Engineering Next-Generation Publishing Workflows

IDPF Digital Book 2013 May 30, 2013

Sanders Kleinfeld O'Reilly Media, Inc.

How do you write a book?

How do you write a "book"?

How do you write an (e)book?

How do you "write" an (e)book?

Anatomy of an ebook: EPUB

What ¬



Chapter 1. A Python Q&A Session

If you've bought this book, you may already know what Python is and why it's an important tool to learn. If you don't, you probably won't be sold on Python until you've learned the language by reading the rest of this book and have done a project or two. But before we jump into details, the first few pages of this book will briefly introduce some of the main reasons behind Python's popularity. To begin sculpting a definition of Python, this chapter takes the form of a question-and-answer session, which poses some of the most common questions asked by beginners.

Why Do People Use Python?

Because there are many programming languages available today, this is the usual first question of newcomers. Given that there are roughly 1 million Python users out there at the moment, there really is no way to answer this question with complete accuracy; the choice of development tools is sometimes based on unique constraints or personal preference.

But after teaching Python to roughly 225 groups and over 3,000 students during the last 12 years, some common themes have emerged. The primary factors cited by Python users seem to be these:

Software quality

For many, Python's focus on readability, coherence, and software quality in general sets it apart from other tools in the scripting world. Python code is designed to be readable, and hence reusable and maintainable—much more so than traditional scripting languages. The uniformity of Python code makes it easy to understand, even if you did not write it. In addition, Python has deep support for more advanced software reuse mechanisms, such as

What's

```
www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<a href="http://www.w3.org/1999/xhtml">
  <head>
    <title>Chapter 1. A Python Q&amp; A Session</title>
    <link rel="stylesheet" href="core.css" type="text/css" />
    <meta name="generator" content="DocBook XSL Stylesheets V1.74.0" />
  </head>
  <body>
    <div class="chapter" title="Chapter 1. A Python Q&amp; A Session">
      <div class="titlepage">
        <div>
          < div>
            <h1 class="title">
              <a id="a python q ampersand a session"></a>
              Chapter 1. A Python Q& A Session
            </h1>
          </div>
        </div>
      </div>
```

If you've bought this book, you may already know what Python is and why it's an important tool to learn. If you don't, you probably won't be sold on Python until you've learned the language by reading the rest of this book and have done a project or two. But before we jump into details, the first few pages of this book will briefly introduce some of the main reasons behind Python's popularity. To begin sculpting a definition of Python, this chapter takes the form of a question-and-answer session, which poses some of the most common questions asked by beginners.

An Inconvenient Truth:

Ebooks are made of code. If you are an ebook publisher, you are in the software-development business.

How do you "write" an (e)book?

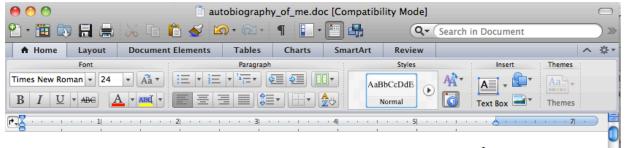
How do you develop an (e)book?

Five Key Principles of a Modern (e)Book Workflow

- #1. Semantic Markup Matters
- #2. Single Source, Multiple Outputs
- **#3. Automate Your Headaches Away**
- #4. Versioning is the New Spell-Check
- #5. Always think "Digital First"

#1 Semantic Markup Matters

First Chapter of My Memoirs



1

Micros oft Word

Autobiography of Me

I was born in 1980, I love chocolate ice cream, and I am a *wicked awesome* writer, <u>yo!</u>

Sec 1 Pages:

22 of 22

150%

Underlying Representation of Content (Word XML)

<w:body><w:p w:rsidR="0073527D" w:rsidRDefault="007F1550" w:rsidP="007F1550"><w:pPr><w:pPr><w:pr><w:rPr><w:rsidRPr="007F1550"><w:rpr><w:rpr><w:r w:rsidRPr="007F1550"><w:rpr><w:rsidRPr="007F1550"><w:rpr><w:sz w:val="96"/><w:szCs w:val="96"/></w:rPr>

<w:t>1</w:t>

</w:r></w:p><w:p><w:p><w:p><w:p><w:p><w:p><w:pPr><w:jc w:val="right"/>
<w:rPr><w:sz w:val="72"/><w:szCs w:val="72"/></w:rPr></w:pPr><w:r w:rsidRPr="007F1550"><w:rPr><w:sz w:val="72"/><w:sz</p>

<w:t>Autobiography of Me</w:t>

<w:t xml:space="preserve">I was born in 1980, I love chocolate ice cream, and I am a </w:t>

</w:r><w:r w:rsidRPr="00032659"><w:rPr><w:i/><w:sz w:val="48"/><w:szCs w:val="48"/></w:rPr>

<w:t>wicked awesome</w:t>

</w:r><w:r w:rsidRPr="00032659"><w:rPr><w:sz w:val="48"/><w:szCs w:val="48"/></w:rPr>

<w:t xml:space="preserve"> writer, </w:t></w:r>

<w:proofErr w:type="spellStart"/><w:r w:rsidRPr="00032659"><w:rPr><w:sz w:val="48"/><w:szCs w:val="48"/>
w:rPr>

<w:t>yo</w:t>

```
</w:r><w:proofErr w:type="spellEnd"/>
```

•••

Three Problems with this XML

Markup is not semantic!

