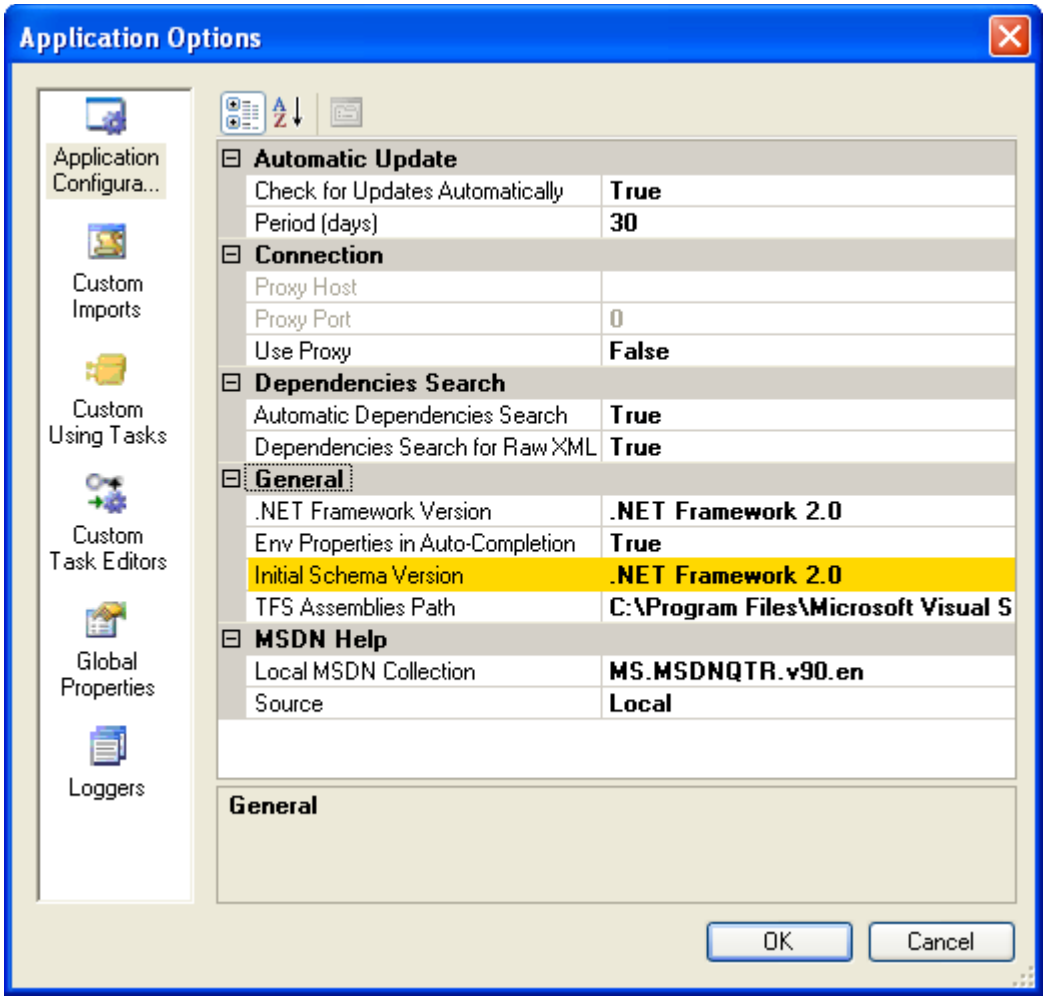
10. MSBuild 2.0, 3.5, 4.0, 4.5 support

10.1 .NET Framework Version

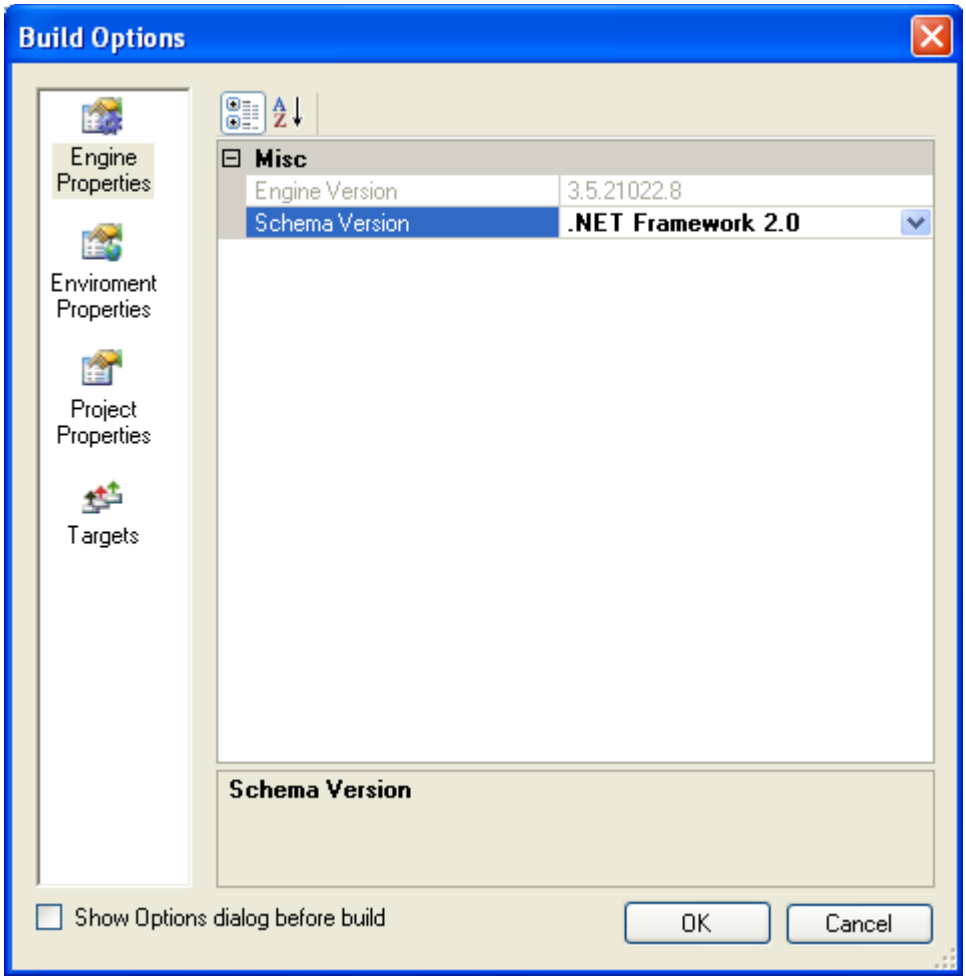
You should have .NET Framework 4.5 installed in order to use MSBuild Sidekick. If you have previous MSBuild version please install MSBuild Sidekick 2.0 (.NET 2.0 or 3.5) or MSBuild Sidekick 3.0 (.NET 4.0).

10.2 MSBuild Schema Version Configuration

MSBuild Sidekick supports editing MSBuild 2.0, 3.5, 4.0 and 4.5 projects; only pre-requisite you need installed is .Net Framework 4.5. However, to build MSBuild 4.5 projects you need to have .Net Framework 4.5 installed.
When creating new projects or loading the projects into the application for the first time, the MSBuild version for the project being loaded is defined by the Initial Schema Version setting. The setting can be changed using **Tools→Options** menu, on **Application Configuration** tab (by default, Initial Schema Version is set to 2.0).



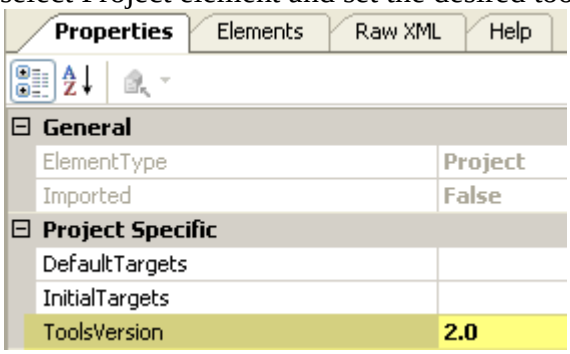
To change MSBuild schema version in the loaded project, use **Build→Build Options** menu, **Engine Properties** tab, Schema Version setting.



Initially, when you load certain project for the first time (or create a new project), the schema version is set to the same value as Initial Schema Version (see above). When changed, the schema version value is stored in the project configuration file (see Project Configuration section above), and hereafter the project loaded will be edited and built according to the schema version set (regardless of the initial schema version setting).

10.3 Toolset Version Configuration

In MSBuild 3.5, 4.0 and 4.5 projects, it is possible to change the build toolset version. To do so, one ought to select Project element and set the desired toolset version in ToolsetVersion property.



10.4 MSBuild 3.5 Editor Support

The following features are available in the editor for MSBuild 3.5 projects only:

- **ToolsetVersion** attribute is available for root Project element
- **ItemDefinitionGroup** element can be added under root Project element
- **Remove** attribute is available for Item elements
- **ItemGroup/PropertyGroup** elements can be added under Target element

- Tasks from Microsoft.Build.Tasks assembly correspond to MSBuild 4.5 version

10.5 MSBuild 4.0 Editor Support

The following features are available in the editor for MSBuild 4.0 projects only:

- **BeforeTargets** and **AfterTargets** attributes are available for Target element.
- Inline tasks can be defined right in the project file under **UsingTask** element. You do not have to create a separate assembly to host the task.
- Tasks from Microsoft.Build.Tasks assembly correspond to MSBuild 4.5 version.

