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The Next Generation of Atlas User Interfaces – A User Study with "Digital Natives"

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Motivation

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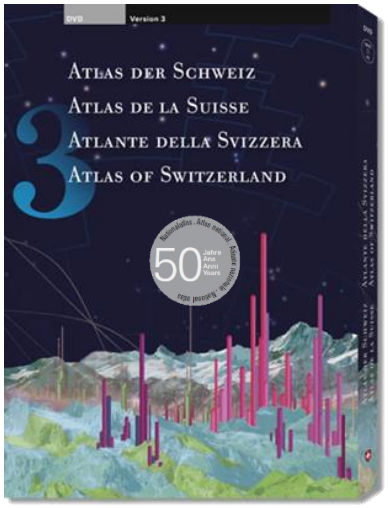
Attract a younger audience with our atlas

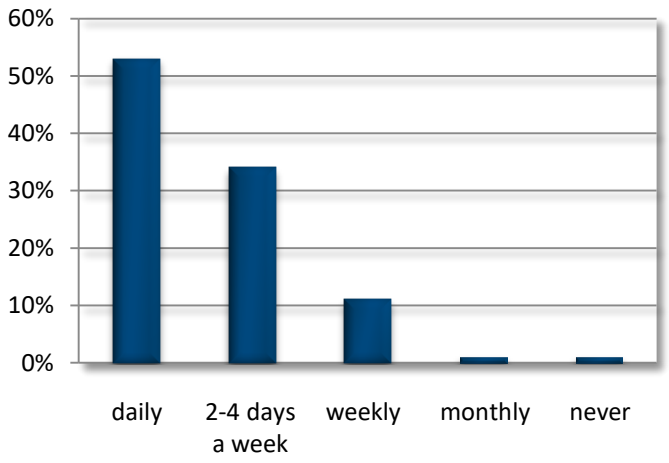


http://texassuccess.org/wp-content/uploads/2012/07/white-boy-laptop.jpg
http://1.bp.blogspot.com/_561n17ze14agfo2do77bd4g/wpengine.netdna-cdn.com/wp-content/uploads/tablet-kid4.jpeg
http://www.mnn.com/sites/default/files/editorial/shutterstock_115123381.jpg
http://www.samsung.com/global/article/consumer-images/article/2012/09/18/Kids-0.JPG

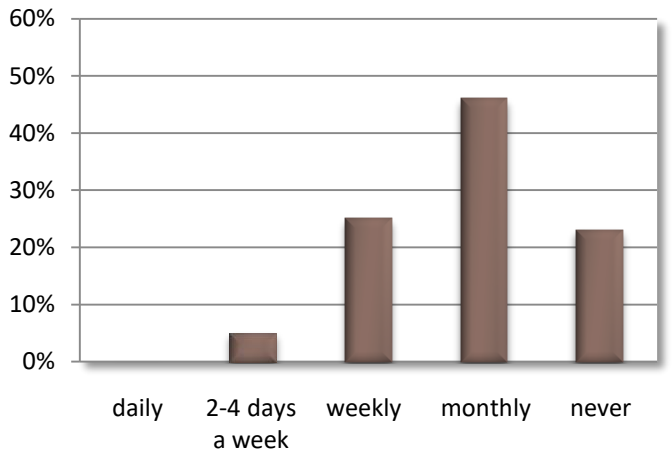
Test participants

- 110 students (61 female, 49 male) from secondary schools in Switzerland
- 14-15 years old

Computer/Tablet usage



Map usage



Test procedure

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- Online survey (SelectSurvey.NET)
- Computer lab

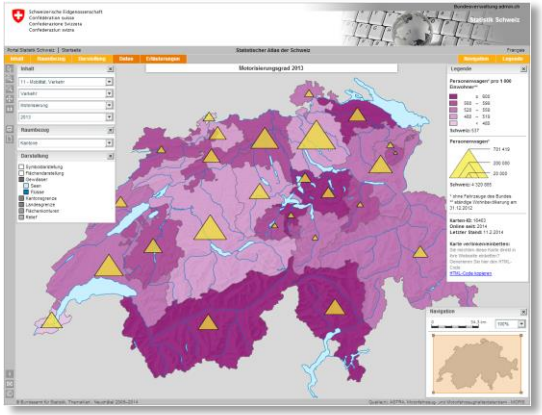
- 5 Atlas GUI layouts varying in layout density and tool arrangement
- 5 typical use cases for atlases