It conflates content and presentation

• Um, yuck 🕾

Semantic Markup in a Nutshell

Semantic markup describes the function of your content, not its formatting

SEMANTIC MARKUP SAYS:

"This is a section heading"

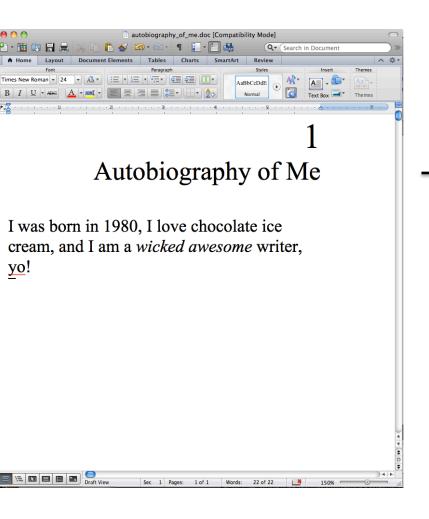
NOT:

"This text is in Garamond, 36 pt, bold, center-aligned"

Semantic Markup Option #1: DocBook

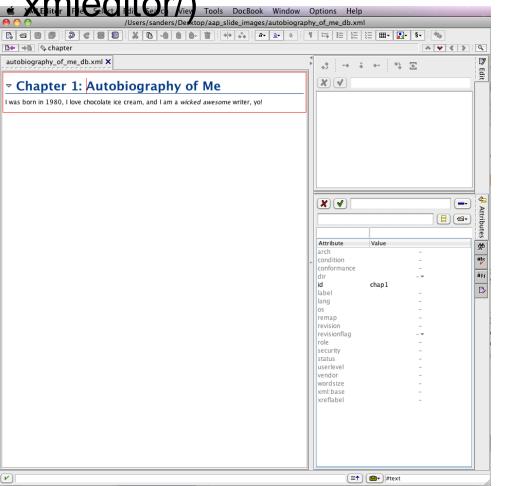
- DocBook is a semantic XML markup vocabulary introduced in 1991
- It was primarily designed for representing technical documentation, but is well-suited for representing any prose content
- DocBook DTDs are available here: http://www.oasis-open.org/docbook/xml/

DocBook Representation of Book Content

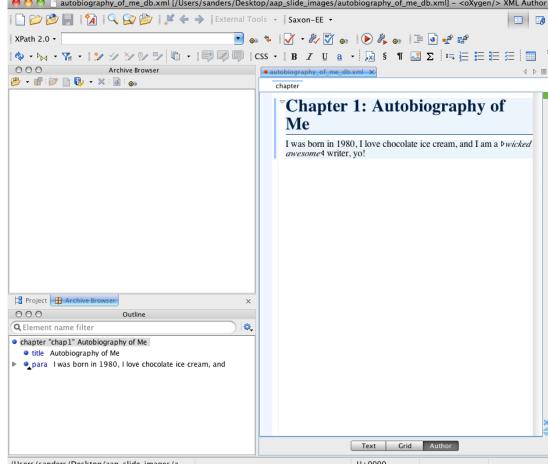


Text Editors with GUI DocBook Support

XMLmind XML Editor (http://www.xmlmind.com/



Oxygen XML Editor (http://

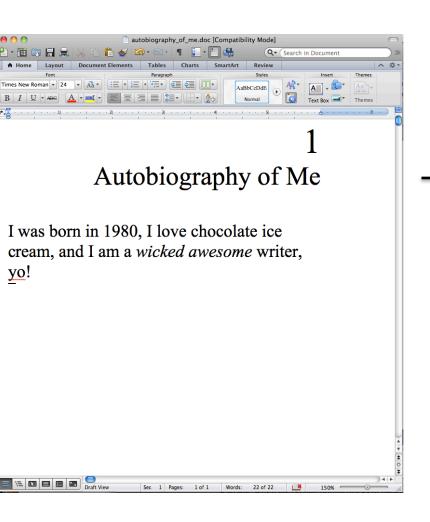


Semantic Markup Option #2: AsciiDoc

- AsciiDoc is a lightweight, wiki-like markup language for prose content
- It was created by Stuart Rackham in 2002.

 The AsciiDoc toolchain is written in Python, and relies heavily on text processing with regular expressions.

AsciiDoc Representation of Book Content



== Autobiography of Me

I was born in 1980, I love chocolate ice cream, and I am a _wicked awesome_ writer, yo!

Text Editor with AsciiDoc Support

O'Reilly



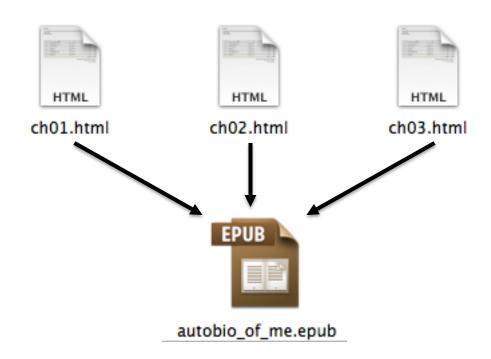
```
== Autobiography of Me

I was born in 1980, I love chocolate ice cream, and I am a _wicked awesome_ writer, yo!
```

Semantic Markup Option #3: HTML

"Say what? HTML?"

