Is Java and JavaFX any good for Display (or should just we go straight to HTML5)?

A brutal way fight between JavaFX and HTML5
(with SVG trying to spoil the party?)

Mark Stephens

Official Disclaimer

No kittens were harmed (or even woken up) in the making of this presentation

Spoiler in case you need to go early

Short answer
It all depends...

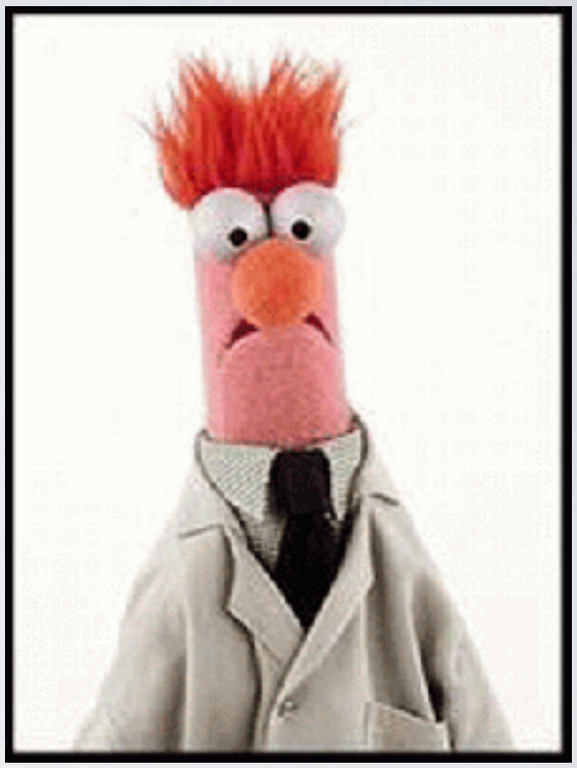
Now the long answer

Talk structure

Introducing me and meet you.
Lessons on display from PDF (and how we convert it)
Quick JavaFX, HTML5, SVG comparison
Recap of what Java offered before JavaFX
JavaFX
HTML5
SVG (in less detail)
Show down time
What do you think
Pub (Inn/tavern?)

audience participation (in blue)
(is that okay?)

Mark's Bio



Speaker at conferences - Seybold, JavaOne, Business of Software
Working with Java and PDF since 1997
Founded IDRsolutions 1999
MA degree in Mediaeval History from St Andrews
My top management/IT guru is Douglas Adams

Ask me about JavaFX, Java, HTML5, SVG, PDF, or anything which happened before 1500AD

My background - What we do

Mix of commercial and Open source

Commercial
PDF library (server or clientside)
PDF 2 HTML5, SVG, JavaFX/FXML

Open Source
PDF viewer
PDF 2 JavaFX/FXML
JBig2 Decoder
PDF plugins for IDEA, Eclipse, NetBeans
Contribute code to JAI libraries

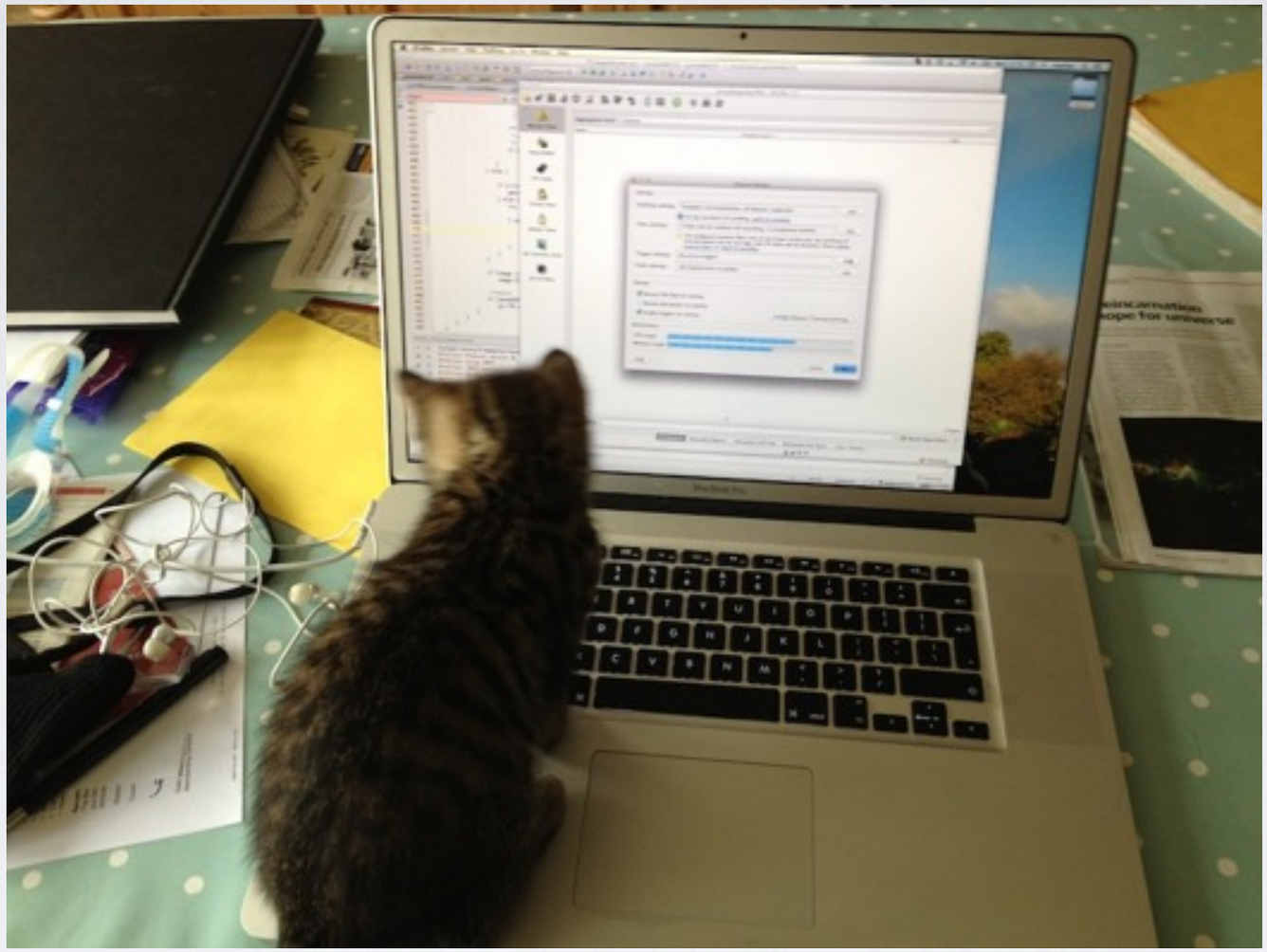
I have been testing performance of HTML5/JavaFX with my 2 lovely assistants

Does anyone have one? What do you think of it?

Prediction: How well does HTML5 run on a Pi?

(find out at the end)

And who are you?



Which of the following is you?

My knowledge of Java

Never been there. Is it nice?
Just starting out.
There are just too many technologies in Java to ever know all of them but I do know....
I understood most of what the speakers said at Devoxx.
I understand everything Mark Reinhold says.
I'm James Gosling

Remember (NOT) to tell embarrassing James Gosling anecdote

My browser of choice

I am stuck on IE6. Help!
Chrome
Safari
IE (with ChromeFrame)
Firefox
Opera
Something else....

My favorite environment is

Eclipse
NetBeans
IDEA
Emacs (or Vi)
Parleys
I mix and match.
I wrote my own in binary for maximum productivity...

Oracle's stewardship of Java is

Something my lawyers told me not to discuss
@£$%^!@$£
Good
Bad
Nice to see some money spent on it.
I still keep calling it Sun...

JavaFX

is the version of Java for adults
just refuses to die
Not as good as Swing
Possibly interesting
The future of software...

Anyone still using Flash?

I have to maintain lots of legacy systems :-(
No. No. No.
Why would you use anything else...

HTML5, SVG and JavaFX matter because...

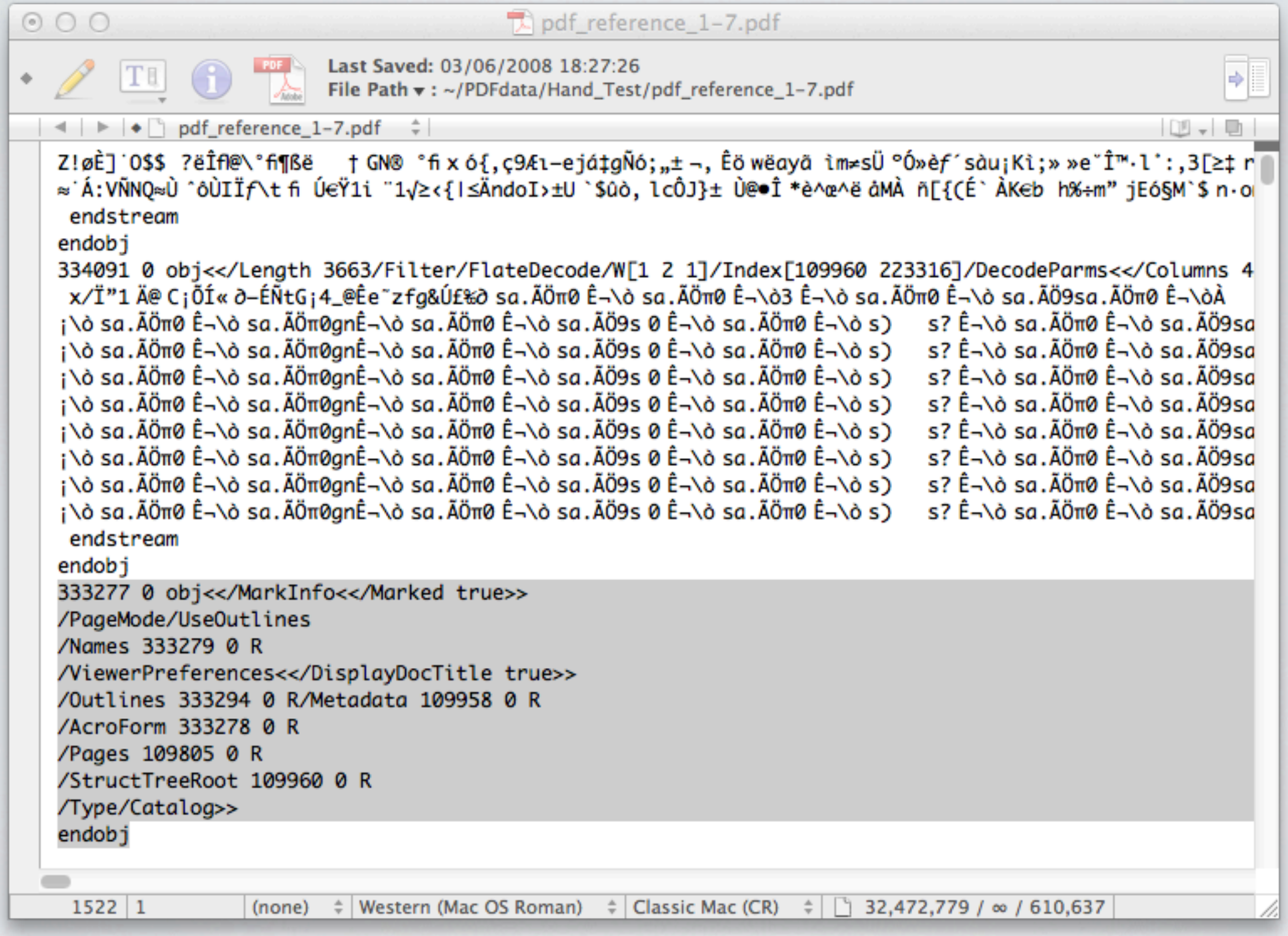
In the beginning we had Apps, applets and web pages.

