



OTTO VON GUERICKE
UNIVERSITÄT
MAGDEBURG

INF

FAKULTÄT FÜR
INFORMATIK



Data & Knowledge Engineering Group

Evolving Search User Interfaces

euroHCIR Workshop 2013

Tatiana Gossen, Marcus Nitsche, Andreas Nürnberger

<http://www.dke.ovgu.de/>

Challenge:

- Especially young and elderly users undergo fast changes in
 - cognitive,
 - fine motor,
 - and other abilities
- Design requirements change rapidly as well and a flexible modification of SUI is needed

Solution:

- *Evolving search user interface (ESUI)*
 - adapts to individual user's characteristics
 - allows for changes in properties of UI elements
 - influences the UI elements and their positioning

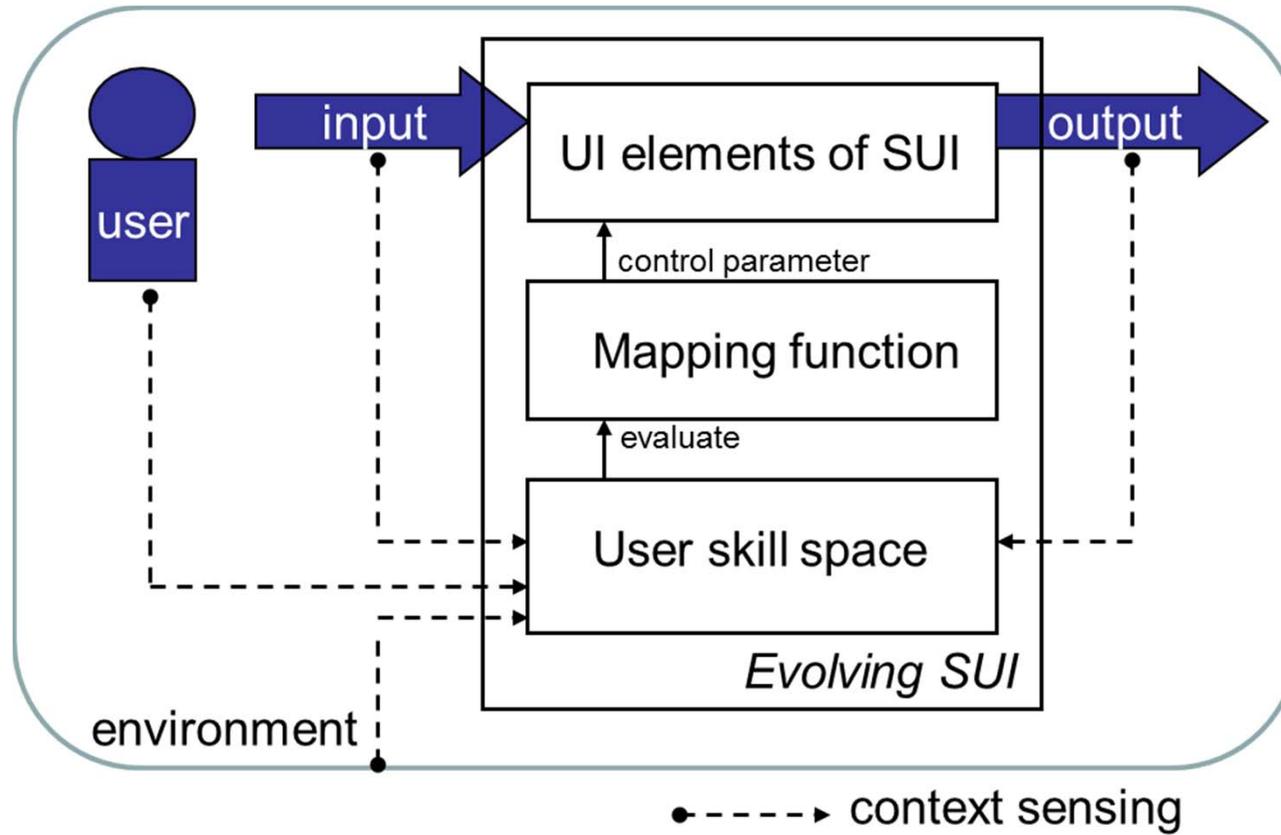
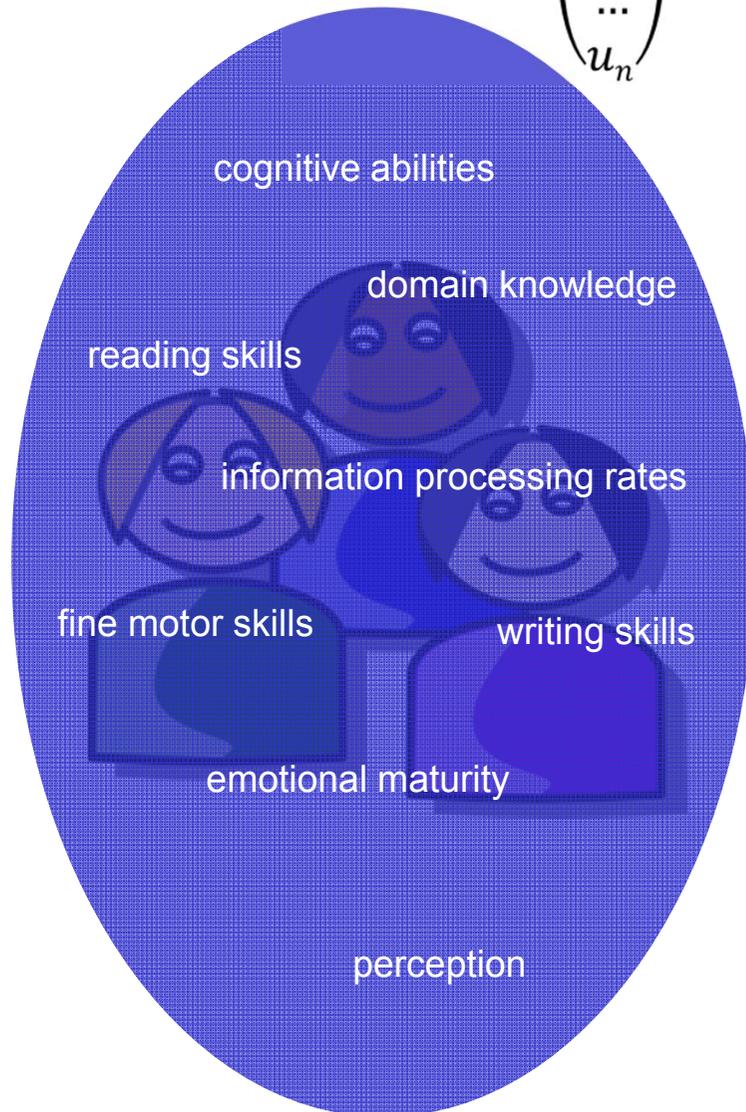


