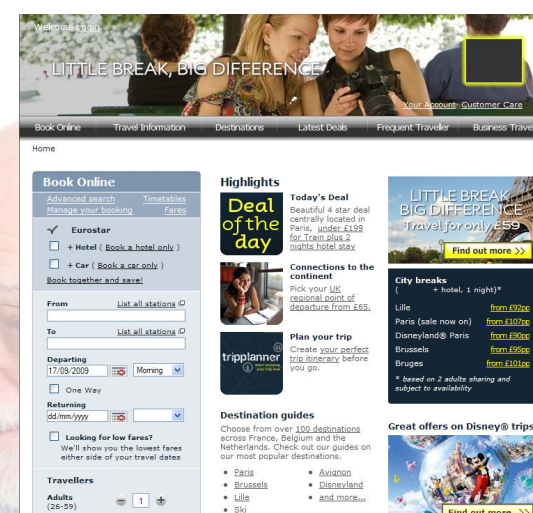
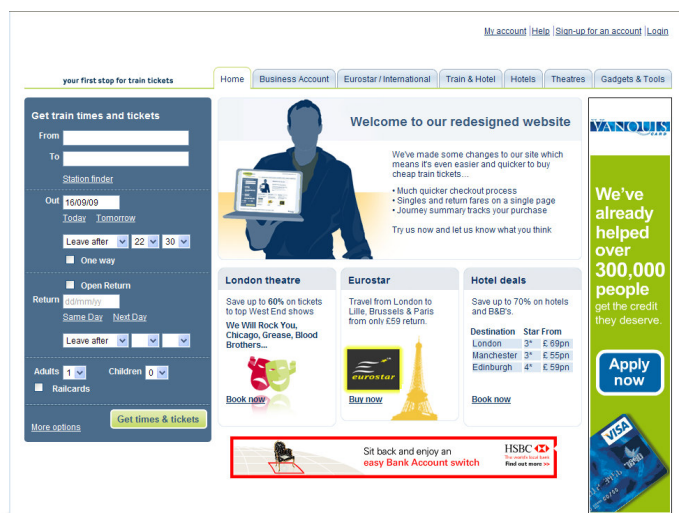


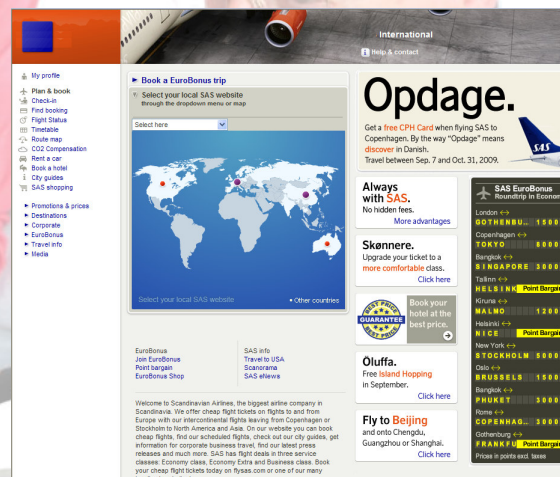
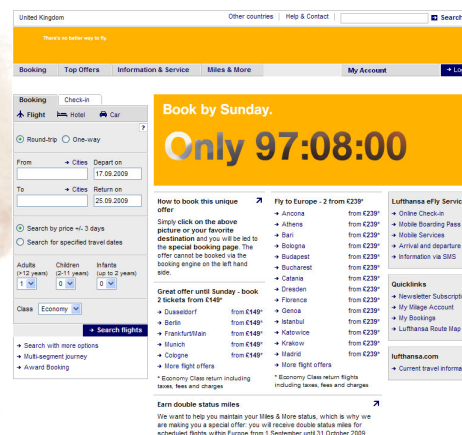
# **DIADEM: Delivering Inclusive Access for Disabled and Elderly Members of the community**

**Arthur Berg Reinertsen Karde AS**

- ❖ En ny innovativ løsning (prototype) for å møte eldres behov for tilpassede internett løsninger.
- ❖ Krav til at alle skal kunne benytte løsningene.
- ❖ Handler om alder og kognitive utfordringer.







- ❖ Less confusion on screen
- ❖ Greater consistency
- ❖ No interruptions & distractions
- ❖ Help from real people