Now we have 'web apps'

What do you think of web apps versus apps?

PDF is a binary file format

Mark's favorite PDF browser

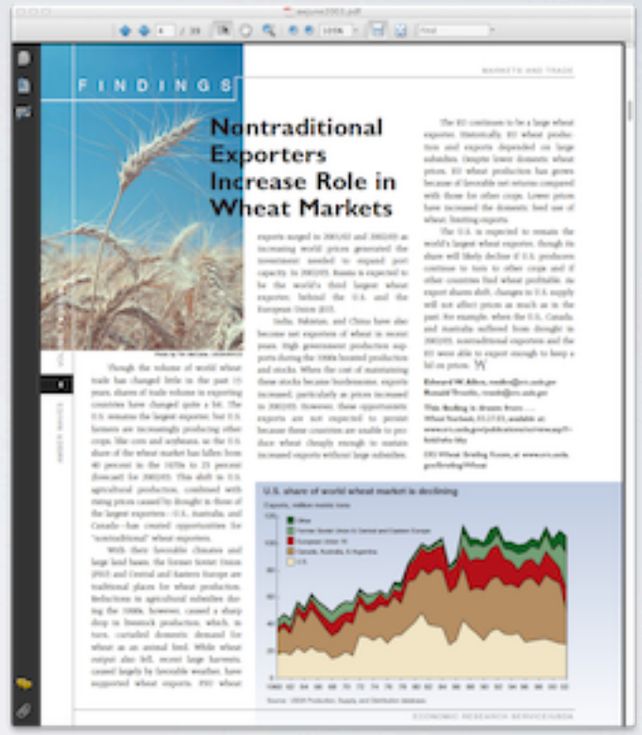


Why do people still use PDF (or what is important for display)

Inertia
High quality display
Advanced typographic capabilities
Fast, robust and flexible
Cross platform
Open standard
Decent toolset
Lots of experience in the marketplace

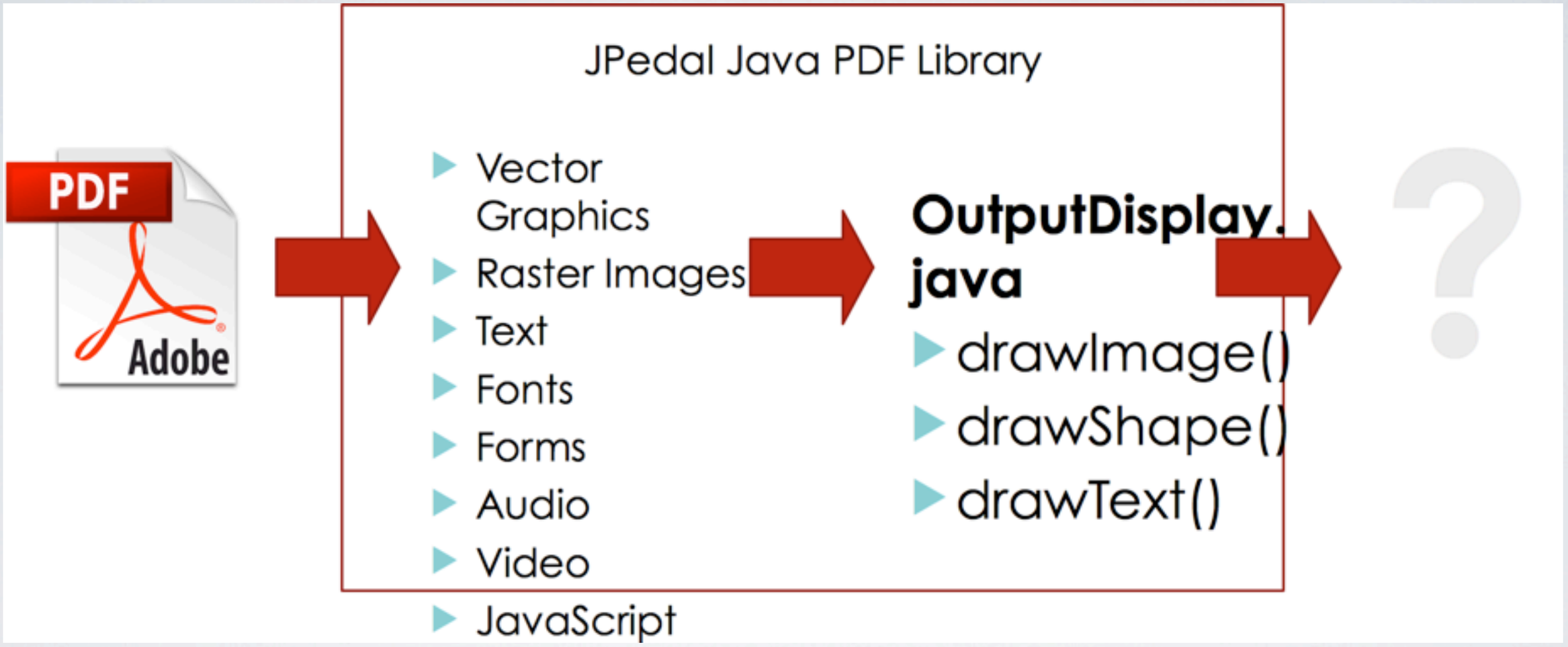
Sounds a bit like a computer language you may have heard of...

Which means



High quality precise text with fonts
Images with clipping and blend transparency
Vector graphics
Colour support
Scaling
Self-contained package - single file to deploy
User interaction (forms, search navigation, links, thumbnails)
Javascript
Animation
Link into server...

How do we convert PDF



Do you know what the TWO biggest headaches have been for us?

Your suggestions first....

Spaces

Fonts

How similar are SVG, HTML and JavaFX (Java) images?

HTMLDisplay.java

```
ctx.drawImage(document.getElementById("Im10_1") ,366,660,129,35);
<img id="Im10_1" src="1/img/Im10.png" alt="Im10_1" width="129" height="35" style="display: none" />
```

SVGDisplay.java

```
<image x="366" y="660" width="129" height="35" opacity="1.0" xlink:href="1/img/Im10.png" />
```

JavaFXDisplay.java

```
Image im10 = new Image(page1.class.getResourceAsStream("/FX4jpegSample/1/img/Im10.png"));
ImageView imView10 = new ImageView();
imView10.setImage(im10);
imView10.setFitWidth(96);
imView10.setFitHeight(25);
imView10.setX(275);
imView10.setY(495);
addToGroup.add(imView10);
```

How similar are SVG, HTML and JavaFX (Java) text?

HTMLDisplay.java

```
<div id="t1_1">Hello World!</div>
<style type="text/css" > #t1_1 { position:absolute; white-space:nowrap; overflow:visible; left:233px;
top:74px; FONT-SIZE: 31px; FONT-FAMILY: Helvetica, Arial, sans-serif; color:rgb(0,0,0);} </style>
```

SVGDisplay.java

```
<text x="232" y="105" font-size="31" font-family="Helvetica, Arial, sans-serif" fill="#000000" >Hello World!
</text>
```

JavaFXDisplay.java

```
Text textBox_1 = new Text(175.0 , 80.0, "Hello World!");
textBox_1.setFont(Font.font("Helvetica, Arial, sans-serif", FontWeight.NORMAL,
FontPosture.REGULAR,24.0));
setTextsize(textBox_1,130);
textBox_1.setFill(Color.rgb(0,0,0));
addToGroup.add(textBox_1);
```

How similar are SVG, HTML and JavaFX (Java) shapes?

HTMLDisplay.java

```
pdf.moveTo(769,1120);
pdf.lineTo(769,1141);
pdf.lineWidth = '2';
pdf.miterLimit = '4.0';
```

```
pdf.lineCap = 'butt';
pdf.lineJoin = 'miter';
pdf.strokeStyle = 'rgb(0,158,215)';
pdf.stroke();
```

SVGDisplay.java

```
<path d="M769,1120      L769,1141"
stroke-width="2"
stroke-miterlimit="4.0"
```

```
stroke-linecap="butt"
stroke-linejoin="miter"
stroke="#009ED7"      />
```

JavaFXDisplay.java

```
Path path_0 = new Path();
ObservableList<PathElement> shape_0 =
path_0.getElements();
shape_0.add(new MoveTo(578,840));
shape_0.add(new LineTo(578,856));
```

```
path_0.setStrokeMiterLimit(1.0);
path_0.setStrokeLineCap(StrokeLineCap.BUTT);
path_0.setStrokeLineJoin(StrokeLineJoin.MITER);
path_0.setStroke(Color.rgb(0,158,215));
addToGroup.add(path_0);
```

Interesting PDF tools/apps online

pdf.js

Scribd

Google docs

glassfish.idrsolutions.com

Google Maps...

Google Maps is an interesting tool

<< Page 01 of 39 >>

PDF, Swing/Graphics2D, JavaFX, HTML5, SVG drawing

A ‘surface’ you draw onto
Draw, test, shape, color, stroke primitives.
Opacity (transparency)
Image support
Clipping (mask)
Animations
As much Anti-aliasing as possible

Display in Java before JavaFX

Sun's old libraries, Sun's dead libraries, other libraries

AWT
Swing
Graphics2D

JAI
Java3D

Swt (Eclipse)
ULC (Canoo)
Others (any suggestions?)

What makes them good or bad?

