What's new with Apache POI

Apache POI - The Open Source Java solution for Microsoft Office

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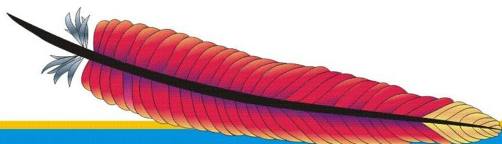

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Nick Burch

Senior Developer

Torchbox Ltd

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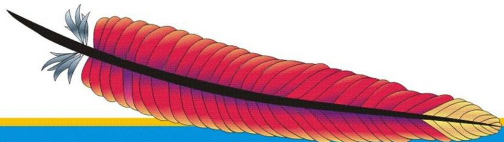

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What'll we be looking at?

- POI and OOXML – why bother?
- Working with Excel files
  - DOM-like UserModel for .xls and .xlsx
  - SAX-like EventModel for .xls
- Converting older code to the new style
- PowerPoint – ppt and pptx
- Word, Visio, Outlook, Publisher

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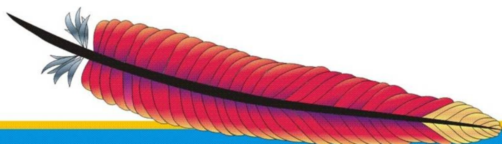

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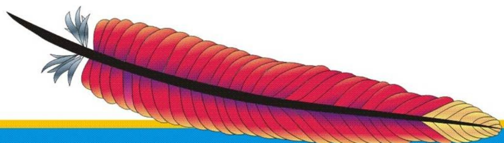
But first... OLE2 & OOXML

- All the old style file formats (xls, doc, ppt, vsd) are OLE2 based
- OLE2 is a binary format, that looks a lot like FAT
- All the new file formats (xlsx, docx, pptx) are OOXML
- OOXML is a zip file of XML files, which are data and metadata



OLE2 Overview

- OLE 2 Compound Document Format
- Binary file format, developed by Microsoft
- Contains different streams / files
- POIFS is our implementation of it
- http://poi.apache.org/poifs/fileformat.htr has the full details
- OOXML structure nods back to OLE2

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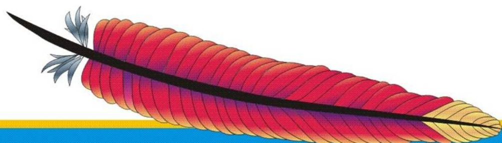

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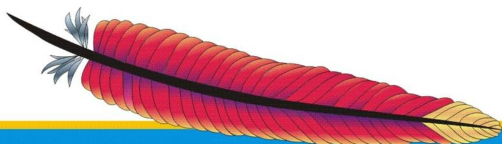
Peeking inside OLE2

- POIFS has several tools for viewing and debugging OLE2 files
- org.apache.poi.poifs.dev.POIFSViewer is the main one
- Ant task is "POIFSViewer", pass it -Dfilename=src/testcase/....
- Documents have metadata entries, and streams for their data



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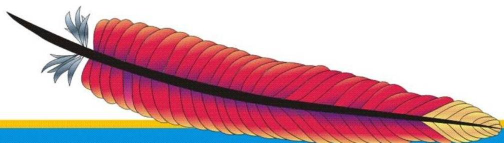
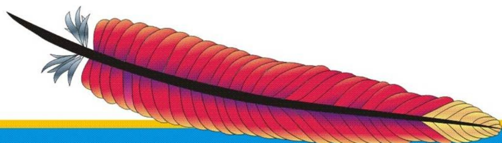
SimpleWithColour.xls

```
POIFS FileSystem
  Property: "Root Entry"
    Name              = "Root Entry"
  DocumentSummaryInformation
    Property: "DocumentSummaryInformation"
      Name              = "DocumentSummaryInformation"
      Document: "DocumentSummaryInformation" size=261
  SummaryInformation
    Property: "SummaryInformation"
      Name              = "SummaryInformation"
      Document: "SummaryInformation" size=229
  Workbook
    Property: "Workbook"
      Name              = "Workbook"
      Document: "Workbook" size=3177
```



OOXML Overview

- Office Open XML file format
- Zip file of XML files
- Defined in ECMA standard 376
- Some files hold OOXML metadata, such as content type lookup
- Some files hold common office file format metadata, eg author
- Rest hold the document itself



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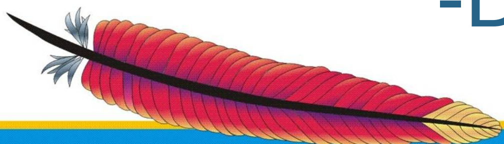
Peeking inside OOXML

- You can just unzip the file to look at it
- The XML is saved without whitespace, so you'll want xmllint or similar to make it look nice
- POI also provides org.apache.poi.dev.OOXMLLister to make browsing easier
- Ant task is “OOXMLLister”, pass it
  -Dfilename=src/testcases/org/....



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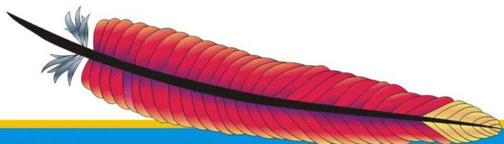
SampleSS.xlsx

```
[Content_Types].xml

docProps/core.xml
docProps/app.xml

_rels/.rels

xl/_rels/workbook.xml.rels
xl/workbook.xml
xl/theme/theme1.xml
xl/worksheets/sheet2.xml
xl/worksheets/sheet3.xml
xl/worksheets/sheet1.xml
xl/sharedStrings.xml
xl/styles.xml
xl/calcChain.xml
```



SampleSS.xlsx cont.

- src/testcases/org/apache/poi/hssf/data/SampleSS.xlsx
- [Content_Types].xml holds mapping between parts and their content types
- _rels/.rels holds relationships between parts of the file
- docProps/*.xml holds document metadata
- xl/*.xml holds excel data

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SampleSS .xls vs .xlsx

- .xls stores excel data in one big stream
- .xlsx stores excel data in 6+ streams, broken out by function
- Both have ways of storing document metadata
- .xlsx file is smaller, despite being xml based
- Processing .xlsx by hand is hard!

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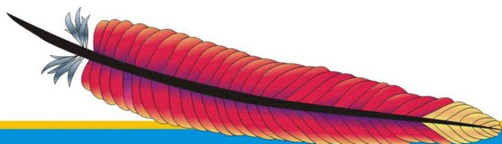

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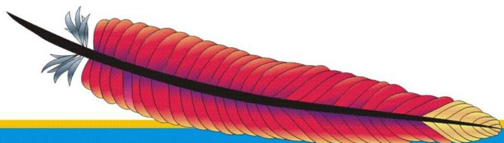
next section follows....



