LectureLive

Supportive Learning during lectures using mobile services

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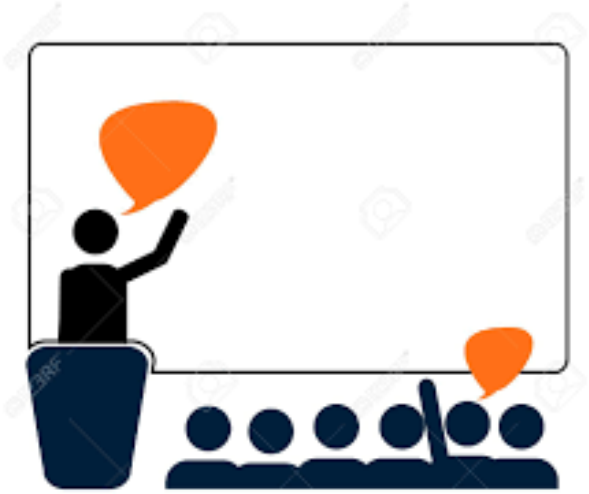
Presentation Overview

- Motivation and context
- Requirements Elicitation
- Student Self-Assessment
- Service Analysis
- Implementation and Demo
- Evaluation
- Conclusions and Future Work Areas

Motivation and Context

Quality Of Life: Thinking, Learning, Memory and Concentration



Student/Teacher Communication

Mobile Service

Requirements Elicitation

Finding The Requirements

Students and Teachers

Who is the client?

Kahoot!

socrative

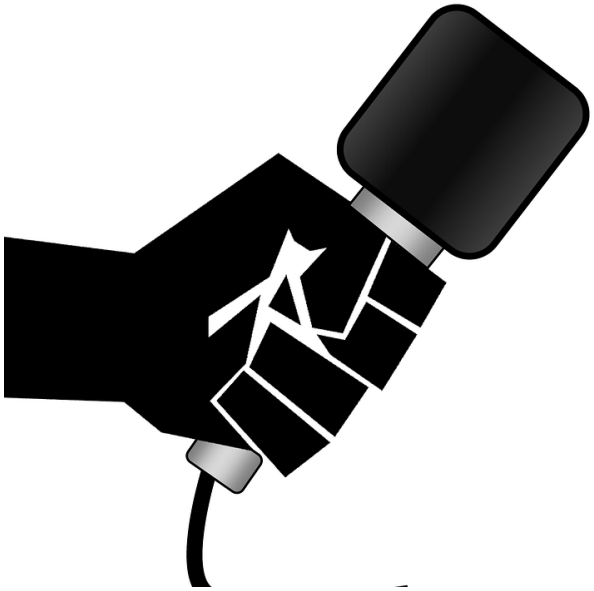
SpeakUp

State Of the Art

Teacher Feedback

- 4 teachers from the University of Copenhagen
- Technology and Teaching
- Is there a communication problem at all?

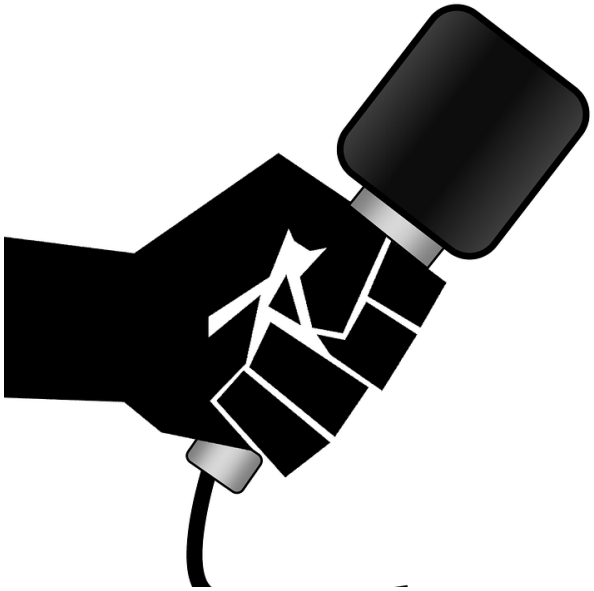
Student Feedback



3 Student Interviews

Student Survey
26 respondents

Student Interviews



- 3 students
- Understanding, motivation and confidence
- Only computer science students
- Foundation for student survey

Student Survey

- SurveyMonkey shared on Facebook
- 26/52 Respondents continued beyond first question
- Confidence
- Technology

Category	Number of Answers
Science	9-10
Health and medical	2
Humanities	3-5
Social Science	9-10
Law	1

From Data to Requirements

- Prioritizing statements
- Making clearly defined requirements

Functional Requirements

- The teacher should get statistics on the students' understanding.
- The teacher should get statistics on the students' motivation.
- The teacher should get statistics on the students' confidence.
- The students should be able to self-assess anonymously.
- The teacher should get feedback from students on their struggles after the lecture.
- Scales in the service for measuring understanding, motivation and confidence should be supported by research
- The service should include a feature supporting note-taking for students.

