



Could authors really write in XML one day?

Peter Flynn

Human Factors Research Group,
School of Applied Psychology
8 August 2013

A TRADITION OF
INDEPENDENT
THINKING



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Contents

Writers just wanna write

What can we change?

Results

Conclusions

Writers just wanna write

Stuff writers need to know to use an XML or \LaTeX editor

- Element
- Insert
- Attribute
- Tree
- Parse error
- Pointy brackets
- Entities
- Valid
- Well-formed
- Empty
- Mixed content
- DTD/Schema
- Namespaces 😊
- Class
- Package
- Command
- Environment
- Backslash
- Curly braces
- ‘You can’t do that in horizontal mode’
- ...

Writers just wanna write

Stuff writers want to know to use an XML or \LaTeX editor

- Font
- Spacing
- Color
- Margins
- Indents
- Bullets
- Interrupted lists
- Footnotes
- Cross-references
- Page numbers
- ‘Just do it right...’
- ...

Writers just wanna write

Stuff writers don't want to know to use an XML or \LaTeX editor

- Element
- Insert
- Attribute
- Tree
- Parse error
- Pointy brackets
- Entities
- Valid
- Well-formed
- Empty
- Mixed content
- DTD/Schema
- Namespaces 😊
- Class
- Package
- Command
- Environment
- Backslash
- Curly braces
- 'You can't do that in horizontal mode'
- ...

Why it's so hard to use a structured editor

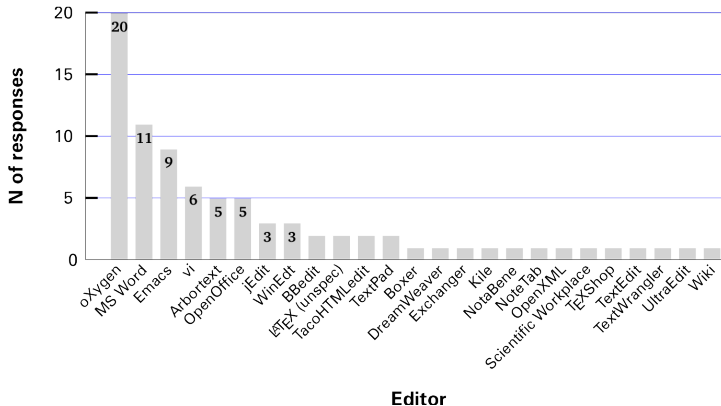
How much of the cognitive, perceptual, and technical burden of creating a formally-structured document might be relieved by changing some of the ways in which the interface works?

Who is this for?

Target population

- Writers who have (or want) to create documents with a well-defined structure
 - *Not* computing scientists, markup experts, professional editors, typesetters, or technical documenters
1. Very diverse: industry, government, NGOs, research, and academia
 2. Known structures (articles, books, reports, white papers, web pages, etc)
 3. Documents intended or expected for re-use, or to become a part of the permanent record

What do they use at the moment?



oXygen (24%), Word (13%). LaTeX (12%), Emacs (11%), vi (7%), Arbortext and OpenOffice (6%)

What can we change?

20 functions identified by survey of writers and editors cause problems while editing

- Keyboard controls
- Documents and metadata
- Insertions
- Formatting controls
- Moving blocks
- References

Smart Insertion and *Target Markup Adoption* also mentioned

Whittled down to 12 tasks to test

1. Create a new document (a journal article)
2. Add a new paragraph after the current one
3. Split a paragraph into two
4. Join a paragraph to the preceding one
5. Join a paragraph to the following one
6. Add a new section to the article
7. Add a new (numbered) list
8. Move a block of text within the document
9. Highlight a product name (in italics)
10. Add a cross-reference to another section
11. Insert a citation and reference to a source
12. Insert a fragment from another document

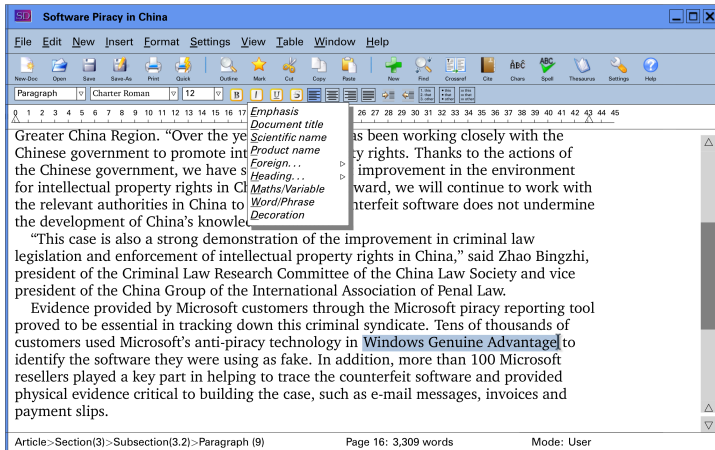
Changes to the interface

Additions to the toolbar and menus

- a 'New' menu item and toolbar button for adding new structural elements
- a specific 'New-Doc' toolbar button
- an 'Outline' toolbar button for access to the document structure for navigation
- a 'Mark' toolbar button for recursively selecting the current container
- 'Crossref' and 'Cite' toolbar buttons
- an additional 'List' type toolbar button for description lists

