

What Can We Do To Make AAC Devices Configuration Easier?

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Topics

- Problem Statement
 - Increasing configuration complexity
- Our Portuguese AAC Tool
 - Eugénio
- Evaluation of the Configuration Interface
 - Tests, Participants, Tasks, Tools
- Results and Discussion
- Conclusions and Future Work

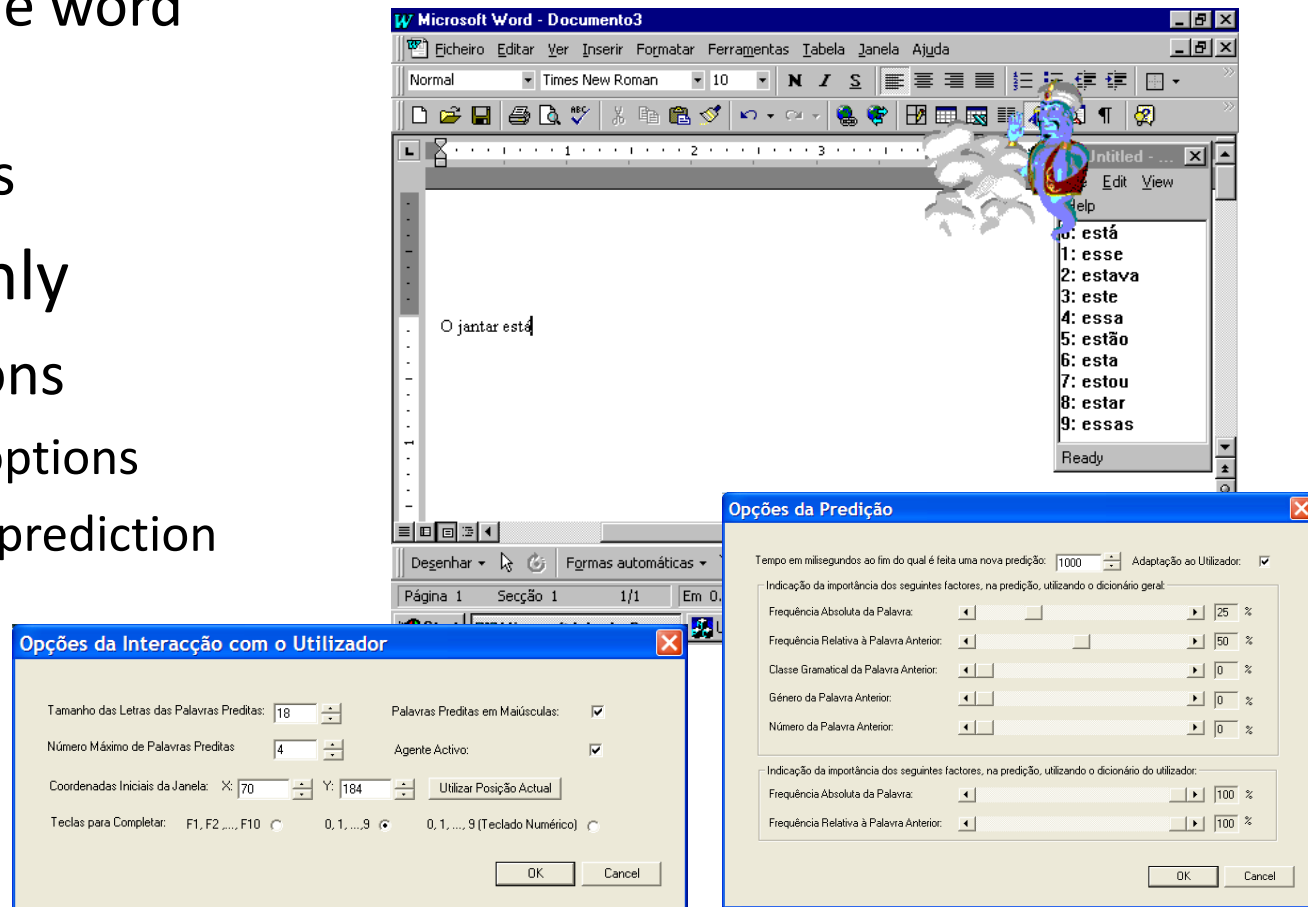
Problem Statement

- AAC tools are designed to meet different users' needs and capabilities
- Many options are included...
- Difficult to configure!