- Mouse click coordinates captured (max. 10 clicks per task)
- Times captured (max. 20 seconds per task)

- Overall rating of the five layouts (attractiveness, usability)

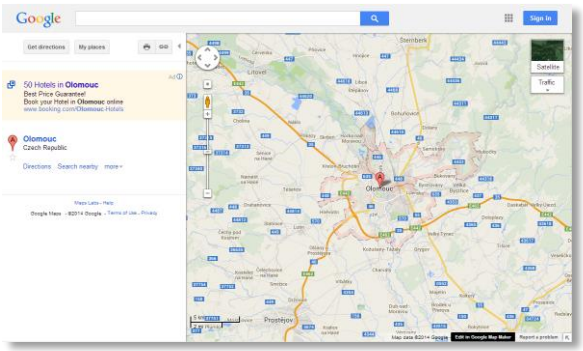
Atlas GUI Layouts

Minimalistic style



Desktop style

Tablet style



Google Maps style

YouTube style

Atlas GUI Layouts

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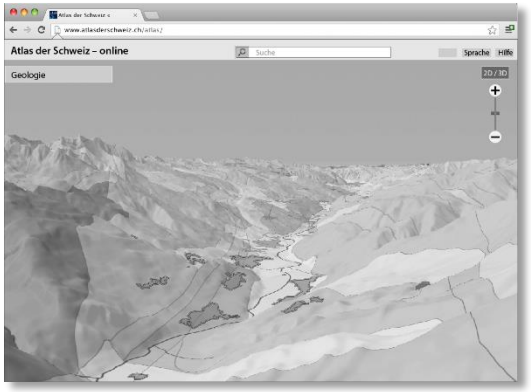
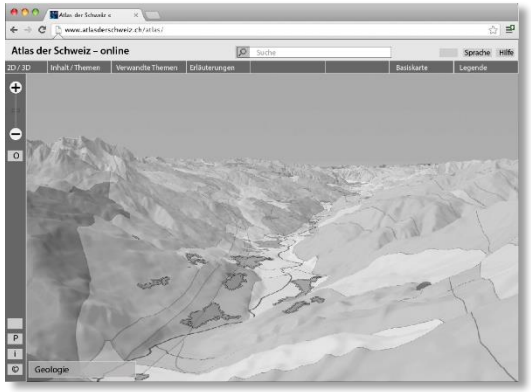
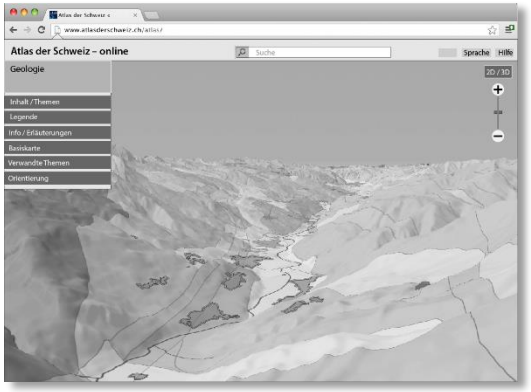


