Mini project: Supporting the learning of skills

Prototyping Tool for Architects

Angeliki, Ioannis, Jonathan, Rafal

Results of design research

Identified problem areas from User Profiling and Task Analysis:

- Concept
- Time management
- Teamwork
- Communicating ideas
- Handling errors
- Crafting skills
- Sketching models

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- Teamwork
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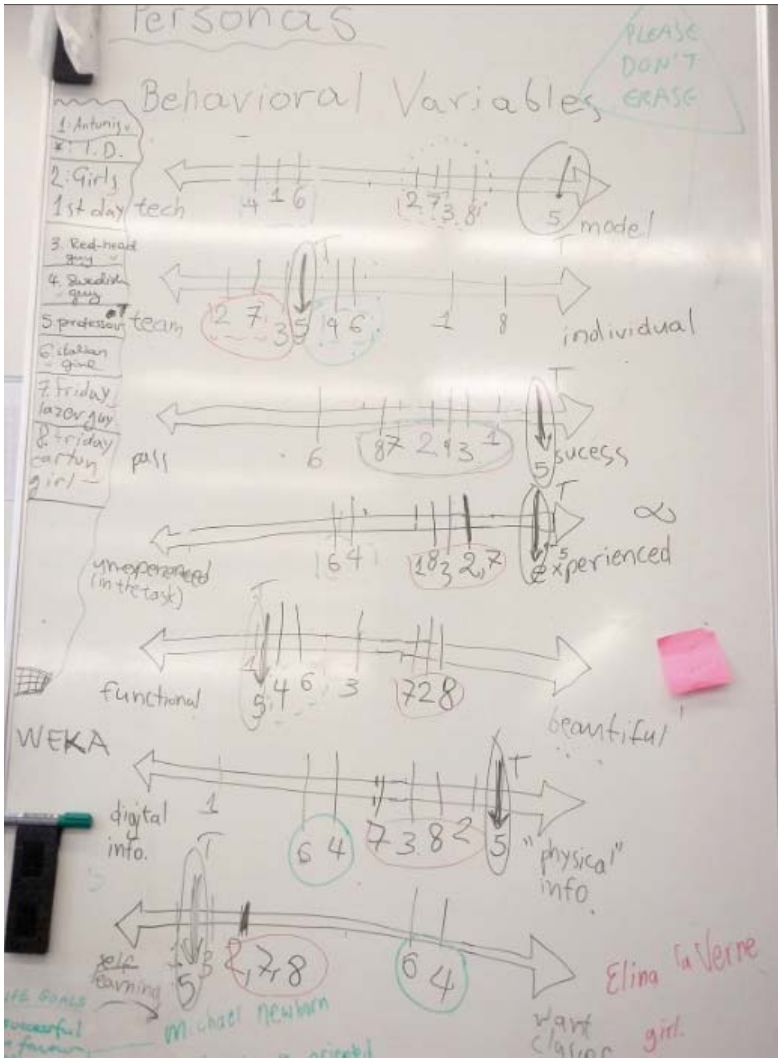
- **Sketching models**

Creating Personas



Primary Persona

Michael Newborn, 20 yrs old
2nd year BSc student of Architecture, TU/e

Characteristics:

- Tech – oriented
  - Prefers 3D models
  - Inspiration through digital sources
- Success motivated
- Fast and efficient
- Individual & group worker

Needs:

- Communicate ideas
- Misses crafting courses
- Misses tool for fast crafting of models

Secondary Persona

Elina Laverne, 22 yrs old

MSc Student, Architecture Building and Plan

Characteristics:

- Model-oriented
- Ambitious
- Individual & group worker
- Difficulty with time management
- Patient & percise

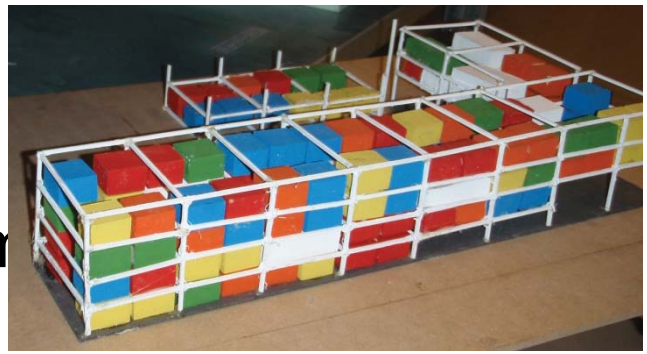
Goals:

