

FOSDEM 2021

# Build-in "xray" like UNO object inspector

By Tomaž Vajngerl



# UNO Object Inspector



# UNO Object Inspector

Best known object inspector – Xray tool

- Also popular EMR
- A simple one serves as a code example in ODK (Office Development Kit)
- Traverse the UNO object tree
- Used for inspecting the UNO Objects
  - Properties (types and values)
  - Methods
  - Interfaces
  - Supported types

# Xray tool

Xray Rev 6.0 en

SwXTextDocument

Close

Configuration

Properties  
Methods  
Services  
Interfaces  
Listeners

Display  
 A...Z  
 Details

Ligne indicated by the caret  
API Doc ? Xray

Initial object  
com.sun.star.uno.XInterface

You may select and copy the displayed lines

Method name	( parameters )	AS returned data type	interface exporting the method
queryInterface	( aType as type )	AS variant	com.sun.star.uno.XInterface
acquire	( )		com.sun.star.uno.XInterface
release	( )		com.sun.star.uno.XInterface
getParent	( )	AS object	com.sun.star.container.XChild
setParent	( Parent as object )		com.sun.star.container.XChild
getDocumentProperties	( )	AS object	com.sun.star.document.XDocumentPropertiesSupplier
checkout	( )		com.sun.star.document.XCmisDocument
cancelCheckout	( )		com.sun.star.document.XCmisDocument
checkin	( isMajor as boolean, comment as string )		com.sun.star.document.XCmisDocument
isVersionable	( )	AS boolean	com.sun.star.document.XCmisDocument
canCheckout	( )	AS boolean	com.sun.star.document.XCmisDocument
canCancelCheckout	( )	AS boolean	com.sun.star.document.XCmisDocument
canCheckin	( )	AS boolean	com.sun.star.document.XCmisDocument
updateCmisProperties	( cmisProperties as []struct )		com.sun.star.document.XCmisDocument
getAllVersions	( )	AS []struct	com.sun.star.document.XCmisDocument
getRDFRepository	( )	AS object	com.sun.star.rdf.XRepositorySupplier
getElementByMetadataReference	( MetadataReference as struct )	AS object	com.sun.star.rdf.XDocumentMetadataAccess
getElementByURI	( URI as object )	AS object	com.sun.star.rdf.XDocumentMetadataAccess
getMetadataGraphsWithType	( Type as object )	AS []object	com.sun.star.rdf.XDocumentMetadataAccess
addMetadataFile	( FileName as string, Types as []object )	AS object	com.sun.star.rdf.XDocumentMetadataAccess
importMetadataFile	( Format as integer, InStream as object, FileName as string, BaseURI as object, Types as []object )	AS object	com.sun.star.rdf.XDocumentMetadataAccess
removeMetadataFile	( GraphName as object )		com.sun.star.rdf.XDocumentMetadataAccess
addContentOrStylesFile	( FileName as string )		com.sun.star.rdf.XDocumentMetadataAccess
removeContentOrStylesFile	( FileName as string )		com.sun.star.rdf.XDocumentMetadataAccess
loadMetadataFromStorage	( Storage as object, BaseURI as object, InteractionHandler as object )		com.sun.star.rdf.XDocumentMetadataAccess



# Xray tool

- Extensions for LibreOffice
- Users need to find it separately
  - They may not even be aware of its existence
- Need to run a macro with object as an parameter
  - `Xray ThisComponent`
  - `Document = ThisComponent`  
`AllSheets = Document.getSheets()`  
`MySheet = AllSheets.getByIndex(0)`  
`Xray MySheet`
- We can do better than this

# **Tender for implementing support for a dedicated, built-in UNO object inspection tool in LibreOffice**

<https://blog.documentfoundation.org/blog/2020/07/27/tender-for-implementing-support-for-a-dedicated-built-in-uno-object-inspection-tool-in-libreoffice-202007-02/>

