



Overview of Project OpenPTK

Scott Fehrman

Derrick Harcey

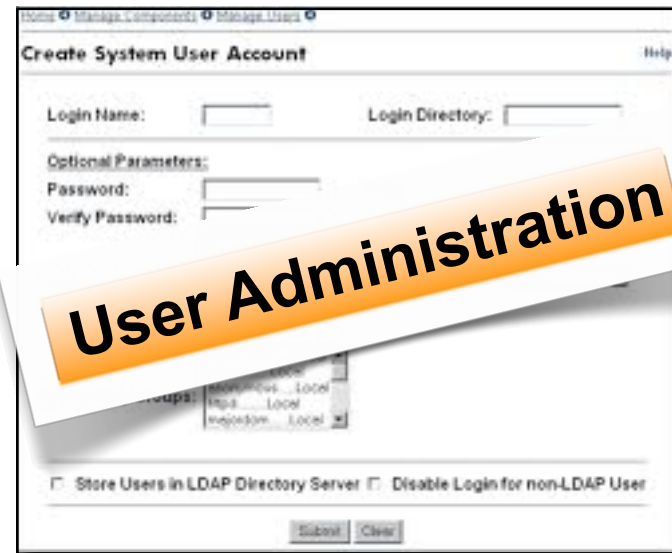
Terry Sigle

Filling a “need”



The image shows the FAFSA (Free Application for Federal Student Aid) login page. The header includes the FAFSA logo and the text "FAFSA Free Application for Federal Student Aid". Below the header, there are navigation links: Home, Contact Us, and Browse Help. The main section is titled "Login" and contains a form for entering the student's Social Security Number (SSN) and the student's date of birth. A virtual keyboard is displayed on the page. A large orange banner with the text "Self Service" is overlaid on the page.

Self Service



The image shows a "Create System User Account" form. The form includes fields for "Login Name:", "Login Directory:", "Optional Parameters:", "Password:", and "Verify Password:". There are also checkboxes for "Store Users in LDAP Directory Server" and "Disable Login for non-LDAP User". A large orange banner with the text "User Administration" is overlaid on the form.

User Administration



The image shows a "Registration Form" with fields for "FirstName", "EmailID", "PhoneNo", "LoginName", and "Password". A large orange banner with the text "Registration" is overlaid on the form.

Registration

Requirements



<?xml?>

JSP / TAGLIB
Servlets



iOS



C++





XML

HTML

JS

C#

C++

JSP

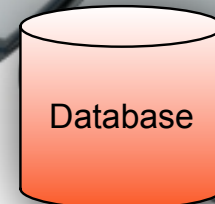
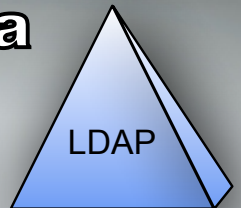
C

Java

PHP

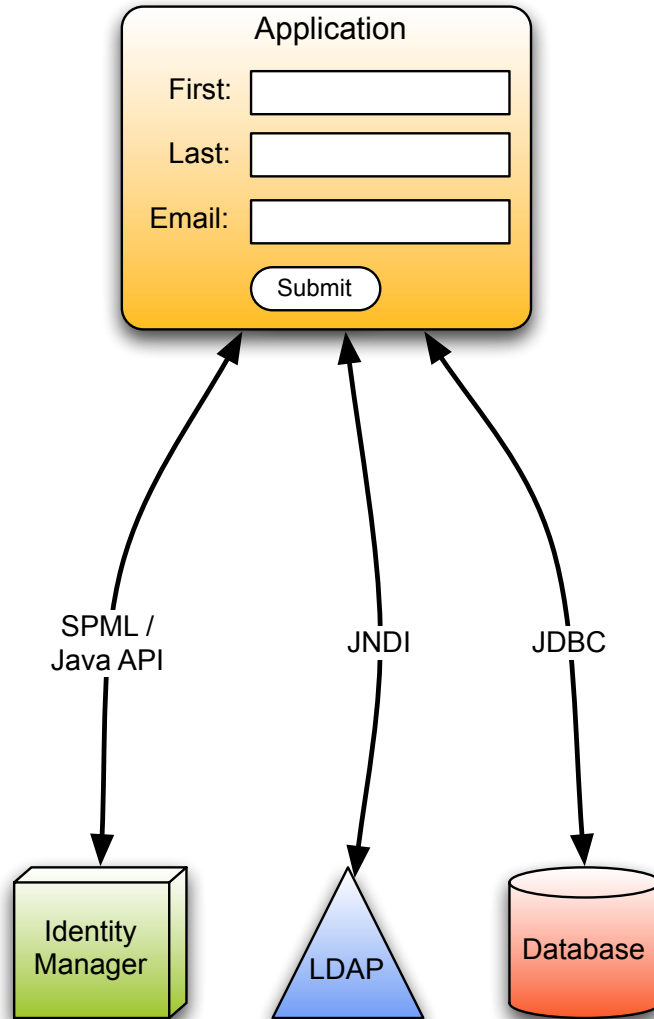


Java



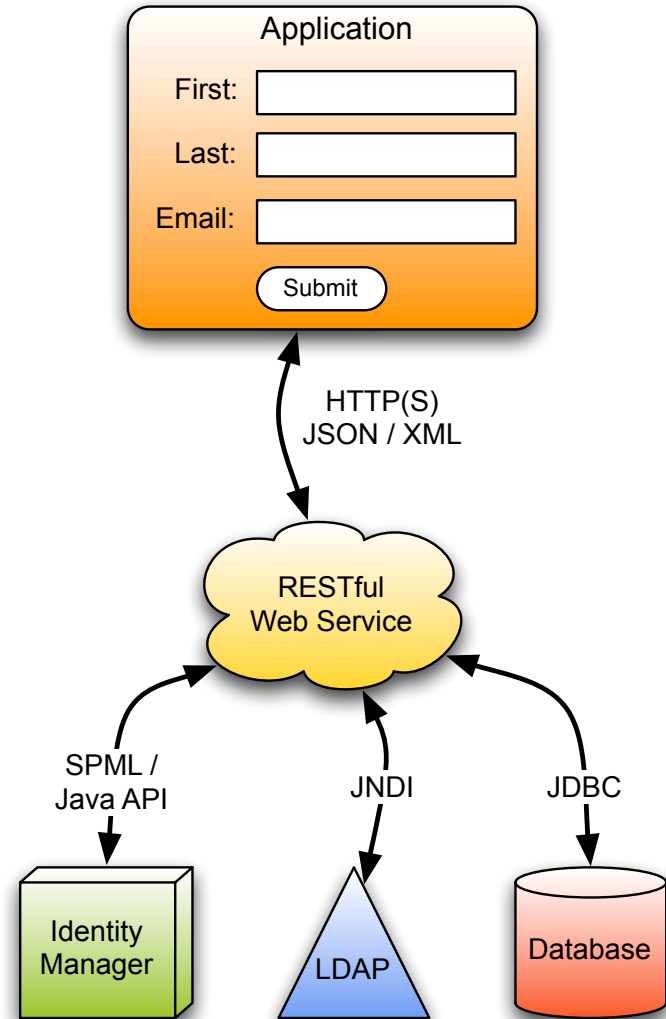
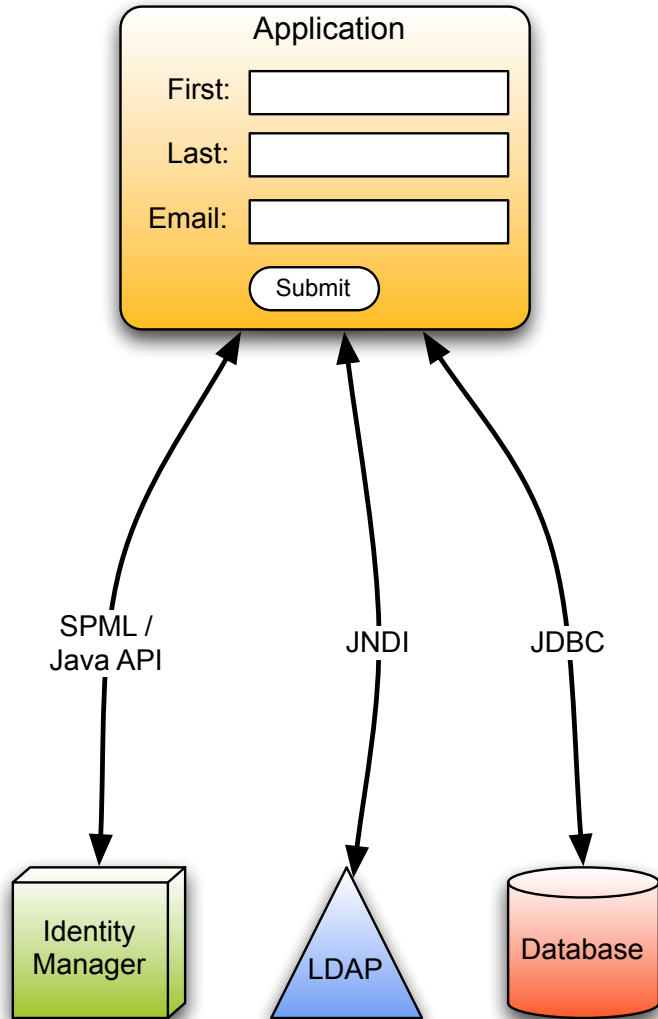
Challenges

