

# Participatory User Interface Design with Aphasic Individuals

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## Research Goal

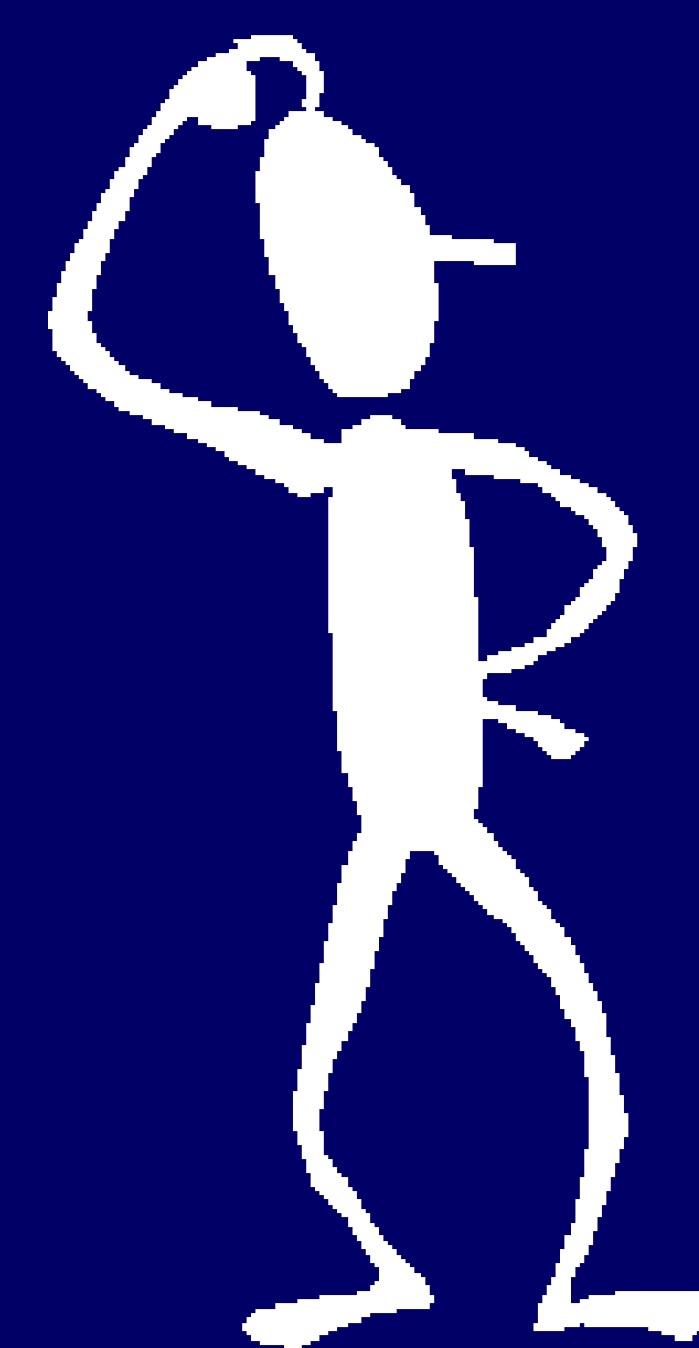
Investigate how technology can be designed to better support people with aphasia, contributing to the broad goal of universal usability.

## Participatory Design

Users are considered experts in the subject area and participate as equal members on the design team.

The water is overflowing..

The business here with the... umm...



## Research Questions

How is current technology addressing the needs of people with aphasia, and is it working?

How do cognitive deficits, such as memory, place limits on interface design?

How can effective interfaces be designed for small screen displays?

How can a system be designed to be adaptive and customizable by users and clinicians?

