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*The Global Summit on Content Creation and Management*



## **SVG and PDF with Apache Batik and Apache FOP**

Jeremias Märki



# Topics

- A quick glance at The Apache Software Foundation
- Converting SVG to PDF and other formats
- Apache Batik (SVG implementation)
- Apache FOP (XSL-FO implementation)
- Using SVG in XSL-FO documents
- Lessons learned
- Status and future developments

# The Apache Software Foundation (ASF)

- Registered NPO in the USA
- You all know the Apache web server
- Provides an attractive environment to develop Open Source Software
- Companies and programmers get together to develop great software
- Publishes software under a commercially interesting license



# The Apache License

- You can download and use for free
- You can modify and redistribute (even for commercial purposes)
- Does not guarantee anything
- Provides legal protection for developers (IP and patent issues etc.)
- One restriction: You must state that you're using software created by the ASF.
- Brand new Apache License 2.0



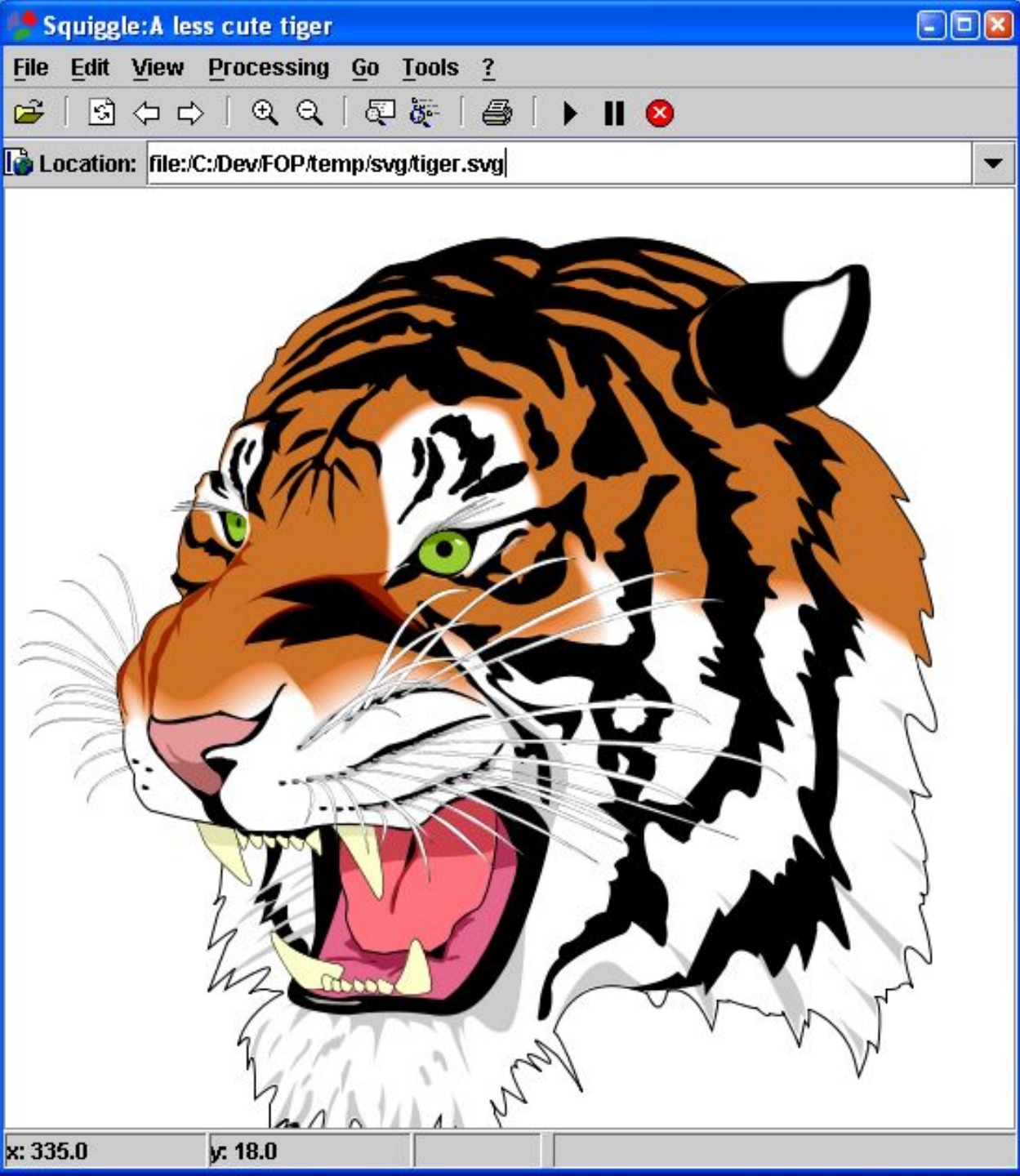
# Roles at the ASF

- Users
  - They use the software, ask questions on the mailing list, help other users, make suggestions
- Developers
  - They modify the software, send in their modifications
- Committers
  - You become a committer through election when you contribute a lot
  - Write access to the code repository
  - They decide on the direction for the project (voting rights)
- PMC members
- ASF members



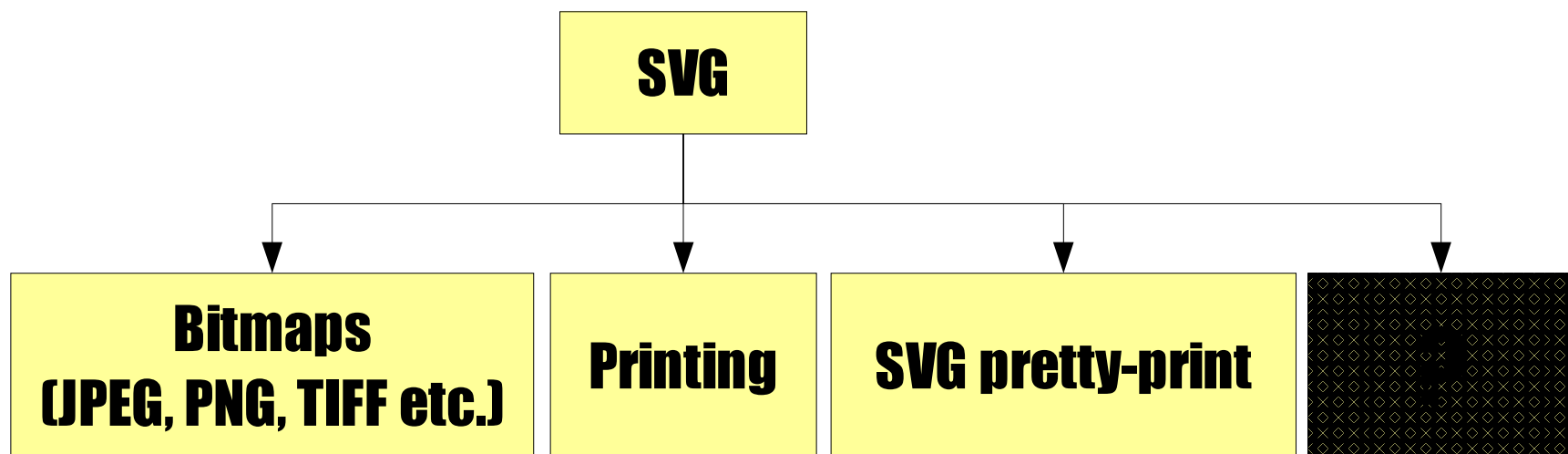
# Apache Batik

- SVG implementation
- Part of the XML project (<http://xml.apache.org/batik>)
- Current production release: Batik 1.5.1
  
- Static features: all implemented
- Scripting: all implemented
- Dynamic features: not yet



# Batik features

- For end-users: Squiggle, the SVG browser
- Lots of things for developers
- Painting on Java2D for GUIs and printing
- Transcoders convert SVG to other formats



