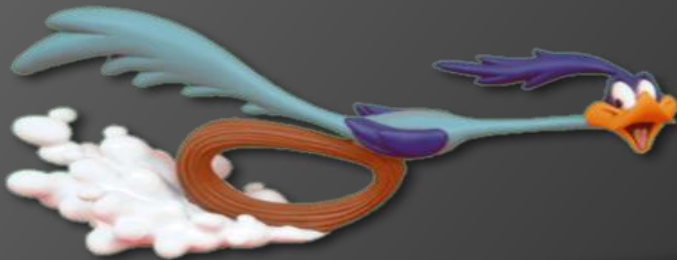


Life in the fast lane with

VELOCITY POWER



VELOCITY POWER

Patrick Talbot / Servoy Stuff

- ◉ Java/Servoy Freelance
- ◉ Open Source developer
- ◉ Servoy Valued Professional
- ◉ Co-Admin of ServoyForge
 - 50+ projects as Project Leader
 - 10+ as Contributor



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The Velocity “Multiverse”

What is this? (And why should I care?)



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In the beginning...



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In the beginning...

- ⦿ HTML AREA

- Sucks at rendering real world HTML

- ⦿ Browser Suite

- Great but heavy (+ Native issues)

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In the beginning...

- ⦿ xHTMLRenderer plugin (Jeff Bader)
 - Commercial plugin
 - Based on Flying Saucer Java lib (aka xHTMLRenderer)
 - Primary focus was better HTML AREA
 - Open sourced in Feb. 2010

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In the beginning...

- No need to duplicate Browser Suite
- But xHTMLRenderer has strength
 - Static xHTML rendering
 - xHTML to PDF

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In the beginning...



- Shortcomings of JasperReports:
 - iReport complexity
 - Fixed layout
 - Quirky sub reports
 - Difficult/impossible to create multi structured reports

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Entering Apache Velocity...

- Awesome templating tool

- Fast
- Easy
- Fast
- Easy
- ...
- Did I say Fast?



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Apache Velocity + xHTMLRenderer

- ⦿ Merging data into xHTML
- ⦿ Rendering the result
- ⦿ Make it fast and easy!

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VelocityReport

- Reporting engine based on xHTML/CSS
- PDF creation
- HTML or any text based merging
 - Emails
 - CSV
 - XML
- Better HTML AREA
- Reports/Dashboards
 - Graphs
 - HTML
 - Tables



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Servoy Web client

- ⦿ Great for form based apps but:
 - Lack of layout flexibility
 - Heavy
 - Weird HTML
 - Quirky to integrate CSS and 3rd party JavaScript framework
 - Slow

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Web server

Various approaches:

- Component oriented
 - Tapestry / Wicket / Click / ...
- MVC based
 - Struts
- Ad-hoc templates
 - ASP/PHP/JSP

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Velocity 'Web client'



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Velocity

- ⦿ Better REST WS plugin +
- ⦿ Fast Velocity templating engine +
- ⦿ VelocityReport awesome integration with Servoy

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Velocity

- Easy to create web pages and sites
- Use **ANY** client framework or plain HTML
- ANY layout
- Huge array of applications (web services)
- JSON or XML or HTML or PDF
- Did I say fast?

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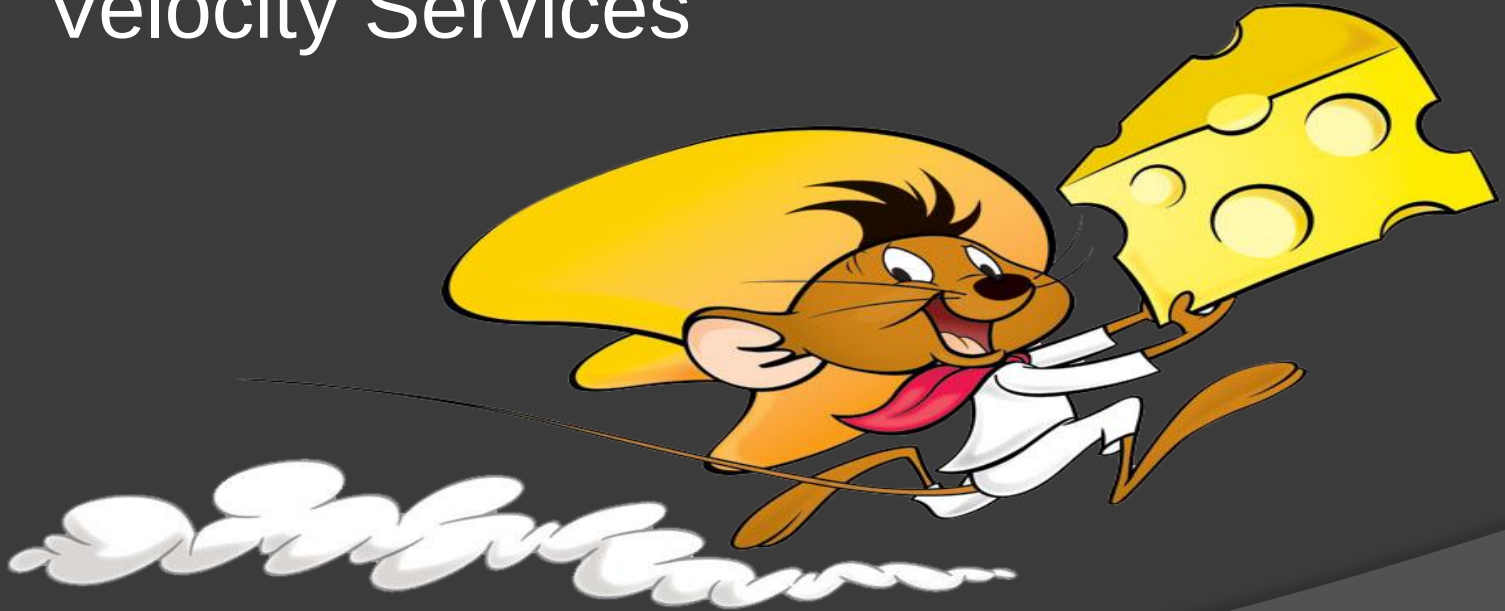
Velocity

