

Prepare for Bilingualism Exam with a PDA in your hands

Anna Trifonova and **Marco Ronchetti**
University of Trento, Italy



Defining M-Learning

- E-learning + mobile computing
 - PDA
 - Cell phones
 - ❖ Any small, autonomous and unobtrusive device



Why language learning with PDA?

- **Short modules**

Users should be able to use their small fragments of waiting or idle time for learning, by reading small pieces of data, doing quizzes or using forums or chat

- **Simple, funny and added value functionality**

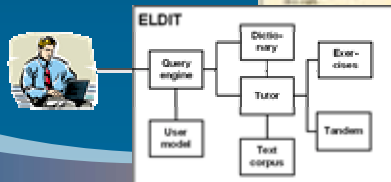
It should be possible to use an m-learning system without reading a user manual, and the experience of studying with the help of such devices should be interesting and engaging

- **Area/Domain specific content, delivered just in time/place**

The mobility should bring the ability to guideline and support students and teachers in new learning situations when and where it is necessary.

The ELDIT system

- An innovative electronic language learning system for the population of South Tyrol
- Helps to prepare for the exams in bilingualism
- For everybody interested in learning German or Italian language
- Consists of: electronic learner's dictionary, a text corpus, quizzes, a tandem module, an adaptive tutor, etc.



The MOBILE ELDIT system

Design Goals

- To support self-motivated learner, (mainly, but not only) preparing for the bilingual exam, who doesn't need any supervisory control of studying process
- To develop a language-learning system, not an electronic dictionary
- To allow 'any time, anywhere' access to the learning materials
- To free the user from annoying procedures of pre-fetching content
- Easy to use system

MOBILE ELDIT - The connectivity



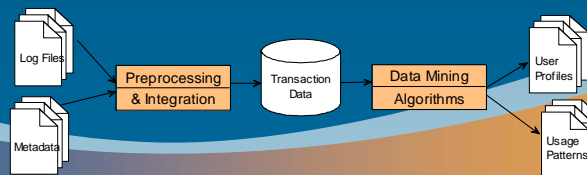
PDAs – The Memory

- Commonly 32 – 64 MB Main memory available
- Extensible – possible to add external memory



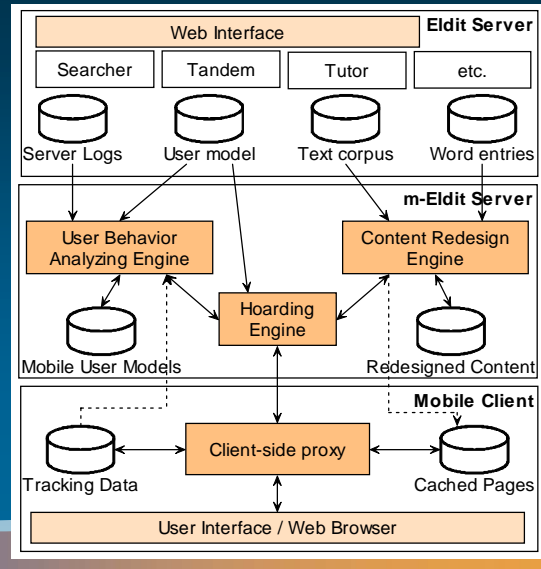
Mobile Eldit – The Hoarding

- Based on the tracking of the user activities during the offline usage of the system
- Taking care of content's coherence and synchronization with the system
- Predict which 'learning path' the user is most likely to follow
- Assign weights to the learning objects based on their importance for next user session
- Uploaded to the device first the objects with higher weights until the device's available memory (cache) is filled
- Analyze how successfully the previous uploads were, improve further prediction



The MOBILE ELDIT system

The Architecture



What can be done in MOBILE ELDIT ?

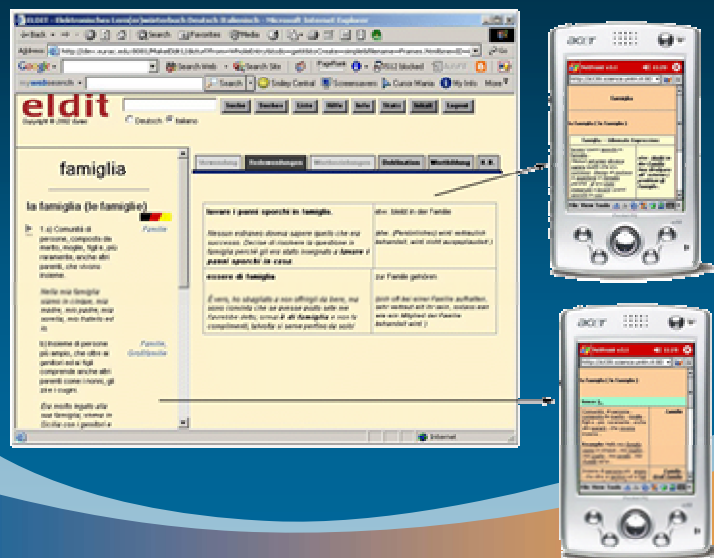
- Mobile ELDIT offers anytime, anywhere access to the data of ELDIT.
- It contains about **800 texts and associated words** in both German and Italian languages.
- Each text has about **150 words and few comprehension questions** that the user should answer in the other language. **Nouns, verbs and adjectives** are linked to **word entries** with rich explanations, translations and additional data.
- The texts are divided into **two difficulty levels** and are split into **thematic groups**.