Nonfunctional Requirements

ability

Require none or very little pre-lecture preparation time.

Distract as little as possible.

Require short interactions by the student.

Easily understood by the teacher.

Have a simple interface and fit the mobile format

liability

The teacher application should always display the accurate and up-to-date statistics.

The service should not crash while being in use in real-time.

Performance

- Maximum students
- Battery usage
- Real-time

Operations Requirements

- Internet access

Portability

- Multiple Platforms

Student Self-Assessment

- How to assess understanding, motivation and confidence?
- Valid measurements vs. usability.

Student Self-Assessment

- How to assess understanding, motivation and confidence?
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ano Scale

well do you understand the current topic?

Even with help I would not understand this.
With a little help I would understand the overall concept.
I understand the overall idea, but not everything.
I understand this to the extend expected for this course.
I have a better understanding than what is expected.

PANAS

At this moment, how interested do you feel in the current topic?

0. Very slightly, or not at all
1. A little
2. Moderately
3. Quite a bit
4. Extremely

Rosenberg Self-Esteem Scale

I currently feel confident participating ver

Understanding Assessment Scale

Score	Marzano Scale [**p.19**, 18]	Rewritten for self-assessment
0.0	Even with help, no understanding or skill demonstrated.	Even with help I would not understand this.
1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	With a little help I would understand the overall concept.
2.0	No major errors or omissions regarding the simpler details and processes but major errors or omissions regarding the more complex ideas and processes.	I understand the overall idea, but not everything.
3.0	No major errors or omissions regarding any of the information and/or processes(simple or complex) that were explicitly taught.	I understand this to the extend expected for this course.
4.0	In addition to Score 3.0, in-depth inference and applications that go beyond what was taught.	I have a better understanding than what is expected.

Motivation Assessment Scale

PANAS (10 positive items and 10 negative items)

- You feel this way right now, that is, at the present moment

[1 = very slightly or not at all; 2 = a little; 3 = moderately;
4 = quite a bit; 5 = extremely]

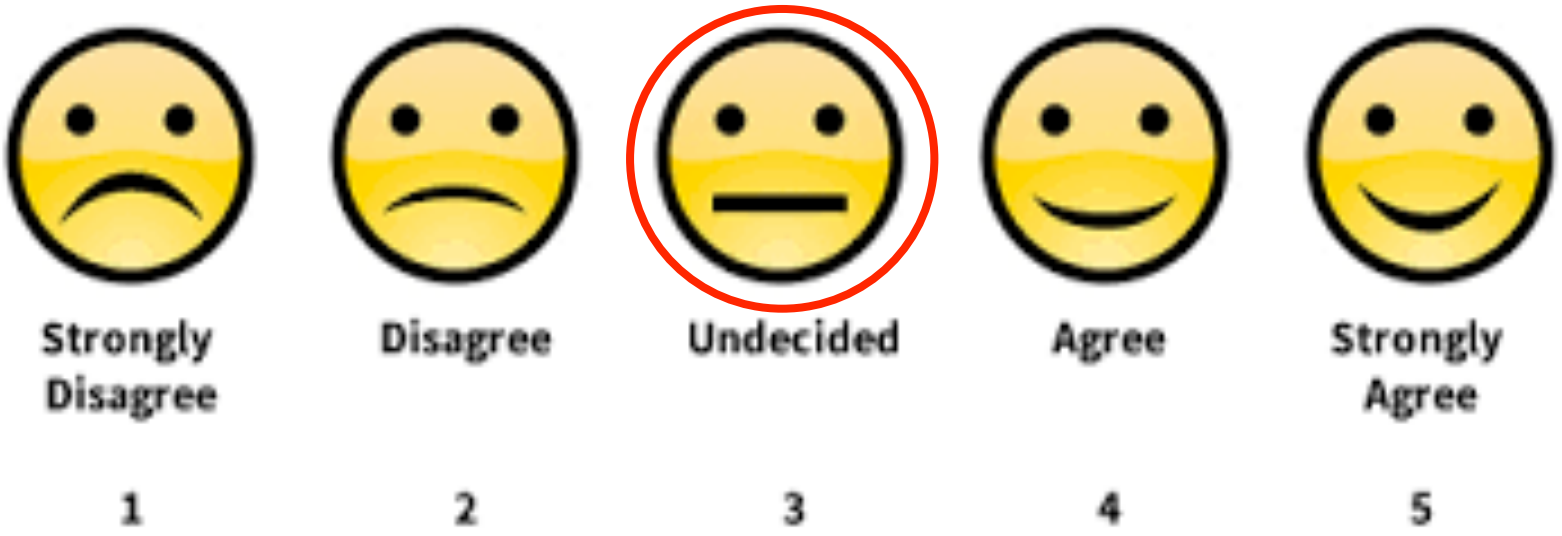
[randomize items]

distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid
interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active

