
ARE WE OPTIMIERT YET?

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AGENDA

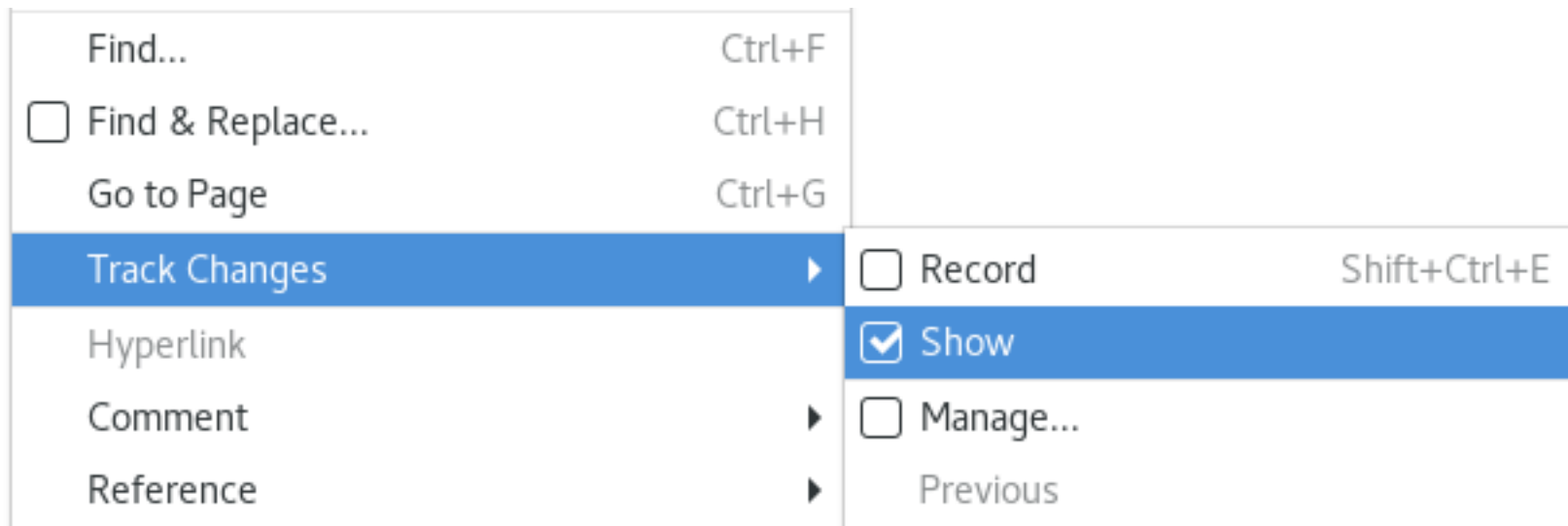
- 1. THE PROBLEM**
- 2. THE SOLUTION**
- 3. IMPLEMENTATION**

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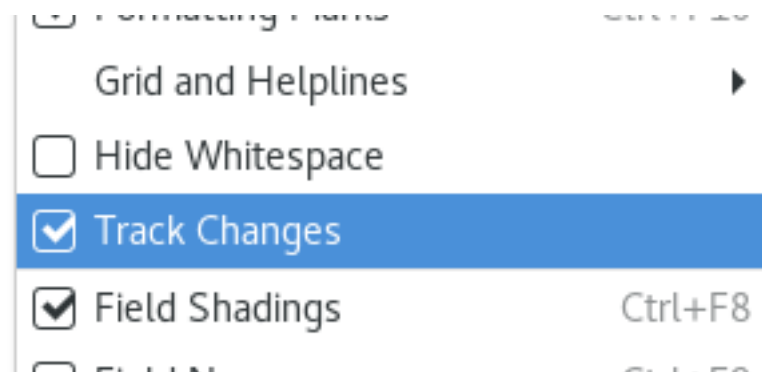
THE (MOST OBVIOUS) PROBLEM OF CHANGE TRACKING IN WRITER

Edit→Track Changes→Show

A document View setting!



