A Tool Developed for Assisted Communication with Deaf Students

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Konstantinos Kornarakis[1], Maria Christofaki[1],
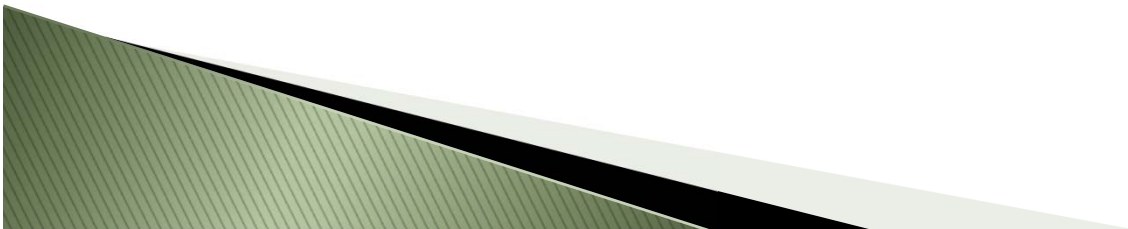Nuno Escudeiro[2], Paula Escudeiro[2]

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Erasmus+

TEI of Crete
Technological Educational Institute of Crete

isep Engenharia
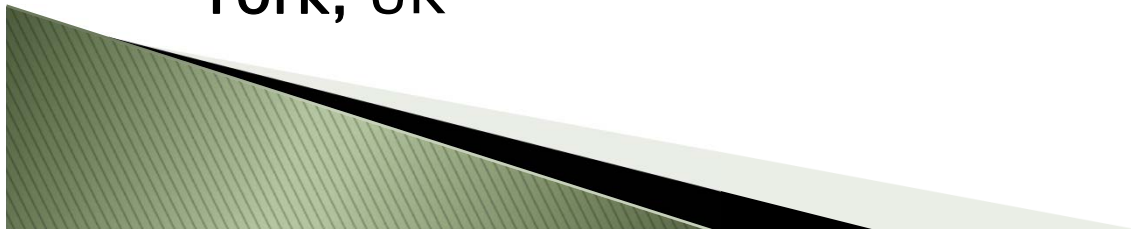
Barriers faced by deaf students in education

- Language barriers to fluent communication
- Experiential shortages
- Social concerns
- Curriculum and instruction
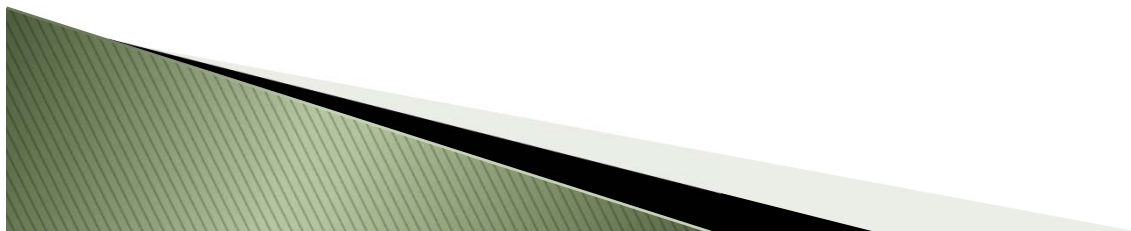- Lack of resources
- Limited access to information.

I-ACE project

- EU Erasmus + Stategic Partnership action started
- Nov 1, 2016 and completed Dec 31, 2018
- Coordinator of the project:
- Instituto Politechnico do Porto
- Participating organizations: **Universitaet Siegen**, Germany, **European Association of Career Guidance**, Cyprus, **Technological Education Institute of Crete**, Greece, **Univerza V Mariborou**, Slovenia, **University of York**, UK
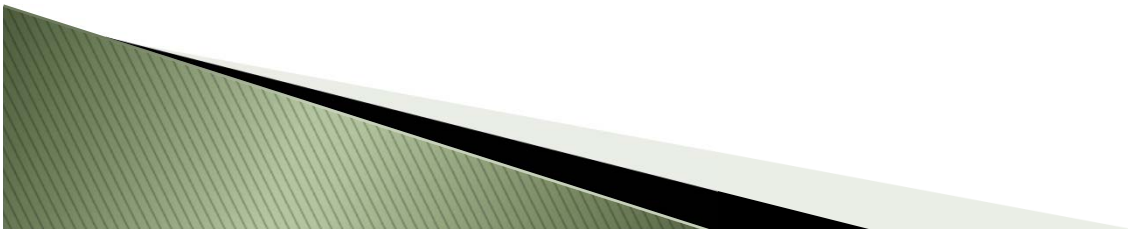
I-ACE project's motivations

