



# XSLT as template engine

*...or why do I love XSLT*





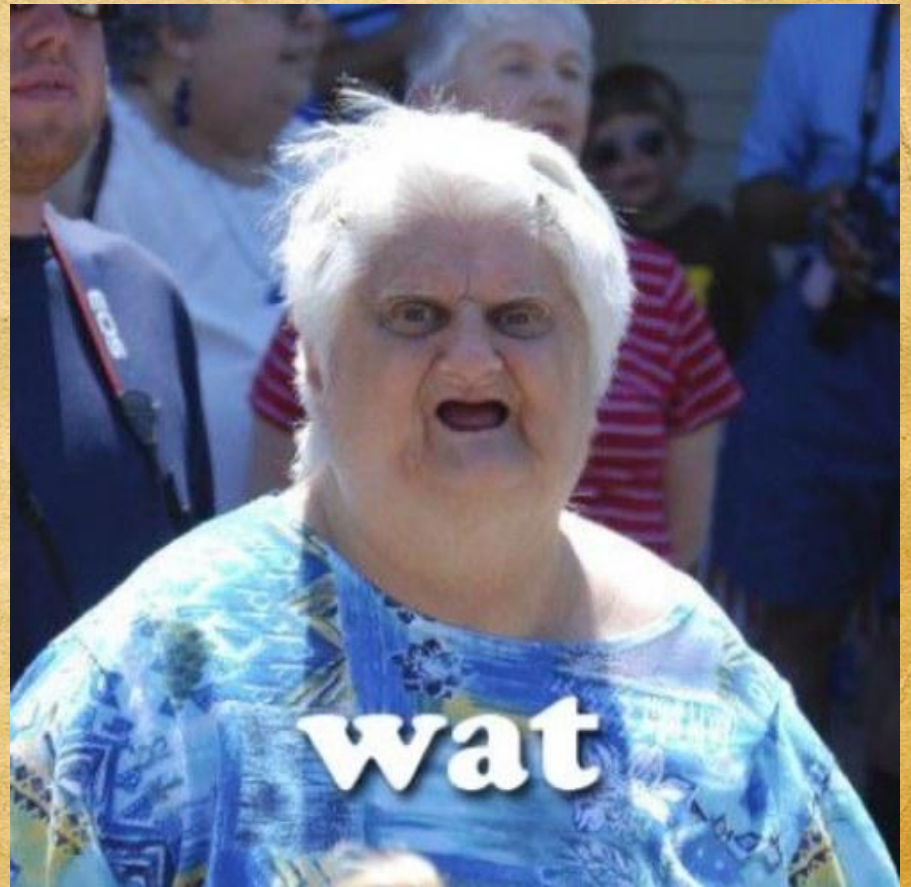


LIVE NATION



Who am I?

cono





Perl TL developer

The Live Nation logo is centered within a red rounded rectangle. It features the word "LIVE" in red, where the letter "V" is replaced by a black silhouette of a person with arms raised in a "V" shape. To the right of "LIVE" is the word "NATION" in black, rendered in a bold, sans-serif, all-caps font.



# Let's Go!



LIVE NATION



# XSLT is slow ?

yes :)

p.s. who cares?



LIVE NATION



# DO WE HAVE "+" ?

standard

output as xhtml / xml / x\*

functional paradigm (apply-templates)

