
CIB UNTERNEHMENSGRUPPE

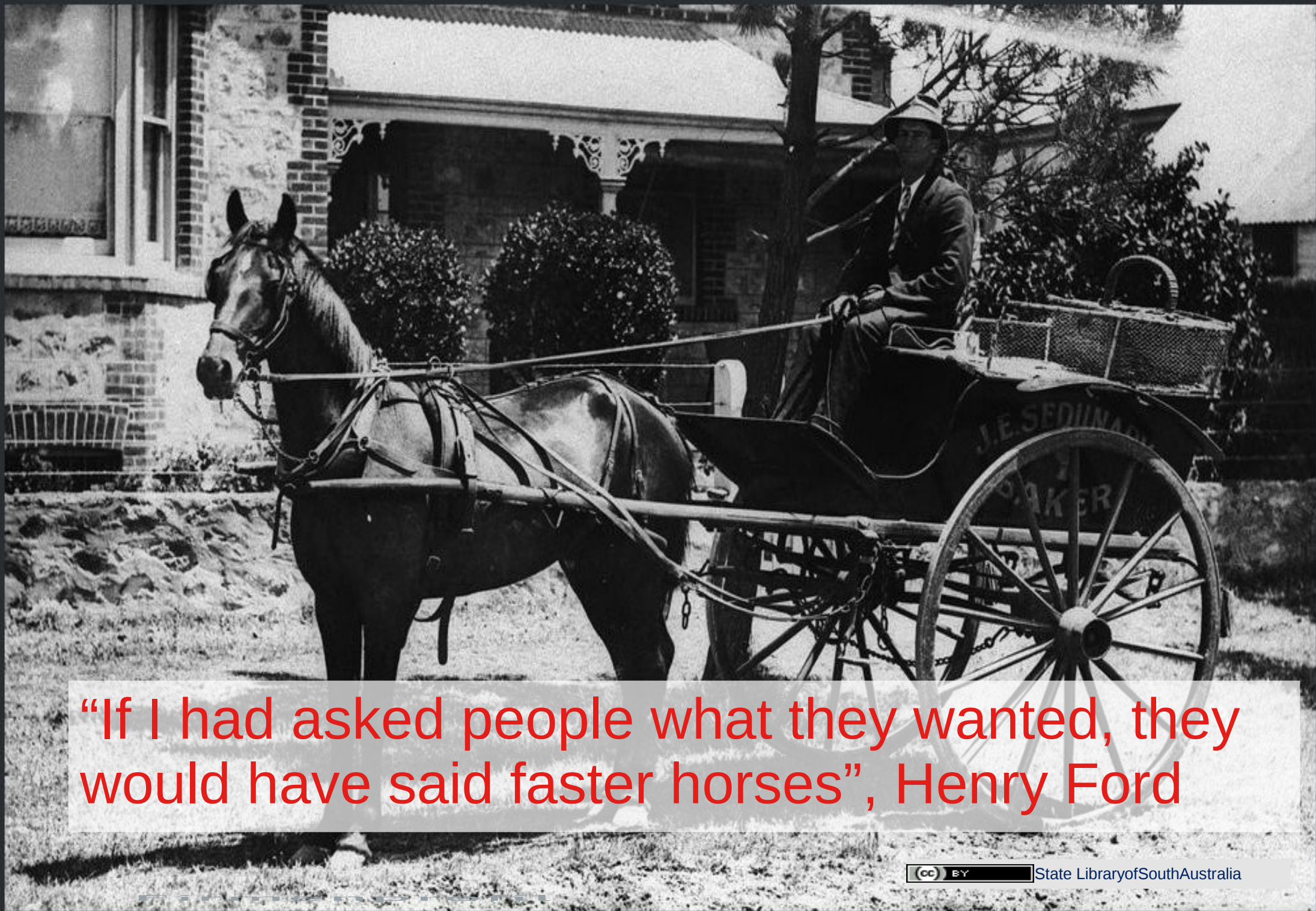
GSOC

SAVING ODF XML OF CHANGE-TRACKING AS A SEQUENCE OF PRE-DEFINED CHANGES



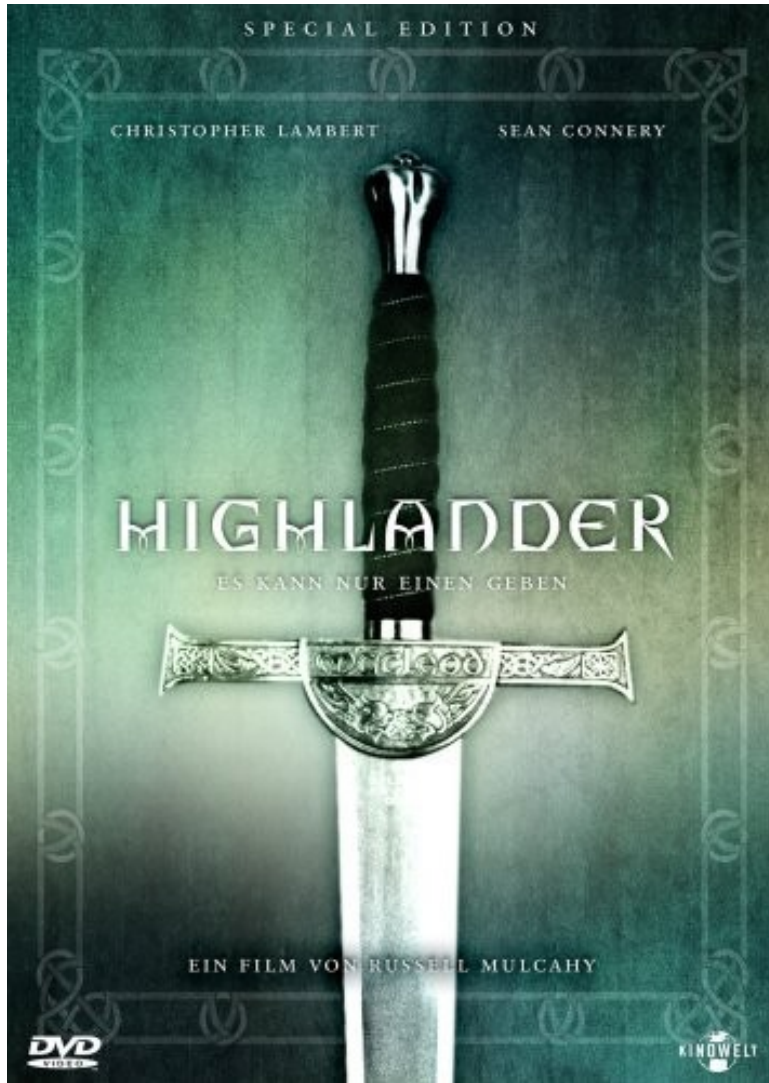


**Documents alone are not
sufficient for interoperable
collaboration**



“If I had asked people what they wanted, they would have said faster horses”, Henry Ford

DOCUMENT COLLABORATION TODAY LIMITS



- Document collaboration evolved great from floppy discs over Email to Cloud Space..
- ..but only as long there is only one editing at the time..
- **There can only be one..**
..editor

Faster Floppy Discs, Email, Cloud...

OPTICAL STORAGE

Sometimes it's better to borrow than invent. DEC worked with Philips and Sony to adapt their music CD for use as a read-only, optical storage medium for distributing software in high volumes.

David Paul Gregg's original optical disk for video, patented in 1961, was read-only. Today, many CD and DVDs are rewriteable.



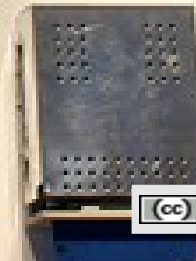
First-time LaserDisc, MCA Home Video Corporation, U.S.A., 1981
MCA and Philips introduced the LaserDisc in 1978 as "Optical Disc." The first sold in North America was the film "Grease." Later, LaserDiscs were direct forerunners of the CD and DVD.



Compact Disc, TDK, Japan, 1979
The compact disc (CD) was developed by Sony and Philips in 1980 to distribute music. CDD became the standard distribution media for software.



The digital video disc (DVD) format was introduced in 1995 by a consortium that formed a compromise between two competing groups. Its successor is the Blu-ray disc.