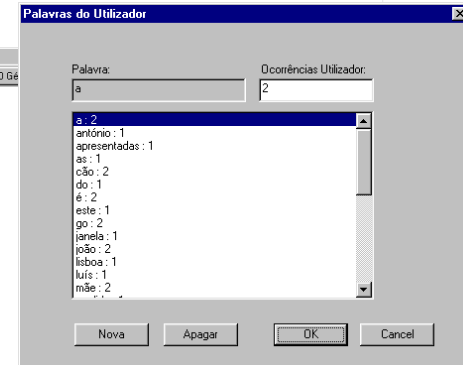
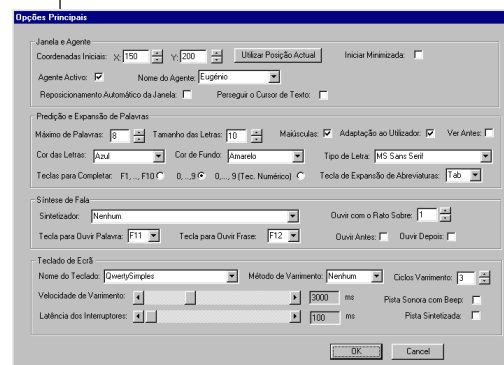
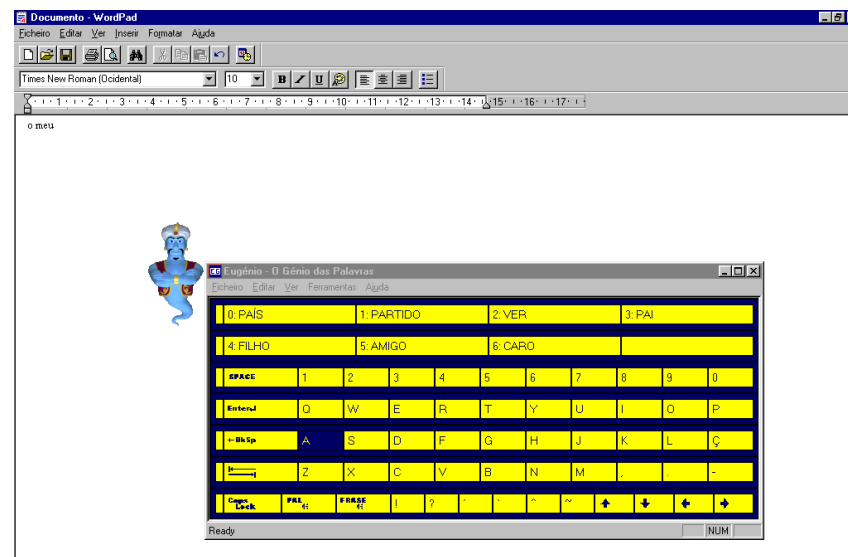
Eugénio Example (1)

- Version 1
 - A very simple word predictor
 - User profiles
- 18 options only
 - Profile options
 - Interface options
 - Advanced prediction options



Eugénio Example (2)

- Version 2
 - On-screen keyboard
 - Different layouts
 - Scanning access
 - New interface settings
 - User vocabulary
- 43 options
 - Profile options
 - Interface options
 - Grouping
 - Advanced prediction options
 - Dictionaries management

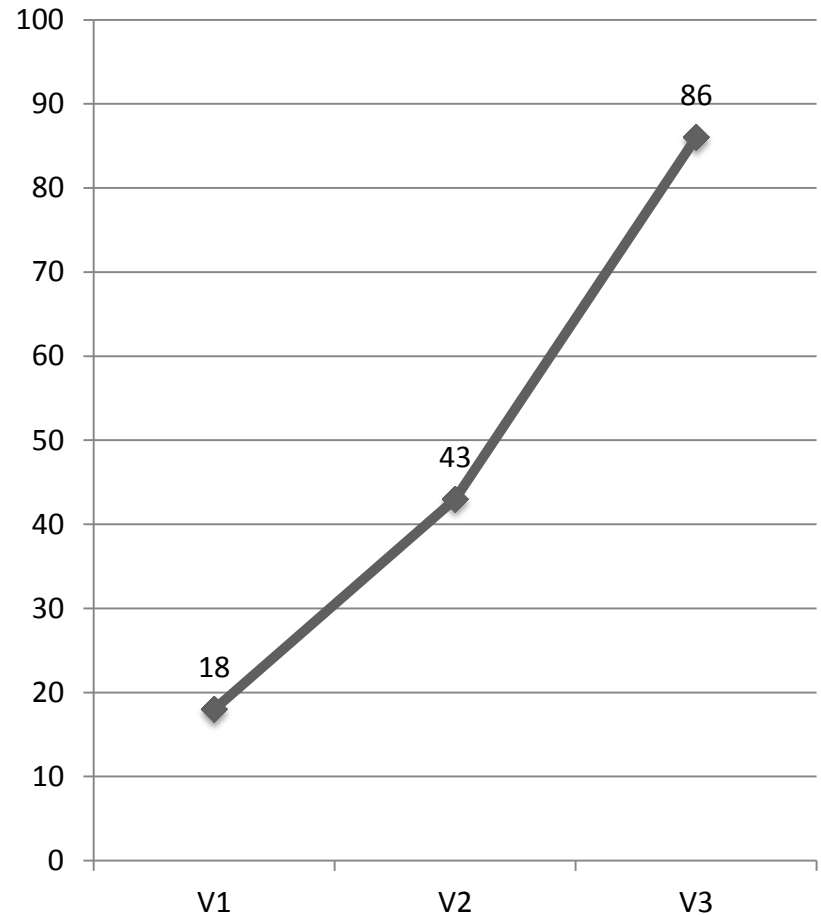


Eugénio with ARASAAC pictograms (designed by Sergio Palao to CATEDU)