JavaFX

Java FX 1.x - scripting language
Java FX2.x - Lets look at some....

```
private synchronized javafx.scene.image.Image getTexturedPage(int pageNumber) {

        BufferedImage raw = pdf.getPageAsImage(pageNumber);
        BufferedImage result = new BufferedImage(quality,quality,BufferedImage.TYPE_INT_ARGB);
        Graphics2D g2 = (Graphics2D)result.getGraphics();
        g2.rotate((rotation/180.0)*Math.PI,quality/2,quality/2);
        g2.drawImage(raw,0,0,quality,quality, null);

        WritableImage wr = null;
        if (raw != null) {
            wr = new WritableImage(raw.getWidth(), raw.getHeight());
            PixelWriter pw = wr.getPixelWriter();
            for (int x = 0; x < raw.getWidth(); x++) {
                for (int y = 0; y < raw.getHeight(); y++) {
                    pw.setArgb(x, y, raw.getRGB(x, y));
                }
            }
        }

        return wr;
}
```

It looks like Java (because it is - you just need jfxrt.jar)
Transitions and timelines
Eye candy

Standard Java rules apply to JavaFX

File size

Naming conventions (I?.java is not allowed)

JavaFX has a very neat tool to package all the content up. Any suggestions?

Its called a jar file!

FXML

XML based version of JavaFX which can be loaded from Java

JavaFXML Files Demo Time

JavaFX is growing quickly

Good - lots of new stuff

Bad - I keep having to review my JavaFX code

JavaFX and CSS

Do you know what CSS is?

JavaFX supports CSS 3.0

CSS is not complete

CSS can be applied to any Node

You can mix and match Java and CSS

JavaFX example from Java

```
private static void drawPage1(ObservableList<Node> addToGroup) {

    Text textBox_1_1 = new Text("Some things never change");
    textBox_1_1.setX(59);
    textBox_1_1.setY(79);
    addToGroup.add(textBox_1_1);
    textBox_1_1.setFont(Font.font("'Times New Roman', Times, serif",
    FontWeight.NORMAL, FontPosture.REGULAR,39));
    textBox_1_1.setFill(Color.rgb(0,85,149));

    drawPage2(addToGroup);
}
```

Very similar to Swing/SWT

JavaFX example from CSS (css)

Source | History

```
1  #textBox_1_1 {
2          -fx-font-family: CataneoBT-Regular;
3          -fx-font-size: 40px;
4          -fx-fill:rgb(0,85,149);
5  }
6
7  #textBox_2_1 {
8          -fx-font-family: RaleighBT-Roman;
9          -fx-font-size: 14px;
10         -fx-fill:rgb(35,32,32);
11 }
12
13 #textBox_3_1 {
14         -fx-font-family: RaleighBT-Roman;
15         -fx-font-size: 9px;
16         -fx-fill:rgb(35,32,32);
17 }
```

Plain text file (no tags needed)

JavaFX example from CSS (css)

Source | History

```
53  public class page01 extends Application {
54
55      BorderPane root;
56      Stage primaryStage;
57      Scene scene;
58
59
60          public static void main(String[] args) {
61                  Application.launch(args);
62          }
63
65          public void start(Stage primaryStage) {
66                  this.primaryStage = primaryStage;
67
68                  root = new BorderPane();
69                  scene = new Scene(root, 648, 851);
70
71                  /**
72                   * setup CSS elements
73                   */
74                  scene.getStylesheets().add(this.getClass().getResource("01/styles.css").toExternalForm());
75
76                  //fonts cannot currently load in CSS with font-face (supposed to work in Version 8)
77                  Font.loadFont(page01.class.getResource("01/fonts/myFont.otf").toExternalForm(),10); //10 can be any number
78
79                  //draw first page
80                  drawPage(primaryStage, root, scene); //actual execution of commands
81
82          }
```

Setup access in Java and load fonts

JavaFX example from CSS (accessing)

```
private static void drawPage1(ObservableList<Node> addToGroup) {

        Text textBox_1_1 = new Text("Some things never change");
        textBox_1_1.setX(59);
        textBox_1_1.setY(79);
        addToGroup.add(textBox_1_1);
        textBox_1_1.getStyleClass().add("textBox_1_1");

        drawPage2(addToGroup);
}
```

Same code block with CSS to set font
(note we can mix and match Java and CSS)

JavaFX works with ‘old stuff’

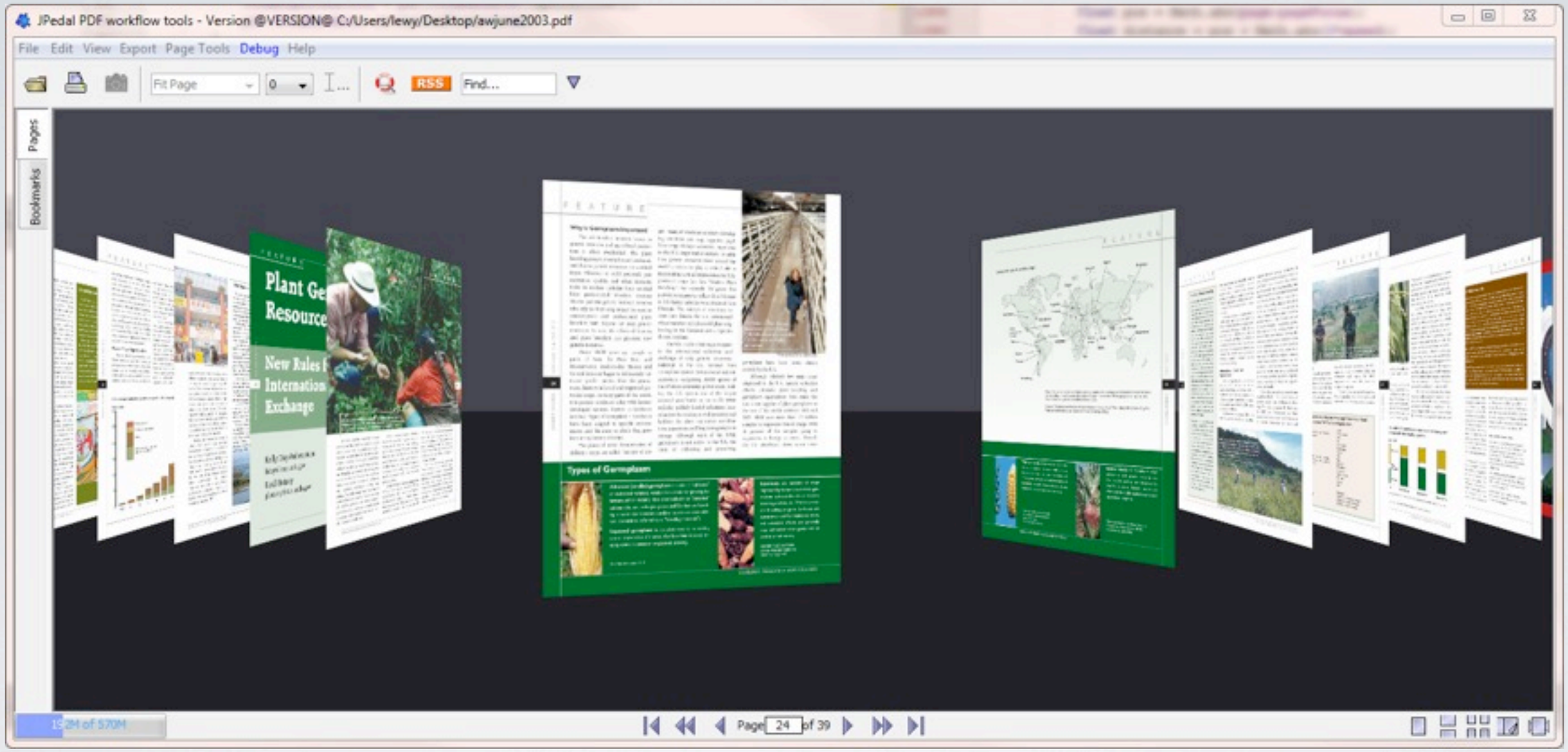
```
BufferedImage bf = null;
      try {
          bf = ImageIO.read(new File("C:/location/of/image.png"));
      } catch (IOException ex) {
          System.out.println("Image failed to load.");
      }

      WritableImage wr = null;
      if (bf != null) {
          wr = new WritableImage(bf.getWidth(), bf.getHeight());
          PixelWriter pw = wr.getPixelWriter();
          for (int x = 0; x < bf.getWidth(); x++) {
              for (int y = 0; y < bf.getHeight(); y++) {
                  pw.setArgb(x, y, bf.getRGB(x, y));
              }
          }
      }

      ImageView imView = new ImageView(wr);
```

What does this code do?

JavaFX can be inside Swing



JavaFX threads with Swing Threads can be interesting

Where JavaFX is very ahead...

```
try {
    BufferedImage bf = pdf.getPageAsImage(1);
    Image img = SwingFXUtils.toFXImage(bf, new WritableImage(bf.getWidth(), bf.getHeight()));
    ImageView imView = new ImageView();
    imView.setImage(img);
    imView.setX(100);
    imView.setY(100);

    imView.setEffect(new Reflection());

} catch(PdfException e) {
    System.out.println("Failed to get page as image.");
}
```

JavaFX display is a tree with Nodes.

But still some ‘features’

Can you see the problem?

