

# Glossary

**Accessibility** The quality of a system incorporating hardware or software that makes it usable by people with one or more physical disabilities, such as restricted mobility, blindness, or deafness.

**Accessibility Interoperability Alliance (AIA)** A group of information technology (IT) and assistive technology (AT) companies, content providers, and other engineering organizations that collaborate together to create standards and design solutions for interoperable accessible technology.

**Accessible Event Watcher (AccEvent)** An investigation tool that allows you to review events raised by the Windows Automation API.

**Alternative Text (Alt Text)** A short descriptive summary of the content shown in a figure. The text provides an alternative means of understanding what the art depicts if a user cannot see the art. It is particularly useful for users who are visually impaired (whether or not they use screen readers to interpret the text in a document) and those who prefer to turn off images, such as users who have slow Internet connections, use a text-only browser, or prefer to work more rapidly than image downloading allows.

**Application Programming Interface (API)** A set of routines, data structures, object classes, or protocols provided by libraries or operating system services in order to support the building of applications.

**Assistive Technology (AT)** A specialty product designed to provide additional accessibility to individuals who have physical or cognitive difficulties, impairments, and disabilities.

**Automation Element** An element in UI Automation that exposes common properties of the UI element it represents.

**Automation ID** An Automation Element Property used to identify an element. This Property should be filled out for most elements.

**Beta** A new software or hardware product, or one that is being updated, that is released to users for the purpose of evaluation in the real world.

**Bug** An error in coding or logic that causes a program to malfunction or to produce incorrect results. Minor bugs, such as a cursor that does not behave as expected, can be inconvenient or frustrating, but do not damage information. More severe bugs can require the user to restart the program or the computer, losing whatever previous work had not been saved.

**Child** In a tree structure, the relationship of a node to its immediate predecessor. Also see parent/child. In contrast to sibling.

**Client** An accessibility or test automation tool that uses an accessibility API to programmatically access application user interfaces.

**Common Controls** A set of windows that are implemented by the common control library, which is a dynamic-link library (DLL) included with the Windows operating system.

**Control** A component in an application with a visual representation in the UI that can be manipulated by the user to perform an action.

**Control Pattern** In UI Automation, a control attribute or functionality that represents common UI behaviors (such as invoking a button) and supports the UIA Properties, Methods, and Events.

**Control Type** A pre-defined set of patterns, properties, and conditions used to define a control's basic appearance and functionality. A well-known identifier that indicates the kind of control a particular UI element represents, such as a combo box or a button.

**Custom Control** A control that is not provided by the UI framework; or a modified control based on a standard control.

**Depth-First Search** Generally following a top-to-bottom, left-to-right scheme, a tree traversal pattern that starts at the root of a tree (located at the top of the tree) and moves down any branches of each top-level node before traversing the next top-level node.

**Digital Inclusion** The idea of using technology to its fullest potential by looking for opportunities to innovate and improve the user experience for all users, including improving issues of accessibility.

**Disability** A temporary or permanent impairment that may involve visual, hearing, mobility, cognitive, or speech abilities.

**Element** In a logical hierarchy, a node representing a control in the UI.

**Event** An action or occurrence, often generated by the user, to which a program might respond (for example, key presses, button clicks, or mouse movements). In UI Automation, Events are action notifications that correspond to an activity occurring in the UI.

**Framework** In object-oriented programming, a reusable basic design structure, consisting of abstract and concrete classes, which assists in building applications.

**High Contrast** A system setting that heightens the color contrast of some text and images on your computer screen, making those items more distinct and easier to identify. Increasing the contrast in colors reduces eyestrain and makes things easier to read for many people.

**High Dots Per Inch (High DPI)** Dots per inch is a measure of screen and printer resolution that is expressed as the number of dots that a device can print or display per linear inch. Resolutions of 144 dpi or higher are considered high dpi. Since the release of Windows Vista, the Windows platform replaced large font settings with dpi configurations.

**IAccessible** A COM-based interface in MSAA that exposes information about UI elements. IAccessible is always paired with ChildId to make up one UI element representation (called "Accessible Object" in MSAA).

**Implementation Table** A table that lists the control types, patterns, and properties for implementing accessible controls.