*So, where is the PDF?*



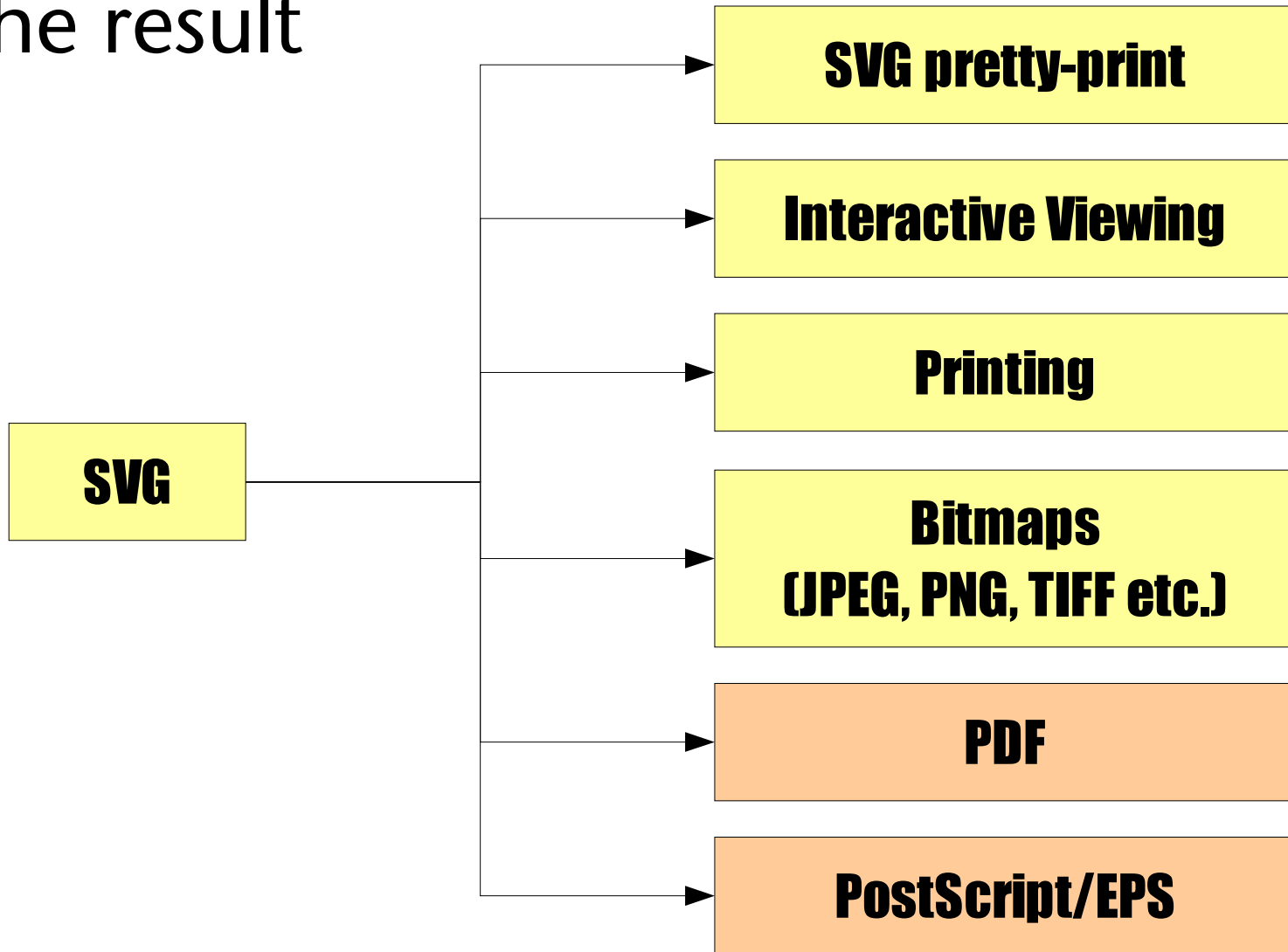
# Apache FOP

- XSL-FO implementation
- Part of the XML project (<http://xml.apache.org/fop>)
- Current production version: FOP 0.20.5
  
- Many (but not all) XSL-FO features implemented
- Most important output formats: PDF and PostScript
- Supports SVG through Batik

# FOP has additional Transcoders

- FOP needs SVG support, so uses Batik
- We don't want to use bitmaps (Scaling)
- The FOP team developed Batik Transcoders for PDF and PostScript/EPS
- Transcoders use FOP's PDF and PS libraries
- FOP provides a stand-alone package as a plug-in to Batik (i.e. SVG to PDF/PS conversion without XSL-FO)
- Batik ships with these Transcoders

# The result



# PDF Transcoder features

- Caveat: Not as mature as the rest of Batik!
- Creates scalable PDF commands
- Works fine for most commonly used constructs
- Some transparency features and patterns
- Support for links
  
- Test the features you need!