Can expose web services that client will call to get data from Servoy (in JSON or XML format)

But how to better consume web services in Servoy???

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Velocity Services



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Velocity Services

- Easy declarative way to integrate JSON/XML web services
- Invocation directly in Servoy (invokeService)
- Or integrated pre or post requests to a Velocity web service/page

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Velocity Services

- ⦿ Easier than using HTTP plugin
- ⦿ Can work asynchronously (with a callback)
- ⦿ On the fly declaration of new services (in config.json)

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In summary: the Velocity Multiverse

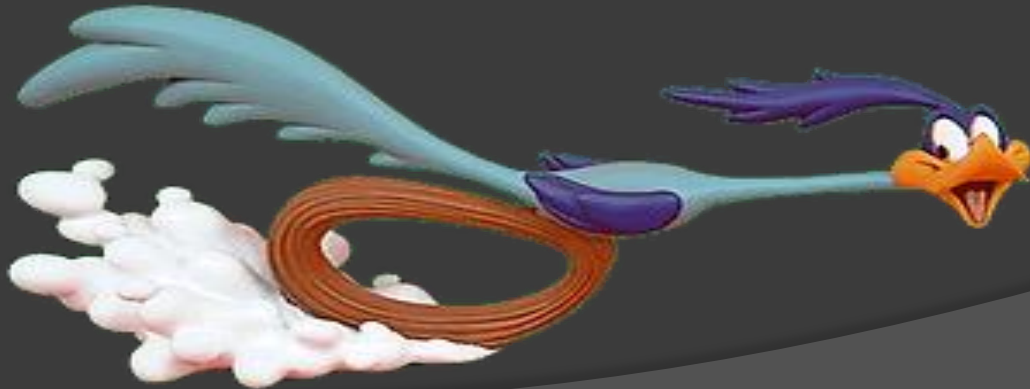
- ⦿ VelocityReport for:
 - Reporting / Merging / Dashboards / Rendering
- ⦿ Velocity for:
 - Serving Web pages / Exposing Web services
- ⦿ Velocity Services for:
 - Consuming Web services

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Questions?

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No need to wait for Servoy 8!
The new web client is there, and it's called
Velocity



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A REST servlet (on steroid)

+

Fast and furious Velocity templating
engine

+

VelocityReport capabilities

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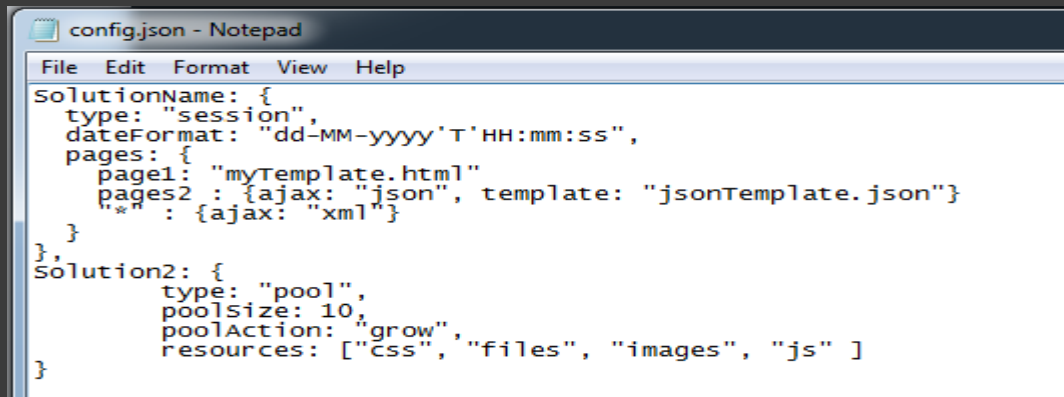
A REST servlet (on steroid)