Reflection does not factor in what is visible

JavaFX Demo Time

JavaFX tools

Built-into NetBeans 7.3

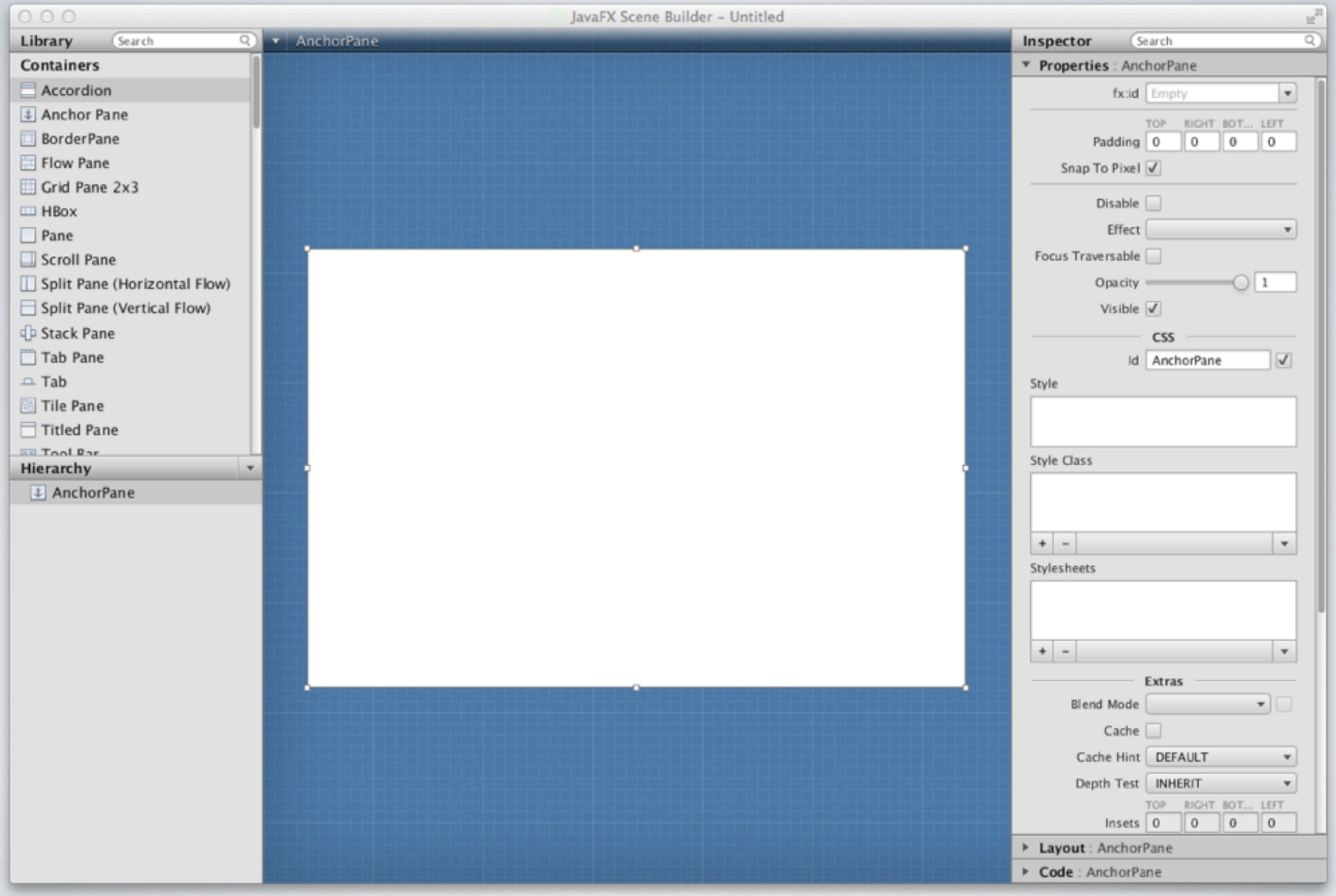
Plugins for your other IDEs (also have CSS/Javascript plugins)

Ensemble

Scene Designer (In theory will also load files)

JavaFX - Ensemble

JavaFX - Scene builder



What does JavaFX need to succeed (and kill off Swing)?

Location?
Facebook integration?
Better Javascript?

Audience participation time again

My biggest requirement is printing.

Unlike Swing JavaFX tries to solve ‘general’ problems not ALL problems.

If you need CMYK images, you are out of luck...

Elephants in the room

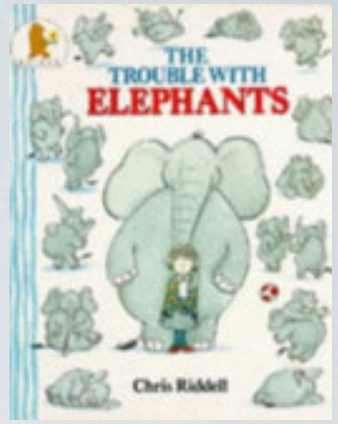


Image support (especially JPEG2000 and Tiff)
(you are using our patched version of JPEG200 JAI library?)
Mobile platforms (Android and IPad)

Can you suggest any other items?

HTML5

Backwards compatibility
Canvas
Multimedia support
Better CSS support
Location
Offline storage
Embed SVG
Javascript

Brings HTML up to date and fills in ‘gaps’ ?
Any HTML gurus here?
How does the Canvas layer interact with other content?

HTML5 multimedia demo

HTML5 canvas

```
<!-- Canvas we draw the content onto -->
<canvas id="pdf1" width="814" height="1054"></canvas>
```

```
function draw1()
{
    var canvas=document.getElementById("pdf1");
    var pdf=canvas.getContext("2d");
    pdf.fillStyle="rgb(0, 0, 0)";
    setFontSize('t1_1','11','333');
    setFontSize('t2_1','11','144');
    setFontSize('t3_1','11','83');
    setFontSize('t4_1','11','482');
    setFontSize('t5_1','26','423');
    pdf.beginPath();
    pdf.moveTo(119,159);
    pdf.lineTo(181,159);
    pdf.lineTo(181,143);
    pdf.lineTo(119,143);
    pdf.lineTo(119,159);
    pdf.closePath();
    pdf.fillStyle = 'rgb(224,224,224)';
    pdf.fill();
    setFontSize('t6_1','13','61');
    setFontSize('t7_1','13','12');
    setFontSize('t8_1','13','20');
    setFontSize('t9_1','13','21');
    setFontSize('t10_1','13','38');
    pdf.beginPath();
    pdf.moveTo(119,208);
```

So how good is HTML5

Which is the PDF page?

PLATE 5 *Rendering intents ("Rendering Intents," page 260)*

PLATE 5 *Rendering intents ("Rendering Intents," page 260)*

```
<!-- Any embedded fonts defined here -->
<style type="text/css" >

@font-face {
        font-family: EDJOJM-MyriadPro-Semibold;
        src: url("1141/fonts/EDJOJM-MyriadPro-Semibold.otf");
}

@font-face {
        font-family: EDJOOP-MyriadPro-Bold;
        src: url("1141/fonts/EDJOOP-MyriadPro-Bold.otf");
}

@font-face {
        font-family: EDJONP-MinionPro-It;
        src: url("1141/fonts/EDJONP-MinionPro-It.otf");
}


</style>

<div id="jpedal">


<!-- Text defined here and setup in CSS -->

<div id="t1_1141">AbsoluteColorimetric</div>
<div id="t2_1141">RelativeColorimetric</div>
<div id="t3_1141">Perceptual</div>
<div id="t4_1141">Saturation</div>
<div id="t5_1141">PLATE 5  </div>
<div id="t6_1141">Rendering intents (“Rendering Intents,” page 260)</div>


<!-- Form Data here -->

<form>
<input type="button" tabindex="2"  id="form1"  pdfFieldName="9596 0 R" />
<input type="button" tabindex="1"  id="form2"  pdfFieldName="9595 0 R" />

</form>

<script type="application/javascript">
function adjustCharSpacing(el,actualWidth) {
                var rawWidth=el.offsetWidth;
                if(actualWidth>20 & rawWidth!=actualWidth && actualWidth>rawWidth){
                        var spacing= 0;
                        var s=spacing+'px';
                        el.style.charSpacing = s;
```

```
#t1_1141 {

position:absolute;

white-space:nowrap;

overflow:visible;

left:154px;

top:387px;

FONT-SIZE: 11px;

FONT-WEIGHT: bold;

FONT-FAMILY: EDJOJM-MyriadPro-Semibold;

color:rgb(0,0,0);

}
```

```
456         pdf_context.lineCap = 'butt';
457         pdf_context.lineJoin = 'miter';
458         pdf_context.strokeStyle = 'rgb(0,0,0)';
459         pdf_context.stroke();
460         pdf_context.drawImage(document.getElementById("Im1_1141") ,377,187,239,187);
461         pdf_context.beginPath();
462         pdf_context.moveTo(377,187);
463         pdf_context.lineTo(616,187);
464         pdf_context.lineTo(616,374);
465         pdf_context.lineTo(377,374);
466         pdf_context.lineTo(377,187);
467         pdf_context.lineWidth = '0.6650000214576721';
468         pdf_context.miterLimit = '4.0';
469         pdf_context.lineCap = 'butt';
470         pdf_context.lineJoin = 'miter';
471         pdf_context.strokeStyle = 'rgb(0,0,0)';
472         pdf_context.stroke();
473         setFontSize('t1_1141','11','110');
474         setFontSize('t2_1141','11','105');
475         pdf_context.drawImage(document.getElementById("Im2_1141") ,377,427,239,187);
476         pdf_context.beginPath();
477         pdf_context.moveTo(377,426);
478         pdf_context.lineTo(616,426);
479         pdf_context.lineTo(616,613);
480         pdf_context.lineTo(377,613);
481         pdf_context.lineTo(377,426);
482         pdf_context.lineWidth = '0.6650000214576721';
483         pdf_context.miterLimit = '4.0';
484         pdf_context.lineCap = 'butt';
485         pdf_context.lineJoin = 'miter';
486         pdf_context.strokeStyle = 'rgb(0,0,0)';
487         pdf_context.stroke();
```