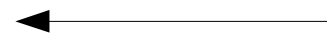
Duplicated in
View menu:



Tracked Delete Change (Show)

```
<BigPtrArray> = BigPtrArray of length 12 = {  
[ 0] 0x3949750      StartNode ,  
[ 1] 0x395a310      EndNode ,  
[ 2] 0x39551c0      StartNode ,  
[ 3] 0x3956360      EndNode ,  
[ 4] 0x395a6e0      StartNode ,  
[ 5] 0x395a650      EndNode ,  
[ 6] 0x395a1c0      StartNode ,  
[ 7] 0x3958560      EndNode ,  
[ 8] 0x395bee0      StartNode ,  
[ 9] 0x97c0bb0      TextNode "Foo",  
[10] 0x3de7d60      TextNode "bar",  
[11] 0x3959b00      EndNode }
```

There's a tracked deletion change in the Model (blue)



Tracked Delete Change (Hide)

```
<BigPtrArray> = BigPtrArray of length 15 = {  
[ 0] 0x3949750      StartNode ,  
[ 1] 0x395a310      EndNode ,  
[ 2] 0x39551c0      StartNode ,  
[ 3] 0x3956360      EndNode ,  
[ 4] 0x395a6e0      StartNode ,  
[ 5] 0x395a650      EndNode ,  
[ 6] 0x395a1c0      StartNode ,  
[ 7] 0x7afdf40      StartNode ,  
[ 8] 0x7a93cd0      TextNode "o",  
[ 9] 0x9785030      TextNode "ba",  
[10] 0x7a86590      EndNode ,  
[11] 0x3958560      EndNode ,  
[12] 0x395bee0      StartNode ,  
[13] 0x97c0bb0      TextNode "For",  
[14] 0x3959b00      EndNode }  
                                     ← Moved  
                                     into  
                                     special  
                                     section
```

Change Tracking: The Problem

- DocumentContentManager.cxx editing operations:

//JP 06.01.98: MUSS noch optimiert werden!!!