Figure 1: Model of an ESUI.

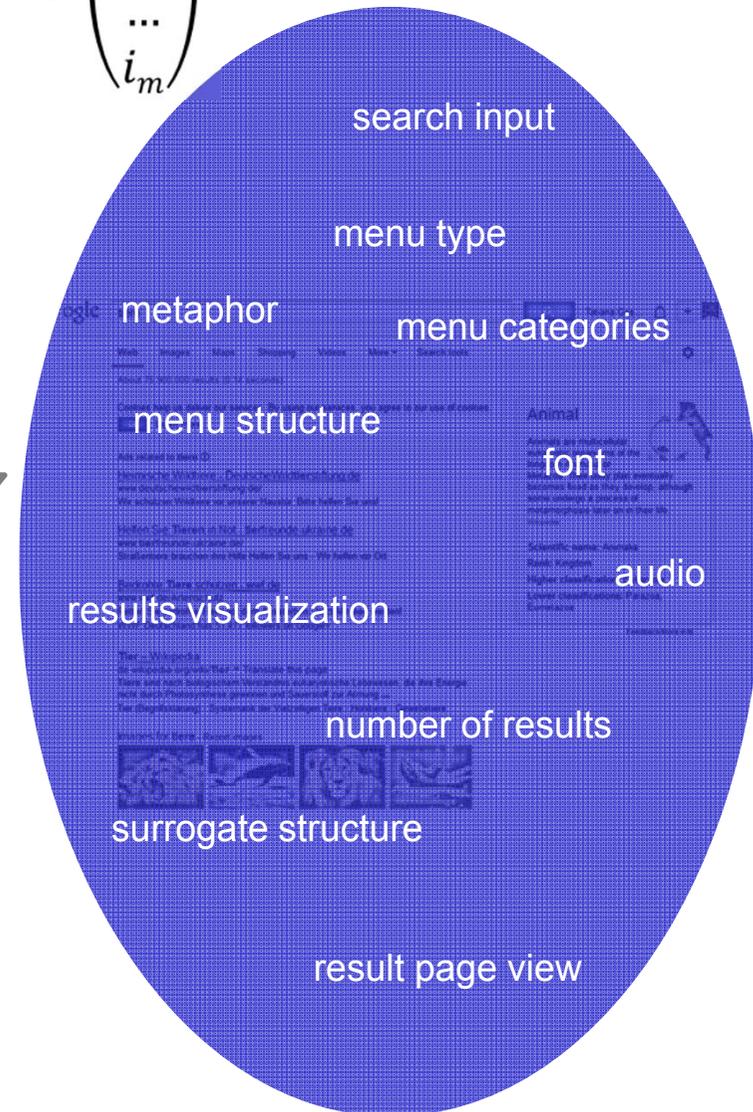
Mapping Function

$$U: \begin{pmatrix} u_1 \\ u_2 \\ \dots \\ u_n \end{pmatrix}$$

$$I: \begin{pmatrix} i_1 \\ i_2 \\ \dots \\ i_m \end{pmatrix}$$



$$F: U \rightarrow I$$

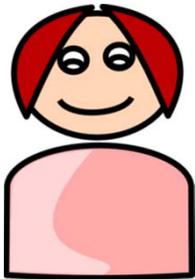
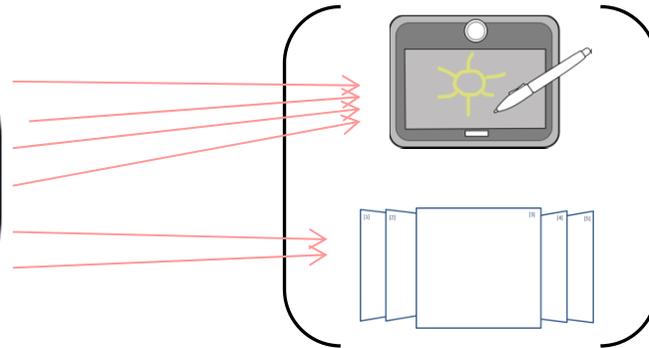


Design Ideas



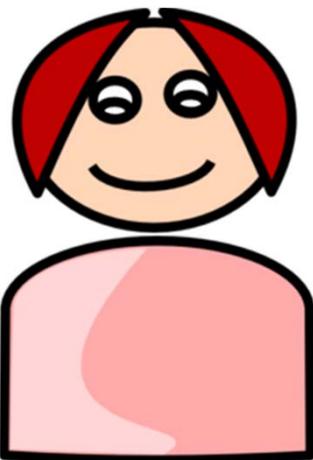
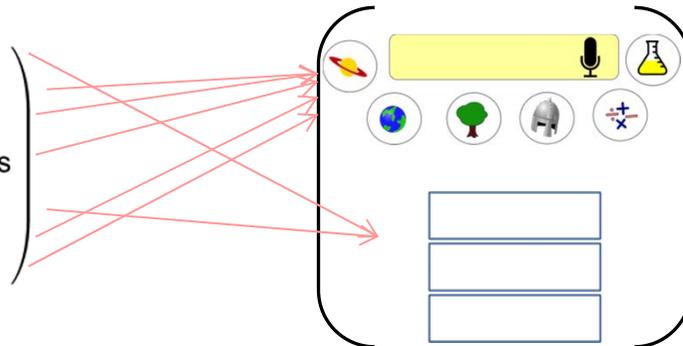
six-year-old Jenny

limited reading abilities
limited writing abilities
5,000 words active vocabulary
cannot understand abstract categories
is not able to process much information
not fully developed fine motor skills



