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"Specification of Symbols Used on Audio-Tactile Maps for Individuals with Blindness"

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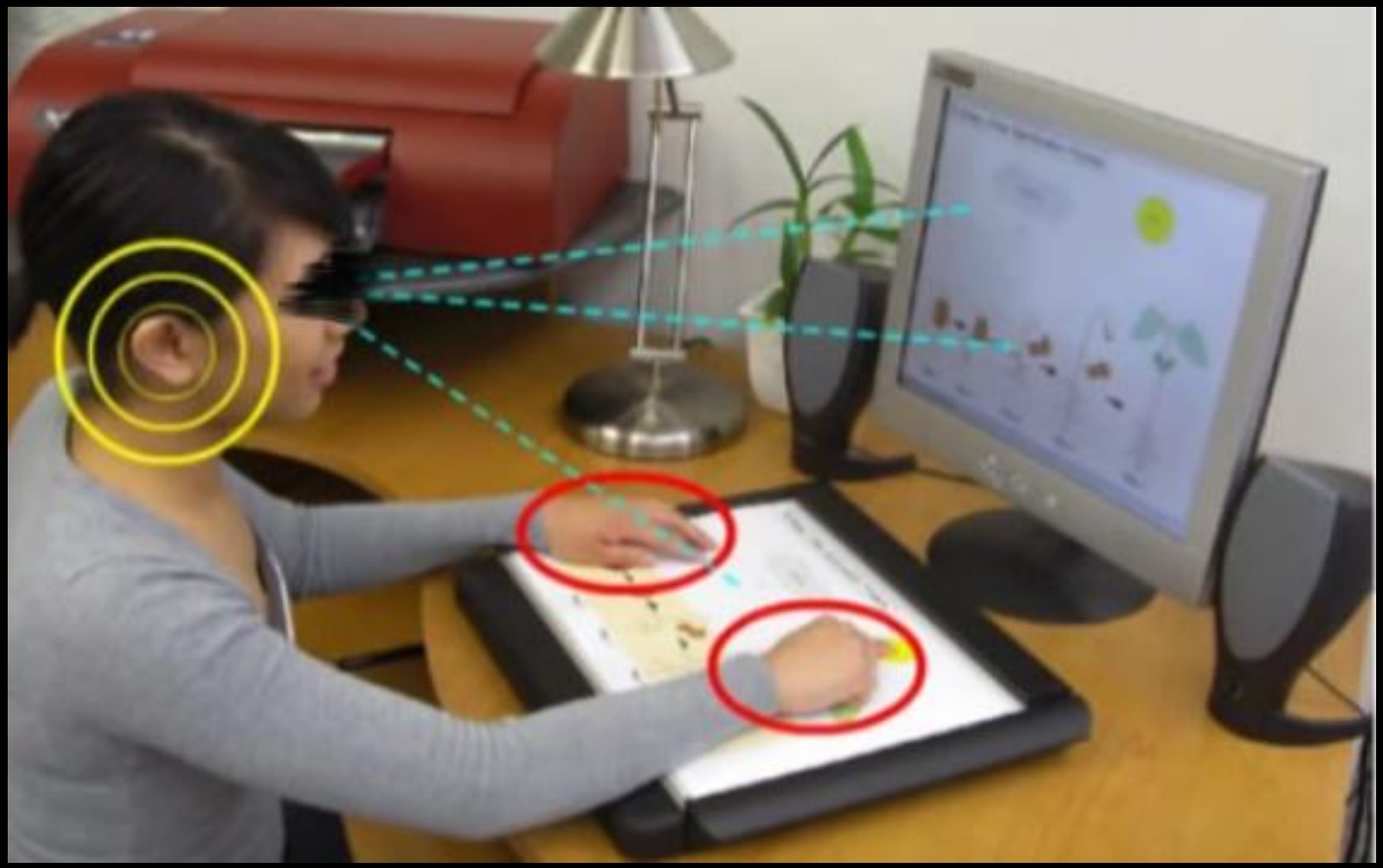
Audio-Tactile Maps

- **Tactile maps** - include raised graphic patterns that are recognizable only by touch.