Ebooks are composed of HTML...



So, why not write them in HTML?

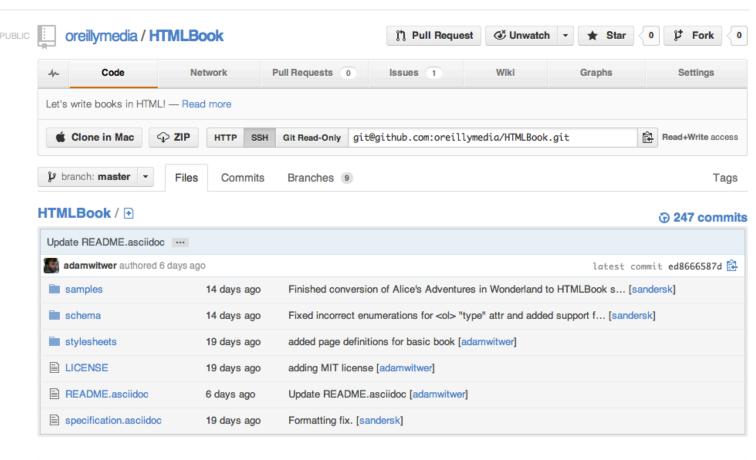
HTML5 = New Structural Semantics

- <article>
- <aside>
- <header>
- <figure>
- < <footer>
- <nav>
- <section>

But eBooks require a richer content model!!!

- More robust semantics for bookspecific elements—e.g, chapter, appendix, glossary
- Explicit, enforceable rules for structure—e.g, no <h1>s lower in the hierarchy than <h2>s

Introducing the HTMLBook Project: http://github.com/oreillymedia/HTMLBook



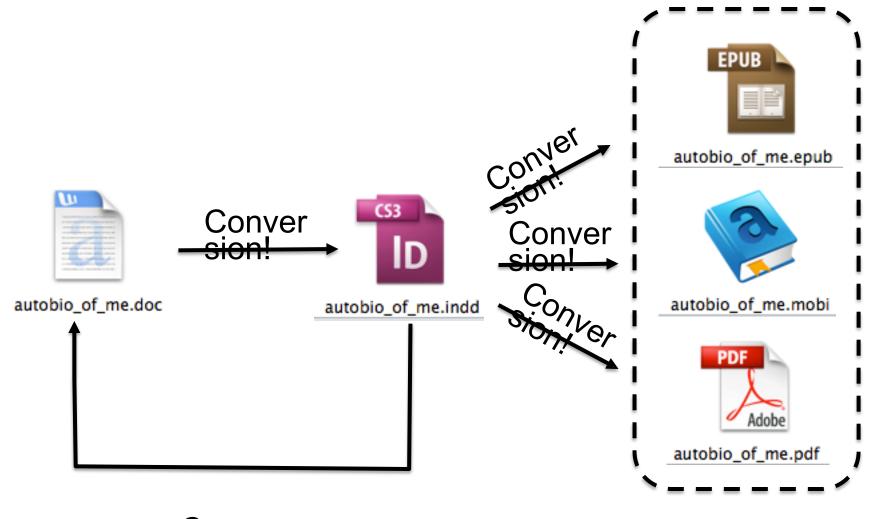
HTMLBook

Let's write books in HTML! HTMLBook is an open, HTML5-based standard for the authoring and production of both print and digital books. HTMLBook is built on the following premises:

"That's nice, but what's in it for me if I develop my (e)book in DocBook or AsciiDoc or HTML?"

#2 Single Source, Multiple Outputs

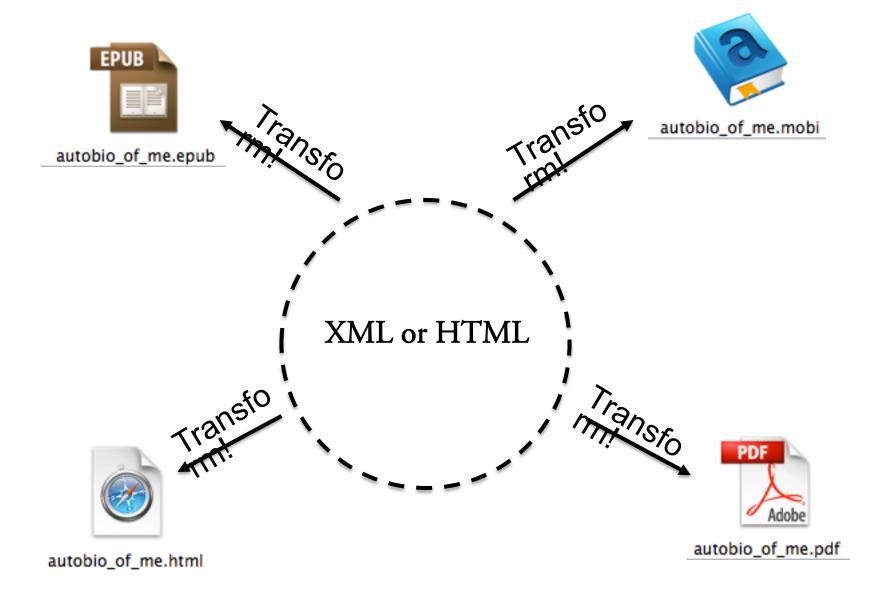
Welcome to Conversion City



Conver sion!