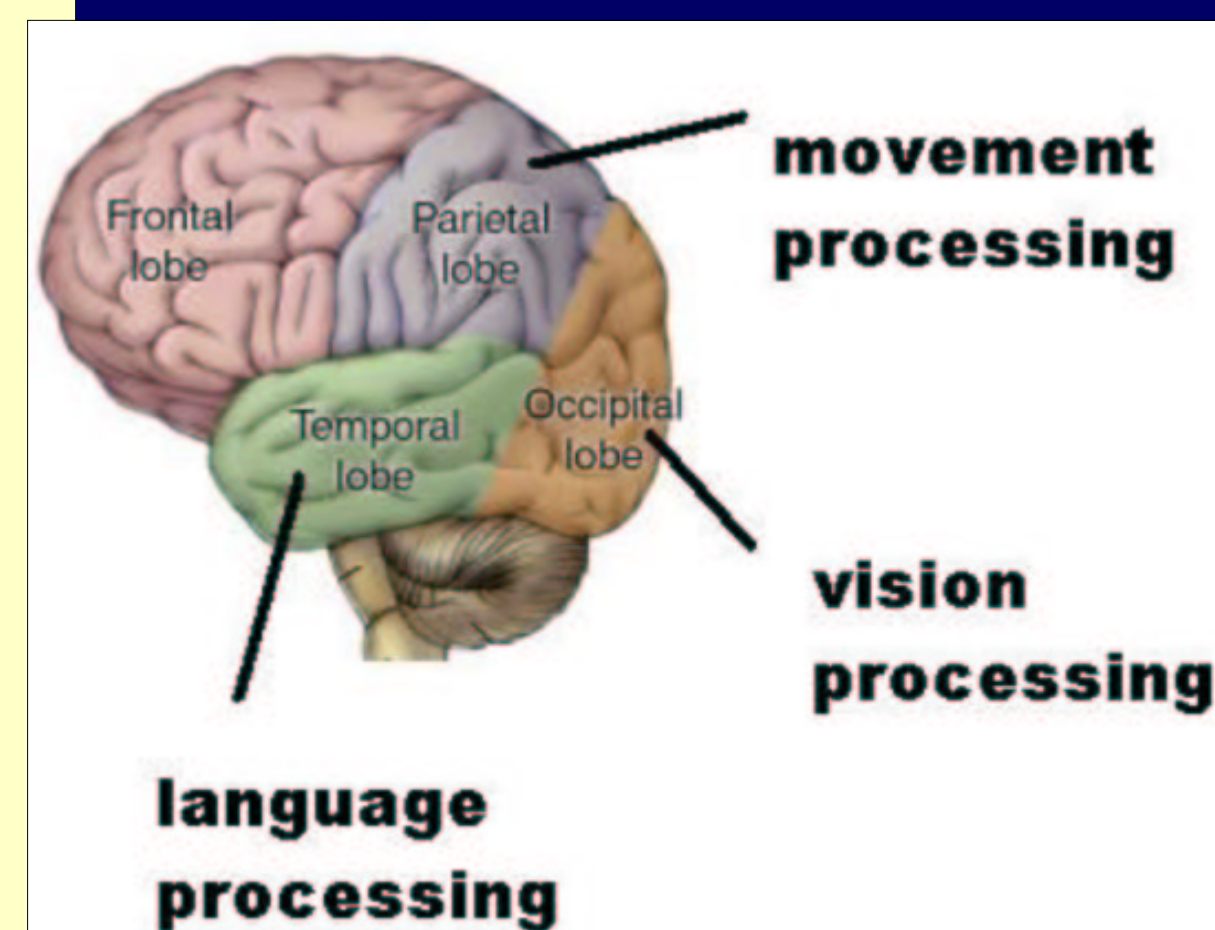
## What is Aphasia?

