



# Microsoft Dynamics<sup>®</sup> AX 2012 MorphX Enhancements

Microsoft Dynamics AX 2012 enhances the developer experience by introducing a developer-centric workspace, a new and improved X++ editor, richer tools for understanding type hierarchies, and a stronger unit test framework that makes extending and running unit tests easier.



## ENHANCED DEVELOPMENT ENVIRONMENT

In Microsoft Dynamics AX 2012, the client experience has been divided into two parts –an application workspace and a development workspace. Each experience is optimized for its specific purpose; either for running the application, with a user friendly, role-based UI; or development, with a screen that is optimized for development tools.

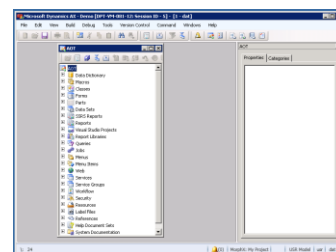
These two workspaces can be invoked either directly or from within each other. When invoking an application workspace from within a development workspace, or vice versa, the two workspaces run in the same client session, sharing assets such as company and state. A total of eight workspaces are supported in the same client session.

The benefits of the new development workspace are:

- **Improved screen usage** – The development workspace removes all non-development content, such as the content and navigation pane in the end-user client, to optimize the screen for development tools.
- **New main menu structure** – Because the workspaces vary by purpose, the developer experience no longer has to include the same main menu as the end-user client. Microsoft Dynamics AX 2012 provides new, restructured main menu that is consistent with Microsoft Visual Studio and contains only developer entries. This new menu results in better grouping of related functionality and a flatter structure, improving discoverability and requiring less navigation to reach a menu item.
- **Windows navigation** – Keyboard shortcuts are available for navigating between open tool windows and docked windows.

## NEW AND POWERFUL X++ EDITOR

The X++ editor has been rewritten for this release, relying on the new rehostable editor control from Visual Studio 2010. The new editor enables a number of new productivity enhancements for developers authoring X++ code. With the new editor, developers can view (read-only) X++ code from within Visual Studio for the purpose of debugging X++ that is running as Intermediate Language (IL).

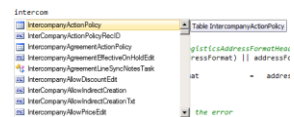


*Development workspace with new main menu*

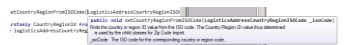


Editor enhancements include:

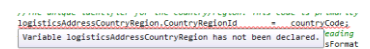
- **Better intellisense** – In addition to member completion, the new editor also supports word completion for variable, type, and keyword names, greatly improving typing speed and reducing spelling mistakes. Member and word completion lookup now includes tooltips with XML document comments, which provides inline help for each lookup.
- **Improved parameter help** – Signature information now supports multiple lines of information, multiple signatures, and XML document comments on parameters, providing inline help when you complete a method call.
- **Improved rendering** – The new editor improves code rendering with additional syntax coloring, zoom capabilities, and line numbers. In addition, code retains its formatting when it is pasted from the Clipboard, and the editor highlights lines that were changed since the last time the code was saved.
- **Indentation** – Indentations no longer just follow the last line. Blocks and statements are also taken into consideration for more automatic indentation.
- **Incremental search** – Like Visual Studio, the X++ editor now supports searching for a string inline when you type the name.
- **Wavy-line tooltips (squiggles)** – Inline compiler error and warning lines now have tooltips, displaying the actual compiler output message. You no longer have to go to the compiler output.
- **GoTo definition for model elements** – Navigating to definitions in code now supports model elements as well. For example, a GoTo definition on a **Table** type opens an AOT with that table. You can use this functionality to quickly inspect and change model element properties.
- **Label tooltip** – Label IDs in code now support a tooltip that displays the label value in the current language.



### Word completion



### Parameter help in the new editor



### Inline tooltips for compiler issues



## BROWSING AND UNDERSTANDING TYPE HIERARCHIES

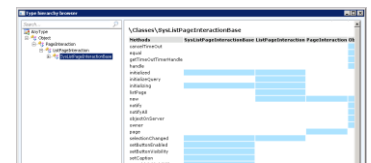
The Microsoft Dynamics AX programming model contains several type hierarchies, such as extensible data types and classes and, new in this release, table inheritance. The AOT itself displays a containment hierarchy for the model elements, and it is thus not suited to show the cross model element hierarchies. In previous releases, developers could use the Application Hierarchy Tree tool to browse the hierarchy structure. In Microsoft Dynamics AX 2012, that tool has been divided into a Type Hierarchy Browser and a Type Hierarchy Context, which make it easier to navigate and understand hierarchies:

- The Type Hierarchy Browser allows developers to browse types by hierarchy, and investigate which methods, fields, and properties are defined or overwritten on the different type levels. Hyperlinks support easy navigation to any model element in the hierarchy. The browser can be opened from within a context in the X++ editor, or the AOT, or opened on its own, either freely browsing or searching among types.
- The Type Hierarchy Context provides a small contextual view that can be docked; for example, along properties. It shows the type hierarchy of the currently-selected node in an active AOT, providing an instant understanding of the hierarchy. Items in the hierarchy are hyperlinks that open a given element in the Type Hierarchy Browser for more detailed information.

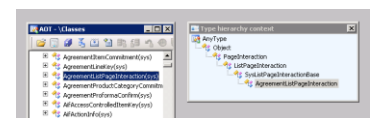
## MORE FLEXIBLE UNIT TESTING

Unit testing is an important part of ensuring code coverage and limiting regressions when code changes happen. The unit test framework in Microsoft Dynamics AX, SysTest, has been improved to make it easier to extend and to integrate in build or check-in gates. Improvements include:

- **Extensible categorization** – Unit test methods can now be categorized, for example, as a check-in test, by using the new X++ attributes. Multiple categories can be assigned. A number of different categories are included with the product, and you can create new ones by extending the attribute base.



*Type Hierarchy Browser*



*Type Hierarchy Context*



- **Extensible execution strategy** – Execution of unit test methods is now determined by reflecting on the category attributes. A number of execution strategies are included in the product, such as running all tests or running tests marked as check-in tests. You can create custom execution strategies and plug them into the framework by extending the base execution strategy.
- **Better user experience** – With the unit test tool, you can run a single test method manually. In addition, the tool now includes status icons for all tests run. Unit test execution can also be integrated into build or check-in gates by using command-line execution.
- **Better logging** – Test run results that are logged to XML now include more information, such as environment setup.

# SUMMARY

Microsoft Dynamics AX 2012 enhances developer productivity through a new development experience, so that you can develop in a simpler and more productive development workspace; an improved X++ editor to increase productivity and provide consistency with the code authoring experience in Visual Studio; an enhanced toolset for browsing type hierarchies, improving understanding and navigability; and improved support for writing, extending, and running unit tests, making it easier to tie unit test into build and application lifecycle management.

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