GRATEX INTERNATIONAL

GjaxTagLib

JSP Tag Library
to
clean your server code
and
improve client markup

HTML5 Source – HTML 5 Output

Demo for simplification and backward compatibility

```
<DOCTYPE markup="HTML5" />

<html>
<head>
    <title>HTML5 test</title>


    <style>
        body { background-color: gray; }
    </style>
</head>
<body>
    <header>Header section</header>
    <article>Page content</article>
    <footer>
        <time>2011-05-08 12:05:25</time>

    </footer>
    <script src="/resources/script.js" />
</body>
</html>
```

```
<!DOCTYPE HTML>

<HTML>
<HEAD>
    <TITLE>HTML5 test</TITLE>
    <META charset="UTF-8">

    <STYLE>
        body { background-color: gray; }
    </STYLE>
</HEAD>
<BODY>
    <HEADER>Header section</HEADER>
    <ARTICLE>Page content</ARTICLE>
    <FOOTER>
        <TIME>2011-05-08 12:05:25</TIME>

    </FOOTER>
    <SCRIPT src="/res/script.js"></SCRIPT>
</BODY>
</HTML>
```

HTML5 Source – HTML 4 Output

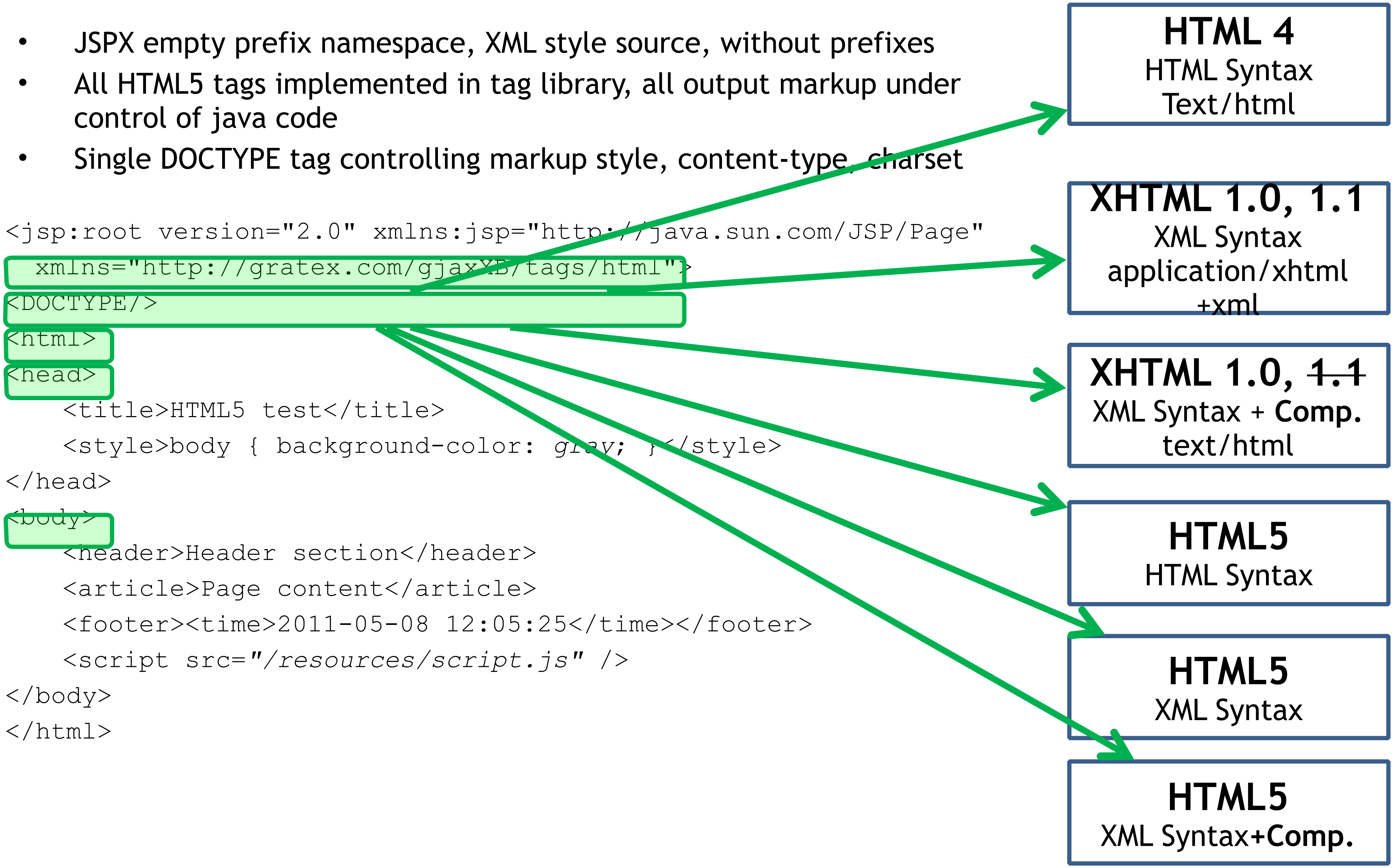
Demo for simplification and backward compatibility

```
<DOCTYPE markup="HTML4" />

<html>
<head>
    <title>HTML5 test</title>


    <style>
        body { background-color: gray; }
    </style>
</head>
<body>
    <header>Header section</header>
    <article>Page content</article>
    <footer>
        <time>2011-05-08 12:05:25</time>

    </footer>
    <script src="/resources/script.js" />
</body>
</html>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
    "http://www.w3.org/TR/html4/strict.dtd">
<HTML>
<HEAD>
    <TITLE>HTML5 test</TITLE>
    <META http-equiv="Content-Type"
          content="text/html;charset=UTF-8">
    <STYLE type="text/css">
        body { background-color: gray; }
    </STYLE>
</HEAD>
<BODY>
    <DIV class="html5-header">Header section</DIV>
    <DIV class="html5-article">Page content</DIV>
    <DIV class="html5-footer">
        <SPAN class="html5-time">2011-05-08
        12:05:25</SPAN>
    </DIV>
    <SCRIPT type="text/javascript"
          src="/resources/script.js"></SCRIPT>
</BODY>
</HTML>
```

