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

London, March 17, 2015

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Graz, Austria
# social inclusion of immigrants

<table>
<thead>
<tr>
<th>Risk for social exclusion</th>
<th>compensatory activities</th>
<th>MASELTOV solution</th>
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</thead>
<tbody>
<tr>
<td><strong>LANGUAGE</strong></td>
<td></td>
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<tr>
<td>Language practice</td>
<td>Train knowledge of communication skills</td>
<td>Assistance to support communication, learn communication skills, motivate real world meetings using social computing</td>
</tr>
<tr>
<td>Communication skills</td>
<td>Support communication with native citizens</td>
<td>Mobile AR for language assistance, mobile learning and serious games</td>
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<tr>
<td></td>
<td>Translate text, engage immigrants with learning tools, motivate to learn to translate</td>
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<tr>
<td><strong>CULTURE UNDERSTANDING &amp; DAILY SKILLS</strong></td>
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<tr>
<td>Understanding of local culture, the differences, the way of living – low intercultural understanding</td>
<td>Inform immigrants and local citizens (two way!) about culture and way of living</td>
<td>Mobile social network with intercultural communication section, with section on exchange of event information (intercultural information exchange)</td>
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<tr>
<td>Small knowledge of daily skills (how to access bank, use public transportation, healthcare, etc.)</td>
<td>Engage immigrants into meetings and communication</td>
<td>Mobile assistance for information on local events that express local and foreign cultures; mobile assistance for navigation (shop/house/job finder!) and for general support</td>
</tr>
<tr>
<td>Lack of navigation skills, lack of knowledge on how to find administrative offices / NGOs, medical services</td>
<td>Support for navigation; learn how to navigate (routing, opportunities, etc.)</td>
<td>Social network, geo-contextual services</td>
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<tr>
<td>Unemployment</td>
<td>Support in daily skills</td>
<td>Activity / job bazaar within social network</td>
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<td>Finder for job search utilities</td>
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<tr>
<td><strong>COMMUNITY</strong></td>
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<tr>
<td>Lack in local community building with natives</td>
<td>Intercultural events</td>
<td>Social network, geo-contextual services</td>
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</tbody>
</table>
requirements for employability

Three MASELTOV themes

- information & assistance
- learning
- community building

relevant information
- bureaucracy
- health care
- points of interest (POI)
- understanding of local culture

language practice
knowledge of daily skills
communication skills
local community building

© M. Garrido
implementation of mobile assistance portal

community / social networking services

- activity bazar
- mult-cultural event calendar
- social language learning
- playful cultural explanations

information services

- bureaucratic advisor
- POI search
- health care service
- geosocial radar
- intuitive navigation

learning services

- basic literacy
- second language
- culture awareness
- text lens
- situated context

serious game & recommendation engine

multisensory context awareness

mobile assistant
MASELTOV objectives

- Everywhere, everytime assistance
- Learning at the spot, at the task
- Mobile assistance for recent immigrants
- Project running in FP7-ICT program
  - R&D project objectives
  - Investigate innovative mobile assistance in urban context
  - Motivation to use a suite of services for communication and integration
advisory board

- Stefano Kluzer (ERVET, IT)
- Clara Centeno (IPTS JRC, ES)
- Alina Cibea / Mădălina Rogoz (ICMPD, AT)
- Maria Garrido (Univ. Washington, US)
- Björn Schuller (Techn. Univ. München, DE)
- Hzael Jones (Univ. Paris, FR)
key social target groups

- main immigrant groups & their languages
  - Turkish
  - Arabic
  - Latin American

- demonstration sites
  - London, UK
  - Vienna, Austria
  - Madrid, Spain
  - Torino, Italy
recent immigrants

specific problems, similar profile
all immigrants are customers, with focus on

- third country nationals
- first year of stay in Europe
- in working age
- low level education
- never learned foreign languages
- different cultural background
user centered approach

- specify user requirements
- develop service scenarios
- interview experts
- participatory design sessions
- Living Lab approach
- iterative validation approach (M12, M24, M36)
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
affordability study

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

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smartphone ownership

- Graz/Vienna: 26 No, 50 Yes
- Madrid: 9 No, 72 Yes
- London: 11 No, 66 Yes

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MASELTMOV – project overview
affordability study

- Choice of contract
- Application costs

What is the maximum amount of money you paid for an application? (Frequencies)
serious game for cultural understanding

- 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
serious game
language learning

Principles

- Practical, situation-based learning
- Complement incidental learning framework
- Personalised through recommendation system
- In situation; preparation; usage; reflection
language learning

Structure
- Modules covering practical subject matter (e.g. Health)
- 3-4 lessons covering typical situations
- Lessons for CEFR A1-B1 language levels – progression
language learning

A lesson
- Key vocabulary and useful phrases (in situation)
- Lesson – dialogue, comprehension, grammar point in context (preparation)
- Challenges (usage)
- Test (reflection)
language learning
language learning

Feedback and progress
• Progress
• Performance
• Self-assessment
text lens service for translation and improving literacy

- video based text recognition
- automated translation (Google Research Award)
- used for training and game based learning
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?”

