



# MyMobileWeb

A pragmatic approach to Model-Based User Interfaces



W3C Workshop on Future Standards for Model-Based User Interfaces  
Rome, 13-14 June 2010

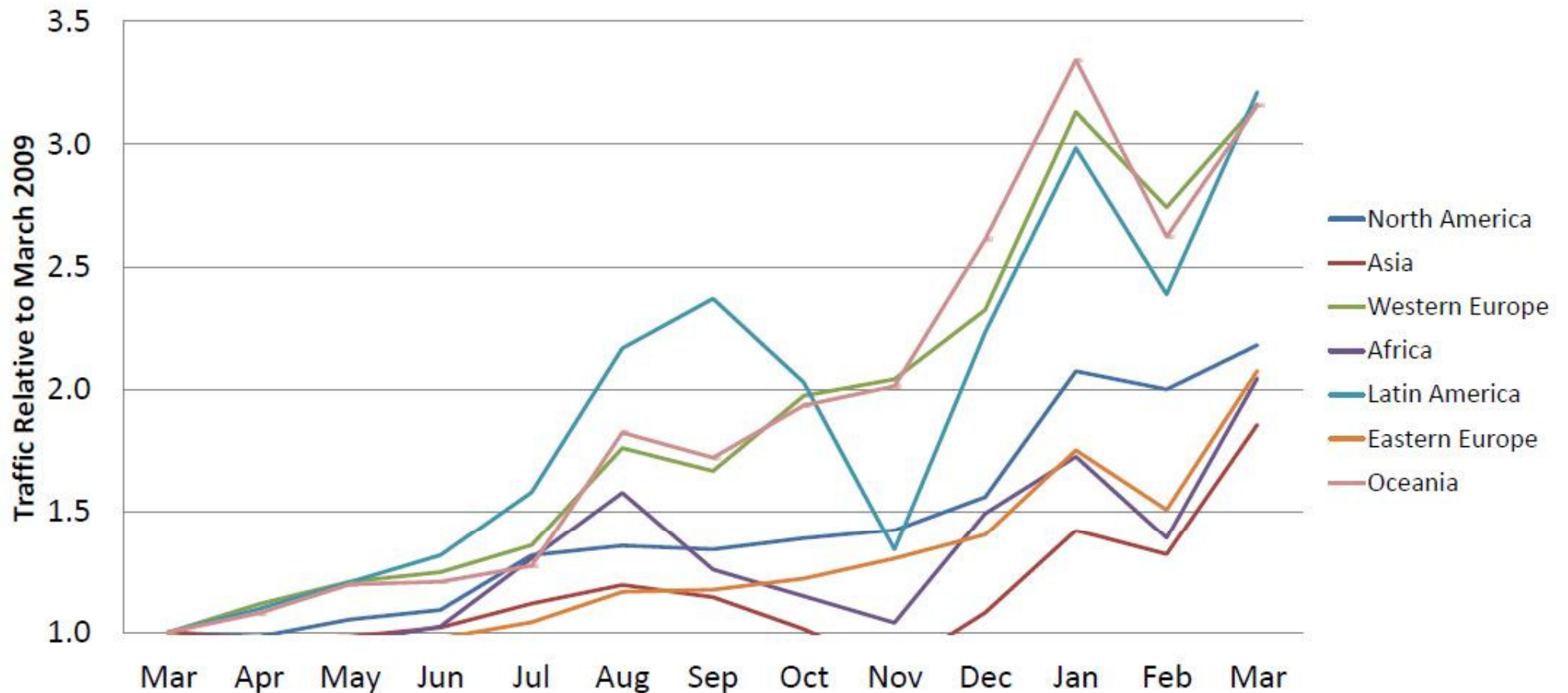
# The Mobile Web: Overview

- Accessing web applications and contents from mobile handsets
- Particularities of the mobile environment → Delivery Context
- Users use their mobiles to do different tasks
- Mobile Web Development is not easy if you wish to support the majority of devices without compromising functionality or user experience



# The Mobile Web: Potential Market

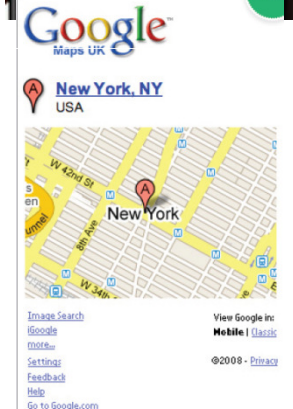
## Monthly Growth in Traffic Since Mar 2009 - Regions



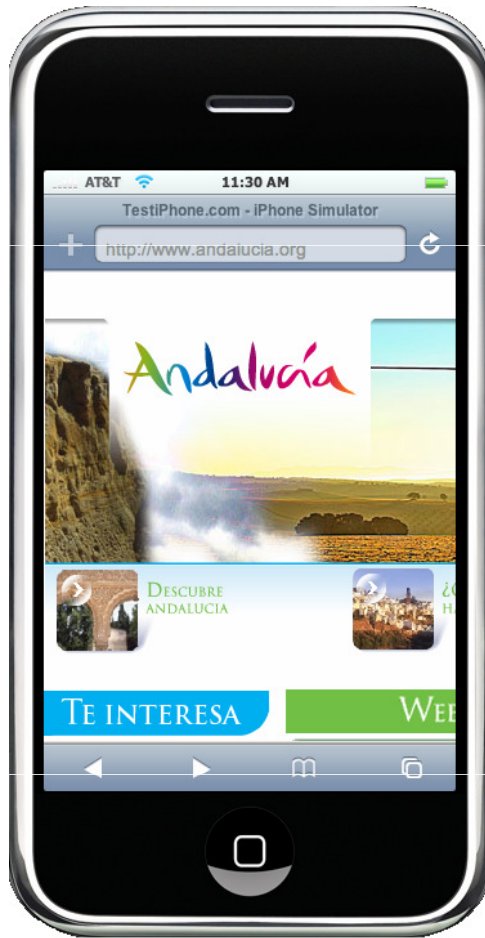
Source: <http://metrics.admob.com/wp-content/uploads/2010/04/AdMob-Mobile-Metrics-Mar-10.pdf>