- Building beautiful & detailed models
- Access to reliable literature for inspiration

The project goal

“Design a tangible platform for quick and easy model prototyping by architecture students”

Now



- ‘Drawing a lot of sketches
- Using self made pieces of foam

Disadva

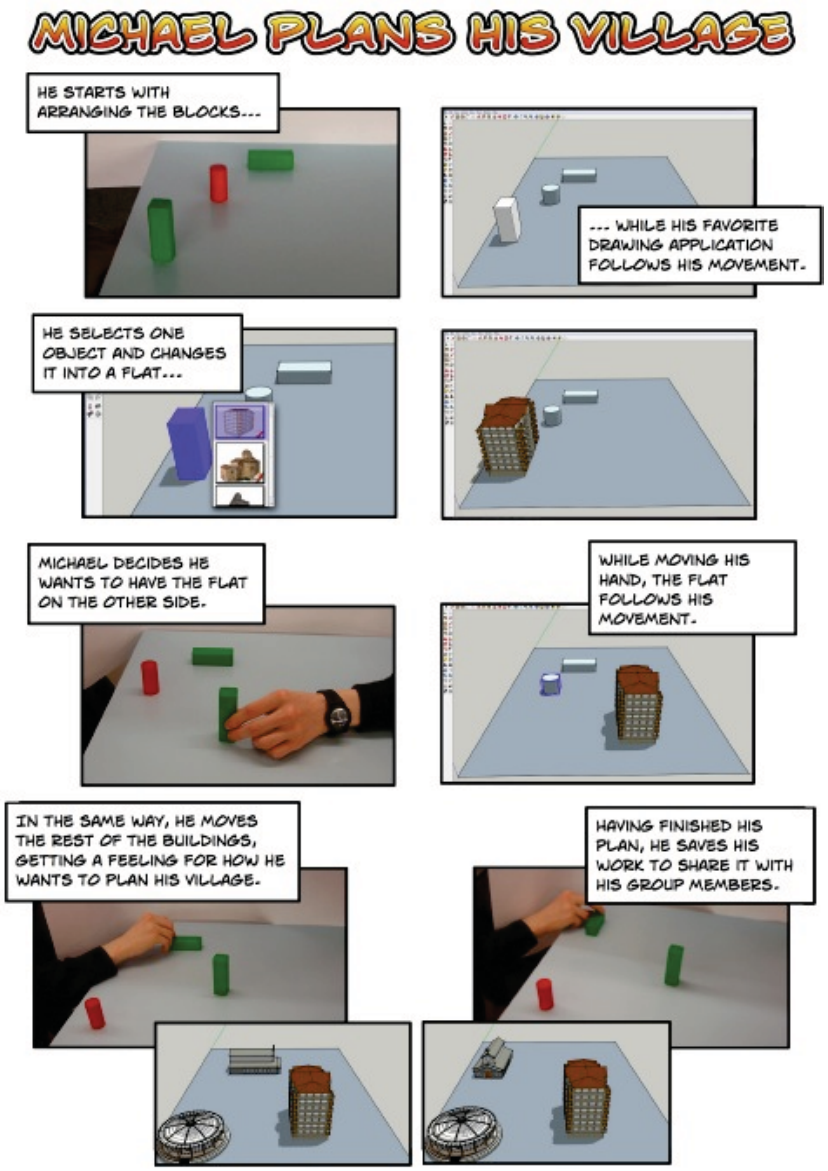
can only manipulate generic foam shapes, has no visualisation of how the real models would look like and interact in the environment

- - has to visualize everything in his mind
- - has to cut foam pices every time

The concept

- Simultaneous manipulation of generic physical shapes and 3D graphics
  - Inspiration
  - Motivation
- Bridges the gap between physical & software model prototyping