## Delivers these

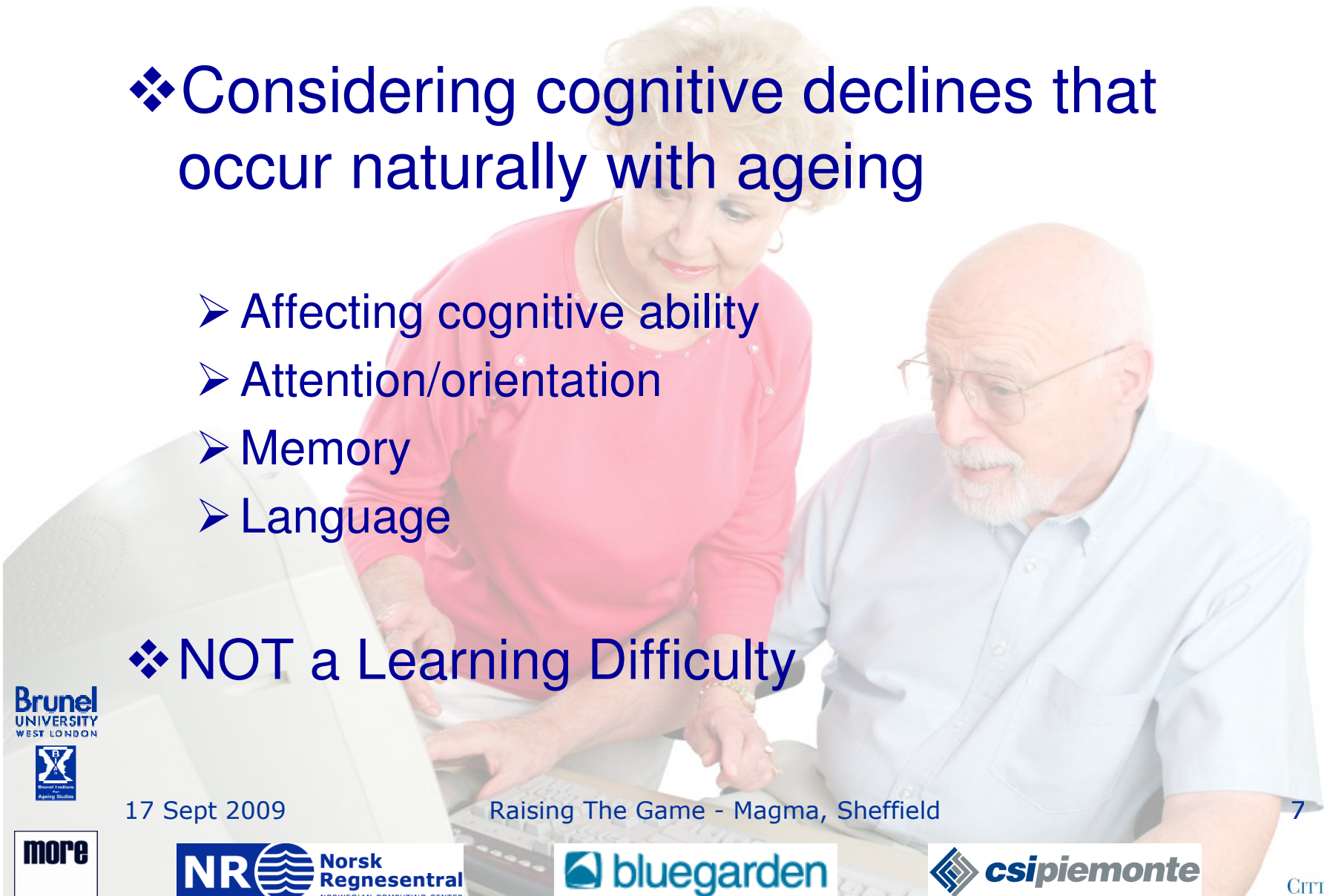
- ❖ The European population is ageing
  - 2007 the old-age dependency ratio: 25.2%
  - 2050 this will have risen to 52.5%
- ❖ Ageing is often accompanied by declines in:
  - Dexterity
  - Mobility
  - Cognitive ability



## ❖ Considering cognitive declines that occur naturally with ageing

- Affecting cognitive ability
- Attention/orientation
- Memory
- Language

## ❖ NOT a Learning Difficulty



- ❖ Create **intelligent**, supportive, and appropriate HCI software components, incorporating **Expert Systems** technology, to provide personalised assistance to older adult users when interacting with online form content
- ❖ Three year €3 million, European Union funded FP6 project
- ❖ Eight European partners
  - Italy
  - Norway
  - UK



## ❖ Service free to the individual

- Assess individuals capability
- Monitor
- Adapt the form
- Provide additional helps and assistance
- Intelligent
- Personalised

Tell us you have moved - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:9080/Diadem/forms/diadem/newform-sheffield.html?js=true

/manager newform-16.xhtml newform-18.xhtml newform-25%20(mod... Dokumente

Do you want Firefox to remember this password? Remember Never for This Site Not Now

You need to click on a question box before you can type an answer.

OK SAY ALOUD EXIT CALL HELP HELP

Sheffield City Council

Completing form **Tell us you have moved** from **Sheffield City Council**. We know that Council Taxpayers have different circumstances, so the on-line form is designed to provide us with the information we need to amend your bill. Please read the questions carefully and only complete the sections you are asked to.

1) Instructions 2) New Home 3) Summary

Change of Address

Section A: Details about the address of your new property

House (or flat) Name Coleraine

House (or flat) Number 12

Street Broadcommon Road

Area (e.g. Broomhill) Hurst

Postcode AL1 4NE

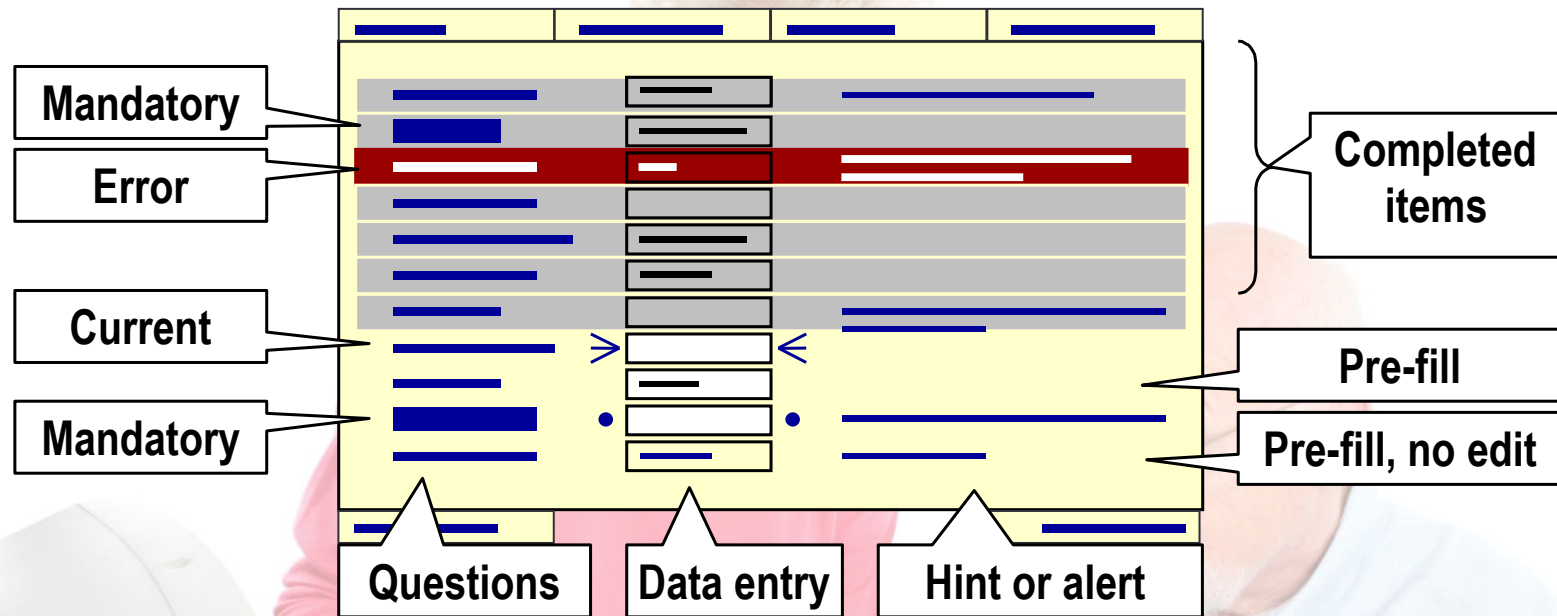
Is your new property located within Sheffield