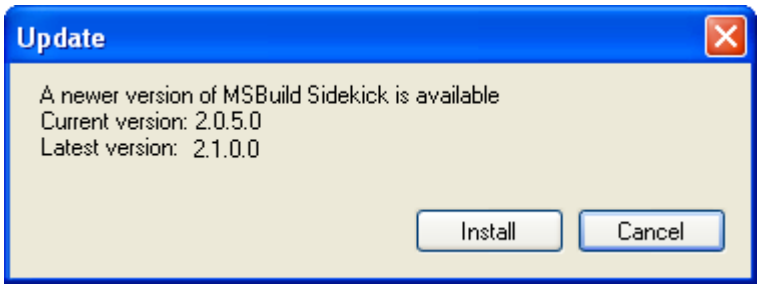
10.6 MSBuild 4.5 Editor Support

The following features are available in the editor for MSBuild 4.5 projects only:

- **VisualStudioVersion** attribute is available for root Project element. By using this attribute you can specify the version of Visual Studio under which this project should be considered to be running.
- **TreatAsLocalProperty** attribute is available for root Project element. By using this attribute you can prevent specific command-line properties from overriding property values that are set in a project or targets file.
- **KeepMetadata** attribute is available for Item element. This attribute specifies the metadata for the source items to add to the target items.
- **RemoveMetadata** attribute is available for Item element. This attribute specifies the metadata for the source items to not transfer to the target items.
- **KeepDuplicates** attribute is available for Item element. This attribute specifies whether an item should be added to the target group if it's an exact duplicate of an existing item.
- The **ContinueOnError** attribute of a Task can contain any of the following values: WarnAndContinue (or true), ErrorAndContinue, and ErrorAndStop (or false).
- Tasks from Microsoft.Build.Tasks assembly correspond to MSBuild 4.5 version.

11. Application Update

You can check for application new releases by choosing *Check for Updates* menu item from *Help* menu.



By pressing *Install* button, application will download new version and start the installer.

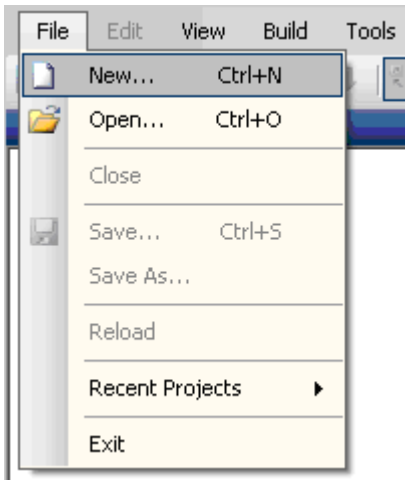
Also application can automatically check for updates if *Check for Updates Automatically* options in **Tools→Options** menu, on **Application Configuration** tab is set to true. You can change the period of updates checks by setting *Period (days)* option.

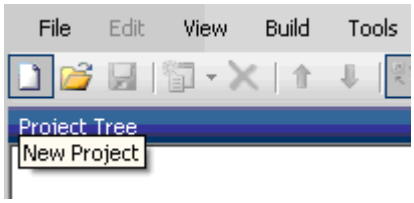
12. Walkthroughs

11.1 Walkthrough: Creating MSBuild project from scratch

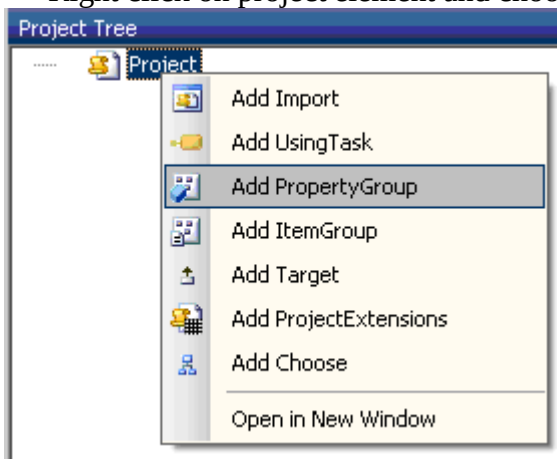
In this walkthrough you will create basic MSBuild project. This project will remove all object (*.obj) and precompiled header (*.pch) files recursively from given folder; if the folder is not passed as a parameter, the folder will default to the project location folder (such script may be useful to remove temporary files from C++ build folders).
Basic knowledge of MSBuild schema is assumed for this walkthrough.

1. Create new empty project
   – Click on *File->New* menu or Standard toolbar *New* button whereupon new project will be created

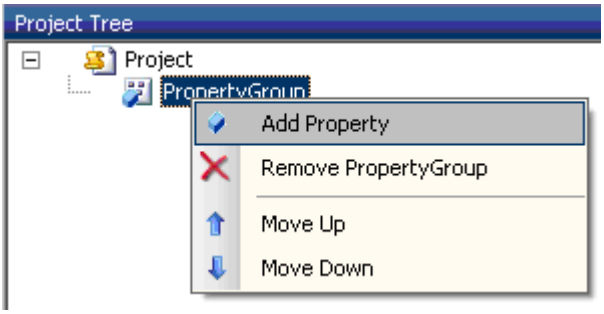




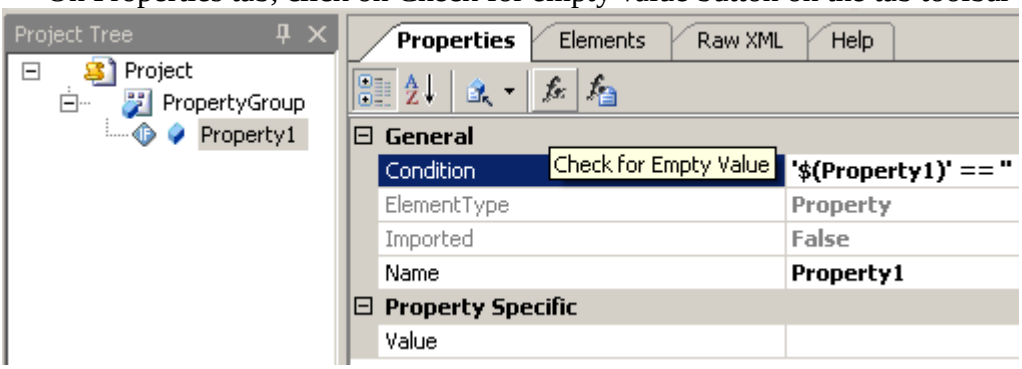
2. Add property group
   – Select project tree element in project tree by clicking on it
   – Right click on project element and choose *Add PropertyGroup*



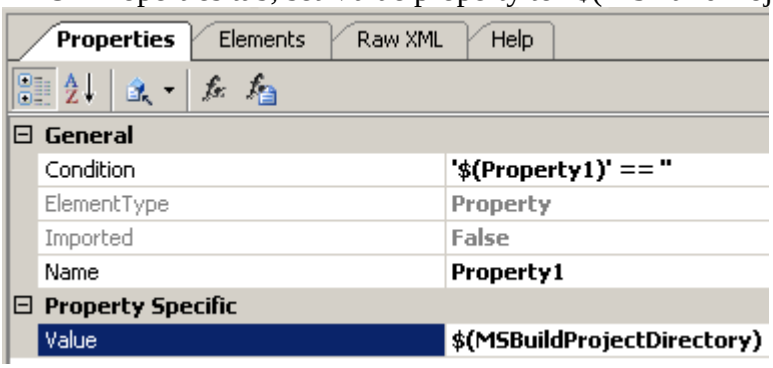
3. Add property (to specify folder to clean up)
   – Select property group element in project tree view by clicking on it
   – Right click on PropertyGroup element and click on *Add Property*



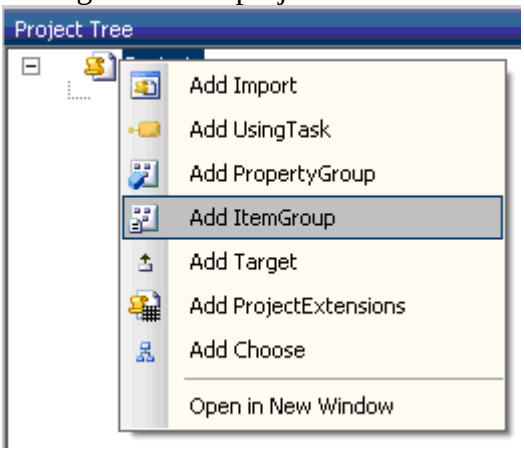
4. Assign condition and default value to the property (so default will be supplied if no external value is passed)
   - Select Property1 element in project tree by clicking on it
   - On Properties tab, click on Check for empty value button on the tab toolbar