The concept


MICHAEL PLANS HIS VILLAGE
HE STARTS WITH ARRANGING THE BLOCKS...
... WHILE HIS FAVORITE DRAWING APPLICATION FOLLOWS HIS MOVEMENT.
HE SELECTS ONE OBJECT AND CHANGES IT INTO A FLAT...
MICHAEL DECIDES HE WANTS TO HAVE THE FLAT ON THE OTHER SIDE.
WHILE MOVING HIS HAND, THE FLAT FOLLOWS HIS MOVEMENT.
IN THE SAME WAY, HE MOVES THE REST OF THE BUILDINGS, GETTING A FEELING FOR HOW HE WANTS TO PLAN HIS VILLAGE.
HAVING FINISHED HIS PLAN, HE SAVES HIS WORK TO SHARE IT WITH HIS GROUP MEMBERS.

The concept

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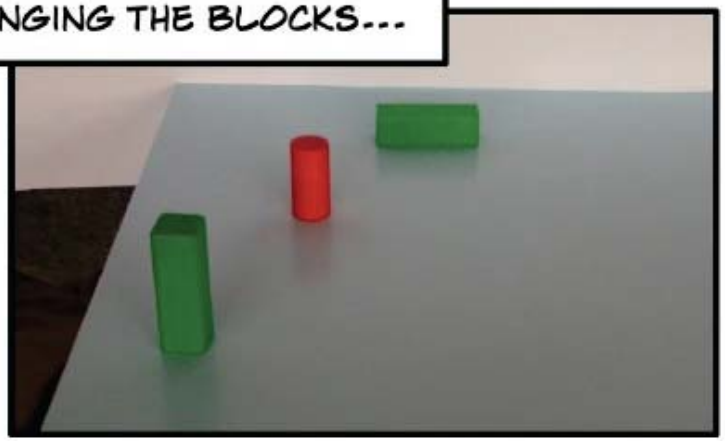

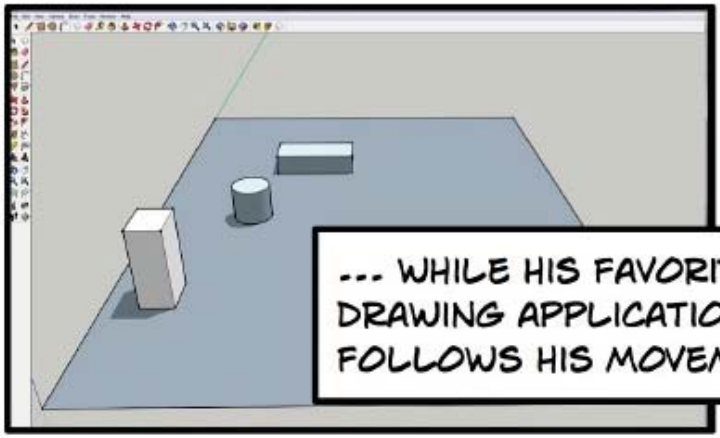

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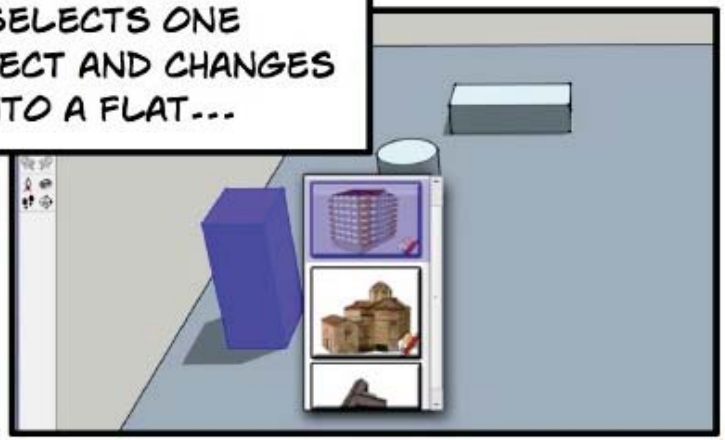