strict splitting code & templates





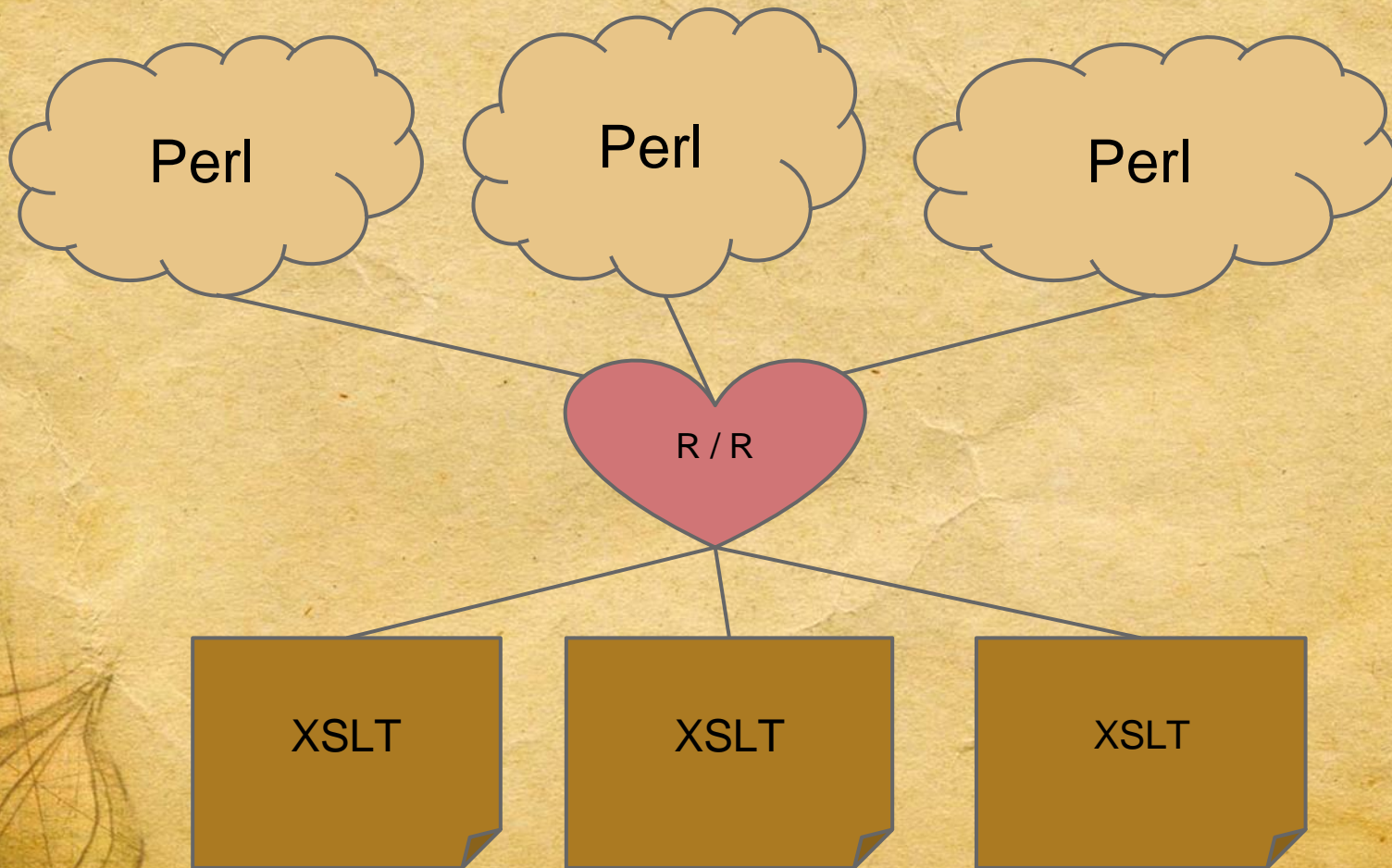
XSLT still slow

What we can do? :)



