title Attribute in ARIA and non-ARIA Environments, with Screen Readers

Context

- tested the "standalone lightbox", that is: ".../src/webapp/fluid-components/html/Lightbox.html" (revision 4739).
- tested two title based configurations:
    - Lightbox.html as is, i.e. no title attributes.
    - Changed the alt text for each <img> within a thumbnail to "*Fruit* alt text".
    - For the image caption text, changed the text between the <a> tags to "*Fruit* link text".
    - Added "title" attribute to:
        - the lightbox container <div> (id="gallery:::gallery-thumbs:::") -- value = "Lightbox",
        - each thumbnail <div> (id="gallery:::gallery-thumbs:::lightbox-cell:*n*:") -- value = "Thumbnail of *Fruit*"
- tested three browsers:
    - FF3 (Minefield 3.0b5pre 2008031405)
    - FF2
    - IE7
- tested two screen readers (in non-browse mode/virtual pc cursor off mode):
    - WindowEyes
    - JAWS
- tested four actions:
    - tab to the lightbox.
    - move from thumbnail to thumbnail using arrow keys (keyboard navigation)
    - keyboard based "drag-and-drop"
    - mouse hover over:
        - thumbnail image
        - thumbnail whitespace
        - thumbnail link
- Temporarily serving from:
    - No title attributes: http://142.150.154.170/TitleAriaTests/NoTitles/fluid-0.2/fluid-components/html/Lightbox.html
    - title attributes: http://142.150.154.170/TitleAriaTests/Titles/fluid-0.2/fluid-components/html/Lightbox.html

One variable that was not tested was running Windows accessible Inspector application in parallel with the browsers. When that is done, IE7 and/or the screen reader acquires more information about what has focus, etc., and tends to give a better experience. It is unlikely that the average screen reader user will run Inspector in tandem with their screen reader; however, our doing so may provide clues as to how to render thumbnails in the lightbox for these types of users.

WindowEyes

Note: when the mouse cursor changes, WindowEyes speaks to indicate the new cursor. For example, when it changes to an I-beam, WindowEyes says, "I-beam". The mouse cursor changes to a pointing hand when over a link; in this case WindowEyes says, "Pointer 32649, undefined". This speech is repeated a lot in the following table.

Browser	Action	No Title Attribute	Title Attribute
FF3 (Minefield)	tab to lightbox	"*Fruit* link text, cell"	"Lightbox, *Fruit* link text, cell, Thumbnail of *Fruit*"
	keyboard navigation	"*Fruit* link text, cell"	"Lightbox, *Fruit* link text, cell, Thumbnail of *Fruit*"
	keyboard DnD	Silence	Silence
	hover over image	"Pointer 32649, undefined"	"Pointer 32649, undefined"; Visually, "Thumbnail of *Fruit*" shows as a tool tip.
	hover over whitespace	"Arrow", if mouse cursor changes to arrow; silence otherwise.	"Arrow", if mouse cursor changes to arrow; silence otherwise; Visually, "Thumbnail of *Fruit*" shows as a tool tip.
	hover over link	"*Fruit* link text, Pointer 32649, undefined"	"*Fruit* link text, Pointer 32649, undefined"; Visually, "Thumbnail of *Fruit*" shows as a tool tip.
	tab to lightbox	"*Fruit* link text, cell"	"Lightbox, *Fruit* link text, cell, Thumbnail of *Fruit*"
	keyboard navigation	"*Fruit* link text, cell"	"Lightbox, *Fruit* link text, cell, Thumbnail of *Fruit*"
	keyboard DnD	Silence	Silence
	hover over image	"Pointer 32649, undefined"	"Context menu, Pointer 32649, undefined...menu closed"; Visually, "Thumbnail of *Fruit* shows as a tool tip. Note that WindowEyes interprets a tooltip popup as a menu.
	hover over whitespace	"Arrow", if mouse cursor changes to arrow; silence otherwise.	"Context menu, Arrow, ...menu closed", if mouse cursor changes to arrow; "Context menu, ...menu closed" otherwise; Visually, "Thumbnail of _Fruit" shows as a tool tip. Note that WindowEyes interprets a tooltip popup as a menu.