LOOKUP “measles”

Keywords
- Vaccination
- Immunisation
- Doctor
- Measles
- Dentist
- MMR Jab
- [...]

Lesson: Illness

MASELTMOV
Language Lesson “Illness”

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

TextLens
(Image)
Text: “Your kids can pick up measles anywhere”

Phone Camera

(Social Forum)
ecology of services & recommendations

- AR Navigation
- Serious Game
- Text Lens
- Language Learning
- Information Service
- Geosocial Radar

MASELTOV – project overview
context & recommendation

Smartphone

Events

MApp App

MApp App

Sensor

User profile
event collection

Notifications

Client side recommender

Recommendations
(to Notification Engine)

Backend

Management
GUI

Rules

Rule based Recommender
Recommendation on

- “Relevant nearby places”
- “Participate in an event”
- “Play the Serious Game now!”
- “Do some language learning on …”
- “Find relevant information in the WIKI”
- “Get assistance on X by using the Geo-Radar”
- “Ask for help in the forum to get advice on X”
- “Get and talk to someone on topic X…”
mobile incidental learning framework
navigation everywhere assistance

- mobile assistance service
- public transportation service
- Vienna :: Madrid :: London
- augmented reality based navigation service
augmented reality for pedestrian navigation

- camera feed overlaid with navigation information in real-time
- arrow based navigation for orientation
- self adjusting map orientation
multisensory context awareness

- richness of **multisensor** information
  - geo-information access
  - activity classification

![Diagram of multisensory context awareness](image)

- Activity Recognition
  - Mode of Transportation
  - Activity Summary

- Semantic Place Detection
  - Instant Place Detection
  - Place History
  - Places of Interest

- Social Interaction
  - Contacts
  - Call Log
  - SMS

- Interest Sensing
  - Interests
    - Browser Search History
    - Browser Bookmarks
    - Places of Interest
community services

- integrating community
  - immigrants “how fix it”
  - culture awareness forum
  - nurture interaction through real world games

- language learning community
- discussion forum
- geo-social radar
system architecture

Smartphone

Android Main App
- Dashboard (FLU)
- POI Service (FLU)
- Wiki (FLU)
- Avatar Assistance Service (COV)
- Serious Games Service (PP)
- Situated Language Service (PP)
- Maseltov Forum (TI)
- Social Network Connector (TI)

Software Modules (Features and GUIs)
- Text Lens (CTU)
- Situated Navigation Assistance Service (JR)
- Navigaiton Service (FLU)
- Language Lesson Learning (PP)
- User Profile (AIT)

Start-up procedure (FLU)

Recommendation Service (AIT)

Context Awareness (JR)

Notify System (JR)

Background components

Browser

Wiki Website (FLU)

Social Network Analysis GUI (TI)

Community Building Service Admin GUI (TI)

Opinion Mining GUI (TI)

Legend

WP4
WP5
WP6
WP7
WP8
final field trials

- Trials in Graz, London (56 participants, 8 weeks use)
- Trial in Milton Keynes (17 participants, 3 weeks use)
  - Enthusiastic response
  - Continuous data log
big data analysis

- Analysis of user behavior
- Usage of MASELTOV services
cultural diversity and human factors analysis

- Analysis of navigation behavior (N=20)
- Mental representation for orientation
- Attention and tool use
cultural diversity and human factors analysis

transitions turkish group

transitions austrian group

AR 44%
Map 27%
Other 29%

AR 28%
Map 40%
Other 31%

MASELTOV – project overview
dialogue analysis - eye contact from audio prosody


<table>
<thead>
<tr>
<th>Subject</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Mean</th>
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<tbody>
<tr>
<td>UAR</td>
<td>70%</td>
<td>67%</td>
<td>65%</td>
<td>68%</td>
<td>67.4% ± .02</td>
</tr>
<tr>
<td>AUC</td>
<td>77%</td>
<td>71%</td>
<td>68%</td>
<td>78%</td>
<td>73.2% ± .05</td>
</tr>
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research contributions

- Incidental learning & serious game
  - Learning and context awareness
  - Situatedness, persuasiveness
  - Serious game for cultural learning
- Multisensory context awareness
  - Geo-contextual events
  - Intelligent recommendation engine
  - Text detection & the text lens
- Human factors research
  - Cultural aspects in mobile interaction
  - Dialogue analysis from audio prosody
lessons learned