Yes No

Section H: Your Contact Details.

<< Previous page Next page >>

Transferring data from localhost...



- ❖ All mouse click and key presses
- ❖ All focus and blur events
- ❖ Valid or invalid item values



Tell us you have moved - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:9080/Diadem/forms/diadem/newform-sheffield.xhtml?js=true

/manager newform-16.xhtml newform-18.xhtml newform-25%20(mod... Dokumente

Do you want Firefox to remember this password? Remember Never For This Site Not Now

SAY ALOUD EXIT CALL HELP HELP

Sheffield City Council

Completing form **Tell us you have moved** from **Sheffield City Council**. We know that Council Taxpayers have different circumstances, so the on-line form is designed to provide us with the information we need to amend your bill. Please read the questions carefully and only complete the sections you are asked to.

1) Instructions 2) **New Home (Contains errors)** 3) Summary

**New Home**

|   |                           |               |
|---|---------------------------|---------------|
| House (or flat) Name                          | Coleraine                 | Edit          |
| House (or flat) Number                        | 12                        | Edit          |
| Street  | Broadcommon Road          | Edit          |
| Area (e.g. Broomhill)                         | Hurst                     | Edit          |
| Postcode                                      | AL1 4NE                   | Edit          |
| Is your new property located within Sheffield |                           | Correct error |
| Your Name                                     | Arthur Greg Monee         | Change        |
| Your daytime telephone number                 | 0114566725                | Change        |
| Your email address                            | arthur.money@brunel.ac.uk | Change        |

DIADEM

<< Previous page Submit

Transferring data from localhost...