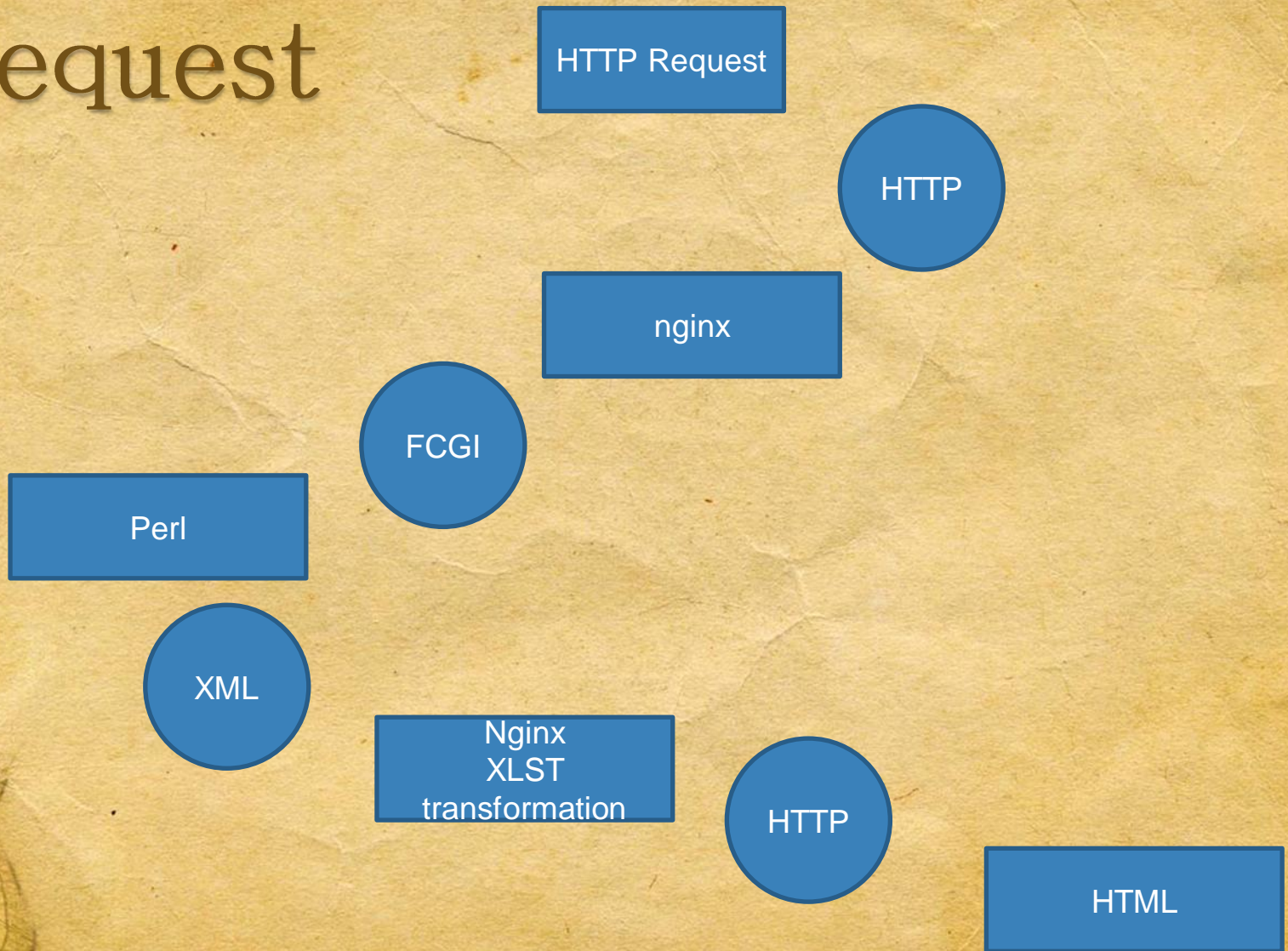


# Web application structure





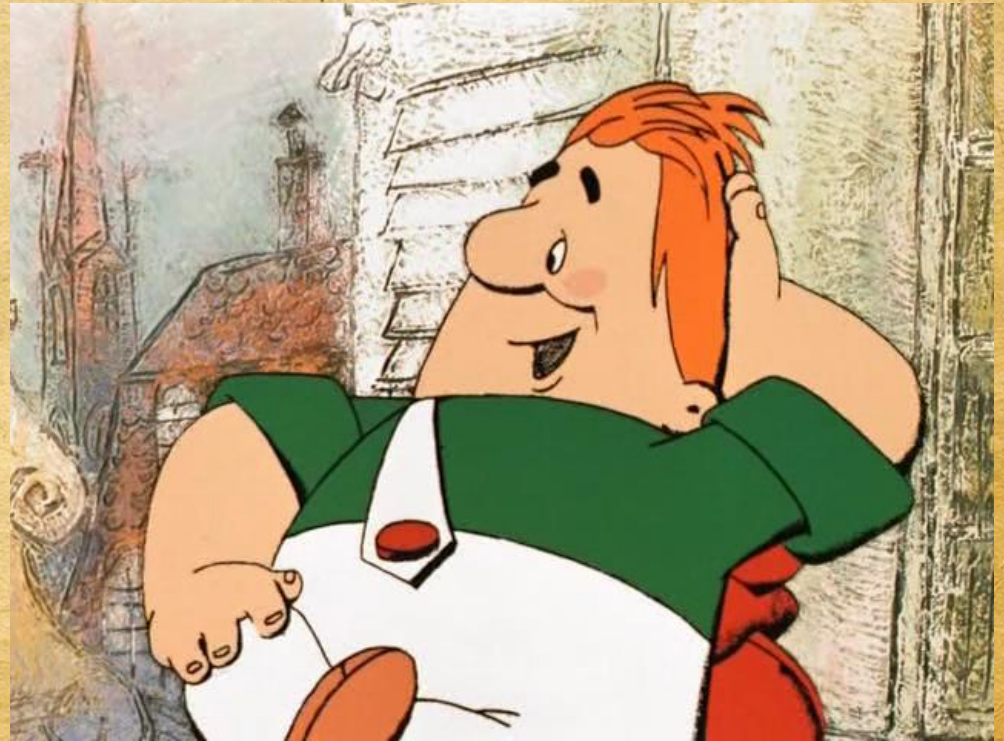
# Request





I have a friend:

<https://github.com/yoreek>





# XSLT module

<https://github.com/yoreek/nginx-xsltproc-module>

X-Xslt-Stylesheet:

/xslt/test.xslt?param1=1&param  
2='test'

profiler / memcached



# XML::Hash::XS

<https://github.com/yoreek/XML-Hash-XS>

## PerlIO print

02:07 <@leont> Well, calling perl functions from XS is ugly too

02:08 <cono> yup

02:08 <cono> so we have not proper way to print to FH which was pass to XS from perl..

02:08 <@doy> i wonder why we don't just provide wrapper functions around the ops

02:08 <cono> y

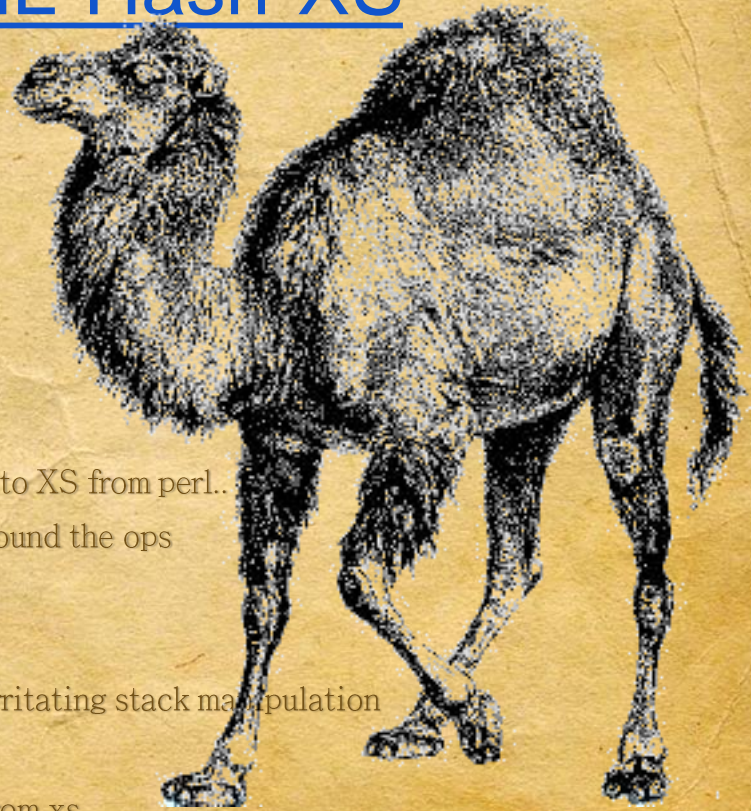
02:09 <cono> doy: great idead

02:09 <@doy> so that they can be called from xs without having to do irritating stack manipulation

02:09 <@leont> We don't have that for a lot of things

02:09 <@leont> printing is easy, try to use regexps or smart-matching from xs

02:09 <cono> no thanks )