- 14 organisations
  - + covering all aspects of R&D
  - - management overhead
  - - partner’s personal problems, partner change
- User centered design (requirements, specifications, evaluation) - long iteration cycles
- Availability of (immigrant) test participants
- System integration and evaluation (many components, partners, interfaces - complex)
community building

- April 26-27, 2012: Barcelona, Spain
  - “Mobile Services for Immigrant People”, Adela Ros and Stefano Kluzer
- March 16-17, 2015: London, UK,
  - “MASELTOV 2015 conference”, Stefano Kluzer
- DGEI: Digital Games for Empowerment and Inclusion
  - Clustered projects MASELTOV, ASC-INC, and TARDIS
  - Headed by Björn Schuller, TU Passau
  - EC, JRC, Inst. for Prospective Technological Studies
  - International discussion group www.linkedin.com
“International Workshop on Intelligent Games for Empowerment and Inclusion” - IDGEI

IDGEI 2013 – Chania, Greece (keynote: S. Newman)

IDGEI 2014 – Haifa, Israel (keynote: B. Schuller)
  - IDGEI 2015 – Atlanta, USA (March 29, 2015)
  - Keynotes: J.C. Lester, J.C. Rehg, A. Games

Associated with Intelligent User Interfaces (IUI)
exploitation models

- **Telecom Italia SpA**
  - 70 Mio. customers, 9 countries
  - Italy 4.5 Mio immigrants (+7%/ann.)
  - integrated service targets at 500 k users

- **Fluidtime Data Services GmbH**
  - public transport navigation Vienna ++
  - more than 200 k downloads first year

- **Pearson Publishing Ltd.**
  - experience with apps for immigrant users
  - expertise in technology for education purpose
MASELTOV in the future

- Immigrants happy to continue operation
- Provision of single components: Serious Game, AR Navigation, etc.
- Global solution
  - Free version in 2015
  - Product development in follow-up project
- Facebook, Twitter Info
MASELTOV links

- Web: http://www.maseltov.eu
- Facebook: http://www.facebook.com/MASELTOV.EU
- Twitter: http://twitter.com/MASELTOV_EU
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-09:20</td>
<td>The MASELTOV Project – Mobile Assistance for Immigrants for Empowerment</td>
<td>Lucas Paletta (JOANNEUM RESEARCH Forschungsgesellschaft mbH, Austria) -</td>
<td>Head of Human Factors Lab, DIGITAL Institute</td>
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<tr>
<td></td>
<td>and Social Inclusion</td>
<td>Head of Human Factors Lab, DIGITAL Institute</td>
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<tr>
<td>09:20-09:40</td>
<td>MApp – A Suite of Integrated Mobile Services for Immigrants and Its</td>
<td>Patrick Luley (JOANNEUM RESEARCH Forschungsgesellschaft mbH, Austria) -</td>
<td>Head of Application Area Mobile Computing, DIGITAL</td>
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<td>Potential</td>
<td>Head of Application Area Mobile Computing, DIGITAL Institute</td>
<td>Institute</td>
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<tr>
<td>09:40-10:30</td>
<td>Informal Learning with Contextual Mobile Services</td>
<td>Agnes Kukulski-Hulme (Open University, United Kingdom) – Professor of</td>
<td>Learning Technology &amp; Comms, Institute of</td>
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<td>Learning Technology &amp; Comms, Institute of Educational Technology</td>
<td>Educational Technology</td>
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<td>10:30-10:50</td>
<td>Coffee Break</td>
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<td>10:50-11:20</td>
<td>A Mixed Reality Game for Cultural Understanding</td>
<td>Ian Dunwell (Coventry University, UK)</td>
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<tr>
<td>11:20-11:50</td>
<td>User Centered Design and Evaluation in the MASELTOV Project</td>
<td>Stephanie Schwarz (Austrian Institute of Technology, Austria)</td>
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<td>11:50-12:10</td>
<td>MASELTOV Smart City Aspects – Conclusions from Contextual Mobile</td>
<td>Sofoklis Efremidis (Athens Institute of Technology, Greece)</td>
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<td>Sensing</td>
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<td>12:10-12:30</td>
<td>MASELTOV’s Exploitation Opportunities</td>
<td>Nicoletta Bersia (Telecom Italia, Italy)</td>
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<tr>
<td>12:30-13:30</td>
<td>Lunch break</td>
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<tr>
<td>13:30-15:00</td>
<td>MApp DEMONSTRATION session</td>
<td>MASELTOV project team</td>
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<tr>
<td>15:00-16:00</td>
<td>Future Pathways in Mobile Assistance</td>
<td>General opinion, interests by the complete audience</td>
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<tr>
<td>16:00</td>
<td>End of the conference</td>
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Thank you for your attention

Dr. Lucas Paletta
MASELTOV project coordinator

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