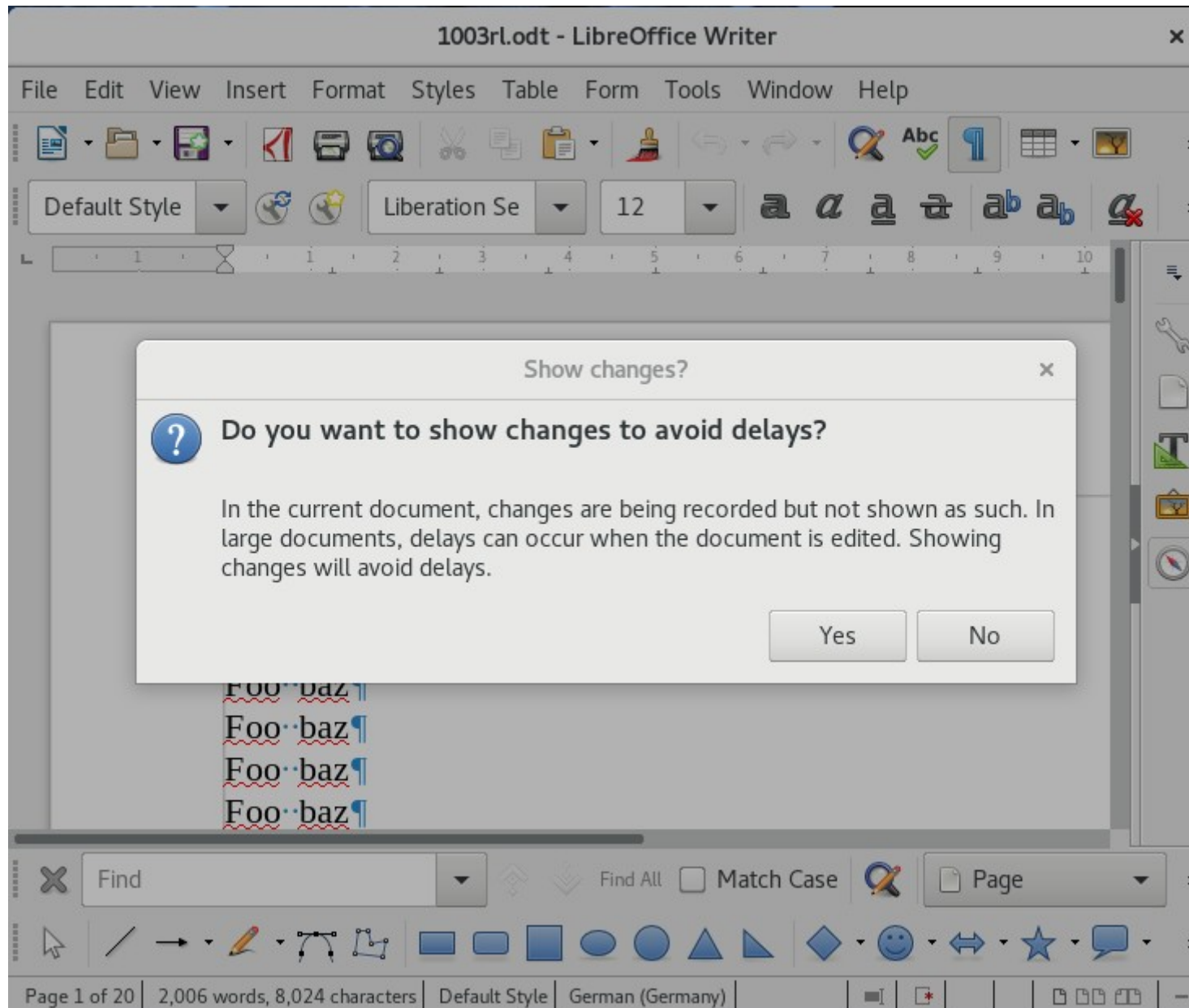
```
RedlineFlags eOld =  
    getIDocumentRedlineAccess().GetRedlineFlags();
```

```
getIDocumentRedlineAccess().SetRedlineFlags(  
    RedlineFlags::On | RedlineFlags::ShowInsert |  
    RedlineFlags::ShowDelete );