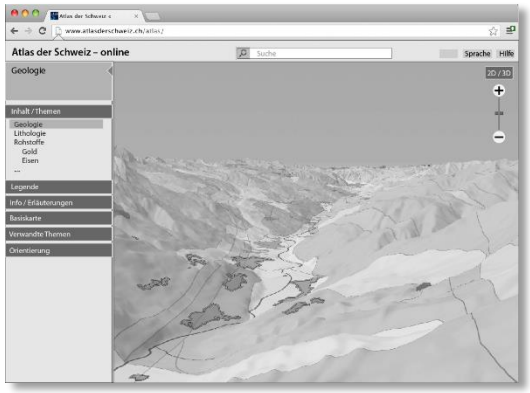
Minimalistic style



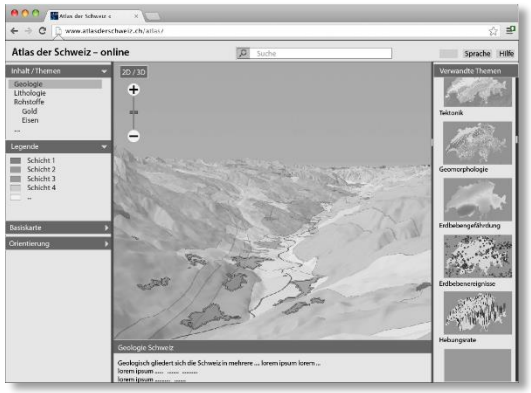
Desktop style



Tablet style



Google Maps style



YouTube style

Tasks

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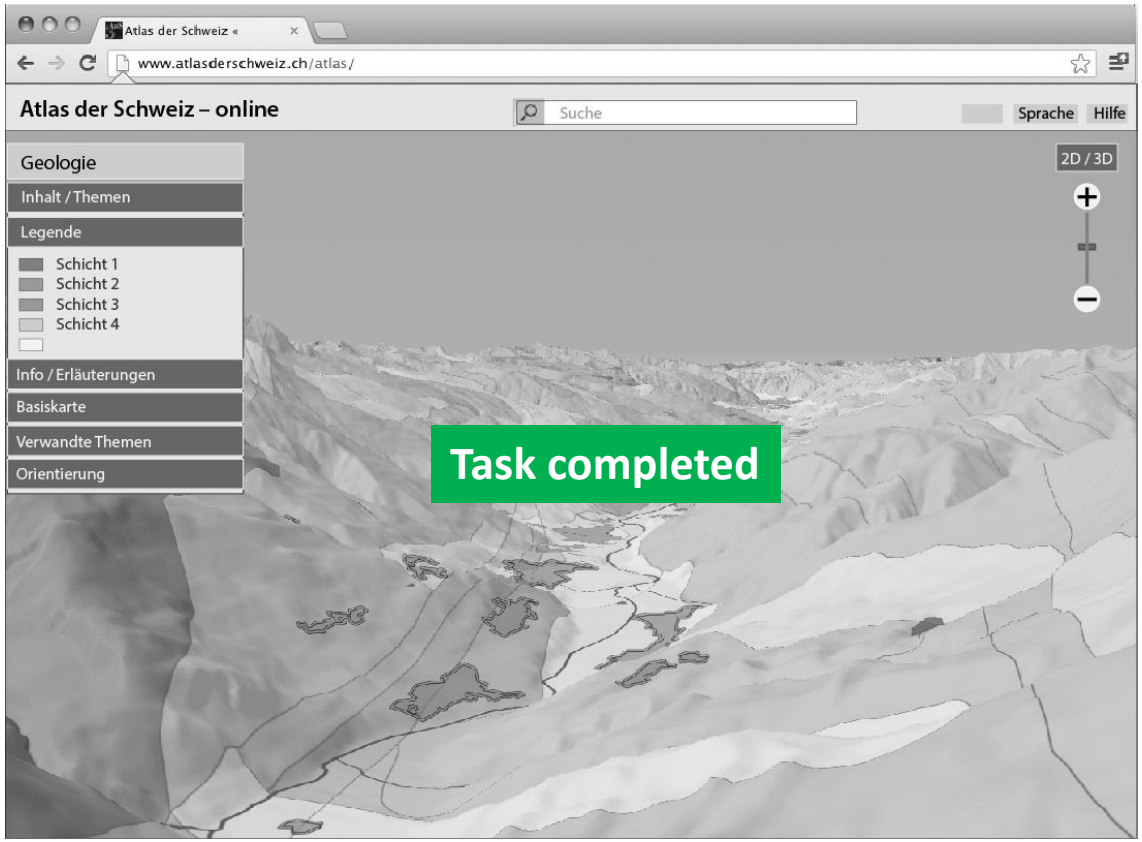
1) **Change theme:** Switch from “Geology” to “Raw materials”
2) **Find legend:** Resolve the meaning of map colors and symbols in the map
3) **Map query:** Determine the name of the settlement and the underlying geological structure in the center of the map
4) **Map info:** Access additional media (e.g. text, images)
5) **Spatial orientation:** Find out where the displayed map region is located within Switzerland