- Natural language barriers to fluent communication between deaf/non-deaf, international cooperation

- Negative impact on the learning and mobility of deaf students which generates discrimination
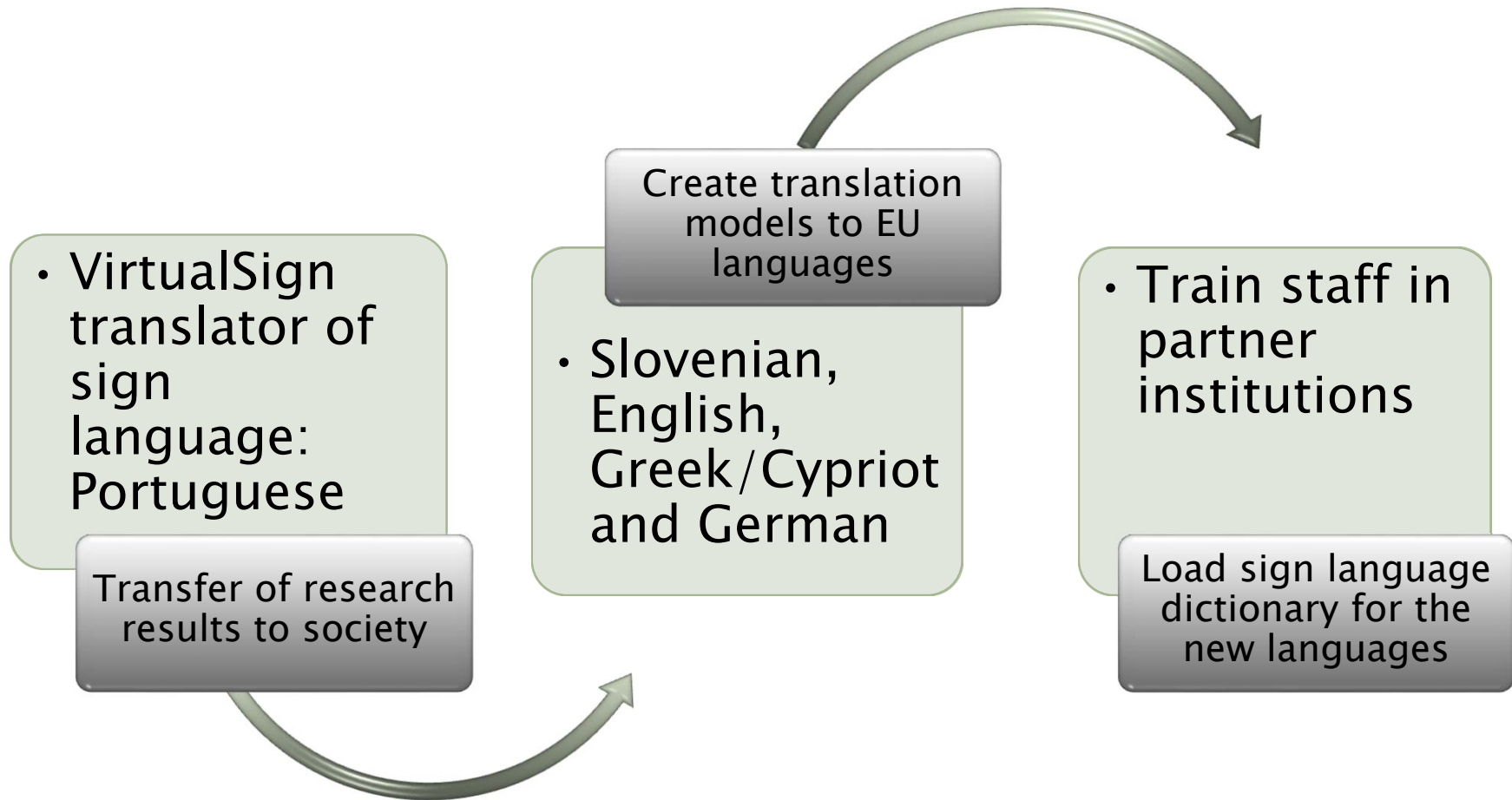
- Inclusive school, equity and equal opportunities.