Main Collaboration Problem: Merging

- **Use Case 1:**

Problems after returning documents from business partner / business software

- What has been changes?
- All changes guaranteed listed via change-tracking?
- How merging multiple document versions?

- **Use Case 2:**

Real-Time editing among different ODF applications is impossible

- Today only complete ODF Documents can defined to be exchanged!
- We need to send a single ODF change without document


MERGE REQUIREMENTS

- **FIND DIFFS:**
Finding differences between two ODT documents
- **CHANGE STEPS:**
Change sequences to apply each other changes
- **INTEROPERABILITY:**
ODF ecosystem blossom with interoperable way to serialization changes (e.g. as XML & JSON)

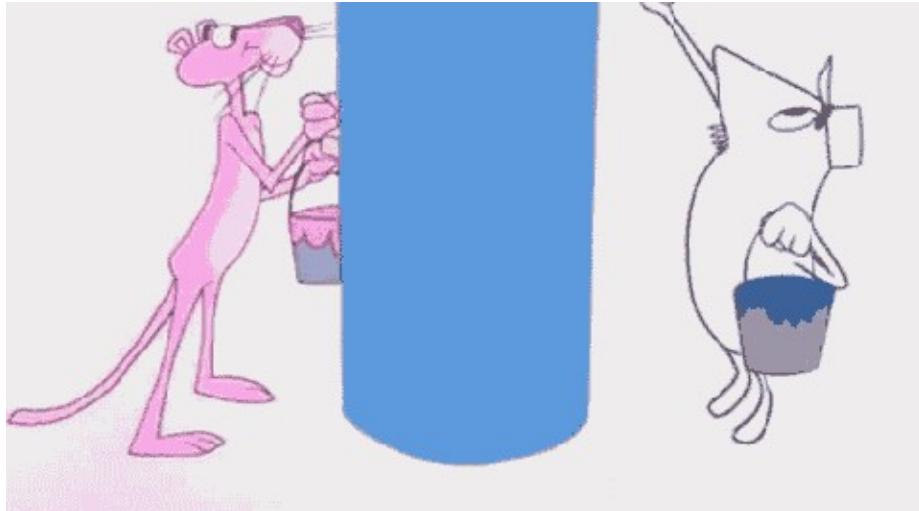


ODF CHANGE DESIGN

- High Level Abstraction from ODF XML -> avoids diffing noise
- Logical / Semantic User Changes -> best applicable to different models
- Atomic Change -> allows switching two changes without context