Strategy

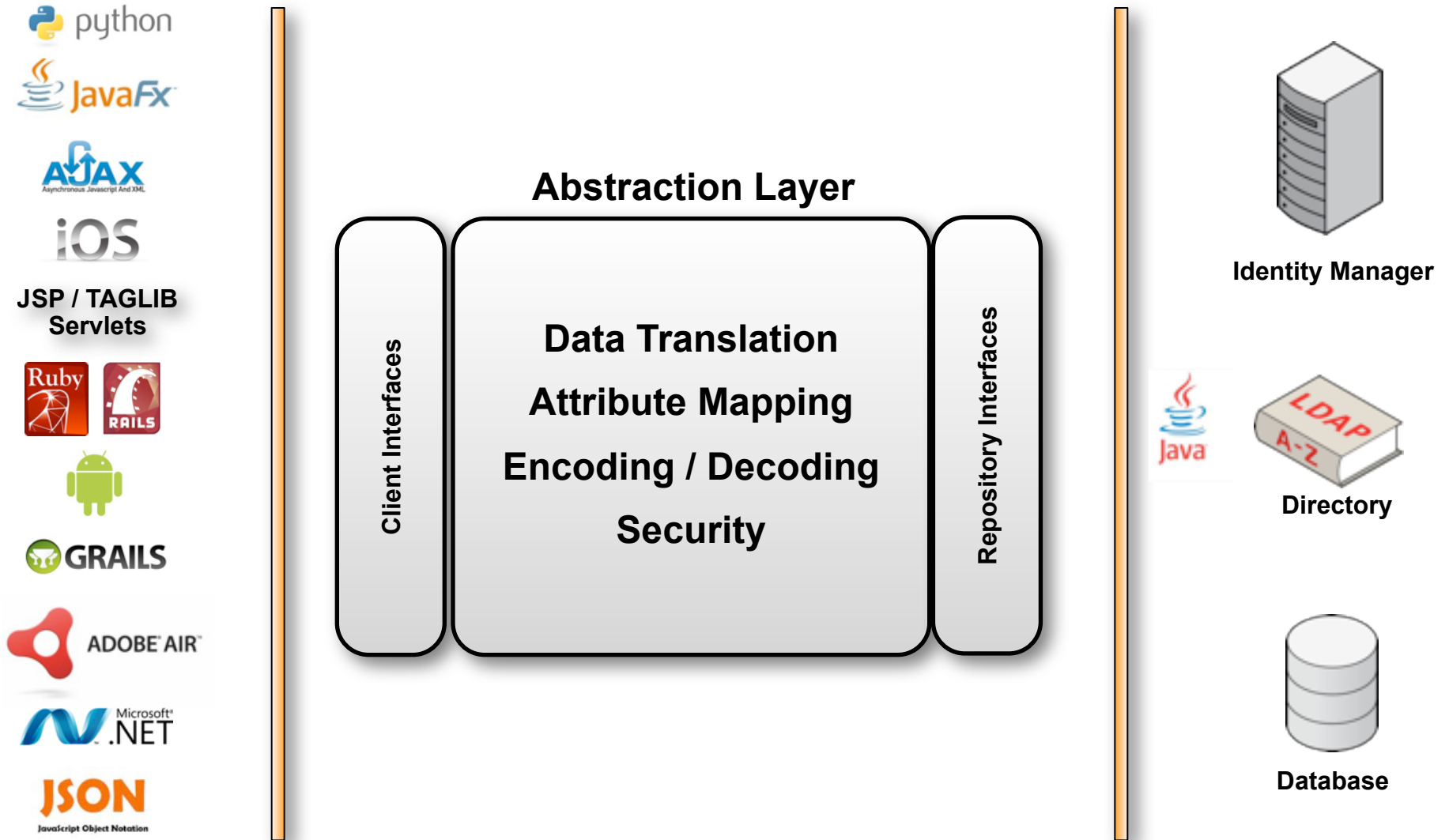


“make is easy for the developer”

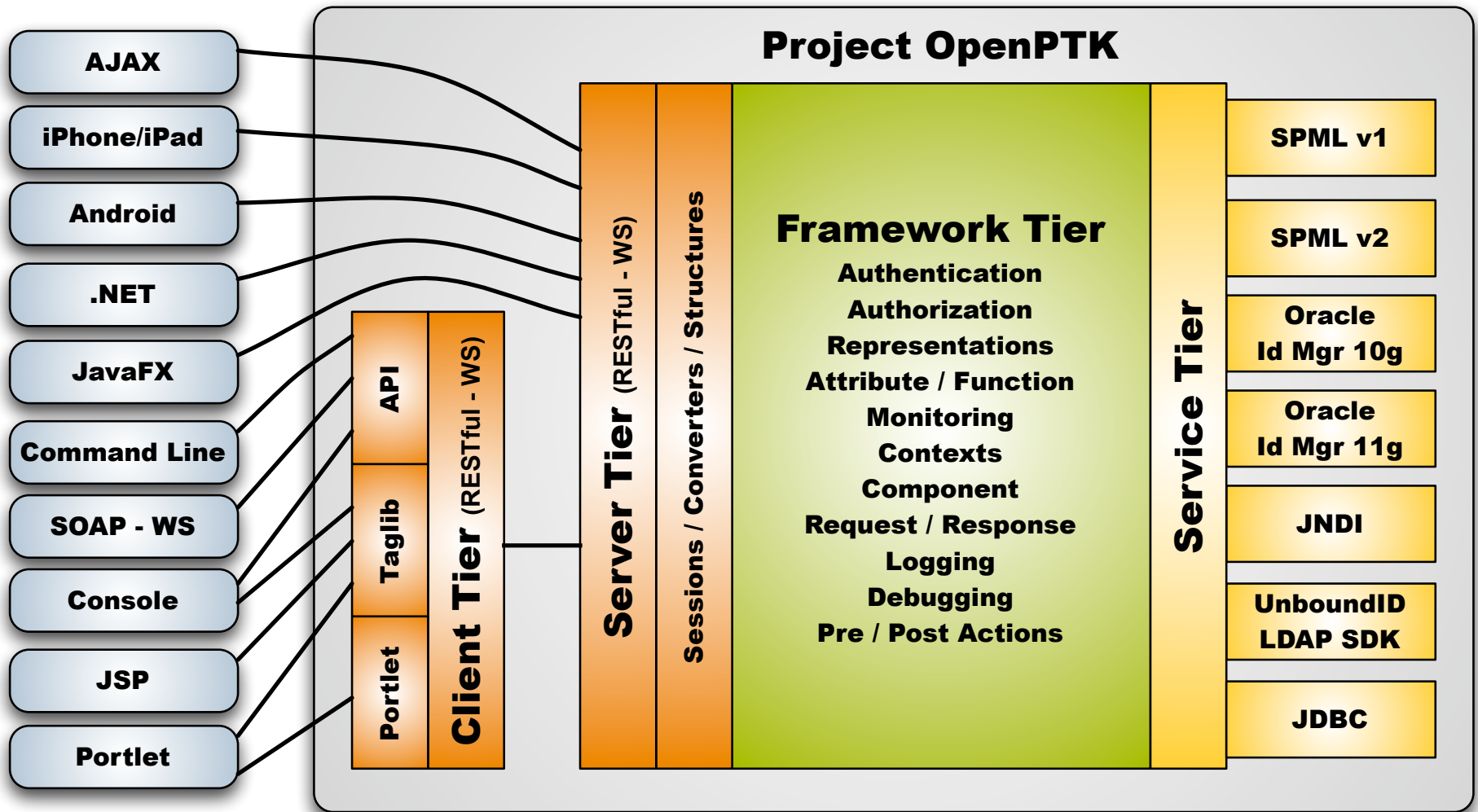
Strategy



Architecture



Implementation



Samples: Registration

Provisioning Framework Help Config

New User Information:

First:

Last:

Email:

OpenPTK
Bridging Identity

OpenPTK
Bridging Identity

Search Results

User Registration

Forgotten Password Questions

Firstname:

Lastname:

Email:

Password:

Confirm:

What is your favorite color?

What is your mother's name?

What is the city of your birth?

Terms and Conditions ☐

Reports To

Peers

Direct Reports

New User Registration Home | About

Please provide the following REQUIRED information:

First Name:

Last Name:

Email:

Confirm Email:

SECURE GOVERNMENT  Type keyword, phrase or question

Contact Us | Subscribe to Email | Agency Directory | Call 311

Service Request Center Area Residents Business & Non-Profit Visitors Media Government

Citizen Registration Home | About

Profile:

First Name: Last Name:

Middle Name: Last 4 SSN:

Date Of Birth (MM/DD/YYYY): Drivers License #:

Gender: ☒ Male ☐ Female

Address:

Home: Work:

Address 1: Address 2:

City:

State:

Zip Code:

Country:

Primary: ☐

alt: Primary ☒ Primary

ext: Primary ☐ Primary

Extension: Primary ☐ Primary

Primary: ☐

Password:

Confirm Password:

Password:

Confirm Password:

What is your favorite color?:

What is your mother's maiden name?:

What is the city of your birth?:

Verification:

End-User Check:  

1.

2.

Samples: Self Service

The collage displays five overlapping screenshots of the OpenPTK self-service web application. The top-most screenshot shows the 'OpenPTK Bridging Identity' header with 'Profile' and 'Logout' links. Below the header is a 'Search Results' section and a user profile card for 'John Andrews' with fields for 'Firstname' and 'Lastname'. A second screenshot, partially obscured, shows the 'Provisioning Framework' page with 'User Details' for 'John Andrews' (Id: ja1324) and an 'Edit Profile' button. A third screenshot shows the 'Provisioning Framework' page with 'Set Forgotten Password Questions' for 'John Andrews' (Id: ja1324), listing questions like 'Mothers Maiden Name', 'City you were born', and 'Last 4 digits of Frequent Flyer'. A fourth screenshot shows the 'Provisioning Framework' page with 'Change Password' options, including 'New Password' and 'Confirm Password' fields, and 'Change It' and 'Cancel' buttons. A fifth screenshot shows the 'Provisioning Framework' page with 'Please answer the following 3 questions:' and 'Account Id: ja1324 (John Andrews)'. The bottom-most screenshot shows the 'OpenPTK Bridging Identity' header with 'Profile' and 'Logout' links, a 'Search Results' section, and a 'Forgotten Password Answers' form with fields for 'Mothers Maiden Name', 'City you were born', and 'Last 4 digits of Frequent Flyer'. The 'OpenPTK Bridging Identity' logo is visible in the bottom right corner of the collage.

Samples: User Administration

[Home](#) | [Find](#) | [Create](#)

Create User:

First:

Last:

Email:

[Home](#) | [Find](#) | [Create](#)

User Details:

Id: **ja1324**

First: **John**

Last: **Andrews**

Fullname: **John Andrews**

Email:

Telephone:

Title:

Role:

Admin

Business

Consumer

[Clear Roles](#)

Manager:

Organization: **Corporate Executive**

[Delete](#) | [Change Password](#) | [Reset Password](#)

OpenPTK
Bridging Identity

[Logout](#)

Enter New User Details

Firstname:

Lastname:

OpenPTK
Bridging Identity

[Logout](#)

Search Results

Found: 15

- Andrews, John
- Boland, John Paul
- Clarke, John
- Cronin, John
- Donnellan, John
- Flynn, John
- Johns, Lynn
- Lowry, John
- Mahony, John
- McCarthy, John

1 - 10 of 15

[Reports To](#)

[Peers](#)

[Direct Reports](#)

Are you sure you want to reset the password?

Samples: Portlets

Welcome to Jetspeed 2 Forgot Password Self Service User Administration

Root Folder >> Forgot Password

Folders

- Public Folders

Additional Links

- Jetspeed 2 Home Page
- Jetspeed 2 Wiki
- Apache Portals Website
- Apache Software Foundation
- PDF Portlet

Forgotten Password Portlet

Please answer the following questions: 4

Account Id: sfehrman (Scott Fehrman)

Color:

Pet Name:

Mother Maiden Name:

City Born:

Status: Ready

User Home Forgot Password Self Service User Administration

Template >> User Administration

Folders

- Public Folders
- Non-Java Portlets
- Third Party Portlets

Non Java Pages

- Non-Java Portlets

Additional Links

- Jetspeed 2 Home Page

User Administration Portlet

Scott Fehrman (sfehrman)

Fill-in the fields below, then press the **Create** button.

Press the **Cancel** button to go back to the Main Page.

First:

Last:

Title:

Email:

Work Phone:

Status: Ready

Forgot Password Self Service User Administration

Self Service

User Self Service Portlet

Scott Fehrman (sfehrman)

Change your values in the fields below, then press the **Update** button.

Press the **Cancel** button to go back to the Main Page.

Title:

Email:

Work Phone:

Status: Ready

Samples: Command Line Administration



```
openptkconfig> create -a firstname="Jack",lastname="Bauer"  
"jbuilder" successfully created.
```

```
openptkconfig> search jack
```

uniqueid	title	email	lastcommafirst
jbuilder		<u>Jack.Bauer@openptk.org</u>	Bauer, Jack
gj11966	Title	<u>Garth.Jackson@openptk.com</u>	Jackson, Garth
rj67536	Title	<u>Robert.Jackson@openptk.com</u>	Jackson, Robert

Records: 3

```
openptkconfig> update jbuilder -a title="Team Leader"  
"jbuilder" successfully updated.
```

```
openptkconfig> read jbuilder
```

```
uniqueid : jbuilder  
manager :  
location :  
forgottenPasswordAnswers : [,]  
lastname : Bauer  
firstname : Jack  
title : Team Leader  
organization :  
email : Jack.Bauer@openptk.org  
roles :  
forgottenPasswordQuestions : [,]  
telephone :  
fullname : Jack Bauer  
lastcommafirst : Bauer, Jack
```

Records: 1

```
openptkconfig> read jbuilder
```

```
uniqueid : jbuilder  
manager :  
location :  
forgottenPasswordAnswers : [,]  
lastname : Bauer  
firstname : Jack  
title :  
organization :  
email :  
Jack.Bauer@openptk.org  
roles :  
forgottenPasswordQuestions : [,]  
telephone :  
fullname : Jack Bauer  
lastcommafirst : Bauer, Jack
```

Records: 1

```
openptkconfig> delete jbuilder
```

"jbuilder" successfully deleted.