- 3 levels of headless client instantiation (per solution):
 - **application** (one headless client to rule them all!)
 - **pool** (just like the REST plugin, but much better!)
 - **session** (one headless client per HTTP session)
- In session mode, your session is stateful
- (Actually it can be stateful also in any mode... :)

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A REST servlet (on steroid)

Easy to configure: the config.json file

A screenshot of a Notepad window titled 'config.json - Notepad'. The window shows a JSON configuration file with two solutions. The first solution, 'SolutionName', is of type 'session' and includes a date format and a set of pages. The second solution, 'Solution2', is of type 'pool' and includes a pool size, a pool action, and a list of resources.

```
config.json - Notepad
File Edit Format View Help
{
  "SolutionName": {
    "type": "session",
    "dateFormat": "dd-MM-yyyy'T'HH:mm:ss",
    "pages": {
      "page1": "myTemplate.html",
      "pages2": {
        "ajax": "json",
        "template": "jsonTemplate.json"
      },
      "*": {
        "ajax": "xml"
      }
    }
  },
  "Solution2": {
    "type": "pool",
    "poolsize": 10,
    "poolAction": "grow",
    "resources": ["css", "files", "images", "js"]
  }
}
```

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config.json

solution1: { },

solution2: {

- type (application|session|pool)
- poolSize / poolAction
- ajax / mimeType
- dateFormat / numberFormat / jsonDateFormat
- defaultForm
- defaultTemplate
- errorPage
- extractBody
- serializeNull

}

- authentication
- defaultUser
- loginPage
- userParam / passParam
- resourceHeaders { }
- resources: []
- deny: []
- pages: { }
- services: { }

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config.json

```
solution: {  
  pages : {  
    • formName (can use * wildcards): {  
    • ajax  
    • jsonp  
    • template  
    • contentType  
    • form  
  }  
}
```

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Apache Velocity language

\$ # ! . () []

if / else / elseif / end

foreach / end / break

set / define

parse / include / evaluate

macro

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VelocityReport capabilities

- Use ANY Servoy objects
- Extend with build-in charts and barcodes
- Create JSON/XML response on the fly
- Easily return dynamic PDF/Excel to a request

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The one function

```
vr_getContext(request) {  
    // analyse request object  
    // do anything based on that  
    // return a ResponseObject  
}
```

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request object

- ◉ A javascript object
 - ◉ **request.method**:
 - GET
 - POST
 - DELETE
 - PUT
 - HEAD
 - OPTIONS
 - TRACE
- ◉ request contains collections:
 - ◉ **request.parameters** {}
 - ◉ request.cookies {}
 - ◉ request.headers {}
 - ◉ **request.session** {}
 - ◉ request.parts {}
 - ◉ request.userGroups []
 - ◉ **request.extraPaths** []
- ◉ request also contains additional values:
 - ◉ request.extension
 - ◉ request.pathInfo
 - ◉ request.protocol
 - ◉ request.scheme
 - ◉ request.characterEncoding
 - ◉ request.locale
 - ◉ request.queryString
 - ◉ **request.requestedForm**
 - ◉ request.sessionID
 - ◉ request.clientID
 - ◉ request.multipart
 - ◉ request.body
 - ◉ request.headlessType
 - ◉ request.authentication
 - ◉ request.userName
 - ◉ request.userID

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Manipulate the response:

- **createReponse**
- createRedirectResponse
- createForwardResponse
- createBytesResponse
- createFileResponse
- createErrorResponse

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ResponseObject properties:

- context
- template
- Inline
- mimeType
- URL
- bytes
- file
- deleteAfterServe
- errorCode
- errorMessage
- errorLink
- errorException

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ResponseObject methods:

- addHeader
- getHeader
- removeHeader
- addCookie
- getCookie
- removeCookie
- addSessionAttribute
- getSessionAttribute
- removeSessionAttribute
- invalidate
- invokeService

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Velocity plugin extra methods:

- createCookie
- getConfig
- invokeService
- createMimeMultipart

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Cookie object:

- domain
- expiryDate
- maxAge
- path
- sessionBased
- value
- getName()

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MimeMultipart object:

- related
- addBodyPart
- addFilePart

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The Velocity workflow

1. HTTP Request
2. Velocity plugin servlet
3. Headless client
4. `function vr_getContext(request)`
5. Do anything you want in Servoy!
6. Return a ResponseObject
7. Rendering: template gets filled
8. Browser interprets html+css+js
9. Takes no time = Happy user!

