

# Memory Game Design and Features Research

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## Abstract

The KDE Edu community would like to develop a Memory game for KDE using the latest KDE and Qt technologies and allowing for different UX (or a common one): tablets, netbooks and desktop. In order to achieve this, we will look at the game traditional gameplay and we will base our research on the 3 existing tentative and unfinished implementations:

- Simion's Memory (referred as Memory)  
code repository:  
[http://sourceforge.net/projects/playlearn/files/MemoryGame\\_v01\\_source\\_code.zip/download](http://sourceforge.net/projects/playlearn/files/MemoryGame_v01_source_code.zip/download)
- Aleix's KMemory (referred as KMemory)  
code repository:
- Annma's Kard (referred as Kard)  
code repository: `git clone git://anongit.kde.org/kard`

After analyzing Memory and KMemory (Kard will only be used for its ideas, the code and technologies being too obsolete) based on screenshots, I will try to define the positive and negative points of each implementation and finally submit design and features ideas which can be a base of later discussion within the KDE Edu community.

## How to play a traditional Memory game

- Goal: to collect the most pairs of cards
- Prepare pairs of cards. Shuffle the cards and lay them on the table, face down, in a pattern (e.g. 4 cards x 13 cards). The cards are face down, hidden, the user returns a pair of them and they should match. If they do not match, they stay in position and are turned back, hidden. If the pair matches, the pair is put aside the player.
- On each turn, a player turns over two cards (one at a time) and keeps them if they match numbers. If they successfully match a pair of numbers, that player also gets to take another turn. When a player turns over two cards that do not match numbers, those cards are turned face down again and it becomes the next player's turn.
- When you play alone, time yourself to see how fast you can find all of the matching pairs. Compete with yourself by trying to get a faster time in a second game.
- When you play with other players (up to 4) players keep each pair they find. At the end of the game, each pair scores one point. When all the pairs have been found, the player with the most points wins.

## Target user

The Memory game helps to teach pattern discrimination, to practice sight word or letter recognition, to develop concentration and memory skills.

Primary target user will be a child aged 3 to 7. Secondary target is older children and all adults who need to improve/recover the above skills.

While the memory is a game, it greatly helps developing literacy skills and the best KDE subproject for it is KDE Edu.