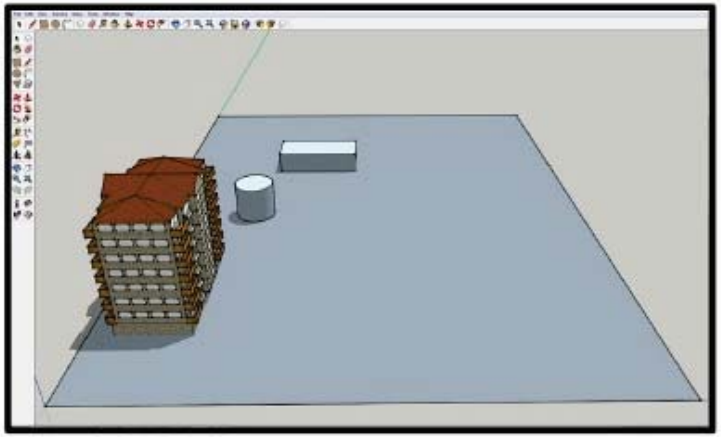

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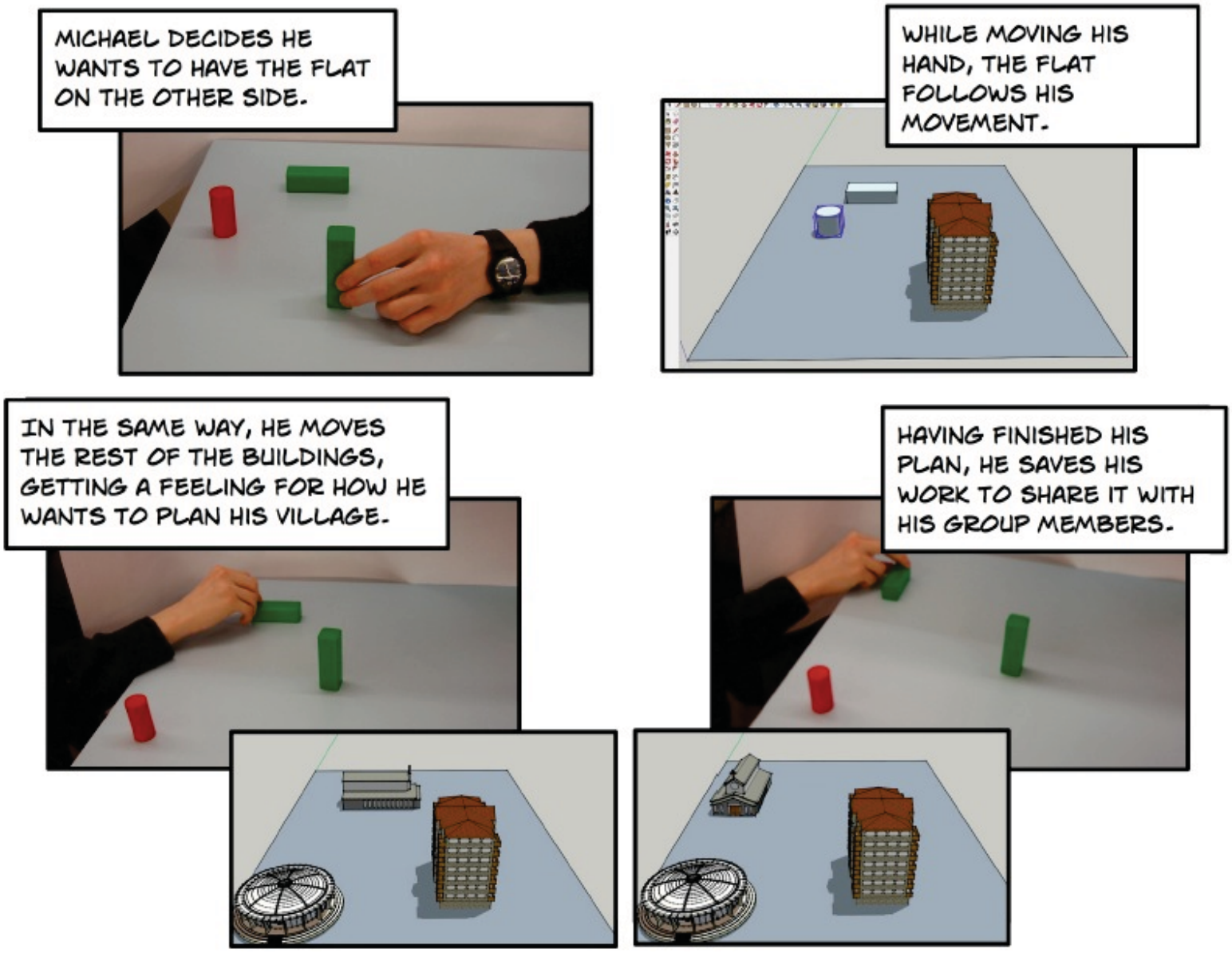
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Advantages

