MyMobileWeb

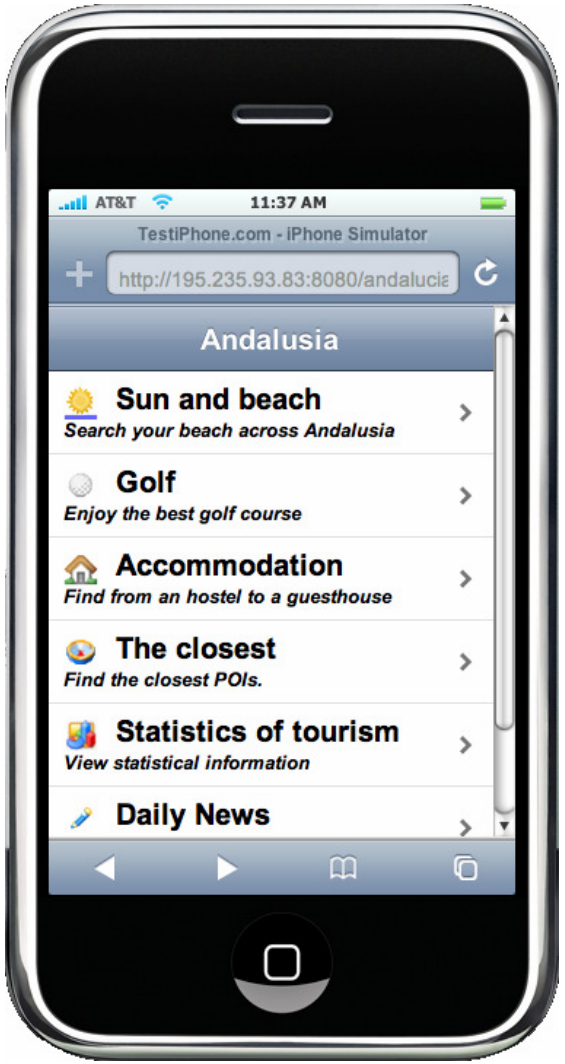
Advanced technologies enabling multi-device mobile access to current and future (semantically enriched) Web applications, services and information portals

The Mobile Web – Why?

¡ 3 Mb – 57 seg !

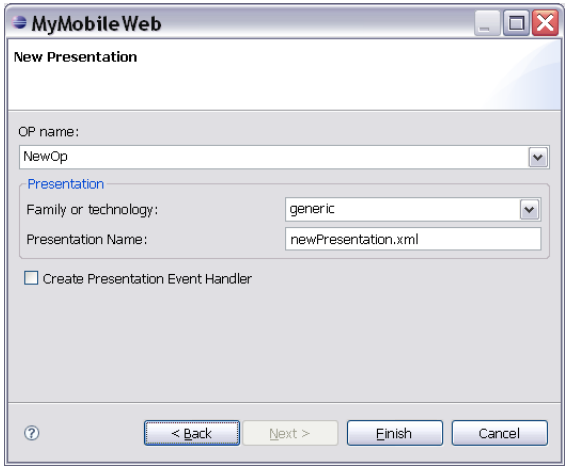
28 Kb – 2 seg

12,5 Kb – 1’7 seg



31 Kb – 2 seg

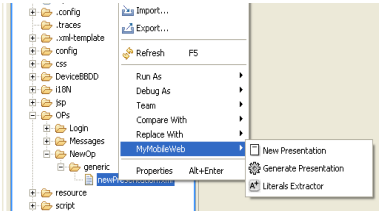
MyMobileWeb in 4

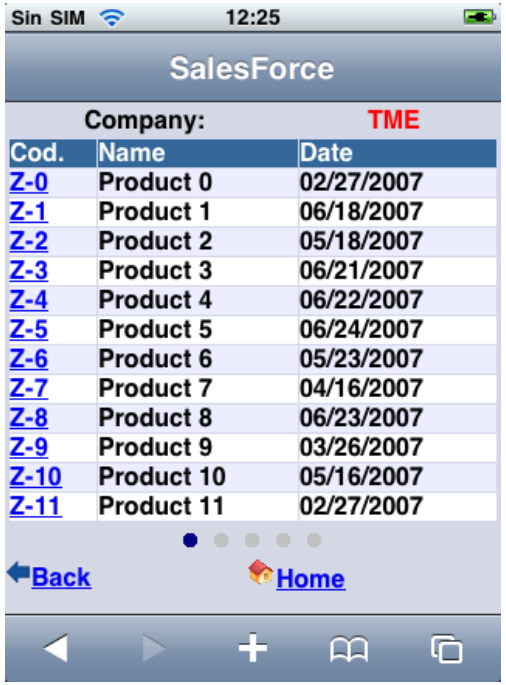


Authoring

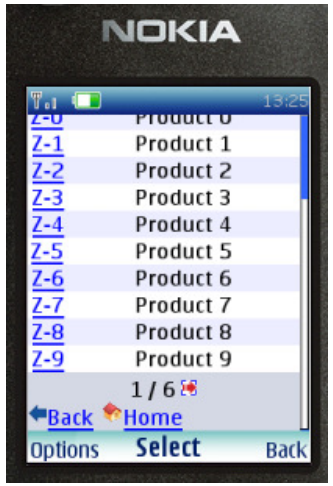
```
<!DOCTYPE ideal2>
<ideal id="pslist" title="SalesForce">
  <ui>
    <body>
      <section id="mainSection">
        <div class="center" id="p1">
          <span>Company:</span>
          <output ref="company" />
        </div>
        <div class="center vertical" id="p2">
          <table ref="selectedPS" class="tps paginate" id="listPS">
            <th class="header">
              <td>Cod.</td>
              <td>Name</td>
              <td expr="dcn:deviceWidth() gt 240">Date</td>
            </th>
            <tr repeat-nodeset="searchPSResult"
                value="${searchPSResult.current.code}">
              <td> <output ref="code" /> </td>
              <td> <output ref="name" /> </td>
              <td> <output ref="date" /> </td>
            </tr>
          </table>
        </div><include content="PSDetail/generic/product/p2" />
</section> </body> </ui>  </ideal>
```