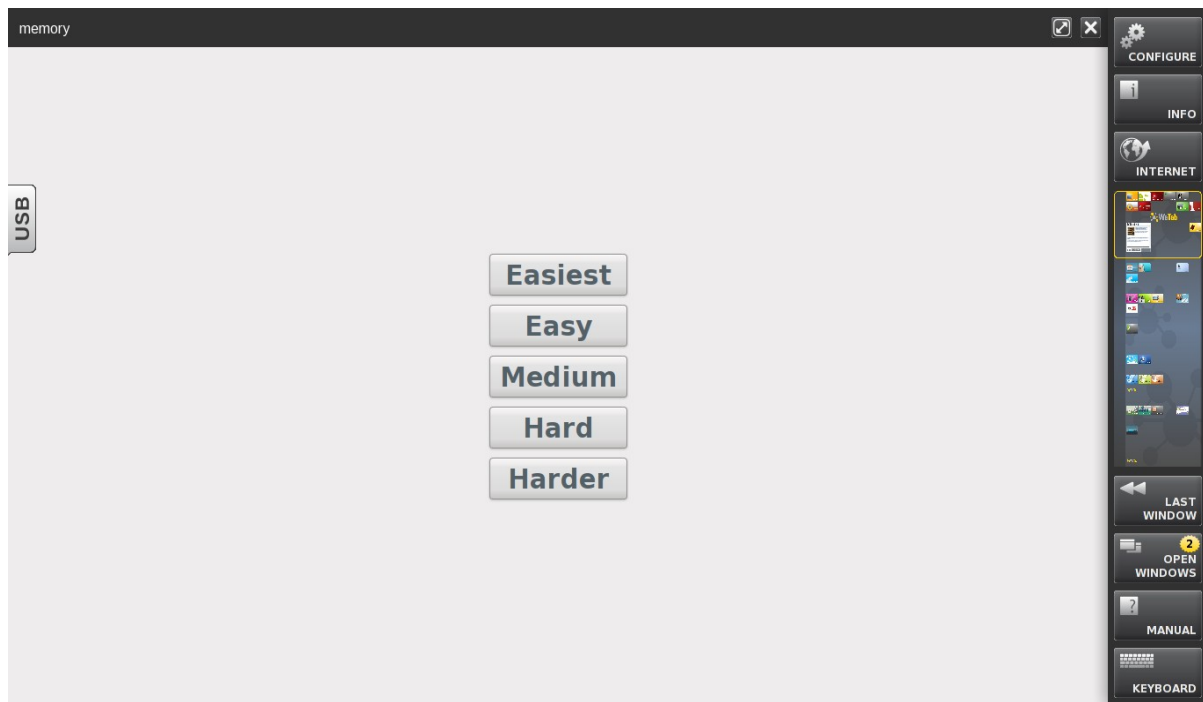
## Study of current Memory programs

### Memory

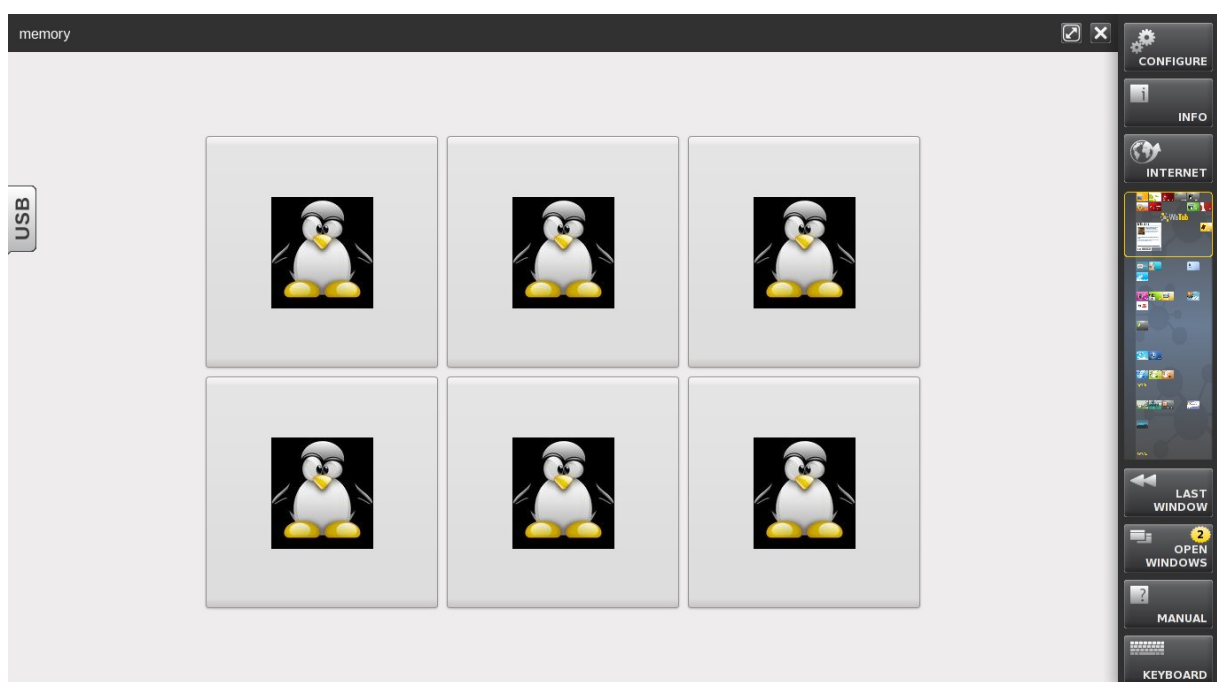
Developed by Simion in Qt for his son.

Screenshots are from the WeTab as it is Meego-ready.