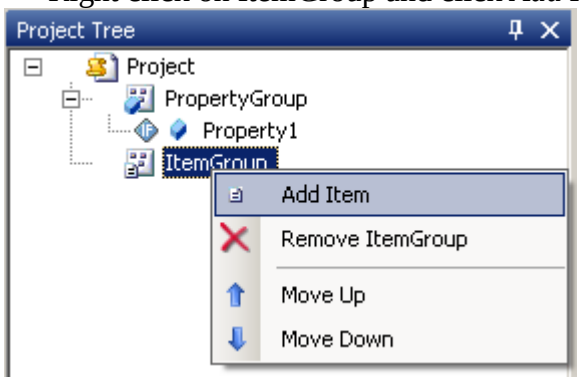
   - On Properties tab, set Value property to "$(MSBuildProjectDirectory)"



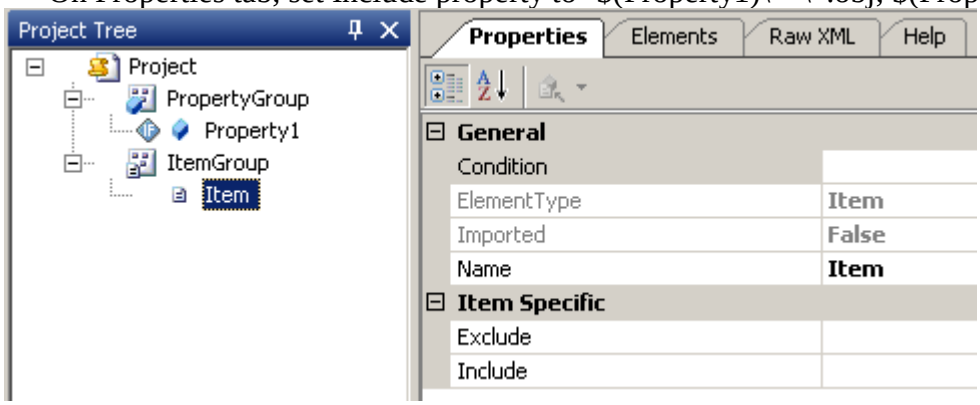
5. Add item group
   - Select project element in project tree view by clicking on it
   - Right click on project element and click *Add ItemGroup*



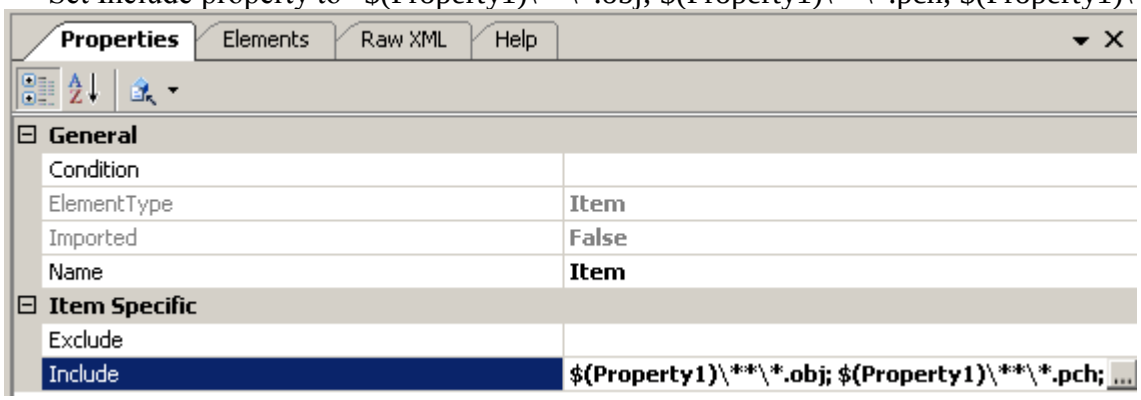
6. Add item (to specify files to be deleted by the project)
   - Select item group element in project tree view by clicking on it
   - Right click on ItemGroup and click *Add Item*



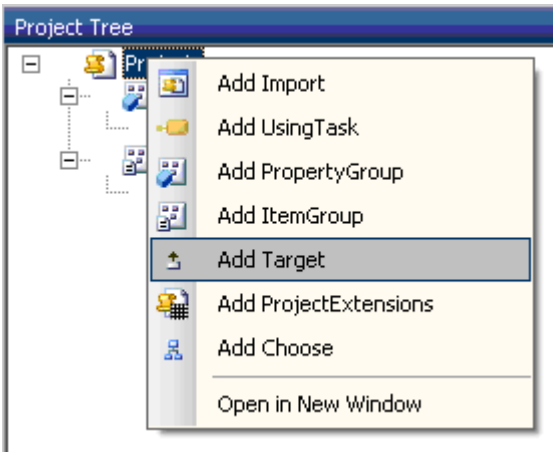
   - Select element item in project tree view by clicking on it
   - On Properties tab, set Include property to "$(Property1)***.obj; $(Property1)***.pch"



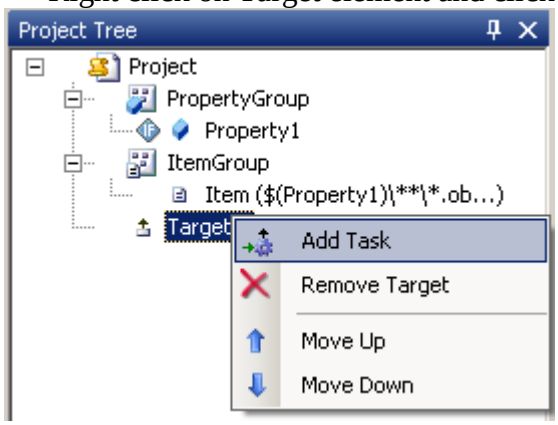
   - Set Include property to "$(Property1)***.obj; $(Property1)***.pch; $(Property1)***.ncb"



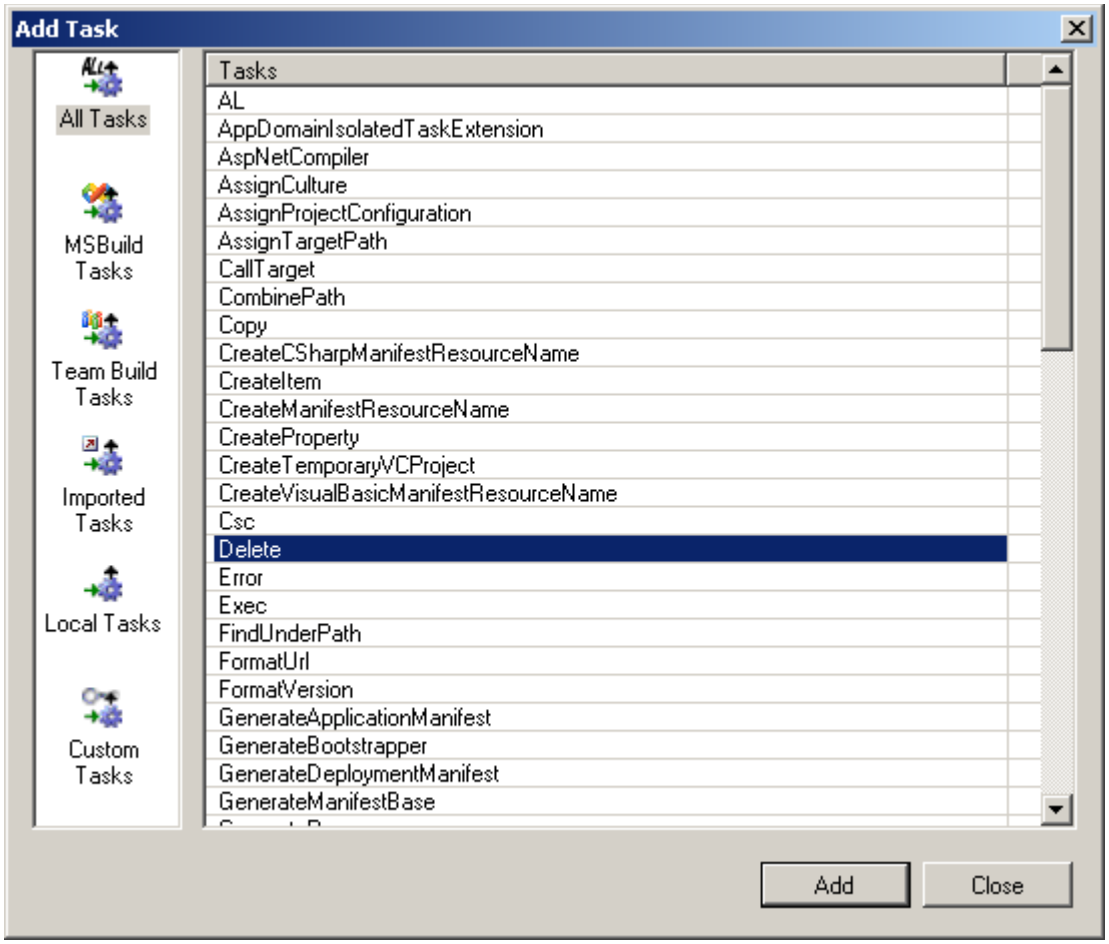
7. Add target
   - Select project element in project tree view by clicking on it
   - Right click on *Project* element and click *Add Target*