MOBILE ELDIT - Specific adaptation

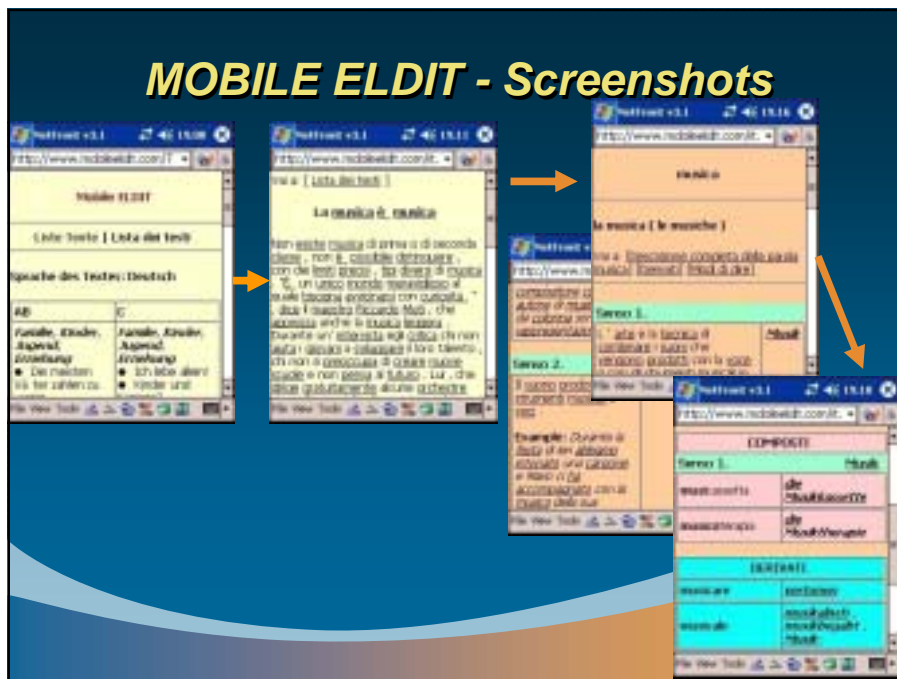
- Most web pages are designed to be displayed on desktop computers with color monitors having at least 800x600 resolution
- Modern Web Browsers allow frames, animations, scripts, applets and etc.
- PDAs
 - Common: 240x320 pixels (16-bit color)
 - Limited browser functionalities: no frames, no applets, limited scripting
 - Hard input, through touch-sensitive screen and a Stylus
- Possible Adaptation Techniques
 - Server-based - XML/XSLT, Cocoon, ...
 - Proxy-based - AvantGo, Palm Web Clipping
 - Client-based - XHTML/CSS



MOBILE ELDIT - Specific adaptation



MOBILE ELDIT - Screenshots



MOBILE ELDIT - Experiments

- Started in July 2004
- One iPaq3800 and two Acer n10 devices
- Up to now **10 users** participated
- A short (not more than **15 min.**) explanation was given to every user about general use of PDAs and the Mobile Eldit prototype
- The users were encouraged to read what they found suitable
- At the end each user filled-in a **questionnaire** for evaluating the system

MOBILE ELDIT - Outcomes

- **Ease of use**

all users found the system easy to use

People that used PDA previously needed no introduction.

The others after a few hours of usage felt familiar enough with all needed functionalities.

- **Availability and freedom**

biggest advantages is the possibility to **have it anytime, anywhere with you**. The device is small and light and it can contain enough content to be used in different places.

All participants were using the system **before or after work hours at home or during waiting-times**, for example in the train while travelling to work or on the coach "**because it is comfortable**".

Some people liked the possibility to use the **online Eldit system** from their work desktop PC, but mainly as a dictionary.

MOBILE ELDIT - Outcomes

- **Fast access**

data are accessible **very quickly** by the user compared to the time needed to find those words in a paper dictionary or other resource.

It is **important to connect every word with the exact meaning** in the context used in the text, which is quite a difficult task, but is substantial for the learner.

- **Additional materials**

people that were preparing for the bilingualism exam generally prefer **taking paper notes**, because it helps them to "remember better". Even when tools for digital notes taking are available on the mobile device the users consider paper notes to be more efficient.

people that were studying the language without the goal to take any examination were **not generally using the system as the only source of 'learning content'**, but were practising their skills by reading books, newspapers, magazines or listening to radio or TV in the targeted language.

MOBILE ELDIT - Outcomes

- **Periods of usage**

time of each session varied from one user to another and ranged mainly from **five to forty-five minutes**.

It strongly depends on the student goals – students that **intend to take the exam** spend longer periods for systematic and concentrated studying

- **Number of texts per session**

the number of texts read in one session varies from **one to more than five**.

Generally the first group of users read **one text per session**,

the second group spends less time on a single text and reads **more than one text per session**.

MOBILE ELDIT - Problems

- **Battery**

battery on Windows based PDAs discharges very fast and discharges even when the device is not used (e.g. is kept switched off for few days). After the device fully discharges all user data and user installed applications disappear.

surprising and frustrating for the users.

- **Special characters**

special German and Italian letters (à, è ...) were not correctly displayed in the browser.

- **Slow transfer**

very slow transfer between the desktop PC and the mobile device. The slowness of the **serial communication channel** on which data are transferred to the PDA remains however a major problem.

Future (present...) Work

- The main direction of our research is to try to **solve the hoarding problem**
- Our goal is to support the automatic selection and pre-fetching of learning content on the mobile devices' limited memory.
- This task involves **deep analysis of user's behaviour, common patterns, particularities** and etc.
- The current experiment has the objective of collecting a real data about the user learning styles, habits and preferences and later tests will be done to compare the effectiveness of different algorithms that can be used for the automatic hoarding.

THANK YOU!

***“Prepare for Bilingualism Exam
with a PDA in your hands”***

Anna Trifonova
trifonova@dit.unitn.it

Marco Ronchetti
ronchetti@dit.unitn.it

University of Trento
Via Sommarive 14, Povo (TN), ITALY

<http://www.science.unitn.it/~foxy/MobileEldit.php>