# PDF Features inherited from FOP

- PDF version 1.4
- Font embedding for Type 1 and TrueType fonts
- Image support for various formats (JPEG, PNG etc.)
- PDF encryption support (40 bit)

But:

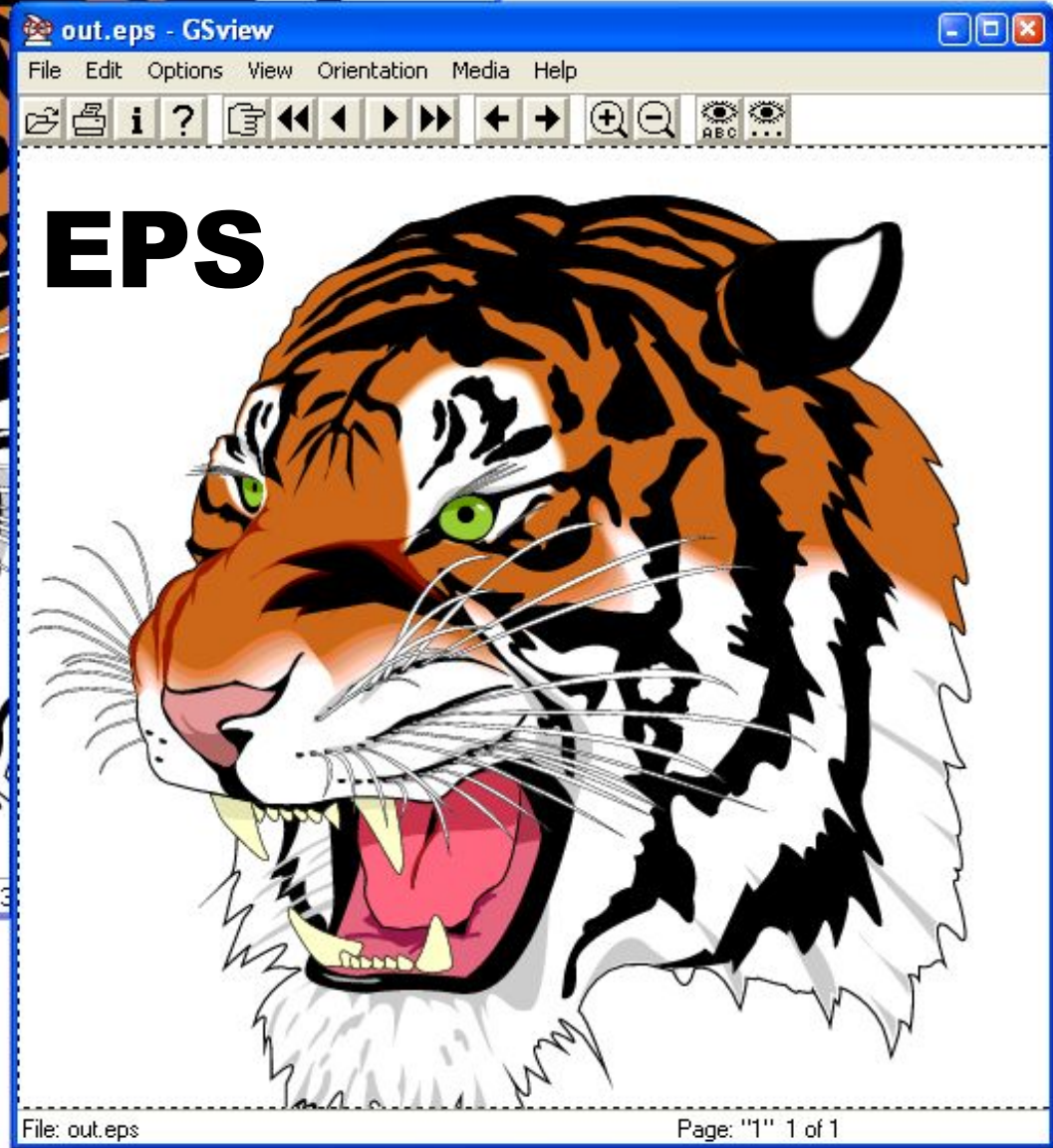
- Only partial ICC support
- Very limited CMYK support
- PDF post-processing tools often needed

# PostScript/EPS Transcoder

- Produce either plain PostScript or EPS (Encapsulated PostScript)
- Basically Level 2, but using some Level 3 features
- Good results for simple SVG documents
- Not as advanced as the PDF Transcoder
- No patterns, no bitmap images, yet
- Generic PostScript, no PPD support, yet



**PDF**



**EPS**

# Extending SVG (or XSL-FO)

- Extending SVG provides powerful opportunities
- Both SVG and XSL-FO provide support for “foreign objects”
- Example: Barcodes using the Open Source project “Barcode4J”
- The package transforms a special XML dialect for barcodes into SVG for use inside SVG or XSL-FO.
- A lot of other possibilities: MathML, charts etc. etc.