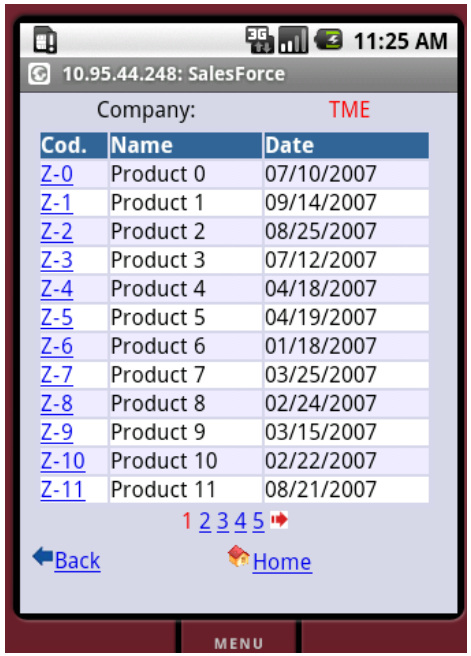
Deployment



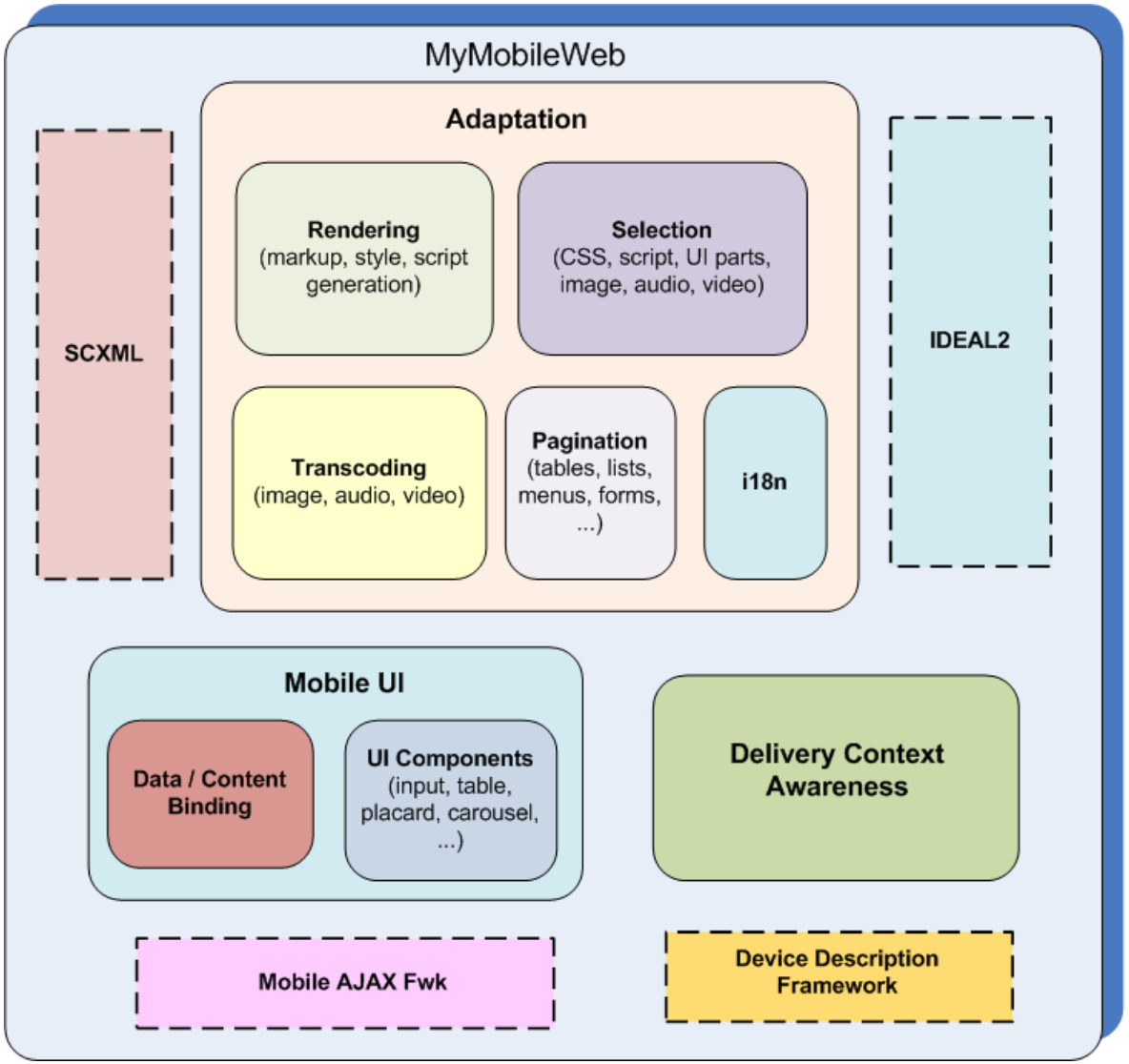


User Experience in different Delivery Contexts