Enjoy Your Stay!

The Single-Source Model

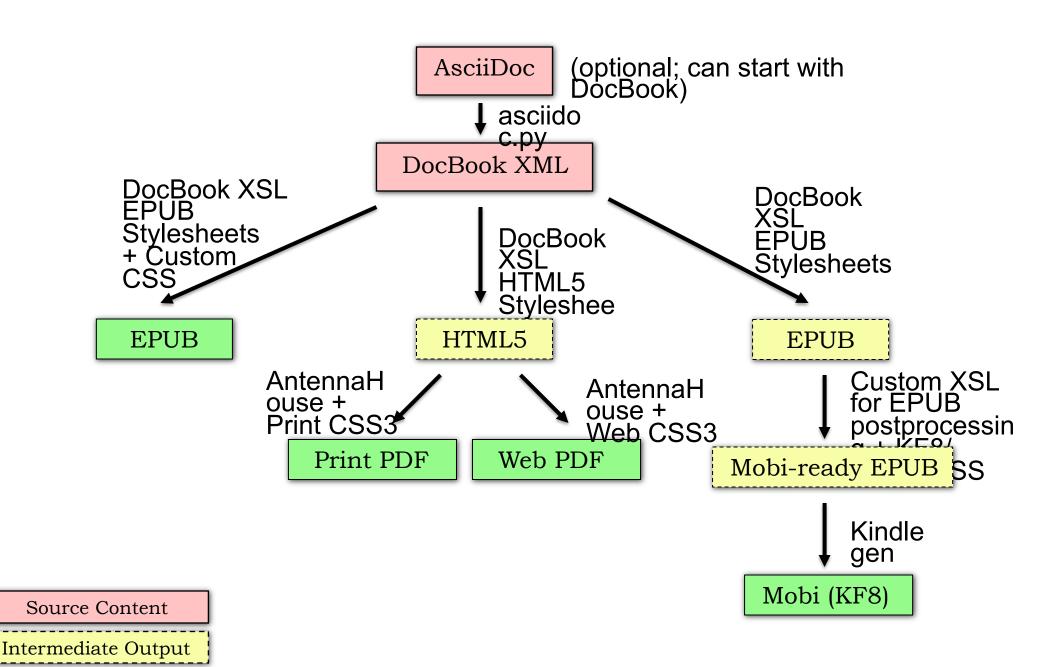


Advantages of the Single-Source Model:

- All authoring/edits are made to just one set of files. No need to maintain multiple sets of files.
- Outputs are produced by transforms, not conversions.
- Transforms are automated, fast, infinitely repeatable, and do not require cleanup afterward.
- The model is *extensible*. Add new output formats by adding a new transform.

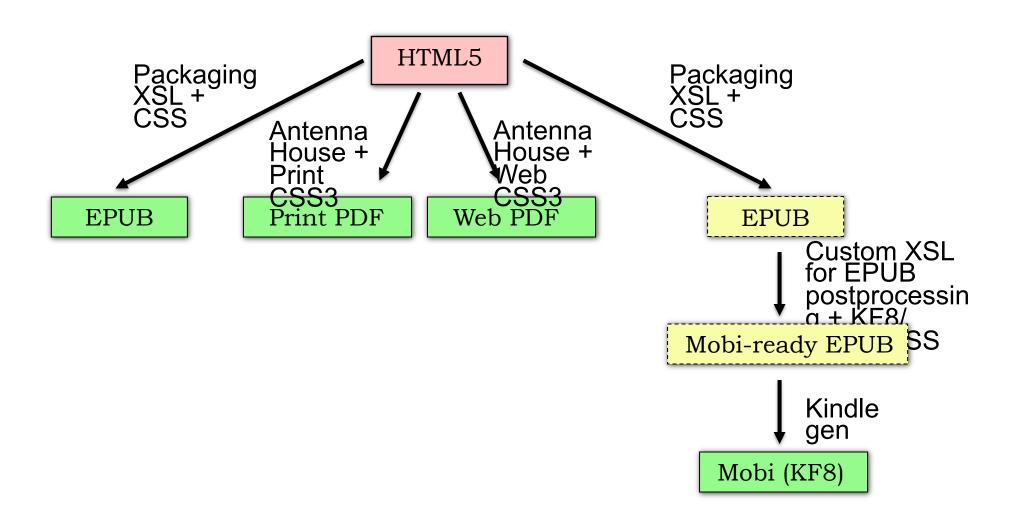
 Workflow doesn't need to be reinvented.