I-ACE project's aims

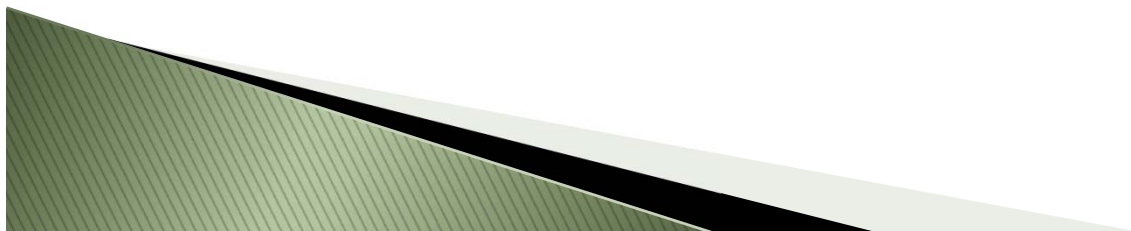▸ Promote equity and social inclusion

▸ Boost mobility of deaf students.

Methodology

- VirtualSign translator of sign language: Portuguese

Transfer of research results to society

- Slovenian, English, Greek/Cypriot and German

Create translation models to EU languages

- Train staff in partner institutions

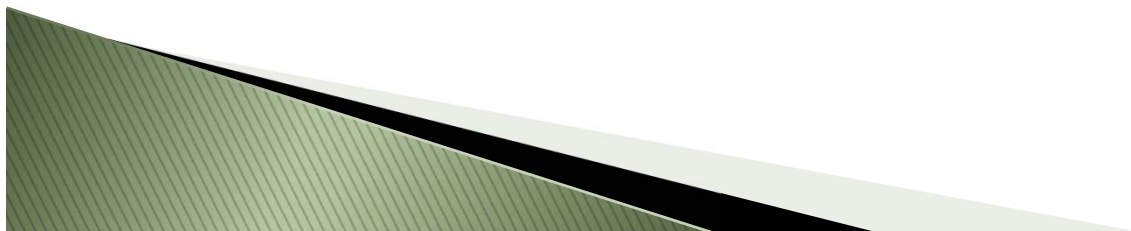Load sign language dictionary for the new languages

Sign languages characteristics

- Sign languages are distinct from oral languages.
- Linguistic features are different
- The first language of deaf people is sign language
- Their country oral language is a second language, like English for most of us
- Despite being able to read in our native language we cannot read English without training
- The same happens to deaf people that cannot read Portuguese because their native language is Portuguese Sign Language, not Portuguese.

Sign language characteristics

Components of sign languages:

▸ Hand configuration

▸ Point of articulation

▸ Hand movement

▸ Body movement

▸ Facial expression.

Sign languages characteristics

- Hand Shape

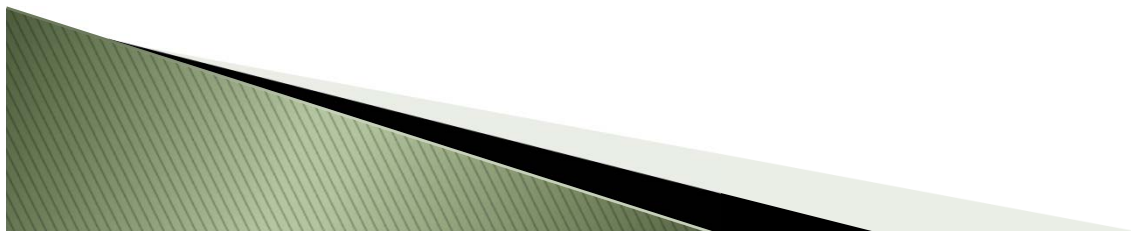- Palm orientation

Sign languages characteristics

▸ Body movement

▸ Facial expression

Hearing impaired people in Greece

- 25.000 deaf/hearing aid people and about 40.000 with residual hearing
- Communication difficulties with the rest of the world
- Isolation of people with hearing problems
- Mediocre quality of everyday life
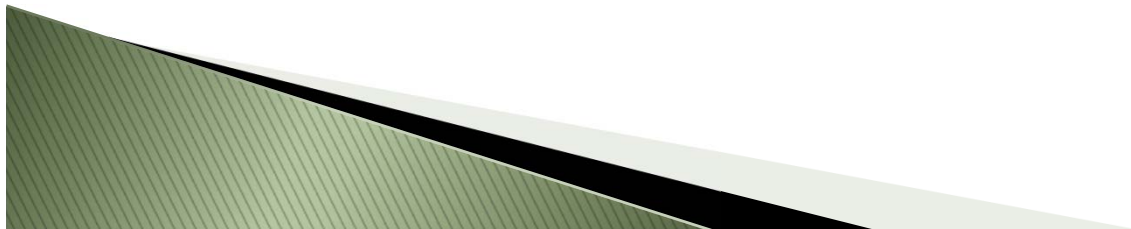- Increased rate of abandoning their studies
- Increased rate of unemployment.