Why REST



facebook DEVELOPERS

The “Internet / Cloud” API

Uses HTTP

MIME-type Standards

Developer Frameworks

Fast, lightweight



YAHOO!



Google code



twitter



RESTful ... not REST-like

REST-like:

GET /webapp/rest?

collection=foo&id=bar&opcode=read&format=json

HTTP/1.1

Host: host:port

RESTful:

GET /webapp/rest/**collection/element**

HTTP/1.1

Host: host:port

Accept: application/json

REST Approach

Resource - URI	GET	PUT	POST	DELETE
Collection <code>http://acme.com/resources</code>	List the collection's members.	Replace the entire collection with another collection.	Create entry in the collection. The entry's ID is assigned and is usually returned.	Delete the entire collection.
Element <code>http://acme.com/resources/123</code>	Retrieve a representation of the member, using a MIME type.	Update the member of the collection, create if it doesn't exist.	Treat the member as a collection in its own right and create a new entry in it.	Delete the addressed member of the collection.

OpenPTK Operations

OpenPTK Operation	METHOD	URI
Create	PUT	../subjects
Read	GET	../subjects/{id}
Update	POST	../subjects/{id}
Delete	DELETE	../subjects/{id}
Search	GET	../subjects
Password Change	POST	../subjects/{id}/password/change
Password Reset	POST	../subjects/{id}/password/reset
Password Forgot	GET / POST	../subjects/{id}/password/forgot
Relationships	GET	../subjects/{id}/relationship/{rel}
Views	GET	../subjects/{id}/views/{view}

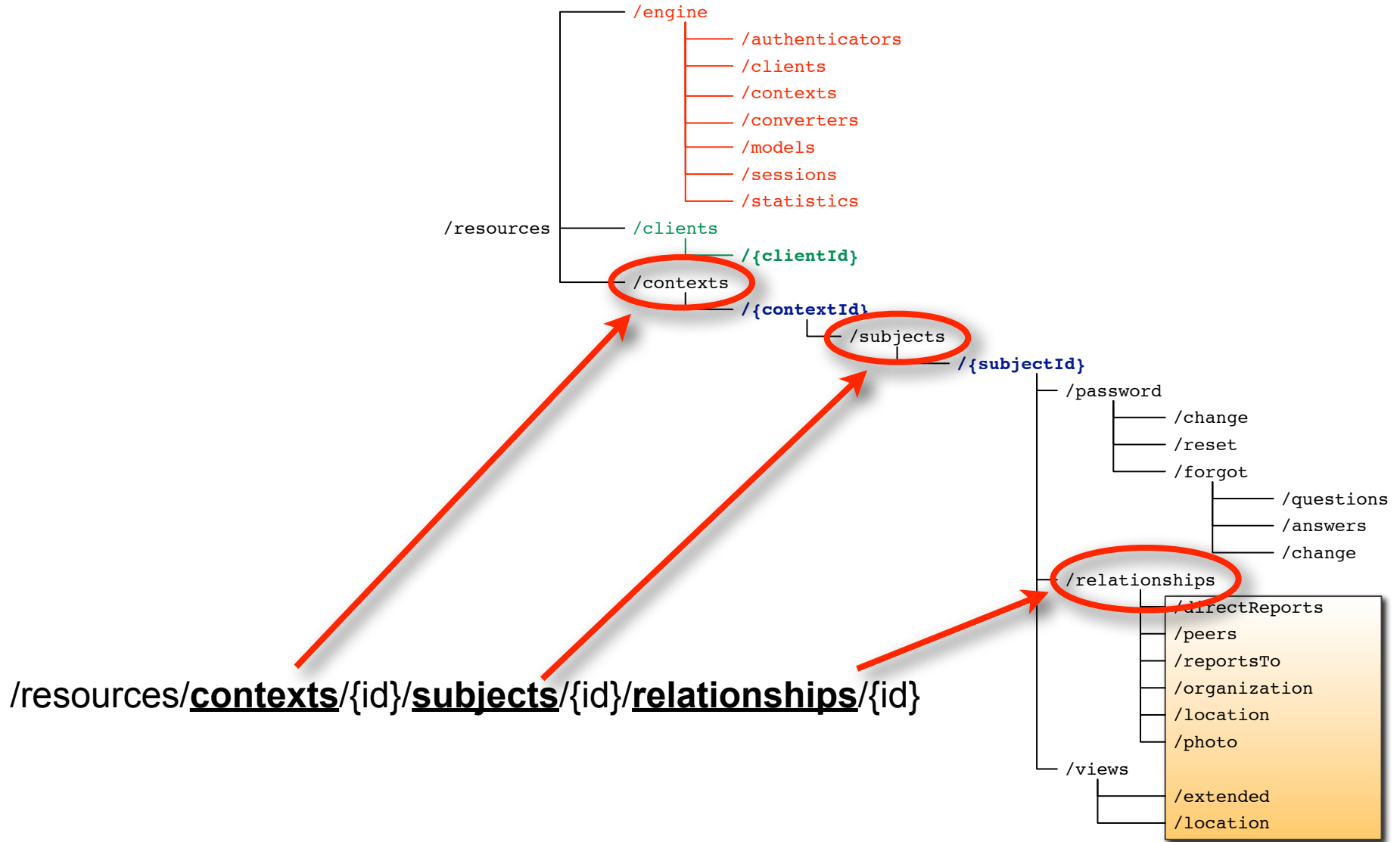
application/json

application/xml

text/plain

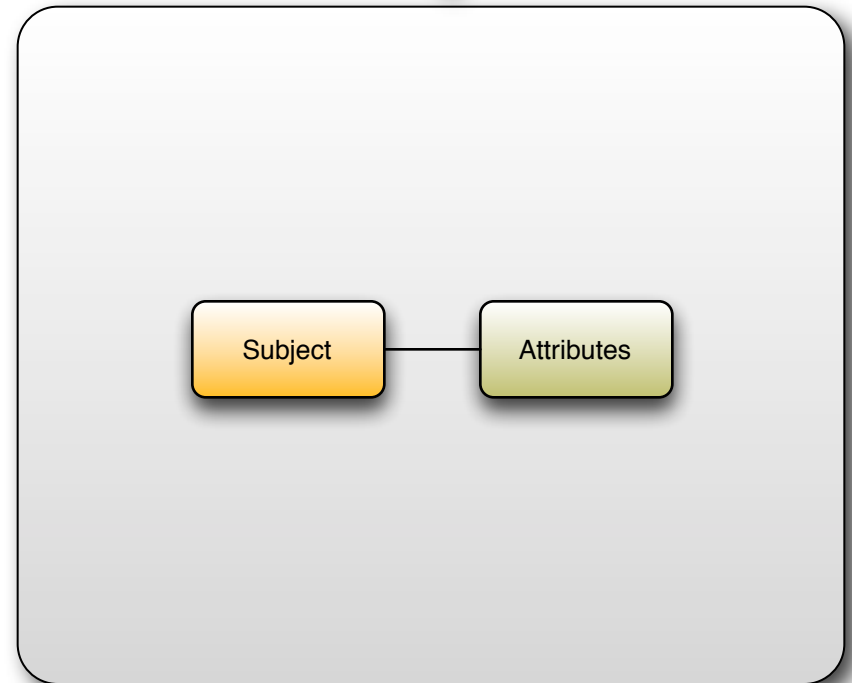
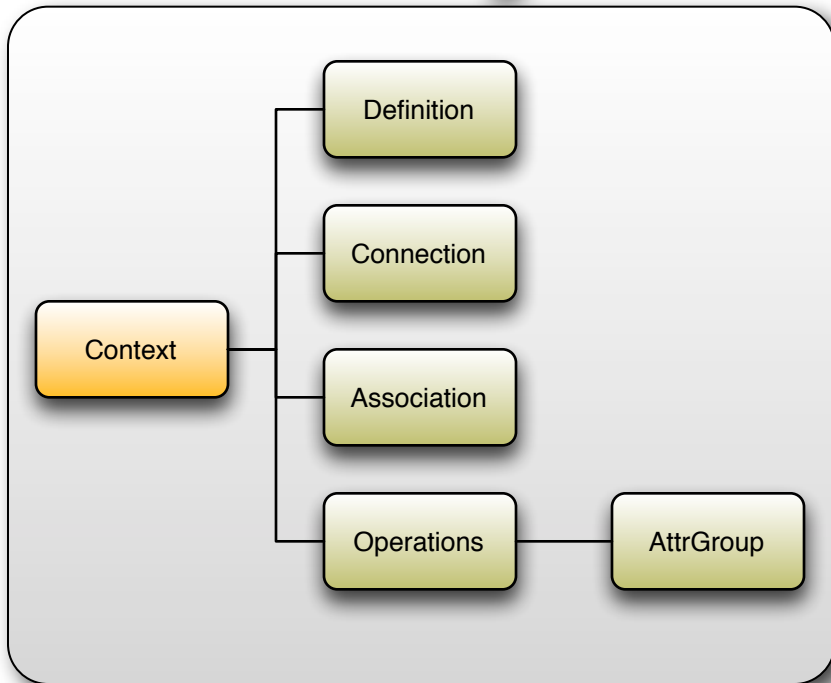
text/html