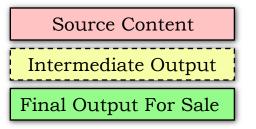
ASC/DB Single-Source Workflow:



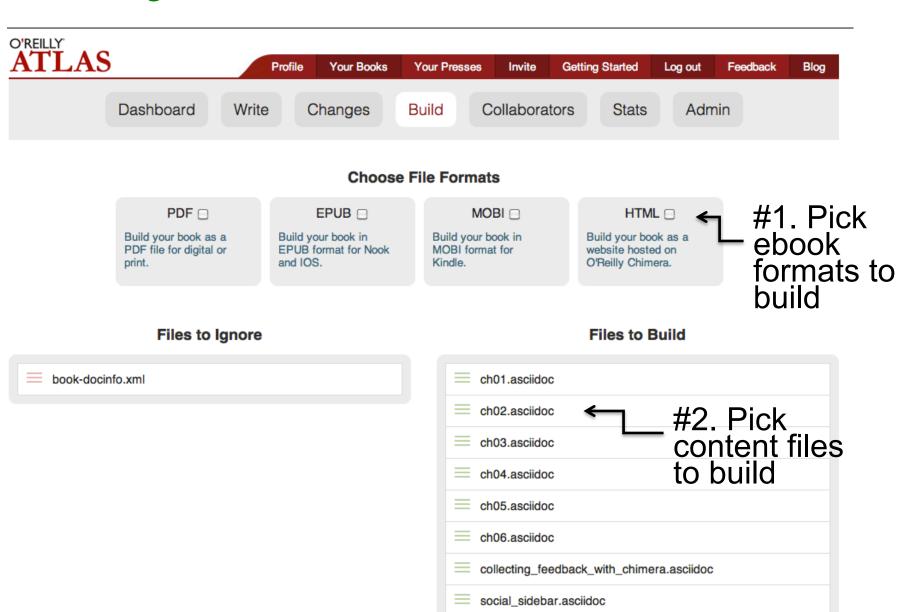
Final Output For Sale

HTML5 Single-Source Workflow:





O'Reilly Atlas Ebook Build UI



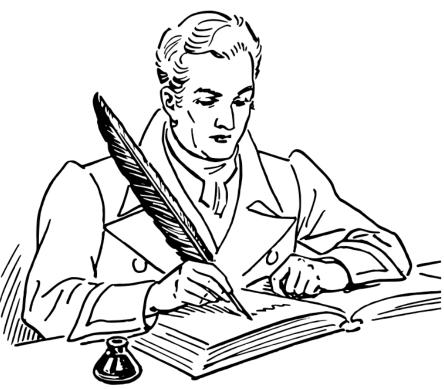


index.asciidoc

#3 Automate Your Headaches Away

1776:

Manuscript edits cannot be automated



http://commons.wikimedia.org/wiki/File:Quill (PSF).svg

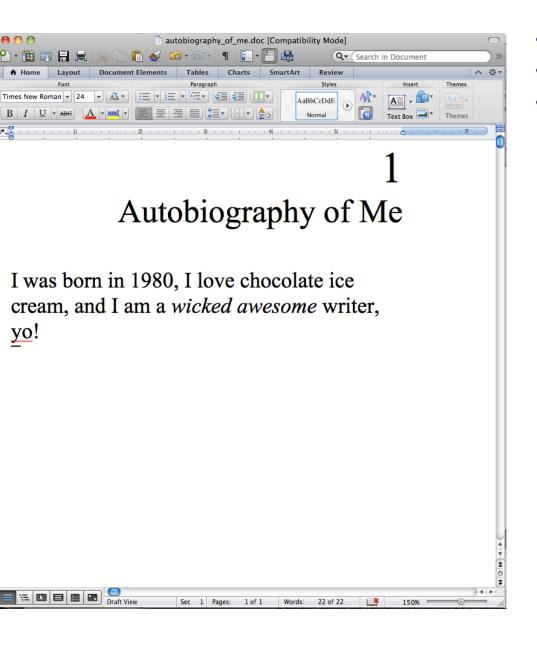
2012:

Manuscript edits can be automated



http://www.flickr.com/photos/asurroca/3699873444/ Some rights reserved by ASurroca

Tools for Scripting Word Documents



- Macros
- Visual Basic for Applications (VBA)
- PowerShell PowerShell

Tools for Scripting Plaintext (AsciiDoc/XML) Documents

```
sanders@devel:~ — ssh — 78×19

File Edit Options Buffers Tools SGML Help

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE chapter PUBLIC "-//OASIS//DTD DocBook XML V4.5//EN"
"http://www.oasis-open.org/docbook/xml/4.5/docbookx.dtd">

<chapter id="chap1">

<title>Autobiography of Me</title>
```

- Ruby
- Python
- Perl
- Java
- XPath/XSLT/XQuery
- JavaScript
- Regex
- Emacs/vi
- sed
- And many more...

Request #1:

"In the important scientific article below, please change all superscripts to subscripts, except in informal equation elements"

DocBook XML Anuscript:

<title>Makin' Water and Energy</title>

<para>Makin' water is really easy. The formula is
H<superscript>2</superscript>0, so you just take
some H<superscript>2</superscript>, and add some
0.</para>

<para>Also, here's how you make energy (per Einstein):

<informalequation>
<mathphrase>
E = mc<superscript>2</superscript>
</mathphrase>
</informalequation>
</chapter>



Makin' water is really easy. The formula is H^2O , so you just take some H^2 , and add some O.