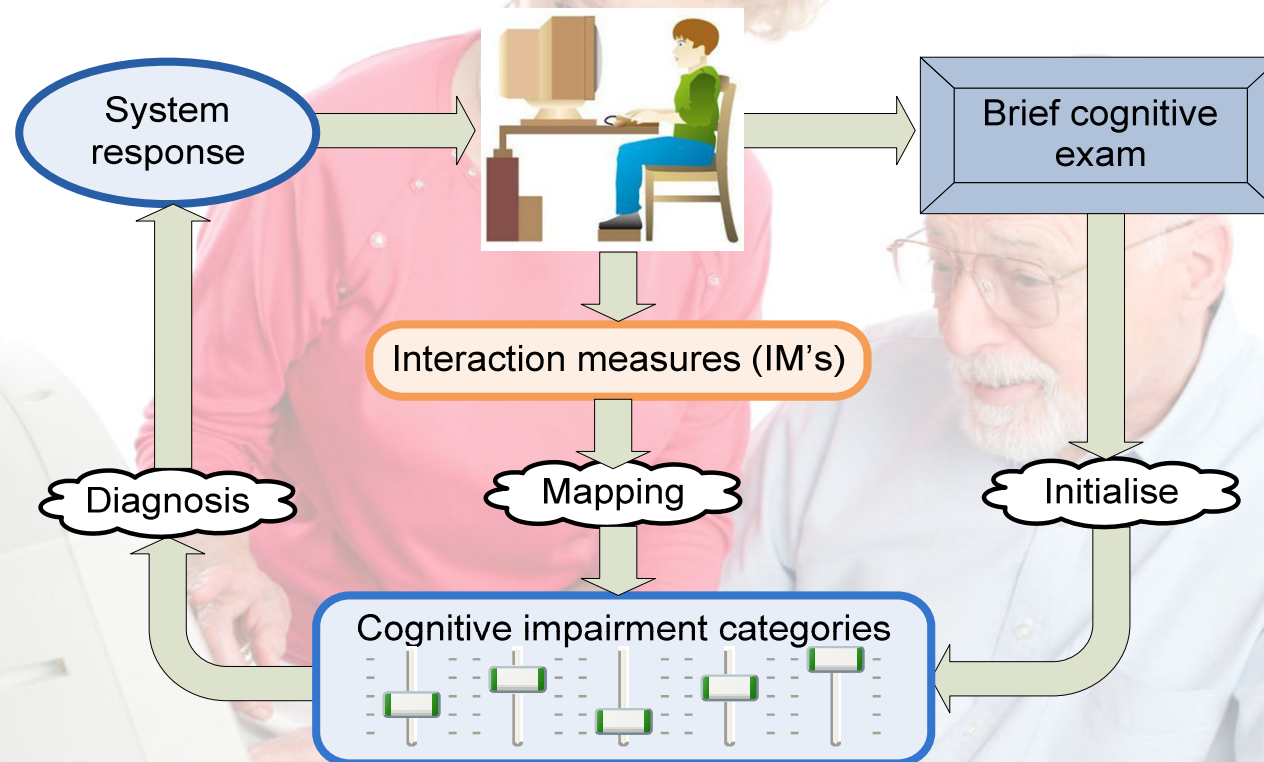
Highlighting of errors in section

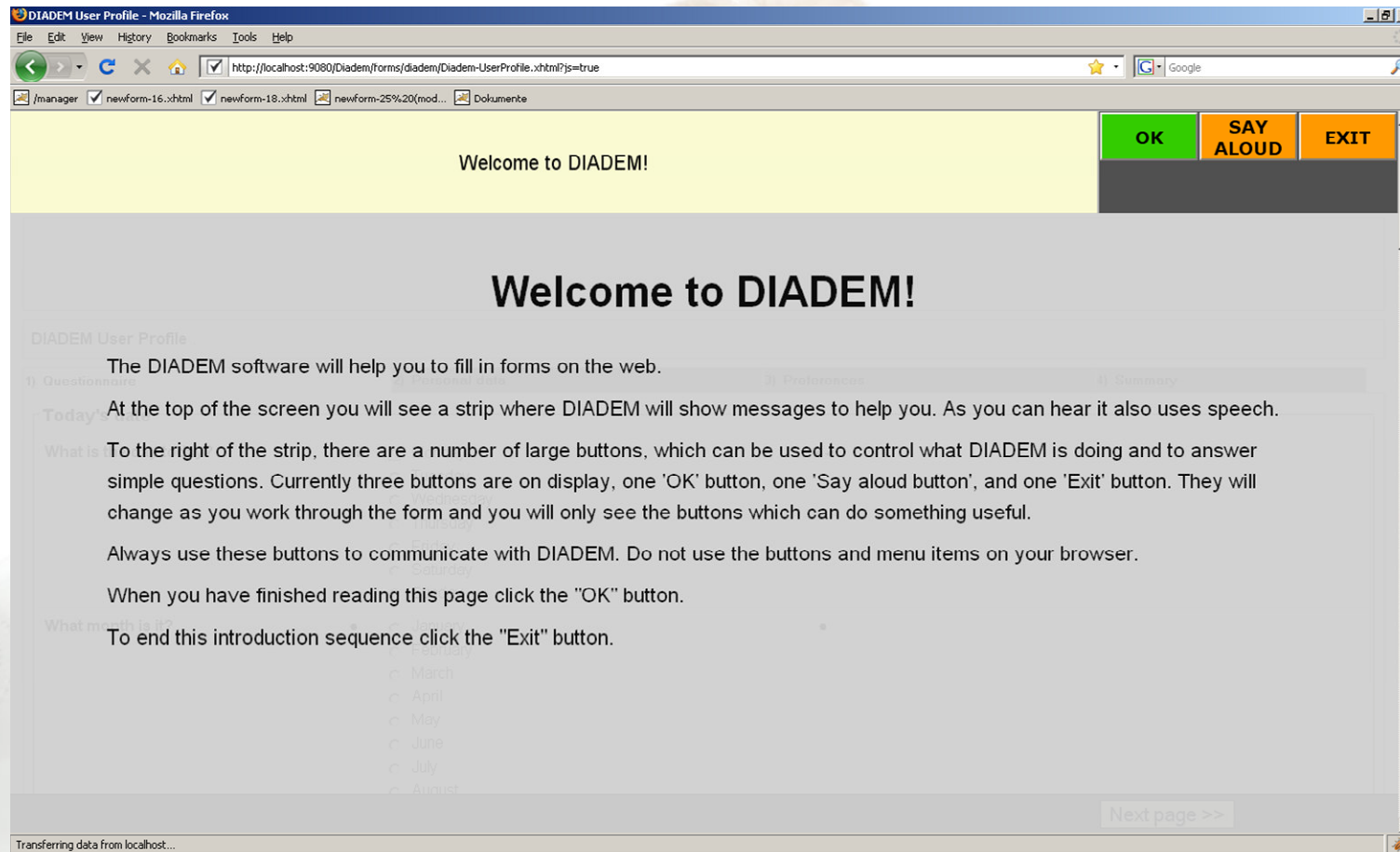
Edit button