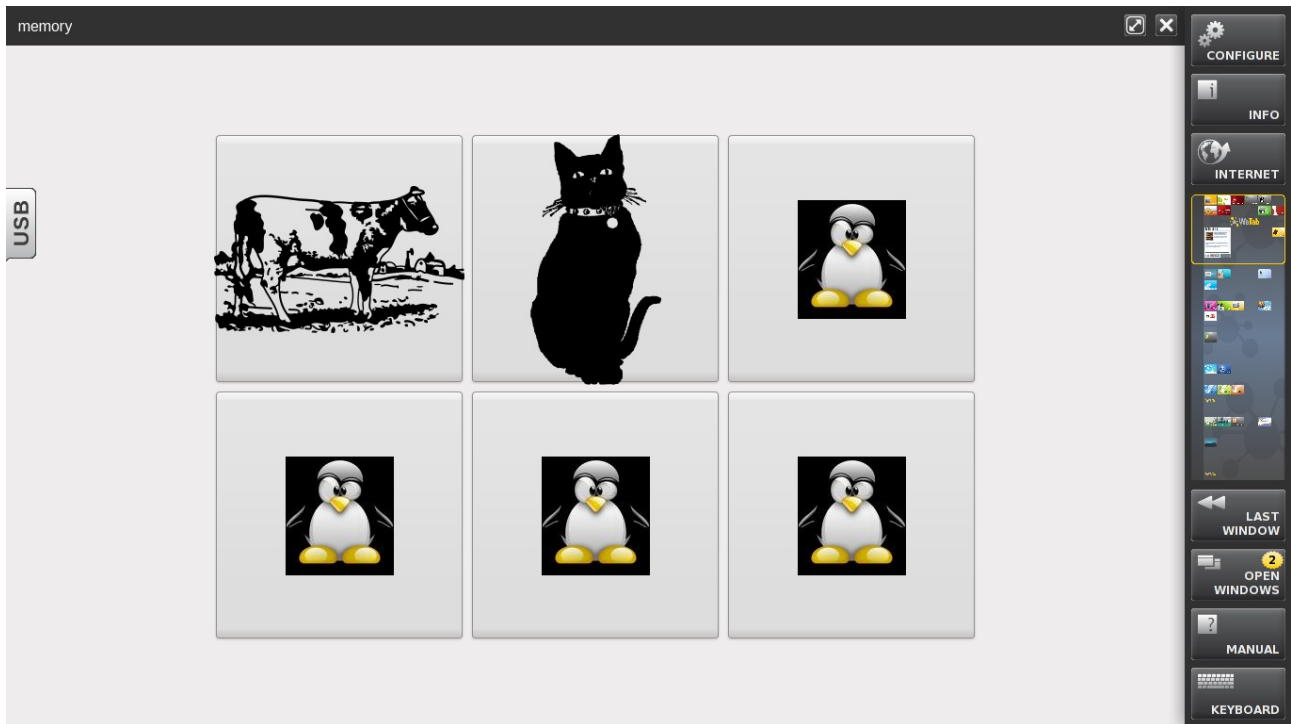
Running Memory you are presented with this first screen: difficulty choice, 5 choices



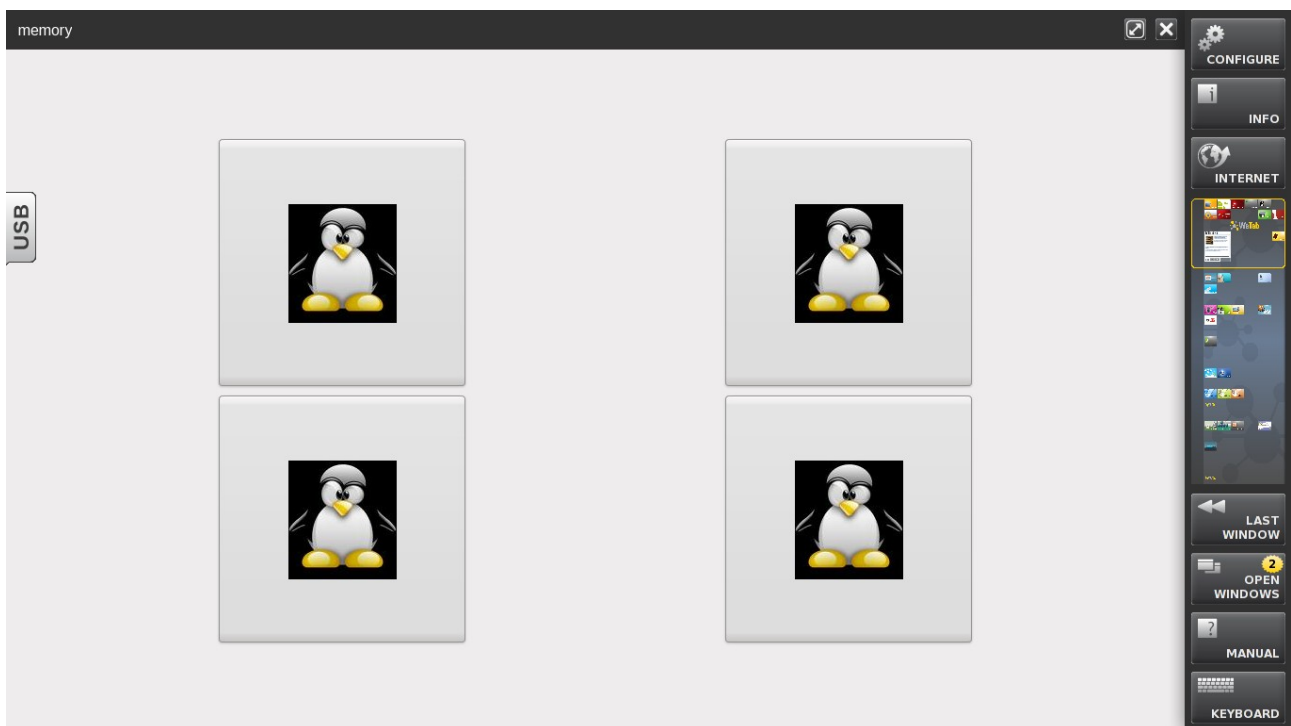
Choosing Easiest you get 6 cards. The back of the card is a nice Tux picture.