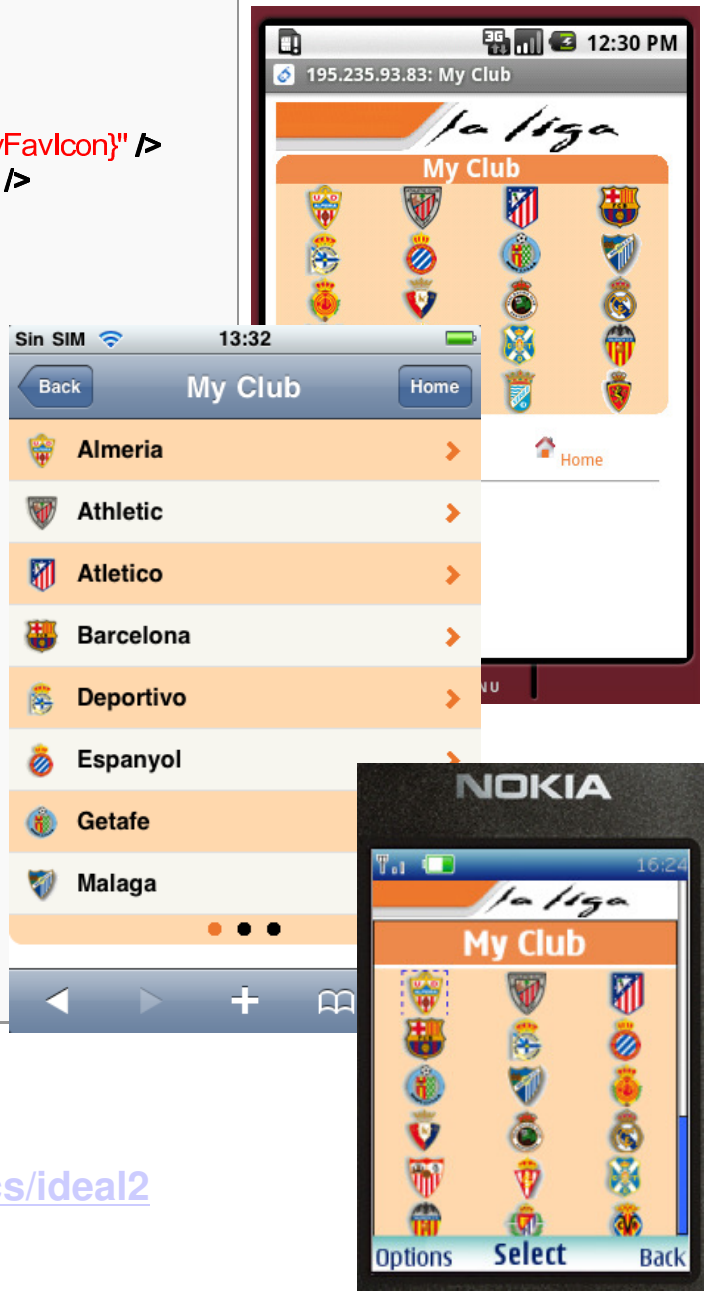


MyMobileWeb - Functional view



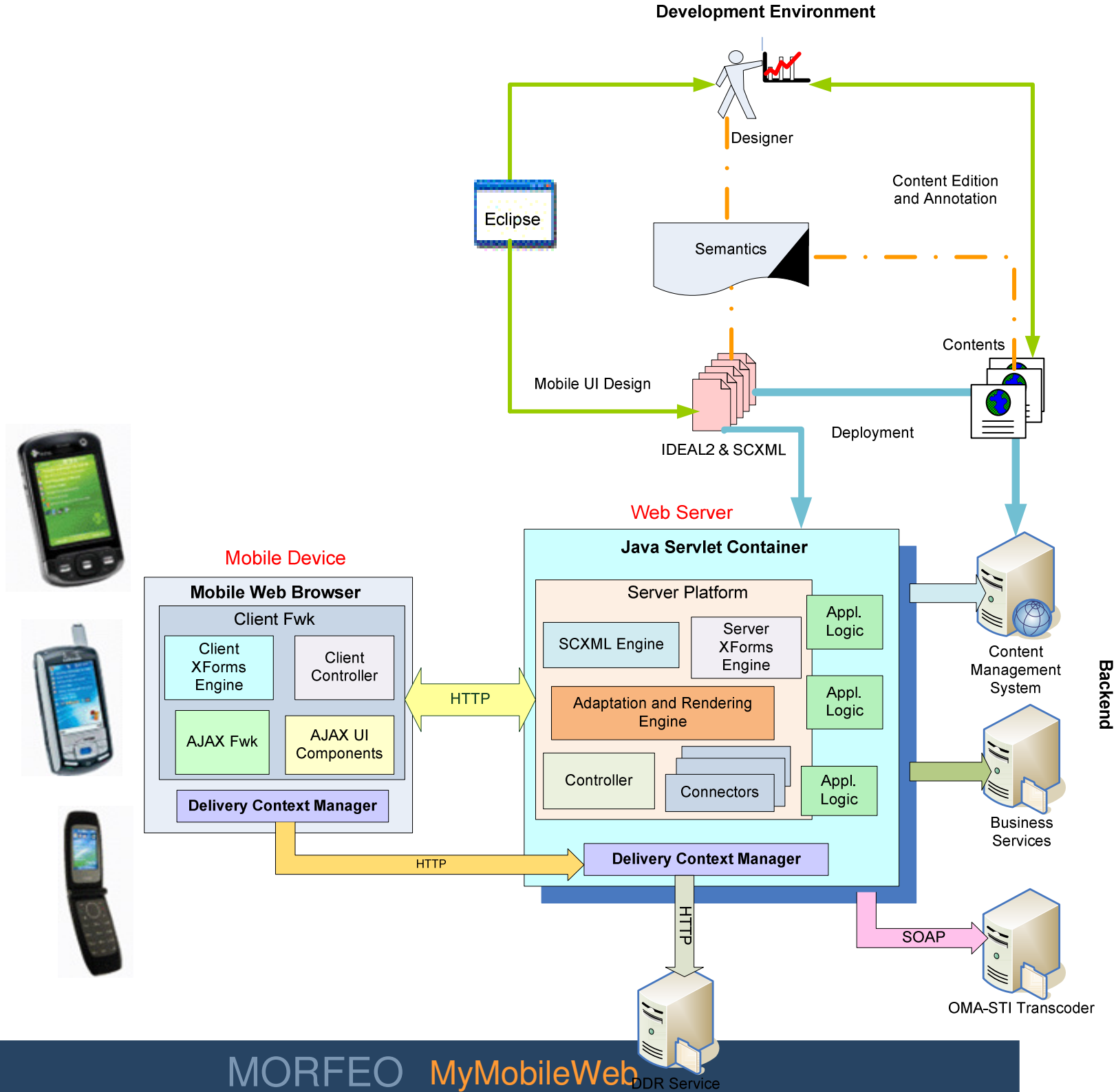
IDEAL2 Example (I)

