

Finding and putting an idea into action

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

Invited lecture

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 Stanford Research Institute (SRI)

- 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

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 too 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 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



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

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





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



Images via <http://deadendthrills.com/>

Problem domain:

- Virtual Reality using head-mounted displays
- Immersive interaction / Natural User Interface
- Non-games related context

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.

Mini-Thesis RQ:

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

- 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



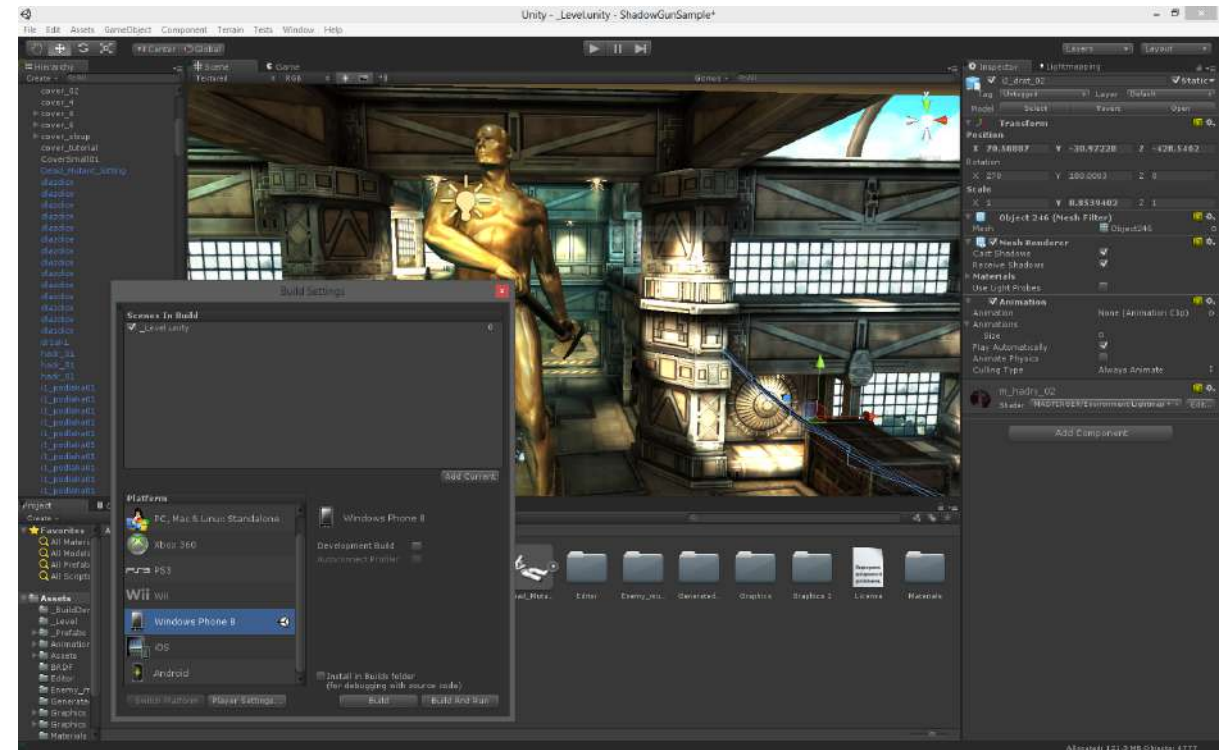




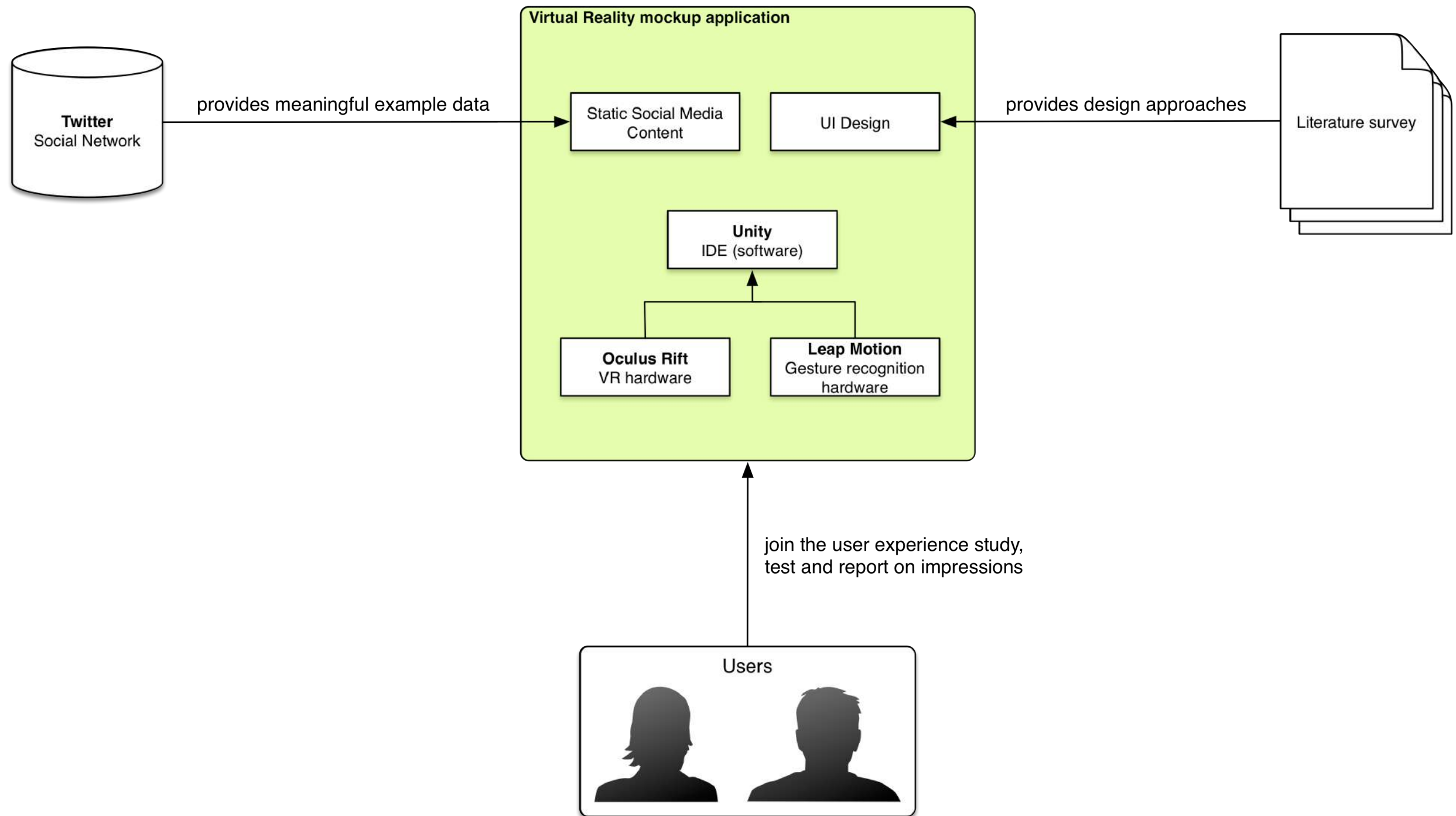
Oculus Rift DK2 // [Source](#)



Leap Motion // [Source](#)



Unity // [Source](#)



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

- 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

- 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

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										

"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.

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Additional references

Portal icons in the presentation available via

bit.ly/portaliconpack