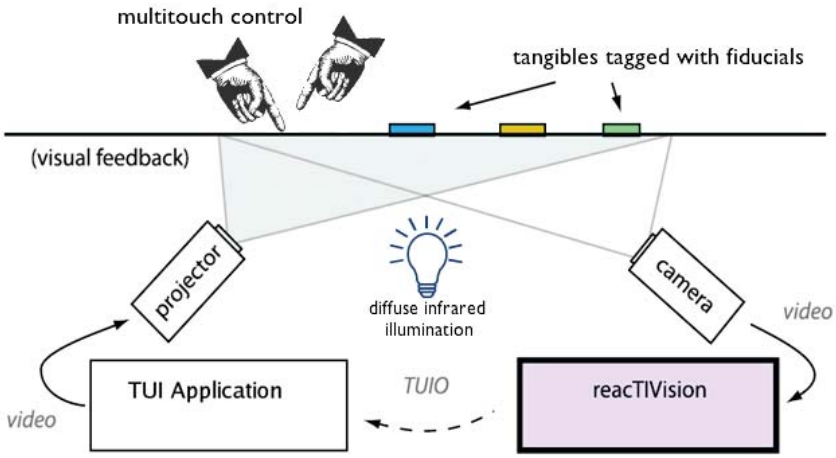
- Fuels imagination
- Combination of representations
- Tangibility (metaphors)
- Ease of manipulation
- Digitization of prototypes
- Game feel
- Quick communication

Challenges

- ? Always good to point out the weaknesses as well.

Feasibility

Picture
jonathan



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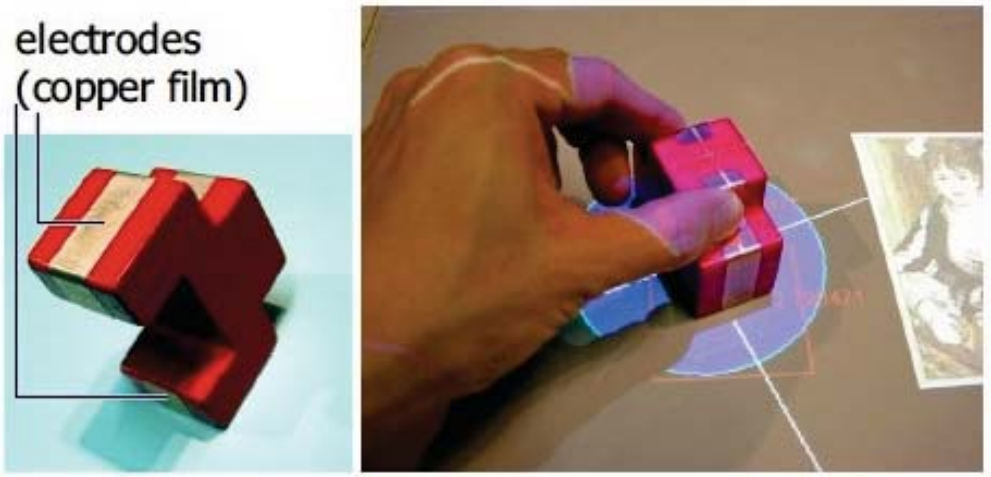

Using a conductive pattern to identify the object

"… the geometry of the patterns indicates the position and orientation of the tag block. Simultaneous object identification and position tracking is a key technology for many post-GUI user interface systems."

(Rekimoto, 2002)

Further reading

- Hornecker, E. and Buur, J. (2006). Getting a Grip on Tangible Interaction
- Ishii, H. (2008) Tangible Bits: Beyond Pixels
- Kaltenbrunner, M. and Bencina, R. (2007). reacTIVision: A computer vision framework for table based tangible interaction
- Rekimoto, J. (2002). SmartSkin: An Infrastructure for Freehand Manipulation on Interactive Surfaces