```

... (impl.) ...

```
getIDocumentRedlineAccess().SetRedlineFlags( eOld );
```

Change Tracking: The Problem



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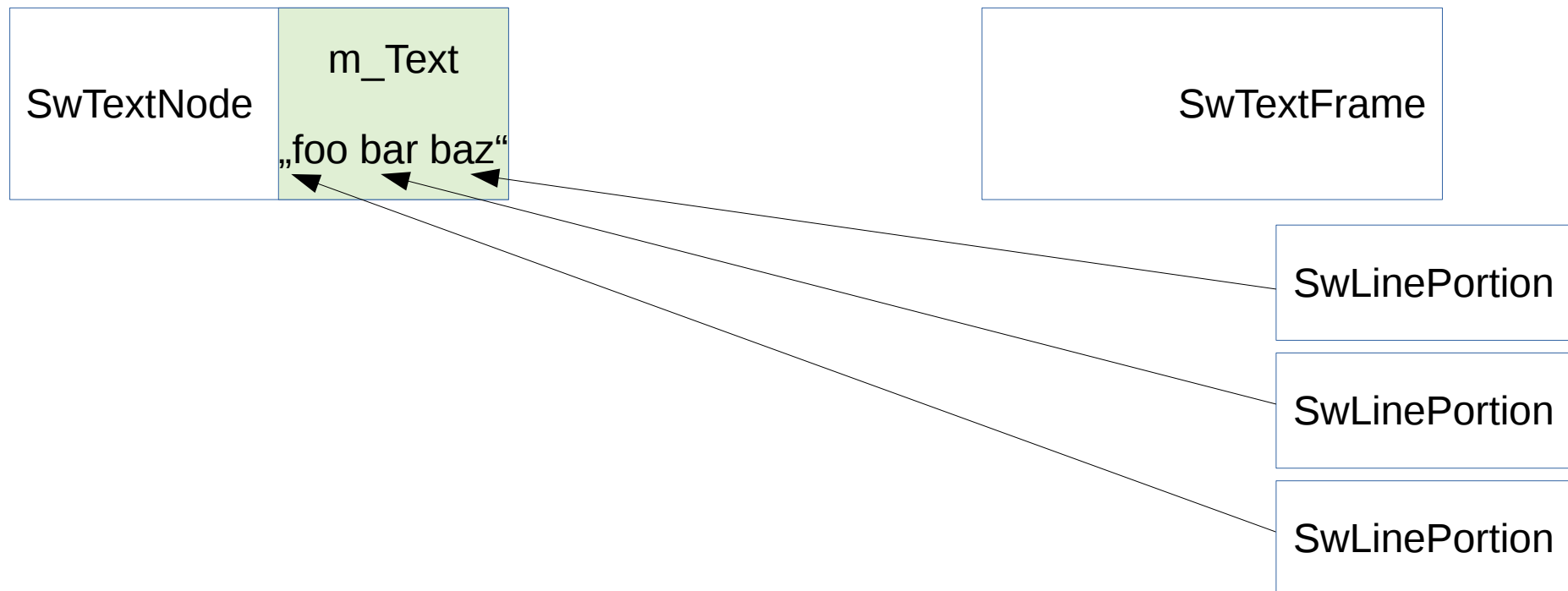
THE (PROPOSED) SOLUTION