**Thanks to TDF to make the work of this tool  
possible**

<https://blog.documentfoundation.org/blog/2020/07/27/tender-for-implementing-support-for-a-dedicated-built-in-uno-object-inspection-tool-in-libreoffice-202007-02/>

**The idea**





# DevTools - Idea

- Built-in LibreOffice
- Dockable window on the bottom
- Similar to developer tools in popular browsers
- 2 trees – left-hand side and right-hand side
  - Left-hand side – tree view with a subset of the DOM (document object model)
  - Right-hand side – tree view with an object inspector
- Point & Click functionality



## DevTools – left-hand side: DOM tree view

- Shows a small subset of the DOM
- Shows objects that the user is most likely interested in.
  - This is easier for the (new) users to understand the DOM and navigate it.
  - Specifics object can still be accessed in the object inspector
- Selecting an objects in the tree shows the object in the object inspector



# DevTools – right-hand side: DOM tree view

- Similar to the Watch window in macro editor
- Shows available properties, methods, interfaces of an object.
  - + types and current values
- It is possible to inspect recursively the objects
- Supports looking into collections and arrays
- Special handling of certain types
  - For example dates shown depending on the locale.

The screenshot shows the DevTools Watch window with the 'TransferDataFlavors' object selected. The window has a search bar at the top containing 'TransferDataFlavors' and a refresh icon. Below the search bar is a table with three columns: 'Variable', 'Value', and 'Type'. The table lists various properties of the object, with 'TransferDataFlavors' highlighted in blue. The properties include 'CurrentSelection', 'Controllers', 'AvailableViewControllerNa', 'Modified', 'Printer', 'Location', 'LibraryContainer', 'ViewData', 'TransferDataFlavors', 'DocumentSubStoragesNar', 'DocumentStorage', 'ScriptProvider', 'UIConfigurationManager', 'Identifier', 'Title', 'UntitledPrefix', 'Types', 'ImplementationId', 'Text', 'LineNumberingProperties', 'ChapterNumberingRules', 'NumberingRules', 'Footnotes', 'FootnoteSettings', 'Endnotes', 'EndnoteSettings', and 'PagePrintSettings'. The values and types are listed in the corresponding columns.

Variable	Value	Type
▶ CurrentSelection		SwXTextRanges
▶ Controllers		Object
▶ AvailableViewControllerNa		String(0 to 1)
— Modified		Boolean
▶ Printer		Object(0 to 7)
— Location	"file:///home/quikee/D	String
▶ LibraryContainer		Object
▶ ViewData		IndexedPropertyValuesContainer
▶ TransferDataFlavors		Object(0 to 7)
▶ DocumentSubStoragesNar		String(0 to 1)
▶ DocumentStorage		Object
▶ ScriptProvider		com.sun.star.script.provider.MasterScriptProvider
▶ UIConfigurationManager		com.sun.star.comp.framework.UIConfigurationManager
— Identifier	"com.sun.star.text.Tex	String
— Title	"Blog.odt"	String
— UntitledPrefix	": "	String
▶ Types		Object(0 to 76)
▶ ImplementationId		Integer(0 to -1)
▶ Text		SwXBodyText
▶ LineNumberingProperties		SwXLineNumberingProperties
▶ ChapterNumberingRules		SwXChapterNumbering
▶ NumberingRules		Object
▶ Footnotes		SwXFootnotes
▶ FootnoteSettings		SwXFootnoteProperties
▶ Endnotes		SwXFootnotes
▶ EndnoteSettings		SwXEndnoteProperties
▶ PagePrintSettings		Object(0 to 8)