Also, here's how you make energy (per Einstein):

 $E = mc^2$

Solution #1: XPath to the rescue!

```
Mak
                                                                            Replac
                                                                                       Do all
                       Select
            e anr =
                                  that
  XMI
                                                                  replace
                                                                                       this on
                                                                            e with
                                                     inform
            edit rena
                       superscri
  comm
                                  are
                                                                  ment
                                                                            subscri
                                                                                       book.x
                       pts...
                 me
  and
                                                                  valuel
                                                                            pta
                                                                                       ml_1
$ xmlstarlet ed -r "//superscript[not(ancestor::inf@malequation)]" -v "subscript" book.xml
```

Revised DocBook <chapte Manuscript:

<title>Makin' Water and Energy</title>

<para>Makin' water is really easy. The formula is
H<subscript>2</subscript>0, so you just take some
H<subscript>2</subscript>, and add some O.</para>

<para>Also, here's how you make energy (per
Einstein):

<informalequation>
<mathphrase>
E = mc<superscript>2</superscript>
</mathphrase>
</informalequation>
</chapter>

PDF Output:

CHAPTER 1

Makin' Water and Energy

Makin' water is really easy. The formula is $\mathrm{H}_2\mathrm{O}$, so you just take some H_2 , and add some O .

Also, here's how you make energy (per Einstein):

 $E = mc^2$

Request #2:

"House style for dates is YYYY-MM-DD Can you please fix in manuscript below?"

AsciiDoc Manuscript:

== Kindergarten Lemonade Sales

```
.Lemonade sales by Kindergarten Lemonade, LLC
```

9/24/12 432 glasses

===========

PDF Output:

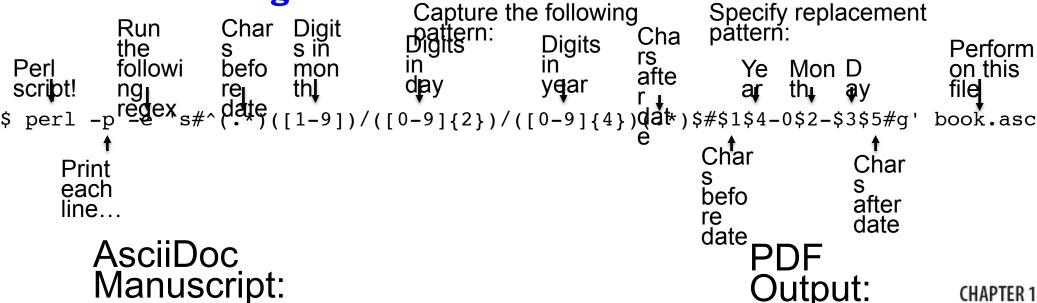
CHAPTER 1

Kindergarten Lemonade Sales

Table 1. Lemonade sales by Kindergarten Lemonade, LLC

Date	Lemonade Sold
3/15/2012	6 glasses
4/22/2010	10 glasses
5/31/2012	2 glasses
7/14/2011	4 glasses
8/19/2012	1 glass
9/24/2012	432 glasses

Solution #2: Regex FTW!



== Kindergarten Lemonade Sales

.Lemonade sales by Kindergarten

Lemonade, LLC

Table 1. Lemonade sales by Kindergarten Lemonade, LLC

Kindergarten Lemonade Sales

Date	Lemonade Sold
2012-03-15	6 glasses
2010-04-22	10 glasses
2012-05-31	2 glasses
2011-07-14	4 glasses
2012-08-19	1 glass
2012-09-24	432 glasses