# The Mobile Web: Realizing its potential

- Making the Mobile Web a reality is not only a question of using highly capable devices and browsers
- Users are expecting more from the Mobile Web
- Application and portal developers are demanding powerful technologies that enable the creation of advanced, high-quality mobile web applications in time to market without investing a lot of money



# The Mobile Web: Why?



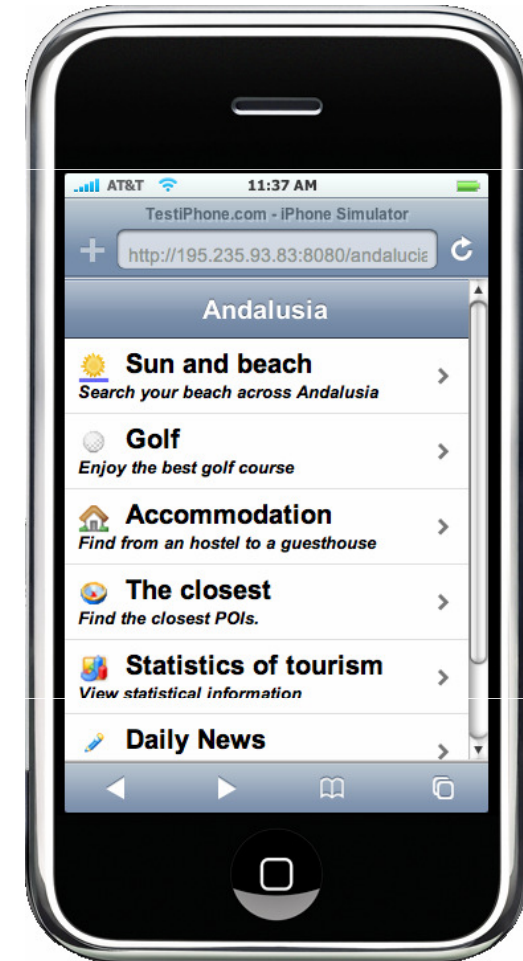
¡ 3 Mb – 57 seg !



28 Kb – 2 seg



12,5 Kb – 1'7 seg

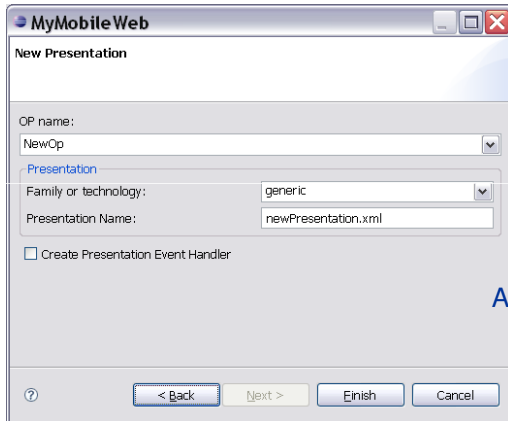


31 Kb – 2 seg

# MyMobileWeb: Introduction

- MyMobileWeb is an open source, standards-based software framework that simplifies the rapid development of mobile web applications and portals
- MyMobileWeb encompasses a set of technologies which enable the automatic adaptation of applications to the target Delivery Context (browser, device, network, location,...), thus offering a harmonized user experience
  - Using an XML-Based language (IDEAL2), that makes it possible to describe device independent user interfaces and their adaptation policies
  - Using an XML-Based language (SCXML), that makes it possible to describe application flow as a finite state machine, associating zero, one or more views to each state.
  - Using a set of client and server-side runtime libraries that realize the automatic content & application adaptation

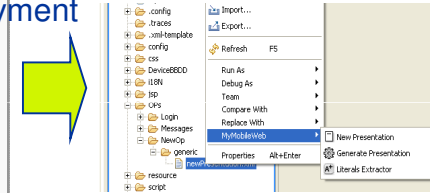
# MyMobileWeb in 4 steps



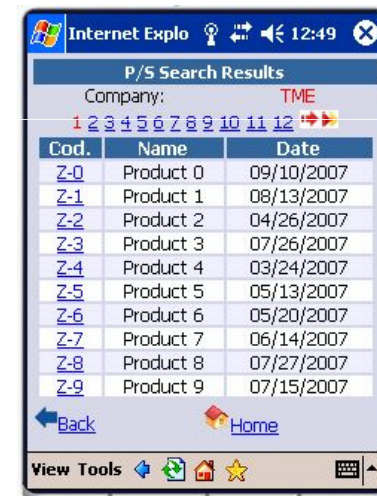
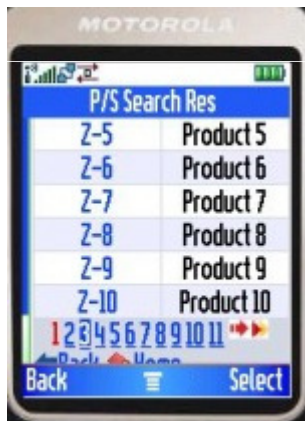
Authoring

```
<!DOCTYPE ideal2>
<ideal id="plist" title="Res. Cons. P/S">
  <ui>
    <body>
      <section id="mainSection">
        <div class="center" id="p1">
          <label>Empresa:</label>
          <label class="remark">${enterprise}</label>
        </div>
        <div class="center vertical" id="p2">
          <table ref="selectedPS" class="tps paginate" id="listPS">
            <th class="header">
              <td>Cód.</td>
              <td>Nombre</td>
              <td expr="dcn:belongsTo('PdaDevice')>Fecha</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" />
        </div></section> </body> </ui> </ideal>
```