REST URI



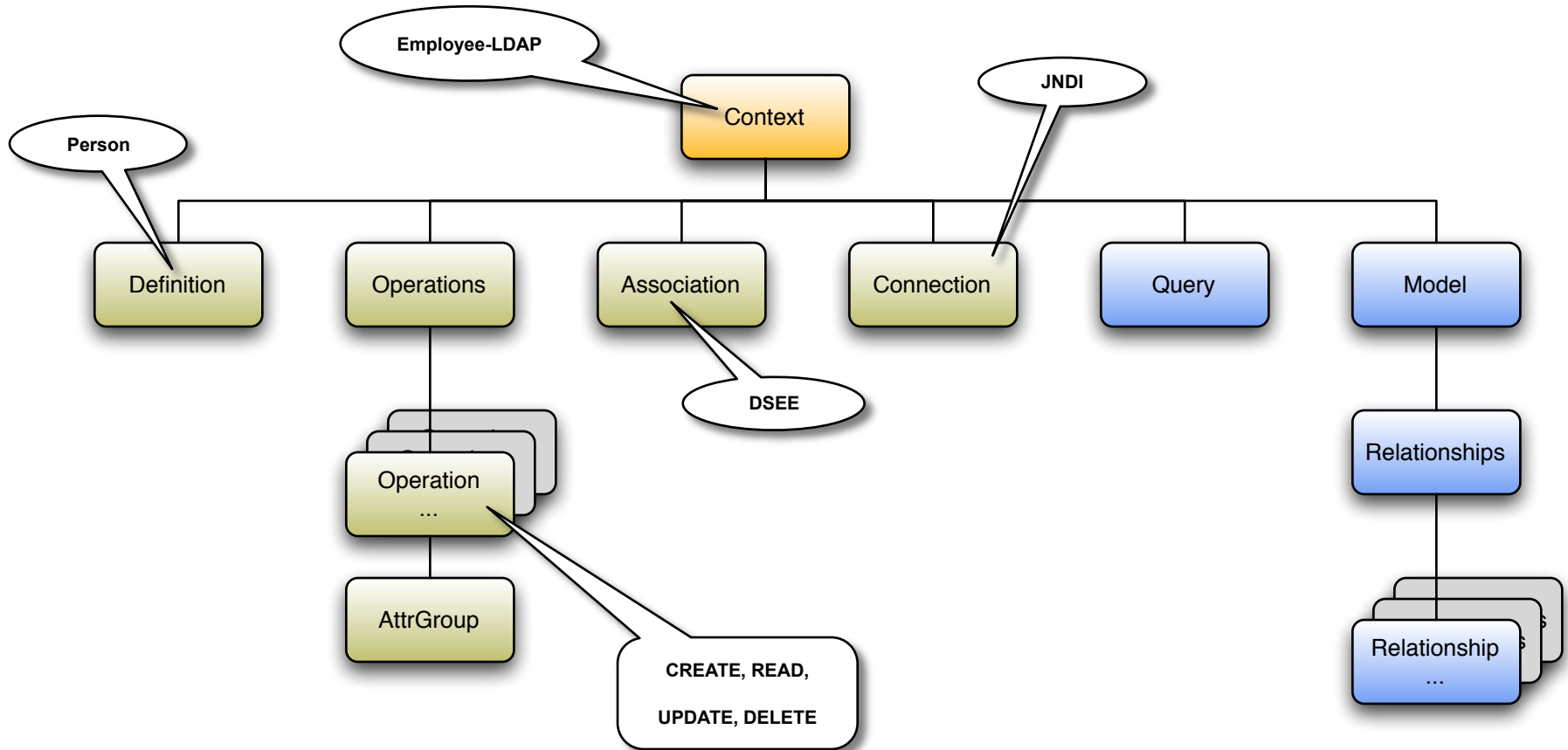
REST URI: Accessing Identity Data

.../resources/contexts/ {id} / subjects / {id}



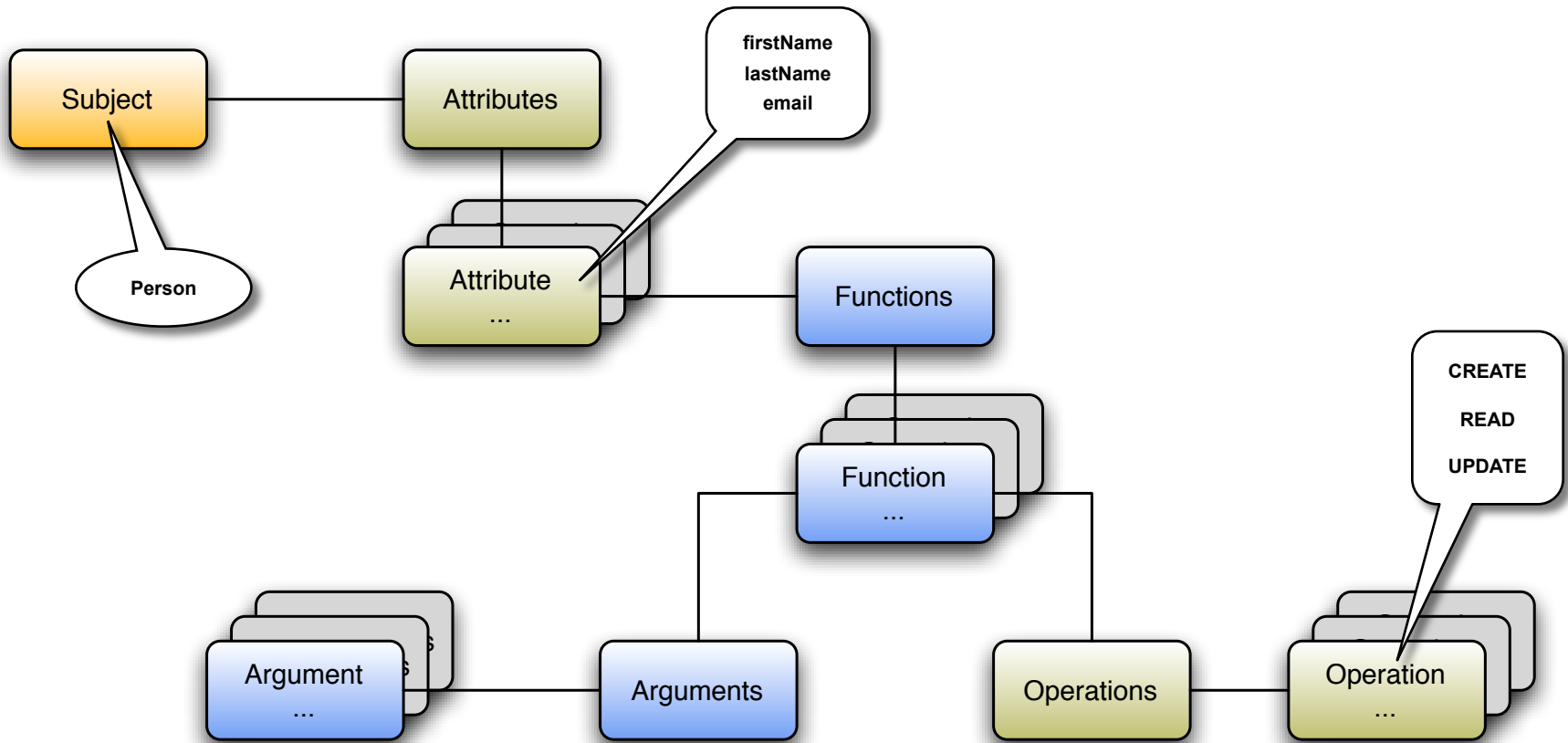
REST URI: Context

.../resources/contexts/ {id} /subjects/{id}

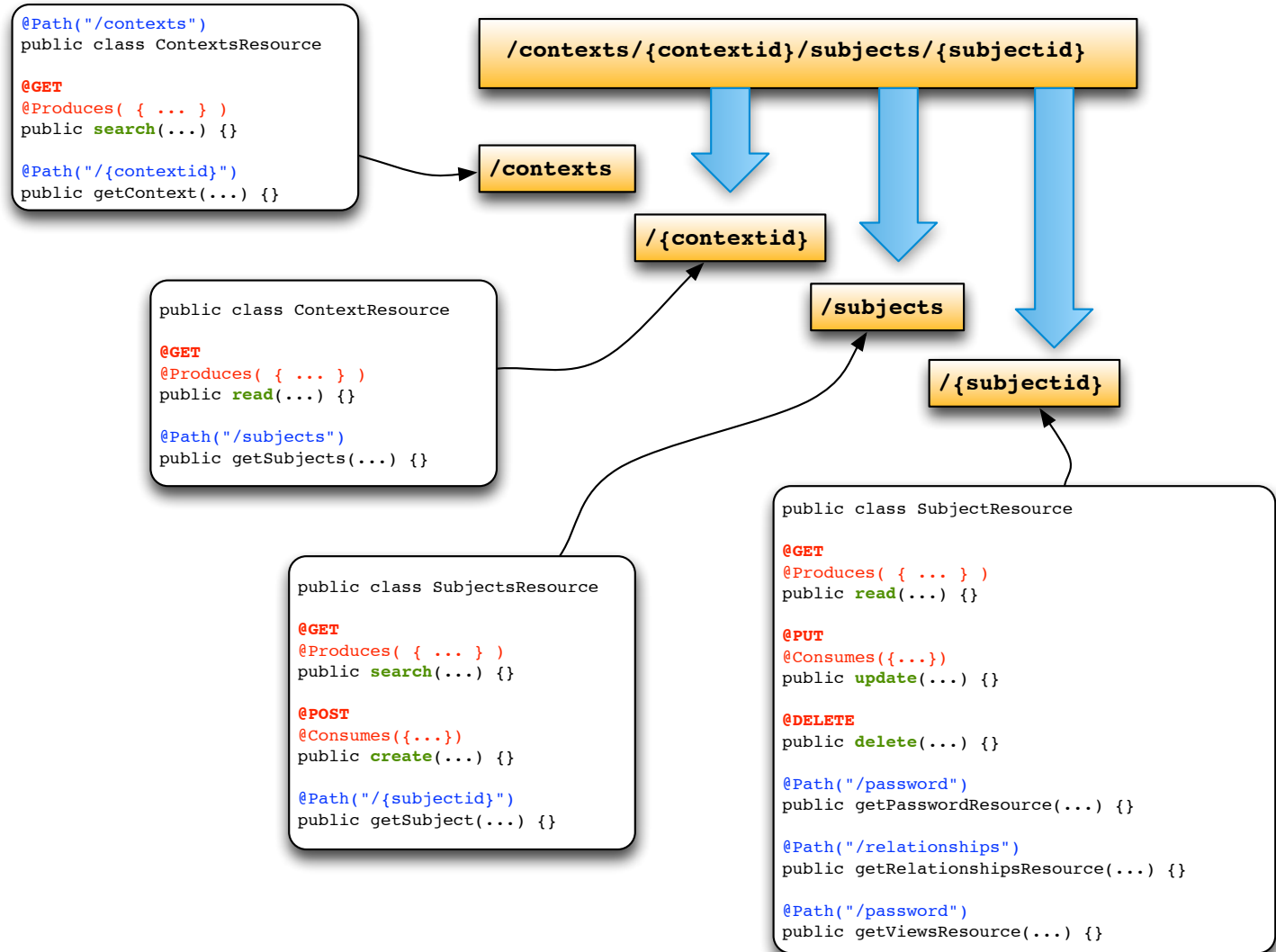


REST URI: Subject

.../resources/contexts/{id}/subjects{id}



REST Implementation: JAX-RS (Jersey) - Java EE 6



Beyond CRUD...