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE ideal2>
<ideal id="index" title="My Club">
  <resources>
    <link id="icon" rel="shortcut icon" expr="!mymw:belongsTo('iPhone')" type="image/x-icon" href="${myFavIcon}" />
    <link id="iconIPhone" rel="apple-touch-icon" expr="mymw:belongsTo('iPhone')" href="${myFavIcon}" />
    <link rel="stylesheet" id="soccerStyle" href="soccer.css" />
  </resources>
  <ui>
   <body>
     <header id="header">
      <include content="Common/generic/common/header" />
     </header>
     <section id="main">
         <div id="p1" class="common title.common" title="My Club">
              <menu id="myMenu" ref="club" class="clubs center">
                   <a id="header" repeat-nodeset="clubList" src="${clubList.current.image}"
                        href="${clubList.current.href}">${clubList.current.name} </a>
              </menu>
         </div>
      </section>
      <footer id="footer">
          <include content="Common/generic/common/footer" />
           <separator class="line" />
           <include content="Common/generic/common/powered" />
       </footer>
    </body>
  </ui>
</ideal>
```



More info at http://files.morfeo-project.org/mymobileweb/public/specs/ideal2

MyMobileWeb – Architectural View



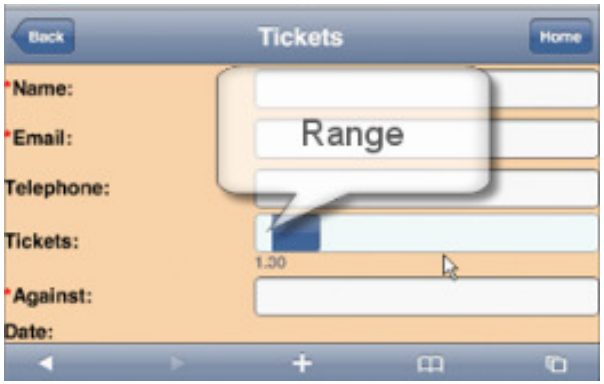
IDEAL2 : UI Components (II)

<upload> enables the common feature found on Web sites to upload a file from the local file system

<inputDate> accepts a date as input. It can be rendered as: calendar, set of input fields, wizard, …

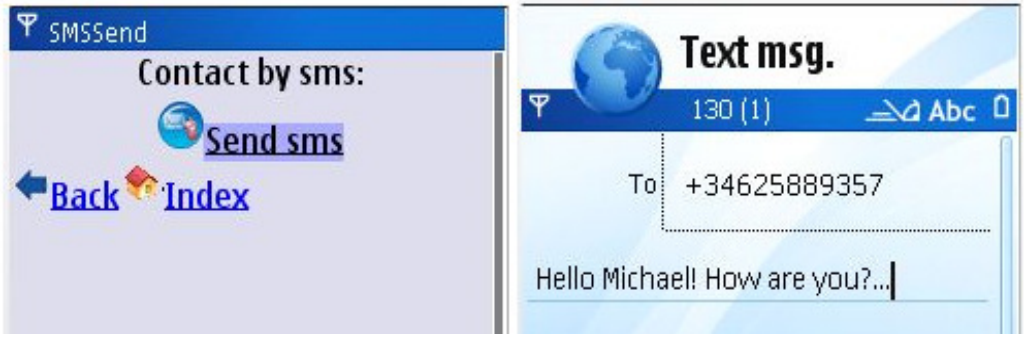
<inputTime> accepts a time as input (hours, minutes and seconds)

<range> allows selection from a sequential range of values



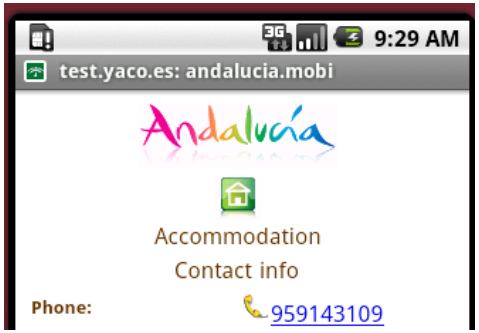
IDEAL2 : UI Components (III)

<smsSend> allows to send a SMS



<phoneBookAdder> adds telephone numbers to the agenda

<image> | **<figure>** to display images (subject to content selection or transcoding)



<telephoneCaller> allows to trigger a phone call

IDEAL2 : UI Components (IV)

<menu> represents a navigation list. It can be rendered as: (combo sensitive to changes, clickable images, list of links, …)

<chainedMenu> It is a set of mutually dependant menus

IDEAL2 : UI Components (V)

<table> represents data in tabular mode

<placard> a container that supports advanced layouts combining text and images

IDEAL2 : UI Components (VI)

<carousel> displays sequentially a dynamic catalogue of objects

AJAX Framework – UI Components

- ## Tabview

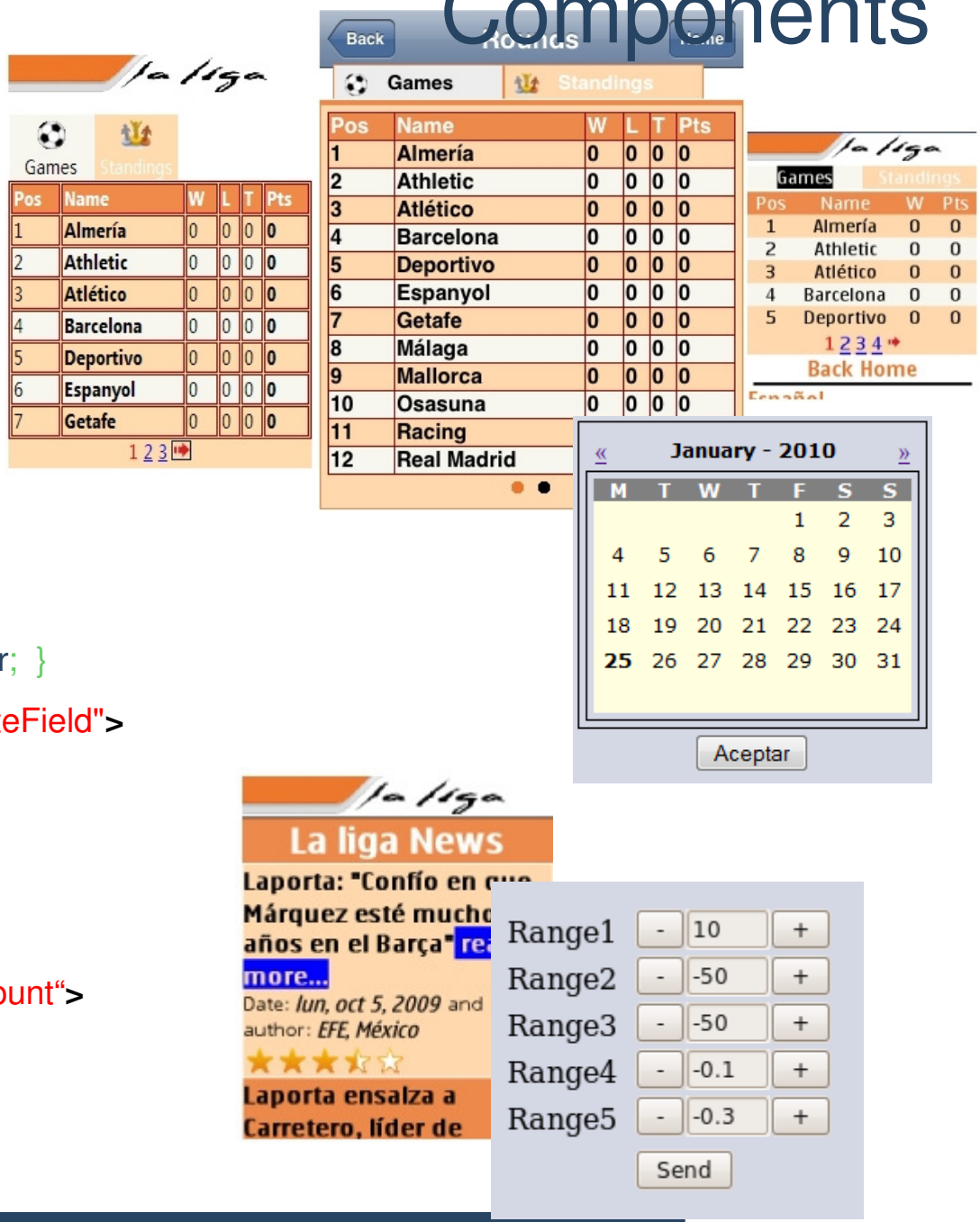
```
body.tabs { display-panels-as: tabs; }
<body class="tabs">
<section id="main">
   <section id="ga" title="Games"> </section>
   <section id="st" title="Standings"> </section>
 </section>
</body>
```

- ## Calendar

```
inputDate.clientcalendar {  display-as: client-calendar;  }
<inputDate ref="date" class="clientcalendar" id="dateField">
   <label id="date">Date:</label>
</inputDate>
```

- ## Range