# Examples



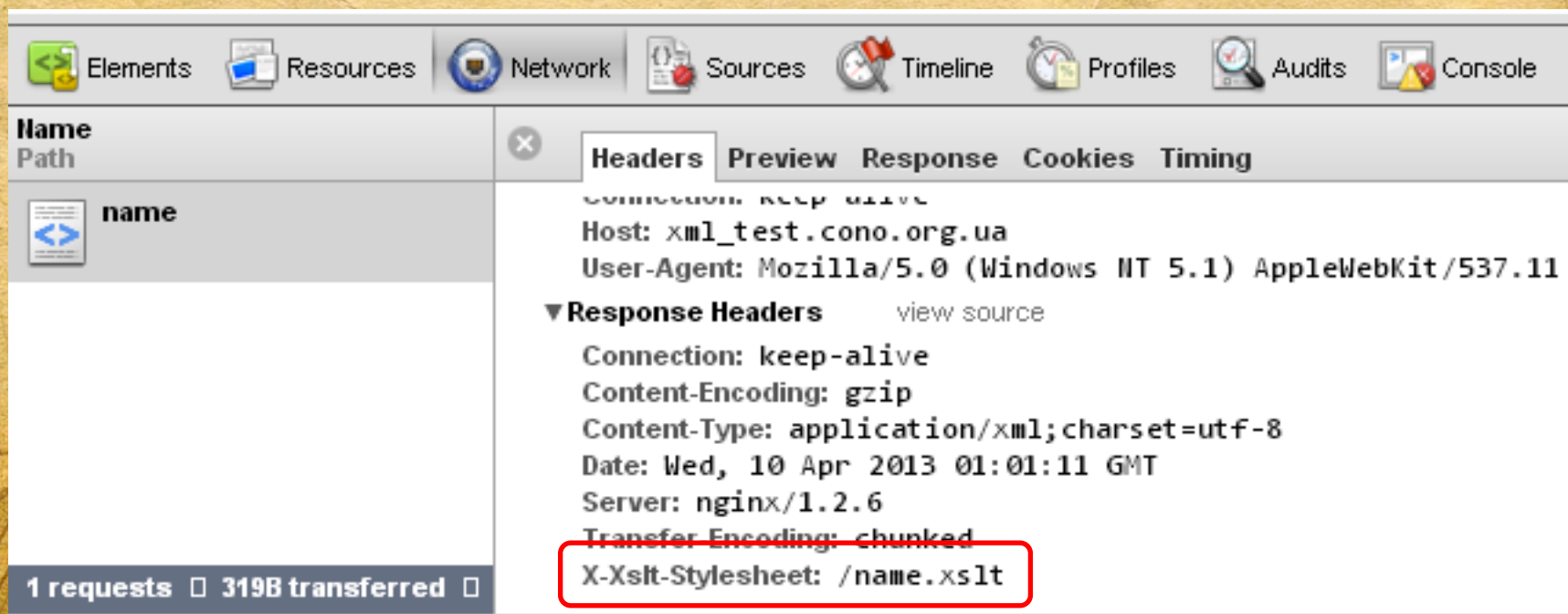
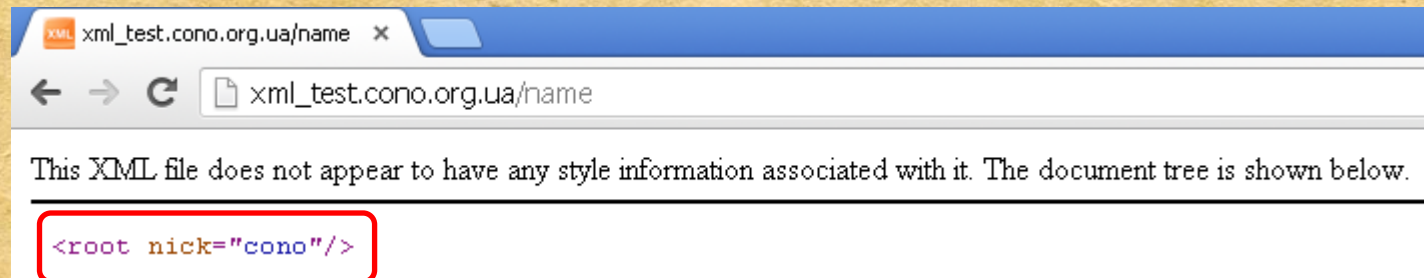


# nginx configuration

```
server {  
    listen 80;  
    server_name xml_test.cono.org.ua;  
  
    location / {  
        try_files $uri @index;  
    }  
  
    location @index {  
        fastcgi_pass 127.0.0.1:6561;  
        include fastcgi_params;  
    }  
  
    access_log /var/log/nginx/xml_test.cono.org.ua.access_log main;  
    error_log /var/log/nginx/xml_test.cono.org.ua.error_log info;  
  
    root /home/cono/www/cxml/htdocs;  
}
```



# Result of xml virtual host





# nginx html virtual host

```
server {  
    listen 80;  
    server_name html_test.cono.org.ua;  
  
    location / {  
        try_files $uri @index;  
    }  
  
    location @index {  
        xsltproc on;  
  
        xsltproc_stylesheet_caching on;  
        xsltproc_stylesheet_root /home/cono/www/cxml/tmpl;  
        xsltproc_stylesheet_check_if_modify on;  
  
        xsltproc_profiler on;  
        xsltproc_profiler_stylesheet /home/cono/www/cxml/tmpl/profiler.xslt;  
        xsltproc_profiler_repeat on;  
  
        xsltproc_types application/xml;  
  
        fastcgi_pass 127.0.0.1:6561;  
        include fastcgi_params;  
    }  
  
    access_log /var/log/nginx/html_test.cono.org.ua.access_log main;  
    error_log /var/log/nginx/html_test.cono.org.ua.error_log info;  
  
    root /home/cono/www/cxml/htdocs;  
}
```