## DevTools idea – point & click object inspection

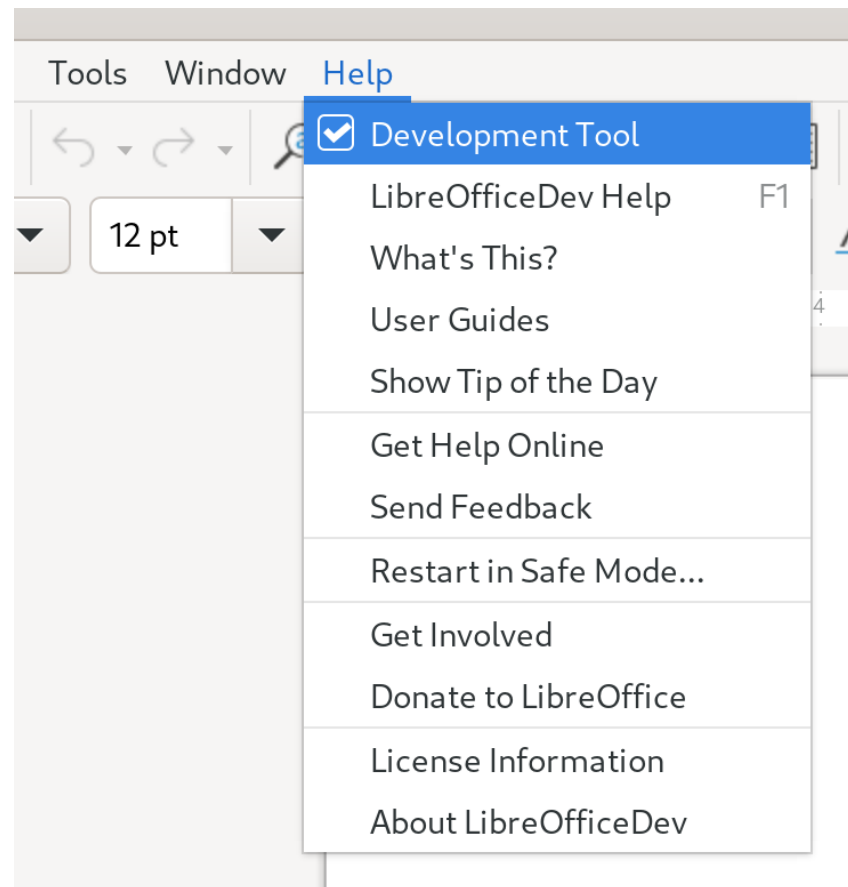
- Click on the document and show the related UNO object in the object inspector
- Can be cursor position or selection
- Orthogonal functionality to the DOM tree view

**Current state**



## Current state

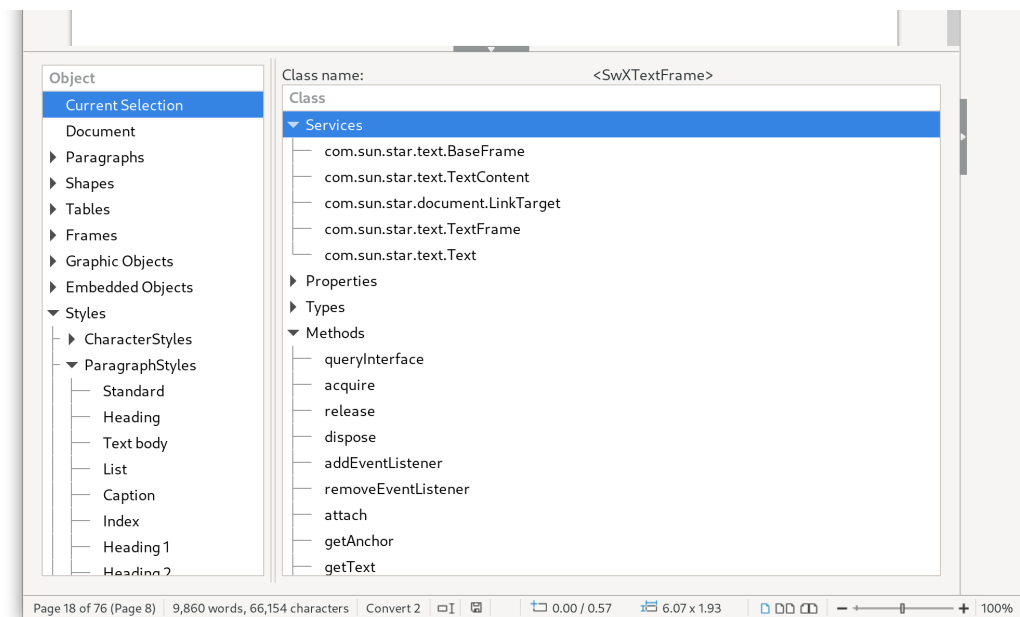
- Currently can be enabled in the menu under Help / Development tool
- Location and name can still be changed