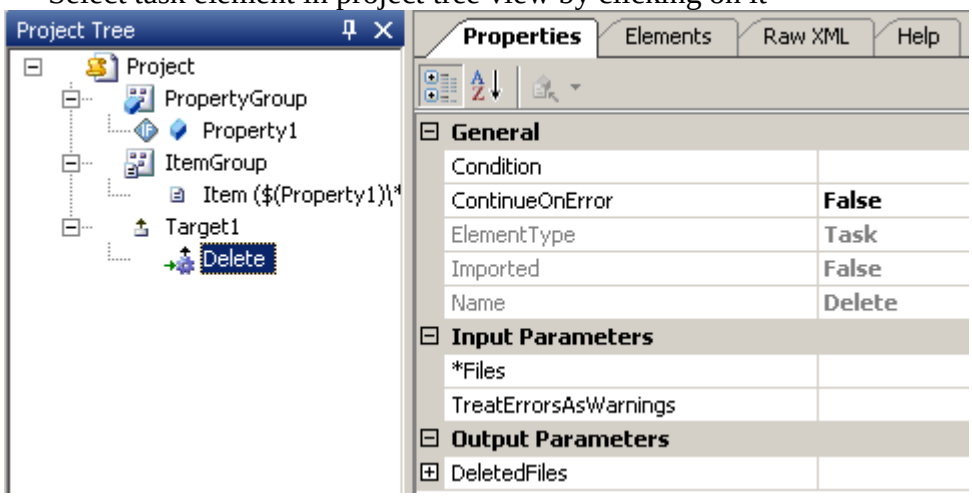
8. Add Delete task to the target
   - Select target element in project tree view by clicking on it
   - Right click on Target element and click *Add Task*



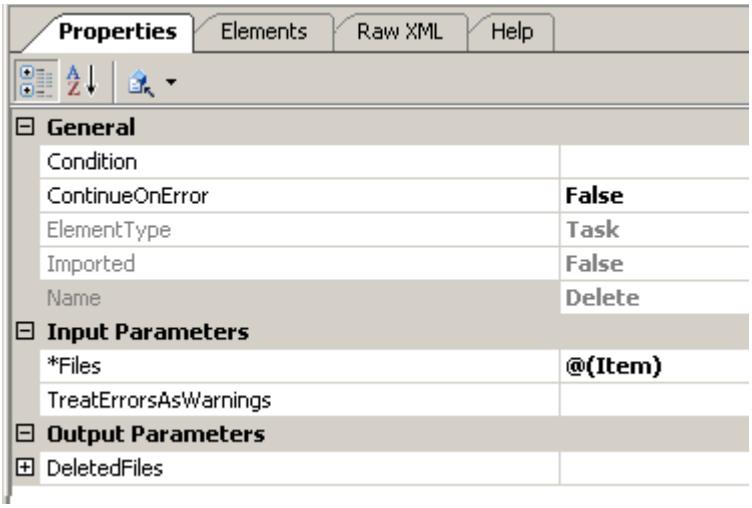
   - Select *Delete* task in Add Task dialog list
   - Click *Add* button
   - Click *Close* button



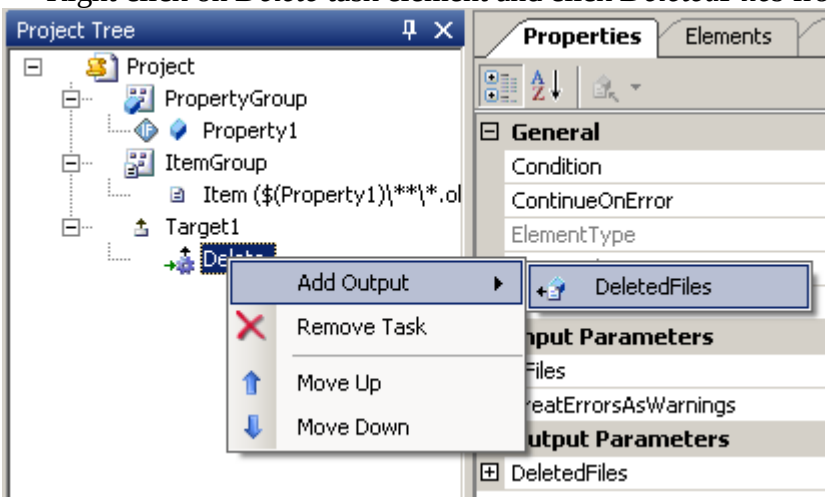
9. Assign Delete task input parameters
   – Select task element in project tree view by clicking on it



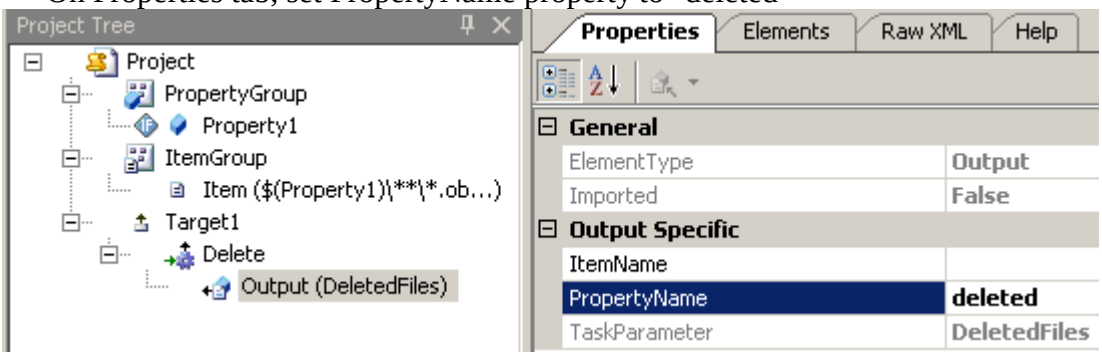
   – On Properties tab, set Files property to "@(Item)"



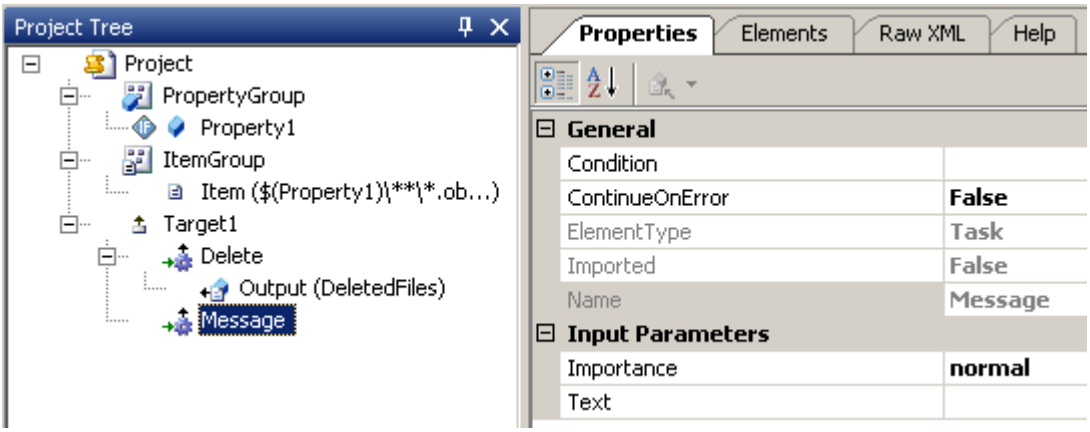
10. Assign Delete task output parameters
    - Select task element in project tree view by clicking on it
    - Right click on *Delete* task element and click *DeletedFiles* from *Add Output* submenu



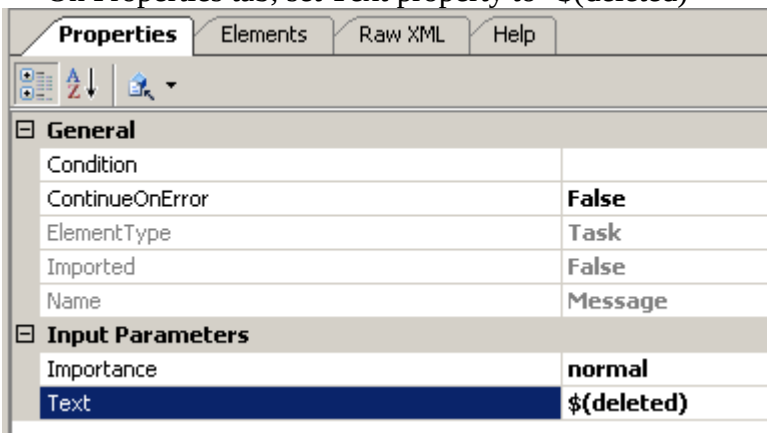
    - Select task output parameter element in project tree view by clicking on it
    - On Properties tab, set PropertyName property to "deleted"