So what is the trick ?

- JSPX empty prefix namespace, XML style source, without prefixes
- All HTML5 tags implemented in tag library, all output markup under control of java code
- Single DOCTYPE tag controlling markup style, content-type, charset



```
<jsp:root version="2.0" xmlns:jsp="http://java.sun.com/JSP/Page"
  xmlns="http://gratex.com/gjaxXB/tags/html">
<DOCTYPE/>
<html>
<head>
    <title>HTML5 test</title>
    <style>body { background-color: gray; }</style>
</head>
<body>
    <header>Header section</header>
    <article>Page content</article>
    <footer><time>2011-05-08 12:05:25</time></footer>
    <script src="/resources/script.js" />
</body>
</html>
```

HTML 4
HTML Syntax
Text/html

XHTML 1.0, 1.1
XML Syntax
application/xhtml+xml

XHTML 1.0, ~~1.1~~
XML Syntax + **Comp.**
text/html

HTML5
HTML Syntax

HTML5
XML Syntax

HTML5
XML Syntax+**Comp.**

JSP: DOCTYPE, Content-Type, Charset

anti DRY, fixed, error prone

```
<jsp:root xmlns:jsp="http://java.sun.com/JSP/Page" version="2.0">
<jsp:directive.page language="java"
   contentType="text/html; charset=UTF-8" pageEncoding="UTF-8" />

<jsp:output doctype-root-element="html"
   doctype-system="http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"
   doctype-public="-//W3C//DTD XHTML 1.0 Transitional//EN" />

<html xmlns="http://www.w3.org/1999/xhtml">
   <head>
      <title>${title}</title>
      <meta content="text/html; charset=UTF-8" http-equiv="Content-Type" />
   </head>
   <body>
      <script type="text/javascript" src="script.js"></script>
      <script type="text/javascript">alert('message');</script>
   </body>
</html>
</jsp:root>
```

TLB: DOCTYPE, Content-Type, Charset

Simplified, consistent, per view

.jspx:

```
<DOCTYPE markup="HTML4" encoding="UTF-8"/> //or use ELs
<html>
    <head>
        <title>Sample</title>
    </head>
```

output:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
        "http://www.w3.org/TR/html4/strict.dtd">
<HTML>
   <HEAD>
      <TITLE>Sample</TITLE>
      <META content="text/html;charset=UTF-8” http-equiv="Content-Type">
   </HEAD>
```

HTTP response:

```
HTTP/1.1 200 OK
Content-Type: text/html;charset=UTF-8
```

TLB: DOCTYPE, Content-Type, Charset

Simplified, consistent, centralized

.jspx:

```
<DOCTYPE/>
<html>
    <head>
        <title>Sample</title>
    </head>
```

web.xml

```
<context-param>
<param-name>com.gratex.gjaxXB.tags.html.encoding</param-name>
<param-value>UTF-8</param-value>
</context-param>