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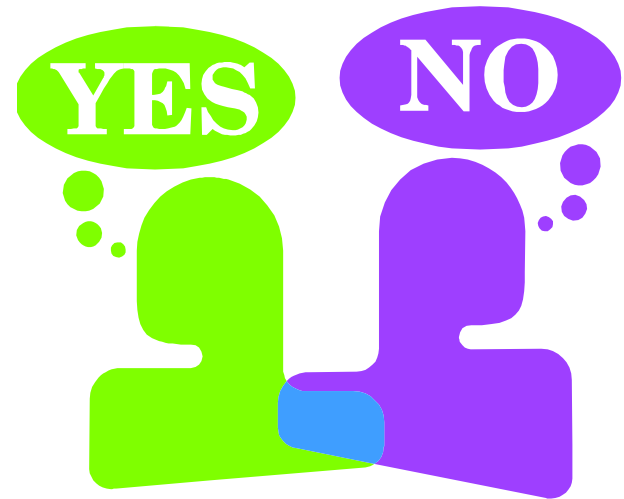
Increasing Number of Options!

- Doubles at each version
- Dialog-based interfaces may not be enough to deal with it...
 - Many ATs use it
- May be of no use if are difficult to configure!
 - AT abandonment
- So...
 - What Can We Do To Make AAC Devices Configuration Easier?



Method

- Ask users to configure a dialog-based interface
 - Eugénio
- Standard tasks
 - Create user profiles, create on-screen keyboards, ...
- Get configurators feedback
 - Difficulties, improvement suggestions
- Analyze and categorize feedback
 - To improve the configuration interface



Participants

- 23 Rehabilitation Professionals
 - Cerebral Palsy Center of Beja
 - School Clusters n.º 2 of Beja
 - School Clusters n.º3 of Beja
- Speech therapists, occupational therapists, school teachers
 - Different levels of expertise



Procedure

- Four-module training course
- In each module
 - Participants learned how to perform typical tasks
 - Later had to perform similar task on their own
 - Submit difficulties and suggestions
- At the end of each module
 - Questionnaire
- After development of real AAC solutions
 - Questionnaire



Training Course Modules

- Module 1
 - User profiles management
 - Basic communication boards
- Module 2
 - Advanced communication boards
- Module 3
 - Importing and exporting data
 - Speech synthesis, vocabulary prediction and scanning access configuration
- Module 4
 - Location, time and speaking partner awareness



Task Example

1. Create a communication board with the following structure and name it *Cafeteria*.

Coffee	Juice	Cake	Chocolate
Toast	Soup	Water	Ice-Cream
Candies	Pie	Sandwich	?

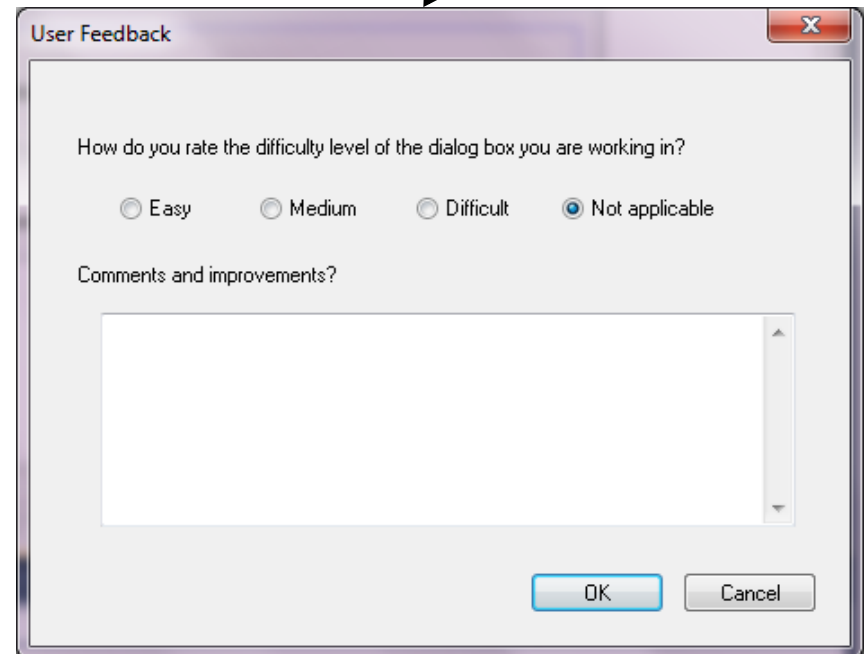
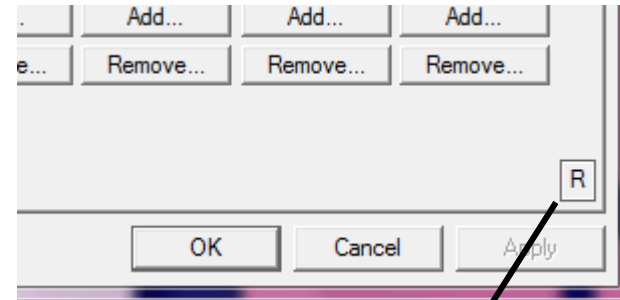


- Adjust the size of the keys.
- Set the keys output to text. Test it.
- Set the keys output to pictogram. Test it.
- Adjust the editing area.