Password Management



Password Management

- .../subjects/ja1324/password/**change**
- .../subjects/ja1324/password/**reset**
- .../subjects/ja1324/password/**forgot/questions**
- .../subjects/ja1324/password/**forgot/answers**
- .../subjects/ja1324/password/**forgot/change**

Provisioning Framework Help Config

Please answer the following 3 questions:

Account Id: ja1324 (John Andrews)

Mothers Maiden Name:

City you were born:

Last 4 digits of Frequent Flyer:

Ope
Brid

Provisioning Framework Help Config

Your challenge questions/answers have been validated

Change Password:


Id: ja1324
Name: John Andrews

New Password:

Confirm Password:

OpenPTK
Bridging Identity

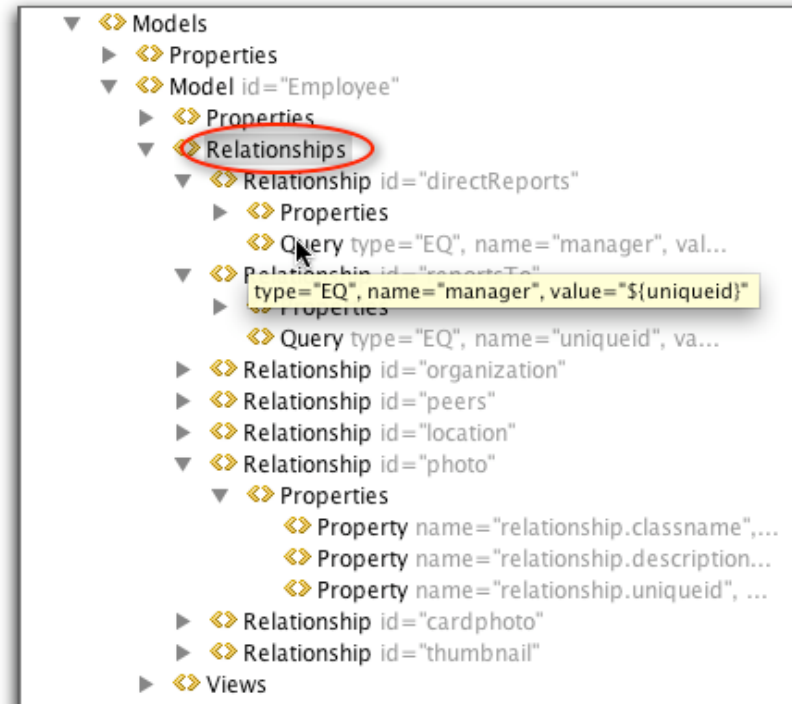
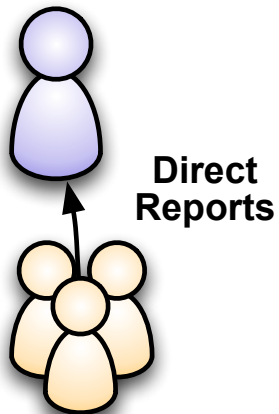
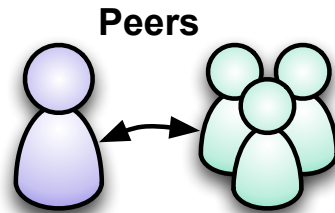
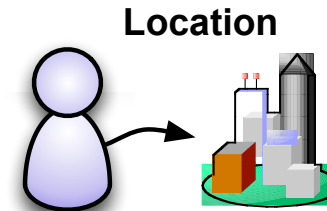
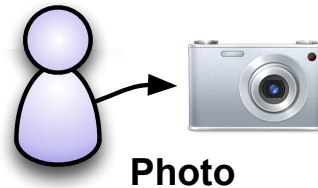
Simplify


$$\begin{array}{r} 1 \\ + 1 \\ \hline 2 \end{array}$$

Relationships

“touch less”

.../subjects/ja1324/relationships/**directreports**
.../subjects/ja1324/relationships/**peers**
.../subjects/ja1324/relationships/**reportsto**
.../subjects/ja1324/relationships/**location**
.../subjects/ja1324/relationships/**photo**



Views

.../subjects/ja1324/views/**extended**
.../subjects/ja1324/views/**location**

Response

Subject

Attributes

name : value(s)

Relationships

Location

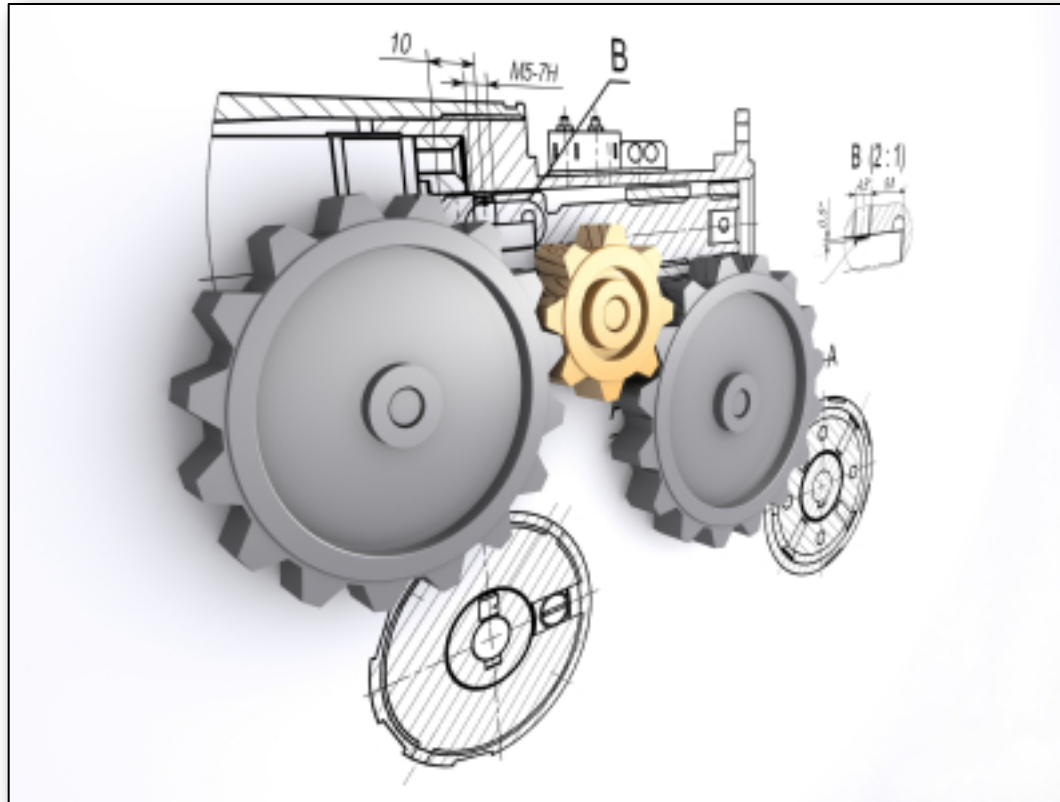
Organization

Peers

Direct Reports

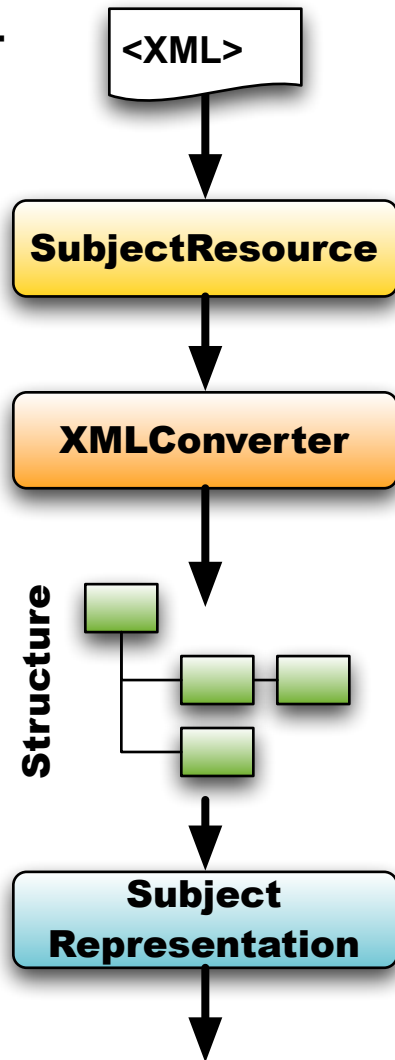
```
▼ <> Models
  ► <> Properties
  ▼ <> Model id="Employee"
    ► <> Properties
    ► <> Relationships
    ▼ <> Views
      ▼ <> View id="extended"
        ▼ <> Relationships
          <> Relationship id="location"
          <> Relationship id="organization"
          <> Relationship id="peers"
          <> Relationship id="directReports"
      ▼ <> View id="address"
        ▼ <> Relationships
          <> Relationship id="location"
```

How it works

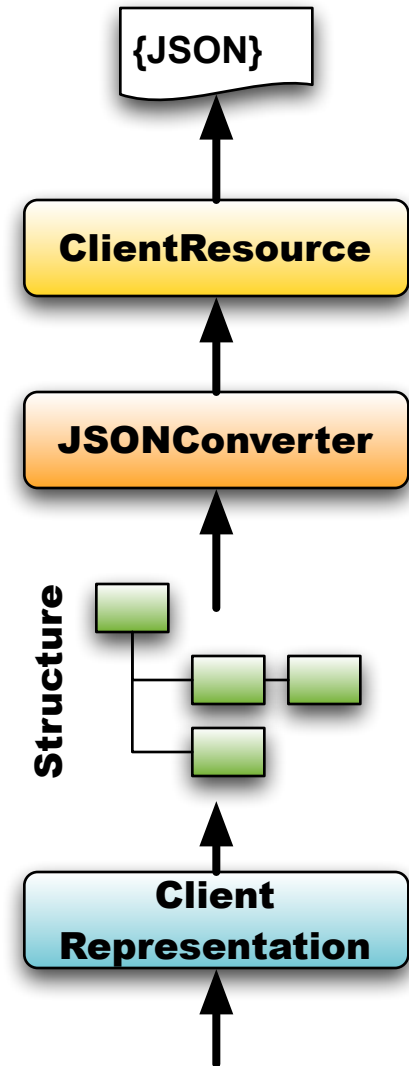


Flexible Encoding

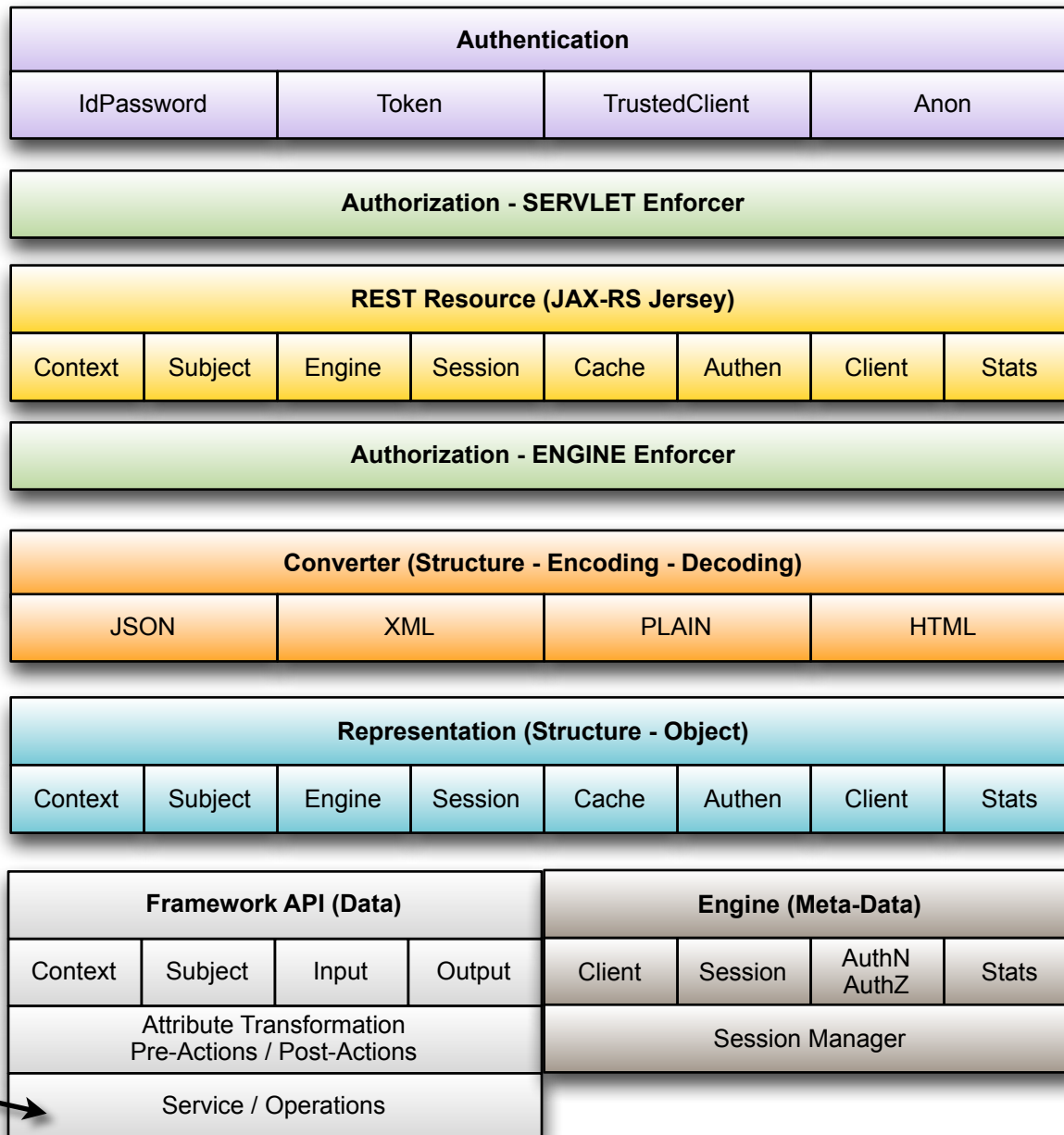
HTTP PUT
Request:



HTTP GET
Response:



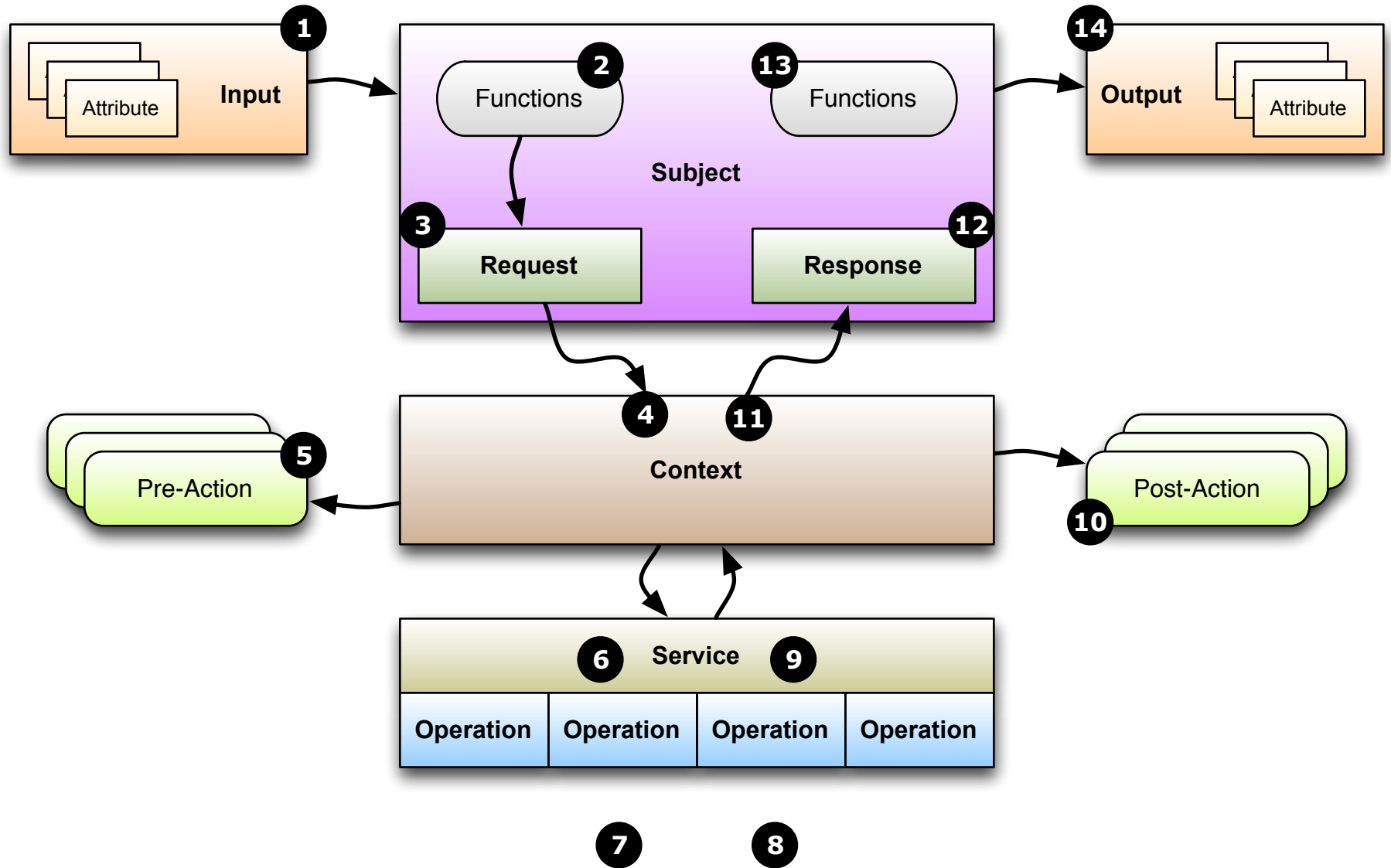
Server-Side



Identity Repositories

SPMLv1 - SPMLv2
JNDI - JDBC
OIM10g - OIM11g
UnboundId

Framework



Query Model

Abstracted Search

Automatic QueryBuilder

Simple Configuration

Search: "Jack"

```
<Query type="EQ" name="firstname" value="Jack"/>
```

Complex Configuration

Search: "John Mc"

```
<Query type="AND">
  <Query type="OR">
    <Query type="CONTAINS" name="firstname" value="John"/>
    <Query type="CONTAINS" name="lastname" value="John"/>
    <Query type="CONTAINS" name="uniqueid" value="John"/>
    <Query type="CONTAINS" name="email" value="John"/>
  </Query>
  <Query type="OR">
    <Query type="CONTAINS" name="firstname" value="Mc"/>
    <Query type="CONTAINS" name="lastname" value="Mc"/>
    <Query type="CONTAINS" name="uniqueid" value="Mc"/>
    <Query type="CONTAINS" name="email" value="Mc"/>
  </Query>
</Query>
```