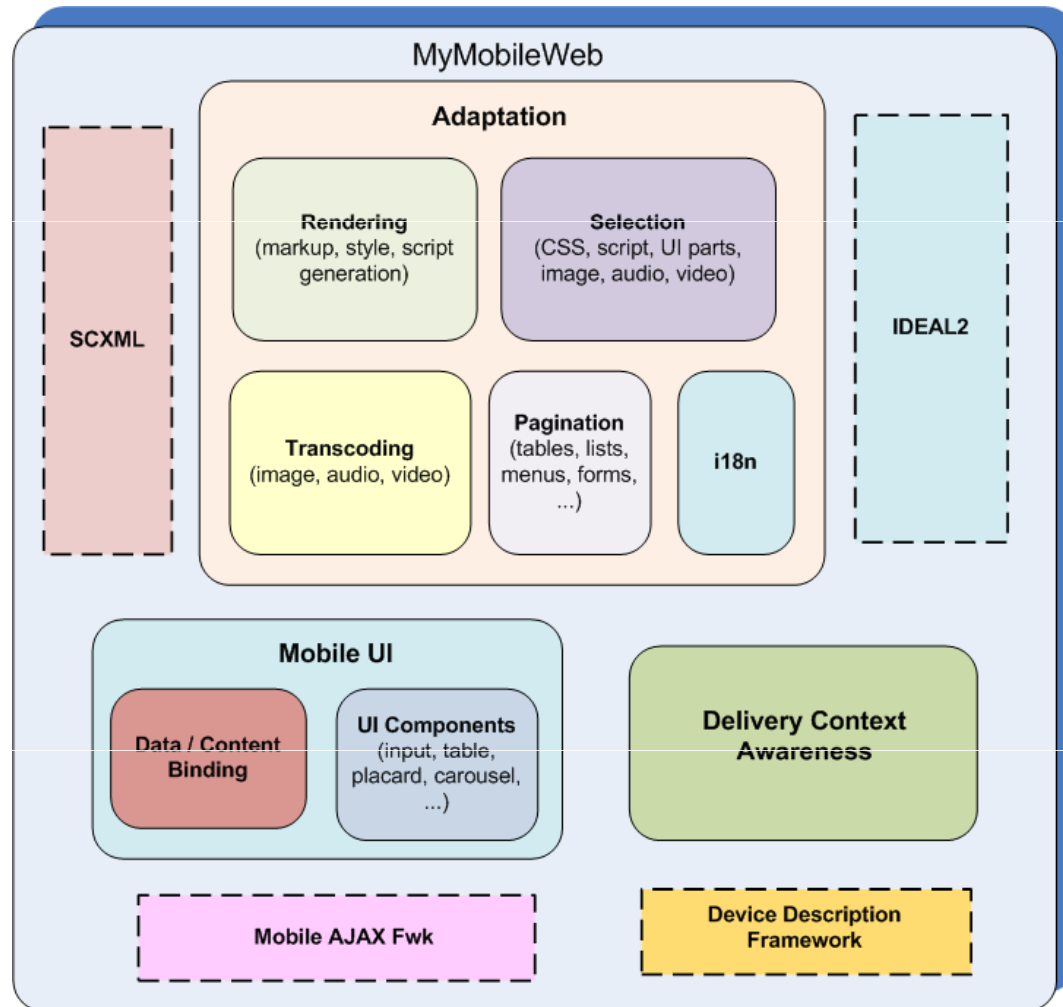
Deployment



User Experience in different Delivery Contexts

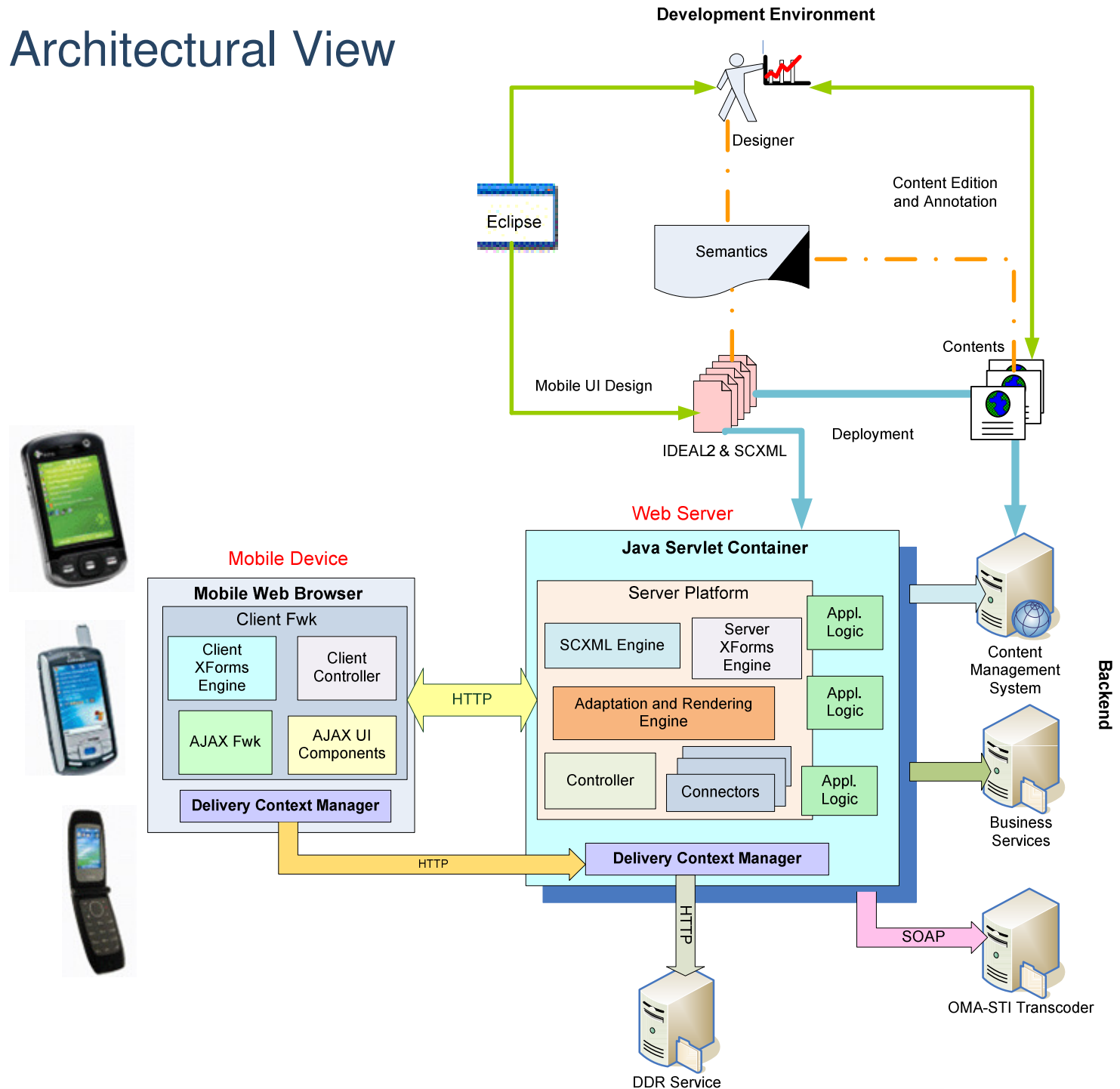


# MMW: Platform Overview





# MMW: Architectural View



- Features

- Based on W3C standards (namely XForms 1.1, DSelect 1)
- Modular and extensible
- Similar syntax to XHTML but higher abstraction layer
  - Final rendering according to the delivery context
- Description of a user interface from a structural and behavioral point of view.
  - All the aspects that have to do with look-and-feel and layout are specified by means of CSS2 and extensions
- By using IDEAL2 developers can concentrate on the application functionality without worrying about markup languages or scripting capabilities