```
<range id="count" start="1" end="5" step="1" ref="count">
   <label>Range value:</label>
</range>
```

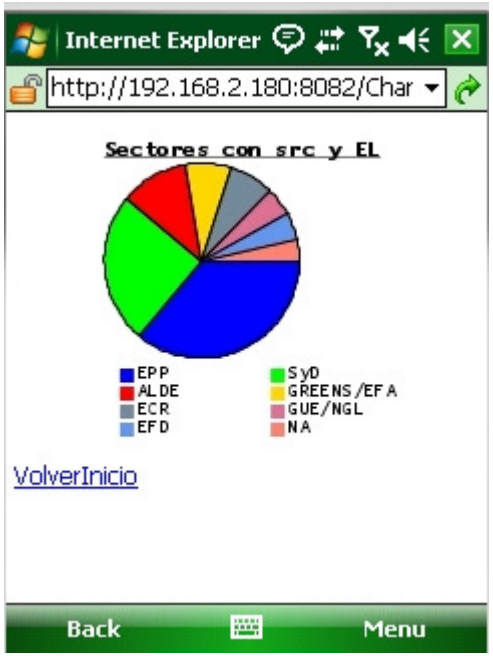


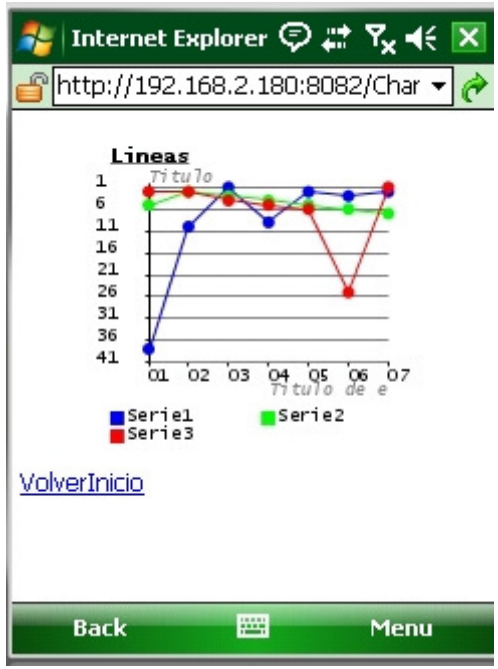
IDEAL2 Chart Extension

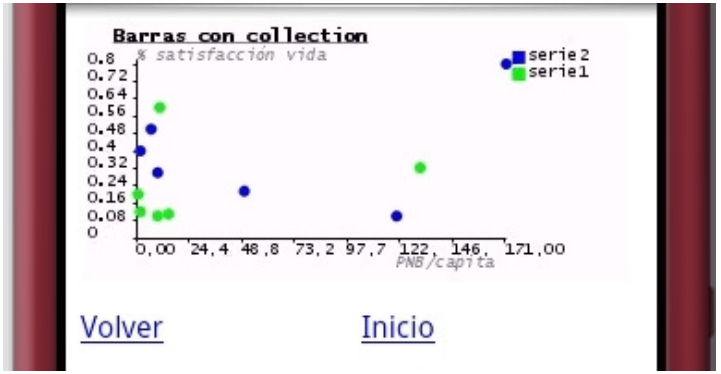
- ***Chart component*** to represent statistical charts
- Output format
  - Vectorial
    - SVG
  - Raster
    - JPG, PNG
- Data from
  - XML
  - Java structures
- Styles: presentation
  - Legend position, show grid, invert values
- XLinks charts:
  - Over a bar, over a sector

Definition

- ***<barchart>***
  - Insert a bar chart
- ***<linechart>***
  - Insert a line chart
- ***<piechart>***
  - Insert a pie chart
- ***<scatterchart>***
  - Insert a scatter chart
- ***<label>***
  - Insert chart's title
- ***<caption>***
  - Axis="x": insert a title in x-axis chart
  - Axis="y": insert a title in y-axis chart



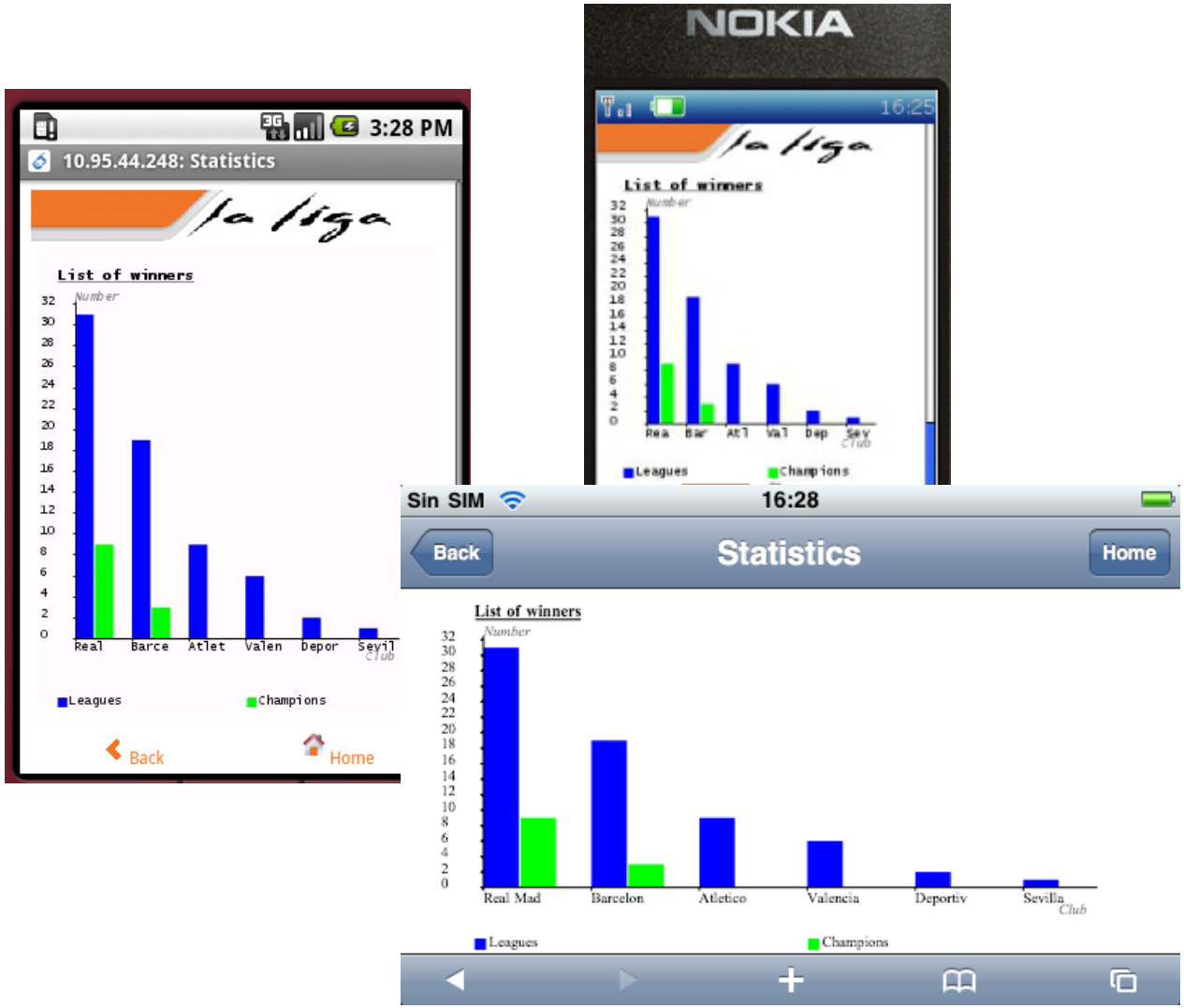




Example

```
<div id="container" class="center nowrap">
   <barchart id="barchart" alt="Leagues" src="resource/charts/teams/barchart.xml" ref="selectedBar" class="myChart">
      <label>List of winners</label>
      <caption axis="x">Club</caption>
      <caption axis="y">Number</caption>
    </barchart>
</div>
```