User Input

QueryBuilder

Query Object

JdbcQueryConverter

LdapQueryConverter

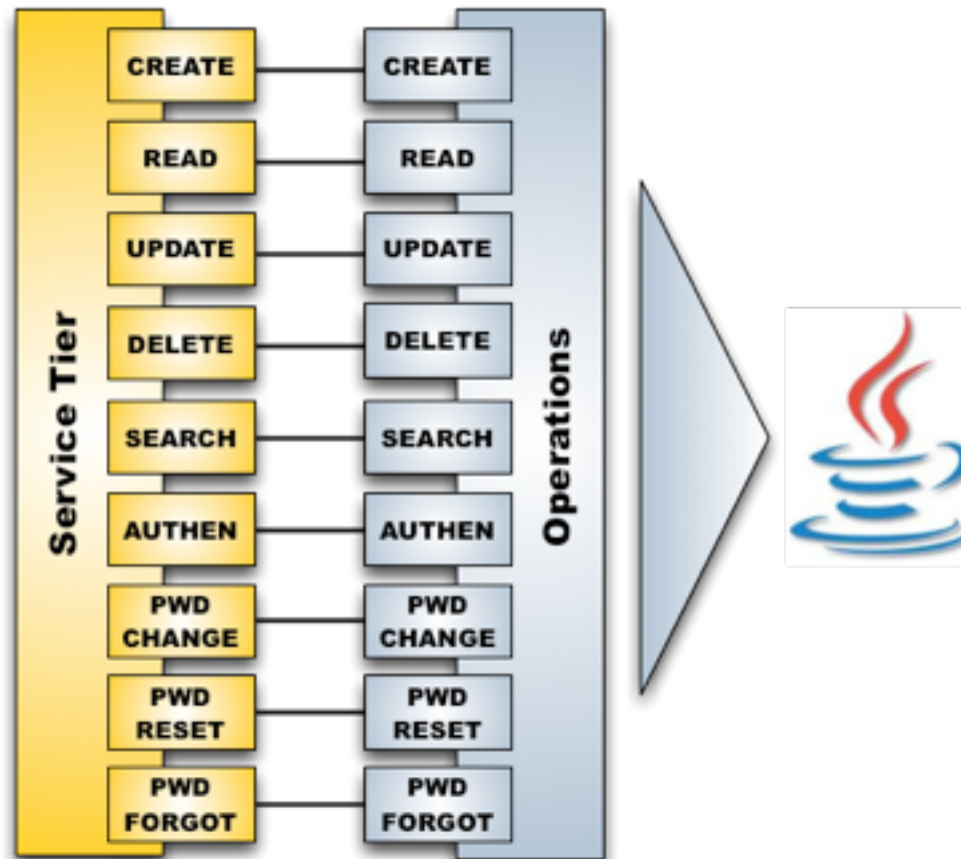
OIMClientQueryConverter

SpmlQueryConverter

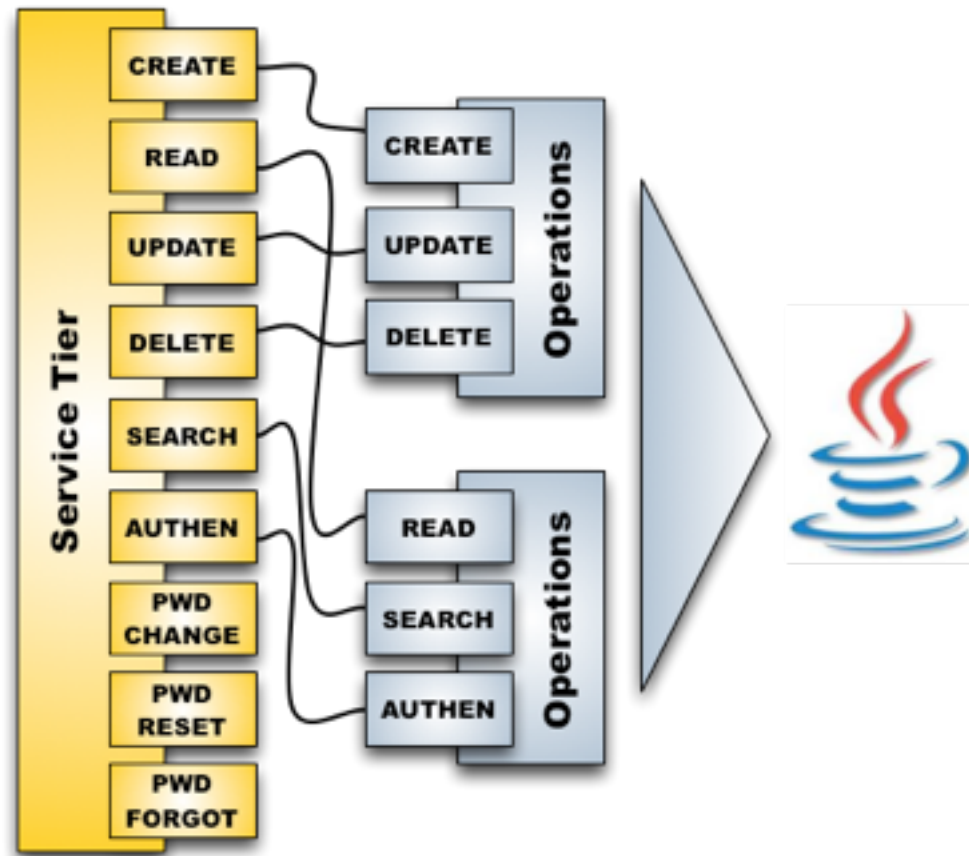
Spml2QueryConverter



Services



Services

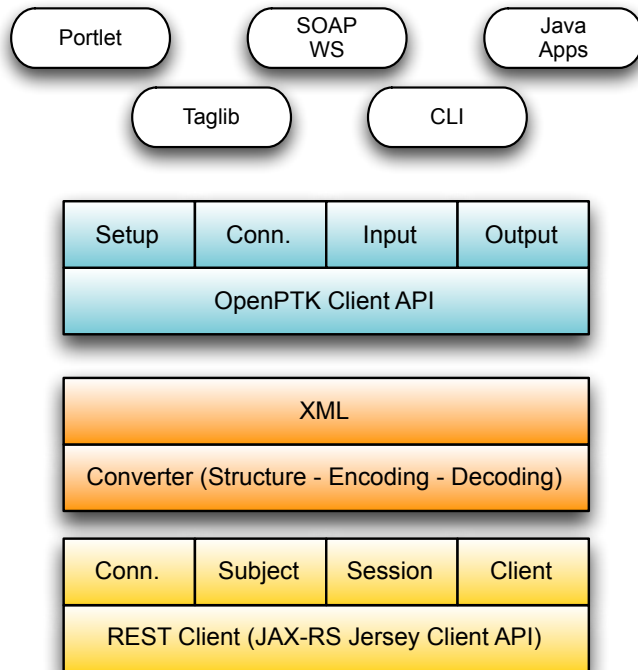


Services: Operations

Service	Operation Support								
	Create	Read	Update	Delete	Search	Authen	PWD Change	PWD Reset	PWD Forgot
JDBC	★	★	★	★	★+	★	+	+	+
JNDI	★	★	★	★	★+	★	★	+	+
UnboundId	★	★	★	★	★+	★	★	+	+
OIM 11g	★+	★+	★+	★	★+	★	★	★	★+
SPML	★	★	★	★	★+	⊘	★	★	★+
SPMLv2	★	★	★	★	★+	⊘	★	★	⊘

★	Native
★+	Native Extended
+	OpenPTK Enhanced
⊘	Not Supported

Client-Side



- **RESTful Web Service centric**
- **Java Client SDK**
- **Client / Server Trust Model**

REST Interface

```
curl -X GET -b cookies.txt -H "Accept: application/json" http://localhost:8080/openptk-server/resources/contexts/Employees-Embed-JDBC/subjects/jbauer
{
  "response" : {
    "uri" : "http:\\\\localhost:8080\\openptk-server\\resources\\contexts\\Employees-Embed-JDBC\\subjects\\jbauer",
    "state" : "SUCCESS",
    "status" : "Entry found",
    "subject" : {
      "uniqueid" : "jbauer",
      "attributes" : {
        "manager" : null,
        "location" : null,
        "forgottenPasswordAnswers" : [ "", "", "" ],
        "lastname" : "Bauer",
        "firstname" : "Jack",
        "title" : "Super Agent",
        "organization" : null,
        "email" : "jack@ctu.gov",
        "roles" : null,
        "forgottenPasswordQuestions" : [ "", "", "" ],
        "telephone" : "123-456-7890",
        "fullname" : "Jack Bauer",
        "lastcommafirst" : "Bauer, Jack"
      }
    },
    "resources" : {
      "resource" : {
        "description" : "Relationships",
        "uri" : "http:\\\\localhost:8080\\openptk-server\\resources\\contexts\\Employees-Embed-JDBC\\subjects\\jbauer\\relationships"
      },
      "resource" : {
        "description" : "Views",
        "uri" : "http:\\\\localhost:8080\\openptk-server\\resources\\contexts\\Employees-Embed-JDBC\\subjects\\jbauer\\views"
      }
    }
  }
}
```

Java API, Client-side

```
public interface ConnectionIF extends ElementIF {
    public enum Session { ID, TYPE; }
    public String getContextId();
    public String[] getContextIds();
    public void setContextId(String ContextId) throws
    public void init() throws ConfigurationException;
    public void open(String user, String password) throws
    public Output execute(Opcode opcode, Input input)
    public void close() throws ConnectionException;
    public void setDebug(boolean debug);
    public boolean isDebug();
    public StructureIF getSession() throws ConnectionException;
}
```

```
String userId = "ja1324";
String userPwd = "Passw0rd";

Setup setup = new Setup("openptk_client");

ConnectionIF connection = setup.getConnection(userId, userPwd);

connection.setContextId("Employees-OpenDS-JNDI");

Input input = new Input();

input.addAttribute("firstname", "Client");
input.addAttribute("lastname", "API");
input.addAttribute("fullname", "RESTful Client API");
input.addAttribute("email", "email@foo.bar");
input.addAttribute("telephone", "987-654-3210");

Output output = connection.execute(Opcode.CREATE, input);
...
connection.close();
```

```
% ./openptk
```

```
Welcome to the OpenPTK Console.
Client Version: 2.0
```

```
Type 'help' for help. Type 'quit' to exit
```

```
> login ja1324
```

```
Password: *****
```

```
Login Successful
```

```
Using Context: Employees-MySQL-JDBC
```

```
ja1324> update ja1324 -a title="Systems Engineer"
```

```
ja1324 successfully updated.
```

```
ja1324> read ja1324
```

```
uniqueid : ja1324
```

```
cn : sa15346
```

```
sn : loc35
```

```
sn : [smith,chicago,1234]
```

```
cn : Andrews
```

```
cn : John
```

```
cn : Systems Engineer
```

```
cn : Corporate Executive
```

```
l : restful@openptk.org
```

```
s : emp
```

```
s : [Mothers Maiden Name,City you were ...]
```

```
e : 303-191-5506
```

```
e : John Andrews
```

```
t : Andrews, John
```

JSP Tag Library

```
<%@taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@taglib prefix="ptk" uri="http://www.openptk.org/taglib" %>

<c:set scope="session" var="connProps" value="openptk_client"/>

<ptk:getConnection var="myconn" properties="{connProps}" scope="session"/>

<ptk:setInput var="myinput"/>
<ptk:setUniqueId input="myinput" value="tuser"/>
<ptk:doRead connection="myconn" input="myinput" output="myoutput"/>
<ptk:getResultsList var="resList" output="myoutput" sizevar="resSize" />

<c:forEach items="{resList}" var="resItem">
  <ptk:getAttributesList var="attrList" result="resItem"/>
```

```
  <c:forEach items="{attrList}" var="attrItem">
    <ptk:getName attribute="attrItem" />
    <ptk:getValuesList attribute="attrItem" />

    <c:forEach items="{valueList}" var="value">
      <ptk:getType attribute="attrItem" value="value" />
    </c:forEach>
  </c:forEach>
</c:forEach>
```

```
<%@taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<%@taglib prefix="ptk" uri="http://www.openptk.org/taglib" %>

<!-- Get Connection -->

<c:set scope="session" var="connProps" value="openptk_client"/>

<ptk:getConnection var="myconn" properties="{connProps}" scope="session"/>

<ptk:setInput var="myinput"/>

<ptk:setAttribute input="myinput" key="firstname" value="Taglib"/>
<ptk:setAttribute input="myinput" key="lastname" value="User"/>

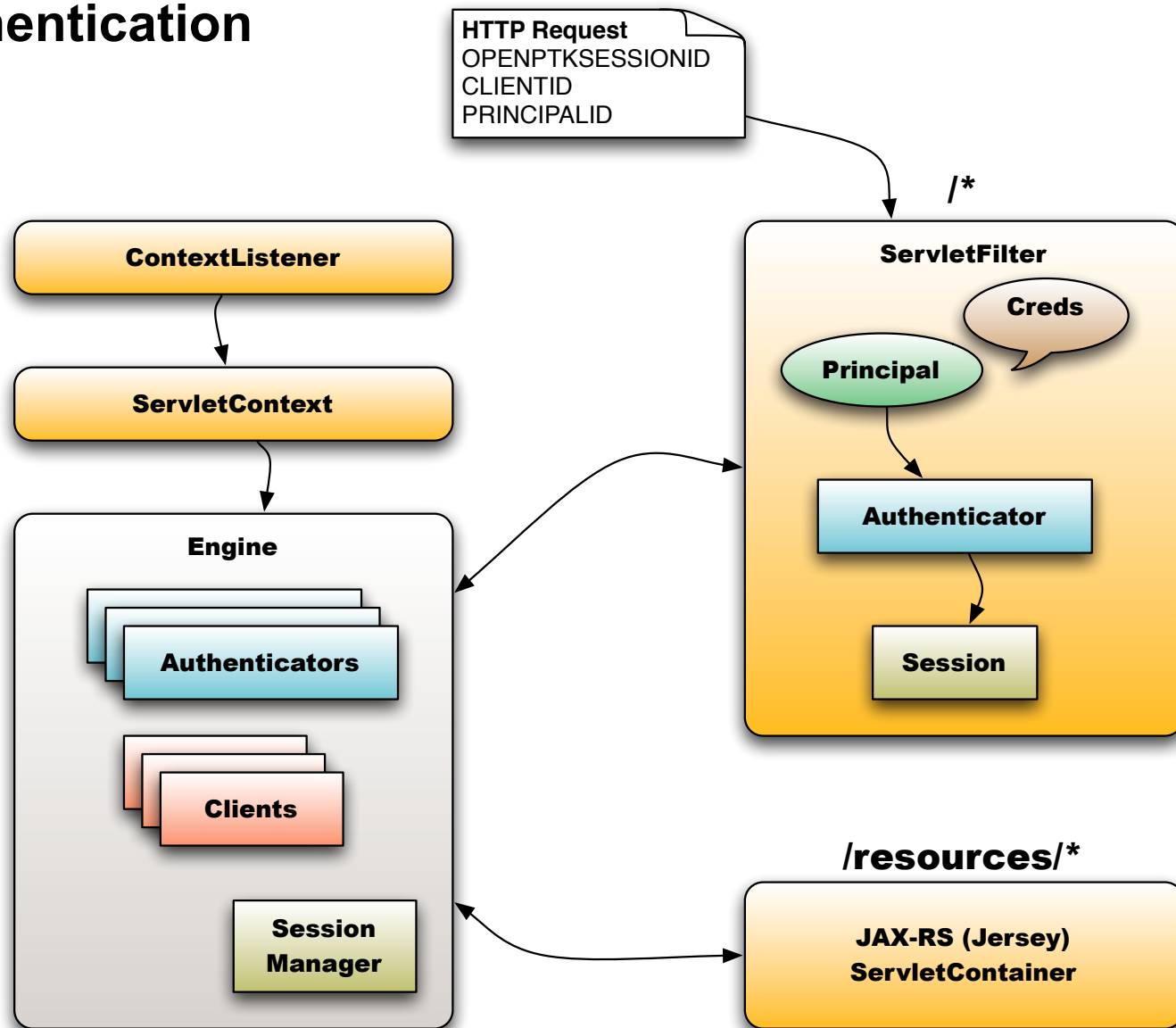
<ptk:doCreate connection="myconn" input="myinput" output="myoutput"/>
```