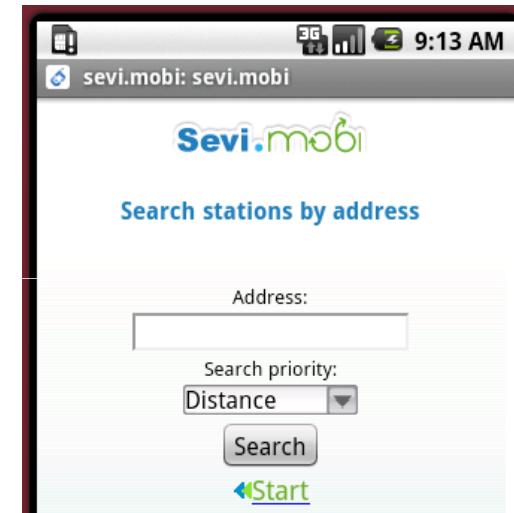
# IDEAL2 Example

```
<?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>

# IDEAL2: UI Components (I)

- **<input>** enables free-form data entry or a user interface component appropriate to the datatype of the bound node.

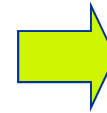


- **<select1>** | **<select>** allows the user to make a single | multiple selection from multiple choices.

- **<textarea>** multi-line text input element
- **<submit>** launches an update of the model (initiates a submission)
- **<trigger>** requests something from the UI without updating the model

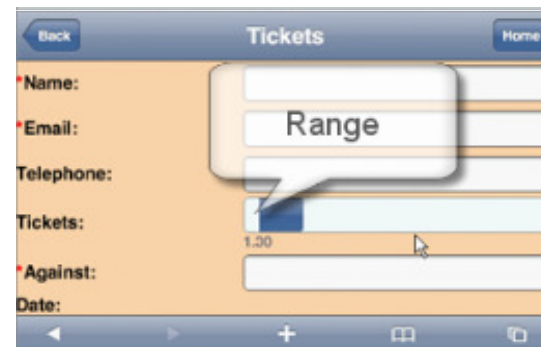
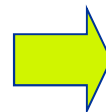
# IDEAL2: UI Components (II)

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