Change Tracking: The Solution (hopefully)

- Don't hide the redlines in the Model, hide them in the View (layout)
- ```
struct sw::MergedPara {
 sw::WriterMultiListener listener;
 vector<Extents> extents;
 OUString mergedText;
 SwTextNode * pParaPropsNode;
 SwTextNode * pFirstNode;
 SwTextNode * pLastNode;
}
```

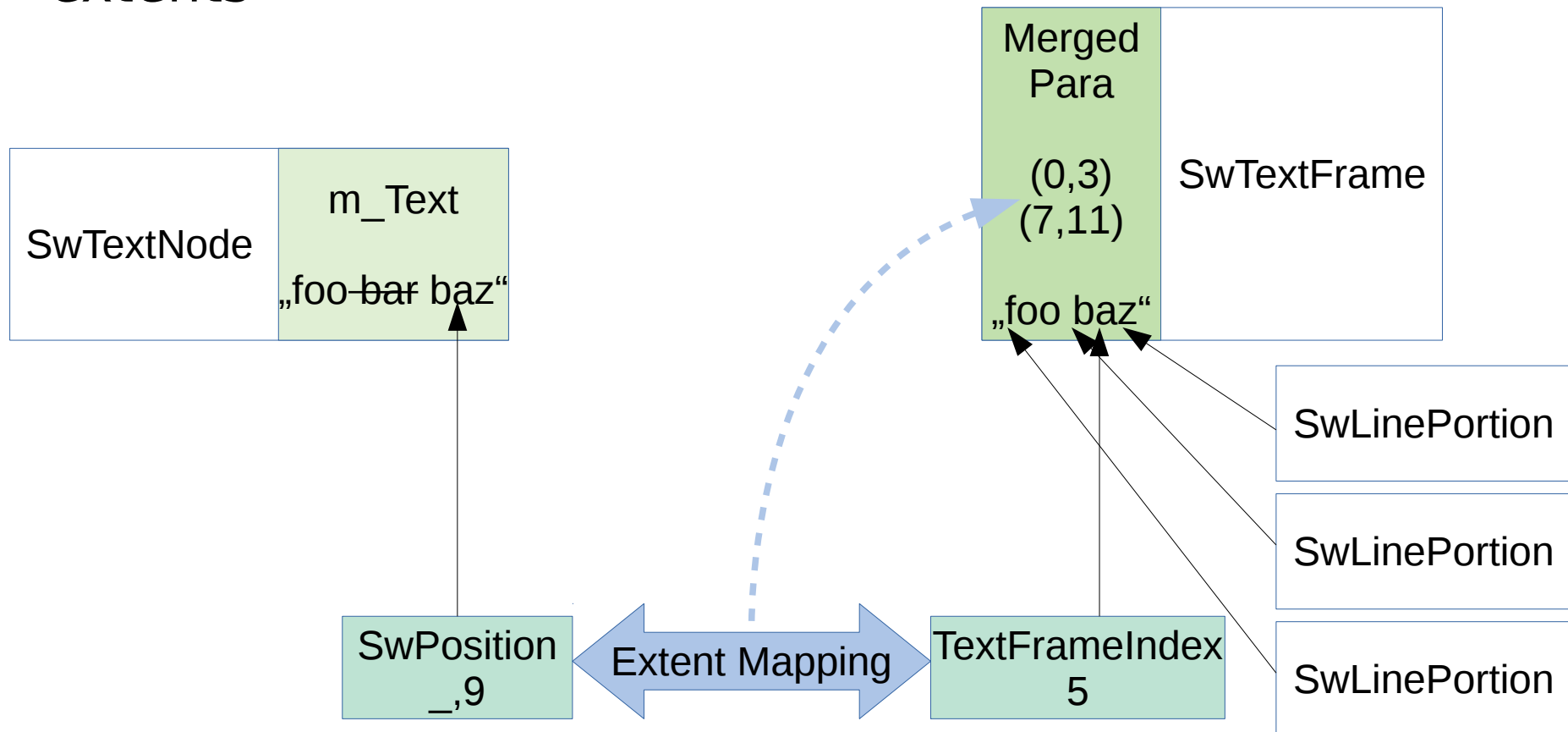
# Change Tracking: The Solution

- From identity between frame content index and node content index to mapping via extents