Greek application of the I-ACE project

▸ Adaption of the automatic bi-directional sign language translator to Greek sign language
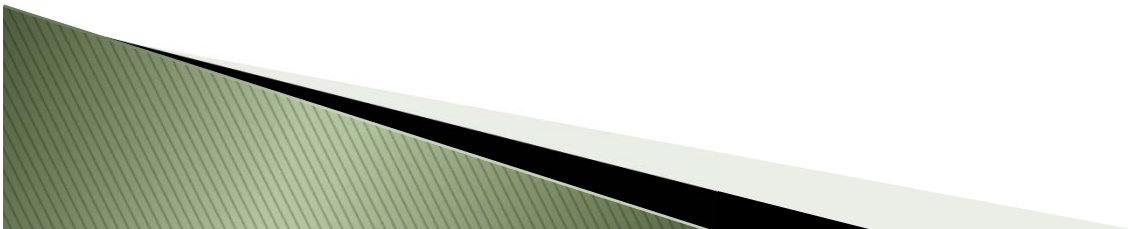
Virtual Sign tools

Translator

Configurator

Incorporating new languages
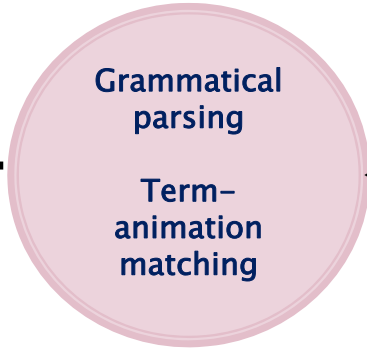
In 2018

- Portuguese and Brazilian Portuguese (LIBRAS)
- Slovenian
- Greek/Cypriot
- German
- English

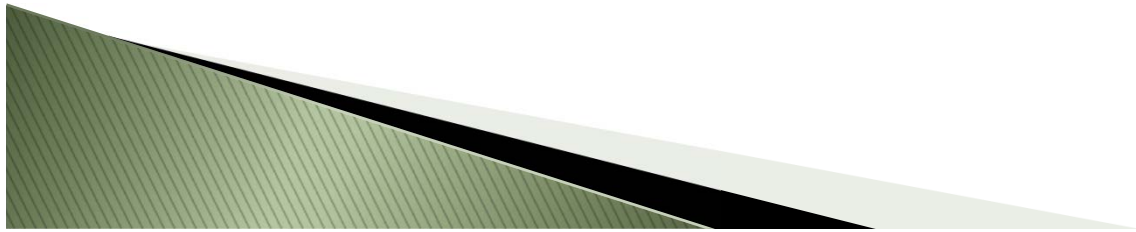**3D Avatar** ← **Grammatical parsing** / **Term-animation matching** ← **Text**