?A cognitive disorder that impairs language abilities: some or all of speaking, listening, reading, and writing

?It results from damage to the brain: stroke, trauma, tumors, infections

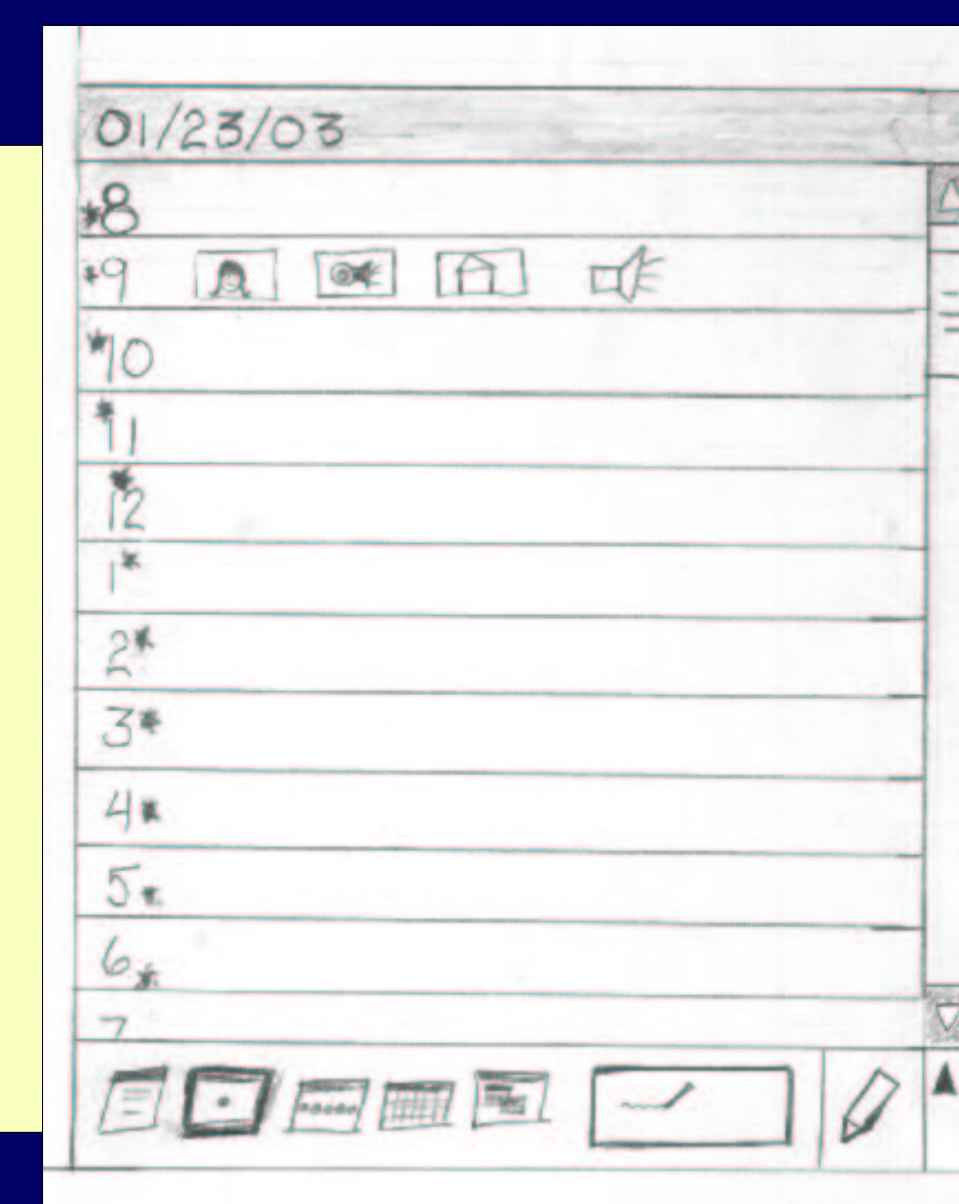
?It is acquired: it occurs in someone who previously had language ability