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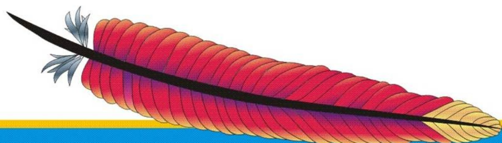
Excel – HSSF & XSSF

- Common UserModel (DOM-like) interface for both .xls and .xlsx
- Common UserModel evolved from existing HSSF UserModel
- Converting from HSSF to new style is fairly easy
- Getting started is even easier



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UserModel basics

- Open / create a Workbook
- From the Workbook, get existing or add new Sheets
- From a Sheet, get at the Rows
- From a Row, get at the Cells
- From a Cell, get contents (values), styling, formatting, comments etc

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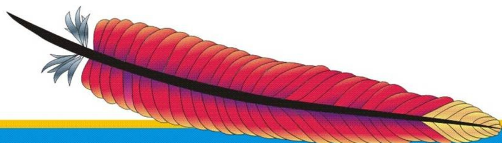

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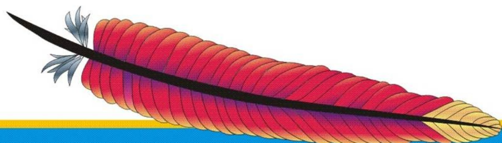
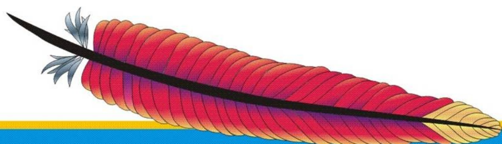
More on usermodel

- Object model fairly closely matched to the excel object model
- The odd bit of the low level file structure may peek through
- HSSF usermodel sits on top of model, which sits on top of records
- XSSF usermodel sits on top of XMLBeans, which does the xml



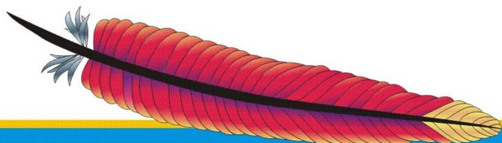
Cells are the key

- Cells contain data, and may optionally have stylings, formatting rules, comments, hyperlinks etc
- Cells can be of different types, such as string, number. Type can be important!
- Numbers and dates are always stored as floating point values
- Ints, dates etc are done by formatting these floating point values



org.apache.poi.ss.usermodel

- Based on exsting HSSF UserModel, but now allows for both .xls and .xlsx support
- Fairly easy to covert existing code to it, to support both formats
- Unless you have very constrained memory, this is the thing to use



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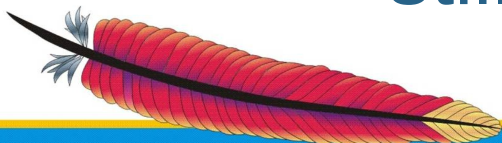
org.apache.poi.ss cont.

- Interfaces provide access to almost all the functionality you'll want for working with both types
- Where things are very different between OLE2 and OOXML, cast to the appropriate concrete class and use that
- Not everything supported yet for XSSF – still some stub methods



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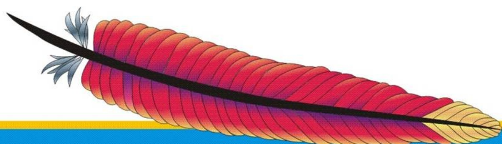
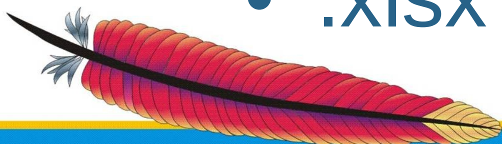
WorkbookFactory

- org.apache.poi.ss.usermodel.WorkbookFactory
- Handles creating the appropriate kind of [H|X]SSFWorkbook
- Accepts generic and implementation specific input sources
  Lets you code generically



Null Rows and Cells

- If a row or cell has never had anything in it, Excel won't have saved it
- POI will give you a null if you ask for a row or a cell that doesn't exist in a file, so check your return values!
- Row and Cell iterators skip over any entries which don't exist, so there will be gaps
- .xlsx and.xls can differ slightly



A4 vs row=3, col=0

- Within the POI usermodel, we generally work with zero based row and cell numbers
- However, Excel uses 1 based row numbers, and A based column letters
- org.apache.poi.ss.util. CellReference will convert between the two for you

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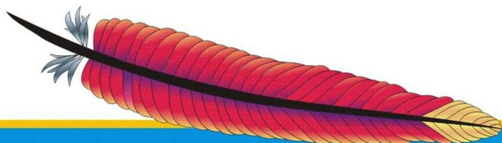
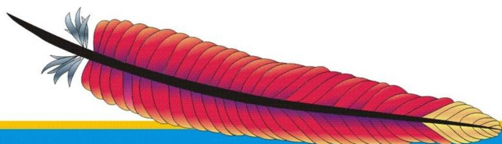


Dates in Excel

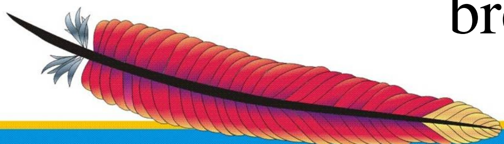
- Dates are stored as floating point numbers, which are fractional days since 1900 or 1904!
- No specific cell type in the file indicates that this is a date
- Only way to detect dates is from formatting rules
- POI tries to detect these for you



Fetching Cell Contents

```
CellReference cellRef = new
        CellReference(r.getRowNum(), cell.getCellNum());
System.out.print(cellRef.formatAsString() + " - ");

// Need to switch on cell type, and call appropriate getter
switch(cell.getCellType()) {
    case Cell.CELL_TYPE_STRING:
        System.out.println(
            cell.getRichStringCellValue().getString());
        break;
    case Cell.CELL_TYPE_BOOLEAN:
        System.out.println(cell.getBooleanCellValue());
        break;
```



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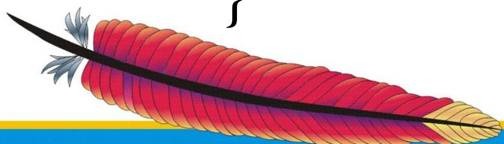
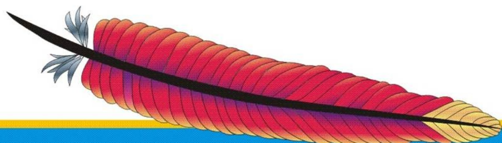
Fetching Cell Contents cont

```
case Cell.CELL_TYPE_NUMERIC:
        if(DateUtil.isCellDateFormatted(cell)) {
            System.out.println(cell.getDateCellValue());
        } else {
            System.out.println(cell.getNumericCellValue());
        } break;
case Cell.CELL_TYPE_FORMULA:
        System.out.println(cell.getCellFormula());
        break;
default:
        System.out.println();
}
```