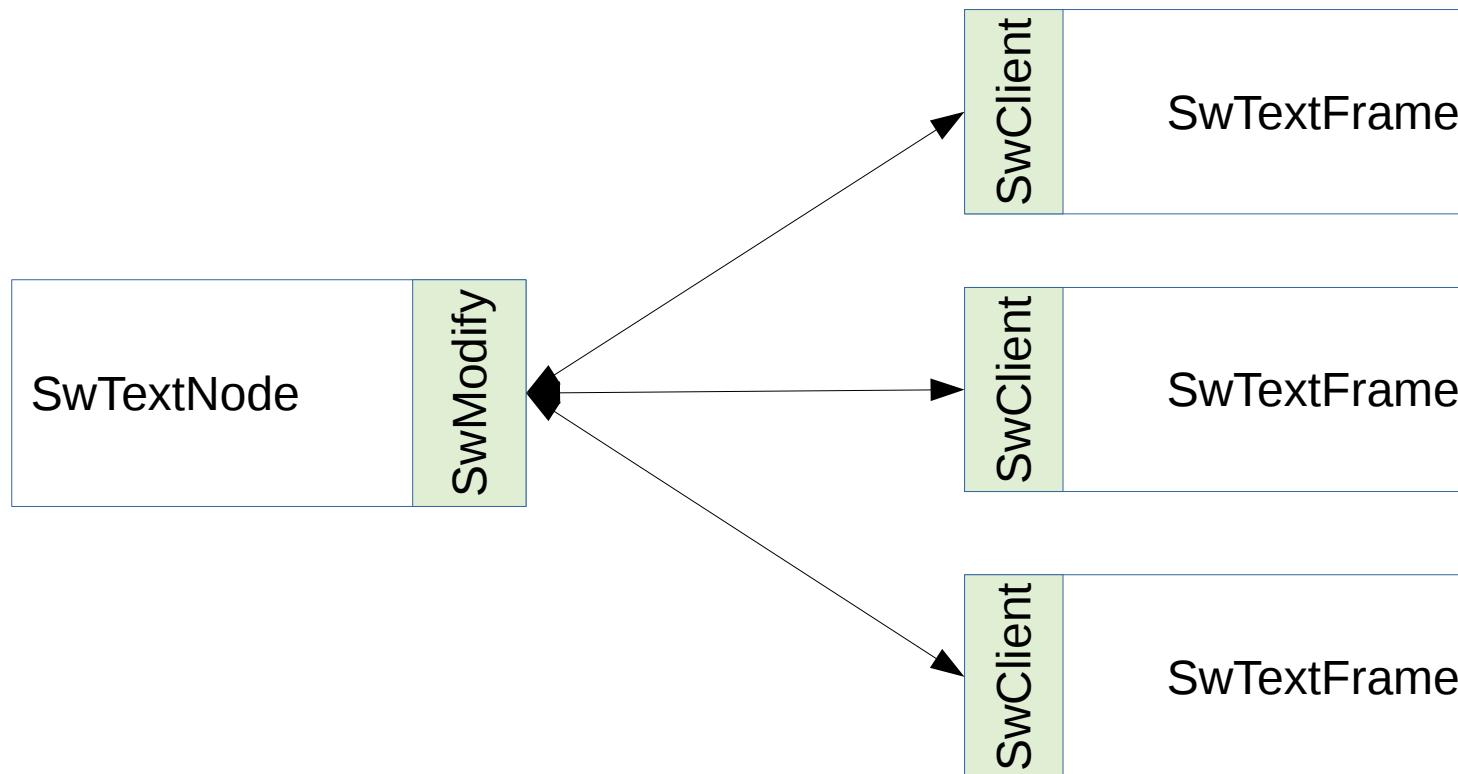
# Change Tracking: The Solution

- From identity between frame content index and node content index to mapping via extents