D. Watson, L.A. Clark & A. Tellegen. Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 47 (1988).*

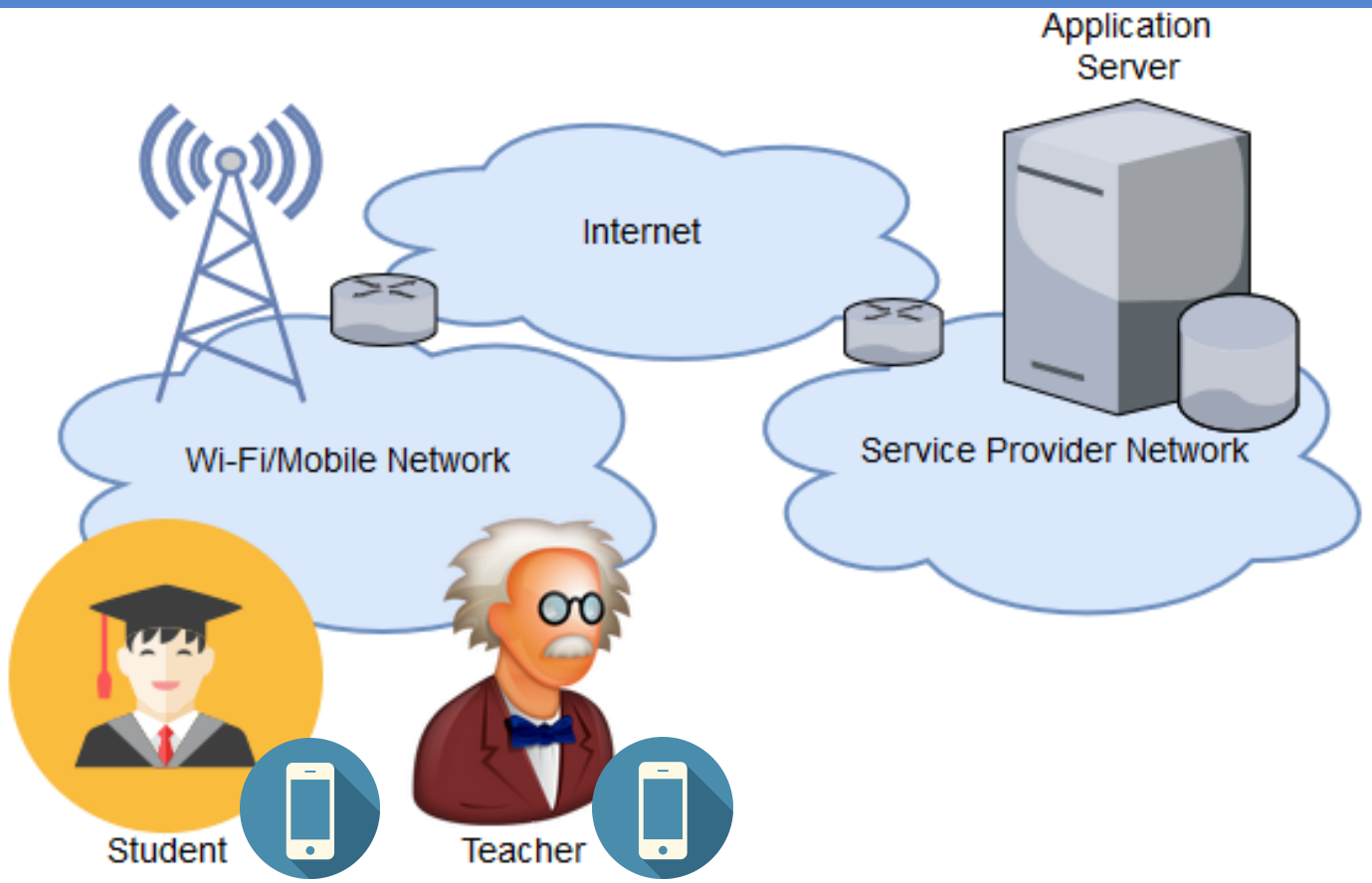
Confidence Assessment Scale

- Rosenberg Self-Esteem Scale
- I currently feel confident participating verbally