A note on shorts

- Historically, POI had used shorts to address row and cell numbers
- Excel row and cell numbers map nicely into shorts
- But it can be confusing for users, especially on rows > 32768
- POI has largely moved to using ints, but the odd short remains



Looping over cells

- Loop over all sheets, using Workbook.getNumberofSheets() and Workbook.getSheetAt(idx)
- On Sheet, call rowIterator / use Java 1.5 foreach loop
- On Row, call cellIterator / use Java 1.5 foreach loop
- You now get all the Cells

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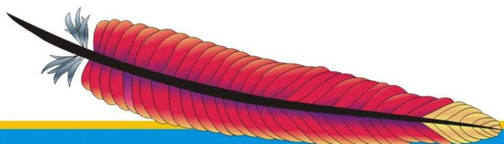

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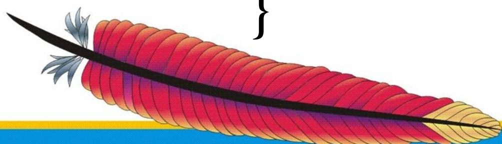
Cell Looping Example

```
// If you want to test, use src/testcases/org/
//      apache/poi/hssf/data/SimpleWithColours.xls
Workbook wb = WorkbookFactory.create(
                    new FileInputStream("myfile.xls"));
for(int sn=0; sn<wb.getNumberOfSheets(); sn++) {
   Sheet sheet = wb.getSheetAt(sn);
   for(Row row : sheet) {
      for(Cell cell : row) {
         // Do something with the cell here
         System.out.println(cell.getCellType());
      }
   }
}
```



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Converting HSSF to SS

- Generally, hssf.usermodel.HSSFFoo has become ss.usermodel.Foo
- hssf.util.HSSFFoo has generally become ss.util.Foo
- Switch your code to use ss interfaces, rather than concrete classes
- When you would have new'd a HSSF, instead ask the CreateHelper to give you a new one

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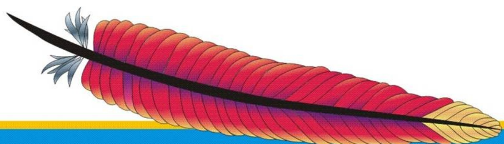

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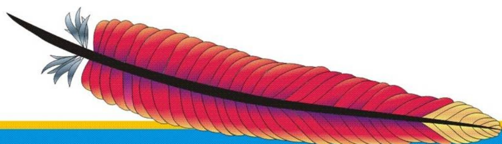
Converting HSSF to SS

- Use WorkbookFactory when opening
- Use new H/X SSFWorkbook when creating a file from scratch
- If you want to do something file format specific, cast the generic interface to the appropriate HSSF / XSSF class



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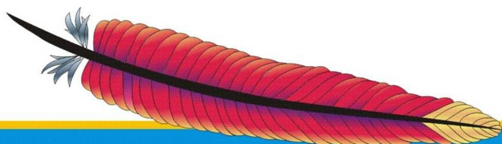
Auto-Sizing Columns

- Handled by the sheet
- Needs to use awt stuff, so either must be running in a graphical environment, or be correctly set to headless
- If running headless, first call System.setProperty(
      "java.awt.headless", "true")).
- Heavily dependent on correct fonts



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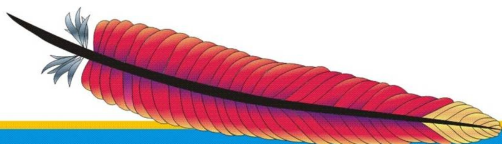
Cell Comments

- Cell comments are the little red triangles in the corners of cells, which can be expanded to show formatted text, commenting on the contents of the cell
- Support for both HSSF and XSSF
- Using Comments the same for both, but creating them differs



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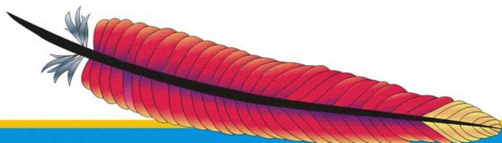
HSSF Cell Comments

- Cell comments appear to have been kludged into OLE2 xls
- They are very similar to other drawing types, eg text boxes
- You create a comment from the base drawing Patriarch of your sheet (create if needed)
- Once created, set fields, and then attach to a cell

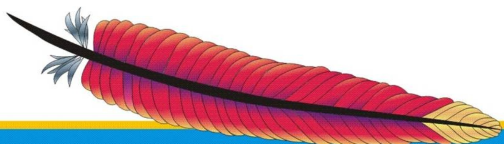
XSSF Cell Comments

- Much more nicely done for OOXML .xlsx than for OLE2 .xls
- Each sheet has another part, which holds all the comments for its cells
- You create a comment from a sheet
- Once created, set fields, and then attach to a cell



HSSF Comment example

```
// Assumes you have a sheet and a cell
HSSFPatriarch patr = sheet.createDrawingPatriarch();
// Anchor defines size and position of the comment
Comment comment1 = patr.createComment(
new HSSFClientAnchor(0, 0, 0, 0, (short)4, 2, (short) 6, 5));
// Set text and author of the comment
comment1.setString(new HSSFRichTextString(
        "We can set comments in POI"));
comment1.setAuthor(“Apache POI”);
// Assign to a particular cell
cell.setCellComment(comment1);
```



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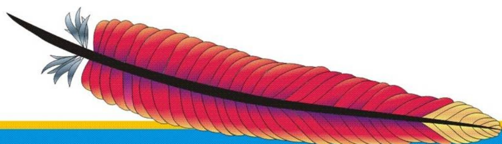
XSSF Comment example

```
Sheet sheet = wb.getSheetAt(1);
Row row = sheet.getRow(2);
Cell cell = row.createCell(0);
// Create a new comment for this sheet
Comment comment1 = sheet.createComment();
// Set text and author of the comment
comment1.setString(new XSSFRichTextString(
        "We can set comments in POI for XSSF too"));
comment1.setAuthor(“Apache POI”);
// Assign to a particular cell
cell.setCellComment(comment1);
```



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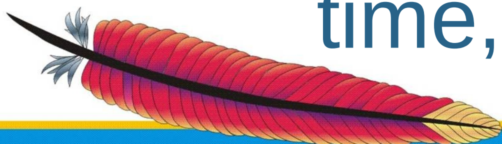
Headers and Footers

- HSSF and XSSF, but XSSF does more
- Works very similar for both Headers and Footers
- Controlled on a per-sheet basis
- Can set text for left edge, centre and right edge
- Special strings for current date, current time, page number etc



Headers and Footers cont

- Get with sheet.getHeader() or sheet.getFooter()
- Total text size is limited to 255 bytes long, across all areas
- Call methods on Header or Footer to get the magic strings for sheet number etc
- Only very limited text formatting

