Finding and putting an idea into action

Self-reflecting and reporting experiences
of approaching a "mini-thesis" project

Invited lecture

Linnéuniversitetet
Institutionen för medieteknik
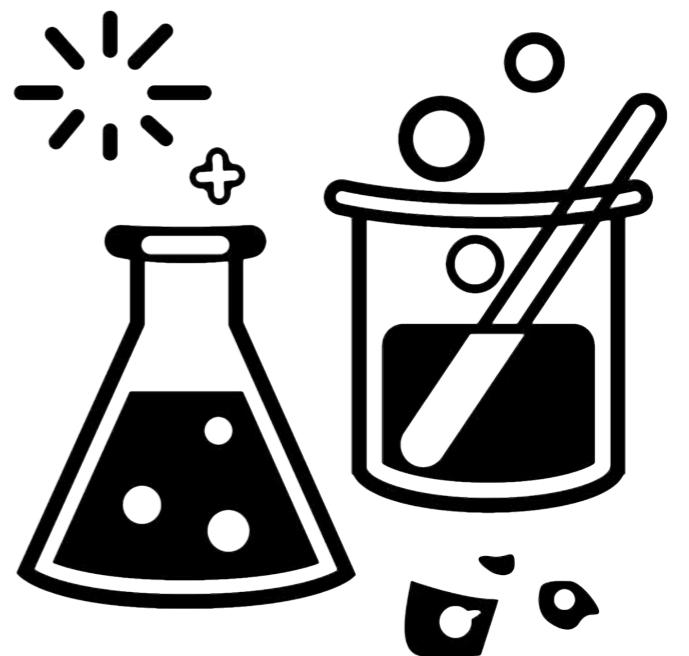
Generalized

1. Finding an idea

2. What (research) questions to ask

3. Getting the scope right

4. Supervision and collaboration

5. Mini-thesis writing and structure

6. Peer-Review and feedback

7. Outcomes

8. Closing comments

Self-reflection

Approaching a mini-thesis

Finding an idea

- First question to ask:

  What are YOU interested in?

- Potential approaches:

  - **Idea-initialized**

    You have a (concrete) idea and are exploring

    possibilities of implementation.

  - **Technology-initialized**

    You are interested in a specific technology and are

    exploring scenarios to use it.

What (research) questions to ask?

- With your idea at hand:

    - What is the problem domain?

    - What are the needs?

    - What is your motivation?

- Try to get the bigger picture!

- Try to find your angle/niche!

What (research) questions to ask?

- Before defining concrete (research) questions, try to define the overall aim of your investigation in one sentence!

- GQM (Goal/Question/Metric) [1]

    - Purpose

    - Issue

    - Object

    - Viewpoint

[1] V. R. Basili, "Software modeling and measurement: the Goal/Question/Metric paradigm," University of Maryland at College Park, 1992.

GQM example

- Example: You are interested in visualization approaches for social networks within immersive virtual reality environments.

Purpose:	Identify requirements, features and interaction possibilities
Issue:	to explore, move and navigate
Object:	in dynamically changing social network visualizations
Viewpoint:	within immersive virtual reality environments.

NABC method <small>**Stanford Research Institute (SRI)**</small>

- Method to pitch/explain an idea in a straight forward way

- Process of creating the pitch also helps you to understand (and develop) your idea yourself

Hook

- **N**eed

- **A**pproach

- **B**enefit

- **C**ompetition

Offer

NABC: How to develop an idea by Sheffield Doc/Fest via YouTube

What (research) questions to ask?

- Derive research questions!

- Based on your overall aim, and typically in the context of Media Technology, you probably end up asking questions related to

    - Technology

    - Human-Computer Interaction (HCI)

    - mixture of both Technology + HCI

Getting the scope right

- This is just a "mini"-thesis!

- Consider that you might end up performing the following tasks:

  - Basic background research

  - Implementation of a small prototype

  - Conduct a user study

  - Report

- Course duration: 10 weeks = better get going now! :)

Getting the scope right

- Main message:

  Consider feasibility of your project goal and the amount of effective time you have available!

