Mobile Assistance for Social Inclusion & Empowerment of Immigrants with Persuasive Learning Technologies & Social Network Services
MASELTOV Project Overview

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DIGITAL – Institute for Information and Communication Technologies
Graz, Austria
requirements for employability

- relevant information
  - bureaucracy,
  - health care
  - navigation
  - understanding of local culture
- language practice
- knowledge of daily skills
- communication skills
- local community building

Three MASELTOV themes
- information & assistance
- learning
- community building

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MASELTOV project objectives
Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services

- Mobile Assistance
  - Everywhere & everytime assistance
- Learning Technologies
  - Learning on the spot & when needed
  - Learning in reflection on own experience
- Persuasive
  - Playful motivation for the use of services
- Social Inclusion & Empowerment
  - Communication and cultural understanding
- The learner’s journey: investigate mobile assistance in urban context
recent immigrants:
specific problems, similar profile
all immigrants are target users,
focusing on problems encountered by
people with profile, as follows,

- third country nationals
- first five years of stay in Europe
- in working age
- with low level education
- with different cultural background
key social target groups

- main immigrant groups & their languages
  1. Turkish
  2. Arabic
  3. Latin American

- demonstration sites
  1. Graz, Austria
  2. Madrid, Spain
  3. London, UK
affordability study

- Graz (Turkish)
- Madrid (Arab)
- London (Latin)

smartphone ownership (N=234)

- Yes: 20%
- No: 80%

<table>
<thead>
<tr>
<th>Location</th>
<th>Yes</th>
<th>No</th>
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<td>Graz/Vienna</td>
<td>26</td>
<td>50</td>
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<td>Madrid</td>
<td>72</td>
<td>9</td>
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<td>London</td>
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<td>11</td>
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- No: 20%

MASELTOV – Project Overview
learner’s journey:
urban opportunities for
mobile situated learning

- Rehearsal
- Conversation
- Translation
- Inquiry
mobile portal of an assistive ecology of services

information services

mixed reality game & recommender engine

multisensory context awareness

mobile assistant

community building services

learning services
MApp – suite of services
MApp – suite of services

- Forum
- Exchange of immigrant relevant experience
MApp – suite of services

- help radar
- social network of volunteers for situated assistance
MApp – suite of services

- information
- general information of interest (health, legal, job search)
MApp – suite of services

- pedestrian navigation
- intuitive service for orientation on unknown pedestrian routes
MApp – suite of services

- navigation
- intuitive service for orientation on unknown transportation routes
MApp – suite of services

- places of interest
- search for immigration relevant urban locations
MApp – suite of services

- translation tool
- intuitive and reliable text translation in urban ambiente
MApp – suite of services

- language learning
- intuitive lessons for host language learning
MApp – suite of services

- serious game
- playful learning of cultural understanding
MApp – suite of services

- recommendations
- context sensitive pointer to related Mapp service for further progress
physical journeys of the learner: purposeful or leisurely
multisensory contextual support

RECOMMENDER SERVICE:
“I can see you are looking at signs about MEASLES. Would you like to try a language lesson on ILLNESS?”

Keywords
Lesson: Illness
- Vaccination
- Immunisation
- Doctor
- Measles
- Dentist
- MMR Jab
- ...

Look up “measles”

Translation service
EN: “Your kids …”
ES: “Sus hijos pueden contraer el sarampión en cualquier lugar”

Text: “Your kids can pick up measles anywhere”

Phone Camera
TextLens
Translation service

(Social Forum)

MASELTOV Language Lesson “Illness”
• Rules implemented by (condition, action) tuples
• Recommendation on
  • “Relevant nearby places”
  • “Participate in an event”
  • “Play the Serious Game on related topic”
  • “Work on related language learning lesson”
  • “Find related information in the WIKI”
  • “Get assistance by using the Help Radar”
  • “Get related advice in the forum”
  • “Navigate to POI to find related information”
persuasive learning: recommendations & mixed reality gaming

Recommendation

Language Learn.
Help Radar
Forum
POI Service
Navigation
Inform. Service
Translation
Serious Game

game usage
currency

MASELTOV – Project Overview
To engage the player and immerse them in the story

To communicate how cultures can differ and the impact of these cultural differences on tasks and interactions
persuasive learning
serious game
persuasive learning

feedback and progress indicators
To make sure MASELTOV meets immigrants’ needs by involving immigrants right from the start of the project.
ethical issues

- ethics
  - ethics manual
  - cultural context:
    offensive content, user interface design

- privacy and trust
  - anonymous data processing
  - control the level of detail
  - distribution in cooperation with NGOs

- affordability
Field trials in

- Graz, Austria (Turkish & Arab origin)
- London, UK (Latin American & Arab origin)
- Milton Keynes, UK (Latin American origin)

73 participants, 8 (3) weeks of use
Mobile learning journeys
- Situatedness, persuasiveness
- Feedback and progress indicators
- Incidental learning and social inclusion

Mobile incidental learning and context
- Learning and geo-contextual events
- Mobile context awareness
- Immigrant sensitive context awareness

research contributions: serious game & cultural understanding

- Serious Game research
  - Ethical research with playful intervention
  - Pervasive games for behavior change
- Playful development of cultural competence
  - Game based learning approaches
  - Role of narrative, empowerment and abstraction