Browser	Action	No Title Attribute	Title Attribute
FF2	hover over link	"*Fruit* link text, Pointer 32649, undefined"	"*Fruit* link text, context menu, Pointer 32649, undefined, ...menu closed"; Visually, "Thumbnail of *Fruit* shows as a tool tip. Note that WindowEyes interprets a tooltip popup as a menu.
IE7	tab to lightbox	"*Fruit* link text, grouping object"	"Thumbnail of *Fruit*, grouping object"
	keyboard navigation	"*Fruit* link text, grouping object"	"Thumbnail of *Fruit*, grouping object"
	keyboard DnD	"*Fruit* link text, grouping object", where *Fruit*, is the name of the thumbnail being moved.	"Thumbnail of *Fruit*, grouping object", where *Fruit*, is the name of the thumbnail being moved.
	hover over image	"*Fruit* alt text, Pointer 32649, undefined" Note: only "*Fruit* alt text" if mouse cursor does not change; Visually, "*Fruit* alt text" shows as a tool tip.	"*Fruit* alt text, Pointer 32649, undefined"; Visually, "*Fruit* alt text" shows as a tool tip.
	hover over whitespace	"Arrow", if mouse cursor changes to arrow; silence otherwise.	"Thumbnail of *Fruit*, Arrow", if mouse cursor changes to arrow; "Thumbnail of *Fruit*", otherwise; Visually, "Thumbnail of *Fruit* shows as a tool tip.
	hover over link	"*Fruit* link text, Pointer 32649, undefined"	"*Fruit* link text, Thumbnail of *Fruit*, Pointer 32649, undefined"; Visually, "Thumbnail of *Fruit*" shows as a tool tip.

JAWS

In terms of moving thumbnails using the keyboard, only cntl-left and cntl-right arrows worked reliably. Cntl-up and cntl-down was intercepted by JAWS, and resulted in the opening of the link (inside a thumbnail) in a new tab, in all three browsers.

Browser	Action	No Title Attribute	Title Attribute
FF3 (Minefield)	tab to lightbox	"Tab, Table, *Fruit* alt text, *Fruit* link text"	"Tab, Table, *Fruit* alt text, *Fruit* link text"
	keyboard navigation	"*Fruit* alt text, *Fruit* link text"	"*Fruit* alt text, *Fruit* link text"
	keyboard DnD	"Blank" on the first move, thereafter "*Fruit*, repeatedly", where *Fruit* is the name of the fruit immediately to the left or right (depending on direction of movement) of the moving item after the first move. Example: "Blank, Kiwi, Kiwi, ..."	"Blank" on the first move, thereafter "*Fruit*, repeatedly", where *Fruit* is the name of the fruit immediately to the left or right (depending on direction of movement) of the moving item after the first move. Example: "Blank, Kiwi, Kiwi, ..."
	hover over image	Silence	Silence; Visually, "Thumbnail of *Fruit*" shows as tooltip.
	hover over whitespace	Silence	Silence; Visually, "Thumbnail of *Fruit*" shows as tooltip.
	hover over link	Silence	Silence; Visually, "Thumbnail of *Fruit*" shows as tooltip.
FF2	tab to lightbox	"Tab, Table, *Fruit* alt text, *Fruit* link text"	"Tab, Table, *Fruit* alt text, *Fruit* link text"
	keyboard navigation	"*Fruit* alt text, *Fruit* link text"	"*Fruit* alt text, *Fruit* link text"
	keyboard DnD	"Blank" on the first move, thereafter "*Fruit*" repeatedly, where *Fruit* is the name of the fruit immediately to the left or right (depending on direction of movement) of the moving item after the first move. Example: "Blank, Kiwi, Kiwi, ..."	"Blank" on the first move, thereafter "*Fruit*" repeatedly, where *Fruit* is the name of the fruit immediately to the left or right (depending on direction of movement) of the moving item after the first move. Example: "Blank, Kiwi, Kiwi, ..."
	hover over image	Silence	"Menu, ...leaving menus"; Visually, "Thumbnail of *Fruit*" shows as tooltip. Note: JAWS interprets the tooltip popup as a menu.
	hover over whitespace	Silence	"Menu, ...leaving menus"; Visually, "Thumbnail of *Fruit*" shows as tooltip. Note: JAWS interprets the tooltip popup as a menu.
	hover over link	Silence	"Menu, ...leaving menus"; Visually, "Thumbnail of *Fruit*" shows as tooltip. Note: JAWS interprets the tooltip popup as a menu.
	tab to lightbox	"Tab, *Fruit* link text" Note: once, it read the entire list of thumbnails.	"Tab, Thumbnail of *Fruit*"