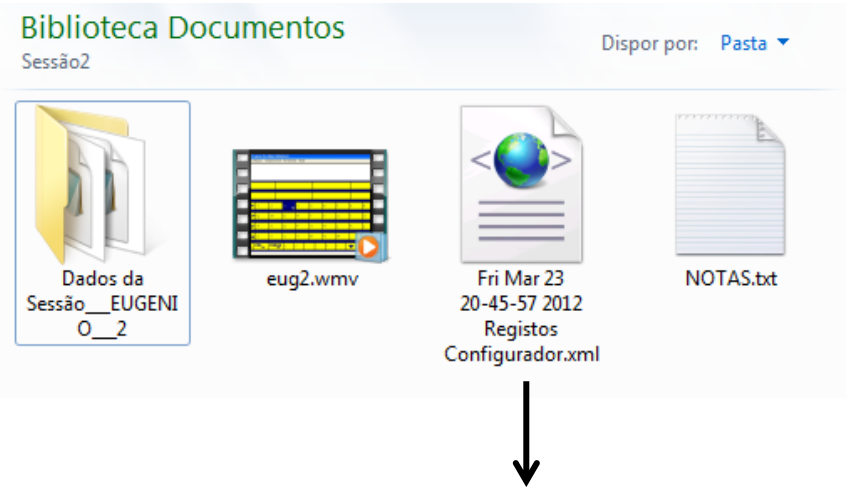
Configurators Feedback

- Collect user feedback from each dialog-box
 - R button
- General feedback also possible
 - Menu option



Collected Data

- Session Data
 - user profiles, on-screen keyboards, ...
- Session screencast
 - Screen recording
- Configurators feedback and navigation
 - Log file
 - menus and dialog-boxes opened
 - user feedback
- Questionnaires
 - Post-Task and Post-AAC Solutions Development

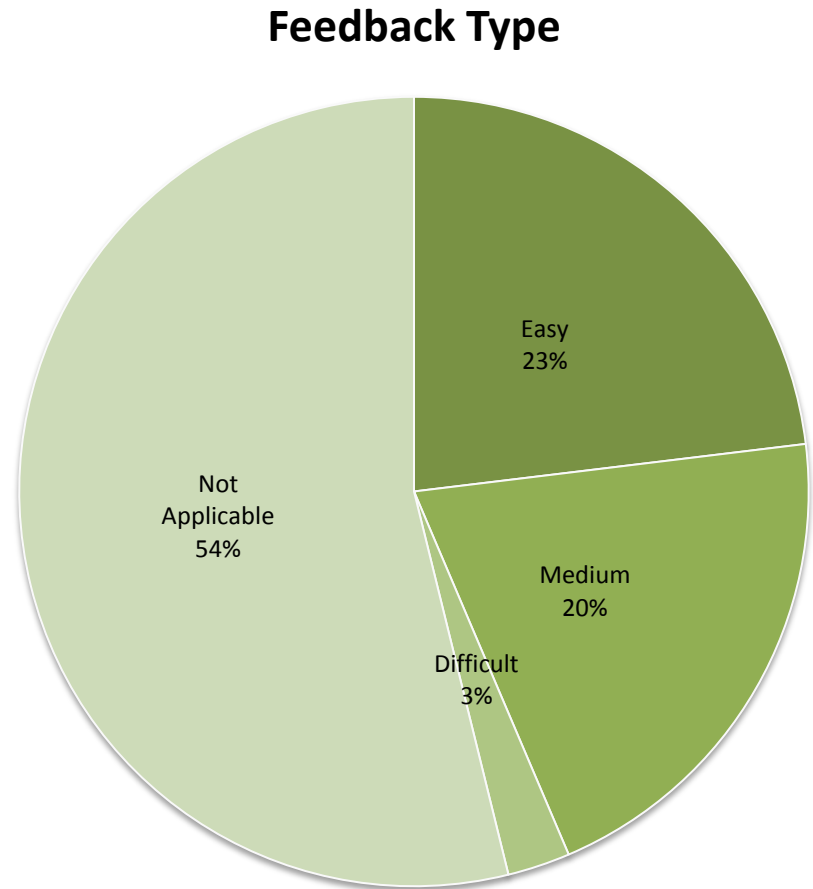


```
...  
<MENU>  
<ID>32899</ID>  
<SELECTION_TIME>2012:03:20:19:57:26</SELECTION_TIME>  
</MENU>  
<USER_FEEDBACK>  
<FEEDBACK_TIME>2012:03:20:19:59:09</FEEDBACK_TIME>  
<USER_DIFFICULTY>3</USER_DIFFICULTY>  
<USER_SUGGESTION>Ponderar a possibilidade de criar um modo de  
"copiar" a última acção efectuada. Por exemplo, temos todas as teclas  
com saída de texto em escrita e queremos alterar para pictograma.  
Criar um modo de o fazermos numa primeira tecla e depois generalizar  
para as outras sem ser necessário passar por todo o processo em cada  
tecla.</USER_SUGGESTION>  
</USER_FEEDBACK>  
...
```