# Current state

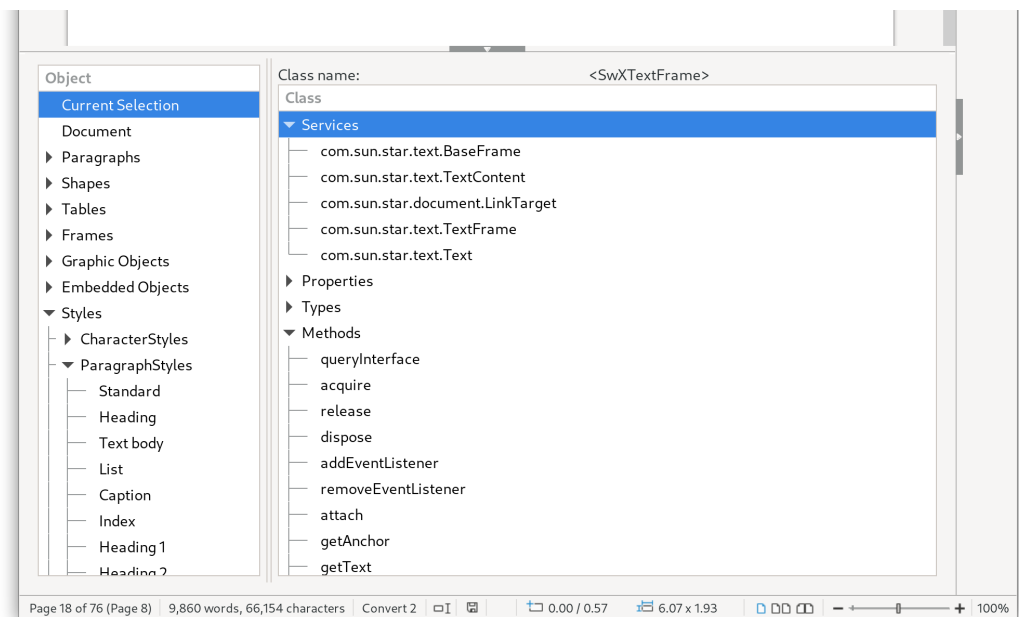
- Implemented
  - DOM tree view (left-hand side)
- Current work in progress
  - Point & click
    - Needs additional tuning
  - Document inspector (right-hand side)





# Current state – DOM tree view (left-hand side)

- Added UNO objects
  - Writer: Paragraph, Shapes, Tables, Frames, Graphic Objects, Embedded Objects, Styles Families and Styles
  - Calc: Sheet, Shapes (per sheet), Charts (per sheet), Pivot Tables (per sheet), Styles Families and Styles
  - Draw / Impress: Pages / Slides, Shapes (per page / slide), Master Slides, Styles Families and Styles