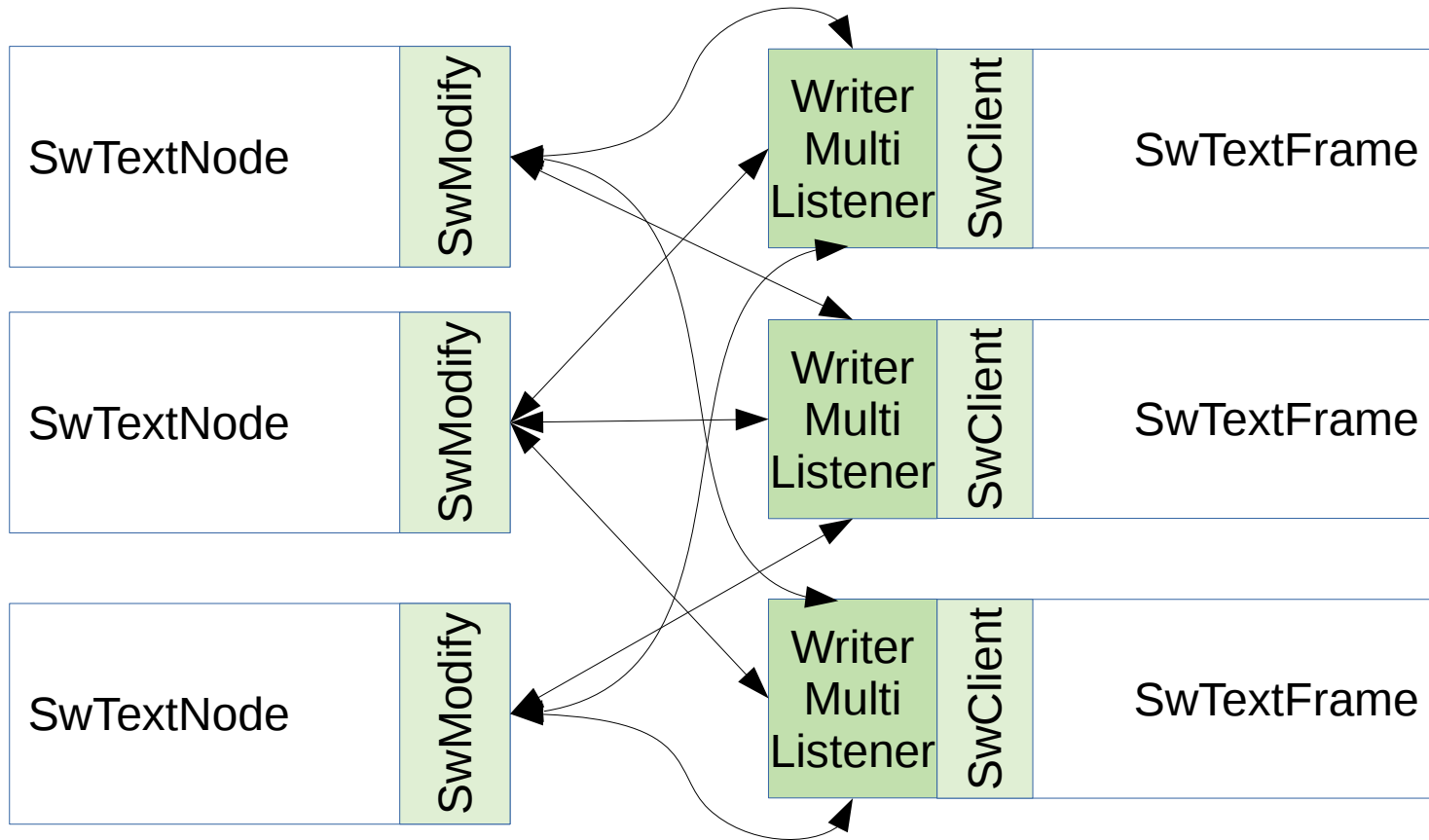


# Nodes And Frames

## Previously: 1:N



# Nodes And Frames With MergedPara: M:N



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## **IMPLEMENTATION**

- 1. Adapt Text Formatting / Layout**
- 2. Adapt Core Model & View Code**
- 3. Accessibility & Numberings**
- 4. Misc. Stuff**

# Adapt Text Formatting

- SwRootFrame::IsHideRedlines()
  - Replacement for GetRedlineFlags()
- SwTextFrame
  - use MergedPara for invalidation
  - etc.
- SwScriptInfo
  - confusing static vs. member functions
- SwAttrIter/SwRedlineIter
  - Avoid kerning issue; redlines must not split portions
    - Even if the redline merges paragraphs



# Adapt Text Formatting: Index Mapping

- Where is index mapping necessary?  
(SwTextNode ↔ SwTextFrame)
- Types to the rescue:  
    typedef  
    o3tl::strong\_int<sal\_Int32>  
    TextFrameIndex;
- First convert all headers
- Convert translation units incrementally
  - git bisect is really useful!

# Adapt Text Formatting: Multiple Nodes

- Replace
  - SwTextFrame::GetTextNode()
  - SwContentFrame::GetNode()
  - SwFrame::GetDep()
  - GetRegisteredIn()
  - SwFrame::GetAttrSet()

with

- GetTextNodeForParaProps()
  - GetTextNodeFirst(), GetBreakItem(),  
GetPageDescItem()
  - GetText()
- SwIterator IteratorMode::UnwrapMulti
-

# Adapt Core Model & View Code

- Load document: create merged frames
- Switch between Show/Hide
  - Flys and footnotes...
- Editing operations & Undo:
  - Invalidation of frames
  - Moving of frames
  - Deletion of frames
  - „Merging“ of frames
- View cursor movement, SwCursorShell
- ExperimentalMode

# Accessibility & Numberings

- Accessibility:
  - currently crashes :(
- Numberings:
  - Footnotes
  - Numbered lists
  - Variable fields
  - Reference fields
  - Chapter fields
  - Bibliography fields
  - Page variable fields

# Miscellaneous Stuff

- AutoFormat
- ToX
- Find & Replace
- Format→Paragraph
- Linguistic?
  - Should already be able to hide redlines but not merge nodes
- Remove that silly dialog...

# Thanks For Funding This Work



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**THANK YOU!**

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