FEEDBACK DURING TASK EXECUTION

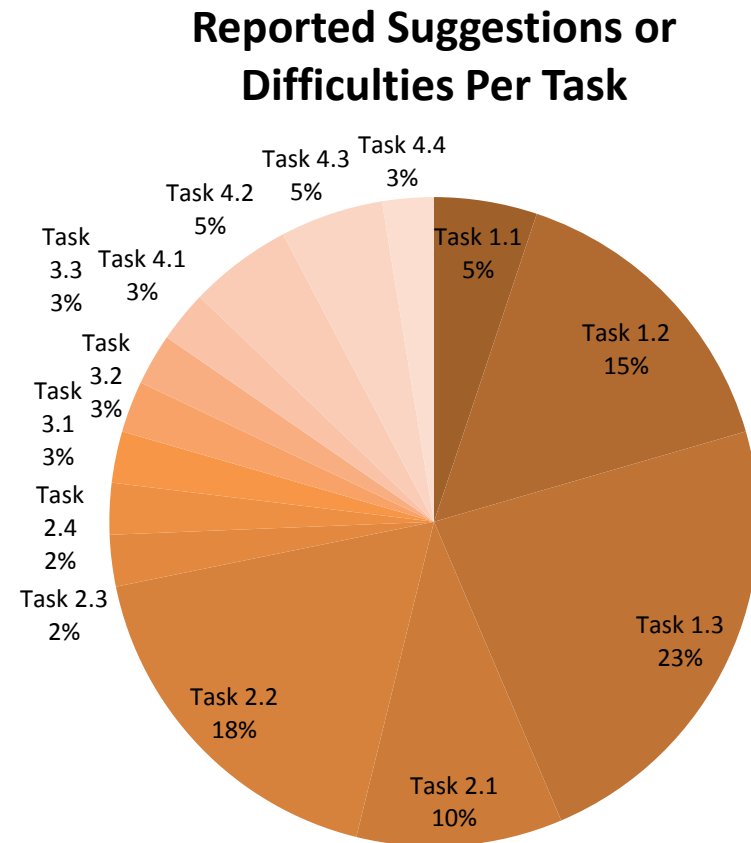
Configurators Feedback

- 39 suggestions or difficulties
- Most of the times dialog boxes were not scored
 - Not Applicable (21)
- Dialog scores
 - Easy (9)
 - Medium (8)
 - Difficult (1)



Feedback During Task Execution

- More feedback in first modules
 - New tool, most obvious problems, task familiarity
- Top 5
 - Task 1.3 (9)
 - Basic on-screen keyboard management
 - Task 2.2 (7)
 - Advanced on-screen keyboard management
 - Task 1.2 (6)
 - Basic user profile configuration
 - Task 2.1 (4)
 - Prediction keys management



What Did Configurators Say! (1)

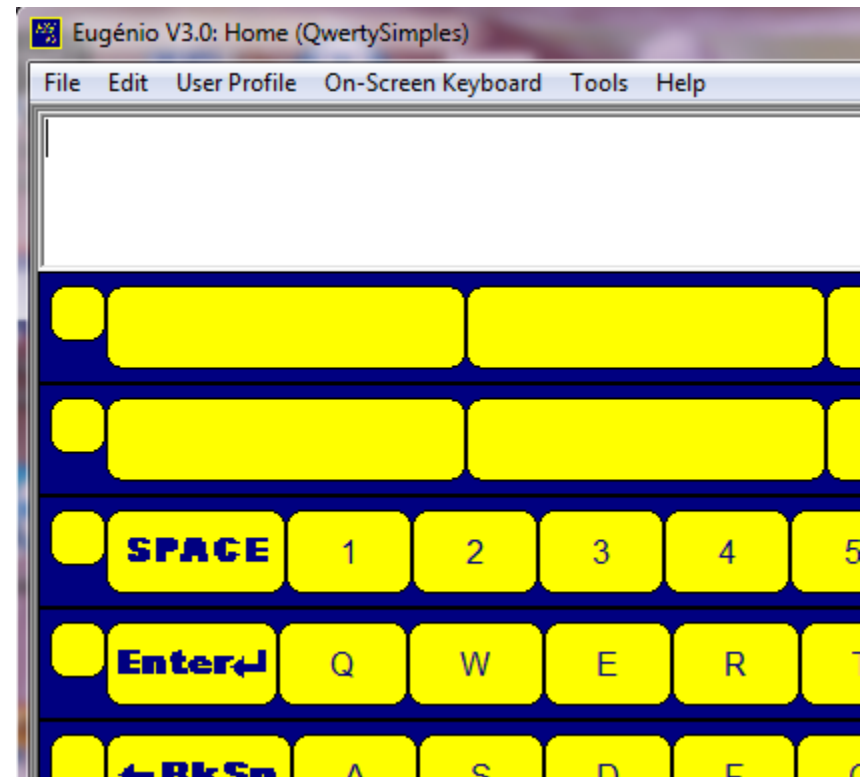
- **Small bugs and insufficient or missing functionality**
 - Possibility to change the on-screen keyboard's name (2)
 - Correct the min and max values for vocabulary prediction (1)
 - Possibility to center text in keys (1)
 - Correct adaptation of labels' size to the width of keys (1)
 - Make access to keys' properties faster (2)
 - Improve navigation in the message editing area (1)
- **Would be better to manipulate objects directly**
 - Drag and drop keys (2)
 - Drag and drop user profiles (1)