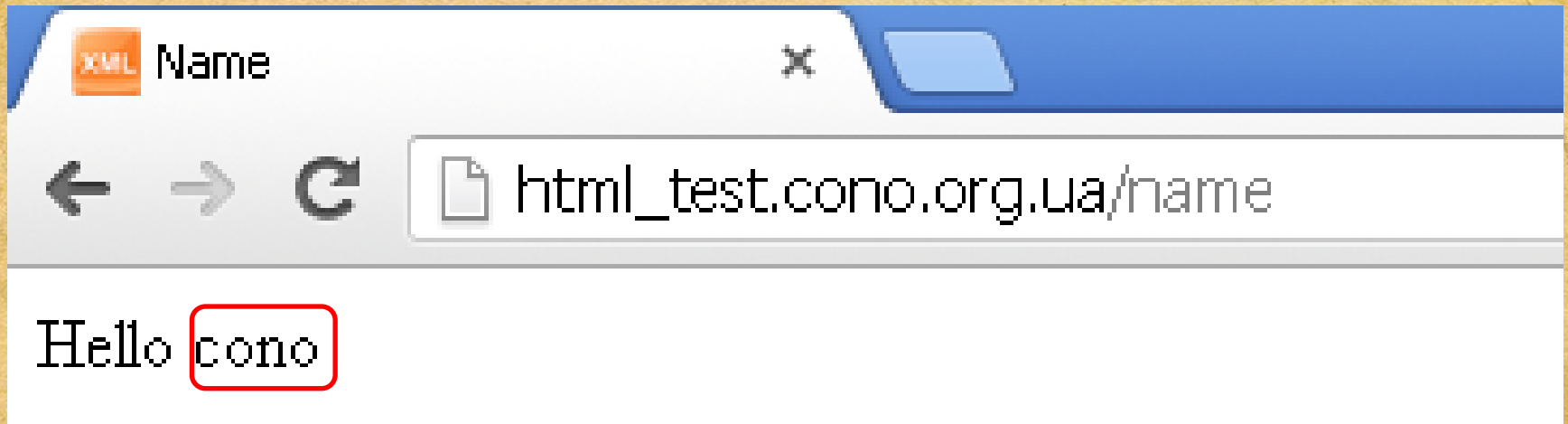


# XSLT template for /name

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/root">
<html>
  <head>
    <title>Name</title>
  </head>
  <body bgcolor="#fff">
    <p>Hello <xsl:value-of select="@nick" /></p>
  </body>
</html>
</xsl:template>
</xsl:stylesheet>
```



# Result of html virtual host

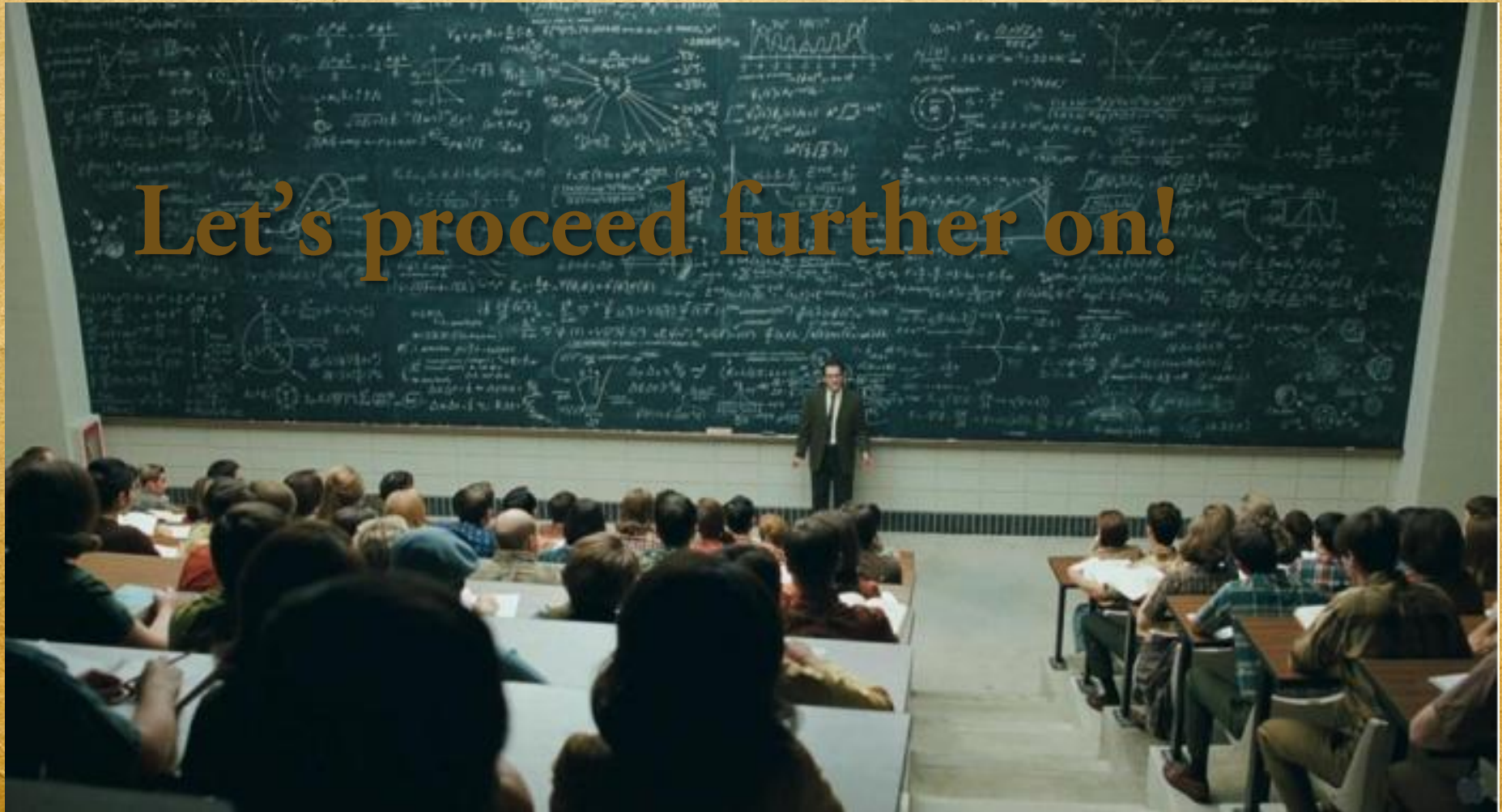




9  
Pretty simple

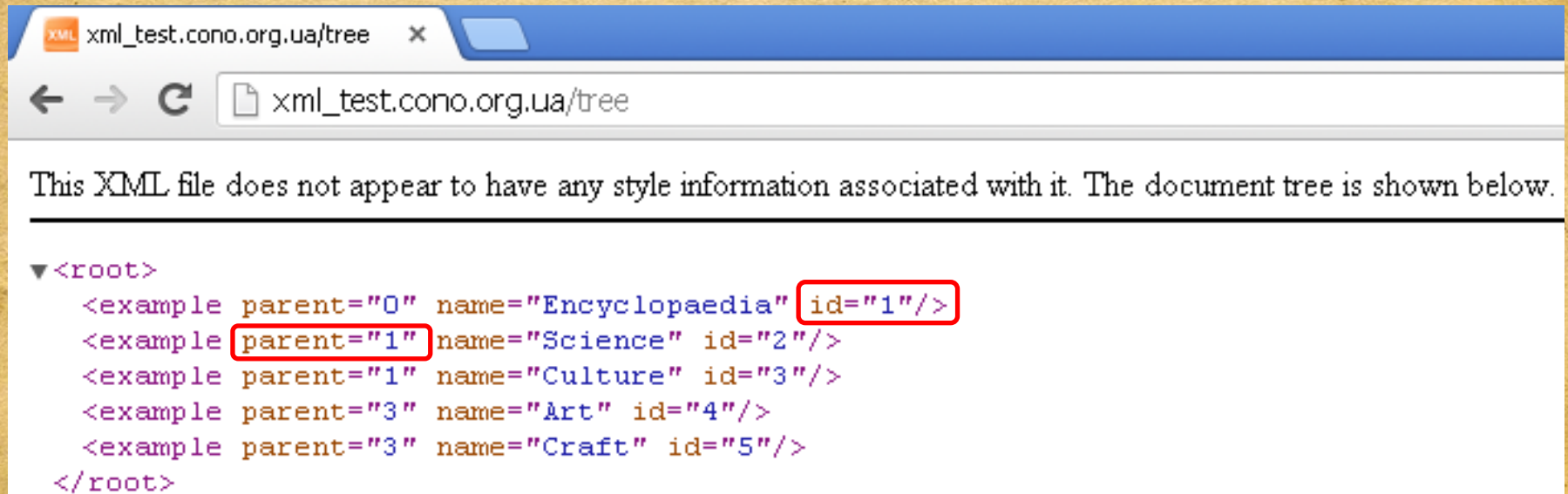
Isn't it? ;)

Let's proceed further on!





# XML for /tree



The screenshot shows a web browser window with the address bar displaying `xml_test.cono.org.ua/tree`. Below the address bar, a message states: "This XML file does not appear to have any style information associated with it. The document tree is shown below." The XML document tree is displayed as follows:

```
▼<root>
  <example parent="0" name="Encyclopaedia" id="1"/>
  <example parent="1" name="Science" id="2"/>
  <example parent="1" name="Culture" id="3"/>
  <example parent="3" name="Art" id="4"/>
  <example parent="3" name="Craft" id="5"/>
</root>
```

In the XML tree, the `parent="1"` attribute in the second `<example>` tag and the `id="1"` attribute in the first `<example>` tag are highlighted with red boxes.



# XSLT for /tree

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

  <xsl:template match="example">
    <li>
      <xsl:variable name="id" select="@id" />
      <label onclick="fold(this)"><xsl:value-of select="@name" /></label>
      <xsl:if test=".. /example[@parent=$id]">
        <ul><xsl:apply-templates select=".. /example[@parent=$id]" /></ul>
      </xsl:if>
    </li>
  </xsl:template>

  <xsl:template match="/root">
    <html>
      <head>
        <title>Tree</title>
        <link rel="stylesheet" type="text/css" href="/c/index.css" />
        <script type="text/javascript" src="/j/index.js" />
      </head>
      <body bgcolor="#fff">
        <div class="treeroot">
          <ul>
            <xsl:apply-templates select="example[@parent=0]" />
          </ul>
        </div>
      </body>
    </html>
  </xsl:template>
</xsl:stylesheet>
```



# HTML for /tree

XML Tree

html\_test.cono.org.ua/tree

- Encyclopaedia
  - Science
  - Culture
    - Art
    - Craft

Profiler (0.16/0.05/0.1x20=0.31 ms)

- Stylesheet: /home/cono/www/cxml/tmpl/tree.xslt (0.1 ms)
- Profile

Rank	Match	Name	Mode	Calls	Time (ms)	Avg (ms)
1	example			5	0.03	0.01
2	/root			1	0.01	0.01

XML

- <root>

```
<example parent="0" name="Encyclopaedia" id="1" ></example>
<example parent="1" name="Science" id="2" ></example>
<example parent="1" name="Culture" id="3" ></example>
<example parent="3" name="Art" id="4" ></example>
<example parent="3" name="Craft" id="5" ></example>
</root>
```