Example

Find the legend



Results

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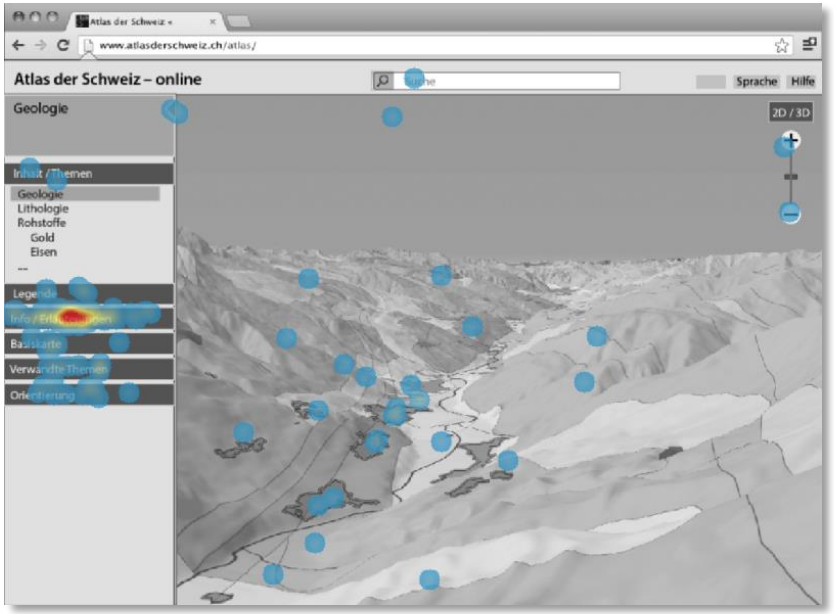
Performance metrics (effectiveness and efficiency)

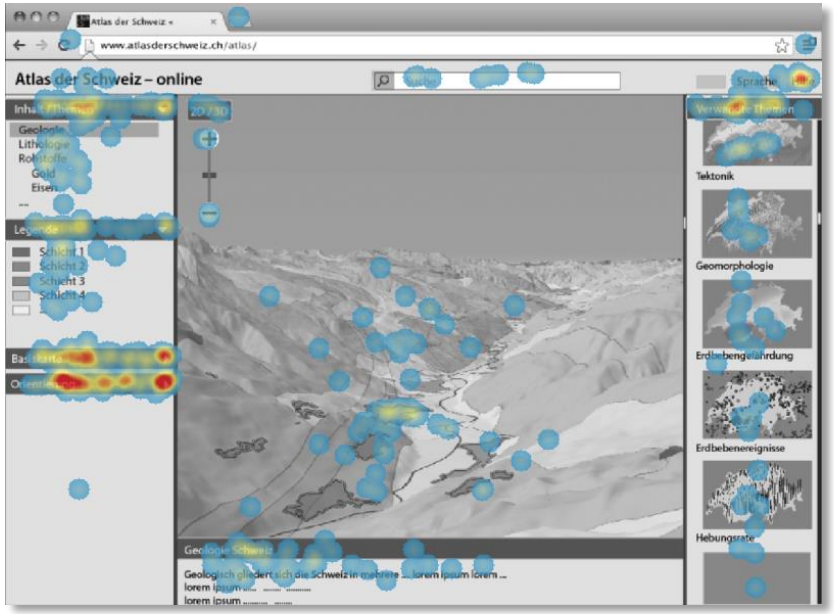
	Successfully completed tasks	Average time spent on a task	Normalized number of mouse clicks for a task
Minimalistic style	66%	8.93s	2.51
Desktop style	72%	9.21s	3.31
Tablet style	90%	5.37s	1.85
Google Maps style	93%	4.52s	1.87
YouTube style	78%	7.87s	2.53

Results

Access additional map information (e.g. text, images)



