

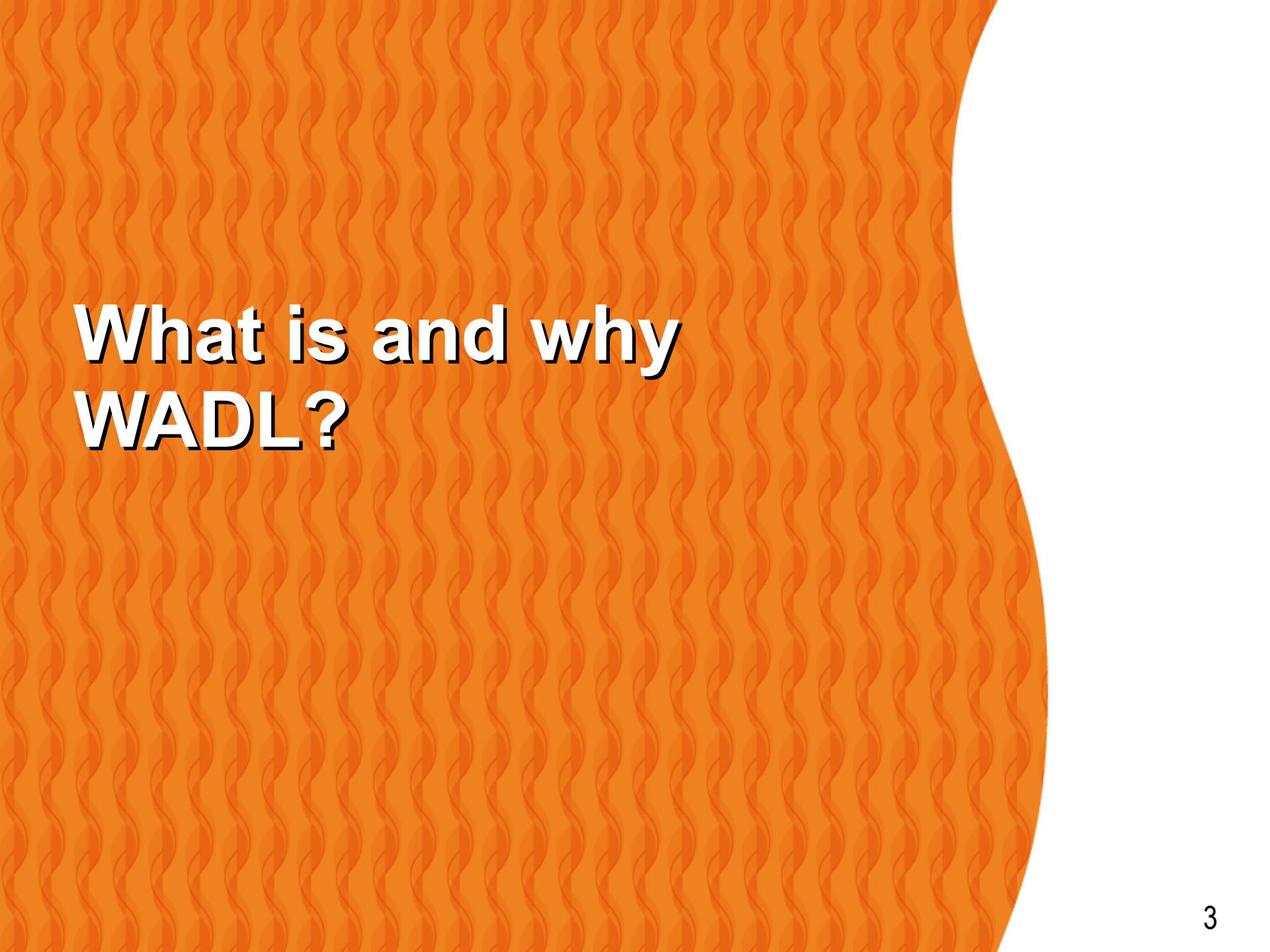
WADL Overview

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“Learning is fun!”**



Agenda

- What is and Why WADL?
- WADL document structure
- Example mapping between a HTTP request and WADL
- WADL examples
 - > Yahoo News Search
 - > Atom Publishing Protocol
- Tools for WADL
 - > wadl2java
 - > soapUI, NetBeans, Google Describe
- Client code



What is and why WADL?