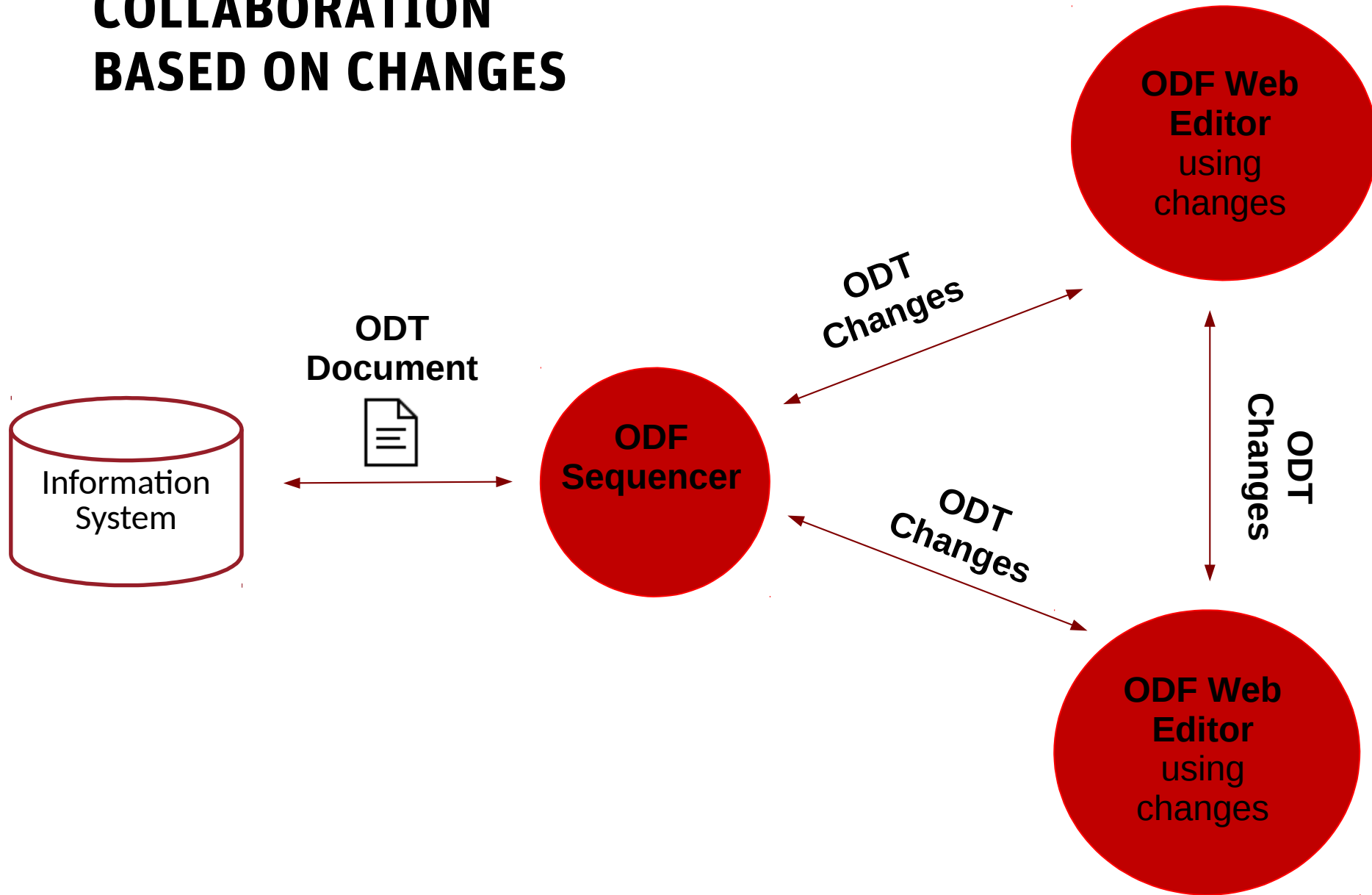
ODT Document	ODT Changes (4 for HEADING only in JSON)
<p>HEADING¶</p> <p>123456789·„Hello·Hyperlink“¶</p> <ol style="list-style-type: none">1. item1¶2. item2¶ 	<pre>{ "name": "addPara", "start": [1], "attrs": { "style": "Heading_20_1", "paragraph": { "outlineLevel": 1 } }, }, { "name": "addText", "start": [1, 1], "text": "HE", }, { "name": "addText", "start": [1, 3], "text": "A", }, { "name": "addText", "start": [1, 4], "text": "DING", }, }</pre>

DESIGN DECISION PROBLEMS



- How to solve design decision problems?
- Rule of thumb:
When in doubt, go for the design which offers the greater feature set (customer first)
- Example:
Ids vs. Number references
Remote reference on read-only document possible only by number

COLLABORATION BASED ON CHANGES



NEXT STEPS



Public Domain -WikiMedia


- ODF Sequencer (Java, ALv2)
 - Upcoming Apache ODF Toolkit (Incubator) feature
 - ODT to „JSON Changes“
 - Applying new changes to ODT
- LibreOffice automatic tests for ODT filter (feature level diff)
 - Tool to filter single feature bug, so not all testing is blocked
- Prototype ODF Git integration
 - ODF changes as diff
 - ODF changes to merge
 - Using ODF Sequencer

NEXT STEPS



Public Domain -WikiMedia

- Work on OASIS ODF Changes specification
- LibreOffice Change-Tracking based on „OASIS ODF changes“
- Improve LibreOffice Tracking (Format on Text / Table / Styles Tracking)



**REMEMBER
GROUP UP!**

PLAY SMART!

- **Support ODF!**
- **LibreOffice strongest ODF player benefits most!!**
- **ISO standard has enormous marketing effects!!!**
- **Leverage of ISO standards on MS ecosystem:**
 - Name of ODF alpha ver. = Open Office XML**
 - Name of MS doc format = Office Open XML**
- **Interoperable Collaboration**
 - a silver bullet for future business software?**