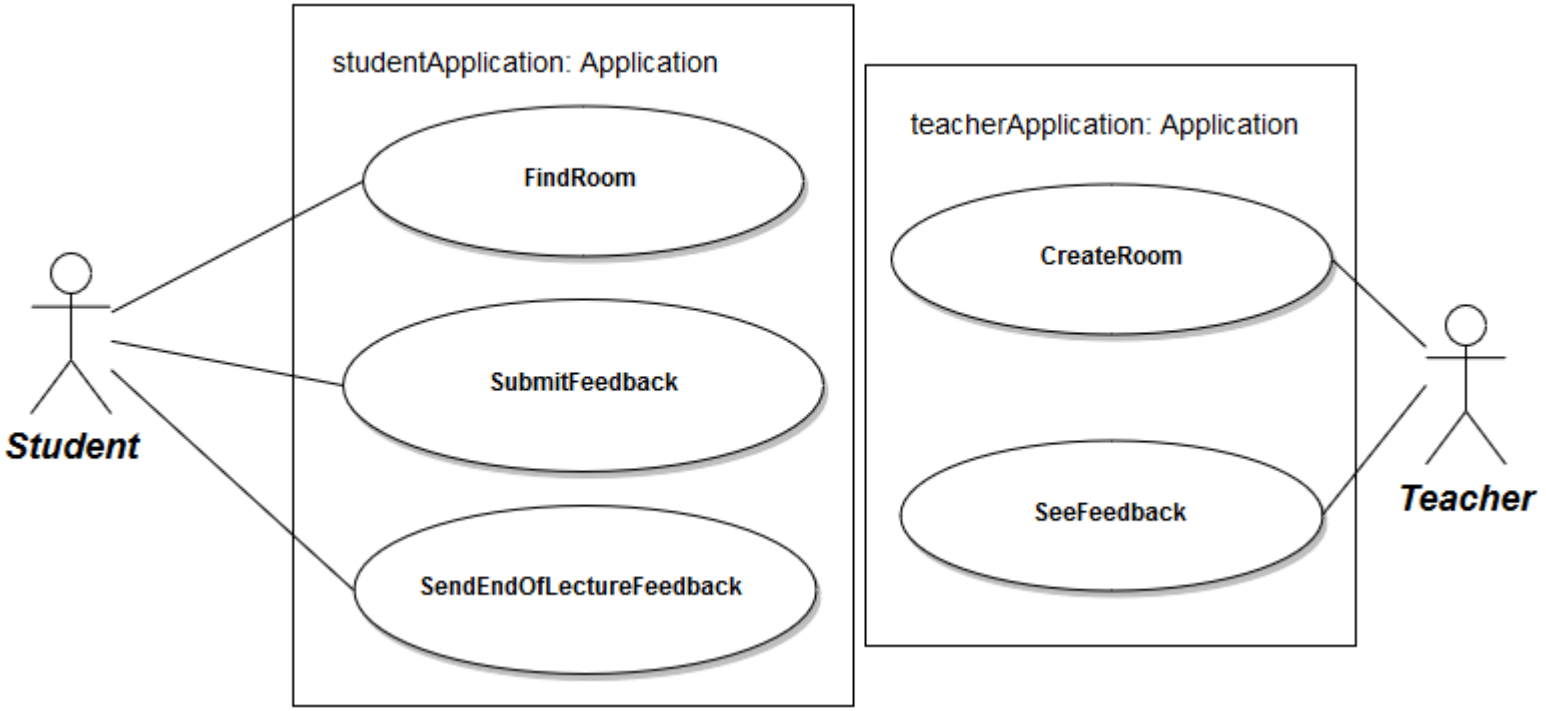


Service Analysis

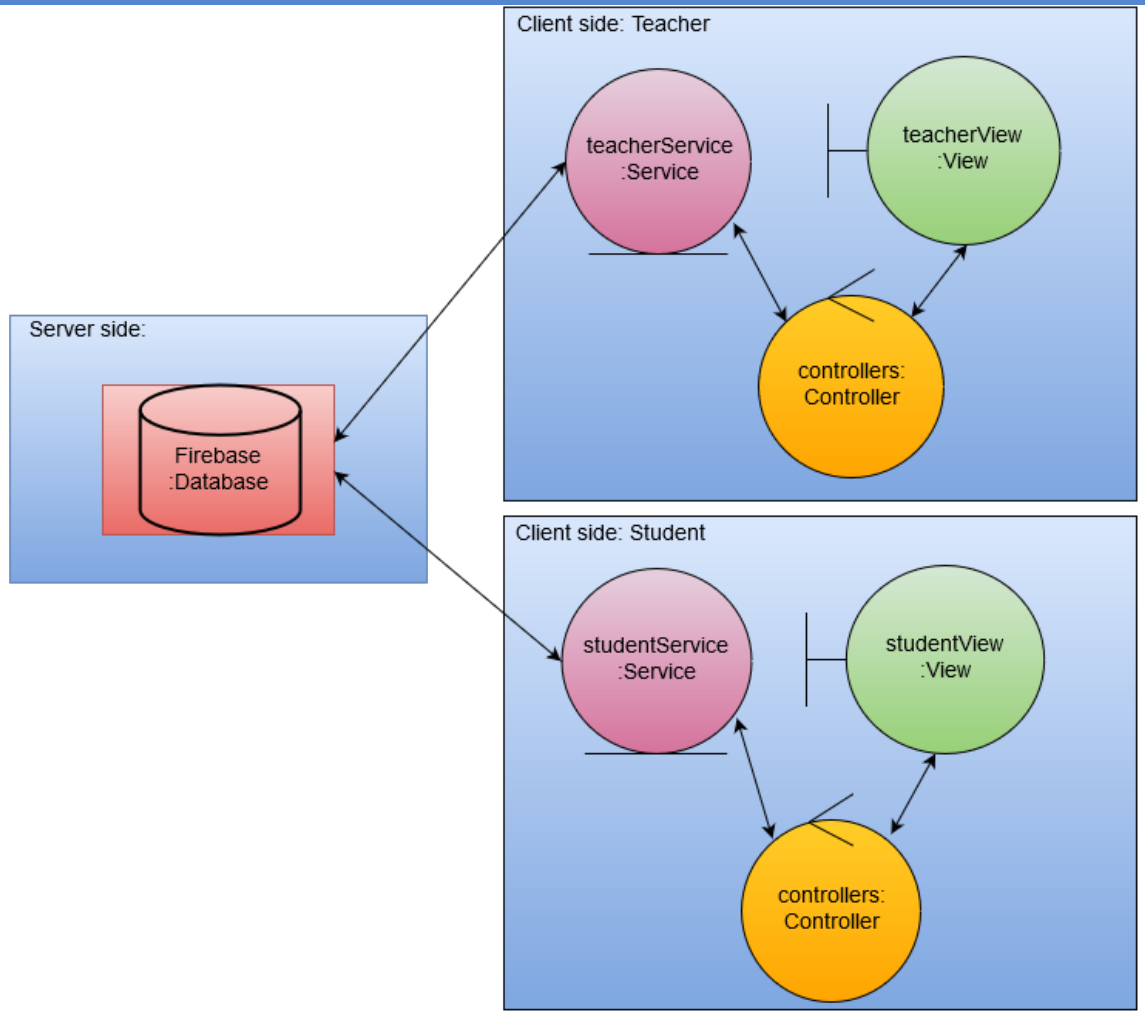
Service Communication



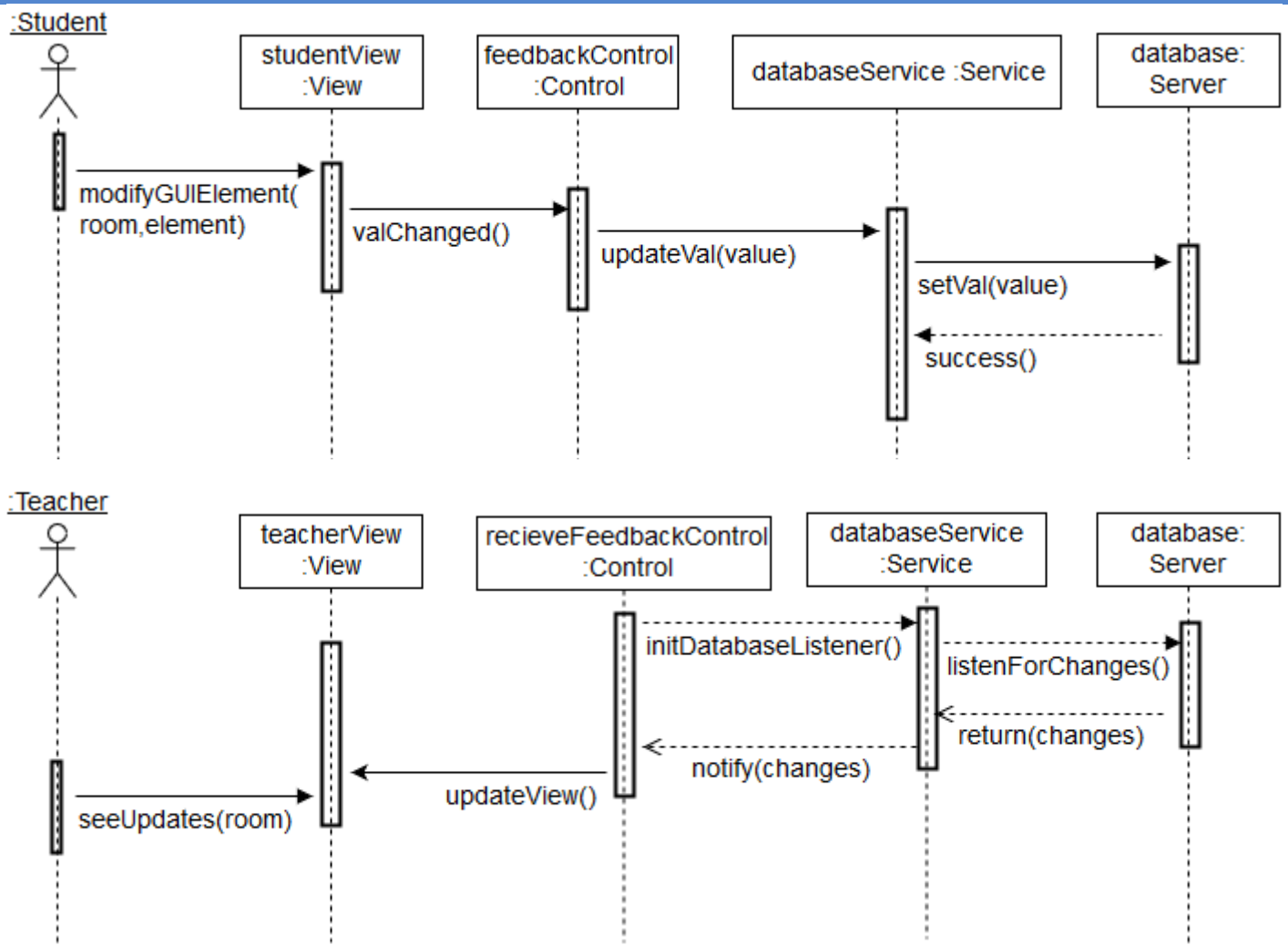
Use Case Model



System Overview Diagram



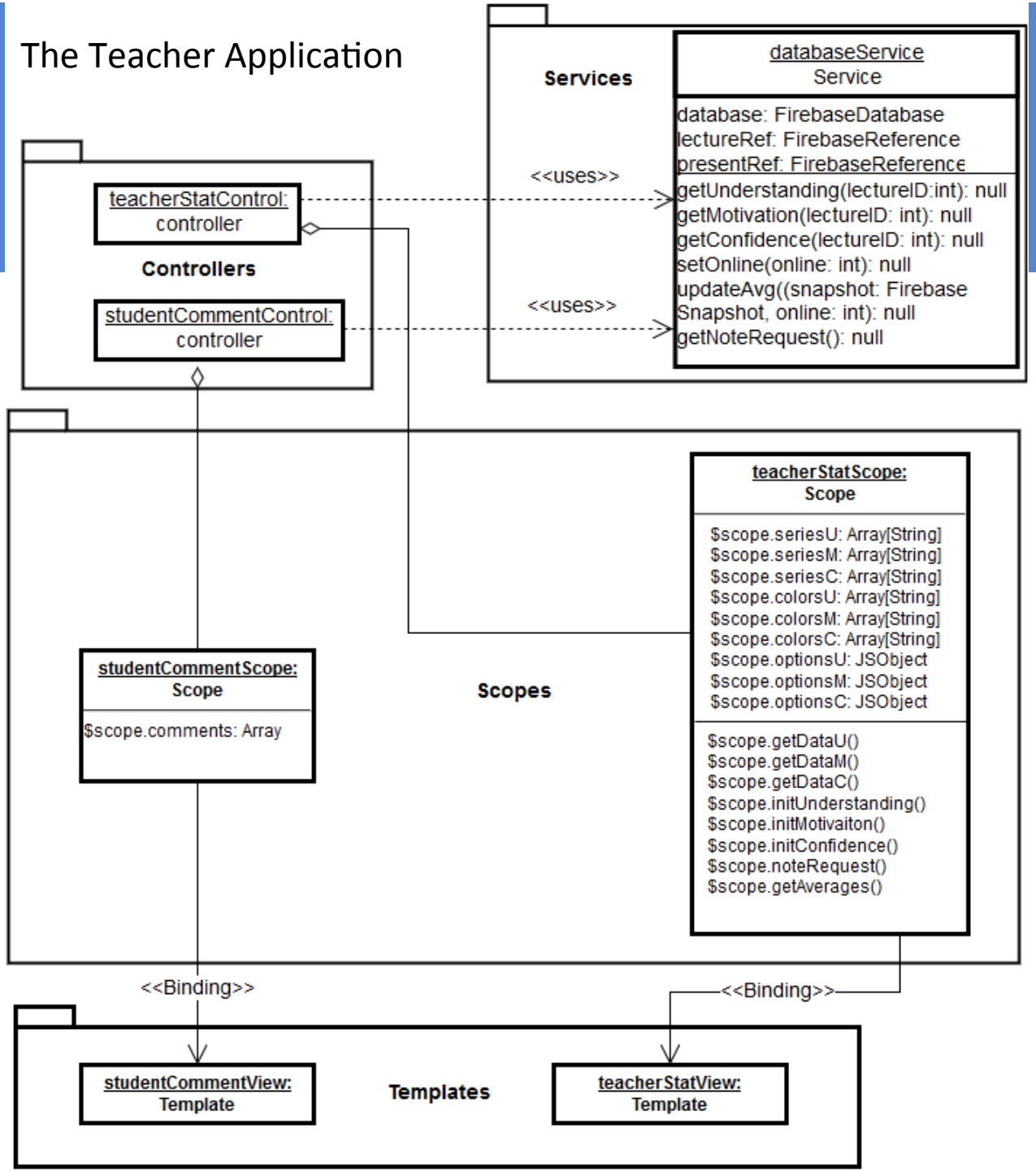
quence Diagrams



Implementation

plementation

The Teacher Application



Prototype Demo

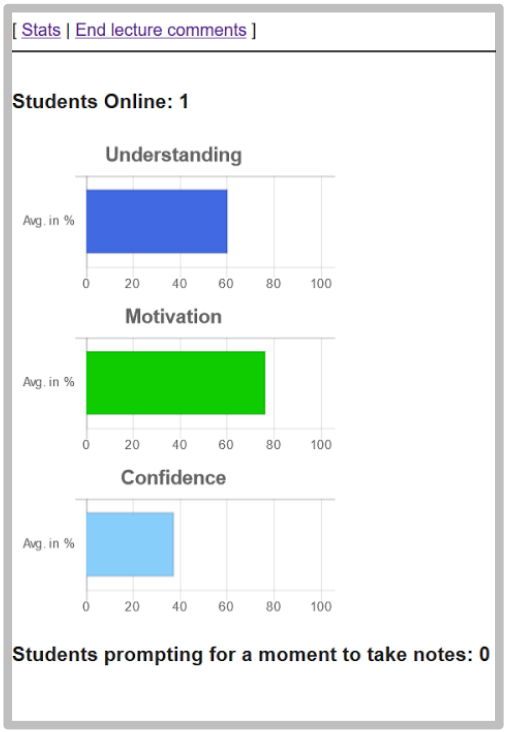
www.madsshansen.dk/student