Security

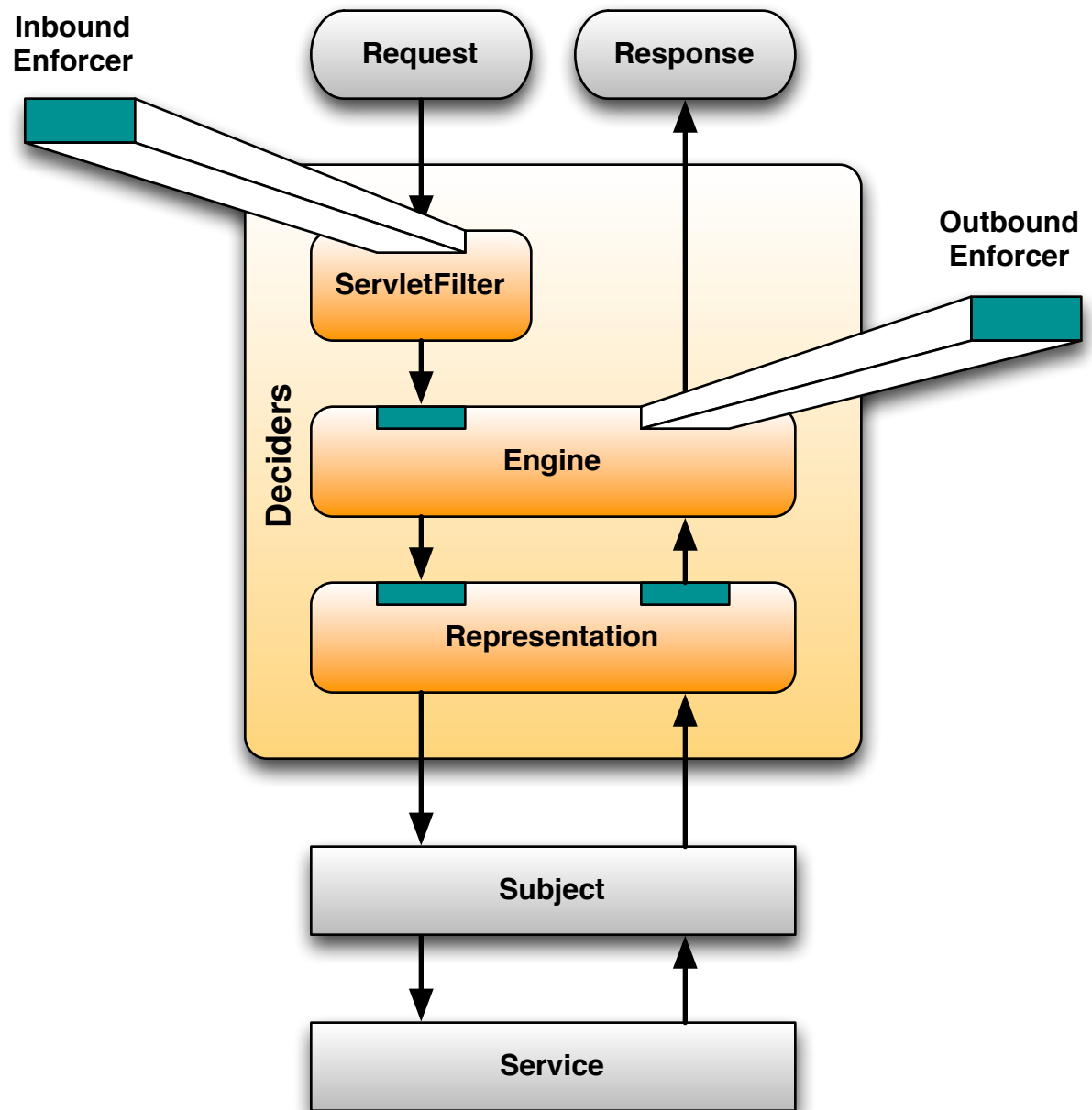
Authentication
Authorization



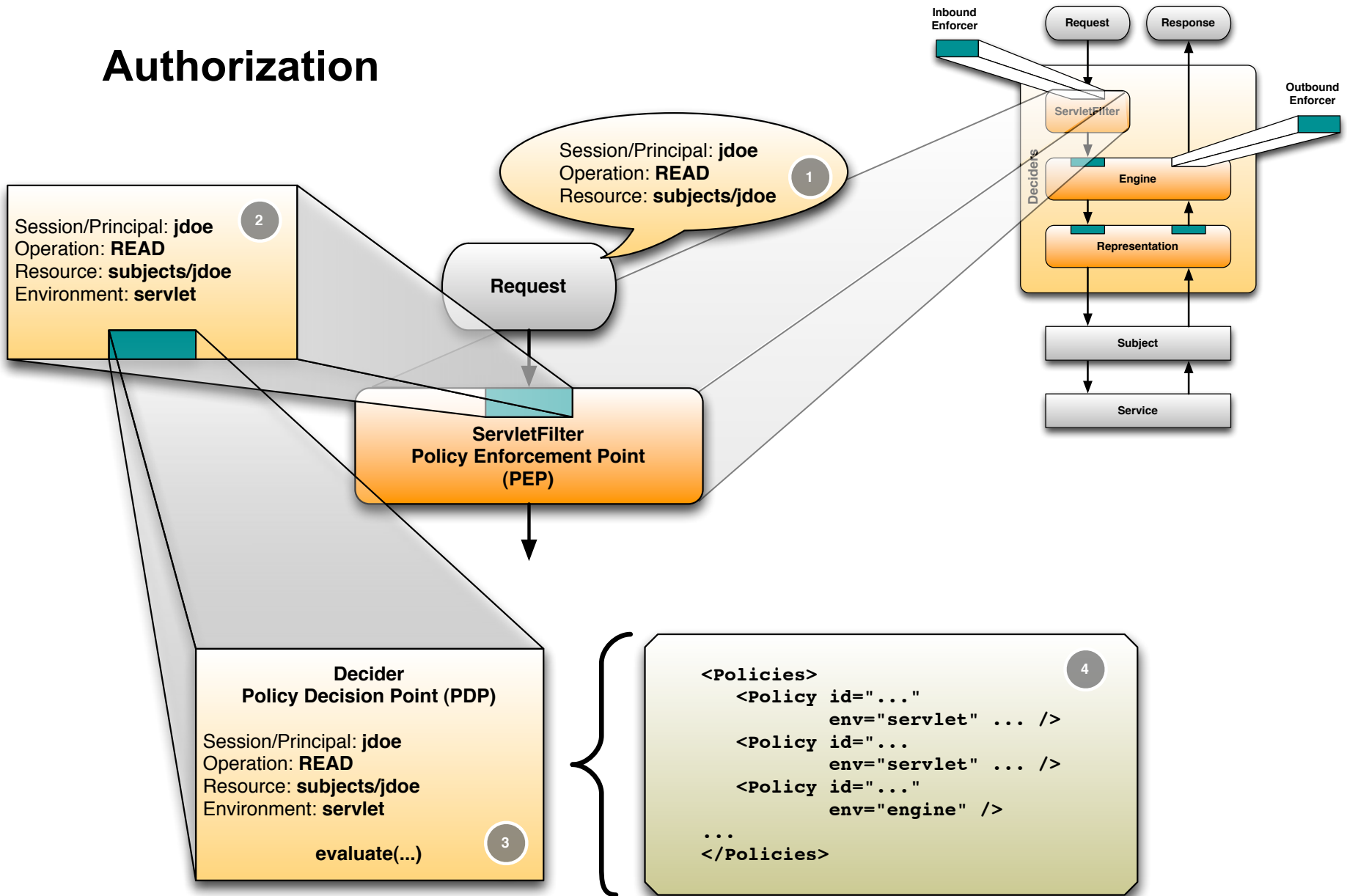
Authentication



Authorization



Authorization



Open Source Profile

Code Base

Over 90% of the code within the project is Java source files.

Sample applications leverage Java Server Pages, XML configuration files and a few shell scripts.

Free Distribution

All components are freely (re)distributable. The entire project is offered as source code.

Pre-packaged WAR files and zip files are provided for milestone releases as a convenience.

Commercial Product

There is currently no commercial offering for this project from Oracle. External organizations may offer a commercial distribution.

Oracle does not currently have a standard support offering for this project.

Competing Projects

There are no known competing open source projects.

Competing Distributions

There are no known competing distributions of this project

Competing Products

Competing commercial Identity Management products may offer certain features that compete with this project.

Community Profile

Governance

The Governance model is based on the Glassfish model. It's available on the project website.

Code put back follows the Governance model regardless of being an Oracle employee

License

The CDDL is exclusively used for this project with no modifications.

Infrastructure

The projects official site <http://java.net/projects/openptk> is used for all project information and collaboration.

Source code is accessible via "svn" from this same site.

Contributions

All enhancements and new features are evaluated by, and need to be committed by, the Project Owners.

Bug fixes can be committed by Project Owners and Committers.

Dynamics

Community members are those interested in creating custom user provisioning interfaces.

This project will typically be used as a component of solutions that compliment user repository offerings.

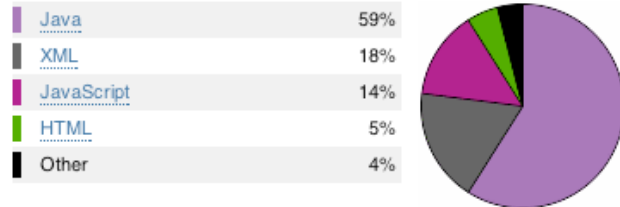
Adoption

The community is using this project to extend the capabilities of Oracle (and non-Oracle) products related to building custom user provisioning solutions.

<http://www.ohloh.net/p/openptk>

Languages

Ohloh analyzes the project source code and determines the language of each line of code, excluding comments and blanks.



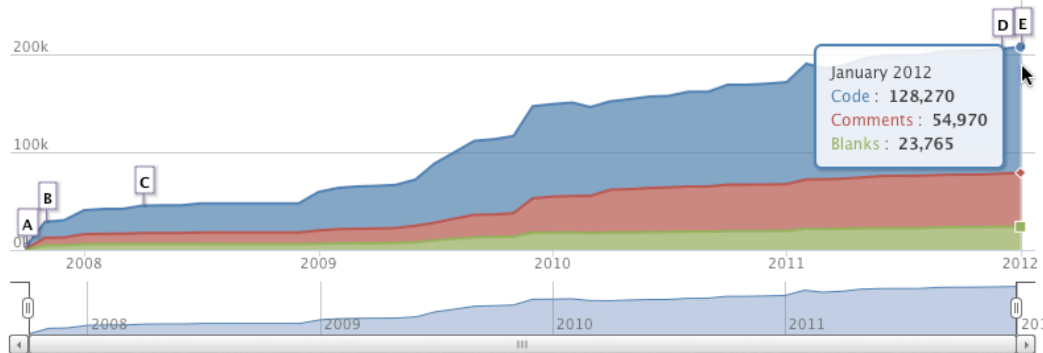
Lines of Code By Language

Language	Code Lines	Comment Lines	Comment Ratio	Blank Lines	Total Lines
Java	75,404	46,039	37.9%	17,240	138,683
XML	23,348	4,097	14.9%	1,484	28,929
JavaScript	18,380	2,291	11.1%	3,346	24,017
HTML	5,784	1,956	25.3%	987	8,727
CSS	2,886	173	5.7%	501	3,560
SQL	1,484	66	4.3%	66	1,616
XML Schema	549	0	0.0%	8	557
shell script	435	348	44.4%	133	916

Code Analysis

Lines of Code

Zoom 1yr 3yr All



Project Cost Calculator

Include: All Code
Average Salary: \$55,000 per year
Codebase: 128,270 lines
Effort (est.): 32 person-years
Estimated Cost: \$1,748,797

January 2012

Project Open Provisioning ToolKit

Extends Identity Repositories

Identity Mangers, Directories, Databases

Developer Focused

RESTful Web Services, Client SDK

Sample Applications

Registration, Self Service, User Administration