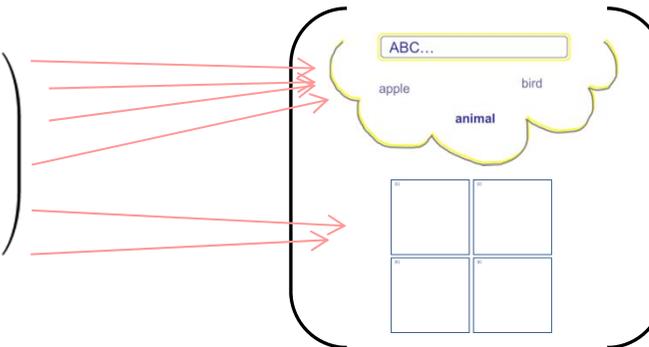
nine-year-old Jenny

can read short stories
few spelling errors
10,000 words active vocabulary
cannot understand abstract categories
is able to process more information
difficulties using a keyboard
easily frustrated



fourteen-year-old Jenny

good reading abilities
good writing abilities
20,000 words active vocabulary
can understand abstract categories
is able to process even more information
good fine motor skills



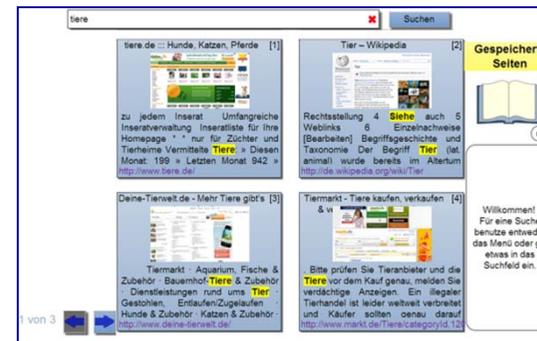
User Study

Hypothesis:

- Users from different age groups would prefer to use different UI elements and different general UI properties

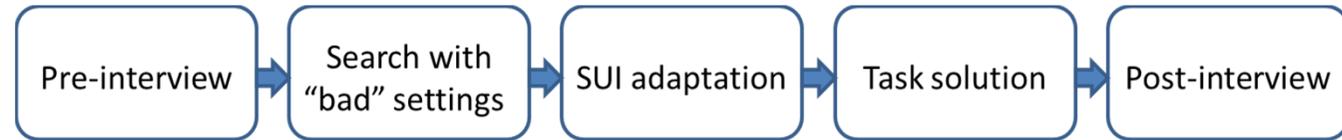
Design:

- Users from different age groups
- Preferences for results visualization
 - vertical list of snippets
 - tiles
 - coverflow



User Study

Procedure:



First results:

- 44 subjects participated:
 - 27 children (8.9 on average)
 - 17 adults (29.2 on average)

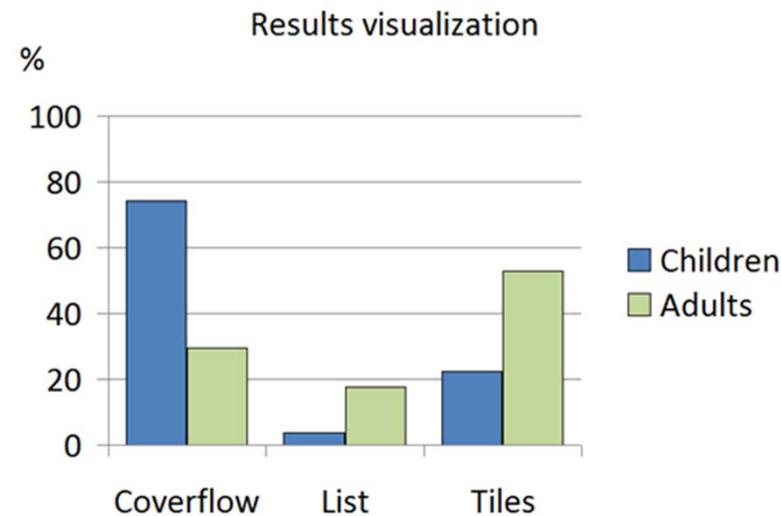


Figure 2: Study results: what type of visualization do children and adults prefer.

Open Questions

- Mapping function
 - user studies about users' search behavior and SUI design preferences

- Adaptive or adaptable SUI
 - how to adapt
 - a SUI in a way users would accept the changes

- Detection of user abilities
 - age of a registered and logged-in user
 - psychological tests covered in form of games
 - log files, in specific, issued queries (their topic and specific spelling errors) and accessed documents

Thank you for your attention!