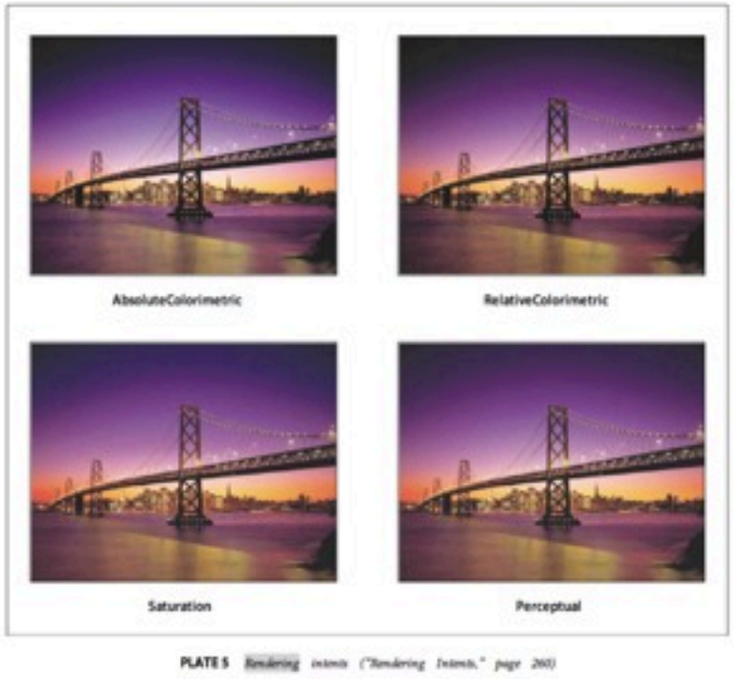
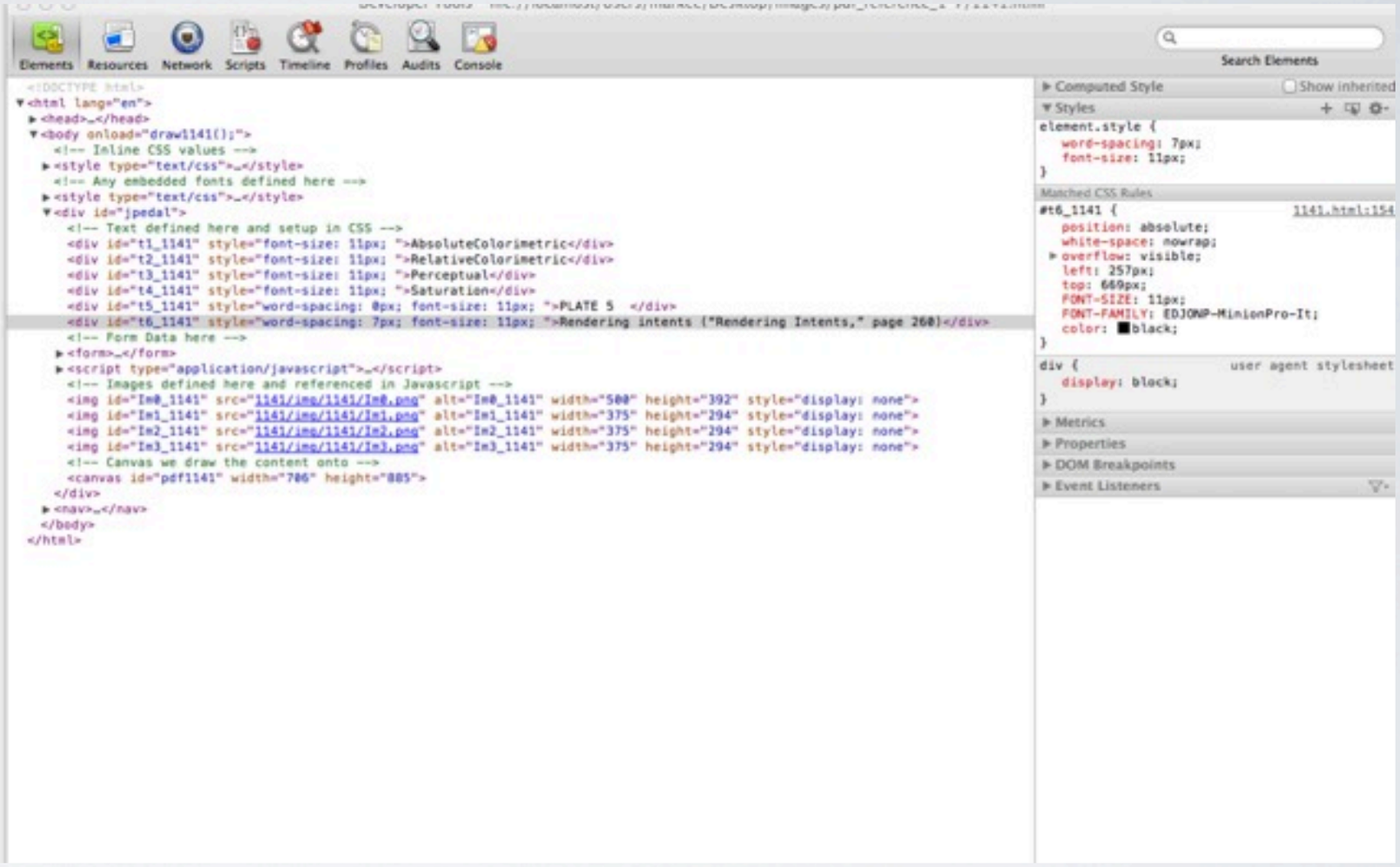


PLATE 5 Rendering intents ("Rendering Intents," page 260)



Which is the HTML5 and PDF page?

[Country Listing] [*The World Factbook* Home]

Brazil

Brazil

Introduction

[Top of Page]

Background: Following three centuries under the rule of Portugal, Brazil became an independent nation in 1822. By far the largest and most populous country in South America, Brazil has overcome more than half a century of military intervention in the governance of the country to pursue industrial and agricultural growth and development of the interior. Exploiting vast natural resources and a large labor pool, Brazil became Latin America's leading economic power by the 1970s. Highly unequal income distribution remains a pressing problem.

Geography

[Top of Page]

Location: Eastern South America, bordering the Atlantic Ocean

Geographic coordinates: 10 00 S, 55 00 W

CIA -- The World Factbook 2000 -- Brazil Page 1 of 10

[Country Listing] [*The World Factbook* Home]

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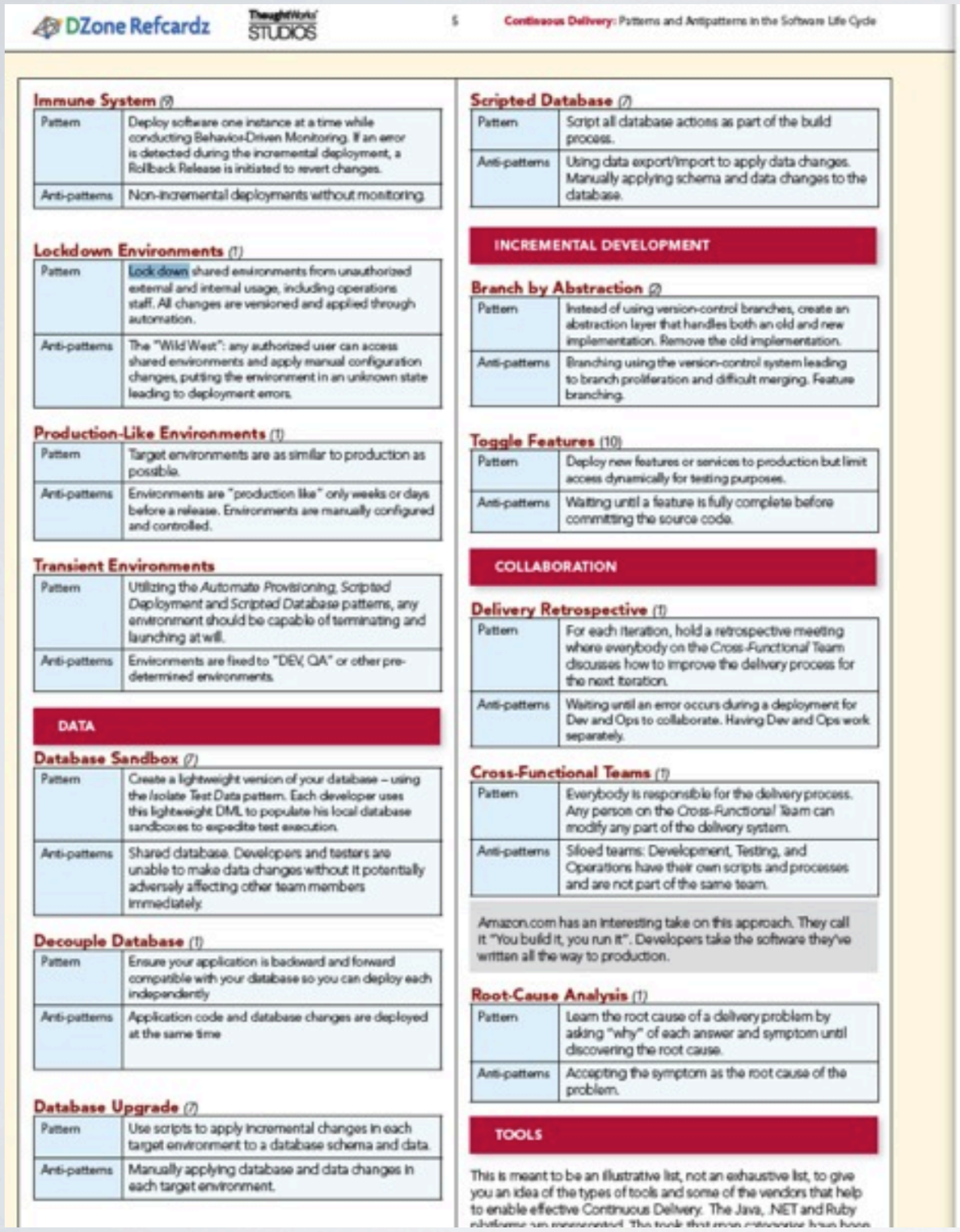
http://www.odci.gov/cia/publications/factbook/geos/br.html 05/10/00

So how good is HTML5



DZone Refcardz — ThoughtWorks STUDIOS — 5 — Continuous Delivery: Patterns and Antipatterns in the Software Life Cycle

Immune System (9)

Pattern	Deploy software one instance at a time while conducting Behavior-Driven Monitoring. If an error is detected during the incremental deployment, a Rollback Release is initiated to revert changes.
Anti-patterns	Non-incremental deployments without monitoring.

Lockdown Environments (1)

Pattern	Lock down shared environments from unauthorized external and internal usage, including operations staff. All changes are versioned and applied through automation.
Anti-patterns	The "Wild West": any authorized user can access shared environments and apply manual configuration changes, putting the environment in an unknown state leading to deployment errors.

Production-Like Environments (1)

Pattern	Target environments are as similar to production as possible.
Anti-patterns	Environments are "production like" only weeks or days before a release. Environments are manually configured and controlled.

Transient Environments

Pattern	Utilizing the *Automate Provisioning*, *Scripted Deployment* and *Scripted Database* patterns, any environment should be capable of terminating and launching at will.
Anti-patterns	Environments are fixed to "DEV, QA" or other pre-determined environments.

DATA

Database Sandbox (7)

Pattern	Create a lightweight version of your database – using the *Isolate Test Data* pattern. Each developer uses this lightweight DML to populate his local database sandboxes to expedite test execution.
Anti-patterns	Shared database. Developers and testers are unable to make data changes without it potentially adversely affecting other team members immediately.

Decouple Database (1)

Pattern	Ensure your application is backward and forward compatible with your database so you can deploy each independently
Anti-patterns	Application code and database changes are deployed at the same time

Database Upgrade (7)

Pattern	Use scripts to apply incremental changes in each target environment to a database schema and data.
Anti-patterns	Manually applying database and data changes in each target environment.

Scripted Database (7)

Pattern	Script all database actions as part of the build process.
Anti-patterns	Using data export/import to apply data changes. Manually applying schema and data changes to the database.

INCREMENTAL DEVELOPMENT

Branch by Abstraction (2)

Pattern	Instead of using version-control branches, create an abstraction layer that handles both an old and new implementation. Remove the old implementation.
Anti-patterns	Branching using the version-control system leading to branch proliferation and difficult merging. Feature branching.