IE7	keyboard navigation	"*Fruit* link text"	"Thumbnail of *Fruit*"
	keyboard DnD	"View, *Fruit* link text [fluid:of the thumbnail that is moving], *Fruit* link text [fluid:of the thumbnail just moved past]" Note: upon releasing the cntl key, "*Fruit* link text [fluid:of the thumbnail that was moved].	"View, Thumbnail of *Fruit* [fluid:that is moving], *Fruit* link text [fluid: just moved past]" Note: upon releasing the cntl key, "*Fruit* link text" [fluid:that was moved].
	hover over image	Silence; Visually, "*Fruit* alt text" is shown as a toolitp.	Silence; Visually, "*Fruit* alt text" shows as a tool tip.
	hover over whitespace	Silence.	Silence; Visually, "Thumbnail of *Fruit*" shows as a tool tip.
	hover over link	Silence.	Silence; Visually, "Thumbnail of *Fruit*" shows as a tool tip.

Summary

The addition of a `title` attribute had an effect mostly with respect to WindowEyes. Furthermore, it had an effect for all three browsers when using this particular screen reader. The presentation of the title, in the case of JAWS, was only effective in IE7.

It may be that where the title attribute was added defines whether it is appears in a screen reader context. It was added the the thumbnail `<div>` element. It could also be added to the `<a>` element for the image and/or the `<a>` element for the link text, or both.

What should a screen reader say?

It's not yet clear what the advantage of having a title attribute is. But, more importantly, it's not clear what the screen reader user experience *should be* for the lightbox.

A lightbox is a device for displaying and reorganizing thumbnail images. Screen reader users should be able to navigate among the thumbnails and move them about. The keyboard support in the lightbox/reorderer already allows for this, but what should be the audio feedback? Here are some brain storming ideas:

Behaviour	Comment
As the user navigates about the thumbnails, announce the name of the thumbnail they are currently on (i.e., the one that has focus).	This is currently happening
Inform users of the existence of the hyperlink in the thumbnails.	The title text could be changed to include the phrase "contains link" or some such thing?
Given the reordering functionality of the lightbox, allow querying of the thumbnails immediately surrounding the currently foucused one: What is immediately to the left, right, above, below, and at the four corners?	Not available, but the user can navigate up, down, etc. to discover neighbors
Users should be allowed to ask for the current order of the images. If the list is long, they should be allowed to interrupt the speech once they have heard enough to know what they were seeking. • it might be useful to allow for a list of what follows from the currently focussed thumbnail - immediately to the right, going forward. • in a similar vein, allow for a listing of what precedes the currently focussed thumbnail - immediately to the left, proceeding backwards.	
as users move an image, some verbal feedback of the new ordering; for example: • if moving left, "Kiwi moved left, now left of Mangosteen". • if moving right, "Lemon moved right, now right of Banana". • if at beginning, "Kiwano moved left, now at beginning, left of Kumquat". • if at end, "Dragonfruit moved left, now at end, right of Strawberry".	This does sound like a definite necessity, but not sure how to implement

A comment on the proposed text of the title:

Once the user is familiar with the Lightbox, they will know that they are navigating amongst thumbnails, and the main thing they're going to want to know is which thumbnail. I would suggest putting the actual name of the image first in the title string (i.e. "Kiwano thumbnail") so that users can cut the screen reader off sooner.