Drag -and-drop keys not available

What Did Configurators Say! (2)

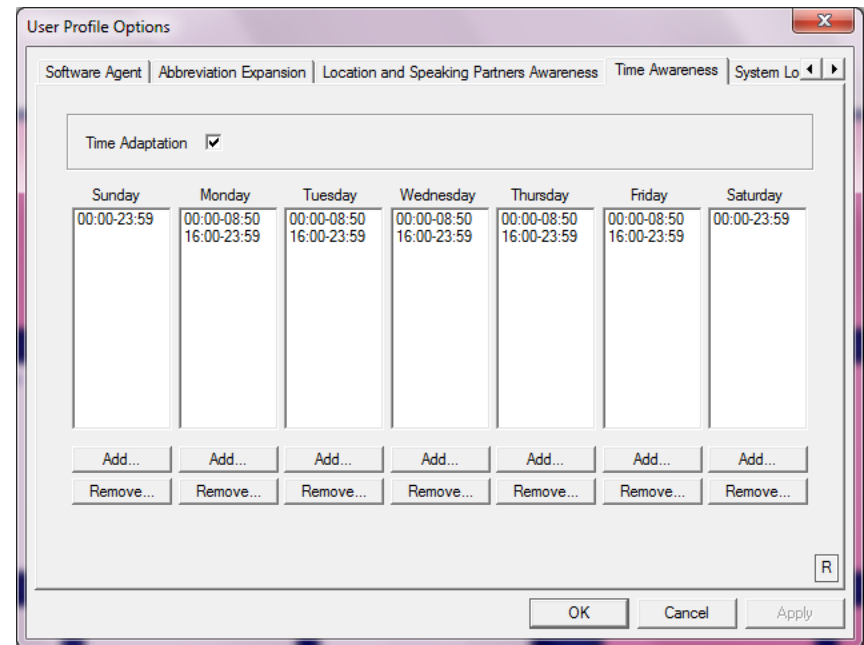
- **Some language corrections**
 - Correct the name of a key's property (6)
 - Correct the name of a on-screen keyboard's property (1)
- **Difficulties identifying available options and active elements**
 - Hide and show available options according to context (1)
 - More feedback about which is the active on-screen keyboard (1)
 - More feedback about which is the active user profile (1)



Active profile and on-screen keyboard

What Did Configurators Say! (3)

- **Perform automatic operations**
 - Whenever possible fill keys' options automatically (1)
 - Applying the same action to several keys (7)
 - Applying the same action to several days of the week (6)
- **Interactive help**
 - Assistance configuring keys' properties (1)

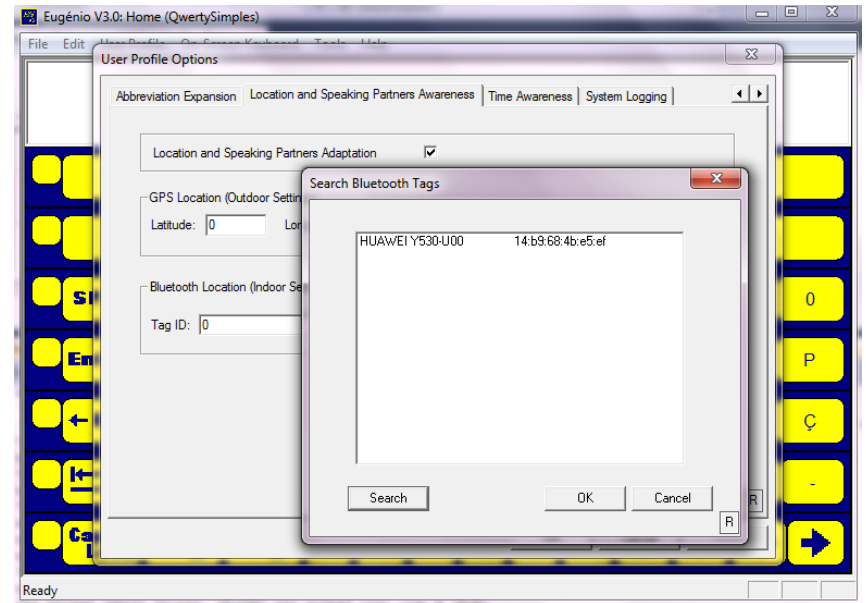


Copy the same time to several days of the week

POST-TASK QUESTIONNAIRES

What Did Configurators Say! (4)