Toggle Features (10)

Pattern	Deploy new features or services to production but limit access dynamically for testing purposes.
Anti-patterns	Waiting until a feature is fully complete before committing the source code.

COLLABORATION

Delivery Retrospective (1)

Pattern	For each iteration, hold a retrospective meeting where everybody on the *Cross-Functional Team* discusses how to improve the delivery process for the next iteration.
Anti-patterns	Waiting until an error occurs during a deployment for Dev and Ops to collaborate. Having Dev and Ops work separately.

Cross-Functional Teams (1)

Pattern	Everybody is responsible for the delivery process. Any person on the *Cross-Functional Team* can modify any part of the delivery system.
Anti-patterns	Siloed teams: Development, Testing, and Operations have their own scripts and processes and are not part of the same team.

Amazon.com has an interesting take on this approach. They call it "You build it, you run it". Developers take the software they've written all the way to production.

Root-Cause Analysis (1)

Pattern	Learn the root cause of a delivery problem by asking "why" of each answer and symptom until discovering the root cause.
Anti-patterns	Accepting the symptom as the root cause of the problem.

TOOLS

This is meant to be an illustrative list, not an exhaustive list, to give you an idea of the types of tools and some of the vendors that help to enable effective Continuous Delivery. The Java, .NET and Ruby platforms are represented. The tools that span categories have been

DZone Refcardz — ThoughtWorks STUDIOS — 5 — Continuous Delivery: Patterns and Antipatterns in the Software Life Cycle

Immune System (9)
Pattern: Deploy software one instance at a time while conducting Behavior-Driven Monitoring. If an error is detected during the incremental deployment, a Rollback Release is initiated to revert changes.
Anti-patterns: Non-incremental deployments without monitoring.

Lockdown Environments (1)
Pattern: Lock down shared environments from unauthorized external and internal usage, including operations staff. All changes are versioned and applied through automation.
Anti-patterns: The "Wild West": any authorized user can access shared environments and apply manual configuration changes, putting the environment in an unknown state leading to deployment errors.

Production-Like Environments (1)
Pattern: Target environments are as similar to production as possible.
Anti-patterns: Environments are "production like" only weeks or days before a release. Environments are manually configured and controlled.

Transient Environments
Pattern: Utilizing the Automate Provisioning, Scripted Deployment and Scripted Database patterns, any environment should be capable of terminating and launching at will.
Anti-patterns: Environments are fixed to "DEV, QA" or other pre-determined environments.

DATA

Database Sandbox (7)
Pattern: Create a lightweight version of your database – using the Isolate Test Data pattern. Each developer uses this lightweight DML to populate his local database sandboxes to expedite test execution.
Anti-patterns: Shared database. Developers and testers are unable to make data changes without it potentially adversely affecting other team members immediately.

Decouple Database (1)
Pattern: Ensure your application is backward and forward compatible with your database so you can deploy each independently
Anti-patterns: Application code and database changes are deployed at the same time

Database Upgrade (7)
Pattern: Use scripts to apply incremental changes in each target environment to a database schema and data.
Anti-patterns: Manually applying database and data changes in

Scripted Database (7)
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TOOLS

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HTML5 canvas performance demo

CSS, Javascript and Canvas can interact

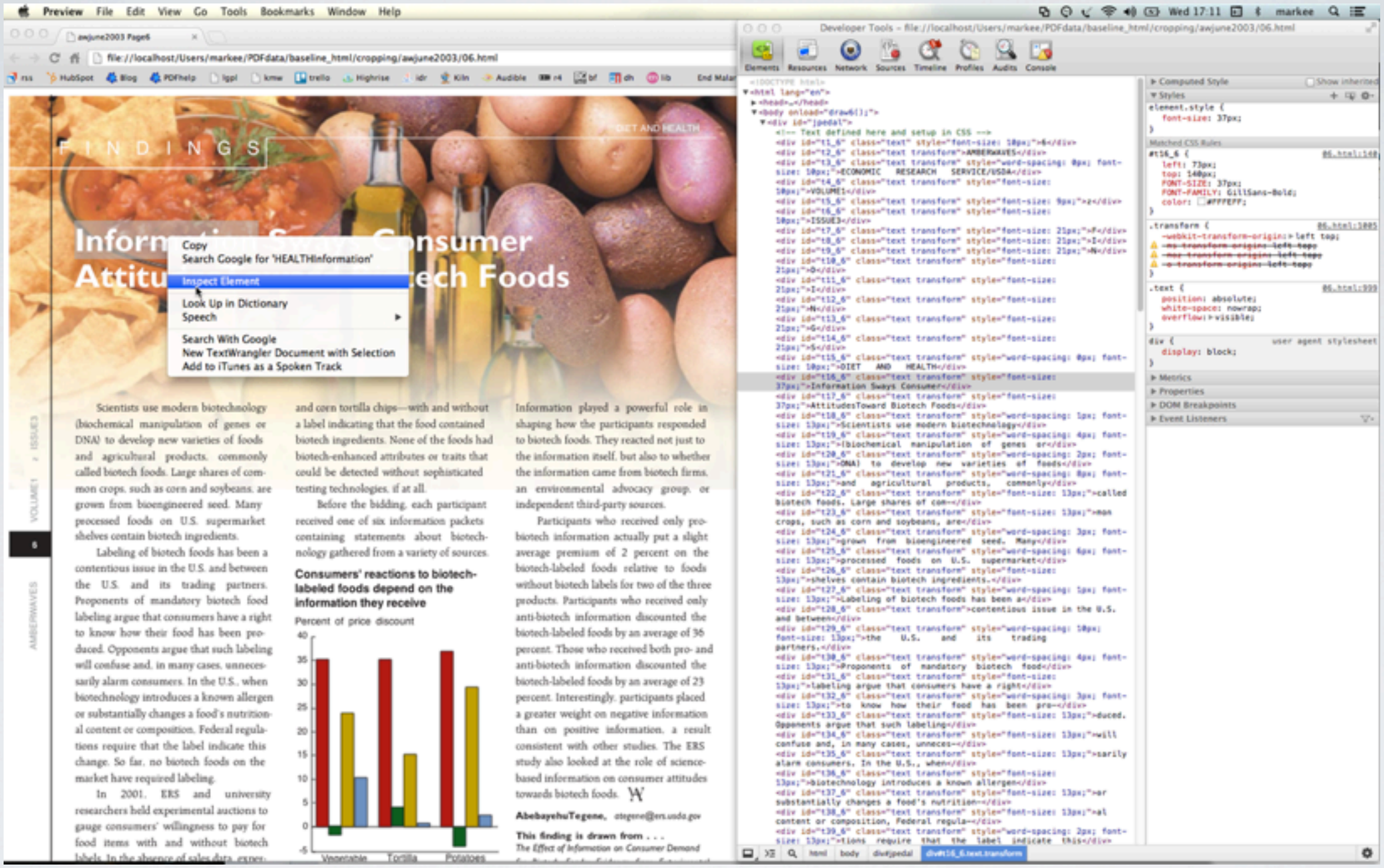
```
function setFontSize(divName,pixelSize,actualWidth) {
	var el = document.getElementById(divName);
	adjustCharSpacing(el,actualWidth);

	adjustWordSpacing(el,actualWidth);

	var rawFontSize=pixelSize;

	var fontChange=0;

	el.style.fontSize = pixelSize+'px';
	var rawWidth=el.offsetWidth;
	var lastRawWidth=actualWidth;
	if(pixelSize>12 & rawWidth>5 & rawWidth!=actualWidth){
		if(rawWidth>actualWidth){
			while (rawWidth>actualWidth & lastRawWidth!=rawWidth){
				pixelSize--;
				el.style.fontSize = pixelSize+'px';
				lastRawWidth=rawWidth;
				rawWidth=el.offsetWidth;
			}
			var lastDiff=lastRawWidth-actualWidth;
			var nextDiff=actualWidth-rawWidth;
			if(lastDiff<=nextDiff){
				pixelSize++;
			}
			fontChange=rawFontSize-pixelSize
		}else{
			while (rawWidth<actualWidth & lastRawWidth!=rawWidth){
				pixelSize++;
				el.style.fontSize = pixelSize+'px';
				lastRawWidth=rawWidth;
				rawWidth=el.offsetWidth;
			}
			var lastDiff=actualWidth-lastRawWidth;
			var nextDiff=rawWidth-actualWidth;
			if(lastDiff<=nextDiff){
				pixelSize--;
			}
			fontChange=pixelSize-rawFontSize;
		}
		if(fontChange>5)
			el.style.fontSize = pixelSize+'px';
		else
			el.style.fontSize = rawFontSize+'px';

		if(pixelSize!=el.style.fontSize){
			adjustCharSpacing(el,actualWidth);
			adjustWordSpacing(el,actualWidth);
		}

	}
}
```

HTML5 and CSS

Supporting multiple browsers can be 'messy'

```
#t2_1 {
    -webkit-transform:matrix(0.97,0.0,-0.20,0.97,99, 159);
    -ms-transform:matrix(0.97,0.0,-0.20,0.97,99, 159);
    -moz-transform:matrix(0.97,0.0,-0.20,0.97,99, 159);
    -o-transform:matrix(0.97,0.0,-0.20,0.97,99, 159);
    FONT-SIZE: 18px;
    FONT-FAMILY: IGNACK-RaleighBT-Roman;
    color:rgb(35,32,32);
}
```