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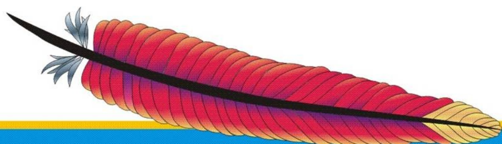
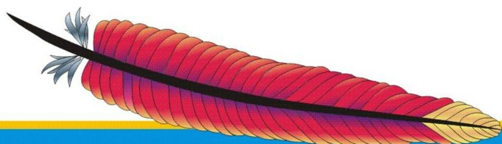


Charts and Pictures

- With HSSF, it is not possible to edit charts or pictures
- (Ditto XSSF, but that ought to be easier to support)
- With HSSF, you can add new pictures, and some simple drawings, but you can't add charts



Charts Workaround

- We want a chart based on data POI will add in, but we can't create the chart with POI
- Instead, open empty file in excel, create chart, and point it at a simple Named Range
- With POI, put in all your data, then update the named range
- Excel will now chart new data

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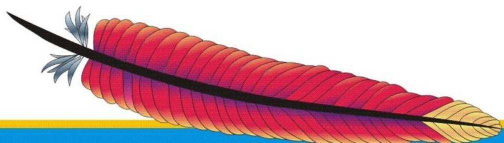
next section follows....



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Excel Formulas

- Excel formulas are a bit tricky
- Cell holds both the formula, and a calculated value
- For .xls, formula is stored in a semi-parsed reverse polish format, with any data they need tacked on the end
- For .xlsx, the formula is just text

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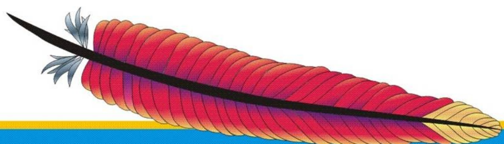

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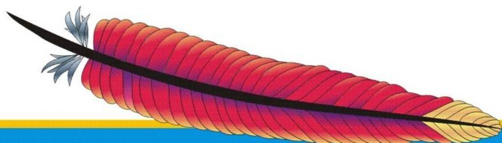
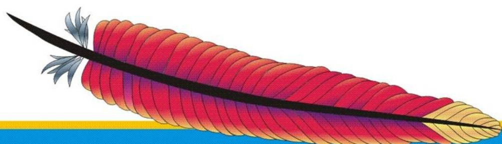
Formula Gotcha

- Open a file containing formulas
- Alter the value of a cell that a formula depends on
- Save the file
- Open in Excel
- Formula cell still has old value
- Open formula cell, hit enter
- Formula cell now gets new value



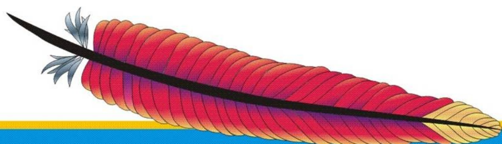
Formula Result Caching

- To make the spreadsheet load faster, Excel stores a computed value with every formula
- Excel will automatically re-calculate formulas for you when source data changes
- POI can re-calculate formulas, but you need to explicitly trigger this



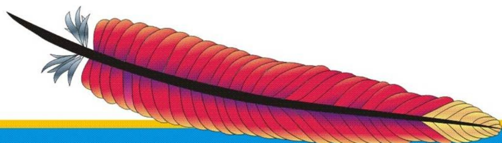
Formula Evaluator

- POI has a largely complete implementation of the Excel formula parser and evaluator
- Doesn't do some functions, but now does most
- Massive improvements of late
- Used to be in scratchpad, but recently moved into main codebase



Using the evaluator

- Evaluator class is org.apache.poi.ss.usermodel.FormulaEvaluator
- Has a variety of methods, but most common are:
  - evaluateFormulaCell(cell)
  - evaluateAllFormulaCells(workbook)
- Only run at very end of processing, just before saving



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What is supported?

- Almost all basic functions are
- VBA based ones never will be
- Quite a few complex things are
- Some of the POI function classes are stubs – if it extends NotImplementedFunction it isn't done yet
- If not, but the class exists, it probably is supported

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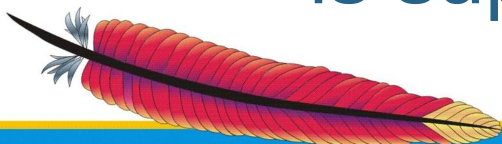

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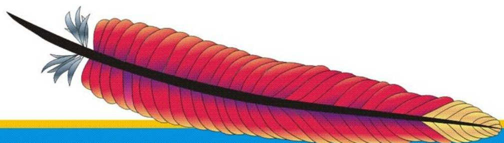

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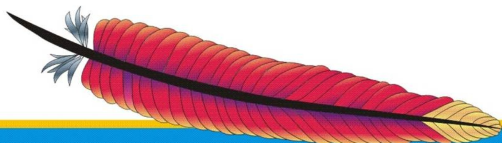
org.apache.poi.hssf.eventusermodel

- Event based reading (no write)
- Basic form fires off for each record that is encountered
- Can filter to only give certain records
- Provides pull method too
- Only fires for records that exist in the file, but there is a workaround



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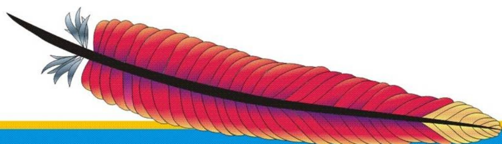
All record based

- Only works with Records though, which are quite low level
- You may find yourself needing to refer to the Microsoft docs
- If in doubt, check the equivalent POI UserModel sourcecode, to see how that works with the records
- That said, it isn't too scary



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Key Records

- NumberRecord – number cell
- FormulaRecord – formula cell, with result if numeric
- LabelSSTRecord – string cell, points to a SSTRecord
- SSTRecord – holds shared strings
- StringRecord – string, used in other parts of the file
- FormatRecord – number format

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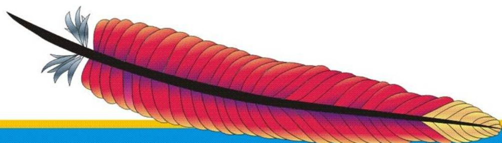
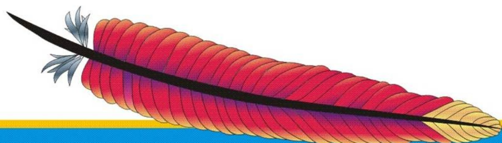
Record ordering

- Many key records come early in the file
- Sheet names and ordering are one such thing, as are all the strings used
- Each sheet's data starts with a BOFRecord
- All rows come before all cells