**In-Process** In the context of accessibility APIs, in-process refers to a program that is running within the process of a target application. For instance, some programs use in-process hooks and load a part of their code to target applications.

**Inspect Objects (Inspect)** A Windows Automation API investigation tool that allows you to examine the element's Patterns and Properties as well as navigate the tree. Inspect allows you to interact with the elements through the accessibility APIs and navigate the elements by keyboard, mouse, or navigation methods provided by the framework.

**Investigation Tools** Investigation tools are manual test tools that allow you to quickly assess the UI for issues. Allows you to look at your UI's underlying structure and properties, as well as interact with the elements. Investigation tools do not "problem-solve" for you.

**Information Technology Industry Council (ITIC)** A lobbying organization based in Washington, D.C., that assists member high-tech companies to achieve legislative policy objectives.

**Library** In programming, a collection of routines stored in a file. Each set of instructions in a library has a name, and each performs a different task.

**Logical Hierarchy** A systematic mapping of the controls in an application to programmatically exposed elements in UIA. The logical hierarchy provides context for the controls' location and relationships in the UI and helps to determine the controls'

implementation. It can also be used for planning keyboard navigation and other system settings.

**Microsoft Accessibility Developer Center**

A portal for guidance, essential information, and tools and technologies for developing accessible applications and writing accessible code for Microsoft developers.

**Microsoft Developer Network (MSDN)**

A portal for developers using Microsoft products, which allows developers to learn, share information, and download tools.

**Microsoft UI Automation Community**

**Promise** A specification that provides information about Microsoft's accessibility frameworks, including Active Accessibility, UI Automation, and its shared implementations. Intended for interoperable implementations by other companies. Access the UI Automation Specification from the Microsoft Accessibility Developer Center at <http://msdn.microsoft.com/en-us/accessibility/default.aspx>.

**Microsoft Active Accessibility (MSAA)**

A COM-based accessibility API, first released in 1997 as an add-on for Windows 95.

**Node** In tree structures, a location on the tree that can have links to one or more nodes below it. Some authors make a distinction between node and element, with an element being a given data type and a node comprising one or more elements as well as any supporting data structures.

**Oleacc.dll** A Windows operating system component that provides the platform support for MSAA.

**On-Screen Keyboard** An assistive technology that allows users to type and interact with their computer using an alternative input device like a switch, rather than the physical keyboard. An on-screen keyboard displays a visual keyboard with all of the standard keys.

**Out-of-Process** In the context of accessibility APIs, out-of-process refers to a program or script running outside of the target application processes.

**Parent/child** Pertaining to or constituting a relationship between nodes in a tree data structure in which the parent is one step closer to the root (that is, one level higher) than the child. In contrast to sibling.

**Persona** A fictional person who represents a major user group, based on real user data.

**Platform** In everyday usage, the type of computer or operating system being used. In this book, platform is only used when referring to the Windows platform.

**Product Lifecycle** The process by which a product is designed, developed, and released to market. The product lifecycle consists of three phases: (1) product definition, (2) product development, and (3) product servicing. Within these phases are the iterative stages of establishing requirements, design, implementation, verification, and release.

**Programmatic Access** Achieved when an application or library of UI functionality exposes the content, interactions, context, and semantics of the UI via a discoverable and publicly-documented application programming interface (API). The API can

be used by another program to provide an augmentative, automated, or alternate, user interaction. Basic information conveyed through programmatic access includes: navigation, interactive elements, asynchronous changes to the page, keyboard focus, and other important information about the UI.

**Property** A characteristic or parameter expressed as a value used to describe a UI element. In UIA, Properties enable client applications to retrieve information about controls.

**Provider** In the context of UI Automation, providers expose information about the UI. Providers can be a full scale application or UI framework that supplies accessible UI parts to programs for agile software development. Providers are referred to as "servers" in MSAA because its role appears as a component object model (COM) server of the IAccessible interface paired with the ChildId.

**Rasterization** The conversion of vector graphics (images described in terms of mathematical elements, such as points and lines) to equivalent images composed of pixel patterns that can be stored and manipulated as sets of bits.

**Screen Magnifier** Also called a "screen enlarger," an assistive technology that works like a magnifying glass for the computer by enlarging a portion of the screen, which can increase legibility and make it easier to see items on the computer. Some screen magnifiers allow a person to zoom in and out on a particular area of the screen.