Clicking on 2 cards:



Matching cards disappear:



Return to first screen is done by using the Esc key.

Positive:

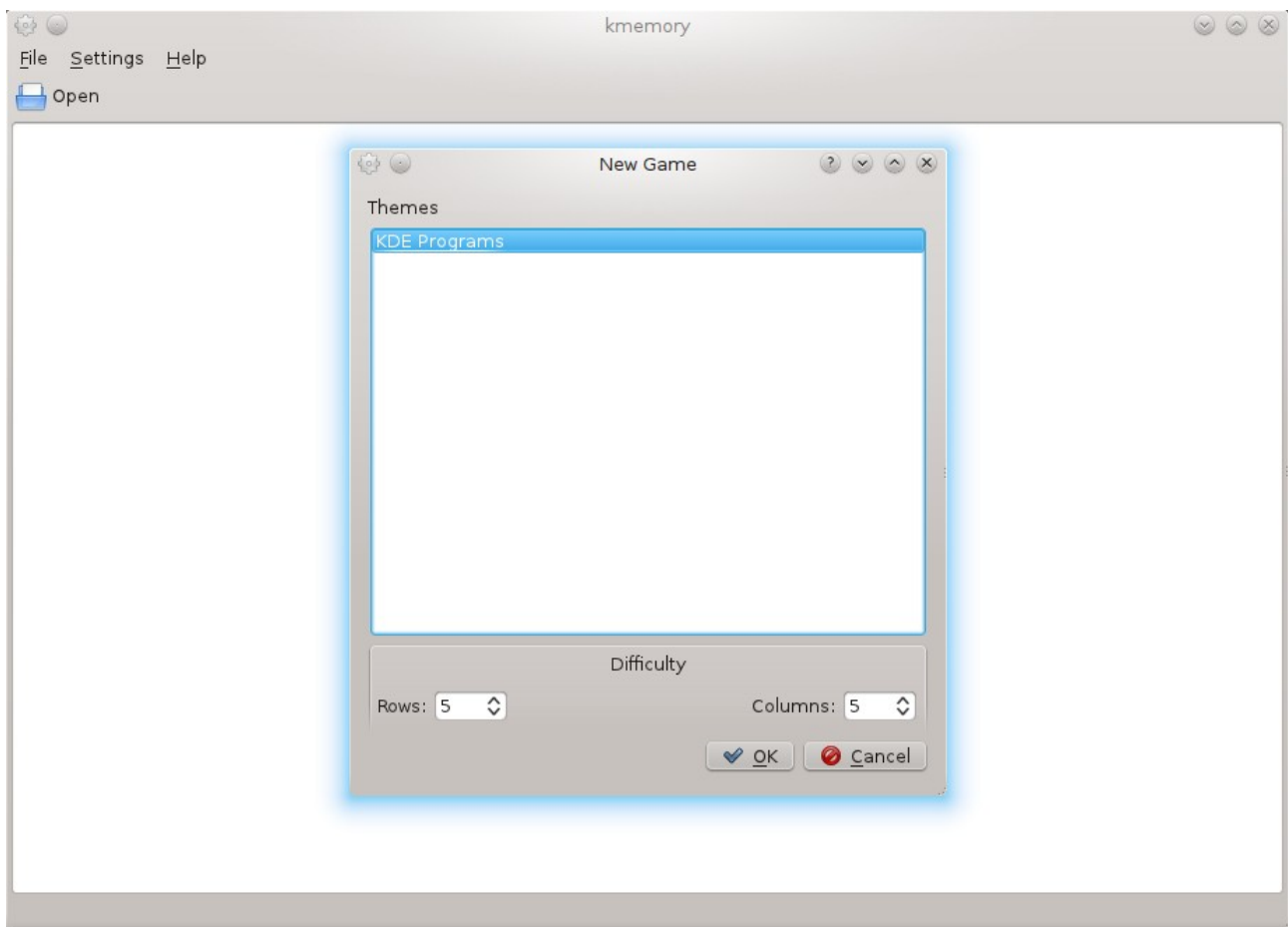
- Touch ready: there is nothing distracting the user.
- I like the start screen is clear
- Matching cards disappear with an animation