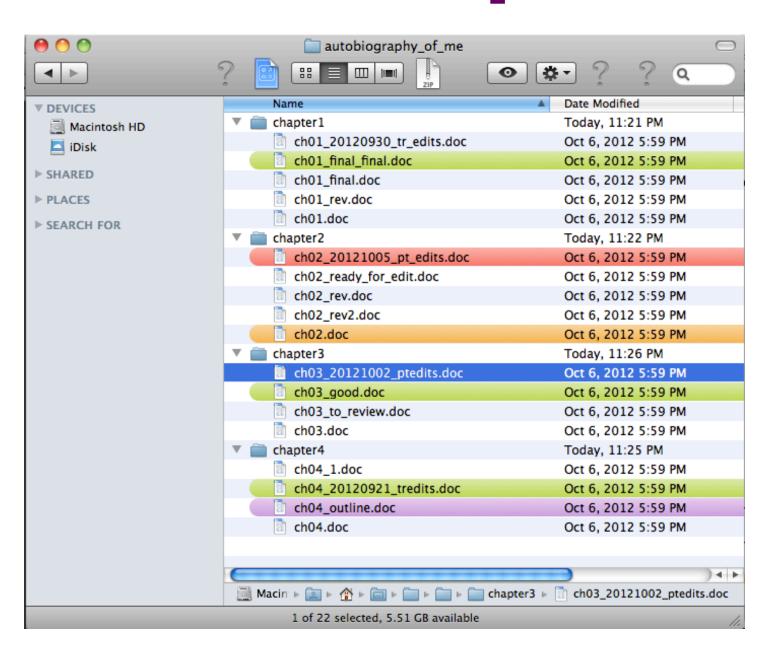
#4 Versioning is the New Spell-Check

Two Questions About Your (e)Book's Editorial Lifecycle

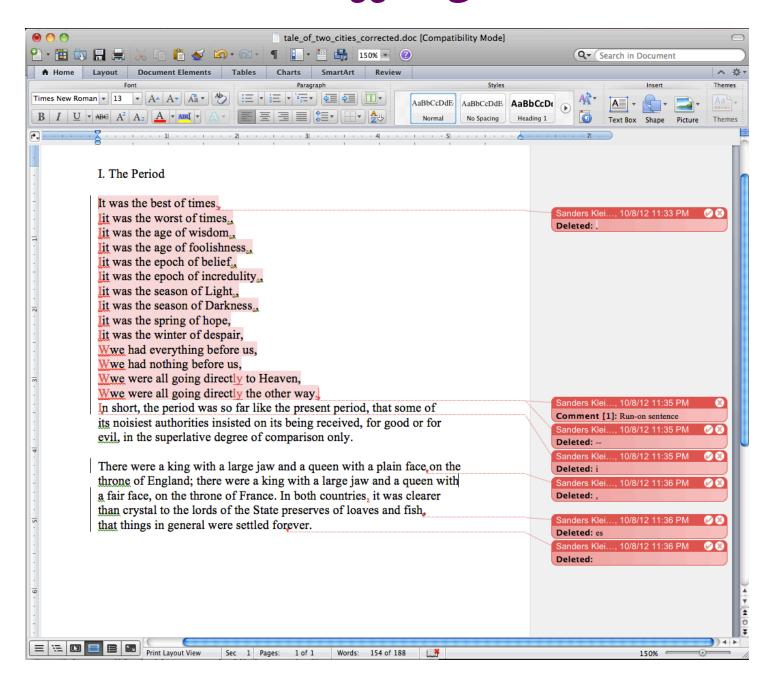
- 1. Will more than one person be working on the manuscript files?
- 2. Will there be more than one draft of the manuscript?

If you answered yes to either question, you need a versioncontrol system.