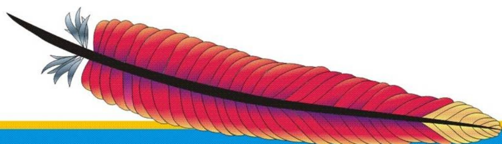
Using the EventModel

- Register a listener, and tell it what kinds of records you want (possibly all of them)
- HSSFEventFactory processes the file, calling your listener for all appropriate records
- You do something as the records come in



EventModel – in code

```
FileInputStream fin = new FileInputStream(filename);
POIFSFileSystem poifs = new POIFSFileSystem(fin);
// get the Workbook (excel part) stream
InputStream din =
poifs.createDocumentInputStream("Workbook");
// Request all records
HSSFRequest req = new HSSFRequest();
req.addListenerForAllRecords(new EventExample());
HSSFEventFactory factory = new HSSFEventFactory();
factory.processEvents(req, din);
din.close(); fin.close();
```



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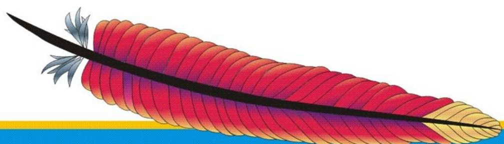
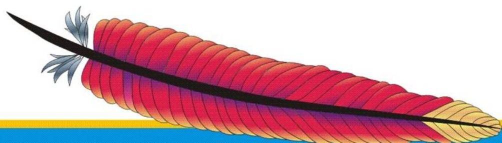
And a sample Listener

```
public class EventExample implements HSSFListener {
    public void processRecord(Record record) {
        switch (record.getSid()) {
            case BoundSheetRecord.sid:
                BoundSheetRecord bsr = (BoundSheetRecord) 
record;
                System.out.println("New sheet named: " + 
bsr.getSheetname());
                break;
        }
}}
```



“Missing” Records

- If you've never put data in a cell, or in a row, there won't be records for it
- But, POI can generate dummy records for you when there is a gap
- You get dummy records for missing row, missing cell, and last cell of a given row



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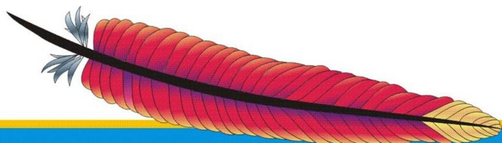
Getting Missing Records

- Create a org.apache.poi.hssf.eventusermodel.MissingRecordAwareHSSFListener
- Pass your own HSSFListener to this
- Have the normal eventmodel code run against the missing record listener
- MissingRecordAwareHSSFListener sits between your HSSFListener and the event factory / HSSFRequest

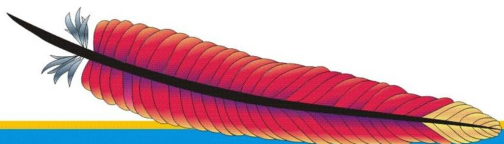
Missing Records Example

- Much too much code to fit onto a slide or two
- Handily located in svn
- /src/scratchpad/examples/src/org/apache/poi/hssf/eventusermodel/examples/XLS2CSVmra.java
- Converts a XLS file to CSV, without issues over gaps in the records



EventModel tips

- Grab useful records as they come past, as they only come once
- But ignore all others, to keep processing and memory light
- If in doubt, check how UserModel does it
- If possible, just buy more memory and use UserModel!



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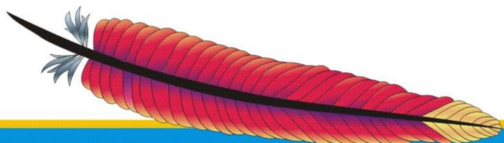

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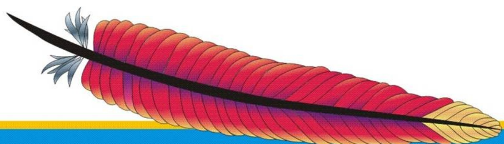
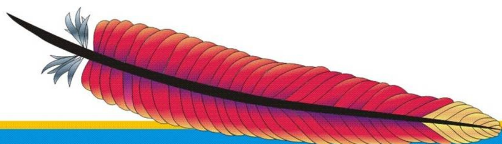
.xlsx and SAX

- Need to use POI to get at the bits of the file we're interested in
- Shared Strings table and Styles table makes life tricky, but POI can help
- Process each sheet individually
- Tends to only have non-blank entries, so there are gaps



Starting with SAX

- Core POI class is org.apache.poi.xssf.eventusermodel.XSSFReader
- This provides a way to get at the raw data for the workbook, and all the sheets
- Also lets you get at shared strings table and styles table



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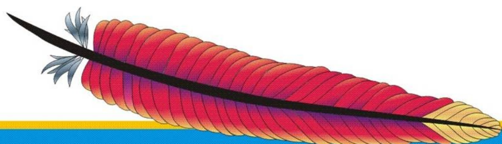
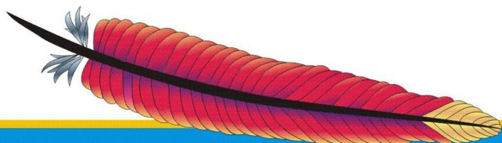
SAX + Shared Strings

- Most string cells actually just contain a pointer to the shared strings table, and not the string value itself
- You need to process the shared strings table to get the string contents
- Can just get the raw contents
- Or can get a handy helper



SAX + Styles

- Cells don't contain their styles, just a pointer to the styles table
- You need to process the styles table to get fonts, colours, number formatting rules etc
- Can just get the raw contents
- Or can get a handy helper



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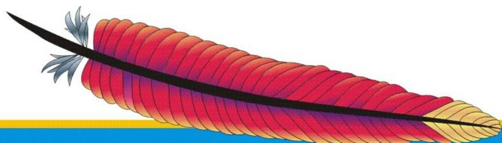
Handy Helpers

- XSSFReader.getSharedStringsTable() - lets you look up shared strings from their index
- XSSFReader.getStylesTable() - lets you look up styles, fonts, number formats etc. Go style to font, style to formatting rules etc



SAX + Sheets

- Two options, either get all sheets, or get a specific sheet
- To get a specific sheet, get the r:id from the workbook's definition of the sheet
- To get all sheets, there is an iterator
- Close InputStreams when done, to keep the memory footprint down

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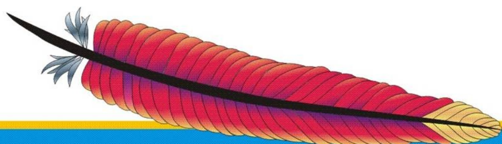