- If your initial project idea seems to big, carefully pick just a part of it for the mini-thesis, and consider continuing with the project in your final thesis.

- If you are not sure about the feasibility =

  Get advice from your supervisor!

Supervision and collaboration

- Staff at Department of Computer Science and Media Technology has a vast diversity of competences.

- Find a supervisor as early as possible!

- Open and honest dialog about your project.

- Aim to have weekly (!!!) milestones and meetings, so you can report on what you have done.

Mini-thesis writing and structure

Abstract

1. Introduction and motivation

2. Problem domain and research questions

3. Related work

4. Methodological considerations

5. Conceptual design and technical approach

6. Results and analysis

7. Conclusion

8. Future work
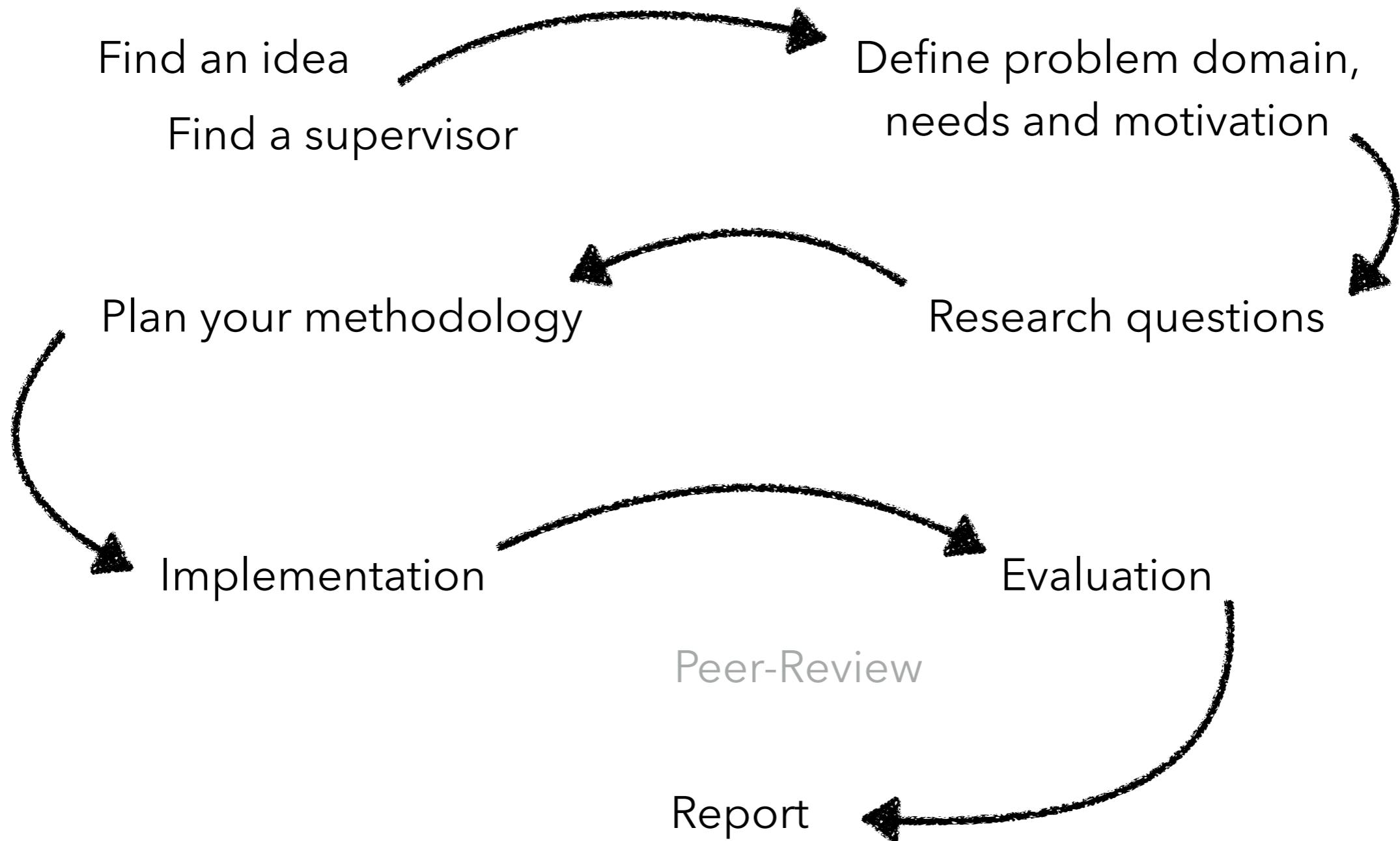
Peer-Review and feedback (optional)

- You are going to review the mini-thesis progress of a class mate and provide comments.

- In return, a class mate will review your mini-thesis progress and provide comments to you.

- Valuable feedback from both your examiner and class mate. Therefore it is important that you report your work thoroughly in the written mini-thesis!

Outcomes

- Small, stand-alone project illustrating the whole thesis workflow:

  Idea - Problem - Methodology - Implementation - Evaluation - Conclusion

- You earned insights and collected experiences.
  Don't underestimate that!

- You may, or may not, continue with your project in your final thesis.

Workflow

Find an idea → Define problem domain, needs and motivation

Find a supervisor

Plan your methodology ← Research questions

Implementation → Evaluation

Peer-Review

Report

Closing comments

- Great format and opportunity to explore a topic you might have no prior knowledge in.

- *(Optional)* If you know you are clearly interested in a specific topic, try to plan ahead and aim to combine it with your final thesis project. Get advice from your supervisor!

Self-reflection

My mini-thesis proposal

**4ME112
Advanced Topics in Media Technology
Social Media and Web Technologies, LNU**

Exploration and navigation in social networks
using a virtual reality environment
and motion controls

4ME112: Mini-Thesis proposal - VR by Nico Reski via Vimeo
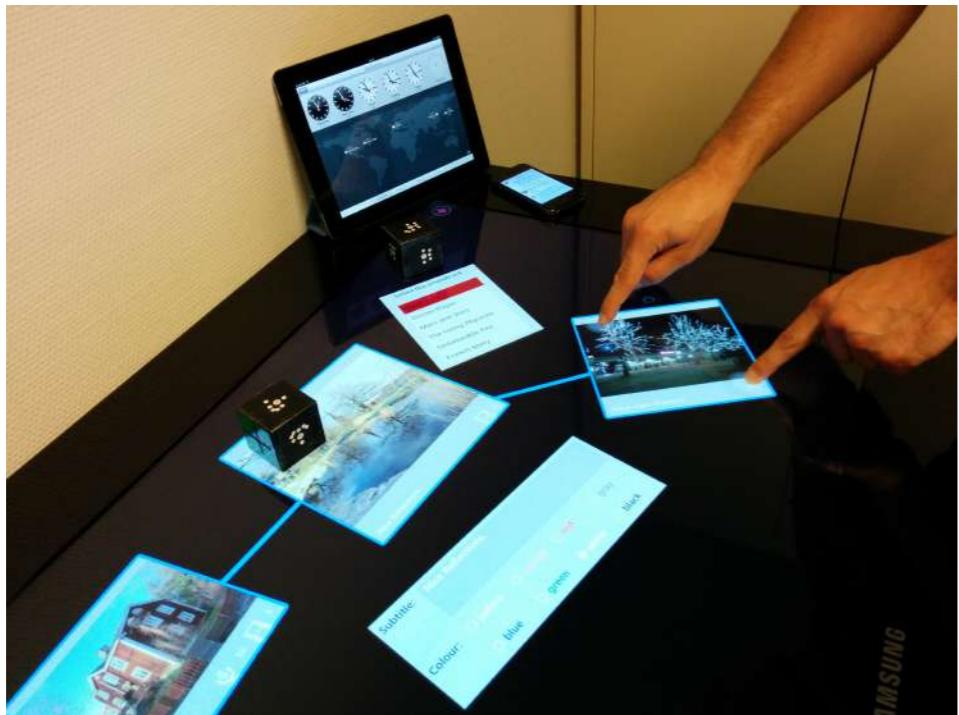
My mini-thesis proposal

- Content and idea presented in the proposal video =
  Way out of scope :)

- After revision with supervisor:
  Initial thoughts got boiled down to cover only a very specific aspect in the scope of the mini-thesis.

