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

- Research through design similar to research through practice [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

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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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