What is WADL?

- Web Application Description Language
 - > Machine-friendly site map
 - > HTTP assumed
- XML-based language
 - > Not restricted to XML payloads
 - > Uses hyperlinks for composability
- Development language+platform neutral
- Aligned with REST terminology

Why WADL?

- WADL is designed to provide a simple alternative to WSDL for use with XML/HTTP Web applications.
- To date such applications have been mainly described using a combination of textual description and XML schema, WADL aims to provide a machine process-able description of such applications in a simpler format than is possible using WSDL.
(quoted from Marc Hadley's "Introducing WADL blog -
http://weblogs.java.net/blog/mhadley/archive/2005/05/introducing_wad.html)

WADL Document Structure

WADL Elements

- Resources
 - > Identified by a URI
 - > Specify which HTTP methods are supported
- Methods
 - > Specify details of request and response contents
 - > Often refer to representations
- Representations
 - > Describe the format of a HTTP entity
 - > Can refer to grammars
- Grammars
 - > Specify use of W3C XML schema

WADL Document Structure

```
<application>
  <doc/*>
  <grammars/>?
  <resources base='anyURI'?>
    <doc/*>
    <resource path='template' type='anyURI+'?>+
      <doc/*>
      <param/*>
      ( <method/> | <resource/> )+
    </resource>
  </resources>
  ( <method/> | <representation/> | <fault/> |
    <resource_type/>)*
</application>
```

WADL Method Structure

```
<method name='NMTOKEN' ? id='ID' ?
    href='anyURI'?>
    <doc/*>
    <request?>
        <param/*>
        <representation/*>
    </request>
    <response?>
        ( <representation/> | <fault/> )*
    </response>
</method>
```

WADL Param Structure

```
<param name='NMTOKEN'
       style='query|matrix|template|header'
       type='QName'
       default='string'
       path='string'
       required='boolean'
       repeating='boolean'
       fixed='string'>
<doc/*>
<option/*>
<link resource_type='anyURI'
      rel='string' rev='string' />?
</param>
```

WADL Resource Type Structure

```
<resource_type id='ID'>
  <doc/>*
  <param/>*
  <method/>*
</resource_type>
```

Example Mapping between a HTTP Request and WADL

Mapping of Base URL

```
GET http://bookmarks-online.com/ api/v1/bookmarks?  
userId=tom&tags=rest&limit=10  
  
<?xml version="1.0" encoding="utf-8"?>  
<application  
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
    xsi:schemaLocation="http://research.sun.com/wadl/2006/10 wadl.xsd"  
    xmlns="http://research.sun.com/wadl/2006/10"  
>  
  <resources base="http://bookmarks-online.com/">  
    <resource path="api/v1/bookmarks">  
      <method name="GET">  
        <request>  
          <param name="userId" type="xsd:string" style="query" />  
          <param name="tags" type="xsd:string" style="query" />  
          <param name="limit" type="xsd:integer" style="query" />  
        </request>  
      </method>  
    </resources>  
</application>
```

Mapping of URL Path

```
GET http://bookmarks-online.com/api/v1/bookmarks?  
userId=tom&tags=rest&limit=10
```

```
<?xml version="1.0" encoding="utf-8"?>  
<application  
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
    xsi:schemaLocation="http://research.sun.com/wadl/2006/10 wadl.xsd"  
    xmlns="http://research.sun.com/wadl/2006/10"  
>  
    <resources base="http://bookmarks-online.com/">  
        <resource path="api/v1/bookmarks">  
            <method name="GET">  
                <request>  
                    <param name="userId" type="xsd:string" style="query" />  
                    <param name="tags" type="xsd:string" style="query" />  
                    <param name="limit" type="xsd:integer" style="query" />  
                </request>  
            </method>  
        </resources>  
</application>
```