Google Maps style



YouTube style

Results

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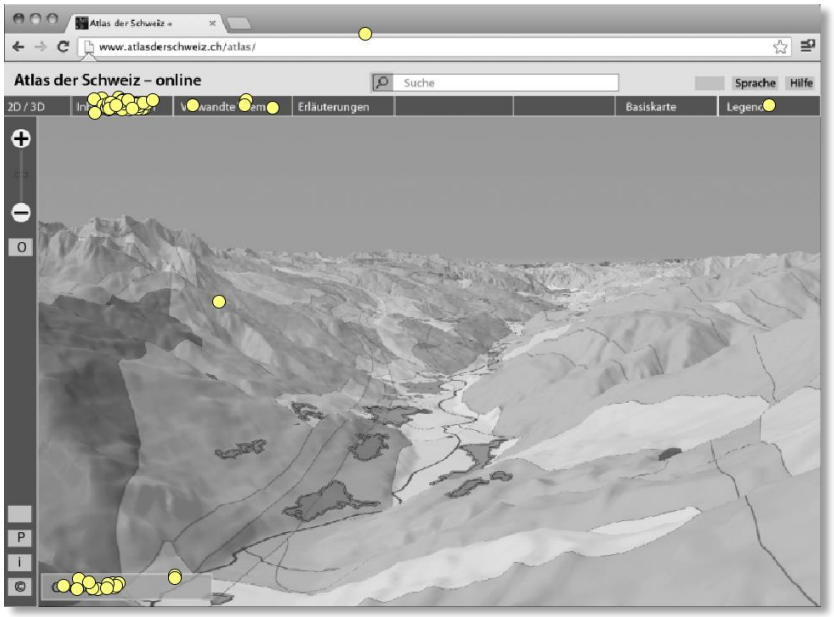
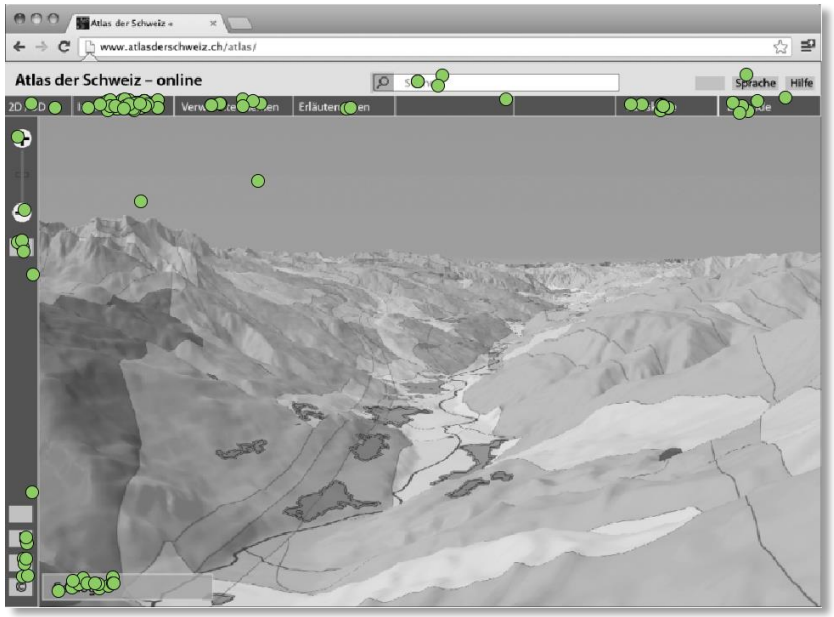
Switch the theme from “Geology” to “Raw materials”