- Conducting ethical research with a game-based intervention for groups at risk of social exclusion. In M. Herrlich, R. Malaka & M. Masuch (Eds.), *Proceedings of the 11th international conference on Entertainment Computing* (ICEC’12)
research contributions: human factors analysis

- Mobile HCI research
  - 3D Gaze recovery on mobile displays
  - Multimodal attention analysis
  - Dialogue analysis from audio prosody
- Cultural differences in navigation
  - Attention processes in navigation
  - Cultural aspects in mobile interaction
  - Cultural differences in wayfinding styles

research contributions:
computer vision for translation

- Computer vision for text detection
  - Text localization and recognition
  - Text detection in “image databases” and “in the wild”
  - Development of beyond the state-of-the-art methodologies
  - Google Research Award

- Jiri Matas and Lukas Neumann; Real-Time Scene Text Localization and Recognition, Demonstration at CVPR 2012, Providence, RI, USA
technological objectives

- YR1 progress
  - User requirements, scenario and use cases
  - First demonstration prototypes
- YR2 progress
  - Fully integrated prototype
  - Serious game, recommendation engine & text lens
  - Human factors technologies prepared for evaluation
- YR3 work plan & achievements
  - Field trials with integrated prototype ✓
  - Finalising language lessons & recommendations ✓
  - Final version of fully integrated prototype ✓
innovations: mobile learning for immigrants (MApp)

- **Suite of services for immigrants**
  - Provides all tools and services
  - Available in multiple languages
  - Pivotal service for recent immigrants

- **Persuasive mobile learning**
  - Context sensitive recommender engine
  - Mixed reality serious game
  - Intuitive text lens

- **Seamless integration**
  - External applications can be tightly linked
  - Get access to user profile, application of recommender engine, get notifications
  - Game, language learning and translation tool are already external services
Playful Cultural Learning

- Learn about cultural differences through play
- Appeal to different audiences than formal learning
- Key elements: narrative, empowerment, abstraction, and experience

Abstraction

- Remove the player from the real world
- Identify common cultural themes (cf. Hofstede)
- Abstract them to general principles

Empowerment

- Unique ability to travel between two “dimensions’ and observe their distinct cultures
- Problem-solving towards (world-saving) goal
Mobile augmented reality for pedestrian navigation
- Intuitive navigation with augmented reality
- No language involved
- Specific optimisation for pedestrian routes

Context awareness as option
- Detection of human behaviour patterns
- Situations faced, places visited, interests, social interaction
- Enables context sensitive recommendations
- Seamless integration with the user profile
- User has full privacy control
innovations: technology readiness levels

TRL 1 – basic principles observed
TRL 2 – technology concept formulated
TRL 3 – experimental proof of concept
TRL 4 – technology validated in lab
TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
TRL 7 – system prototype demonstration in operational environment
TRL 8 – system complete and qualified
TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)
- Milton Keynes 3-week Field Trial
  - 17 participants
  - MApp in use after training session
- Enthusiastic feedback
  - Asked for extended service usage time
  - Confirmed learning of language, etc.
  - Confirmed to have developed in different aspects

success stories:
high acceptance of MApp
Milton Keynes field trial
Mobile app usage tracing
- Component usage sends event trigger
- Usage of individual components and of modules within becomes transparent
- **Smart inclusive city** approach

Behavior analysis
- Analysis of temporal context
- Context analysis future work

**success stories:**
behavior tracing for smart inclusive city approach
success stories:
very positive feedback at MASELTOV Conference 2015

- MASELTOV session & demo
  - Session presenting MASELTOV progress
  - Live demonstration of MApp

- Feedback from audience
  - Rated as very progressed and matured
  - Should definitely be presented to governments

- Testimonials of ICT & social inclusion researchers
  - Testimonials in MASELTOV video in youtube http://youtu.be/u4W3wDt52K0
  - Dana Diminescu, Telecom Paris: “…a very ambitious project which kept all its promises.”
  - Stefano Kluzer, ERVET Bologna: “…MASELTOV was eventually successful.”
success stories: Google Research Award for computer vision partner CTU

- International state-of-the-art in computer vision based text detection
  - Google PhD Fellowship for L. Neumann
  - Work of Neumann et al. very highly cited (>10^2)
  - Google Research Award for J. Matas
  - ICDAR 2015 Robust Reading Competition uses it as baseline
  - Highest ranked publications (ICCV, CVPR, IEEE PAMI)
success stories: Free MApp version at Google Play

Google Play since May 6, 2015
- www.maseltov.eu/app

Services offered
- **Serious Game**: train your daily skills with the help of a serious game
- **Language Learning**: take language learning lessons about topics of everyday life
- **Translation Tool**: translate text with the camera of your mobile phone
- **Navigation Service**: public transport and pedestrian navigation in a novel, intuitive way
- **Recommender Service**: receive recommendations for further tasks based on current activities
- **Information Service**: get information about emergency health services or how to find a job
- **Places of Interest**: find nearby places such as doctors, stations or schools
conclusions

- MASELTOV project
  - Investigate the immigrant’s learner journey
  - User-centered approach with experience
  - Persuasive learning approach (recommender)
  - Attention in mobile interaction

- Lessons learned
  - Importance of NGOs, facilitators
  - UCD with complex app challenging

- Exploitation
  - Free version(s) available
  - Product development (freemium)
Thank you for your attention

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