Params

Name	Value
------	-------



# nginx html virtual host

```
server {  
    listen 80;  
    server_name html_test.cono.org.ua;  
  
    location / {  
        try_files $uri @index;  
    }  
  
    location @index {  
        xsltproc on;  
  
        xsltproc_stylesheet_caching on;  
        xsltproc_stylesheet_root /home/cono/www/cxml/tmpl;  
        xsltproc_stylesheet_check_if_modify on;  
  
        xsltproc_profiler on;  
        xsltproc_profiler_stylesheet /home/cono/www/cxml/tmpl/profiler.xslt;  
        xsltproc_profiler_repeat on;  
  
        xsltproc_types application/xml;  
  
        fastcgi_pass 127.0.0.1:6561;  
        include fastcgi_params;  
    }  
  
    access_log /var/log/nginx/html_test.cono.org.ua.access_log main;  
    error_log /var/log/nginx/html_test.cono.org.ua.error_log info;  
  
    root /home/cono/www/cxml/htdocs;  
}
```



# HTML for /tree

XML Tree

html\_test.cono.org.ua/tree

- Encyclopaedia
  - Science
  - Culture
    - Art
    - Craft

Profiler (0.16/0.05/0.1x20=0.31 ms)

- Stylesheet: /home/cono/www/cxml/tmpl/tree.xslt (0.1 ms)

Profile

Rank	Match	Name	Mode	Calls	Time (ms)	Avg (ms)
1	example			5	0.03	0.01
2	/root			1	0.01	0.01

XML

```
<root>  
  <example parent="0" name="Encyclopaedia" id="1" ></example>  
  <example parent="1" name="Science" id="2" ></example>  
  <example parent="1" name="Culture" id="3" ></example>  
  <example parent="3" name="Art" id="4" ></example>  
  <example parent="3" name="Craft" id="5" ></example>  
</root>
```

Params

Name	Value
------	-------



Any other reason  
to use XSLT?

Third parties!





# nginx third party

```
server {  
    listen 80;  
    server_name third_party.cono.org.ua;  
  
    location / {  
        try_files $uri @index;  
    }  
  
    location @index {  
        xsltproc on;  
  
        xsltproc_stylesheet_caching on;  
        xsltproc_stylesheet_root /home/cono/www/cxml/tmpl;  
        xsltproc_stylesheet_check_if_modify on;  
  
        xsltproc_profiler on;  
        xsltproc_profiler_stylesheet /home/cono/www/cxml/tmpl/profiler.xslt;  
        xsltproc_profiler_repeat on;  
  
        xsltproc_types application/xml;  
  
        add_header 'X-Xslt-Stylesheet' '/third_party_real.xslt';  
        proxy_pass http://xml_test.cono.org.ua:80;  
    }  
  
    access_log /var/log/nginx/html_test.cono.org.ua.access_log main;  
    error_log /var/log/nginx/html_test.cono.org.ua.error_log info;  
  
    root /home/cono/www/cxml/htdocs;  
}
```



# XML for /third\_party

xml\_test.cono.org.ua/third\_

xml\_test.cono.org.ua/third\_party

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<root>
  <results date="2013-04-21" artist_name="Madonna" venue="Kitchen" event="cooking"/>
  <results date="2013-04-20" artist_name="cono" venue="Provectus-IT" event="presentation"/>
</root>
```





# XSLT for /third\_party

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

<xsl:template match="/root">
<html>
  <head>
    <title>Third Party</title>
  </head>
  <body bgcolor="#fff">
    <table border="1" cellpadding="1" cellspacing="1">
      <th>Event</th><th>Performer</th><th>Where</th><th>Date</th>
      <xsl:for-each select="results">
        <tr>
          <td>
            <xsl:value-of select="@event" />
          </td>
          <td>
            <xsl:value-of select="@artist_name" />
          </td>
          <td>
            <xsl:value-of select="@venue" />
          </td>
          <td>
            <xsl:value-of select="@date" />
          </td>
        </tr>
      </xsl:for-each>
    </table>
  </body>
</html>
</xsl:template>
</xsl:stylesheet>
```



# HTML for /third\_party

XML Third Party x

← → ↻ [third\\_party.cono.org.ua/third\\_party](http://third_party.cono.org.ua/third_party)

Event	Performer	Where	Date
cooking	Madonna	Kitchen	2013-04-21
presentation	cono	Provectus-IT	2013-04-20

Profiler (0.14/0.03/0.05x20=0.22 ms)

- Stylesheet: /home/cono/www/cxml/tmpl/third\_party\_real.xslt (0.05 ms)
- Profile

Rank	Match	Name	Mode	Calls	Time (ms)	Avg (ms)
1	/root			1	0.01	0.01

XML

- <root>
  - <results date="2013-04-21" artist\_name="Madonna" venue="Kitchen" event="cooking" />
  - <results date="2013-04-20" artist\_name="cono" venue="Provectus-IT" event="presentation" />

+ Params



LIVE NATION



Anything left?

XSD!