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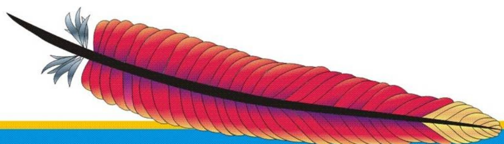
SAX in action

```
XMLReader parser = fetchSheetParser();

Package pkg = Package.open(“myfile.xlsx”);
XSSFReader r = new XSSFReader( pkg );
SharedStringsTable sst = r.getSharedStringsTable();
Iterator<InputStream> sheets = r.getSheetsData();
while(sheets.hasNext()) {
	InputStream sheet = sheets.next();
	InputSource sheetSource = new InputSource(sheet);
	parser.parse(sheetSource);
	sheet.close();	}
```



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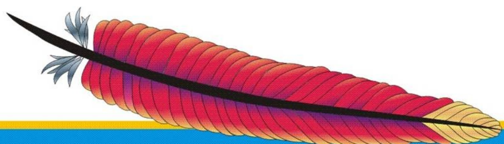
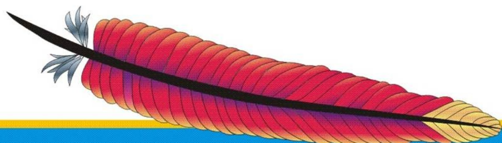
Getting an XMLReader

```
// Readers may be re-used, but only sequentually
public XMLReader fetchSheetParser() throws
                                        SAXException {
    XMLReader parser =
        XMLReaderFactory.createXMLReader(
            "org.apache.xerces.parsers.SAXParser"
    );
   ContentHandler handler = new SheetHandler();
   parser.setContentHandler(handler);
   return parser;
}
```



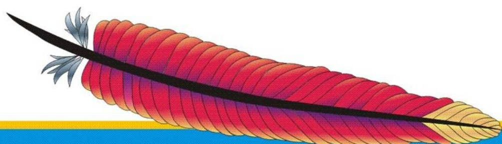
Simple ContentHandler

```
// See org.xml.sax.helpers.DefaultHandler javadocs
public class SheetHandler extends DefaultHandler {
    public void startElement(String uri, String localName,
                    String name, Attributes attributes)
                    throws SAXException {
        super.startElement(uri, localName, name, attributes);
        if(name.equals("c")) {
            System.out.println(attributes.getValue("r"));
        }
    }
}
```



SST Aware Handler

```
public  class SheetHandler extends DefaultHandler {
  private SheetHandler(SharedStringsTable sst) { this.sst = sst; }
  public void startElement(String u, String ln, String name, Attributes attr) throws Exception {
        if(name.equals("c")) { // c => cell
              // Print the cell reference
              System.out.print(attr.getValue("r") + " - ");
              // Figure out if the value is an index in the SST
              String cellType = attr.getValue("t");
              if(cellType != null && cellType.equals("s")) {
                    nextIsString = true;
              } else {
                    nextIsString = false;
              }
        } }
public void endElement(String u, String ln, String name)  throws SAXException {
        if(name.equals("v")) { // v => contents of a cell
              System.out.println(lastContents);
        } }
```



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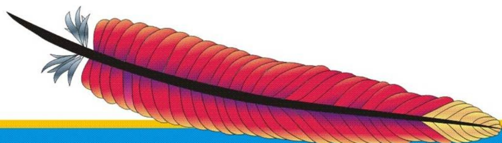
SST Aware Handler cont

```
public void characters(char[] ch, int start, int length) throws SAXException {
        lastContents = new String(ch, start, length);
        if(nextIsString) {
                int idx = Integer.parseInt(lastContents);
                lastContents = sst.getSharedStringAt(idx);
        }
}

private SharedStringsTable sst;
private String lastContents;
private boolean nextIsString;
}
```



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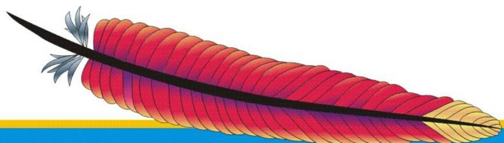

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Text Extraction

- POI provides a large number of text extractors
- Most Office file formats are covered, to varying levels of completeness
- Metadata and embeded documents are supported too
- Tika might wrap everything you want up already though

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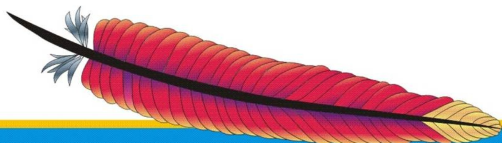

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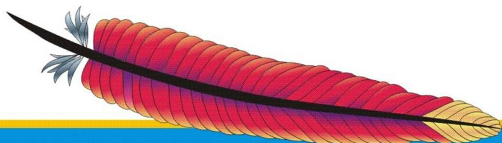
Key Classes

- org.apache.poi.POITextExtractor
  base of all extractors. Lets you get text and metadata
- org.apache.poi.POIOLE2TextExtractor
  for older file formats
- org.apache.poi.POIXMLTextExtractor
  for newer, ooxml file formats



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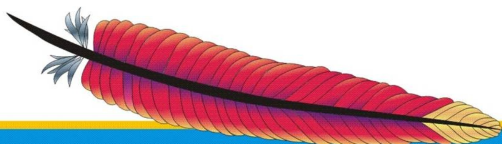
Key Classes cont.

- org.apache.poi.extractor.
  ExtractorFactory

- Identifies the file format, and builds the appropriate extractor for you
  Able to identify embeded documents within your file, and give you extractors for those too



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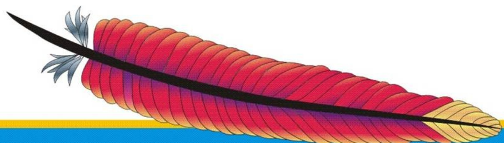

PowerPoint – HSLF & XSLF

- Existing code in POI Scratchpad partly converted to do .pptx too
- Code much less advanced than equivalents in HSSF/XSSF
- Mix of low-level and high-level code
- Much of the file format deals with Escher shapes and objects

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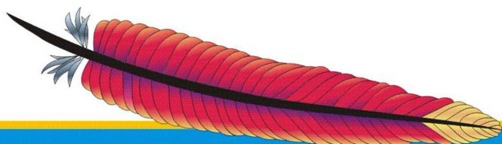

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PowerPoint Text

- Slideshow is made up of a number of slides, which can optionally have a notes sheet associated with them
- Notes are fairly simple, and normally just have rich text
- Slides can have text runs directly, but normally have lots of Escher drawings, which may occasionally contain text too

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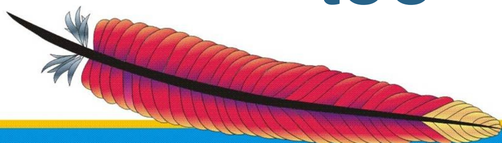

PowerPoint text continued

- From both a Slide and Notes, you can get TextRuns, which contain the text of the sheet, no matter where it lives
- On these, you can get the text, get the rich text formatting, change the text of change the formatting
- Adding new text is only supported via adding a new Escher text box onto the page, and adding text to that