```
<chart id="data" type="BarChart">
  <data>
   <serie name="Leagues">
    <item y="31"/>
    <item y="19"/>
    <item y="9"/>
    <item y="6"/>
    <item y="2"/>
    <item y="1"/>
  </serie>
  <serie name="Champions">
    <item y="9"/> <item y="3"/>
    <item y="0"/> <item y="0"/>
    <item y="0"/> <item y="0"/>
  </serie>
  </data>
<axes>
  <axisx name="Club">
    <value>Real Madrid</value>
     <value>Barcelona</value>
     <value>Atletico</value>
     <value>Valencia</value>
     <value>Deportivo</value>
     <value>Sevilla</value>
  </axisx>
</axes>
</chart>
```



IDEAL2 GIS Extensions

- The aim of this extension is to provide developers IDEAL2 abstractions to simplify the mobile access to Open Location Services.

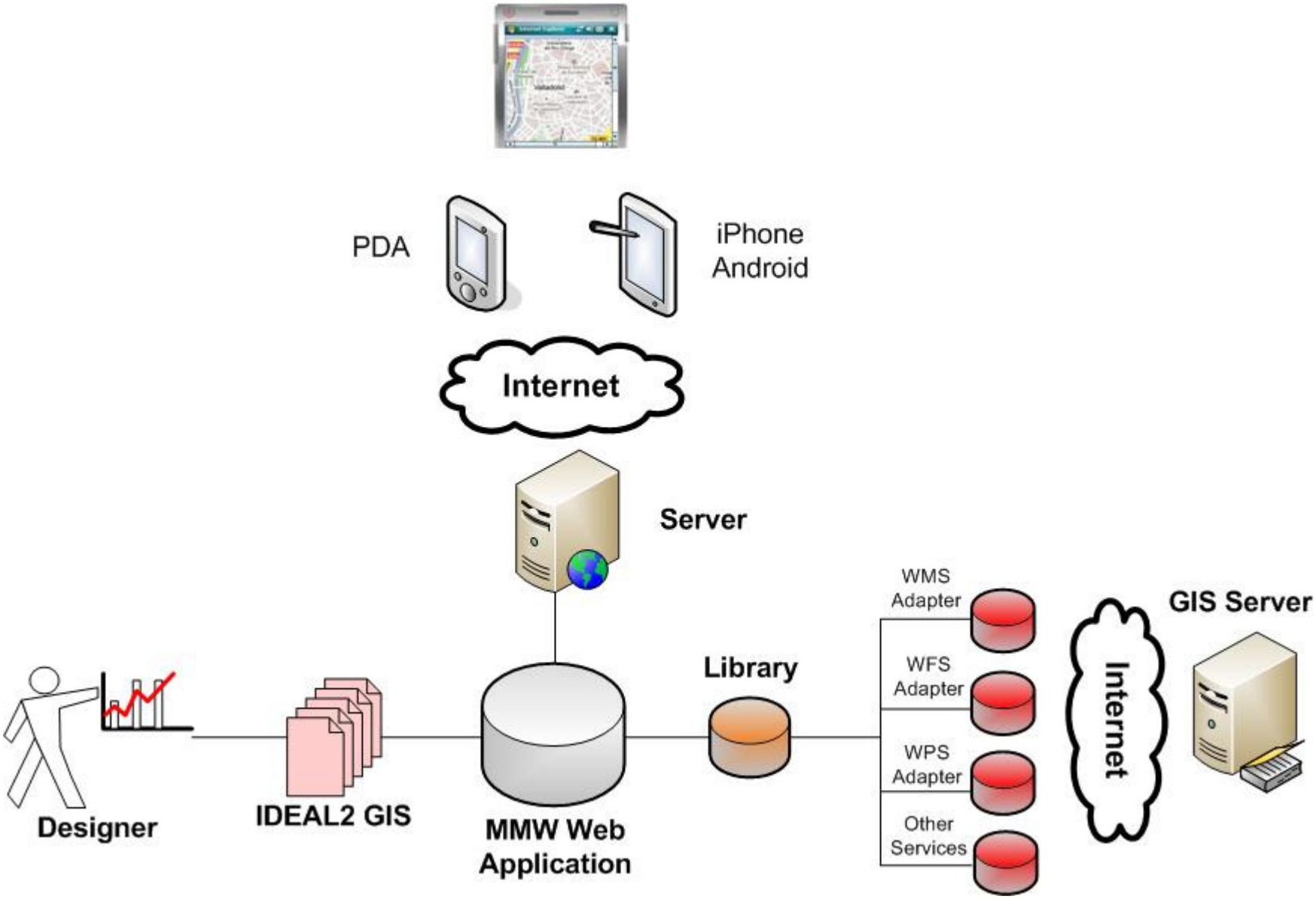
- Open Architecture allowing connect different GIS or map servers
  - OGC-compliant, WMS
  - Google Maps

IDEAL2 GIS : Technical Approach

- The development has been based on **OGC Open Location Services** also known as **GeoMobility Server (GMS)** that is an open platform for location-based application services.
  - Implementation of the interface Open LS, library “ageomobility”

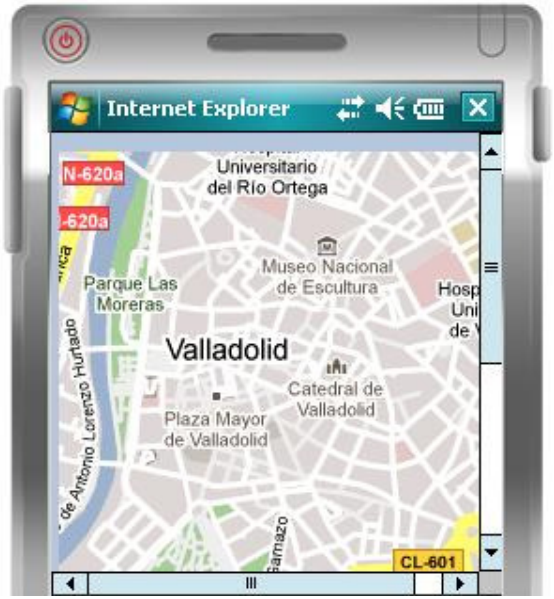
- Development of a set of IDEAL2 UI components for services that define OpenLS, in particular maps presentation and management layers.
  - a set of elements to incorporate elements GML (Geography Markup Language), points, lines and polygons

IDEAL2 GIS : Architecture



IDEAL2 GIS : Components (I)

- **<presentationmap>** shows a map navigation interface that will allow to move around the map, change the zoom and see layers



- **<contenttable>** list that contains the layers that form the map. Actions: remove layers and select a group of layers to be shown

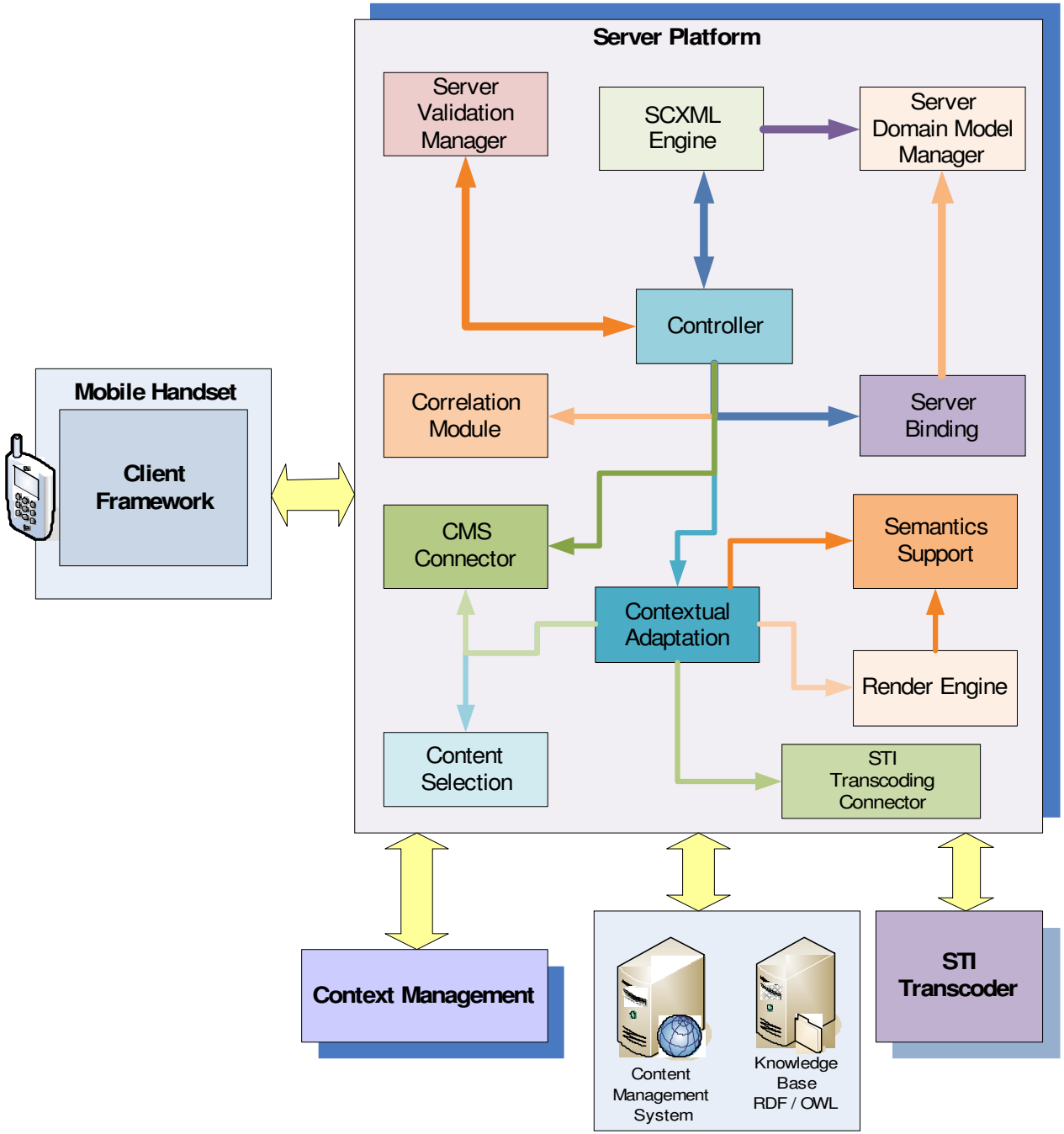
IDEAL2 GIS : Components (II)

- **<point>** point on the map, add new layer

- **<line>** line on the map, add new layer

- **<polygon>** area on the map, add new layer

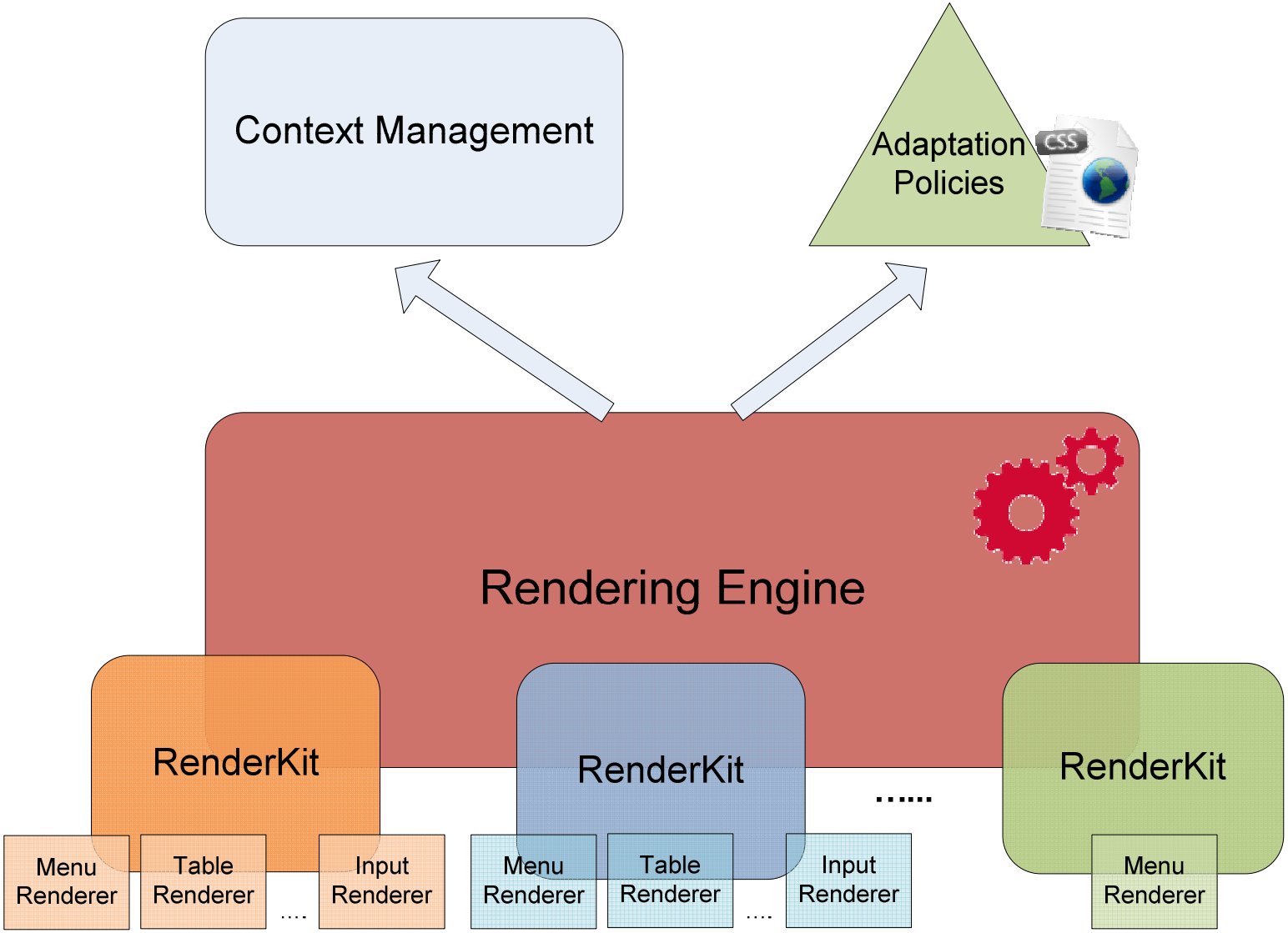
Conceptual Architecture



Adaptation :Sub-Functionalities

- **Automatic generation** of the most suitable markup, style sheets and Javascript to realize the different user interface elements (specified using IDEAL2).
  - from legacy (WML [16]) to the most modern (WebKit-based) enhanced browsers