Key Feature #1 of Version Control: Revision Snapshots

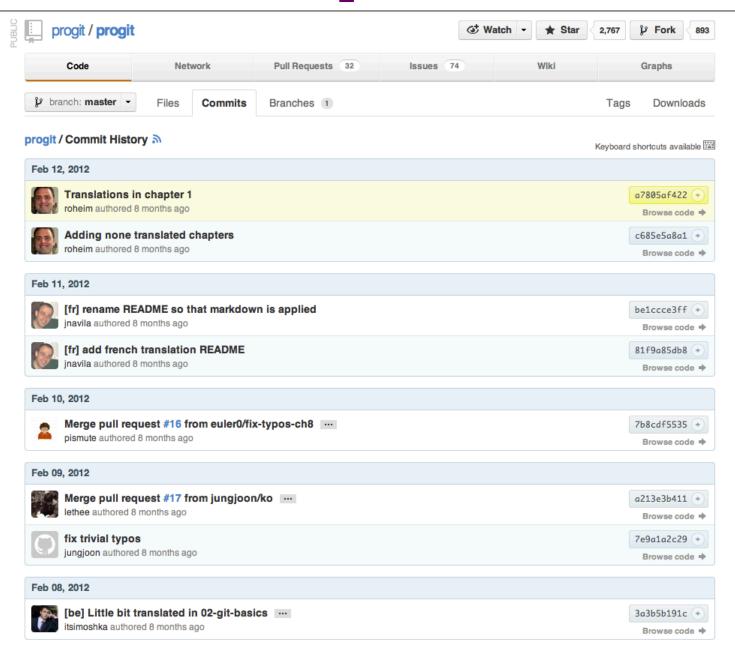


Key Feature #2 of Version Control: Diffing



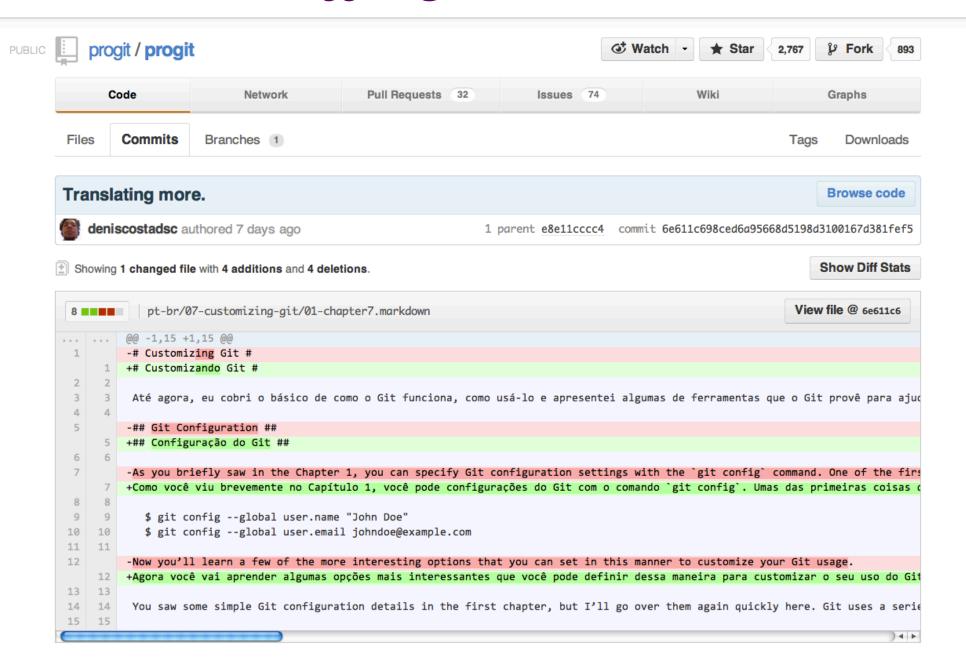
What if we versioned manuscripts like software developers version code?

Revision snapshots in GitHub



Pro Git: https://github.com/progit/progit

Diffing in GitHub



(English to Portuguese translation)

#5 Always Think "Digital First"

There is a difference between a digitized text and a digital text

Digitized Text = Digital Last "Let's make a print book and then get it converted to an ebook."

Digital Text = Digital First "Let's make an ebook."

What Does Digital First Look Like?

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O'REILLY*Labs HTML5 for Publishers Comments On Log in Sign up Search this book... can also download the code from the GitHub repository for HTML5 for Publishers. And don't forget to try out the example for yourself! Try It Now! Try out the quadratic equation solver below: Quadratic equations can be written in the form: $2x^2+4x+-16=0$ Interactive examples! Here's the formula for solving quadratic equations <-- Click these buttons to resize the quadratic equation and formula **Quadratic Equation Solver** Enter integer values for a, b, and c to solve a quadratic

♦ b: 4 **♦** c: -16 **♦**

Solve equation

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O'REILLY*Labs

High Performance Browser Networking

Comments On

Chapters

Profile

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Inline

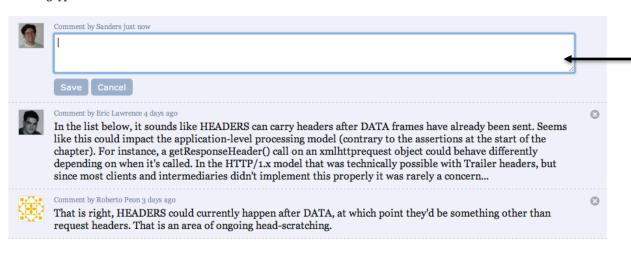
Commenting!

· The 31-bit stream identifier, which uniquely identifies the HTTP 2.0 stream.

When debugging HTTP 2.0 traffic, some may prefer to work with their favorite hex viewer. Alternatively, there are plugins for Wireshark and similar tools which present a much easier and human-friendly representation - e.g. Google Chrome allows you to inspect the decoded exchange in chrome://internals#spdy.

Given the above knowledge of the shared HTTP 2.0 frame header, we can now write a simple parser which can examine any HTTP 2.0 bytestream and identify different frame types, report their flags, and the length of each by examining the first 8 bytes of every frame. Further, because each frame is length prefixed, the parser can skip ahead to the beginning of next frame both quickly and efficiently - a big performance improvement over HTTP 1.x!

Once the frame type is known, the remainder of the frame can be interpreted by the parser. The HTTP 2.0 standard defines the following types:



DATA

used to transport HTTP message bodies

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Integrated Multimedia!

Big Data on Small Devices: Data Science goes Mobile

Yael Garten (LinkedIn)

Mobile is already changing everything about the way we access information, and we've only begun to experience the impact of the smart devices revolution. Mobile analytics is also very different from web product analytics. With a variety of screen sizes, operating systems, and many other features, the "mobile platform" is in fact a multitude of distinct platforms. How do we recognize and even benefit from this richness and heterogeneity to create amazing products our users will love? Data science

Contact Me!

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Cambridge, Massachusetts

Fhook Alchemist

Areas of Expertise:

- DocBook XML
- XSLT
- XPath
- XQuery
- RDF
- SPARQL

- EPUB
- Mobi
- HTML5
- speaking
- writing

Biography Books Blog Multimedia

Sanders Kleinfeld has been employed at O'Reilly Media since 2004 and has held a variety of positions, including roles on O'Reilly's Production, Editorial, and Tools teams. Currently, he works as a Publishing Technologies Specialist, maintaining O'Reilly's XML-based toolchain for generating EPUB and Mobi formats of both frontlist and backlist titles. He also helps coordinate O'Reilly's digital distribution efforts to electronic sales channels, and is currently assisting in R&D efforts surrounding HTML5

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 @nbousquet Most EPUBs out now use XHTML 1.1, so EPUB is already pretty Web-compliant, Maybe HTML5 ebooks will be more attractive to pirates? 2 days ago

Author Events

Webcast: HTML5 for **Publishers**