Greek application for the I-ACE project
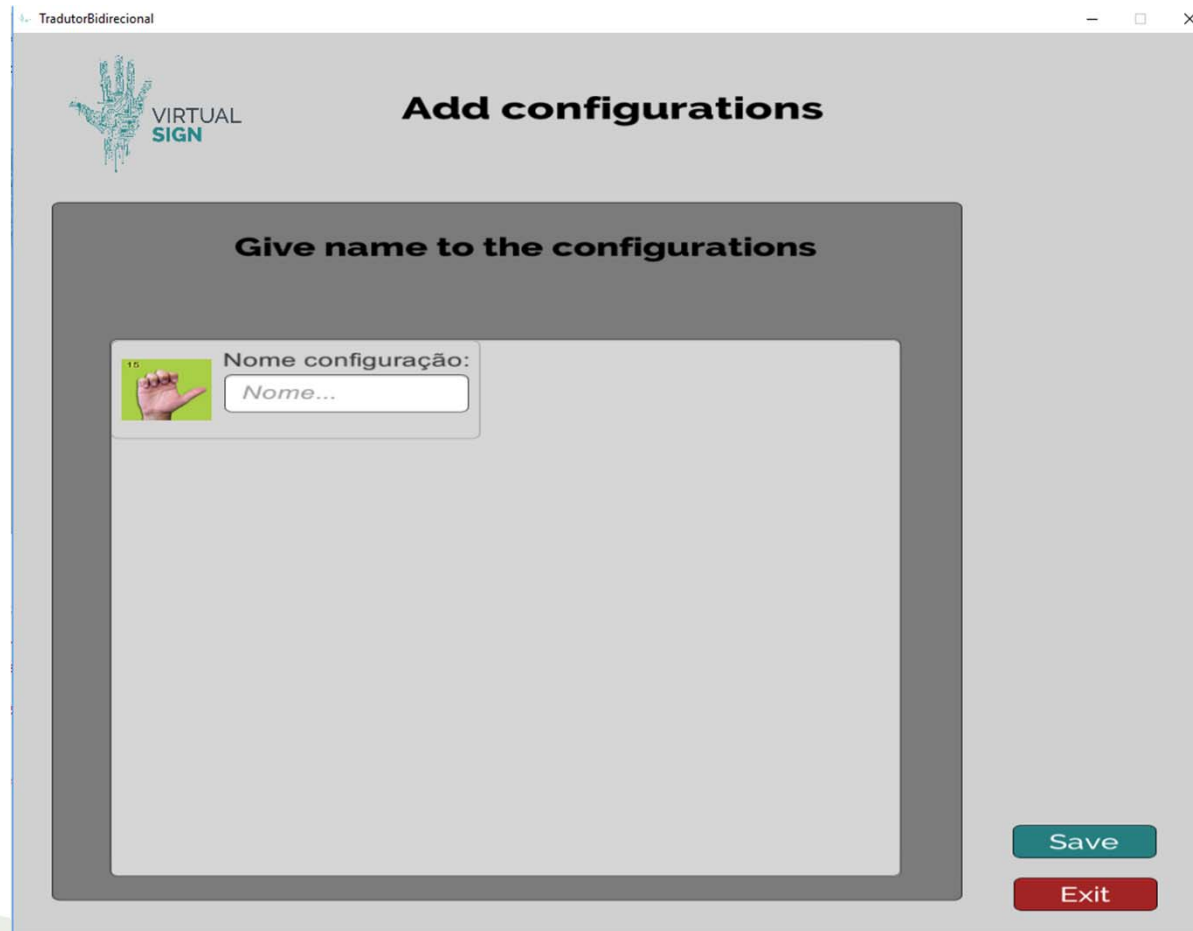
▸ Import of the selected hand configurations in the system
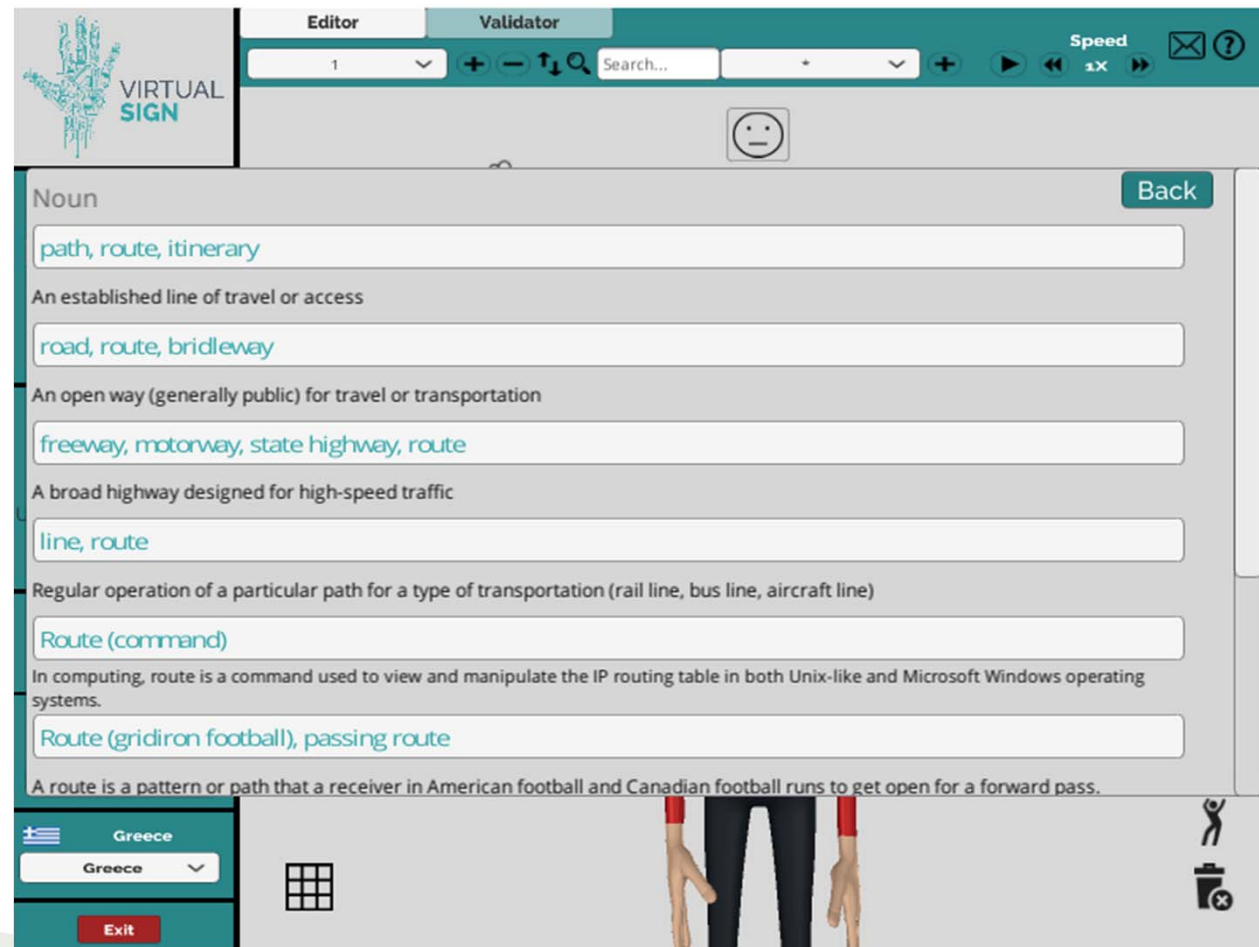
Greek application for the I-ACE project