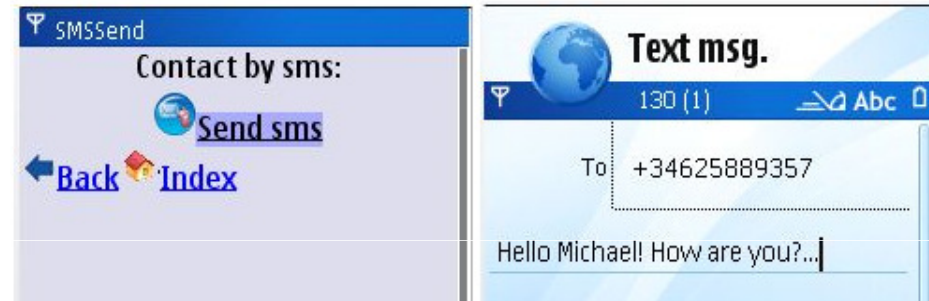
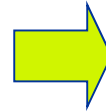
- **<inputDate>** accepts a date as input. It can be rendered as: calendar, set of input fields, wizard, ...
- **<inputTime>** accepts a time as input (hours, minutes and seconds)

- **<range>** allows selection from a sequential range of values



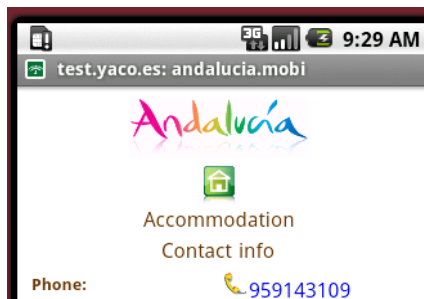
# IDEAL2: UI Components (III)

- **<smsSend>** allows sending an SMS



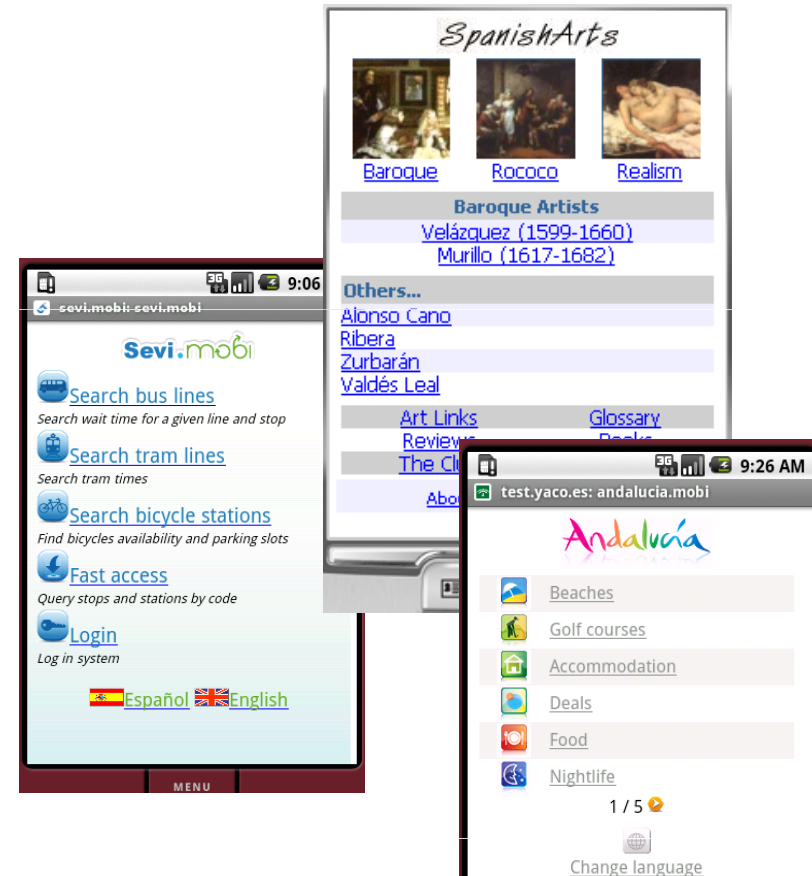
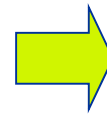
- **<phoneBookAdder>** adds telephone numbers to the agenda

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



# IDEAL2: UI Components (IV)

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