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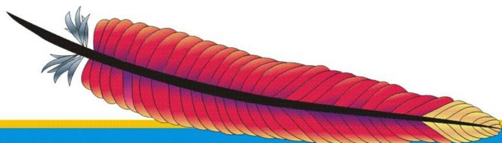
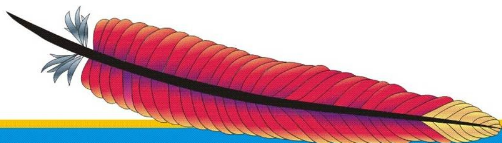
Supported Features

- Reading and changing text
- Adding new slides
- Drawing simple shapes onto slides
- Adding, changing and extracting pictures
- Hyperlinks
- Tables
- Viewing and editing slide backgrounds



PowerPoint Rendering

- Yegor has done some excellent work on rendering PowerPoint files into images
- HSLF only for now, but works well for simpler slides already
- http://poi.apache.org/slideshow/how-to-shapes.html#Graphics2D



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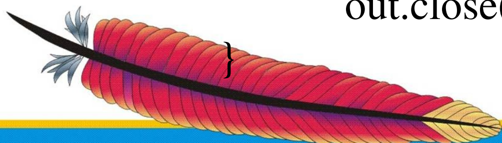
Rendering Example

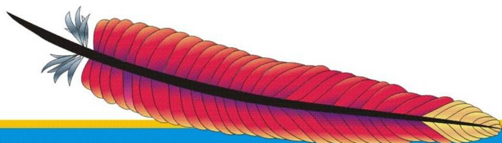
```
FileInputStream is = new FileInputStream("slideshow.ppt");
SlideShow ppt = new SlideShow(is);

 Dimension pgsize = ppt.getPageSize();
 Slide[] slide = ppt.getSlides();
for (int i = 0; i < slide.length; i++) {
          BufferedImage img = new BufferedImage(pgsize.width, pgsize.height,
BufferedImage.TYPE_INT_RGB);
          Graphics2D graphics = img.createGraphics();
          //clear the drawing area
          graphics.setPaint(Color.white);
          graphics.fill(new Rectangle2D.Float(0, 0, pgsize.width, pgsize.height));
          //render
          slide[i].draw(graphics);
         //save the output
          FileOutputStream out = new FileOutputStream("slide-"  + (i+1) + ".png");
          javax.imageio.ImageIO.write(img, "png", out);
          out.close();
}
```



Creating PPT in Java

- HSLF only for now
- It's possible to treat a HSLF file almost as a Graphics2D canvas, and draw onto it
- See http://people.apache.org/~yegor/apachecon_eu08/ for a demo



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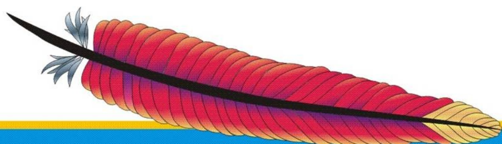
Drawing text

```
Slide slide = ppt.createSlide();

TextBox box1 = new TextBox();
TextRun tr1 = box1.getTextRun();
tr1.setRunType(TextHeaderAtom.TITLE_TYPE);
tr1.setText("Isn't HSLF excellent?");
box1.setAnchor(new Rectangle(36, 21, 648, 90));
slide.addShape(box1);

TextBox box2 = new TextBox();
TextRun tr2 = box2.getTextRun();
tr2.setRunType(TextHeaderAtom.BODY_TYPE);
tr2.setText("HorribleSLideshowFormat is the POI Project's pure Java implementation " +
        "of the Powerpoint '97(-2007) file format. \r" +
        "It supports drawing text new on a PPT page");
box2.setAnchor(new Rectangle(36, 126, 648, 356));
slide.addShape(box2);
```



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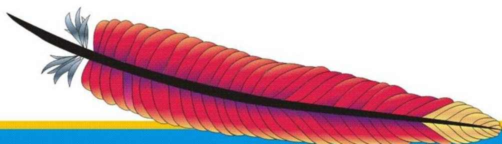
Drawing a bar graph

```
//bar chart data. The first value is the bar color, the second is the width
Object[] def = new Object[]{
    Color.yellow, new Integer(100),
    Color.green, new Integer(150),
    Color.gray, new Integer(75),
    Color.red, new Integer(200),
};

Slide slide = ppt.createSlide();

ShapeGroup group = new ShapeGroup();
//define position of the drawing in the slide
Rectangle bounds = new java.awt.Rectangle(200, 100, 350, 300);
group.setAnchor(bounds);
slide.addShape(group);
Graphics2D graphics = new PPGraphics2D(group);
```



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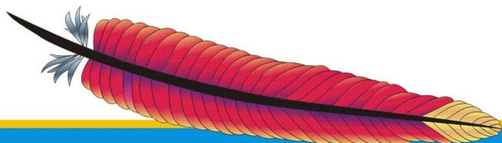
Drawing a bar graph cont.

```
//draw a simple bar graph
int x = bounds.x + 50, y = bounds.y + 50;
graphics.setFont(new Font("Arial", Font.BOLD, 10));
for (int i = 0, idx = 1; i < def.length; i+=2, idx++) {
    graphics.setColor(Color.black);
    int width = ((Integer)def[i+1]).intValue();
    graphics.drawString("Q" + idx, x-20, y+20);
    graphics.drawString(width + "%", x + width + 10, y + 20);
    graphics.setColor((Color)def[i]);
    graphics.fill(new Rectangle(x, y, width, 30));
    y += 40;
}
graphics.setColor(Color.black);
graphics.setFont(new Font("Arial", Font.BOLD, 14));
graphics.draw(bounds);
graphics.drawString("Performance", x + 70, y + 40);
```