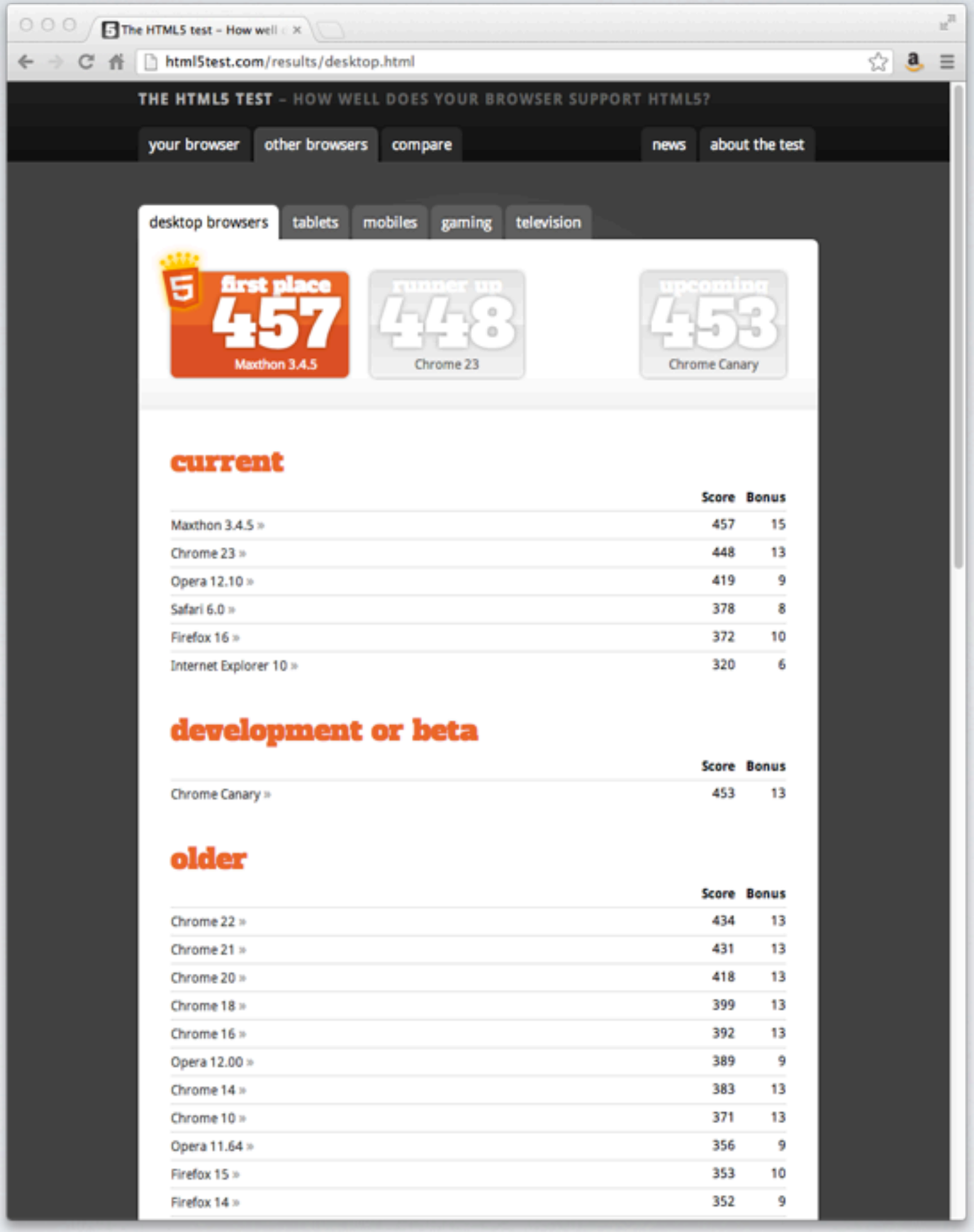
HTML5 tools



Font error reporting is **NOT** good :-(

Google Demo Time

Browser support



Font support

Postscript
TrueType
OpenType

Do you know the difference?

EOT

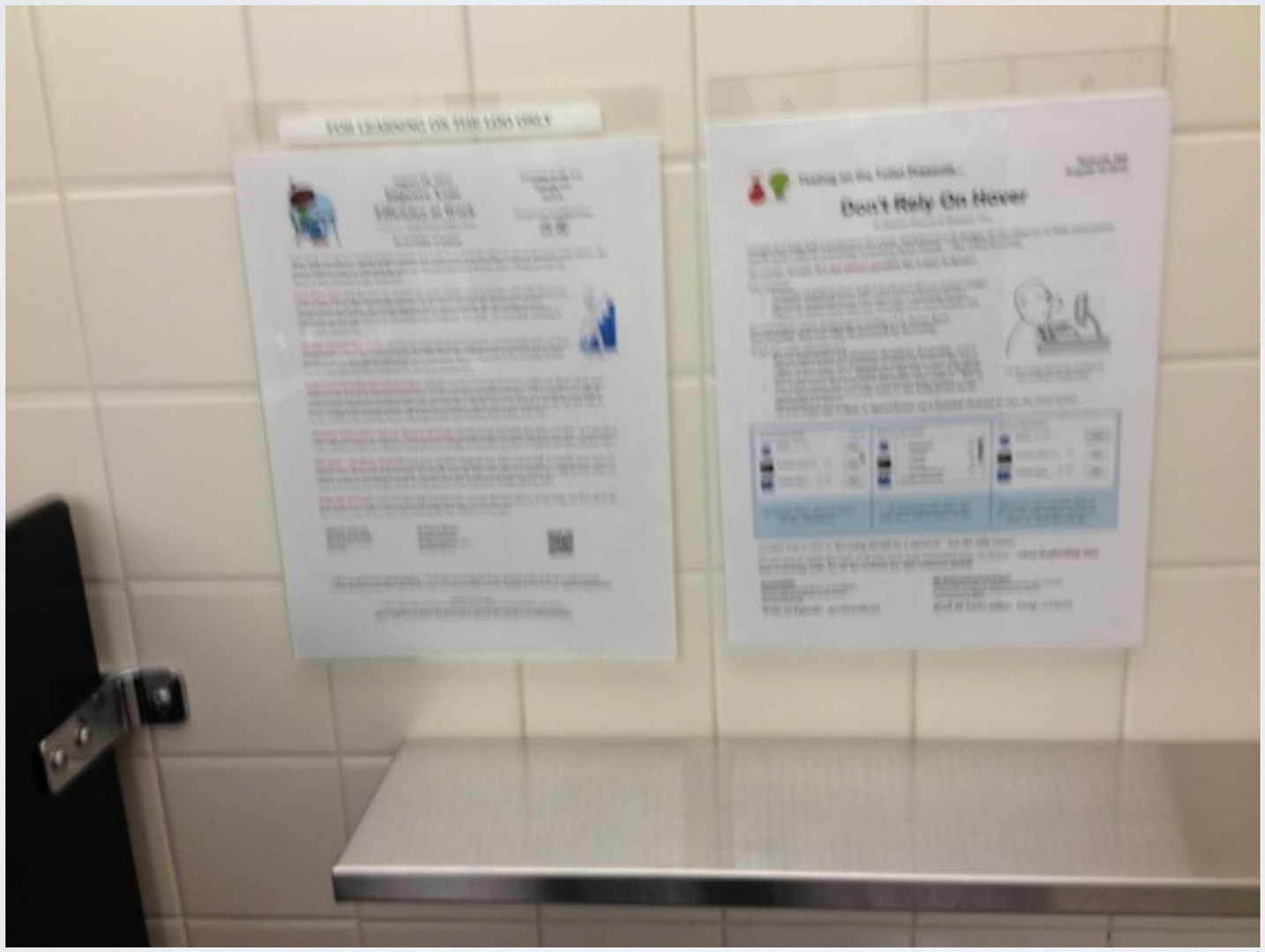
WOFF (use this one!)

Font support varies (even better the same browser)

Debugging fonts in very hard!!!

Useful font tools

Fontforge
Dutch Type Library OT Master
Microsoft Font Validator
sfntly (Google)
Anyone visited google?



HTML5 Demo Time

Does the number of Glyphs effect performance

Javascript

Originally named to pick up on Java's success...

Everything we moved to Java to avoid...

Javascript (and HTML forms) Demo

SVG

Yesterday's technology of tomorrow?

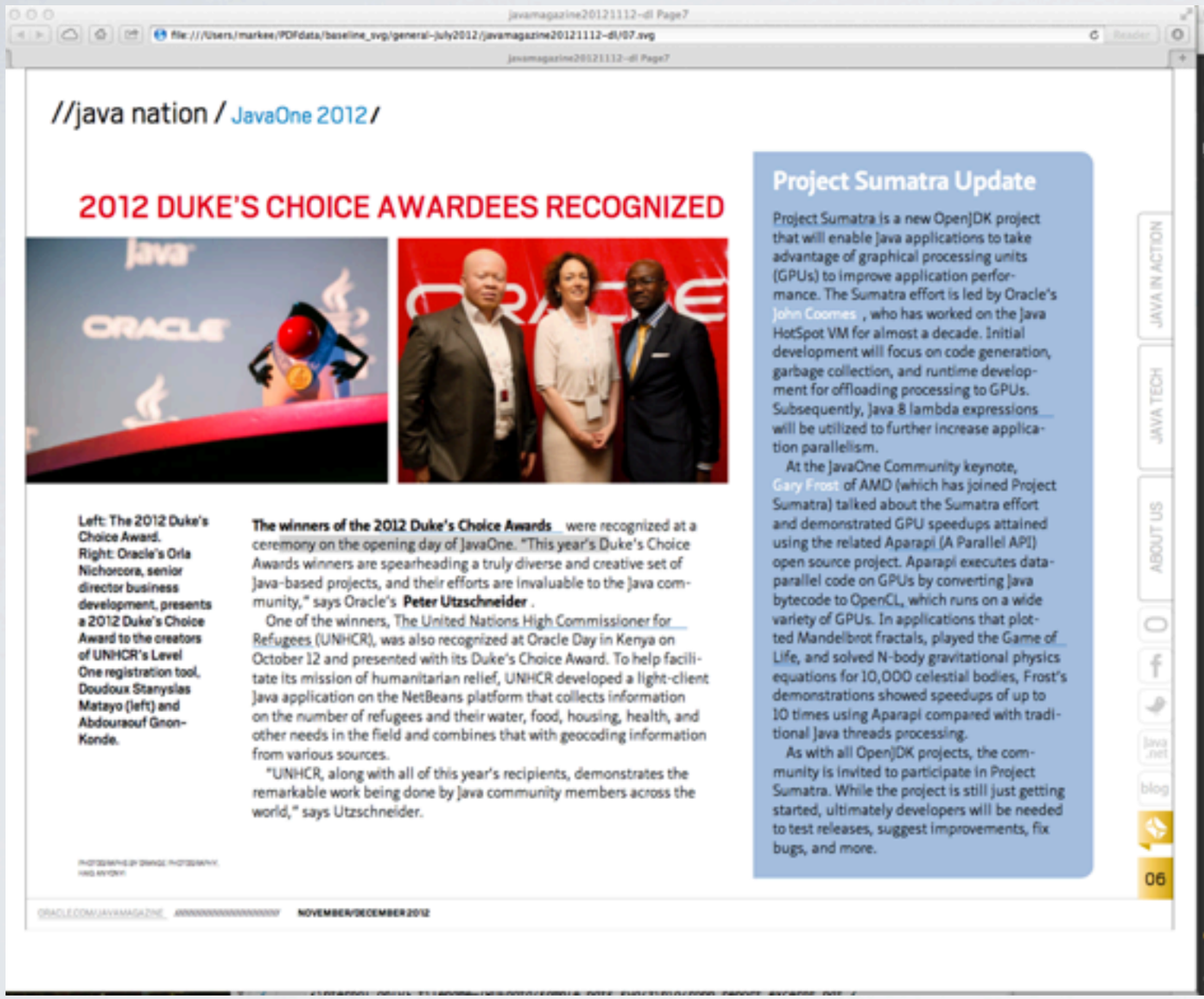
XML based.