<context-param>
<param-name>com.gratex.gjaxXB.tags.html.markup</param-name>
<param-value>HTML4</param-value>
</context-param>
```

output:

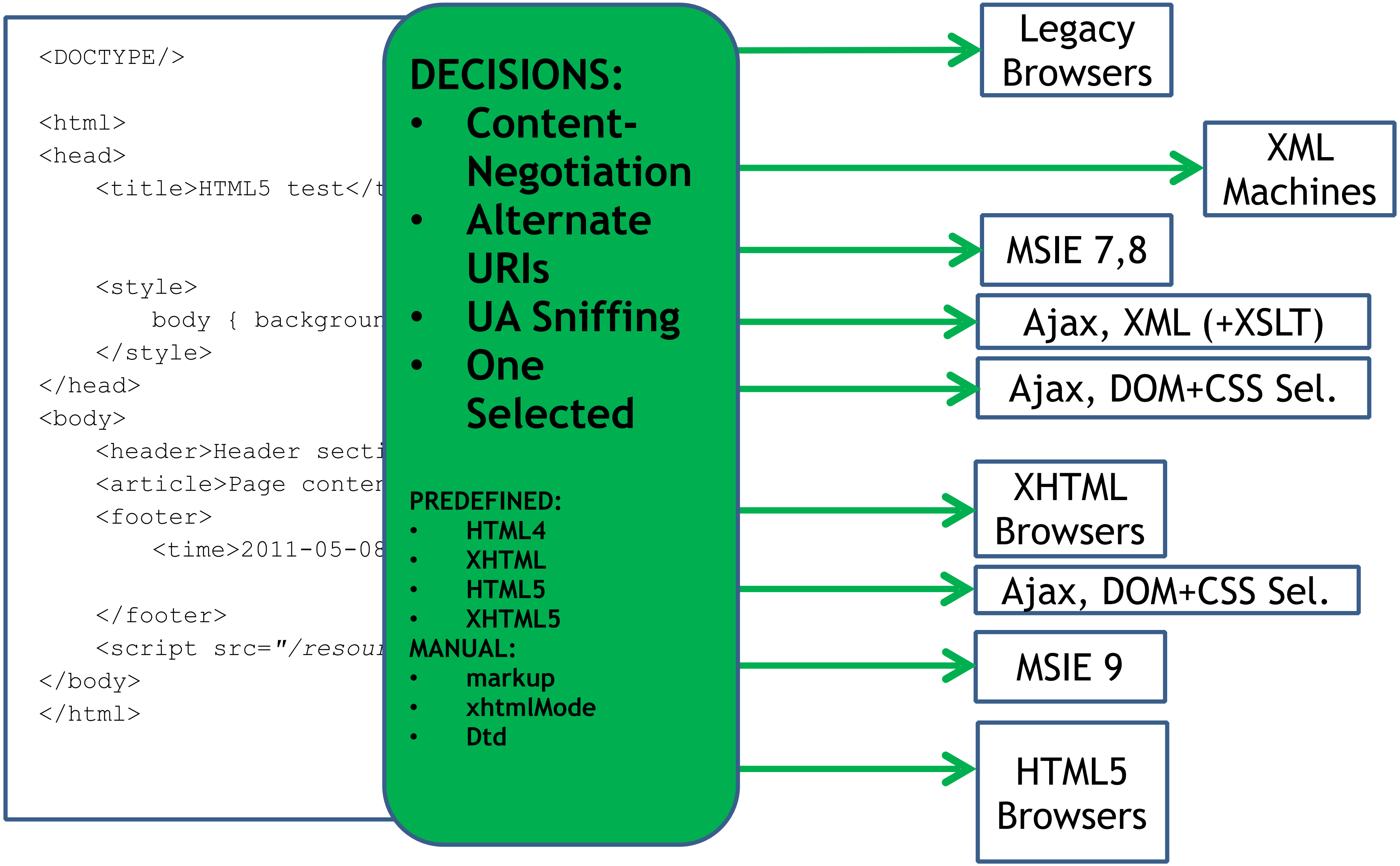
```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
        "http://www.w3.org/TR/html4/strict.dtd">
<HTML>
   <HEAD>
      <TITLE>Sample</TITLE>
      <META content="text/html;charset=UTF-8" http-equiv="Content-Type">
   </HEAD>
```

HTTP response:

```
HTTP/1.1 200 OK
Content-Type: text/html;charset=UTF-8
```

One Source Code, Multiple Outputs

what markup to send



```
<DOCTYPE/>

<html>
<head>
    <title>HTML5 test</t


    <style>
        body { backgrour
    </style>
</head>
<body>
    <header>Header secti
    <article>Page conter
    <footer>
        <time>2011-05-08