Correct error button

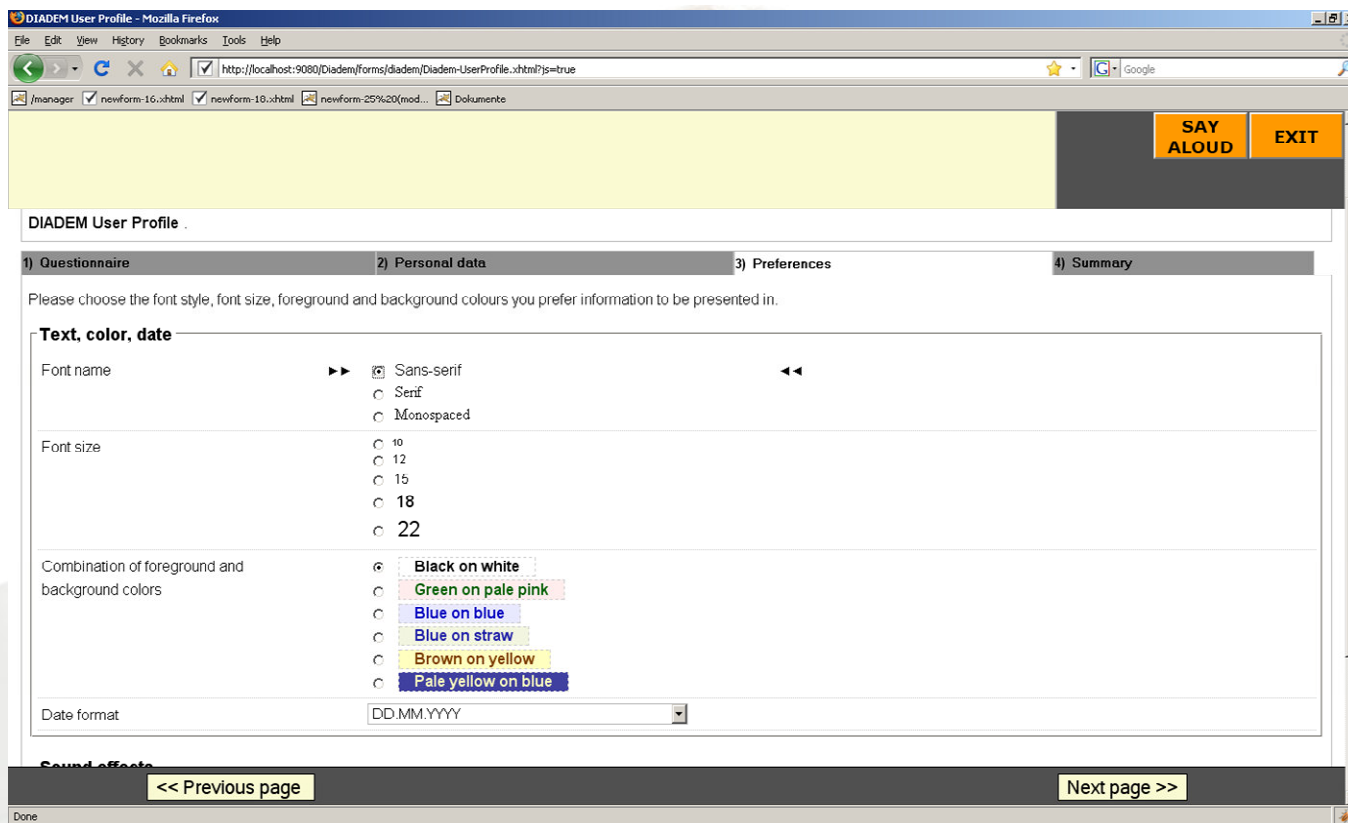
## ❖ Mapping of interactions to Cognitive Impairment Categories (CIC's)