Ability to include HTML5, CSS and Javascript

Forms support is not good

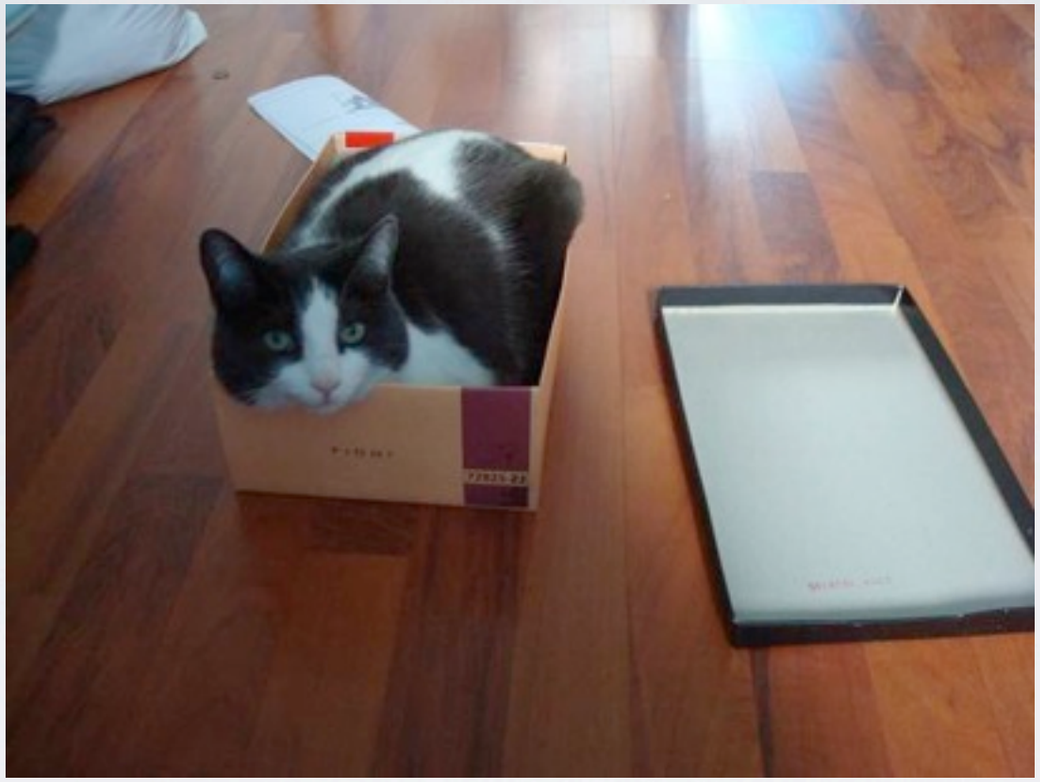
Now works in main browsers

SVG does a good rendering job



SVG Demo Time

THINKING OUT OF THE BOX



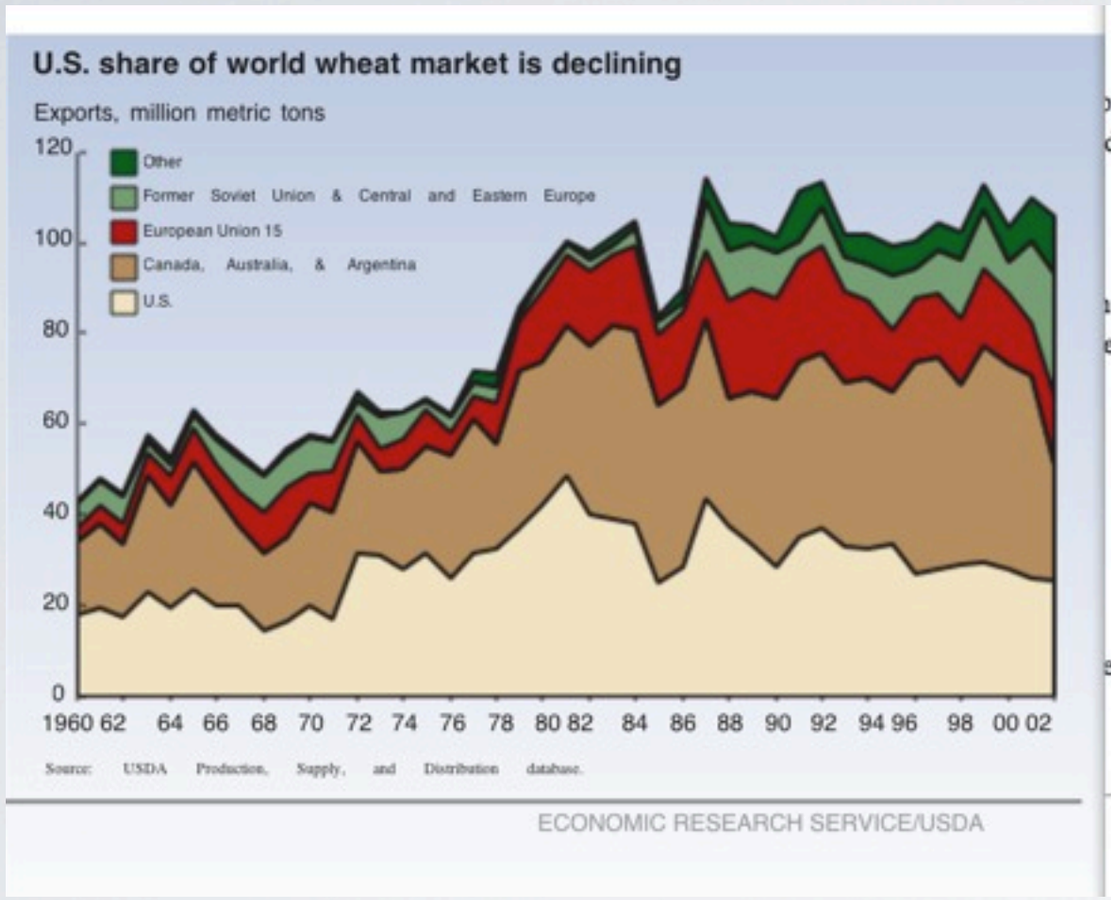
We are actually using SVG to overcome some HTML5 limitations and HTML5 to overcome some SVG limitations!

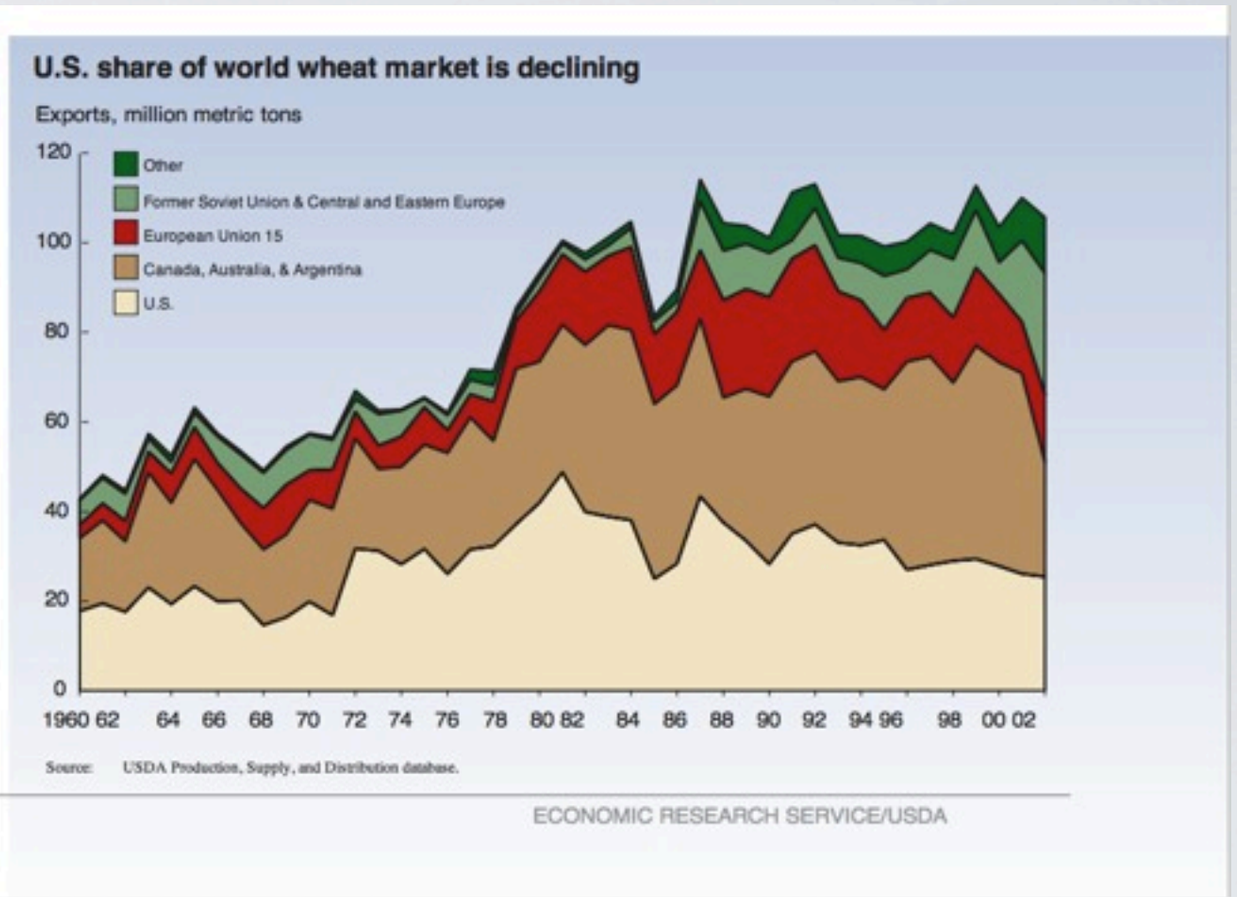
Which page is not SVG?

SVG in HTML demo

So maybe it is wrong to think of HTML5 or SVG

Does HTML5 or SVG scale better?





HTML5 and SVG support complex transforms demo

The key to the success of SVG/HTML5 will be how well the browsers work

Are browsers more compatible than Android/iOS devices?

HTML5 v JavaFX on a Pi

Contact details

Twitter: javaPDF
Blog: http://blog.idrsolutions.com
Email: markstephens@idrsolutions.com

Thank-you for inviting me...

JavaFX, SVG, or HTML5. Your call...