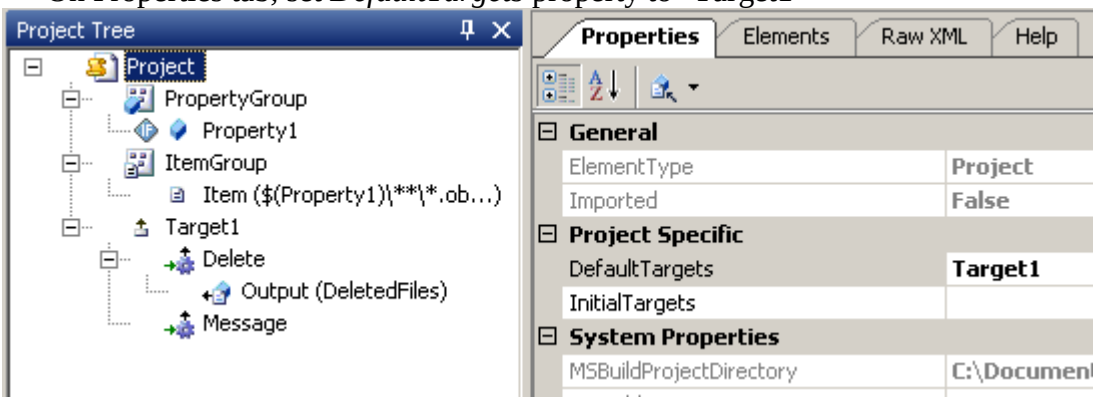
11. Add Message task (to print the deleted files list)
    - Right click on Target element from project tree and choose *Add Task*
    - Select Message task in Add Task dialog tasks list
    - Click *Add* button
    - Click *Close* button



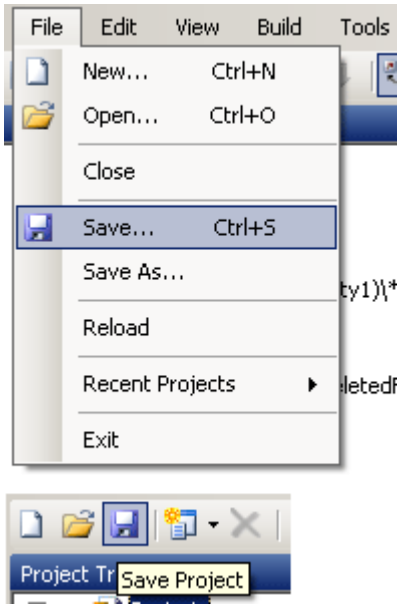
12. Assign Message task input parameters
    - Select task element in project tree view by clicking on it
    - On Properties tab, set Text property to "$(deleted)"



13. Set project default target
    - Select project element in project tree view by clicking on it
    - On Properties tab, set *DefaultTargets* property to "Target1"



14. Save project file
    - Click *File->Save* menu or Standard toolbar *Save Project* button



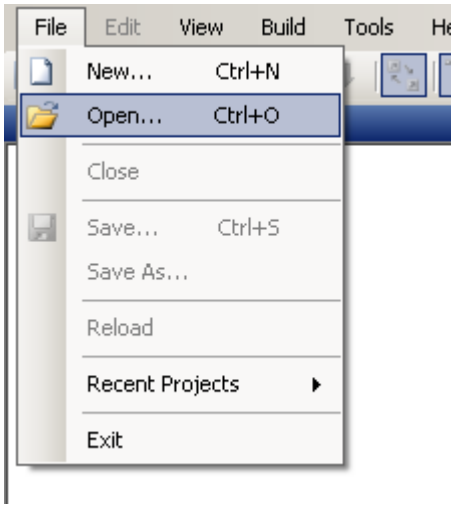
Upon completing the walkthrough, the following MSBuild project was created:

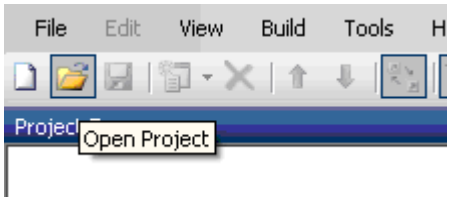
```
<Project xmlns="http://schemas.microsoft.com/developer/msbuild/2003"
 DefaultTargets="Target1">
 <PropertyGroup>
  <Property1 Condition="'$(Property1)' == ''">$(MSBuildProjectDirectory)</Property1>
 </PropertyGroup>
 <ItemGroup>
  <Item Include="$(Property1)\**\*.obj;$(Property1)\**\*.pch;" />
 </ItemGroup>
 <Target Name="Target1">
  <Delete Files="@(Item)">
   <Output TaskParameter="DeletedFiles" PropertyName="deleted"/>
  </Delete>
  <Message Text="$(deleted)" />
 </Target>
</Project>
```

11.2 Walkthrough: Building and using build logs

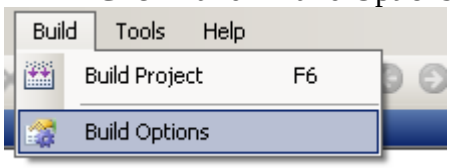
In this walkthrough, you will run build on existing build project and review logs of the build process; the project created in “Creating project from scratch” walkthrough will be used. To review the project build logic and logs it is advisable also to create a temporary folder containing files with object (*.obj) or precompiled header (*.pch) extensions.
Basic knowledge of MSBuild schema and build logic is assumed for this walkthrough.

1. Load saved project
   – Click File->Open menu or Standard toolbar Open Project button and select the existing project

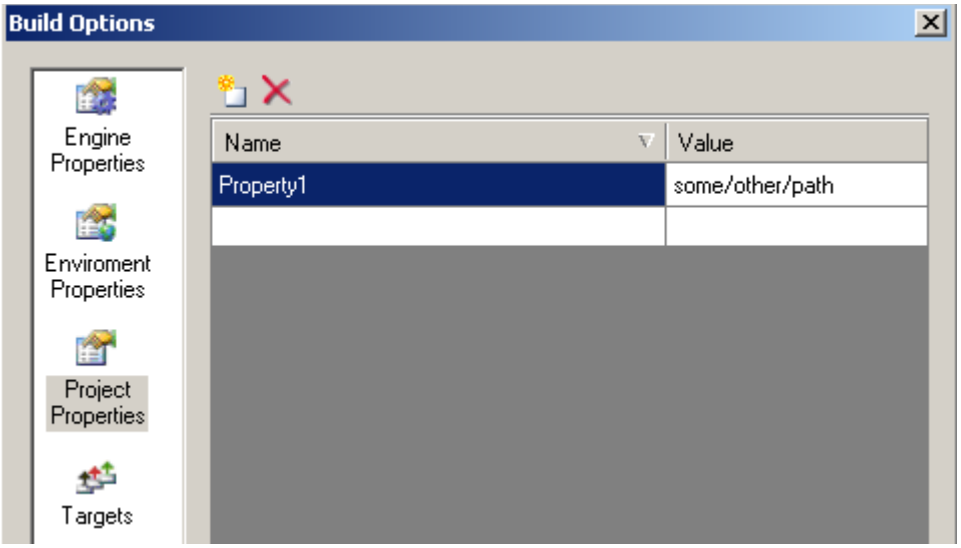




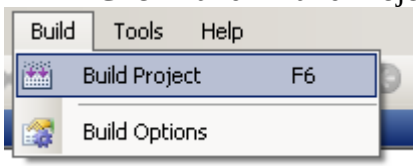
2. Specify external parameters for the build
   - Click Build->Build Options menu or Build toolbar Build Options button

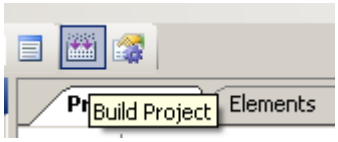


   - Switch to Project properties tab by selecting Project properties shortcut on the left pane of Build Options dialog
   - Add new record to table: Name = "Property1", Value = "path" (where path is set to the path containing obj and pch files)

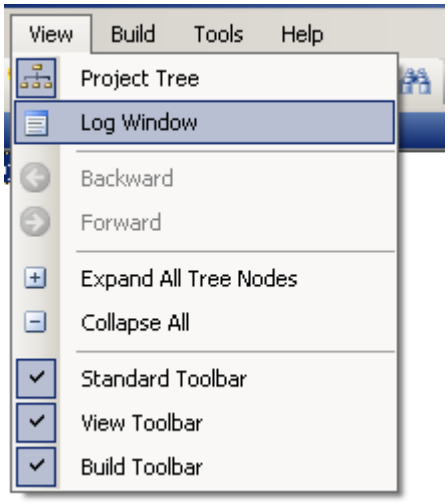


3. Build project
   – Click Build->Build Project menu or Build toolbar Build Project button

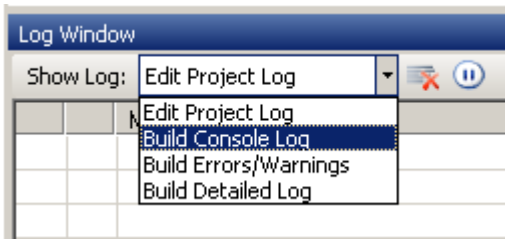




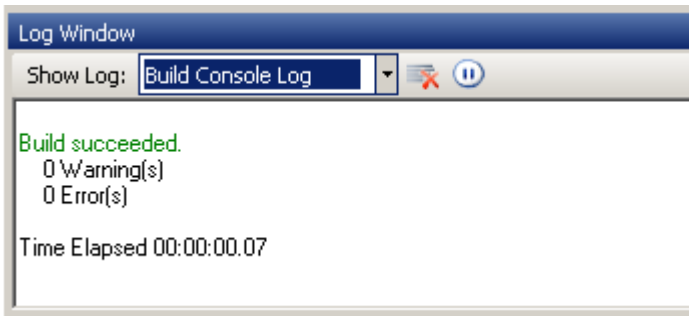
4. Review logs (errors, detailed, console)
   – Build Console log
     - Open log window (View->Log window menu or View toolbar Show Log window button)