?It is *not* a deficit of sensation or intellect



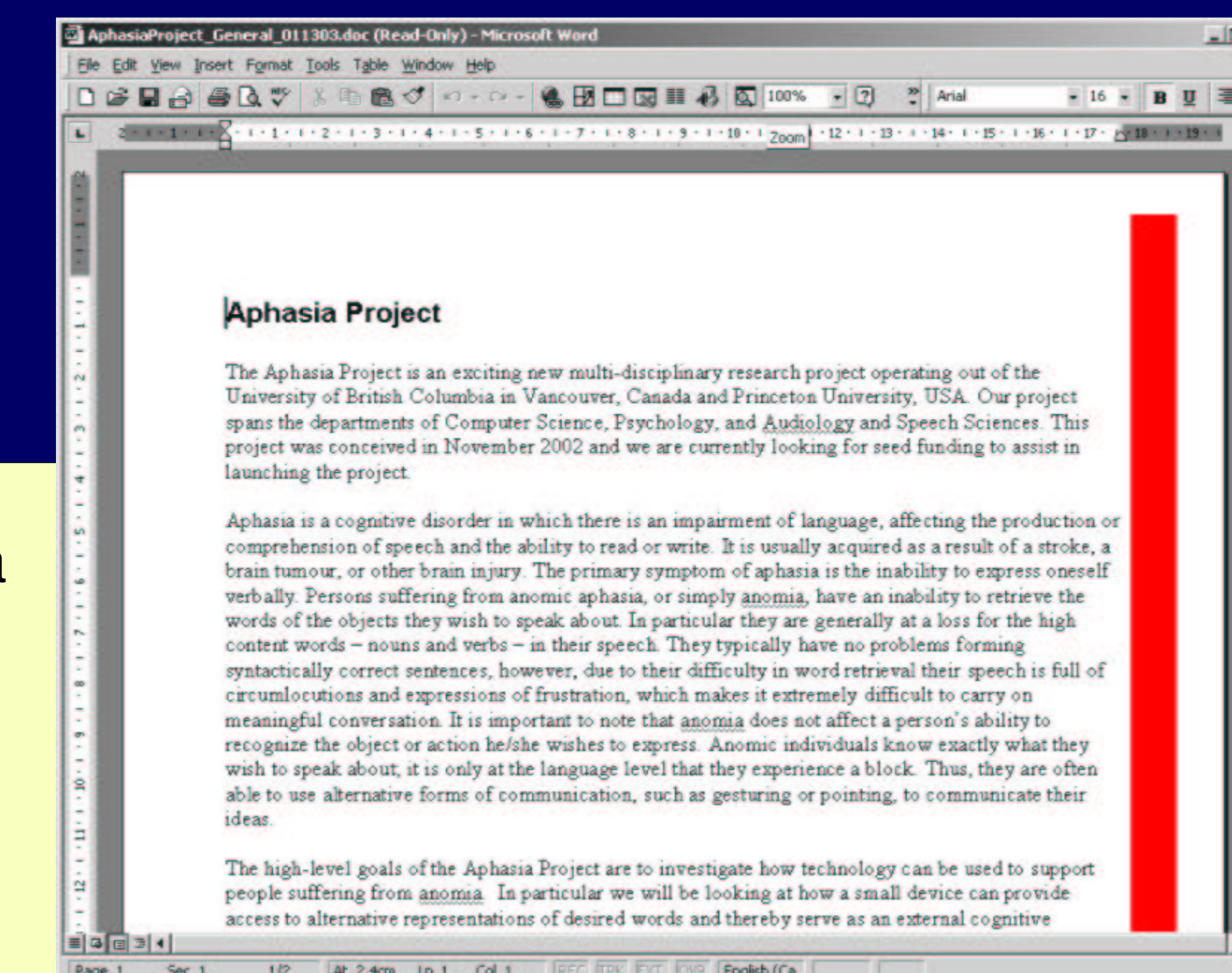
Relies on participant knowing his or her own abilities well enough to comment on them, an ability lacking in some aphasic individuals.

Prototypes were useful for generating a discussion on needs and desires.