  - mobileOK content.
- **selection of CSS style-sheets** to customize the look-and-feel or layout for different devices.
- **selection of user interface parts** (including Javascript code), using W3C's DISelect 1.
- **pagination of long content** such as tables with many rows, menus with many options or forms with many fields.
- **selection or transcoding of different multimedia content** (images, audio, video). While selection consists of choosing the best from a set of variants, transcoding implies a transformation process from a source to a target resource.
  - MyMobileWeb incorporates a simple image transcoding component and can interoperate with any OMA-STI compliant transcoding service, such as the open source Alembik system.
- **internationalization and literal management** which consists of selecting literals depending on the delivery context (for example to accommodate a short space by choosing an acronym) or the user preferences (preferred language).

Rendering Engine (I)

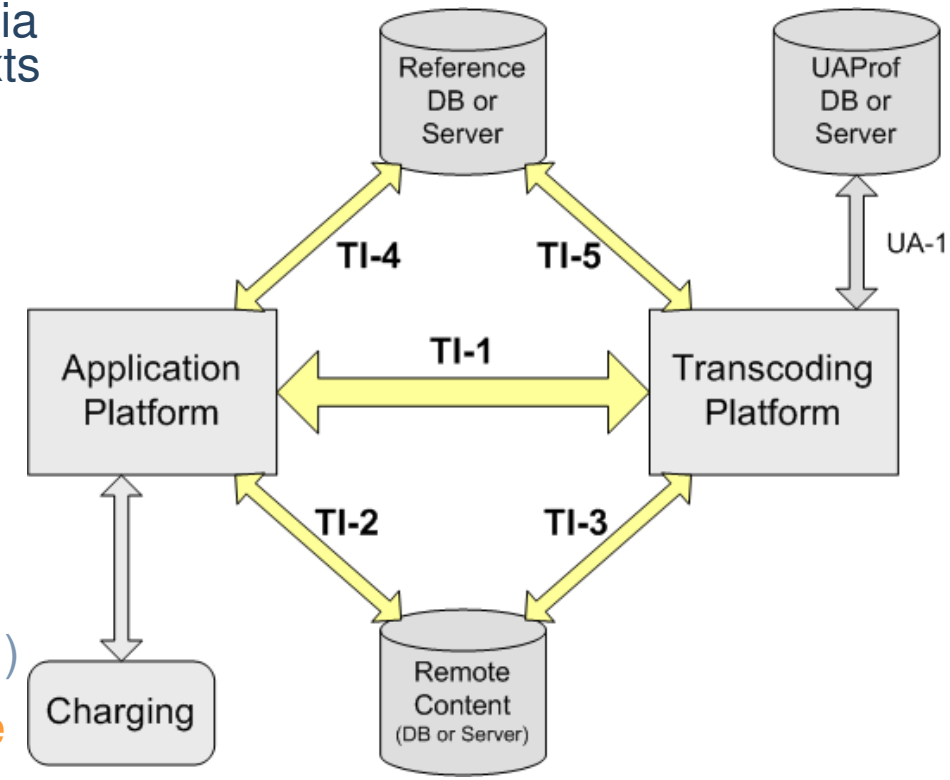


Rendering Engine (II)

- MyMobileWeb's Rendering Engine is based on the concept of **Render Kits**
  - Render Kits enable a modular and extensible architecture
- Render Kit
  - A set of "**renderers**" that produce the final markup / style / script to be sent to the web browser
  - A "renderer" is typically a Java class that contains all the code generation logic for an IDEAL element
- Adaptation policies expressed by authors (IDEAL2 and CSS) and Delivery Context Characteristics (provided by the *Context Management*) might influence on both
  - The Render Kit to be used
  - The code generation logic inside a renderer

Transcoding Module

- Problem : Dynamic transformation of multimedia resources to adapt to different Delivery Contexts
  - media formats and codecs
  - form factor and colors
  - duration, size, …
- MyMobileWeb solutions
  - Local image transcoder
    - Based on existing Java libraries
      - JAI, Batik, etc
  - OMA Standard Transcoding Interface (STI)
    - It can handle any multimedia resource (video, audio, …)
    - Request/Response (SOAP over HTTP)
    - We have developed an specific connector for the Alembik open source platform



Authoring perspective

- CSS Styles