# SVG in XSL-FO

```
<fo:page-sequence master-reference="simpleA4">
  <fo:flow flow-name="xsl-region-body">
    <fo:block font-weight="bold">
      Logo:
    </fo:block>
    <fo:block>
      <fo:external-graphic src="file:my-logo.svg"/>
    </fo:block>
  </fo:flow>
</fo:page-sequence>
```

---

```
<fo:instream-foreign-object>
  <svg:svg xmlns:svg="http://www.w3.org/2000/svg"
    width="5cm" height="4cm">
    <svg:g transform="translate(190, 170)">
      .....
    </svg:g>
  </svg:svg>
</fo:instream-foreign-object>
```

# Real life usage example #1

- High-volume invoice and insurance policy printing system (personalized documents on laser printers)
- SVG used whenever XSL-FO can't help:
  - Barcodes
  - Logos
  - Form filling
- Generation of PostScript files that are concatenated and post-processed for OMR marks and paper tray selection etc.
- PDF versions for the archive or the customer



# Lessons learned

- XSL-FO is very expressive but you need SVG to help out with some specialties.
- Special extensions are easily done with some programming know-how.
- WYSIWYG editors for XSL-FO are not always good enough, manual XSLT still necessary.
- Learn to live with a subset of features theoretically available.

## Real-life usage example #2

- Printing of price etiquettes and posters
- Templates designed in Adobe Illustrator (in SVG)
- Apache Batik used to print the generated SVG
- Black and white only, with images and barcodes
- Templates enriched by values from a database
- n-up using separate templates entirely done in SVG



# Lessons learned

- XML-based SVG is very flexible, extensible and easy to modify and enrich.
- SVG files can easily be nested.
- As with HTML, interpretation of the SVG standard may differ between implementations.
- You may need to restrict yourself when you're designing templates.

# Future for Batik and FOP

- Batik and FOP will grow closer together under a common umbrella: “XML Graphics” (working title)
- PDF and PS libraries will be shared, SVG code in FOP will be more accessible to the Batik team.
- We're looking for more synergies.
- Resources are relatively scarce. Help (in every thinkable flavor) is always welcome. Everyone can participate.

# Interesting development

- “SVG Print” working draft
- Directly send SVG to a printer.
- Specifies how to hold multiple pages within one SVG document.
- This moves it closer to PDF.



# Conclusions

- SVG is an exciting standard with lots of applications and possibilities.
- I see SVG's strength mainly in complimenting other technologies (SVG in XSL-FO, SVG in PDF, SVG on websites).
- There are good Open Source software packages around which are used in production by many users.
- Do a careful evaluation. Check your requirements.

## Conclusions #2

- Possible pitfalls: Color and Interoperability.
- But these new standards make it easier to switch the tool, Open Source or not.
- Editors will still need to become more powerful.

# Thank You!

- Feedback? Comments? Suggestions?

Slides available from <http://www.seybold365.com>

## Contact Info

Jeremias Märki, [jeremias@maerki.org](mailto:jeremias@maerki.org) (Speaker)

David Penfold, [penfold@eps-edge.demon.co.uk](mailto:penfold@eps-edge.demon.co.uk) (Moderator)

Seybold Director of Content, Cynthia Wood, [Cynthia.Wood@mlii.com](mailto:Cynthia.Wood@mlii.com)

Seybold VP & General Manager, James Smith, [James.Smith@mlii.com](mailto:James.Smith@mlii.com)



# Links

- SVG: <http://www.w3.org/Graphics/SVG/>
- The Apache Software Foundation:  
<http://www.apache.org>
- Apache Batik: <http://xml.apache.org/batik>
- Apache FOP: <http://xml.apache.org/fop>
- Apache Cocoon: <http://cocoon.apache.org>