# Test class

```
package CF::Test::XSD;

use strict;
use warnings;

use LWP::Simple;
use XML::LibXML;

use base 'Test::Builder::Module';

our @EXPORT = qw(xsd_ok);

my $CLASS = __PACKAGE__;

sub xsd_ok {
    my ($url, $xsd, $name) = @_;
    my $tb = $CLASS->builder;

    eval {
        my $xml = get($url);
        die "Could not fetch $url" unless defined $xml;

        my $parser = XML::LibXML->new(
            expand_entities => 0,
            load_ext_dtd    => 0,
            validation      => 0,
        );

        my $schema = XML::LibXML::Schema->new(
            location => $xsd
        );

        my $doc = $parser->parse_string($xml);
        $schema->validate($doc);
    };

    warn $@ if $@;

    $tb->ok(!$@, $name);
}
```



# Test script

```
#!/usr/bin/perl

use strict;
use warnings;

use Test::More tests => 2;
use File::Spec;
use FindBin qw($Bin);
use lib File::Spec->catdir($Bin, qw(.. lib));

use CF::Test::XSD;

my $host = 'http://xml_test.cono.org.ua/';

for my $uri ( qw/name tree/ ) {
    xsd_ok("$host$uri", File::Spec->catfile($Bin, 'xsd', "$uri.xsd"), "Check /$uri");
}
```



# XSD for /name

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

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <!-- root element -->
  <xsd:element name="root" type="root-type" />

  <!-- root element type -->
  <xsd:complexType name="root-type">
    <xsd:attribute name="nick" type="xsd:string" use="required" />
  </xsd:complexType>
</xsd:schema>
```



# Test successful

```
[Tue 13/04/09 23:48 UTC][pts/12][x86_64/linux-gnu/3.8.2-gentoo][5.0.2]
<cono@betacoda(4):~/www/cxml>
zsh/2 335 (git)-[master]-% prove t
t/00-xsd.t .. ok
All tests successful.
Files=1, Tests=2, 0 wallclock secs ( 0.02 usr 0.00 sys + 0.08 cusr 0.03 csys = 0.13 CPU)
Result: PASS
```



# XSD for /tree w/ mistake

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

<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <!-- root element -->
  <xsd:element name="root" type="root-type" />

  <!-- root element type -->
  <xsd:complexType name="root-type">
    <xsd:sequence>
      <xsd:element name="example" type="example-type" minOccurs="0" maxOccurs="unbounded" />
    </xsd:sequence>
  </xsd:complexType>

  <!-- example element type -->
  <xsd:complexType name="example-type">
    <xsd:attribute name="parent" type="xsd:unsignedInt" use="required" />
    <xsd:attribute name="name" type="xsd:int" use="required" />
    <xsd:attribute name="id" type="xsd:unsignedInt" use="required" />
  </xsd:complexType>
</xsd:schema>
```



# Test fail

[Tue 13/04/09 23:49 UTC] [pts/12] [x86\_64/linux-gnu/3.8.2-gentoo] [5.0.2]

<cono@betacoda(4):~/www/cxml>

zsh/2 336 (git)-[master]-% prove t

```
t/00-xsd.t .. 1/2 unknown-2613d60:0: Schemas validity error : Element 'example', attribute 'name': 'Encyclopaedia' is not a valid value of the atomic type 'xs:int'.
unknown-2613d60:0: Schemas validity error : Element 'example', attribute 'name': 'Science' is not a valid value of the atomic type 'xs:int'.
unknown-2613d60:0: Schemas validity error : Element 'example', attribute 'name': 'Culture' is not a valid value of the atomic type 'xs:int'.
unknown-2613d60:0: Schemas validity error : Element 'example', attribute 'name': 'Art' is not a valid value of the atomic type 'xs:int'.
unknown-2613d60:0: Schemas validity error : Element 'example', attribute 'name': 'Craft' is not a valid value of the atomic type 'xs:int'.
```

# Failed test 'Check /tree'

# at t/00-xsd.t line 16.

# Looks like you failed 1 test of 2.

t/00-xsd.t .. Dubious, test returned 1 (wstat 256, 0x100)

Failed 1/2 subtests

Test Summary Report

-----

t/00-xsd.t (Wstat: 256 Tests: 2 Failed: 1)

Failed test: 2

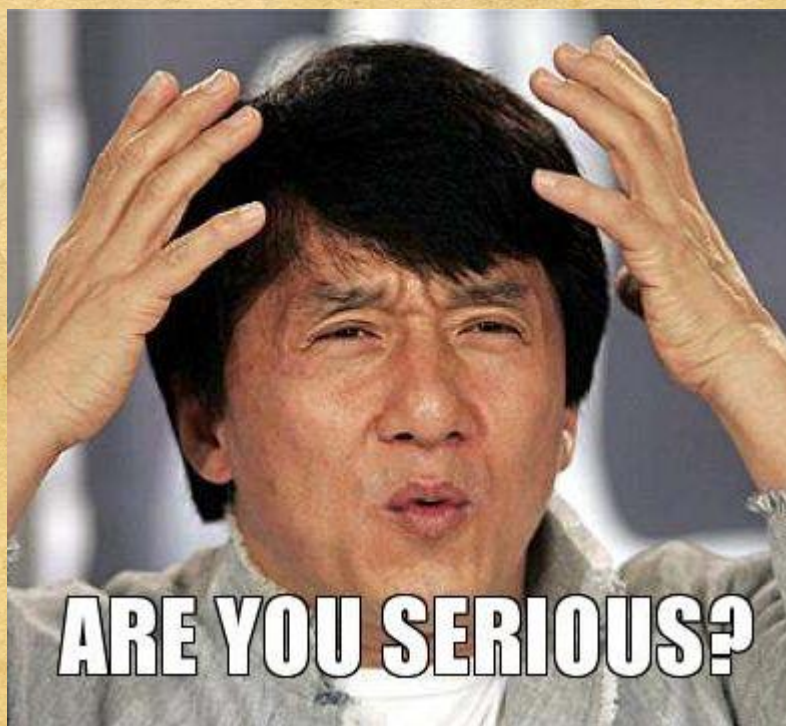
Non-zero exit status: 1

Files=1, Tests=2, 0 wallclock secs ( 0.01 usr 0.01 sys + 0.08 cusr 0.02 csys = 0.12 CPU)

Result: FAIL



Almost the end!





Joking! 😊





# Thanks

bb :)

<https://github.com/cono/xslt-template-engine>

