# PicassoPass

Do you want to tap more than 25 times to enter V%8Un!2Y&p~5 to unlock your smartphone, just to be sure your data is secure?

Prevent shoulder surfing with PicassoPass!

- Due to dynamically combining elements, shoulder surfing becomes more difficult
- The layering of information makes it questionable why a cell is chosen: which layer holds the key?
- Due to usage of colors, shapes, themes and characters users can create a mnemonic story, to aid them in remembering their password
- A grid of 12 cells contains more information than 12 digits, increasing the number of possibilities thus making brute force attacks requering more time

Top Layer
Character

Theme

Color

Shape

Bottom Layer
Location
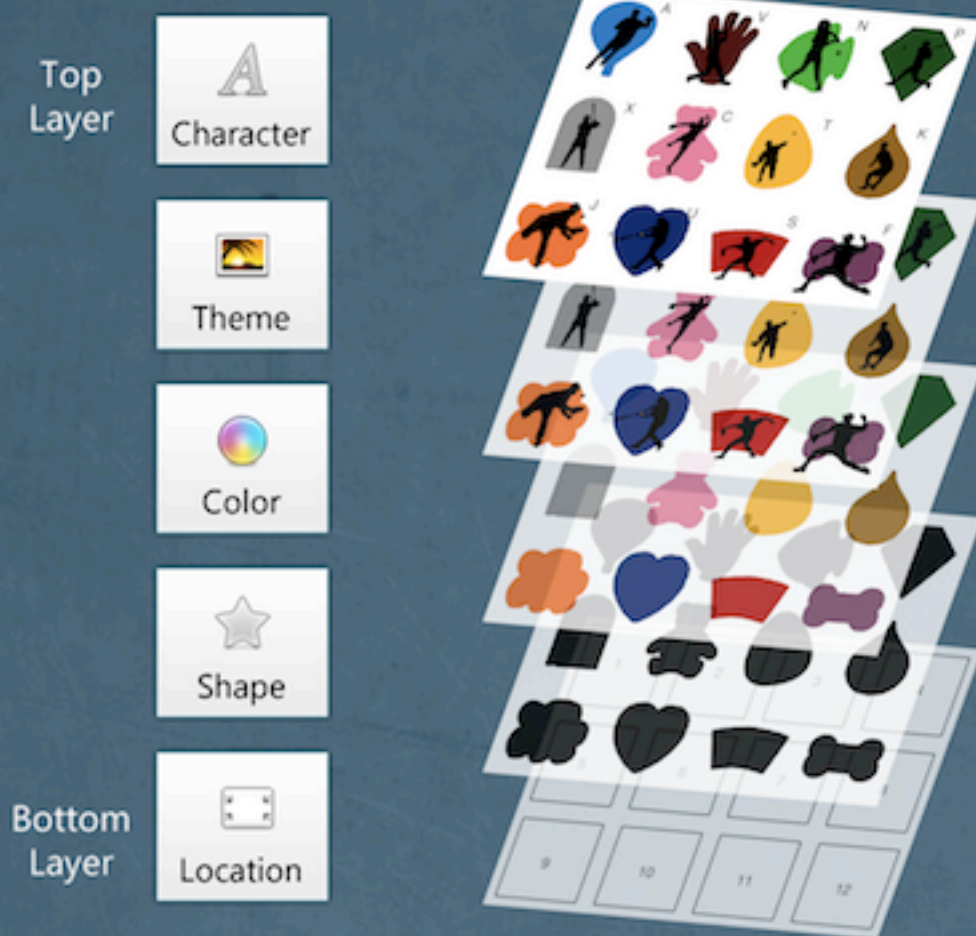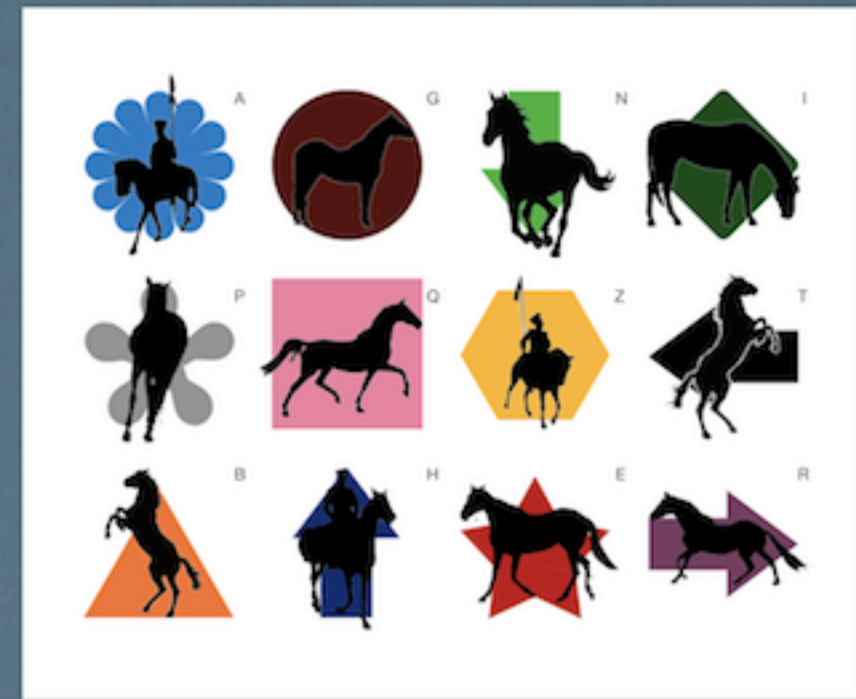
Combining elements to improve security

Users can choose from different:
- Colors
- (Geometrical) shapes
- Theme shapes
- Characters from the alphabet
- Location on the grid

Combining the elements give, with a grid size of 12, 60 possibilities for each step versus the 9 a numpad can give.

Is the red star chosen due to being red, or because of the star shape?

Test results for resistance for shoulder surfing

57 participants responded out of 120 send invitations. These participants were divided into 3 groups. Each participant was shown 1 video of someone entering a password on a mobile device, filmed as the viewer was watching over the shoulder. For each group, the used password technique was different. After viewing the video, the participant had to select the correct answer from a set of six possibilities.

The results of this between- subjects study design show that none of the 22 participants that were assigned to PicassoPass, correctly guessed the pasword, while almost everybody correctly guessed the numeric password. We have showed the potential of PicassoPass to protect from shoulder surfing attacks. Future studies will have more focus on the usability.

	Numeric	Gesture	PicassoPass	
Correct	17	13	0	30
Incorrect	1	4	22	27
	18	17	22	57

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