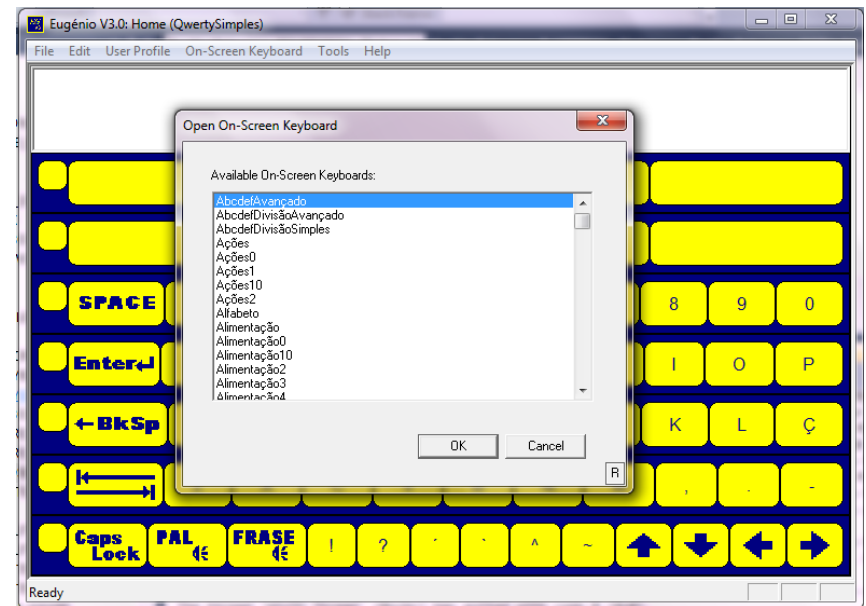
- **Small bugs and insufficient or missing functionality**
 - Recover deleted user profiles (1)
 - Correct adaptation of labels' size to the width of keys (1)
- **Difficulties making associations between solution's elements**
 - Difficulties associating a user profile to speaking partners mobile phones (1)
 - Difficulties associating a user profile to the indoor location devices (1)
 - Associating a user profile to a certain time/day of week is easier because there are no external devices involved (1)



Associating a profile to a speaking partner mobile phone

What Did Configurators Say! (5)

- **Stronger visual representation of solution's elements**
 - Visual presentation of user profiles' options and configuration (1)
 - Visual presentation of on-screen keyboard's options and configuration (1)
 - Associate images to user profiles and on-screen keyboards (1)
- **Perform automatic operations**
 - Whenever possible fill keys' options automatically (1)



Opening an on-screen keyboard

What Did Configurators Say! (6)

- **Difficulties importing resources from third-party applications**
 - Incorporate pictogram resources to avoid working with two different programs (1)
- **Long task sequences**
 - Needs a long sequence to assign a user profile to a specific indoor location (1)
 - Needs a too long sequence to assign a user profile to a specific speaking partner (1)

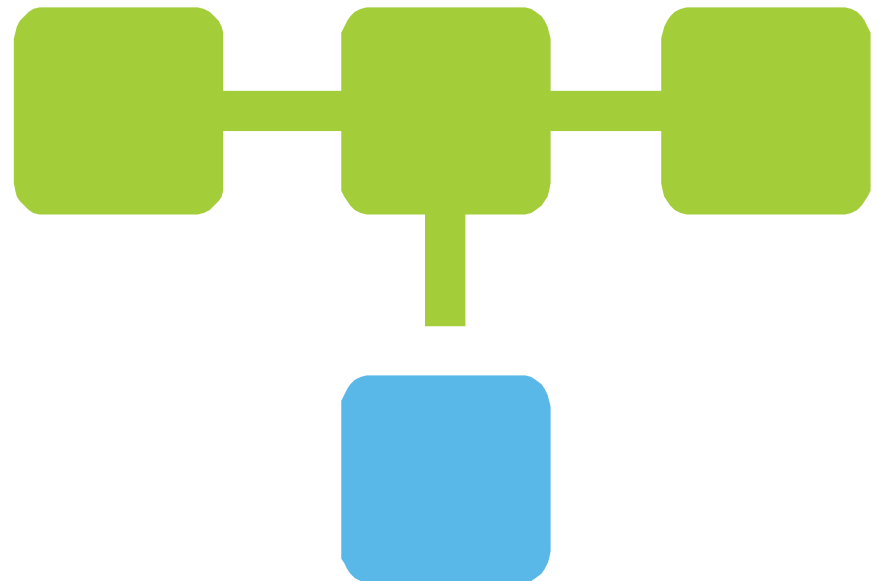


Eugénio & Picto Selector (Martijn van der Kooij)