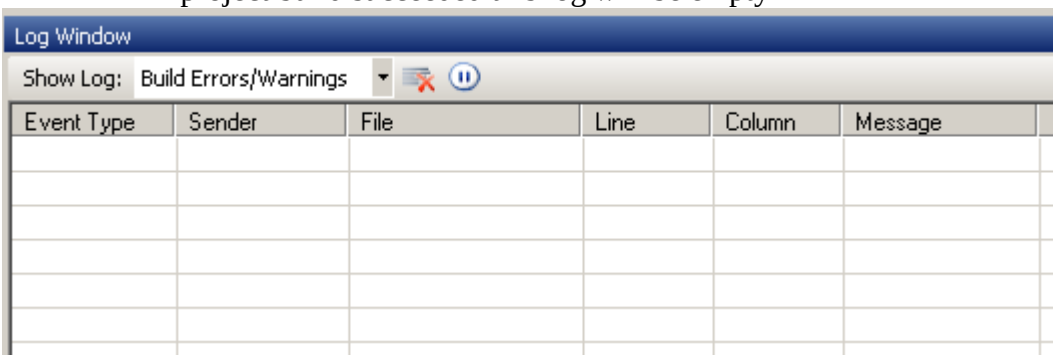
- Switch to Build Console log by choosing corresponding item from log window combobox



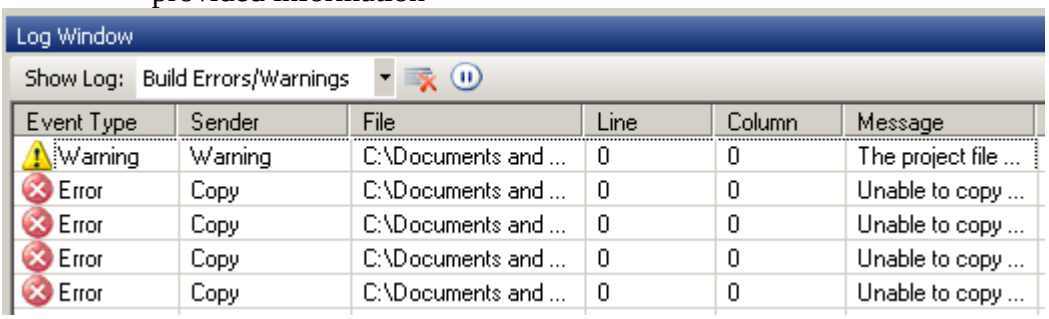
- Log contains all build information (similar to MSBuild engine command-line console log)



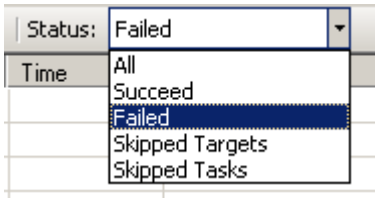
– Build Errors/Warning log
  - Switch to Build Errors/Warnings by choosing corresponding item from log window combobox. If project build succeeded this log will be empty



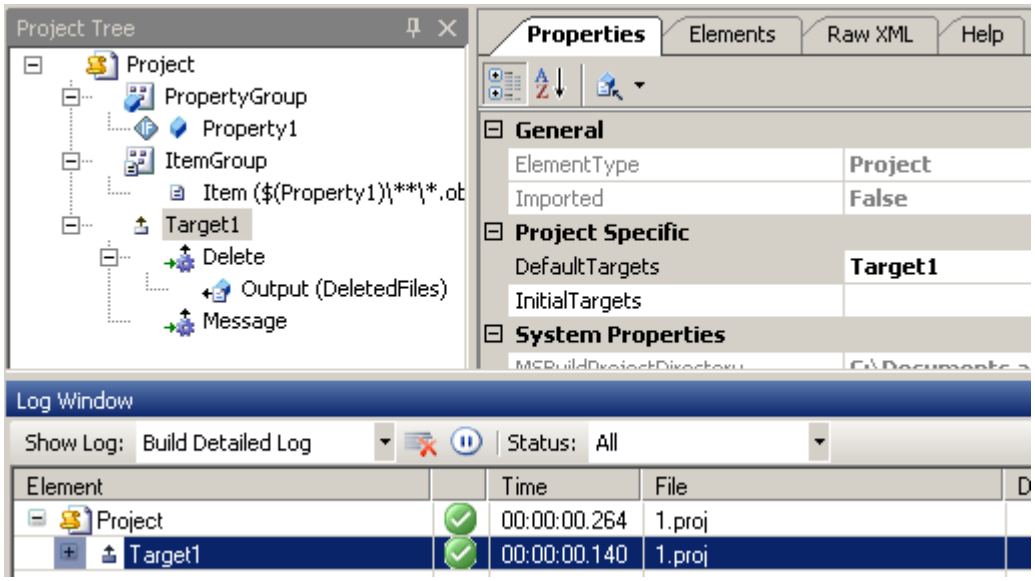
  - If there were errors/warning during build log contains information about them (filename, line, column and message if provided by MSBuild engine), and helps to fix the problem using provided information



– Build Detailed Log
  - Switch to Build Detailed log by choosing corresponding item from log window combobox
  - Log contains elements build order information and status of each element
  - By choosing value from Status combobox located on the window toolbar, the list can be filtered by specific status



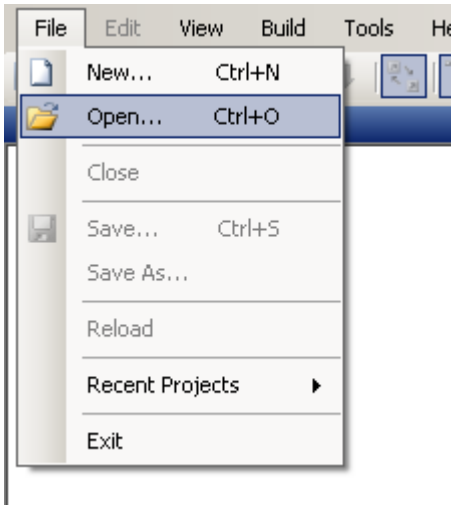
- Double-clicking on selected element will select the element in the project tree view. Note: First occurrence of element with same name and type in project tree will be selected



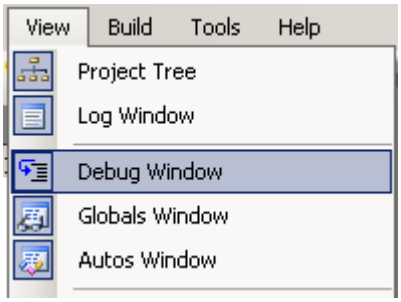
11.3 Walkthrough: Debugging and using Globals/Autos windows

In this walkthrough, you will debug an existing Visual Studio C# project, set breakpoints for particular Tasks and monitor Property values using Globals/Autos windows.
Basic knowledge of MSBuild schema and build logic is assumed for this walkthrough.

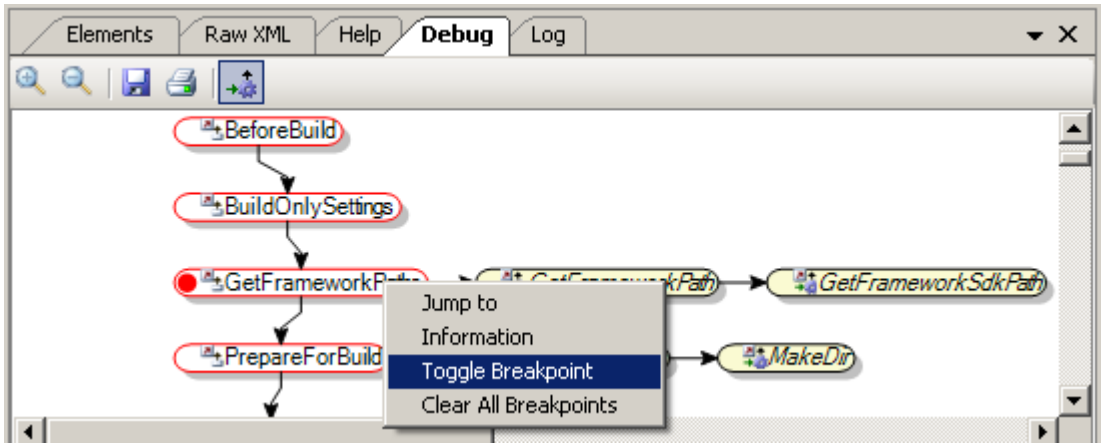
1. Open valid C# project
   – Click *File->Open* menu or Standard toolbar Open Project button and select C# project file to open