▸ Naming configurations

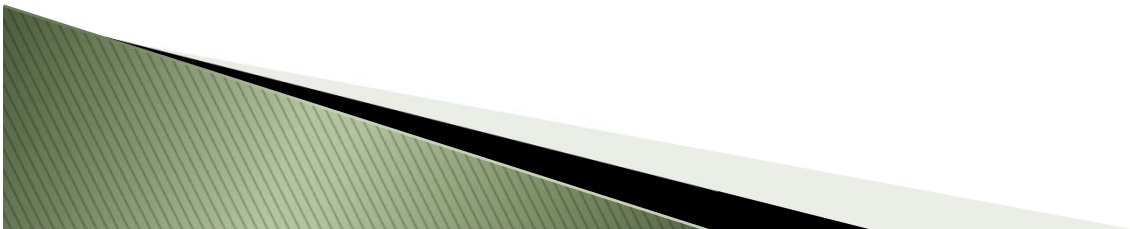# Greek application for the I-ACE project
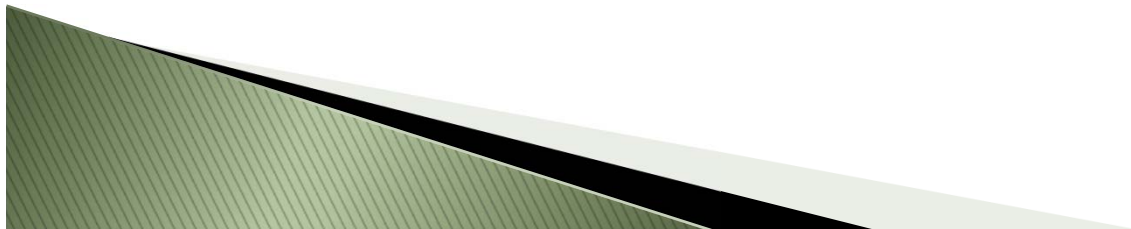
▸ Entering the words

Greek contribution

- Total number of inserted words: 605

- Total number of validated words: 605

- Greek model used as the basis for Cypriot model as well.

