A System for Adaptive Platform-Independent Mobile Learning

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Introduction

The mobile devices and technologies offer great opportunities for e-learning community.

Never as before the learning may become “when you want” but also, and that is the mobile technologies potentiality, “where you want!!”

New scenarios, didactical models, learning experiences and services have to be designed for this new users’ categories
Mobile world

Different Technologies

Evolving
So many kinds of technologies have generated a plurality of devices

- Simple Mobile Phone
- Pocket PC
- Smartphone
- PDA
Is it possible to build an e-Learning system in order to support multimodal mobile access and offer a complete set of learning experiences, services and models able to fit this complex and variegated world?

We have tried to answer to this question.
How?

In order to design and deliver significant learning experience among a huge quantity of mobile technologies we have extended an existing Italian e-Learning platform:

IWT: Intelligent Web Teacher
Every didactic/formative context requires its own specific e-learning solution

Its architecture allows to extend the platform by adding new Resources.

A resource can be:

- Learning object type
- Services

Creating, in this way, specific e-learning solutions

It’s realised completely exploiting Microsoft .NET technology.
IWT Features

- It allows to manage contents like Learning Objects, Tests, Business Games
- It allows to manage courses
- It allows users to collaborate and communicate each others
- It provides as integrated service an Intelligent Tutoring System - LIA
What’s LIA?

LIA is a standard based ITS able to:

- Create customised courses respecting student knowledge and preferences
- Evaluate test results
- Update student profiles
- Create remedial work
LIA Methodologies

- **Ontologies to describe domains**
  - Concepts and relations
- **Learner profiles to describe users**
  - Cognitive state and preferences
- **Metadata to describe resources**
  - Technical and learning features
- **SCORM to package courses**
  - Learning path and presentation
IWT Extension

We have extended IWT in order to provide the following users’ interactions:

- Browser based interaction
- SMS interaction
- Voice interaction
Browser based interaction

Users having HTML-enabled mobile devices may access to a sub-set of IWT functionalities:

- Course subscription
- Course delivery (*Flash, HTML content, etc.*)
- Basic collaboration features (like chat, forum and messaging).

Moreover, such functionalities are synchronized with those available on the PC-Web Browser
Browser based interaction

Content and layout are automatically adapted by the IWT engine that recognises the kind of devices that users are employing for the connection.

Adopting the Microsoft Mobile Internet Toolkit that extends the Microsoft .NET Framework with server-side technology.
SMS based interaction

The courses are composed of SMS ‘pills’: short textual Learning Objects

The users can read and answer to those multiple choice test SMSs by simply replying the test SMS through a SMS containing the answer.

IWT tracks the answer received from every single learner, verifies the results and sends to him/her a new SMS containing the test results, finally suggests improvements.
SMS based interaction

To allow the management of these new type of learning objects we created several new IWT resources

- SMS Test
- SMS Textual
- SMS Course

To send/receive SMS we have extended the IWT services with SMS Router Module that interacts with a SMS Gateway
Voice based interaction

The user is able to access the system by a usual phone call and to navigate the IWT portal in an IVR (Interactive Voice Response) fashion.

A synthesized human voice reads a simplified version of the portal content:

- bulletin, news reading, course catalogue
- collaboration features (messaging, voice chat with a tutor)

and the user can browse the portal by dialling on the phone keyboard.
Voice based interaction

The voice based interaction is realised by connecting to the IWT General Base Platform an IVR based software linked to the telephone network through a H323 Gateway.
Experimentation

The mobile browser-based interaction is under experimentation by approximate 200 users coming from UK, Italy and Sweden, experimenting a set of courses on literacy and numeracy.

In collaboration with Albatros, an organization from South Italy, working for the social integration of foreign and dialect speaking people, we have started in these days a new experimentation based on a SMS first level Italian language course also using, voice-based interaction for collaboration activities.
Results

Final results of both experimentations are not available yet.

The first impression is that users are, generally, highly motivated in using mobile technologies for learning with particular emphasis on SMS technology that seems to be more effective and simpler than browser-based interaction which still presents connection problems.
Contacts and Further Info

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Thanks for your attention 😊