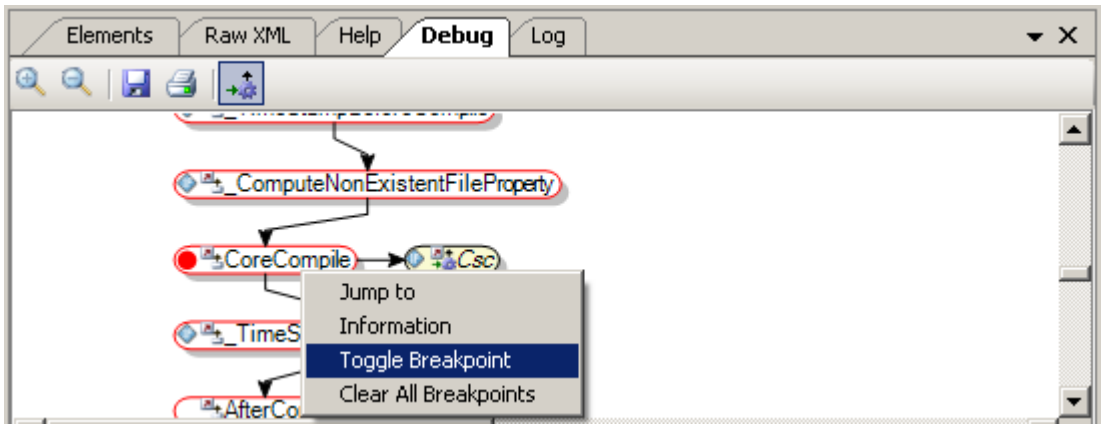


2. Open Debug, Globals, Autos windows
   – Click *View -> Debug Window* menu
   – Click *View -> Globals Window* menu
   – Click *View -> Autos Window* menu

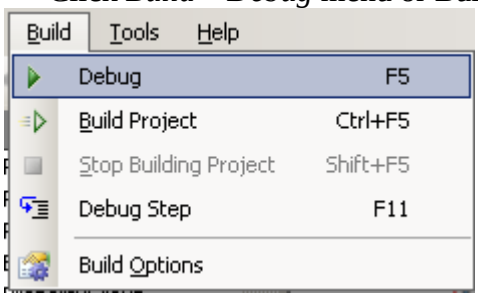


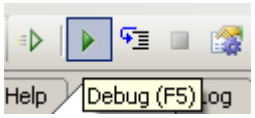
3. Navigate to Debug window and toggle breakpoint on GetFrameworkPaths and CoreCompile Targets.
   – Right mouse click on Target element and click on *Toggle Breakpoint* menu item



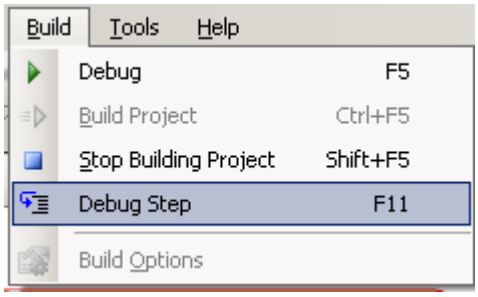


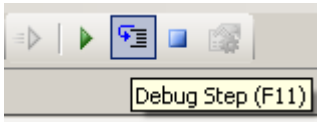
4. Start debugging
   – Click *Build->Debug* menu or Build toolbar *Debug* button



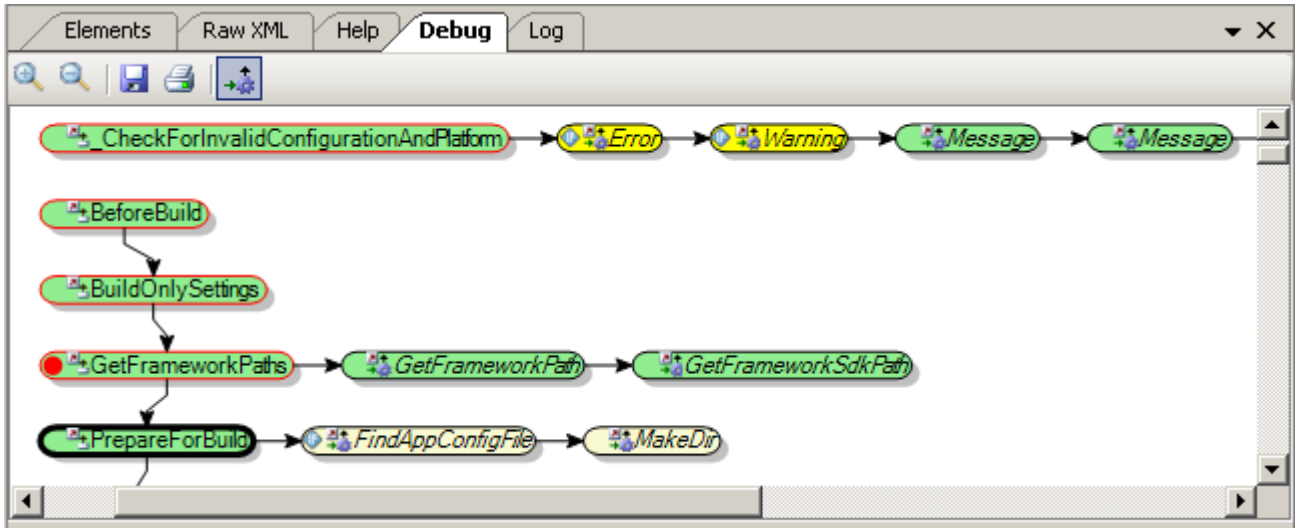


5. Perform three debug steps until PrepareForBuild Target becomes highlighted
   – Click *Build->Debug Step* menu or Build toolbar *Debug Step* button

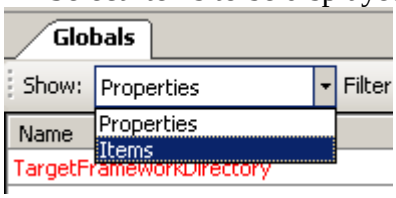




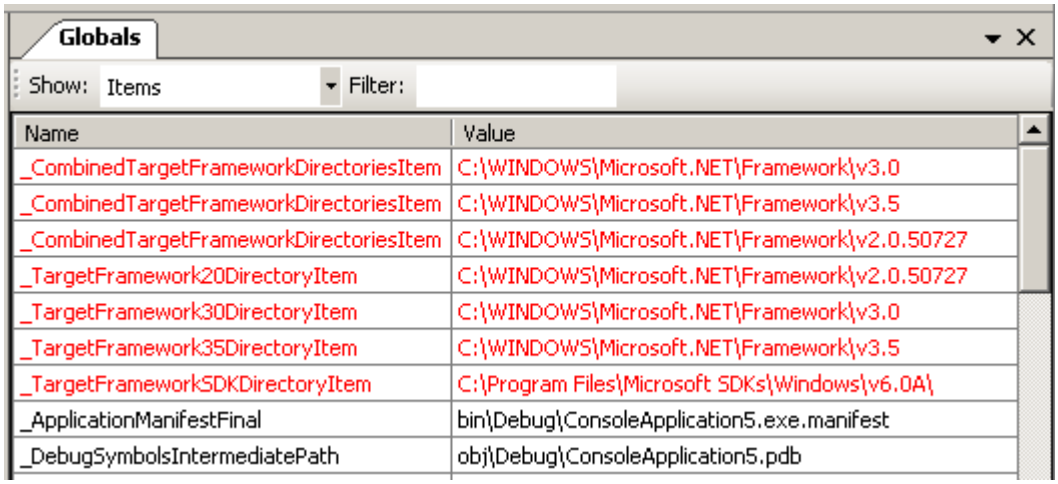
6. View the Targets/Tasks build order on Debug diagram.
   – Note that Targets/Tasks highlighted with green were executed in the build; Targets/Tasks highlighted with yellow were skipped



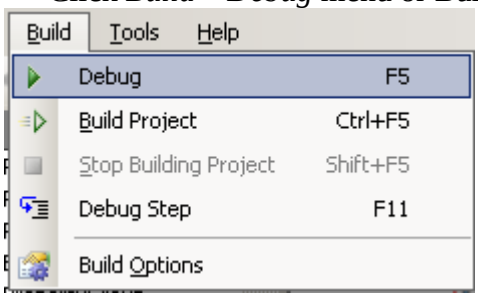
7. View .NET Framework paths detected by GetFrameworkPath task on Globals window
   – Select Items to be displayed in drop-down on Globals window

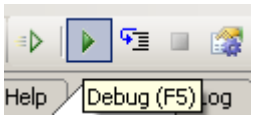


   – Items that are updated on GetFrameworkPaths Target execution are highlighted with red on Globals window