I-ACE project core activities

Heraklion focus group

▸ Desk research and online surveys

▸ Meetings with deaf people

▸ Presentation of Mr Kornarakis's thesis titled "3D AVATAR AND I-ACE IN THE SERVICE OF THE DEAF PEOPLE"

▸ TV, radio, newspapers and news websites highlighted the significance of the focus group.
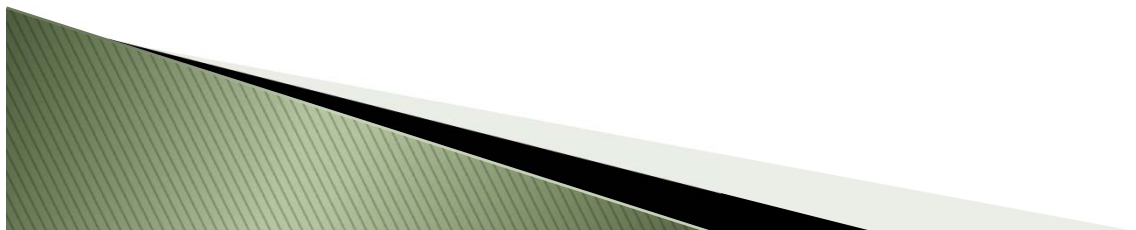
▸ http://bit.do/evjb8

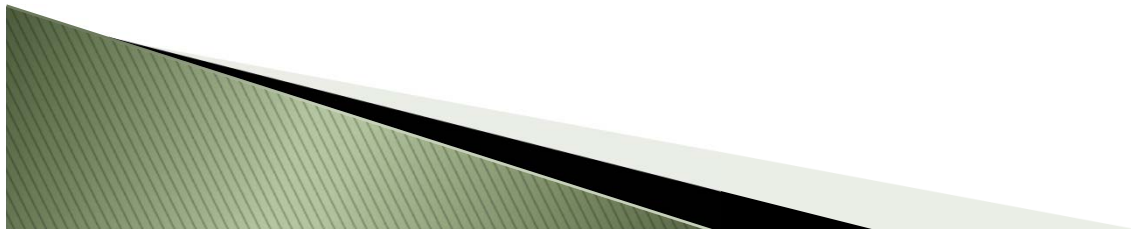# Heraklion focus group
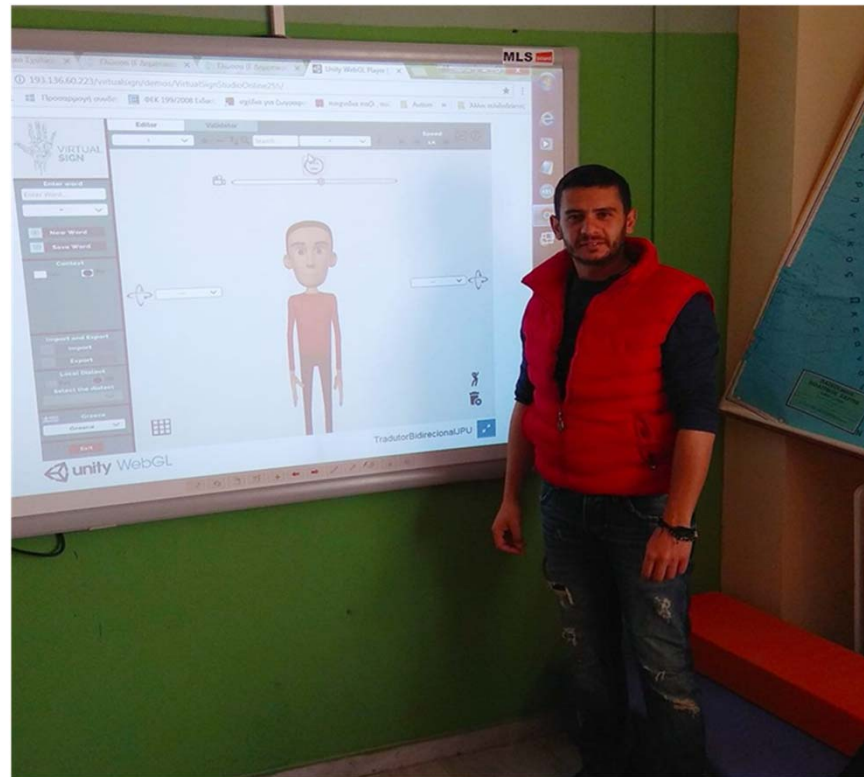