Mapping of HTTP Method

```
GET http://bookmarks-online.com/api/v1/bookmarks?  
userId=tom&tags=rest&limit=10  
  
<?xml version="1.0" encoding="utf-8"?>  
<application  
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
    xsi:schemaLocation="http://research.sun.com/wadl/2006/10 wadl.xsd"  
    xmlns="http://research.sun.com/wadl/2006/10"  
>  
    <resources base="http://bookmarks-online.com/">  
        <resource path="api/v1/bookmarks">  
            <method name="GET">  
                <request>  
                    <param name="userId" type="xsd:string" style="query" />  
                    <param name="tags" type="xsd:string" style="query" />  
                    <param name="limit" type="xsd:integer" style="query" />  
                </request>  
            </method>  
        </resources>  
</application>
```

Mapping of Parameters

```
GET http://bookmarks-online.com/api/v1/bookmarks?  
userId=tom&tags=rest&limit=10  
  
<?xml version="1.0" encoding="utf-8"?>  
<application  
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
    xsi:schemaLocation="http://research.sun.com/wadl/2006/10 wadl.xsd"  
    xmlns="http://research.sun.com/wadl/2006/10"  
>  
    <resources base="http://bookmarks-online.com/">  
        <resource path="api/v1/bookmarks">  
            <method name="GET">  
                <request>  
                    <param name="userId" type="xsd:string" style="query" />  
                    <param name="tags" type="xsd:string" style="query" />  
                    <param name="limit" type="xsd:integer" style="query" />  
                </request>  
            </method>  
        </resources>  
</application>
```

Yahoo News Search

WADL Examples

Yahoo News Search

- <http://search.yahooapis.com/NewsSearchService/V1/newsSearch>
- Query parameters
 - > appid: get this from Yahoo by registering
 - > query: space separated list of keywords
 - > many others including language, sort, result count etc.
- Get back results as XML, JSON or PHP
 - > XML schema available for normal and error responses

News Search Documentation for Yahoo! Search Web Services - YDN - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://developer.yahoo.com/search/news/V1/newsSearch.html

Most Visited Getting Started Latest Headlines Welcome to JavaPassi...

Mozilla Firefox Start Page News Search Documentation for ...

Yahoo! My Yahoo! Mail Welcome, axykim00 Sign Out

YAHOO! DEVELOPER NETWORK

MY PROJECTS SERVICES & TOOLS RESOURCES SUPPORT

YDN News Search Documentation for Yahoo! Search Web Services

News Search Documentation for Yahoo! Search

Submitting News Queries

The News Search service allows you to search the Internet for news stories.

Request URL

<http://search.yahooapis.com/NewsSearchService/V1/newsSearch>

Request parameters

See information on [constructing REST queries](#)

Parameter	Value	Description
appid	string (required)	The application ID. See Application IDs for more information.
query	string (required)	The query to search for.
type	<i>all</i> (default), <i>any</i> , or <i>phrase</i>	The kind of search to submit: <ul style="list-style-type: none"><i>all</i> returns results with all query terms.<i>any</i> returns results with one or more of the query terms.

READY TO GET STARTED?
By applying for an Application ID for this service, you hereby agree to the [Terms of Use](#)

[Get an App ID](#)

YAHOO! GROUPS DISCUSSIONS

[possible to pay for increased limit?](#)
Fri, 09 Apr 2010

[Yahoo Local search data for France](#)
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[Search Yahoo local search API with Longitude and Latitude values.](#)
Fri, 09 Apr 2010

[Find nearest intersection to a given address](#)
Fri, 09 Apr 2010

Done

Yahoo News Search WADL (1)

```
<application xmlns:...>

  <grammars>
    <include href=".../NewsSearchResponse.xsd"/>
    <include href=".../NewsSearchError.xsd"/>
  </grammars>

  <resources
base="http://api.search.yahoo.com/NewsSearchService/V1/">
    <resource path="newsSearch">
      <param name="appid" type="xsd:string"
        required="true" style="query"/>
      <method href="#search"/>
    </resource>
  </resources>
```