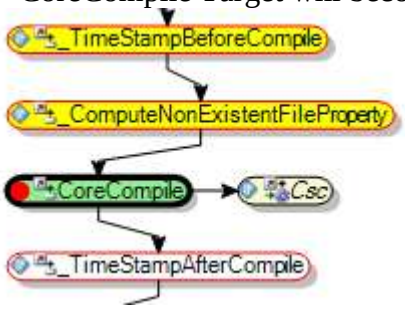


8. Resume project execution until Csc Task is reached
   - Click *Build->Debug* menu or Build toolbar *Debug* button

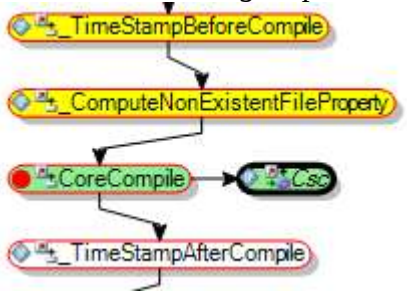




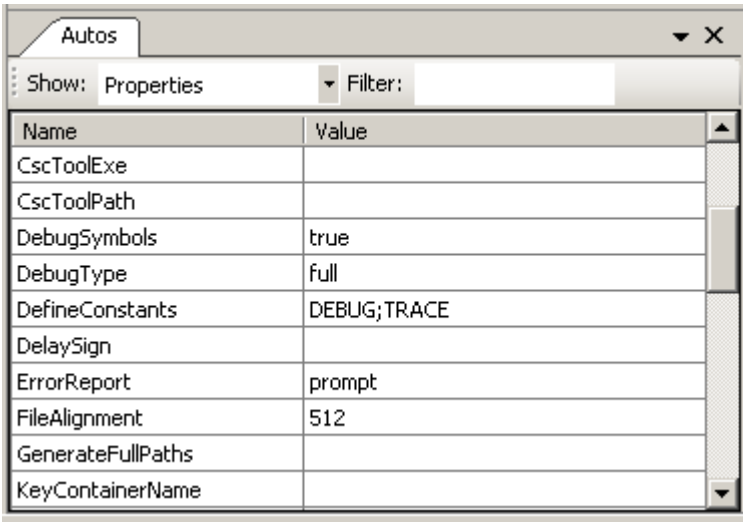
   - CoreCompile Target will become selected on Debug window



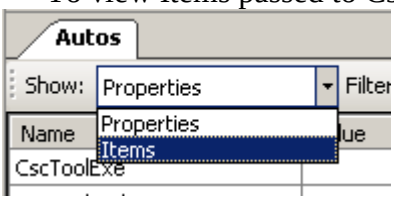
   - Click *Build->Debug Step* menu or Build toolbar *Debug Step* button

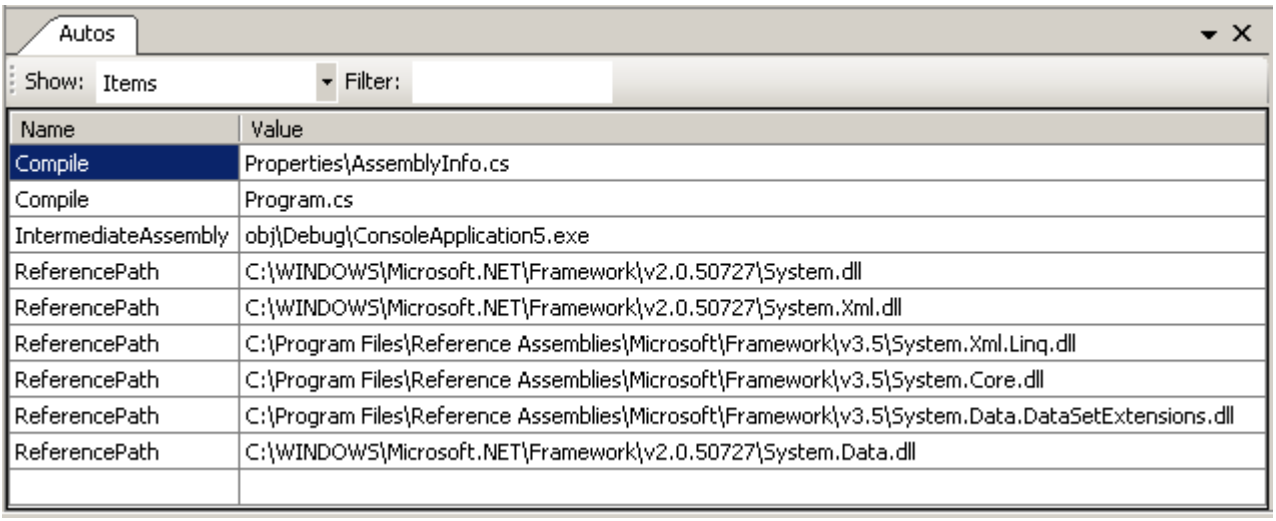


9. View options and files to be passed to C# compiler on Autos window
   - Navigate to Autos window to view Properties and their values passed to Csc Task



– To view Items passed to Csc task, select Items in drop-down on Autos window

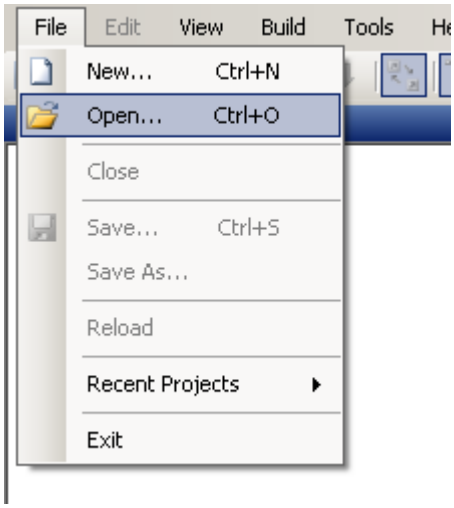


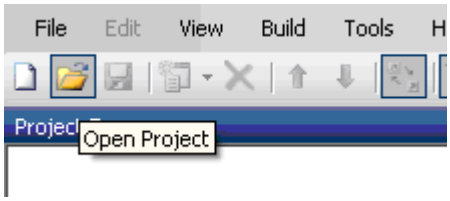


11.4 Walkthrough: Building Visual Studio C# project different configurations

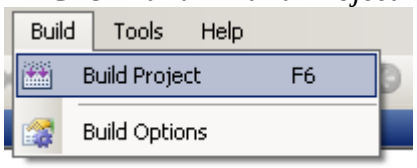
In this walkthrough, you will build an existing Visual Studio C# project, change build configuration from default (Debug) to Release and review logs of the build process.
Basic knowledge of MSBuild schema and build logic is assumed for this walkthrough.

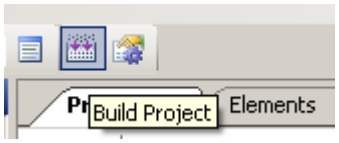
2. Open valid C# project
   – Click *File->Open* menu or Standard toolbar Open Project button and select valid C# project to open





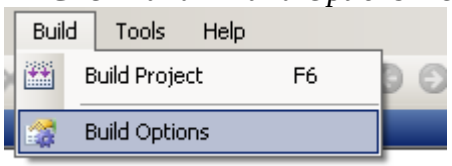
3. Build project
   – Click *Build->Build Project* menu or Build toolbar *Build Project* button





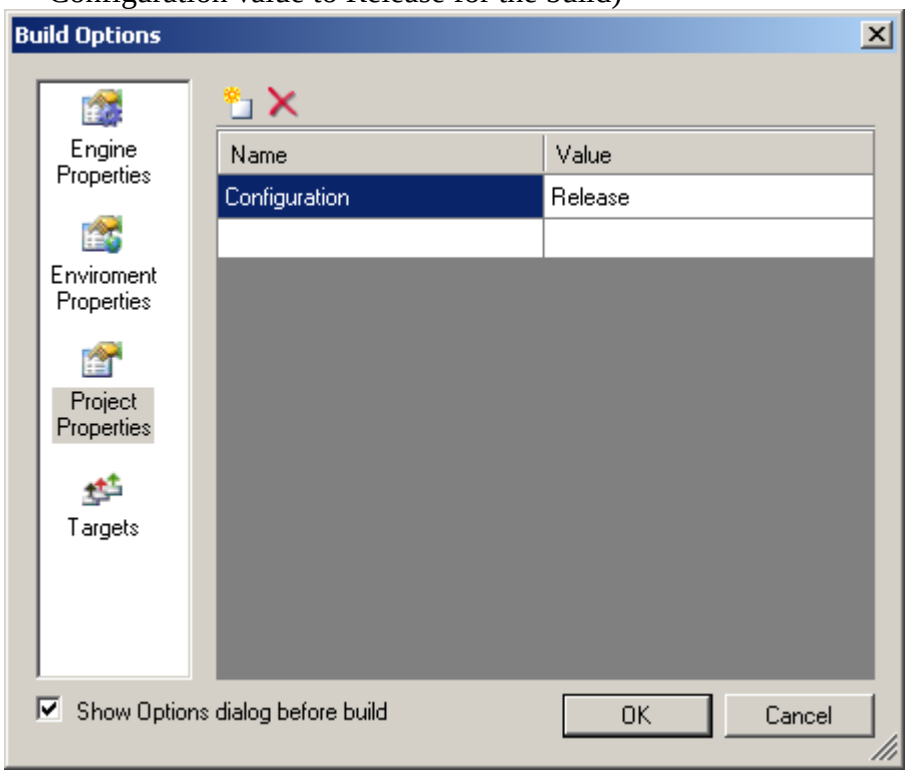
4. Review logs (error, detailed, console)
   – Please see *Building and using build logs* walkthrough for details on reviewing logs

5. Change configuration from Debug to Release for the build
   – Click *Build->Build Options* menu or Build toolbar *Build Options* button



   – Switch to Project properties page by selecting Project properties shortcut on the left pane of Build Options dialog

– Add new entry to table: Name = "Configuration", Value = "Release" (the new entry sets property Configuration value to Release for the build)



6. Build Release configuration
   – Execute step 2 again. Reviewing the logs will show that build was performed for Release configuration