POST-AAC SOLUTIONS DEVELOPMENT

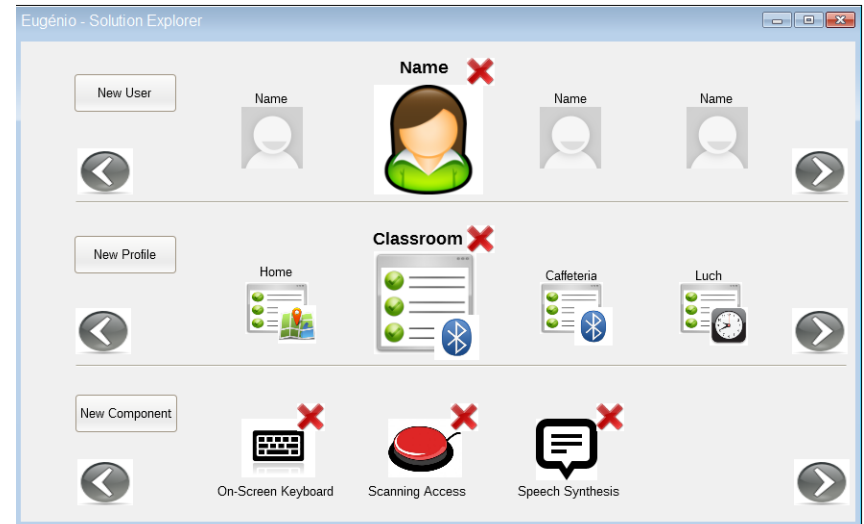
What Did Configurators Say! (7)

- Small bugs and insufficient or missing functionality
 - Decrease adaptation time in indoor settings (2)
 - Turn speech synthesis faster (1)
 - Better adjustment of images inside the keys (1)
- Links to external resources
 - Link to other programs (1)
 - Connection to Internet resources (1)
- Visual representation of elements and aesthetics
 - Turn the configuration interface more visual (1)
 - Turn the interface more attractive (1)
- Configuration issues
 - Difficult to configure due to the quantity of options (1)
 - Create a configuration manual (1)



What Configurators May Want...

- Elements presented visually
- Relations between elements
 - Users, profiles, components
- Configurators say which components to configure



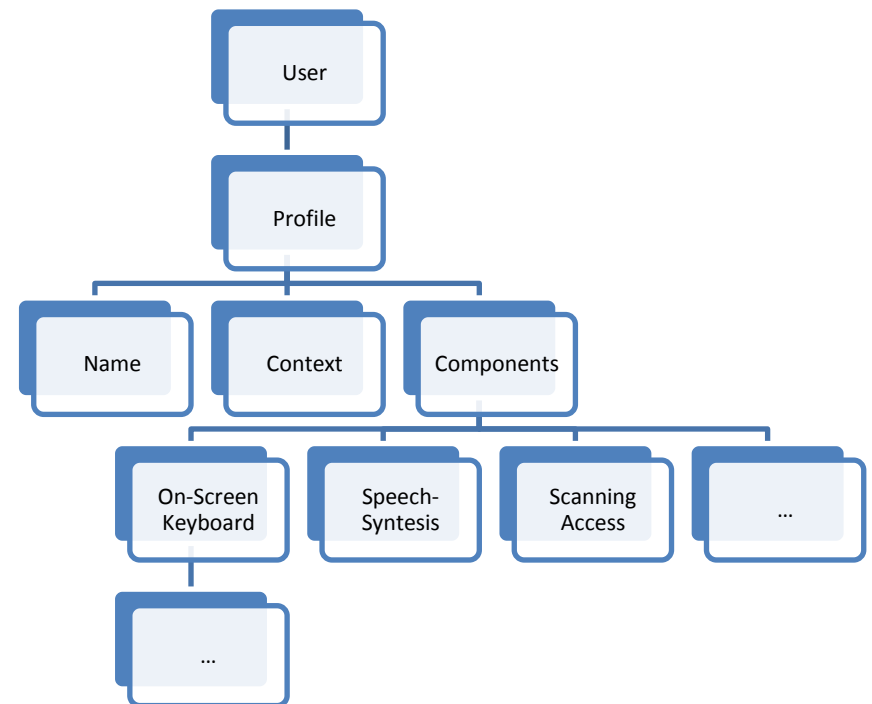
Conclusions

- Evaluated the dialog-based interface of Eugénio
- Identified difficulties configuring a dialog-based interface for AAC
- Identified principles to construct better configuration interfaces



Future Work

- Design a configuration interface that follows identified principles
 - New tests with the support of SUPERA (AT Portuguese Association)
- Deeper analysis of other system's configuration interfaces
- Taxonomy that groups and presents configuration properties for AAC
 - Collaboration with other research groups



Thank You!

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