



**ICT in SES**

# **Software for users with special needs**

Lesson №23

# Users with special needs

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## **Include users**

- Different types of disabilities – sensory, physical, mental (mental retardation), multiple disabilities
- Speech and language disorders
- Learning difficulties

# Software development criteria

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## General criteria

- Every software product must comply to them
- Examples: ease of use, reliability, basic functionality

## Educational criteria

- Quality of educational elements and training design
- Examples: content presentation, tasks, providing feedback

## **Specific criteria**

- Related to the specific needs of the user group
- Software accessibility and specific content design requirements and tasks provided by the software

# Accessibility

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## Accessibility

- How easily a person uses or understands content
- Provides usability of software applications to the widest range of users

## Accessibility strategies

- Used by most users without any modification
- Adaptability to different users
- Standardized interface for assistive technologies

# Criteria related to needs

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Motor  
problems



Hearing  
problems



Visual  
problems



Learning  
problems

# Motor problems

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- Software must support a variety of assistive technologies

Alternative keyboards

Alternative pointing devices

# Visual problems

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- Compatible with screen readers and magnifiers
- Customizable functionalities and appearance
  - Font size, background and text colour
  - Sufficient contrast
  - Compatibility with OS accessibility settings
- Colour should not be the only way to present information for colour blind users



- Images and other multimedia elements must support alternative text descriptions available to screen readers
- Textual and graphic information must be accompanied by alternative audio description (where possible)

# Hearing problems

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- Audio information must have alternative visual presentation

# Learning problems

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- Keep the software as simple as possible
- Consistent and predictable
- Software content should be linear in nature
- Adhering to the standards of user interfaces

# More criteria

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## Functionality

- Easy access to the most frequently used features
- All features are accessible via the keyboard
- Using pointing devices is optional, not mandatory
- Documentation of all accessibility features, configuration options and instructions for using them

# Interface

- Simple and clear instructions, tips and results, supported by visual or audio hints
- Graphical elements with descriptive names and alternative text descriptions
- Image used in several places has the same meaning
- Text information should not be presented as an image because this makes it inaccessible to screen readers

# Multimedia

- In case of time limitation for an event, its duration should be either configurable or tailored to slower users
- For audio and multimedia all information can be perceived by the deaf or hearing impaired users

By displaying visual indication of all sound signals

By provides the ability to turn on, off and adjust the volume

# Colours

- Support for colour customization and contrast options
- Use of uniform text background and avoid of images as a background as it reduces visibility and readability of text, making it difficult for people with visual impairments and learning disabilities
- Avoid flashing elements, unless they are used to attract attention of hearing impaired users

# More information

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- Kavcic, A., [Software Accessibility: Recommendations and Guidelines](#), EUROCON 2005, The International Conference on "Computer as a tool", Belgrade, Serbia & Montenegro, November 21-24, 2005
- World Wide Web Consortium (W3C), [Web Accessibility Initiative \(WAI\)](#), Version: 1.3 August 2005
- [Game accessibility guidelines](#), 2012-2015
- IGDA Game Accessibility SIG, [Guidelines for game accessibility](#), 2003
- Becta (British Educational Communications and Technology Agency), [Standards and guidelines for making accessible software](#), January 2009





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**The end**

Comments, questions