Interface design must accommodate a range of deficits.

E.g. a bright line can help individuals overcome visual field and motor deficits on the right side.



Evaluation

Initial Research Interviews

Low-fi Prototypes

Low-fi Evaluation

Medium-fi Design

Medium-fi Prototypes

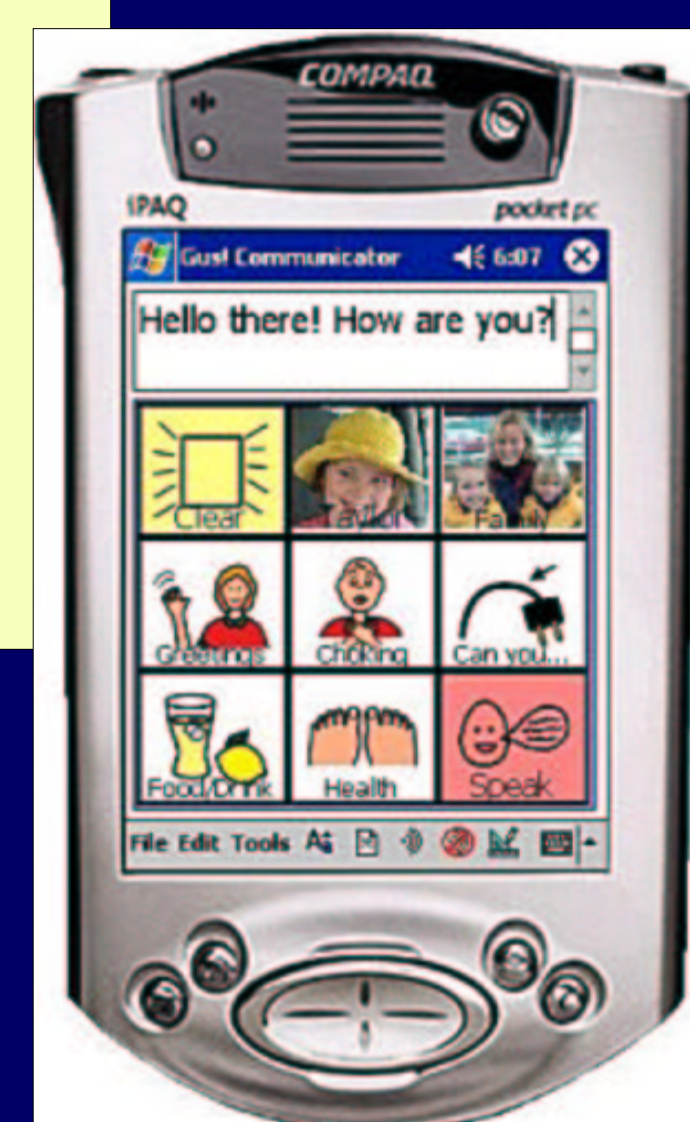
Medium-fi Evaluation

Design

Investigated ability of existing technologies to fulfill needs.

