Design Research & Tangible Interaction

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Introduction

- The design research approach is increasingly used in the TI field.

- Design research approach taken from product design & industrial design fields.

- Design research can integrate human sciences, engineering and design

    - Designing within context

    - Iterative design & evaluation of prototypes

    - Start designing from existing physical activities

    - Surpass ease-of-use, move towards fun and engagement

From Tangible Interaction to Design Research

- Seen in design research

  - Shift towards complex interactive products

  - Focus not only on usability & efficiency, experience goals also important

  - Not only control and manipulate digital information,

    also make interaction physical and express functionality

- TI approach is related to Design approach

- TI as inspiration for product/interaction design

- Design as inspiration for TI development

A Design Research approach

• <u>Research through design</u> similar to <u>research through practice</u> [Archer]

    –   Depends on designer skills

    –   Applicable to specific situation

    –   Explore implications of theory in context

    –   Experimentation in real life situation

Why design research is useful

1. Investigate theory in context

2. Creation based on existing physical activities / products

3. Creation of several models/prototypes/demonstrators

4. Evaluation of prototypes for usability and experiences

5. Long term study of potential impact possible with more mature designs

Why design research is useful (1)

- Stimulates to investigate theory in context

    - Autobiographical Memory theory

    - Investigated in context

    - Cues needed for recollection

    - Physical objects used as cues

Why design research is useful (2)

• Facilitates creation of new design based on

existing physical activities or products

– Showing photos, videos and objects

using souvenirs

Why design research is useful (3)

- Learning by doing; creating several prototypes

  - From cardboard prototypes to a rich interaction

    camera

  - Learned:

    How products with TI take form

    Insight in values of TI principles applied to products

    Framework for designing TI products focusing on interaction itself
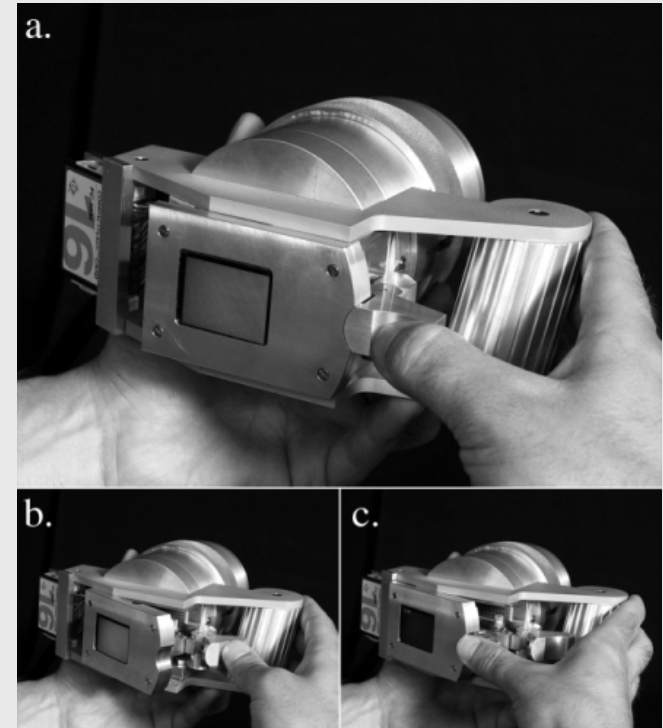
Why design research is useful (4)

- Evaluation with potential users

  – Iconic versus symbolic appearance

  – Test preference of novice and expert users

Why design research is useful (5)

• More mature designs allow for a longitudinal

"in context" study

– Several iterations of technology, usability and

graphical layout

– Think about alternative use of augmented reality beyond sketching

– Qualitative feedback from architects and designers

Discussion

• Miniaturization creates new opportunities for TI

• Ambient intelligence will create many possibilities for TI objects

• Handling these groups of objects in our everyday world asks for

  a design research approach

Conclusion

- Research through design combines research methodology with design methodology, integrating knowledge from different areas of research into relevant highly experiential *prototypes* that can be seen as *physical hypotheses*.

- We believe this approach is useful for the field of Tangible Interaction.

Thank you for your attention.

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