MSc thesis presentation

Focus group participants

I-ACE project core activities

Pilot installation of the European sign language translator in the special primary school
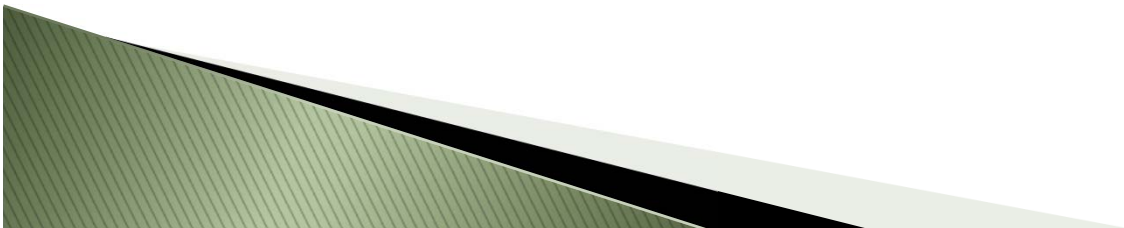
- Presentation of "John", the 3D avatar

- Tic-Tac-Toe game

- Hands-on session (teachers' and students' training)

- Assessment of the I-ACE project.
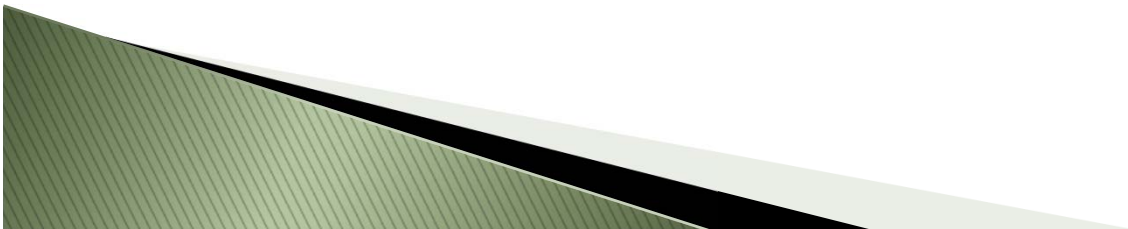
Pilot installation

Teachers and students training
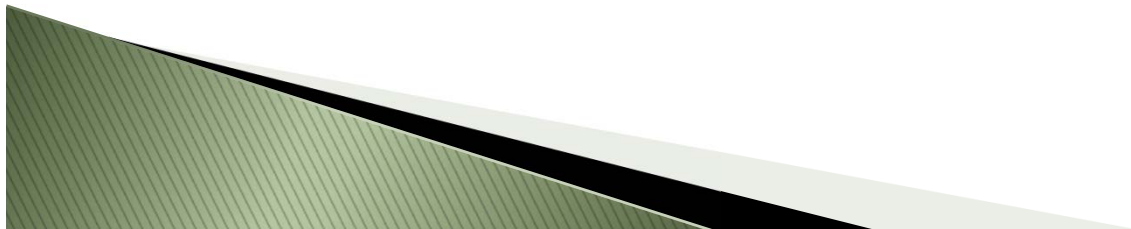
I-ACE assessment

▸ Participants

Six Deaf students

Four sign language teachers

▸ Average age: 19,4 years.

Results

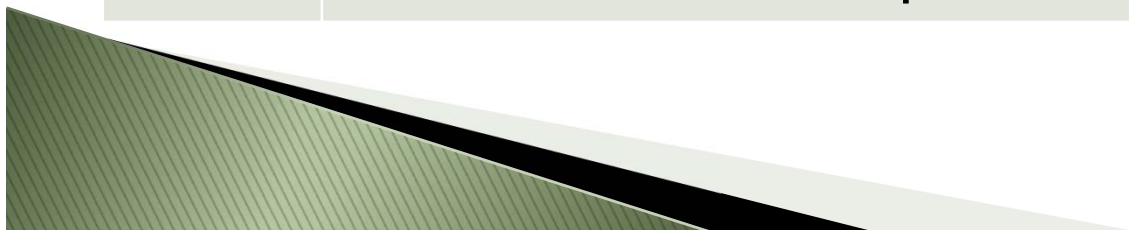|	
Deaf students	6
Sign language teachers	4
Age	19,40
Usefulness	100%
Understandability	90%
Speed	90%
At home	100%
At school	100%
Willingness to participate in similar projects	30%

Improvement suggestions

1	Facial expression
2	Facial expression
3	More colours
4	Body movement
5	Facial expression, body movement
6	Slightly slower speed
7	Speed, facial expression, clearer movement
8	Speed, facial expression, movement
9	Facial expression
10	Speed, facial expression, better application, 3D presentation

Thank you!