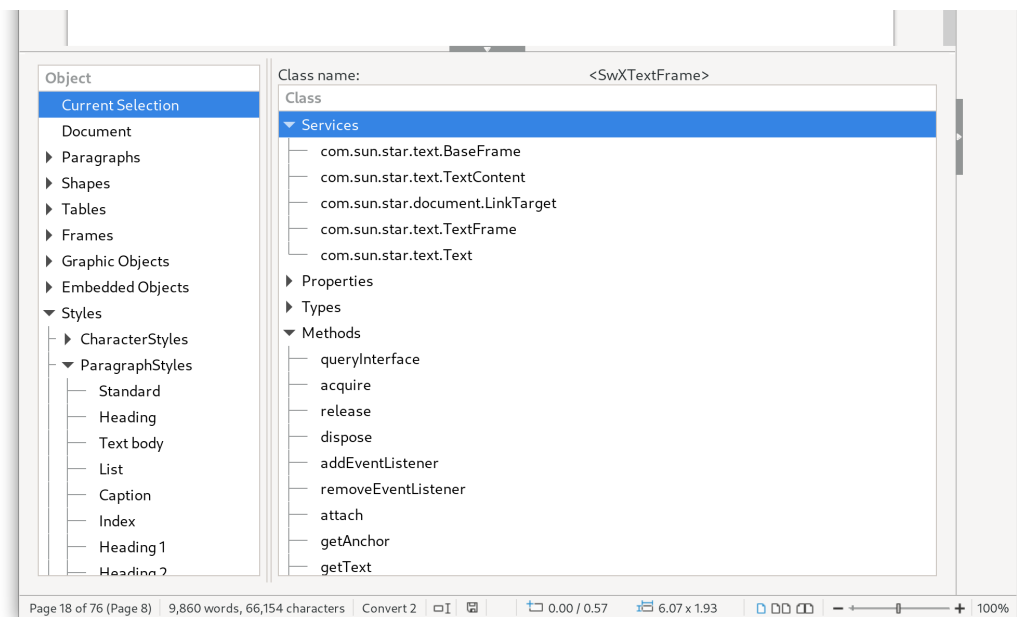






## WIP – object inspector (right-hand side)

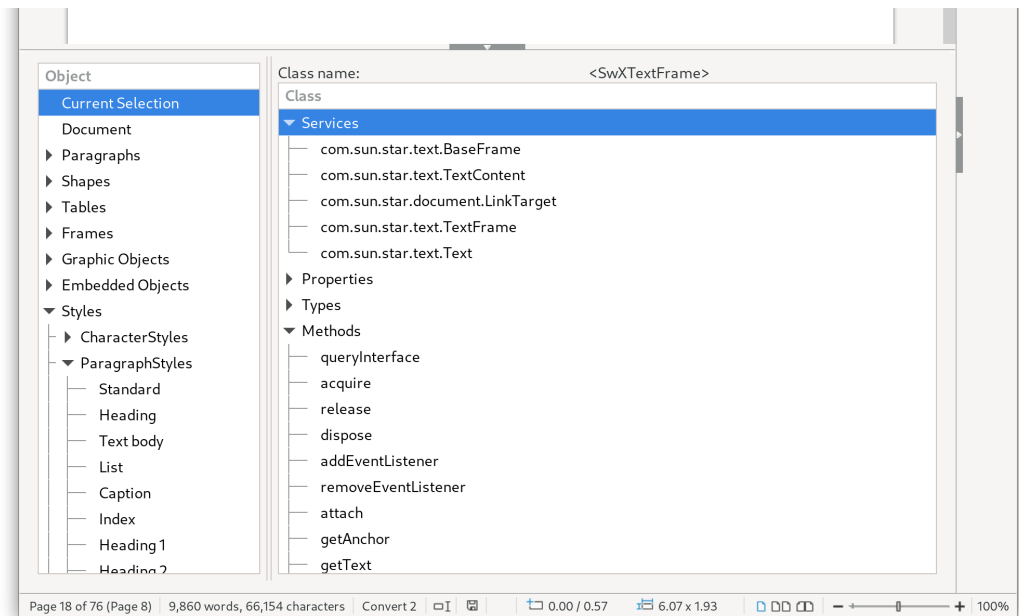
- Shows Implementation name
- List of interfaces, properties, types, methods
- Should be using the same code as Watch window
  - If this is possible
- Doesn't yet show values and types
- UI needs working, maybe only one list view is not enough





# WIP – point & click

- Listens to the selection change
- Fills the current selected object into “Current Selection”
- When selected it is shown in the object inspector



**Demo**



Collabora Productivity

# Thanks for listening!

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