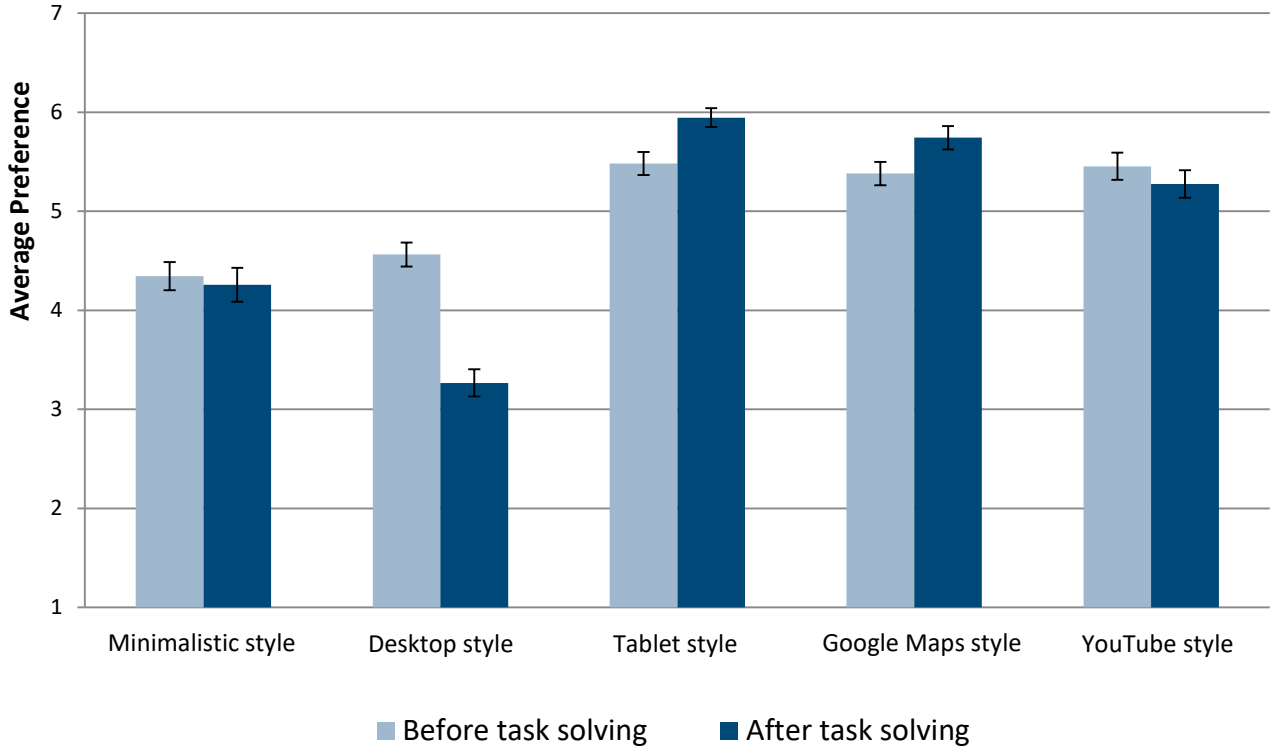
First clicks



Following clicks

Results

Overall attractiveness and usability rating



Conclusions

- Atlas GUIs with a large map panel and a slim interface are not preferred by Digital Natives
- Digital Natives performed significantly better in Atlas GUIs with a medium tool density

Recommendations:

- Functions/Tools should be grouped, not distributed
- GUI elements should be tested for ambiguity
- The use and effect of a tool should be easily recognizable

Outlook

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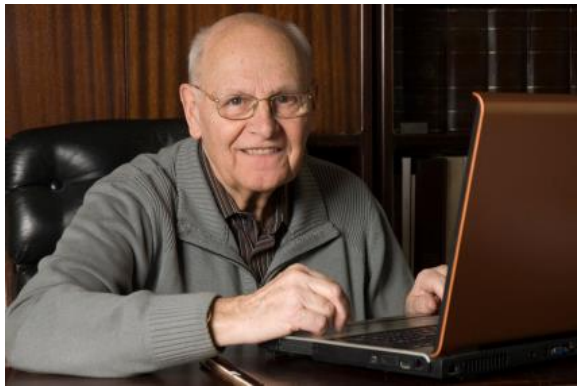
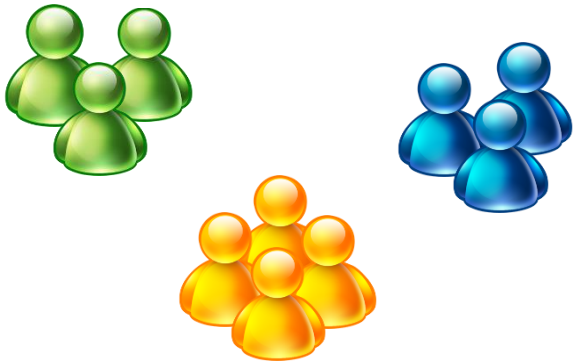
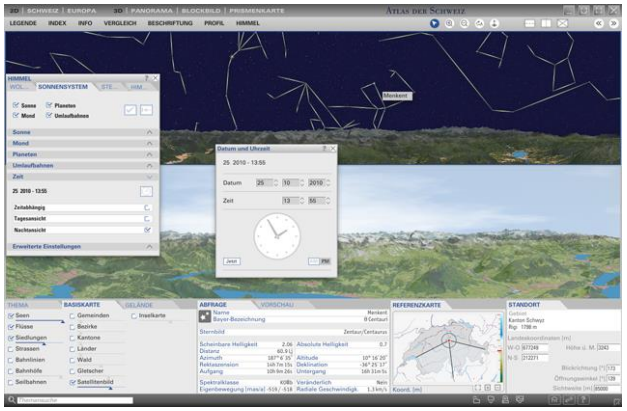


Silver Surfers

Tablets



Inter-subject tests



More complex tasks and more realistic interfaces

http://www.iconhot.com/icon/png/brush-intense-messenger/256/buddy-bleu.png
http://files.softicons.com/download/application-icons/messenger-icons-by-tatice/png/256/En%20ligne.png
http://png-4.findicons.com/files/icons/2279/brush_intense_messenger/256/msn_mobile.png
http://memorycareaz.com/care/wp-content/uploads/2010/11/Grandfather-on-computer.jpg

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Thank you for your attention!

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