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Installing Velocity

- <https://www.servoyforge.net/projects/velocity-report/files>
- Unzip, put /plugins in /plugins
- Put eastwood.war in /server/webapps
- Create a reports folder somewhere
- Put VM_global_library.vm in there
- Create a www/ folder + a config.json file
- In servoy-admin/plugins-setting:
 - set velocityreport.reportfolder
 - and velocityreport.serverURL

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Questions?

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DEMO

**A functional webstore with
Bootstrap/jQuery/Servoy/Velocity**

<https://www.servoyforge.net/projects/velocity-samples>

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Demo: Things to note

- Pick your favorite client framework or roll your own
- Flexible layout, any HTML, even HTML5
- Debugging in Velocity
- Error management
- Tomcat Manager
- config.json is entirely dynamic
- Templates/includes are entirely dynamic
- Form changes are mostly dynamic
- If not, kill that client!

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In the template

- Integrating charts/barcodes in your pages
- Creating PDF on the fly
- Creating JSON/XML on the fly (using the extension)
- No need for extensions (cleaner URLs / REST style)
- Using `$i18n` in the templates
- Using `$globals` and `$scopes` (even functions) in the templates
- Using `$valueLists` in the templates
- `$now`, `$date` and `$number`
- use `.toJSON()` to pass objects to JavaScript
- `$httpSession`
- Silence null and exceptions !
- `$null.isNull()` and `$null.isNotNull()`

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In the template

- `foundset == dataset == Array<Object>`
- `$fs.get() / $fs.getRecord() / $fs[]`
- `$ds.get() / $ds.getRow() / $ds[]`
- `[] == .get()`
- `$function.call()`
- `#foreach > object/array/foundset/dataset`
- In loops, `$foreach.count / $foreach.hasNext`
- `$record` has relationships
- `$record` has calculations/aggregates
- Use dot (.) syntax, just like in Servoy
- Use `${}` to delimit a variable in edge cases
- Manipulate ANY text (html / js / css / xml / json) at rendering time

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A little quiz: what does this do?

```
// IN SERVVOY:
globals.const_TABLE_TO_DETAIL = {
    products: { related: 'product', ref: 'id' },
    orders: { related: 'order', ref: 'filter' } // etc.
}

function vr_getContext(request) {
    var context = {};
    context._page: request.requestedForm;
    // some more treatment here
    return plugins.Velocity.createResponse(context);
}

// IN THE TEMPLATE:
$(document).ready(function () {
    #set($rel = $globals.const_TABLE_TO_DETAIL[$_page])
    #if($rel)
    $('table#$_page tbody tr').click( function(e) {
        var id = $($ (this).children()[0]).text();
        window.location.href = '$rel.related?$rel.ref='+id;
    } );
    #end
} );
```

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In config.json

- Automatic reload
- solutionName: {} – default for everything
- type: application vs session vs pool
- dateFormat / numberFormat / jsonDateFormat
- authentication
- defaultUser (users.properties) / loginPage + userParam/passParam
- resources = static files / deny = 403
- defaultForm / defaultTemplate/ errorPage
- extractBody / jsonDateFormat / serializeNull
- resourcesHeaders
- Services (pre/post/client/server?)
- pages – implicit definition {template, form, ajax, jsonp, mimeType}
- Valid extensions for template: html/xhtml/htm/tmpl/tpl/vtl/xml/txt
- Access templates from another solution ../ (shared templates)
- use #include() in config.json – always ‘touch’ config.json
- JSON need to be well formed!
<http://jsonviewer.stack.hu/> <http://www.freeformatter.com/json-validator.html>

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In Servoy

- request gives access to everything you need (and more!)
- use request.method for REST, along with extraPaths []
- Ajax request == http request
- request.parameters for GET/POST/PUT/DELETE
- ResponseObject = createResponse()
- Put anything you want in the context
- Redirect != Forward
- Bytes != File
- Form enctype=multipart/form-data
- Input=file received as JSFile (server-side)
- request.multipart / request.parts
- request.body

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In Servoy

- `request.cookies` = limited storage, browser side
- Cookies can be persistent accross sessions
- Cookies can be disabled by users!
- `request.session` == http globals! (but better)
- Store anything in the session = stateful
- session cannot be disabled by users
- session variables can be spied upon! 😊
- session objects persist even after a server restart!
- `ResponseObject.addSessionAttribute()`
- `ResponseObject.removeSessionAttribute()`
- `ResponseObject.invalidate()`
- `createErrorResponse()` -> `errorPage`

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Questions?

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Want to unleash the power of Velocity?

**I'm offering consulting services/training/help building
your solutions/modules/templates**



Servoy Stuff

admin@servoy-stuff.net

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Brought to you by:



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Find it on ServoyForge: <https://www.servoyforge.net/projects/velocity-report>

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