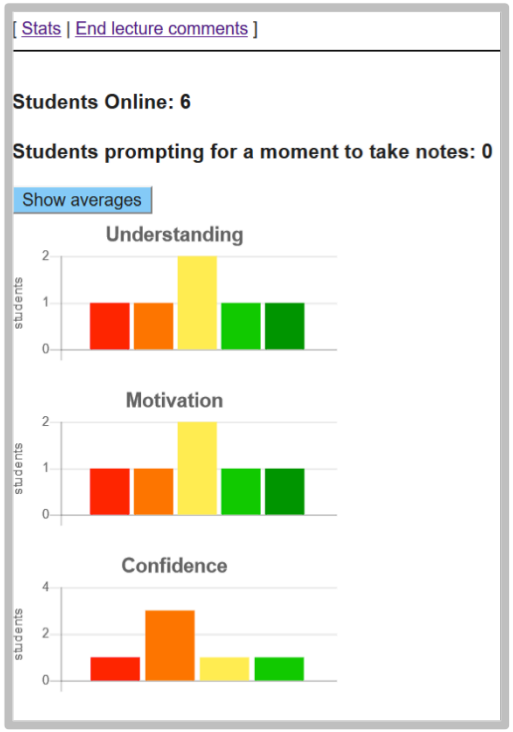
www.madsshansen.dk/teacher

Evaluation

University of Geneva Testing

- 7 “students” online – 1 “teacher”
- Testing if ready to test in a classroom



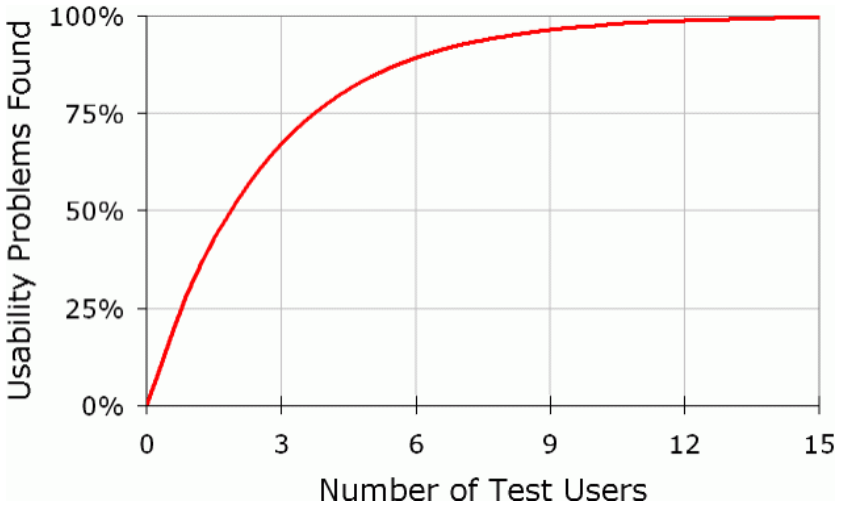


"Think Aloud"-Test Copenhagen

Test participants(2 Students, 1 teacher)

The application required too much attention when trying to understand a lecture at the same time.