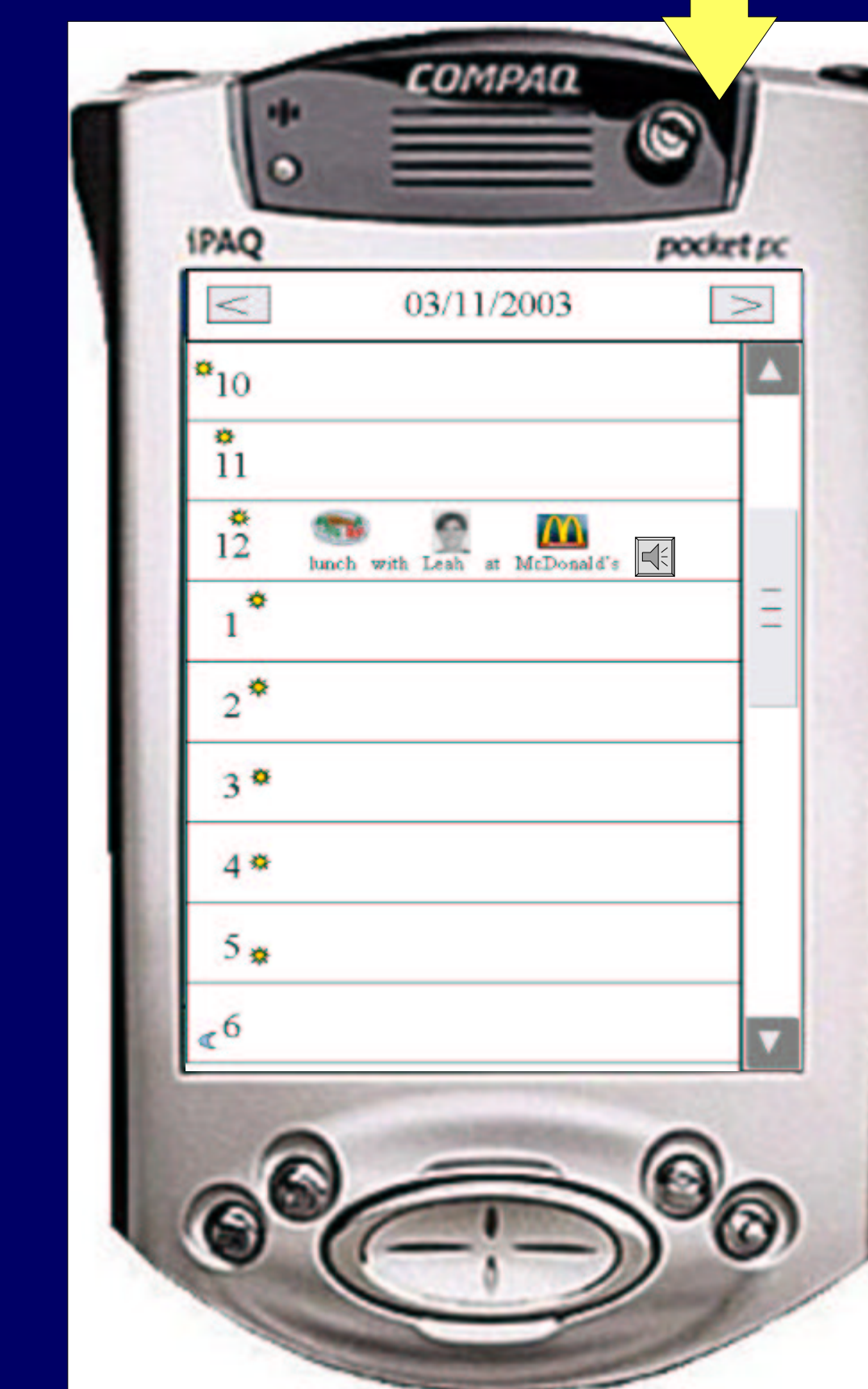
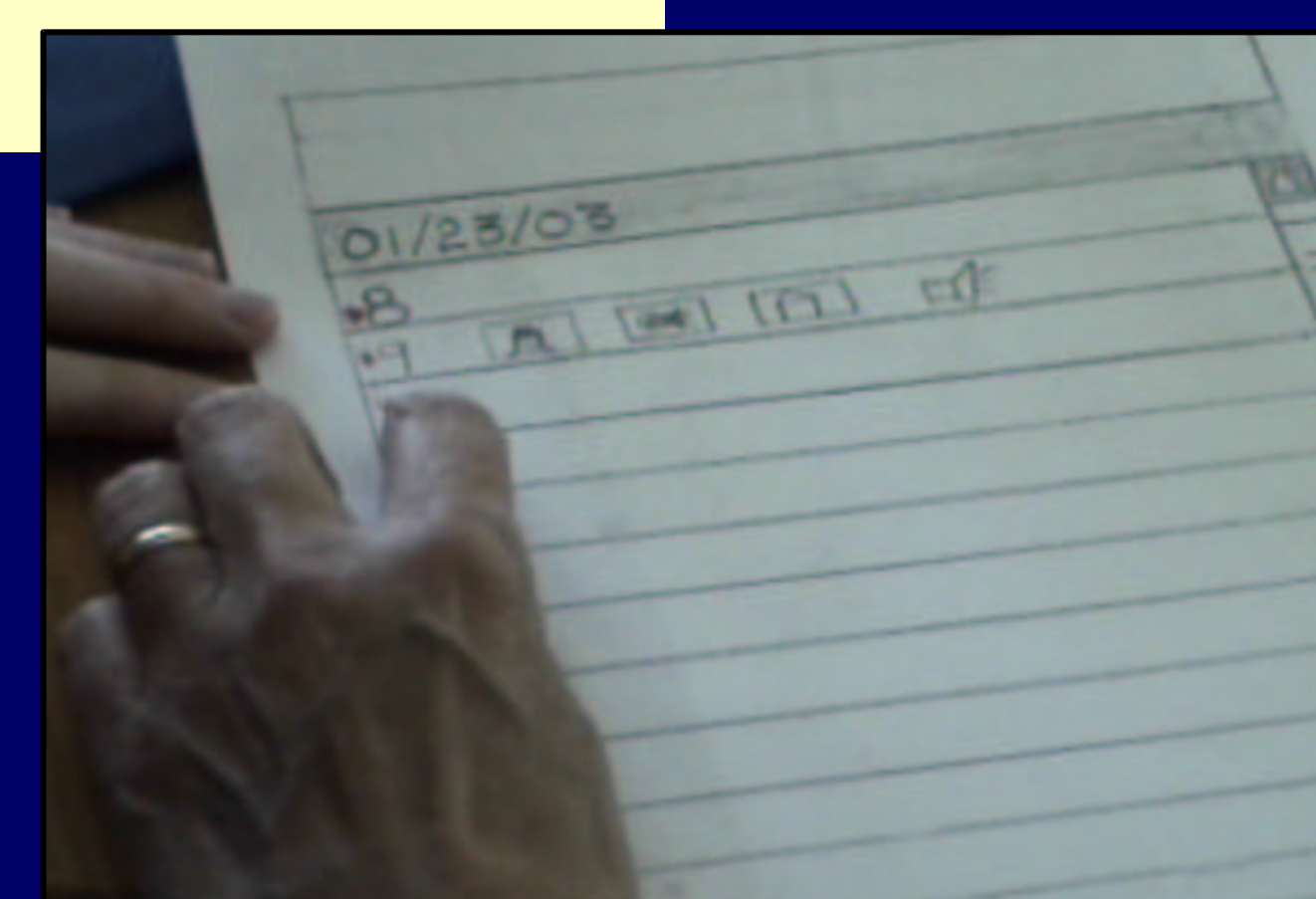
Extra time is needed to ensure participants have an opportunity to express themselves.

Discussions require the use of alternative communication techniques, such as drawing and gesturing.



Evaluated with two participants.

One had aphasia as a result of a brain tumour and the other as a result of a stroke.



Process needs to adapt to changes in abilities of participants:

E.g. fatigue, cerebrovascular recovery following stroke, deterioration due to tumor growth

Many thanks to the other members of the Aphasia Project:

Dr. Anita Borg, CEO and Founder Institute for Women and Technology, Aphasic Individual  
 Dr. Joanna McGrenere, Assistant Professor, Computer Science (HCI)  
 Dr. Maria Klawe, Adjunct Professor, Computer Science (HCI and Theory)  
 Dr. Peter Graf, Professor, Psychology (Memory and Cognition)  
 Barbara Purves, Clinical Associate Professor, School of Audiology and Speech Sciences

Implementation

Design Cycle