```
image.example1 {
        transcode:true;
        resize-directive:aspect-ratio;
        width:90%;
}
```

```
image.example4 {
        transcode:true;
        resize-directive:aspect-ratio;
        width:90%;
        mirror-axis:LR;
}
```

```
image.example9 {
        transcode:true;
        width:90%;
        contrast-level:-30
}
```

```
<image id="ti" src="resources/images/tiger.jpg" class="examplex"/>
```

```
image.example6 {
        transcode:true;
        width:90%;
        level-correction
        brightness-level:20;
}
```

```
image.example10 {
        transcode:true;
        content-type:"image/png";
        width:90%;
        color-scheme-depth: 10;
        color-scheme-scheme:palette-grey;
}
```

MyMobileWeb - CMS Integration

- Authors can associate content from CMS with UI components

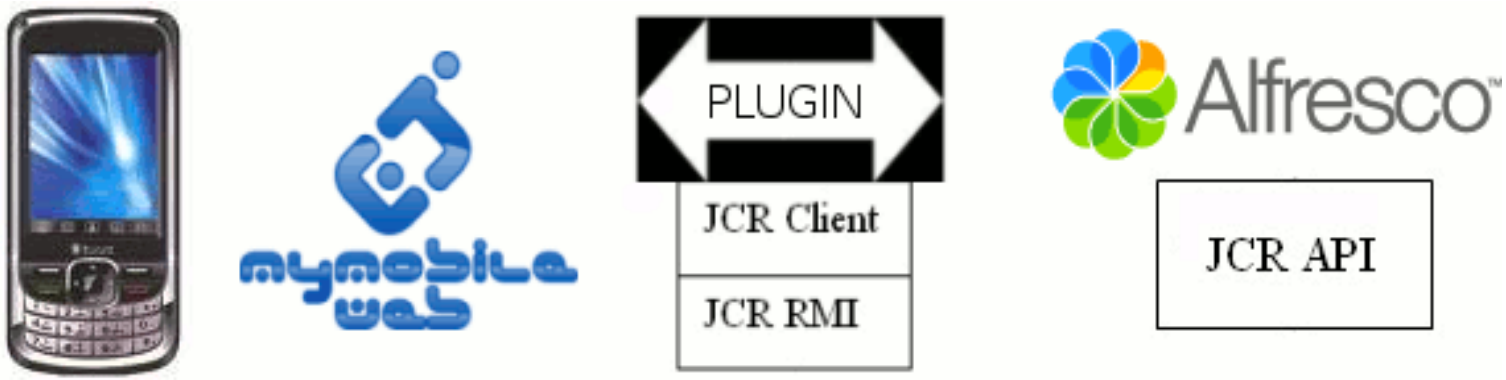
```
<textarea id="biography">cmspath:/Demo/Text/Bibliography</textarea>
```

- MyMobileWeb provides a generic Java interface for accessing to content repositories
  - Based on JSR-170 concepts (workspace, repository, node, …)

- A generic plugin class (**`GenericJSR170Plugin`**) to get access to JSR-170 repositories
  - The difference among the distinct repositories is how to find the 'Repository' object

MyMobileWeb – Alfresco Integration

- Alfresco JSR-170 Connector:
  - Alfresco is the leading open source enterprise Content Management System, implemented in Java
  - Alfresco supports the JCR standard access to its platform
  - The implementation is based on the development of a plugin extending the one provided by MyMobileWeb



MyMobileWeb XForms Engine

- MyMobileWeb incorporates a Javascript-based XForms engine
  - partial implementation of the XForms 1.1 standard
  - partial implementation of XPath 1.0
  - extensions: JSON Data Models

- Our implementation supports the whole XForms data processing loop
  - providing a full separation of concerns between user interface, data and behaviour.
  - performing the validation of the data in the model at run-time, based on the data constraints specified in the XForms data model.

- Our implementation is realized by means of
  - a Javascript library that implements the data binding and validation aspects
  - the IDEAL2 rendering engine