Make changes to the application during breaks to avoid distraction.



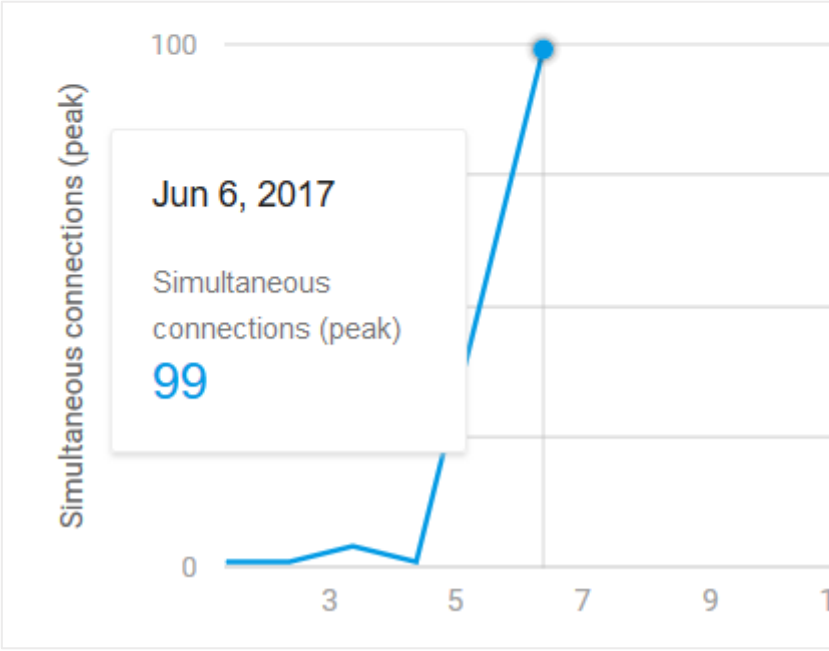
(Nielsen Norman Group)

rformance Testing

```
25 ms    124 ms    127 ms  216.239.51.157
 *         *         *     Request timed out.
26 ms    127 ms    126 ms  226.130.154.104.bc.googleusercontent.com [104.154.130.226]

omplete.
```

Response Time Tested With Tracert



Concurrent *Students* Test

Nonfunctional Requirements Review

ability

Require none or very little pre-lecture preparation time. Achieved

Distract as little as possible. Future Work

Require short interactions by the student. Needs Testing

The data should easily be understood by the teacher. Achieved

Have a simple interface and fit the mobile format. Achieved

liability

The teacher application should always display the accurate and up-to-date statistics. Needs Testing

The service should not crash while being in use in real-time. Needs Testing

Performance

- Real-time. Achieved
- Maximum students. (Achieved)
- Battery usage. Needs Testing

Portability

- Multiple Platforms. Needs Testing

Operations Requirements

- Internet access. Achieved

Conclusions and Future Work Areas

- Testing in real lecture
- Low-fidelity prototyping
- Unit Testing
- Modeling AngularJS

Thank you for listening