Exploring interface design approaches to visualize content generated by and related to social networks within an immersive virtual reality environment

Mini-Thesis Presentation

1. Introduction and motivation
2. Problem domain and research questions
3. Methodological considerations
4. Conceptual design and technical approach
   1. Conceptual design
   2. Technical approach
5. Results and analysis
6. Conclusions

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Final Fantasy XIII via http://deadendthrills.com/

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Images via http://deadendthrills.com/

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Problem domain:

- Virtual Reality using head-mounted displays

- Immersive interaction / Natural User Interface

- Non-games related context

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Purpose: Explore and investigate

Issue: how to naturally interact

Object: with content generated by and related to social networks

Viewpoint: in an immersive virtual reality environment

using head-mounted displays.

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Mini-Thesis RQ:

What interface design approaches and interaction guidelines should be considered when creating applications for usage within an immersive virtual reality environment?

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

- Literature survey
    - Automatic search / manual selection
    - identified relevant databases, keywords and key researchers in the field

- Automatic search: 44 results
- Manual selection: 18 sources considered relevant

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies
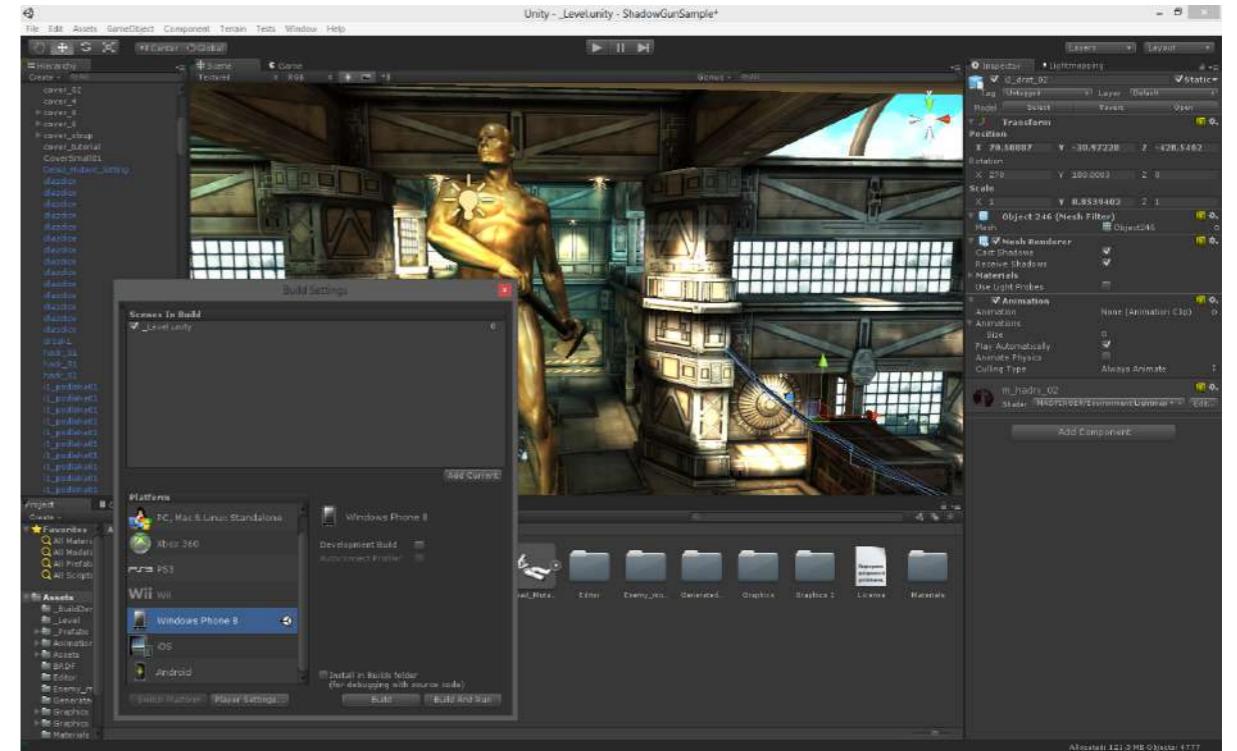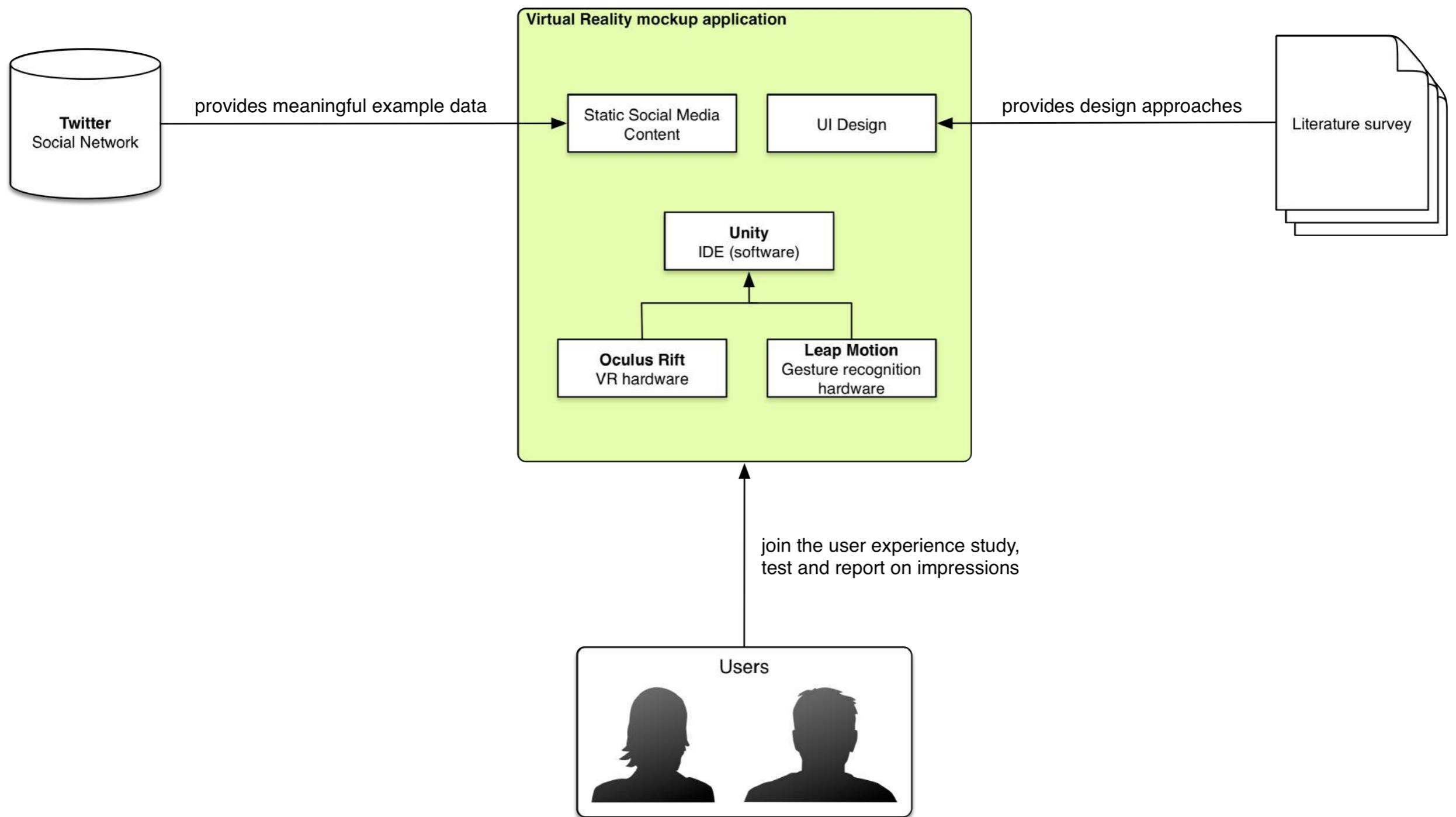
Oculus Rift DK2 // Source