Yahoo News Search WADL (2)

```
<method name="GET" id="search">
  <request>
    <param name="query" type="xsd:string"
          required="true" style="query"/>
    <param name="type" type="xsd:string"
          default="all" style="query">
      <option value="all"/>
      <option value="any"/>
      <option value="phrase"/>
    </param>
    ...
  </request>
  <response>
    <representation href="#resultSet"/>
    <fault href="#searchError"/>
  </response>
</method>
```

Yahoo News Search WADL (3)

```
<representation id="resultSet"
    mediaType="application/xml"
    element="yn:ResultSet">
    <doc xml:lang="en"
        title="A matching list of news items"/>
</representation>

<fault id="searchError"
    status="400"
    mediaType="application/xml"
    element="ya:Error"/>
```

Atom Publishing Protocol

WADL Examples

Atom Publishing Protocol

```
<service xmlns....>
  <workspace>
    <atom:title>Main Site</atom:title>
    <collection href="http://...." >
      <atom:title>My Blog Entries</atom:title>
      <accept>entry</accept>
      <categories href="http://...." />
    </collection>
    <collection href="http://...." >
      <atom:title>Pictures</atom:title>
      <accept>image/*</accept>
    </collection>
  </workspace>
</service>
```

App Service Doc using WADL

```
<application xmlns...>
  <resources base="http://example.org/">
    <resource path="reilly/main"
      type="http://.../app.wadl#feed"/>
    <resource path="reilly/pic"
      type="http://.../app.wadl#media"/>
  </resources>
</application>
```

App Feed Resource Types

```
<resource_type id="feed">
  <method href="#getFeed"/>
  <method href="#addEntryCollectionMember"/>
</resource>

<resource_type id="media">
  <method href="#getFeed"/>
  <method href="#addEntryCollectionMember"/>
  <method href="#addMediaCollectionMember"/>
</resource>
```

Java Tools for WADL

Java Tools for WADL

- wadl2java
- soapUI - uses wadl2java underneath
- NetBeans - uses wadl2java underneath
- Google REST compile and describe

wadl2java

- Open source project
 - > <http://wadl.dev.java.net>
- Generate client-side stubs
- Command line, Apache Ant, Maven
- Uses JAXB for XML processing
- Uses DataSource for other types of entity
- JAXB code model used for code generation
- URL connection used for HTTP communication

Using wadl2java (command line)

- `java -jar wadl2java.jar`
- `-o outputDir`
 - > Specifies the output directory
 - `-p package`
 - > Specifies the Java package to use
 - `[-a]`
 - > Automatic package naming for schema-derived classes
 - `[-c customization]*`
 - > Specify JAXB binding customization file
 - `file.wadl`

Yahoo News Search Stub

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
    public DataSource getAsApplicationXml(  
        String appid, String query) {...}  
    public DataSource getAsApplicationJson(  
        String appid, String query) {...}  
    public DataSource getAsApplicationPhp(  
        String appid, String query) {...}  
}  
...
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

```
<resource path="newsSearch">  
    <param name="appid" style="query"/>  
    <method name="GET">  
        ...  
    </method>  
</resource>
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

```
<resource path="newsSearch">  
    <param name="appid" style="query"/>  
    <method name="GET">  
        ...  
    </method>  
</resource>
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

```
<resource path="newsSearch">  
    <param name="appid" style="query"/>  
    <method name="GET">  
        ...  
    </method>  
</resource>
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

```
<method name="GET">  
    <request>  
        <param name="query" style="query"/>  
    </request>  
    <response>  
        <representation element="y:ResultSet"/>  
    </response>  
</method>
```

Mapping WADL to Java

```
public class NewsSearch {  
    public NewsSearch() {...}  
    public ResultSet getAsResultSet(  
        String appid, String query) {...}  
}
```

```
<method name="GET">  
    <request>  
        <param name="query" style="query"/>  
    </request>  
    <response>  
        <representation element="y:ResultSet"/>  
    </response>  
</method>
```

Client Code

Client Code

```
NewsSearch s = new NewsSearch();
ResultSet rs = s.getAsResultSet(
    "some_app_id", "java sun");
for (Result r: rs.getResultList( ))
{
    System.out.printf(" %s (%s)\n",
        r.getTitle(),
        r.getClickUrl());
}
```

Thank you!

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