Testing method

Paper prototyping: screenshots of the modified interface



Results

Method: stepwise comparison against patterns to determine rank (preferability)

User data:

2,cursor,newbut,para
8,mark,hilite,cursor,cut,cursor,enter,paste

Patterns:

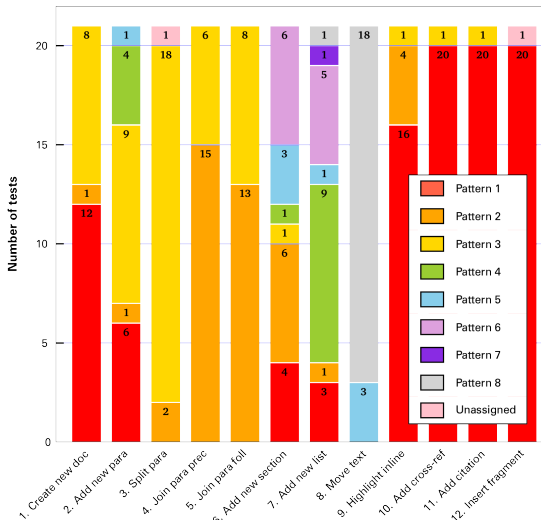
2,1,n,newbut,para
2,2,n,newmenu,para
2,3,o,cursor,enter
2,4,on,cursor,newbut,para *

2,5,on,cursor,newmenu,para
8,1,n,mark,outline,select,move
8,2,n,3click,outline,select,move
8,3,on,cursor,hilite,outline,select,move
8,4,n,edit,mark,outline select,move
8,5,n,mark,cut,cursor,paste *

8,6,n,3click,cut,cursor,paste
8,7,o,cursor,hilite,cut,cursor,paste
8,8,n,edit,mark,cut,cursor,paste

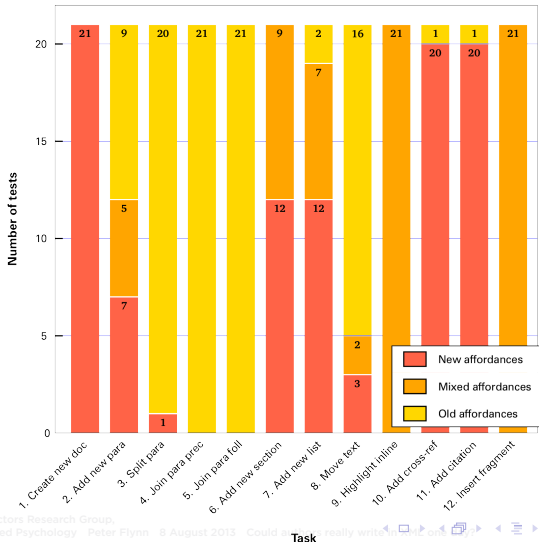
Results

Rank 1...n was too fine a discriminant

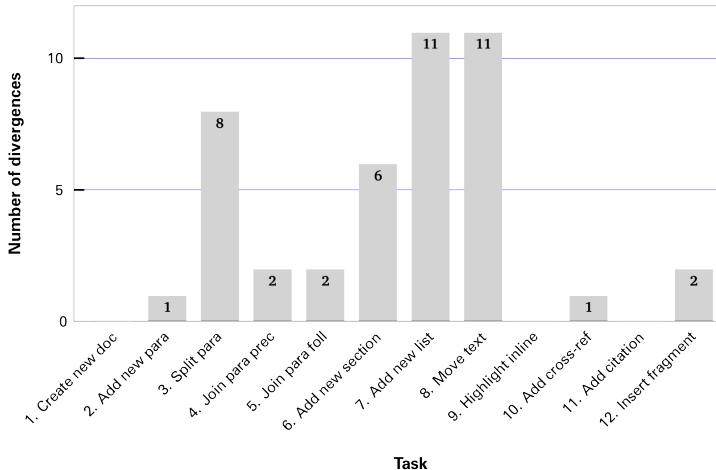


Results

Affordance class was more useful



Where did people stray off-course?



Conclusions

Changes to the interface have many effects

1. The 'New' button works for adding new structural elements with Smart Insertion
2. Splitting and joining elements are not important enough in the user's mental model to warrant change
3. Moving text blocks need *much* better context-sensitivity and navigation
4. Inline markup *can* be used to capture intent
5. Cross-referencing (and citation) work better when the target list is available in the document pane
6. Fragment insertion using document-pane navigation works for structural elements with Target Markup Adoption

Techniques

Smart Insertion Never refuse to paste something from the same type of document; make it fit or ask the user

Target Markup Adoption Make all pastes adopt the surrounding styles of the target location

Thank you

Documentation

- See the full paper for details:

<http://research.ucc.ie/balisage/Bal2013flyn0902>

- Draft of research:

<http://wiki.ucc.ie/structed/>