Unity // Source

Leap Motion // Source

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

Virtual Reality mockup application

Twitter
Social Network

provides meaningful example data

Static Social Media
Content

UI Design

provides design approaches

Literature survey

Unity
IDE (software)

Oculus Rift
VR hardware

Leap Motion
Gesture recognition
hardware

join the user experience study,
test and report on impressions

Users

- Perception of the presented content
- Perception of the vision-based motion controls
- Evaluation of the content transition effects
- Human factors and ergonomics
- Overall feedback

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

- Appreciation: Intuitiveness of consuming the displayed content through naturally looking around in 3D space
- Hand gesture controls: perceived highly enjoyable
- Instant or fast transitions / animations: less likely to find user acceptance
- More affordance is necessary in order to indicate which virtual objects are manipulable and how

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

- Physical location: Impact on application usage
  - Desk: Provides haptic feedback and orientation
  - Swivel chair: Support of head rotation movements
- Ideal content placement: In front and on the sides
  - Arranging content too far to the user's side or even behind were not perceived ideal

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

4ME112 - Mini-Thesis - Timetable

Activity	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45
	01.09. - 07.09.	08.09. - 14.09.	15.09. - 21.09.	22.09. - 28.09.	29.09. - 05.10.	06.10. - 12.10.	13.10. - 19.10.	20.10. - 26.10.	27.10. - 02.11.	03.11. - 09.11.
Initial mini-thesis topic survey	■	■								
First (mini-) thesis proposal draft		■								
Presentation of (mini-) thesis proposal draft			■							
Finalizing thesis proposal draft and mini-thesis proposal			■	■	■					
Presentation of final mini-thesis proposal					■	■				
Literature survey				■	■	■	■			
Design of mockup VR application					■					
Implementation of mockup VR application						■				
Preparation of user experience study						■				
Conduction of user experience study							■	■		
Data analysis								■	■	
Report of results									■	■

Linnæus University
Sweden

4ME112 - Advanced Topics
in Media Technology

© Nico Reski
Social Media and Web Technologies

"Post- mini-thesis -era"

- continuation of the overall mini-thesis efforts within the final thesis project; topic slightly changed (but this is normal too)

Thesis

Reski, N. (2015). "Change your Perspective: Exploration of a 3D Network created with Open Data in an Immersive Virtual Reality Environment using a Head-mounted Display and Vision-based Motion Controls", Student thesis in Social Media and Web Technologies (M.Sc.) at Linnaeus University. October, 26, 2015, Växjö, Sweden, p 194.

Conference paper

Reski, N., and Alissandrakis, A. (2016). Change your Perspective: Exploration of a 3D Network created from Open Data in an Immersive Virtual Reality Environment, in Proceedings of the 9th International Conference on Advances in Computer-Human Interactions (ACHI 2016). April, 24-28, 2016, Venice, Italy. pp 403-410.

Contact
Nico Reski

reski.nicoversity.com

@nicoversity

nico.reski@lnu.se
(PGP Key ID: B061D75B,
PGP Fingerprint: E826 C9FF 1701 0BAC
CA98 308C 6772 4499 B061 D75B)

Office: HUS D 2269 A
VRxAR Labs
Department of Media Technology
Faculty of Technology
Linnaeus University, Växjö

Additional references

Portal icons in the presentation available via

bit.ly/portaliconpack