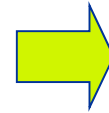


- **<chainedMenu>** is a set of mutually dependant menus



# IDEAL2: UI Components (V)

- **<table>** represents data in tabular mode



Pos	Name	W	L	T	Pts
1	Almería	0	0	0	0
2	Athletic	0	0	0	0
3	Atlético	0	0	0	0
4	Barcelona	0			
5	Deportivo	0			
6	Espanyol	0			
7	Getafe	0			
8	Málaga	0	1		
9	Mallorca	0	2		
10	Osasuna	0	3		
11	Racing	0	4		
12	Real Madrid	0	5		

Pos	Name	W	Pts
1	Almería	0	0
2	Athletic	0	0
3	Atlético	0	0
4	Barcelona	0	0
5	Deportivo	0	0

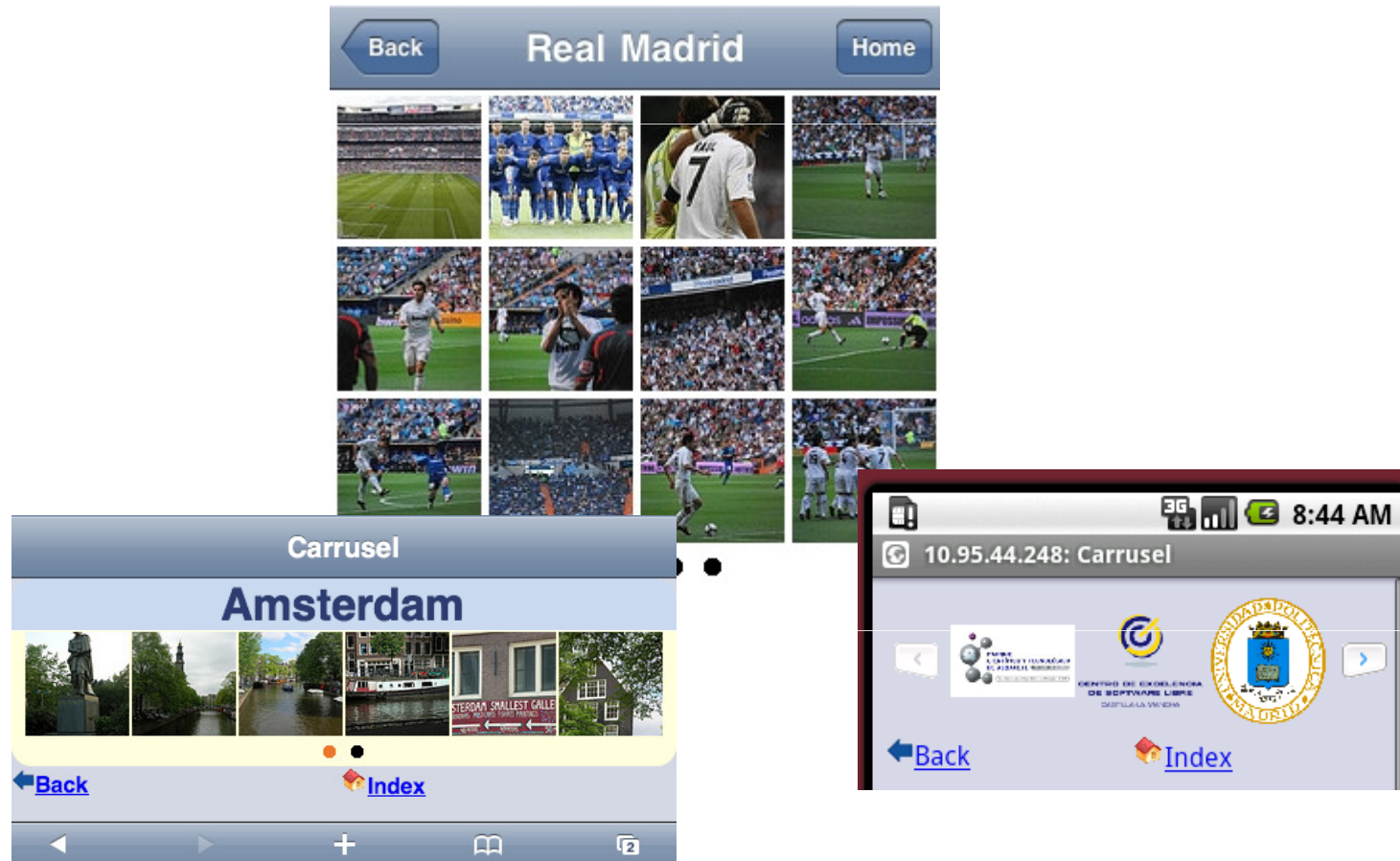


- **<placard>** a container that supports advanced layouts combining text and images



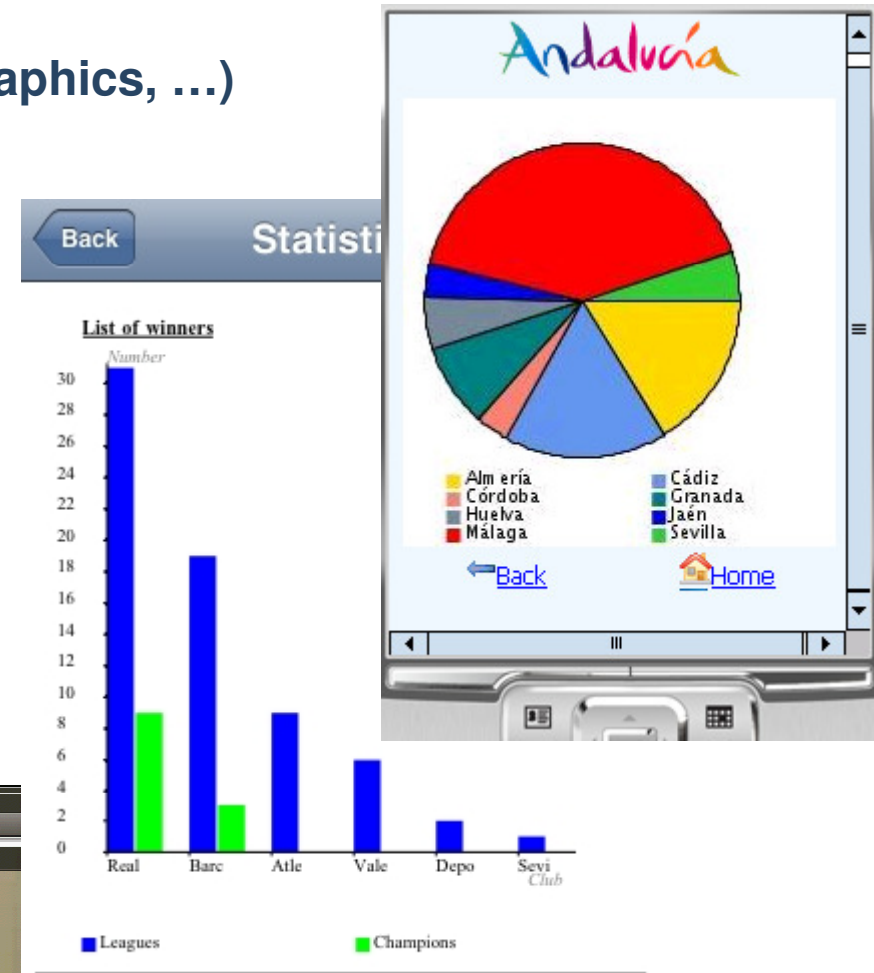
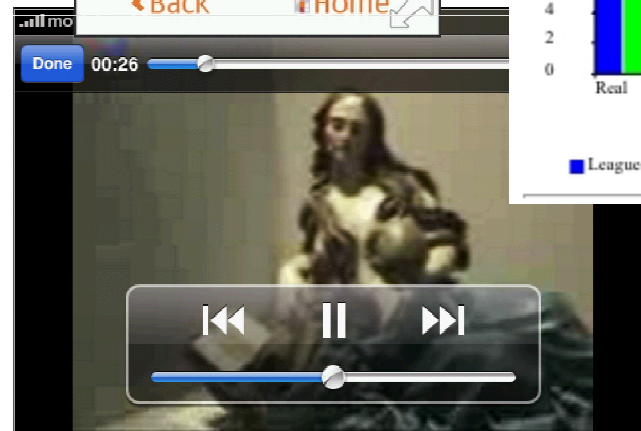
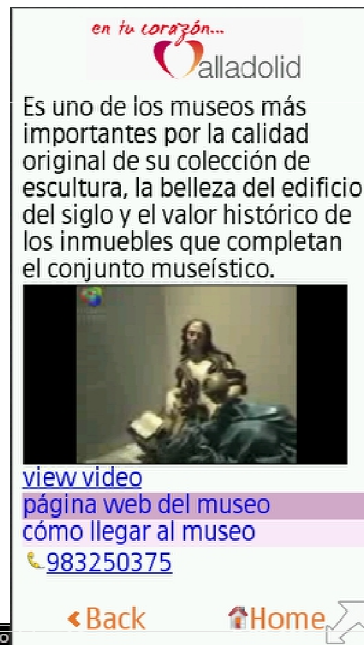