- Attention & orientation, Memory, Fluency, Language, Visuospatial









- ❖ User preferences
- ❖ Brief cognitive exam

## Mouse clicks & location

- Field selections
- Navigation – tabs and buttons
- Missing active objects

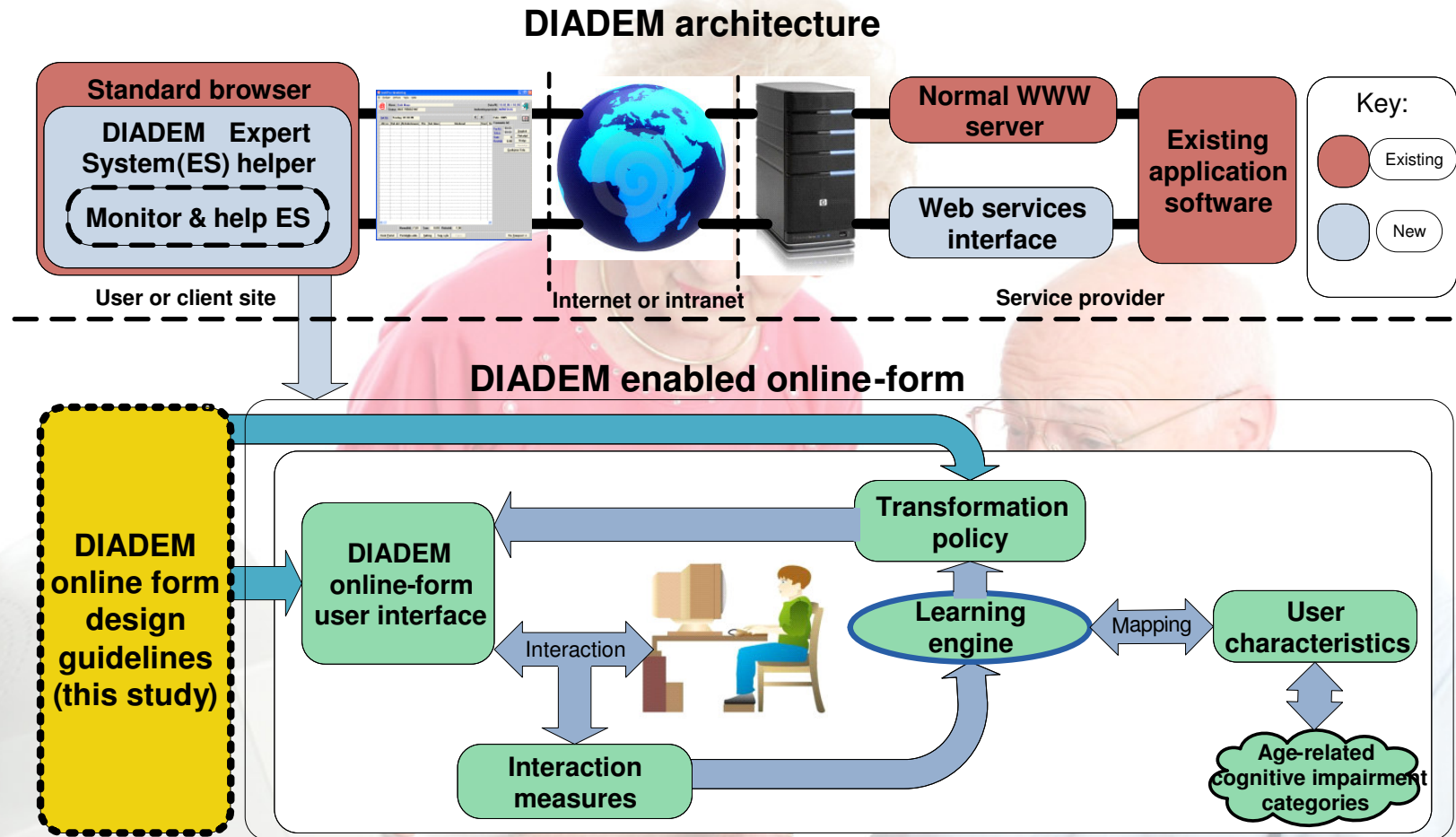
## ❖ Key presses

- Valid or invalid

## ❖ Field completions

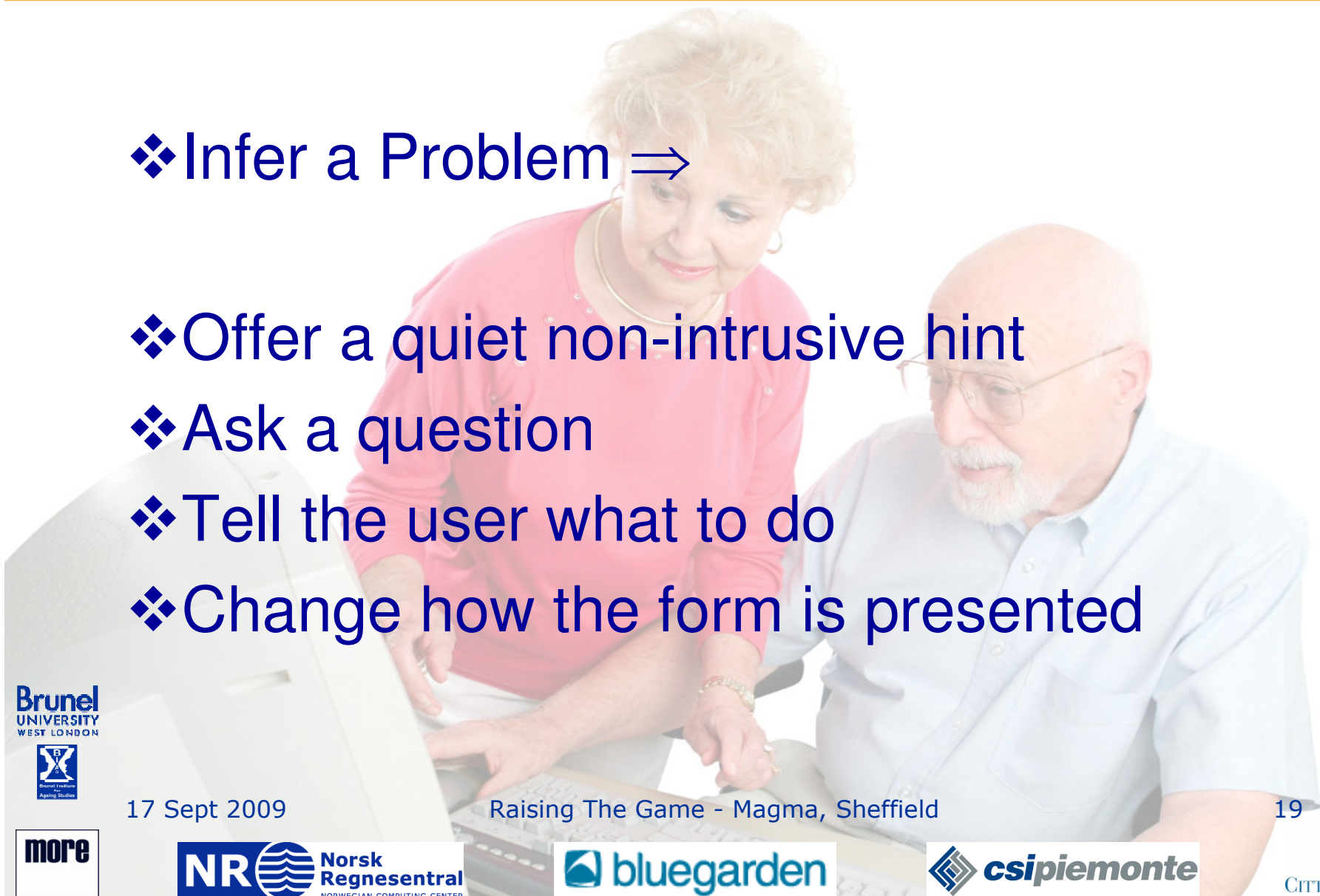
- Valid or invalid

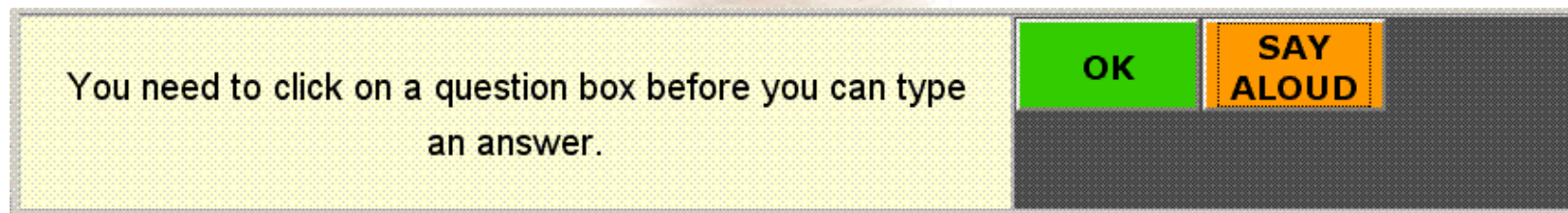
## ❖ Clock ticks





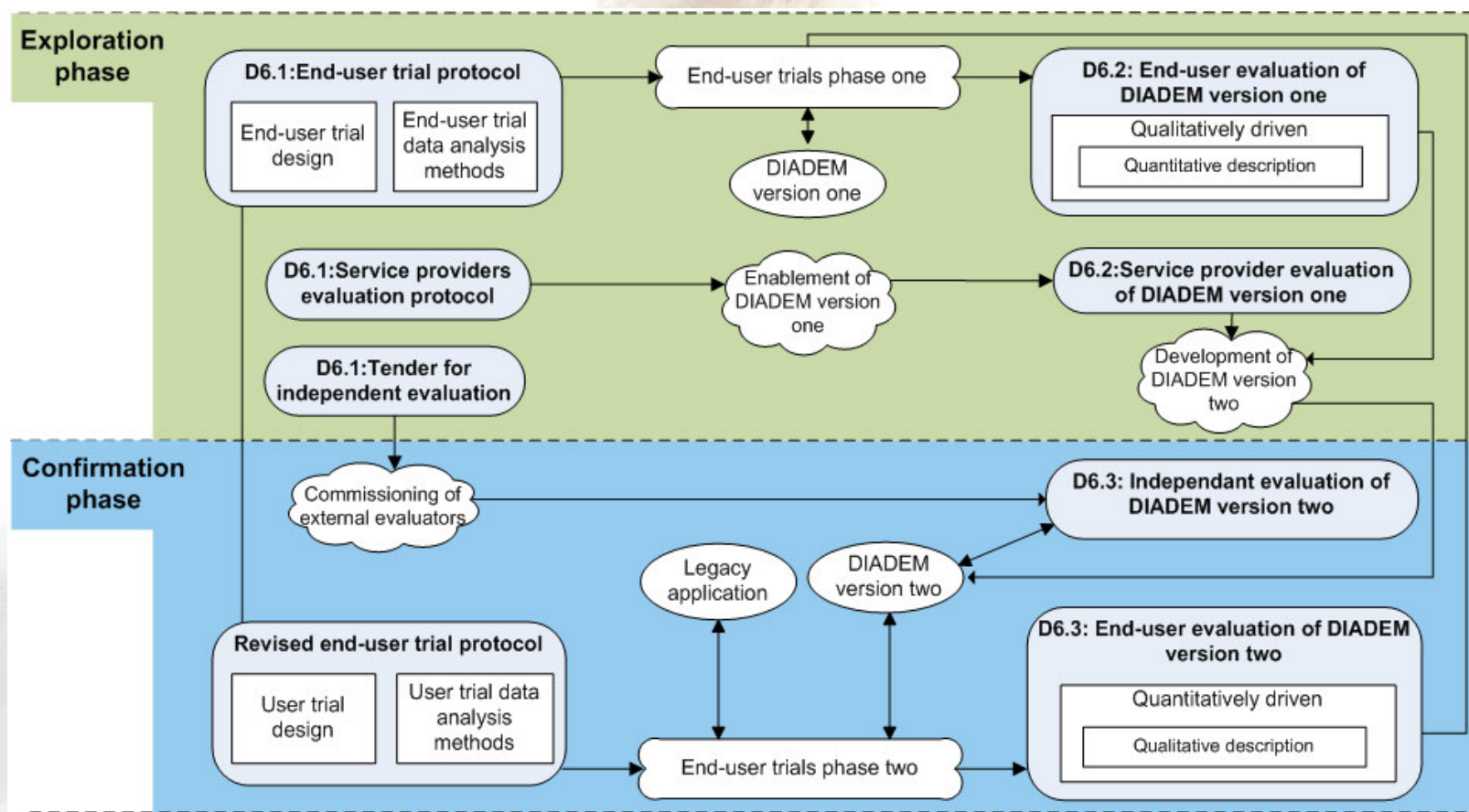
- ❖ Key press rate (last 5 minutes)
- ❖ Completed fields (last minute)
- ❖ Idle time % (last 3 minutes)
- ❖ Invalid fields (real-time/per session)
- ❖ Clicks outside an item (last 3 minutes)
- ❖ Key press outside an item (last minute)
- ❖ Clicks outside an item (per session)
- ❖ Key press outside an item (per session)

- 
- A photograph of an elderly couple sitting at a desk with a computer. The woman, with short blonde hair and wearing a pink top, is pointing at the screen. The man, with a white beard and glasses, is wearing a light blue shirt and looking at the screen. The text of the list is overlaid on this image.
- ❖ Infer a Problem  $\Rightarrow$
  - ❖ Offer a quiet non-intrusive hint
  - ❖ Ask a question
  - ❖ Tell the user what to do
  - ❖ Change how the form is presented