**Screen Reader** A software program that presents graphics and text as speech. A screen reader is used to verbalize, or "speak," everything on the screen including names and descriptions of control buttons, menus, text, and punctuation.

**Section 508 of the Rehabilitation Act of 1996** An act for U.S. federal agencies procuring electronic and information technology. For further details, see <http://www.section508.gov/>.

**Sibling** A process or node in a data tree that is descended from the same immediate ancestor(s) as other processes or nodes. The order of sibling relationships is important when designing navigation. In contrast to parent/child.

**Specification (spec)** An explicit set of requirements to be satisfied by a material, product, or service.

**System-Wide Settings** Settings, such as font, screen resolution, or color settings, that allow users to customize the UI to fit their needs and preferences. System-wide settings should be respected and should work with your product.

**Tab Order** The specified sequential order by which users navigate through the UI using the TAB key or SHIFT+TAB.

**Tab Stop** The location, usually on an element that receives keyboard focus, where the cursor stops when the TAB key is pressed.

**UI Automation (UIA)** The new accessibility and automation framework for Windows. UIA provides programmatic access to user interface (UI) elements on the desktop,

enabling assistive technology (AT) products such as screen readers to provide information about the UI to end users.

**UI Automation (UIA) Tree** A UIA-specific solution that helps assistive technologies gather information about the UI and its elements. The root element of the UIA Tree is the desktop, whose child elements are programs running on it, such as an application or the operating system's UI. The UIA Tree is not a fixed structure and is seldom seen in its totality, because it might contain thousands of elements. Parts of it are built as they are needed, and it can undergo changes as elements are added, moved, or removed. The UIA Tree should not be confused with the logical hierarchy, another tree-like structure used for design purposes.

**UI Spy** An investigation tool that allows you to examine the UIA Tree, Elements, and Events. UI Spy enables developers and testers to view and interact with the user interface (UI) elements of an application. By viewing the application's UI hierarchical structure, Property values, and raised Events, developers and testers can verify that the UI they are creating is programmatically accessible to assistive technology devices such as screen readers.

**UI Automation Verify (UIA Verify) Test Automation Framework** A verification tool that checks your implementation at run time to confirm that you are implementing the correct tree, Patterns, and Properties. The framework facilitates manual and automated testing of the Microsoft UIA Provider implementation of a control or application.

**Usability** The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (ISO 9241-11). In general, how well users can learn and use a product to achieve their goals and how satisfied they are with that process.

**User Experience (UX)** The end-user's overall experience and satisfaction interacting with a product or service. In UI design, UX can touch on many fields of study, such as **usability**, human-computer interaction, and behavioral psychology.

**User Interface (UI)** The means by which humans can interact with a computer, technical device, or some other complex tool to accomplish a task.

**User Scenario** A test scenario in which a feature of the program is highly visible or necessary to successfully use your program. The feature tested is used by a majority of the application's users.

**Voluntary Product Accessibility Template (VPAT)** A standardized form developed by the Information Technology Industry Council (ITI) used to show how a software

product meets key regulations of Section 508 of the Rehabilitation Act. VPATs were created as a collaborative effort between industry and ITI, and the U.S. government's General Services Administration (GSA) to evaluate and describe the accessibility of a product.

**Windows Automation API** The ecosystem of Windows automation technologies, which includes classic Microsoft Active Accessibility (MSAA) and Windows implementations of the UI Automation (UIA) specification.

**Windows Presentation Foundation (WPF)** A framework for programming that keeps the business code and the design layers separate. It uses Microsoft's newest accessibility API, UI Automation (UIA), to programmatically expose information to users of assistive technology (AT). Developers use the WPF code as well as its declarative markup language XAML to create products with amazing capabilities.

**WinEvents** A cross-process event system in the Windows platform that allows programs to notify others with a defined set of IDs and the information.

**Workaround** A way of bypassing a problem or functionality issue in a program.

*Go further: The terms used in this book are based on definitions from the UI Automation (UIA) Specification, Windows Accessibility Software Developer Kit (SDK), the Microsoft Developer Network (MSDN), and the Microsoft Press Computer Dictionary. To access or learn more about these sources, go to <http://go.microsoft.com/fwlink/?LinkId=150842>.*