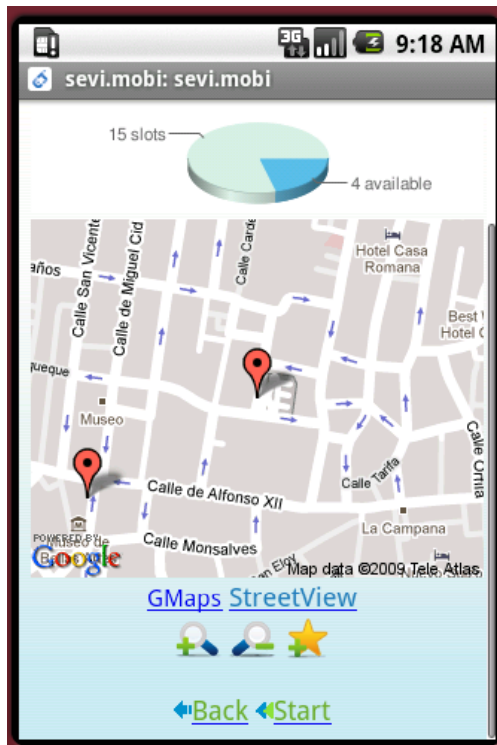
# IDEAL2: UI Components (VI)

- **<carousel>** displays sequentially a dynamic catalogue of objects



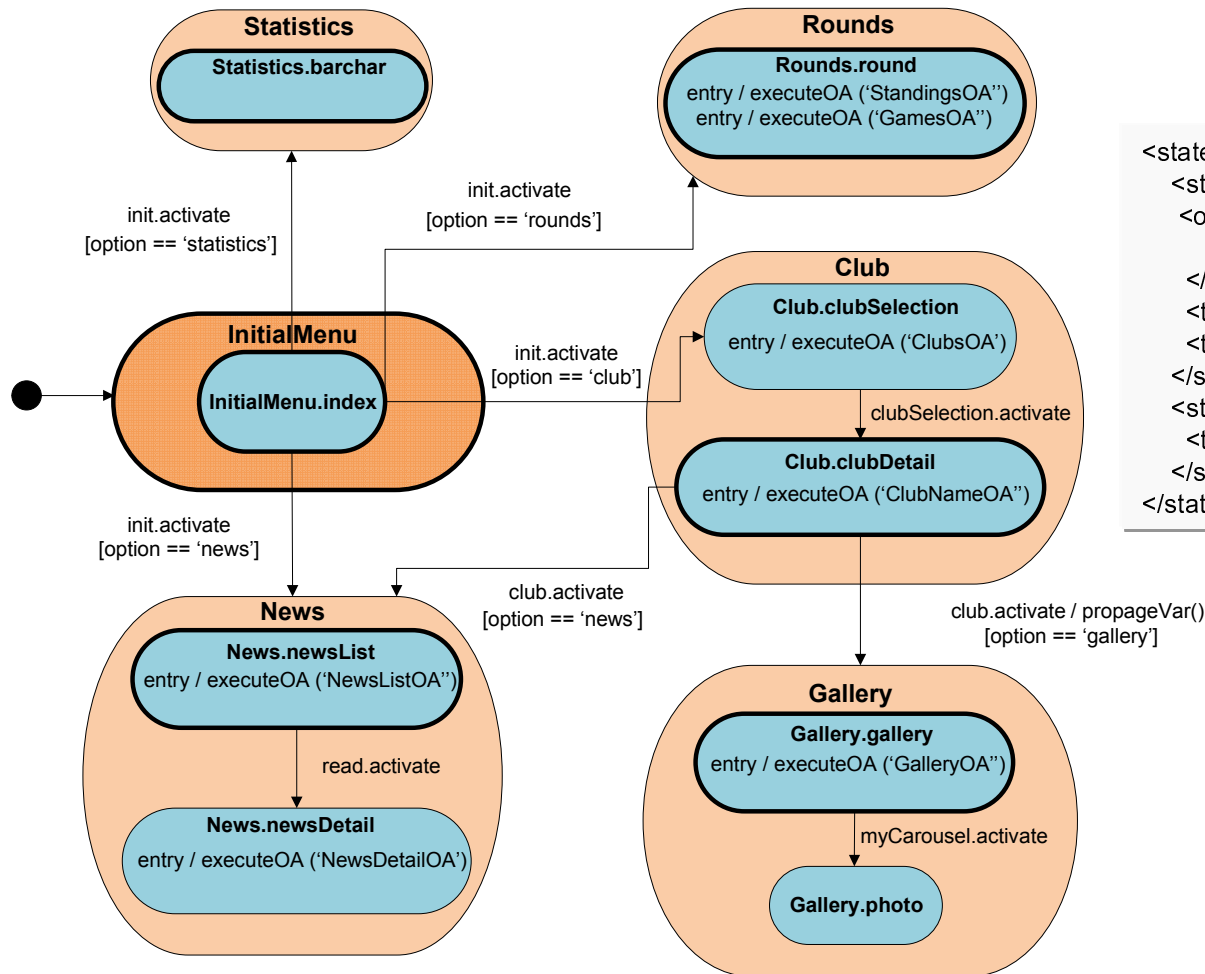
# IDEAL2: UI Components (VII)

## IDEAL2 Extensions (maps, media, statistical graphics, ...)



- State Chart XML (SCXML) is a W3C standard
  - General purpose language for describing state machines
  - Based on Harel States Tables
  - Used to specify MyMobileWeb's application flows
- Application Flows describe the behavior to be performed in reaction to the interaction of the user with the system
  - The set of actions to be performed by an application flow does not only depend on the events raised by the user interface but also on the application state

# SCXML Example