- **Touchpad devices** - are touch sensitive pads that can simultaneously provide users with tactile and audio information, while they explore tactile graphics by their fingers.

- **Audio-Tactile Maps** - information is represented by audio, tactile symbols, audio- tactile symbols (combined) and Braille labels.

Audio-Tactile Map reading



Lifelong Learning Programme

Tactile Symbols examples

- **Point Symbols**

- **Linear Symbols**

- **Areal Symbols**

Audio-Tactile map challenges

- **Challenging task for designers of AT-Maps**
  - Restriction on the number of tactile symbols
  - Restriction on the extended use of Braille labels
  - Need for additional tactile legend
  - What information to include for different types of maps?
  - What tactile symbols to use?
  - In which format information should be included?
- **Lack of a unique list of tactile and audio-tactile symbols specified for each type of AT-map**

Aims

- **The specification of audio-tactile symbols** to be used in Audio-Tactile Maps for education and training of individuals with blindness.
- **Based on different types of maps**: 1) Indoors, 2) Neighborhood - Residential area, 3) Campus, 4) City center, 5)Political map, 6) Physical map, 7) Historic map, 8) Thematic map
- **Training** of end-users

Objectives

- **Derive** a user centered, research-based, specification of audio-tactile symbols.
- **Promote** the use of a specified unique "audio-tactile language" that will govern the construction of Audio-Tactile Maps.
- **Simplify** map construction procedure
- **Improve** the curricula and promote multimodal education of individuals with blindness.

Implementation phases

- Phase 1: Elicitation of user requirements
- Phase 2: Specification of audio-tactile symbols
- Phase 3: Construction of a multilingual web-based library of audio-tactile symbols
- Phase 4: Construction of a political-physical audio-tactile atlas of Europe
- Phase 5: Training activities for end users
- Phase 6: Update relevant bodies

User Requirements

Phase 1: Elicitation of user requirements

- **Research study**
  - What information should be included in each type of AT-Maps, based on
    - Significance of information
    - Frequency of occurrence
  - In which format the information should be presented
- **Outcome - Lists of information to be included in different types of AT-Maps**

Specification of Symbols

Phase 2: Specification of audio-tactile symbols

- **Development of tactile symbols**
  - Point, Linear, Areal
- **Production of pilot tactile Maps**
  - Evaluate symbols as stand-alone symbols but also when included in maps
- **Evaluation of tactile symbols**
  - Legibility based on parameters (e.g. time, errors)

Specification of Symbols (2)

- **Audio-tactile symbol specification activities**
  - Final lists of the optimal point, linear and areal tactile symbols for the representation of the information on different types of AT-Maps.
  - Associate tactile symbols with audio information as acquired from user requirements
  - Functional information and guidelines in order to use AT-symbols in AT-Maps.

Library of audio-tactile symbols

Phase 3: Construction of a multilingual web-based library of audio-tactile symbols

- Searchable, will present the specified symbols and associated information.
- The users of the library will be able to download and use the stored symbols in order to develop their own AT-Maps.
  - Vector format
  - Raster format
  - Text description of information

EU political-physical atlas

Phase 4: Construction of a political-physical audio-tactile atlas of Europe

- Will include a variety of spatial information
- Content translated in English, Greek, German and Turkish languages
- Procedure
  - Design digital base map
  - Cartographic generalization (readable for active touch)
  - Tactile symbols addition
  - Tactile printout (microcapsule paper method)
  - Add Audio part of symbols (audio descriptions)

Training activities

Phase 5: Training activities for end users

- Production of training material
- Training activities for end-users on the construction of Audio-Tactile Maps and on the use of audio-touchpad devices.
  - Train the trainers
  - Teachers of visually impaired children
  - Rehabilitation specialists
  - O&M specialists and designers of O&M aids
  - Individuals with blindness

Update relevant bodies

Phase 6: Update relevant bodies

- Electronic index of relevant organizations
  - Register and get involved !

Thank You !

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