Negative:

- The code is Qt-only
- When 2 non-matching cards are turned, they stay turned until the user clicks on a third one and then they are turned face down. Kids will click/touch repetitively and there must be an indication that the pair does not match.
- Lacks several features such as theme support, quit button, changing theme and level easily.
- There is no feedback on results
- The black and white pictures are not appealing.

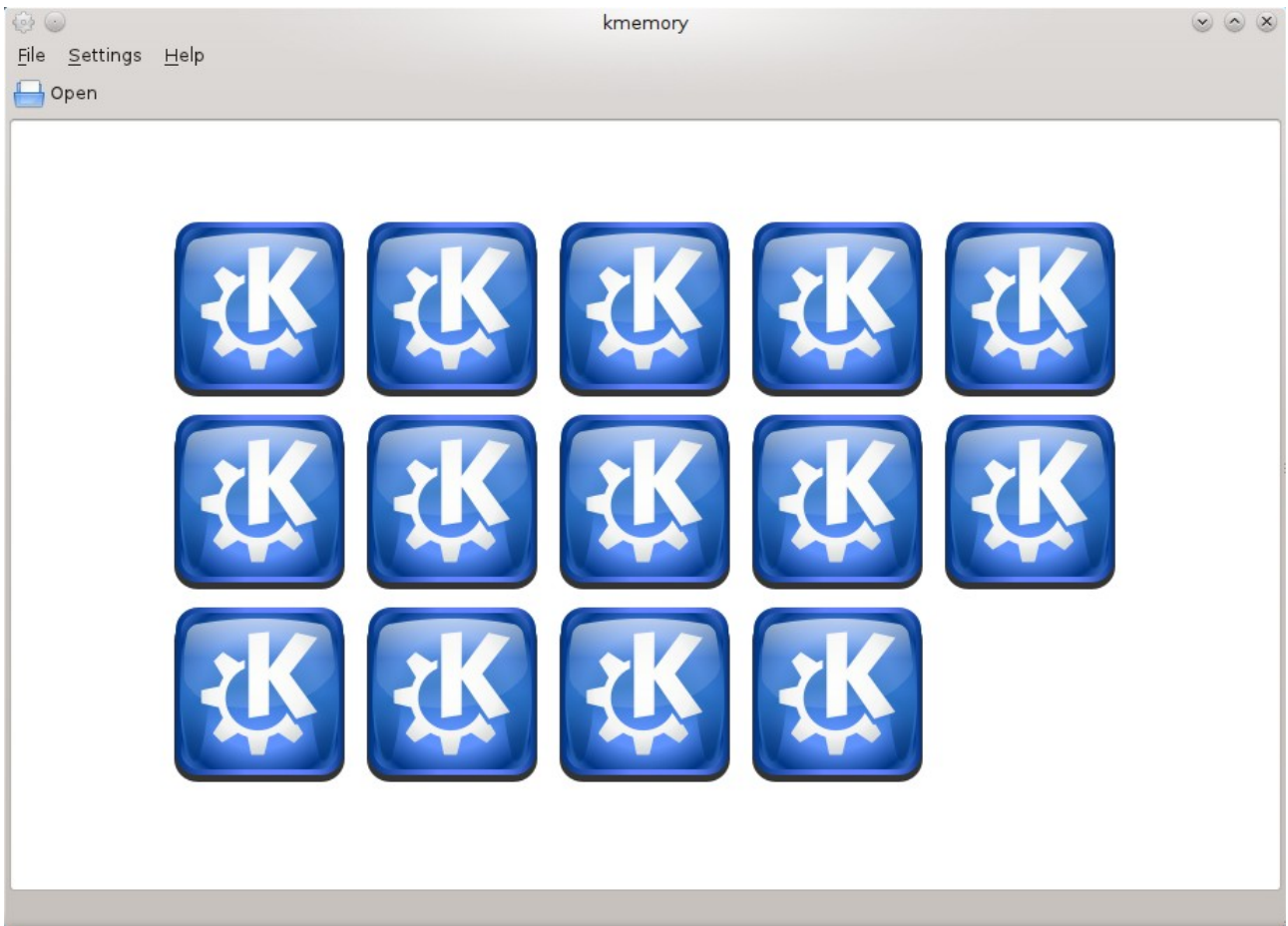
## **KMemory**

Running the program on a desktop, you are presented with a settings screen:



This screen can also be accessed from the File → Open menu item later on in a game.

The Row/Column chooser does not work so well:



When you click on 2 non matching cards the cards got turned back after 1 second or so. When a pair is discovered, it stays on the board (maybe a bug or intentional?)



Positive:

- cards that do not match are turned back

Negative:

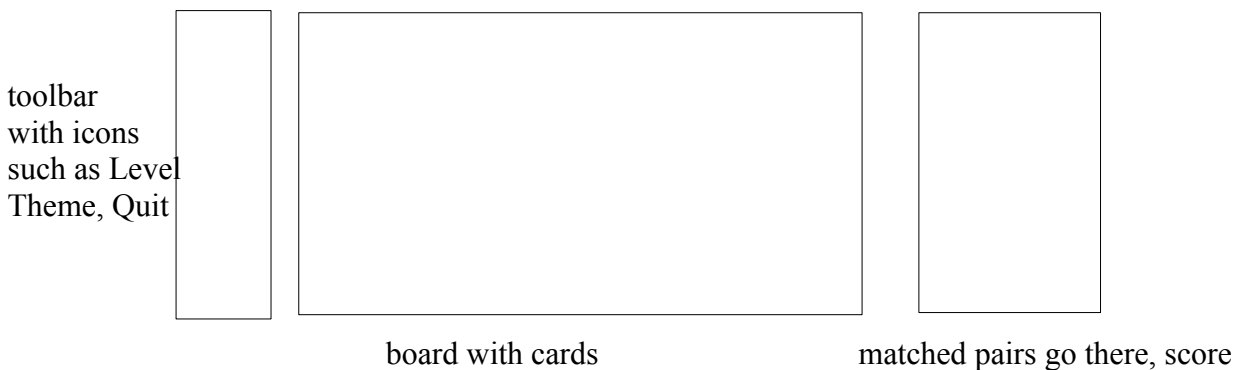
- first screen is not targeted to kids
- back of cards and pictures on cards are not appealing for kids
- changing settings is not intuitive
- matched cards should be moved aside

### Basic facts we agree on

- implementation: separate UI and logic
- allow for different levels of difficulty (number of cards increasing)
- allow for different themes. Usually images on the cards are literacy-related such as colors, pictures, shapes, letters, numbers, syllables, symbols, words, ...
- we need good drawings to start with: look into GCompris or TuxPaint pics?

### Things to decide

- Does such a game need 2 interfaces (one for desktop, one for tablet)? Or would one be OK as Kanagram.
- See with KDE in general and KDE Games team in particular how to implement a touch application. See <http://majewsky.wordpress.com/2011/07/08/kde-games-towards-an-active-interface/>
- Only 1 player or implement several players?
- Tentative UI



Let's try to make use of the window space wisely and not waste it too much.  
Should it be orientable? (i.e. used with a vertical tablet?)