```
<state id="Gallery" mymw:category="UseCase" initial="Gallery.gallery">
  <state id="Gallery.gallery" mymw:category="View">
    <onentry>
      <mymw:executeOA idOA="GalleryOA" />
    </onentry>
    <transition event="myCarousel.activate" target="Gallery.photo" />
    <transition event="back.activate" target="Club" />
  </state>
  <state id="Gallery.photo" mymw:category="View">
    <transition event="back.activate" target="Gallery.gallery" />
  </state>
</state>
```

```
<state id="InitialMenu" mymw:category="UseCase" initial="InitialMenu.index">
  <state id="InitialMenu.index" mymw:category="View">
    <transition event="init.activate" cond="{option == 'news'}" target="News" />
    <transition event="init.activate" cond="{option == 'club'}" target="Club.clubSelection" />
    <transition event="init.activate" cond="{option == 'rounds'}" target="Rounds" />
    <transition event="init.activate" cond="{option == 'statistics'}" target="Statistics" />
  </state>
</state>
```

# Advantages

- Legibility:
  - Flow clearly visible by looking at the flow definition file
- Separation of concerns:
  - Pure implementation of the MVC design pattern
- Maintainability
  - It makes future maintenance tasks easier
- Simplicity:
  - Avoid the use of the tedious Java Handlers
- Standards-based solution:
  - SCXML is a W3C technology
- Flexibility:
  - Generic State Machine Language

# Open Questions



# Open Questions (I)

- What are the main benefits for Model-Based UI?
  - Declarative vs Imperative, What vs How, High-Abstraction vs Implementation Details
- What are the next steps to be taken concerning standardization?
  - Re-usage of existing technologies and (de-facto) standards
- Is it feasible and opportune to start an standardization process now?
  - Absolutely. Many people intending to do similar things. Heterogeneity can provide a higher abstraction level.
- What are the technologies that call for standardization?
  - Model-Based UI Incubator Group Report, additional works in this workshop

# Open Questions (II)

- What needs to be standardized, models, syntaxes, both?
  - Both, so it is easier to create standard-compliant runtimes
- What companies and institutions are interested in participating in the process?
  - The MyMobileWeb Consortium, the Serenoa Consortium , and attendants to this workshop, I dare to say 😊
- What liaisons need to be established?
  - TBD in this workshop
- What is the roadmap to be followed?
  - TBD in this workshop



# References

- Visit our main demo at
  - <http://195.235.93.83:8080/Soccer>
  - Tutorial based on the demo:<http://files.morfeo-project.org/mymobileweb/public/tutorial>
- Watch our video-demo at  
<http://files.morfeo-project.org/mymobileweb/public/videos/mymw/index.htm>
- Visit our website  
<http://mymobileweb.morfeo-project.org>
- Download the software from our forge
  - <http://forge.morfeo-project.org/projects/mymobileweb/>
- Have a look at the documentation
  - [http://forge.morfeo-project.org/wiki\\_en/index.php/MyMobileWeb\\_Platform](http://forge.morfeo-project.org/wiki_en/index.php/MyMobileWeb_Platform)
- You can get support at
  - [mymobileweb-support@lists.morfeo-project.org](mailto:mymobileweb-support@lists.morfeo-project.org)

# Partners



# Thank you for your attention

<http://mymobileweb.morfeo-project.org>