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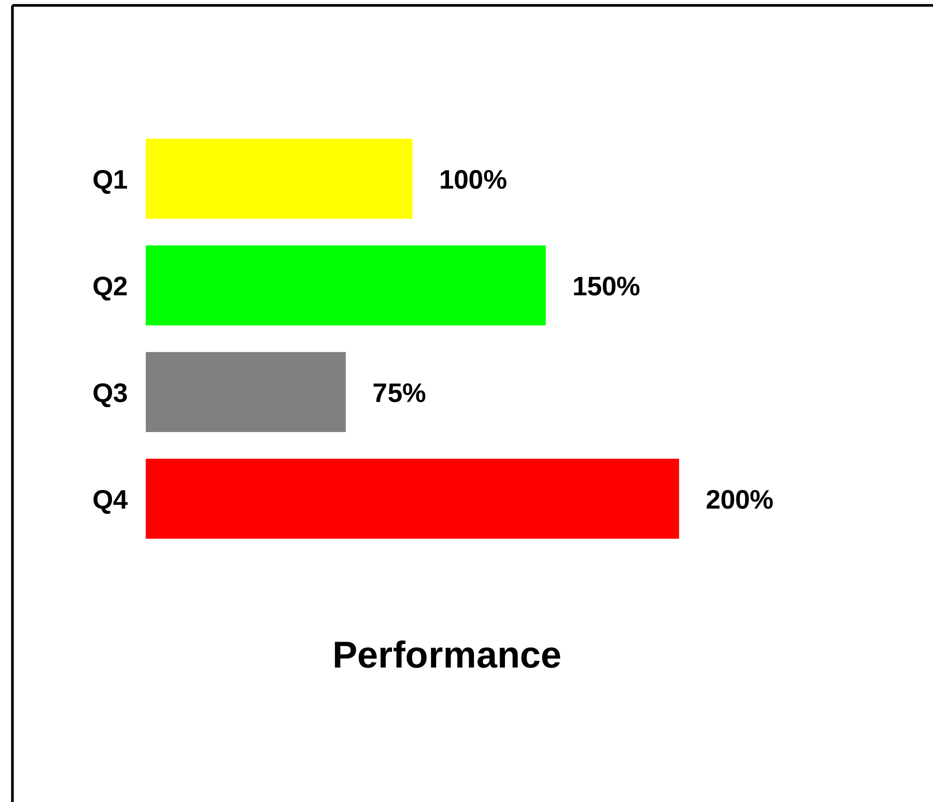
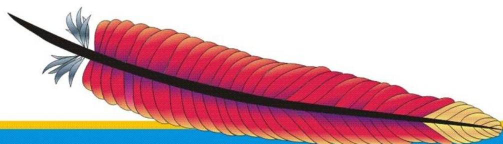
Result – we can draw!





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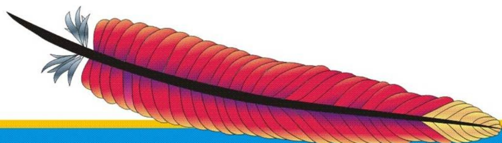
next section follows....



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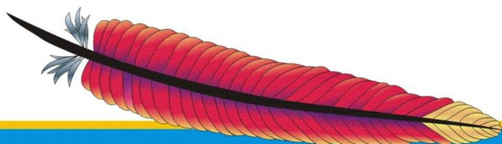
Word – HWPF & OpenXML4J

- For .doc, HWPF provides partial support
- For .docx, OpenXML4J provides partial support, but that is not being developed
- POI provides XWPF, which handles the basics, and is being developed



HWPF Overview

- .doc files are mostly concerned with runs of text
- File has ranges paragraphs, which have paragraphs, which have runs
- Formatting can be applied at any stage
- All text in a given run has the same formatting
- Many objects are actually stored as special text runs

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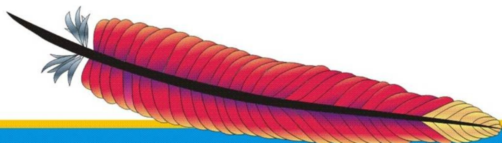
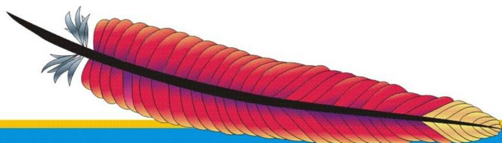
Supported Features

- Fetching, changing and inserting text
- Fetching and changing some text formatting (not all kinds supported)
- Extracting pictures



XWPF Overview

- .docx files are also mostly concerned with runs of text
- Runs can be in a default style, or the style info can be embeded inline
- The xml leaves a lot to be desired, but is fairly close to how .doc works
- Support is evolving



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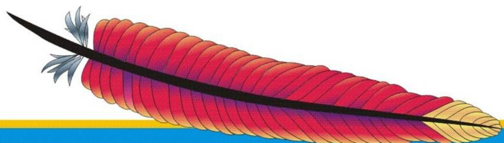

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Visio

- Visio can save as OLE2 or XML
- POI only works on the OLE2 .vsd format for now
- Despite being OLE2 based, .vsd has many differences to the other Office OLE2 file formats
- Code in scratchpad, still very limited support

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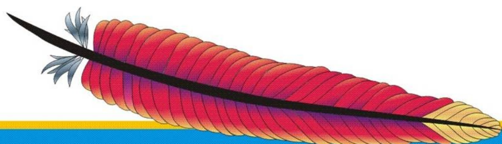

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Streams, Chunks, Pointers

- Visio files are made up of lots of streams, which may be compressed
- Streams can hold pointers (to other streams), or chunks
- Chunks hold commands, such as text, drawings, page styles, colours etc
- Our knowledge of chunk commands comes from vsdump

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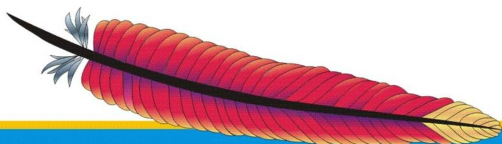

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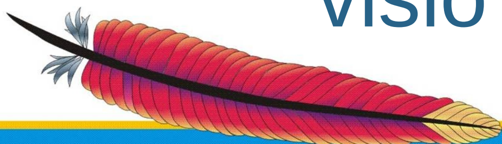
vsdump

- http://www.gnome.ru/fileformats/diagrams.html
(site sometimes down though)
- Allows you to check the contents of a visio file
- Fairly good c based visio dumper, and limited python based visio dumper
- Source of lots of information on the visio file format



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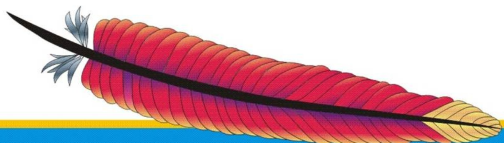

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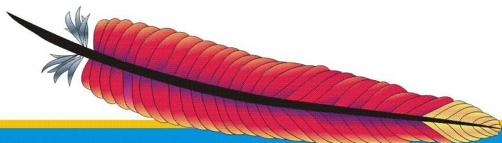
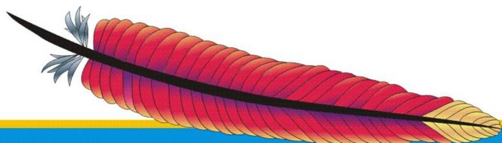
HPBF - Publisher

- Text extraction only for now
- We still don't know how much of the file format works
- One of the few formats for which Microsoft haven't released any docs
- Lots more reverse engineering is needed!



HSMF – Outlook MSG

- Mainly just text / message extraction
- File format makes heavy use of POIFS directory entries for different bits of the message
- Some entries are simple, and just contain the bits you want
- Some are more complex
- Hard bit is knowing which entry to get



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