    </footer>
    <script src="/resour
</body>
</html>
```

DECISIONS:

- **Content-Negotiation**
- **Alternate URIs**
- **UA Sniffing**
- **One Selected**

PREDEFINED:

- **HTML4**
- **XHTML**
- **HTML5**
- **XHTML5**

MANUAL:

- **markup**
- **xhtmlMode**
- **Dtd**

GjaxTagLib Demystified

- GjaxTagLib solves basic conversion
  - XHTML 2 HTML
    - Obey Appendix C, HTML Compatibility Guidelines
    - Deny Deprecated Tags
  - HTML5 2 HTML 4
    - New tags: div/span + CSS class
    - New attributes: extract from markup to JavaScript (just to obey w3 validator)
    - Auto-generate required defaults

Of course it is not all !

HTML5TagLib Glorified

XML/HTML Escaping

- XML/HTML Escaping
  - Automatic attribute value escaping
  - innerText, innerHtml server side attributes

View:

Without taglib:

```
<div class="${fn:escapeXml('a&b')}"><c:out value="${plainText}" /></div>
```

With taglib:

```
<div class="a&b" innerText="${plainText}"/>
```

Controller:

```
mav.addObject("plainText", "<P>plain text</P>");
```

Output:

```
<DIV class="a&amp;b">&lt;P&gt;plain text&lt;/P&gt;</DIV>
```

URI Reference Building Support

inspired by MS

- How much code do you need to generate
- 8 lines of **correct** <script><script> and <link/> tags ?
- Spring-Roo: **16**
- HTML5TagLib: **8**

Expected output:

```
<SCRIPT type="text/javascript"       src="/SampleRooMvc/resources/spring/Spring-Dojo.js">
</SCRIPT>
```

Spring (or JSTL) style:

```
<spring:url value="/resources/spring/Spring-Dojo.js"    var="spring_dojo_url" />
<script src="${dojo_url}" type="text/javascript"><jsp:text/></script>
```

Our Style:

```
<script src="~/resources/spring/Spring-Dojo.js"/>
```

Spring Roo - complete **load-scripts.tagx** code review avaliable in: samples\Spring-Roo-Load-Script

URI Reference Building Support

inspired by URI Templates (Spring Impl.)

- Templates

JSP without taglib

```
<spring:url value="/a/{var}/c"  var="href">
         <spring:param name="var" value="b"/>
</spring:url>
<a href="${href}">Link</a>
```

JSP with taglib

```
<a href="~/a/{var}/c"><spring:param name="var" value="b"/>Link</x:a>
```

Output

```
<A href="/SampleRooMvc/a/b/c">Link</A>
```

Removable HTML Comments

Funny tag <_>, same syntax in .jsp and .jspx, turn them all on/off

.jsp:

```
…
<body>
    <
</b
…
```

web.xml:

```
…
<context-param>
   <param-name>
      com.gratex.gjaxXB.tags.html.commentsOutput
   </param-name>
   <param-value>true</param-value>
</context-param>
…
```

Out

```
…
<BO
    <DIV><!--This is a comment.--></DIV>
</BODY>
…
```

Frame Busting

Defense against Clickjacking attack

- http://seclab.stanford.edu/websec/framebusting/framebust.pdf
- https://www.codemagi.com/blog/post/194
- Tag library automatically outputs <style> and <script> tag which performs **Frame Busting**
- Default behavior can be changed
  - In web.xml (com.gratex.gjaxXB.tags.html.frameBust property with true/false value)
  - Using attribute on <DOCTYPE frameBust="false"/> tag
- Functionality can be added also explicitly using <x:frameBust /> tag

Output:

```
<!DOCTYPE HTML>
   <HTML>
      <HEAD>
         <STYLE id="antiClickjack">body{display:none !important;}</STYLE>
         <SCRIPT>
            if (self === top) {
               var antiClickjack = document.getElementById("antiClickjack");
               antiClickjack.parentNode.removeChild(antiClickjack);
            } else {
               top.location = self.location;
            }
         </SCRIPT>
         ...
```

X-UA-Compatible meta tag

Avoiding MSIE compatibility mode

- Webpage can specify Internet Explorer compatibility mode either by sending a http header or using following Meta tag:

```
<meta http-equiv=“X-UA-Compatible” content=“IE=edge,chrome=1” />
```

(latest IE, use chrome engine)

- Use on <DOCTYPE> tag:
- `<h:DOCTYPE xuaMetaTag="IE=edge,chrome=1"/>`

Further references:

http://msdn.microsoft.com/en-us/library/cc288325(v=vs.85).aspx

http://www.456bereastreet.com/archive/201103/x-ua-compatible_and_html5/