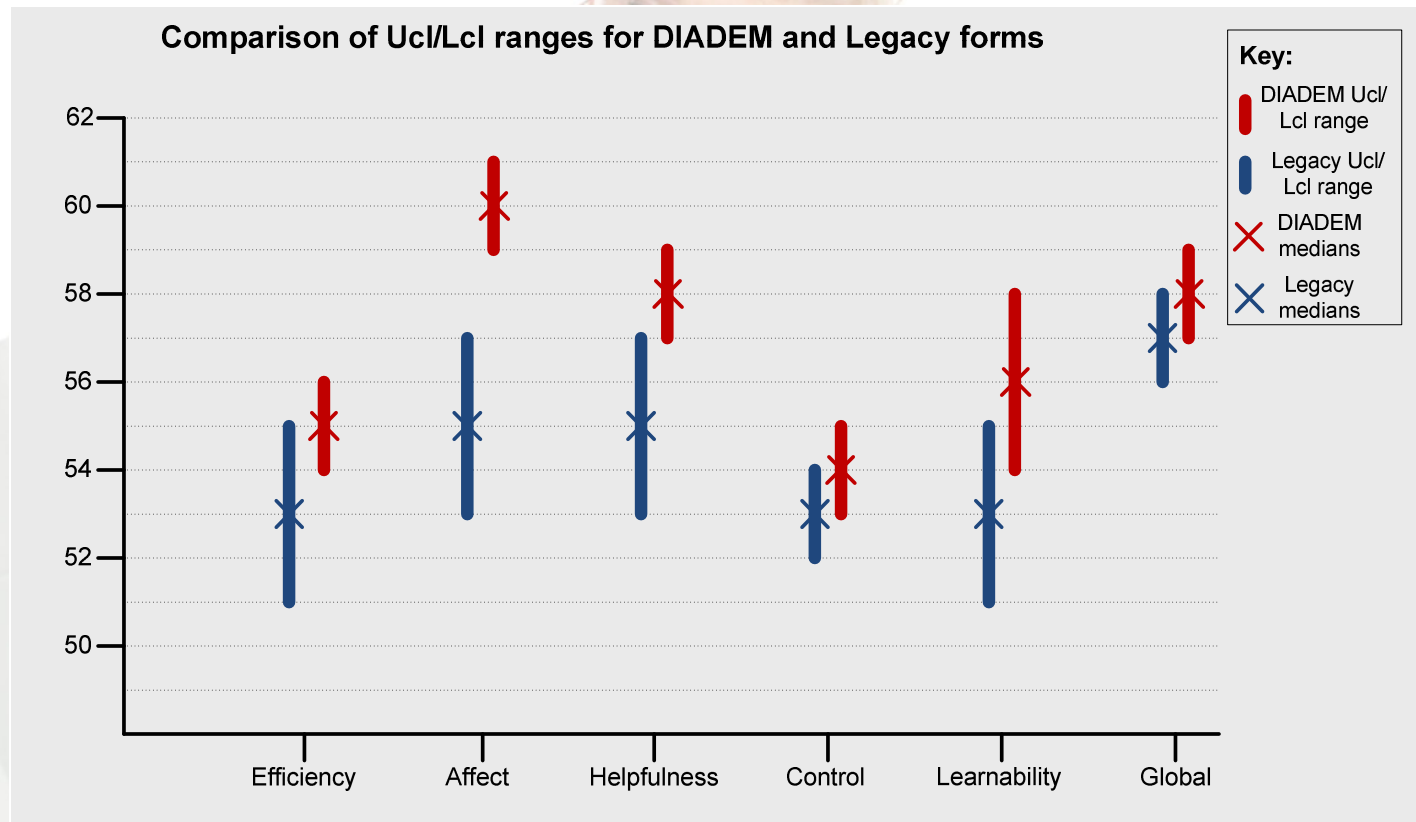


- ❖ Always visible at top of screen
- ❖ Text displayed without affecting focus or creating a popup
- ❖ Relevant buttons for interaction with DIADEM
- ❖ Help and audio support tracks context
- ❖ Data entry area cover for showing large texts or forcing attention

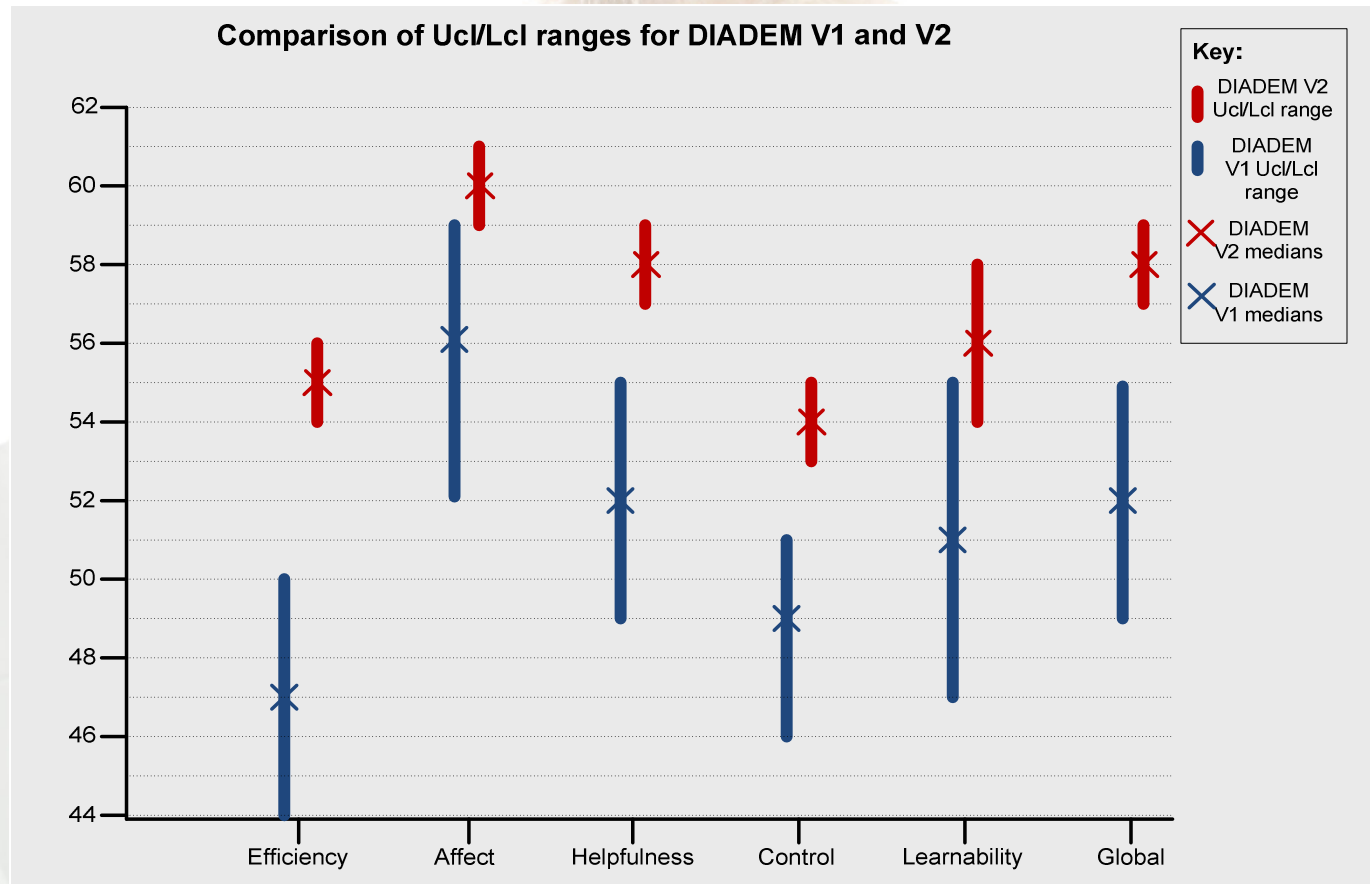




- ❖ Comparison between legacy and DIADEM forms
- ❖ Statistically DIADEM achieved significantly higher satisfaction scores compared with legacy forms



## ❖ Comparison between DIADEM versions one and two





- ❖ Overall positive about the notion of pro-active voice assistance
- ❖ Voice messages were clear and easy to understand
- ❖ Open minded towards offers of reconfiguration during a session
- ❖ Commented that the DIADEM interface was clearer and easier to understand compared with original versions
- ❖ Liked the pre-filling of input fields from profile information
- ❖ Summary page function was useful

- ❖ Finer tuning of the proactive assistance
- ❖ Inform the user of what has been changed after reconfiguration
- ❖ Provide function to turn off audio if required
- ❖ Provide help buttons alongside each input field
- ❖ Allow users to correct errors directly on the summary page
- ❖ Reduce amount of scrolling required, perhaps via wizard-like navigation
- ❖ Provide more detailed descriptions of why a field contains errors