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CS492 Crowdsourcing - Final Team Presentation

1-Day-N-Questions

2016-12-15

Team **MEDDLER**

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A

Motivation

Very Global Problem for Learning

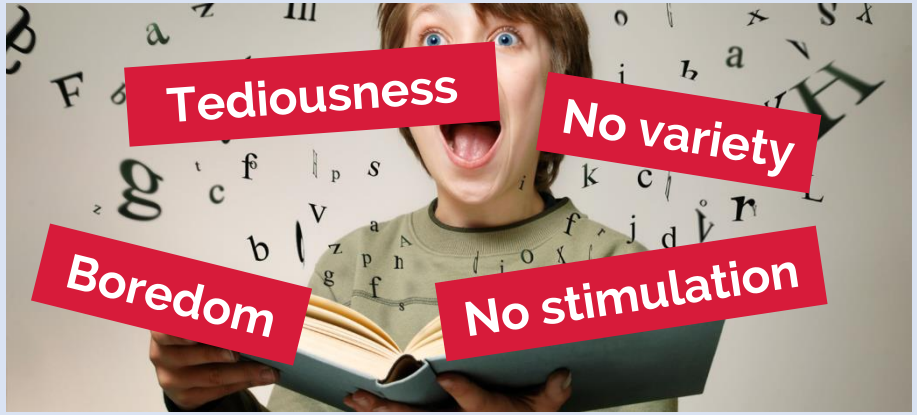
❖ Unfair and ineffective environment for learning

Unfair education environment

Regional/Economic differences
Different environment (time) for education

Ineffective learning materials

Fixed set of problems for learning
No proper stimulation for self-study



Specific Problems

We want to get "good" learning materials "for free"

We need to study, anytime and anywhere

How can we enable learners to study easily in their daily lives?

Use smartphone!

We need to be motivated to learn

How can we provide the proper stimulation for learning?

Use crowds!

We need newer and more diverse problems

Where can we get a number of various problems?

Use crowdsourced problems!

Already in Many Study Groups …

They have already facilitated
group-based crowdsourcing for effective learning for free

Crowds (People) can effectively stimulate learners to study
in a person-to-person way.

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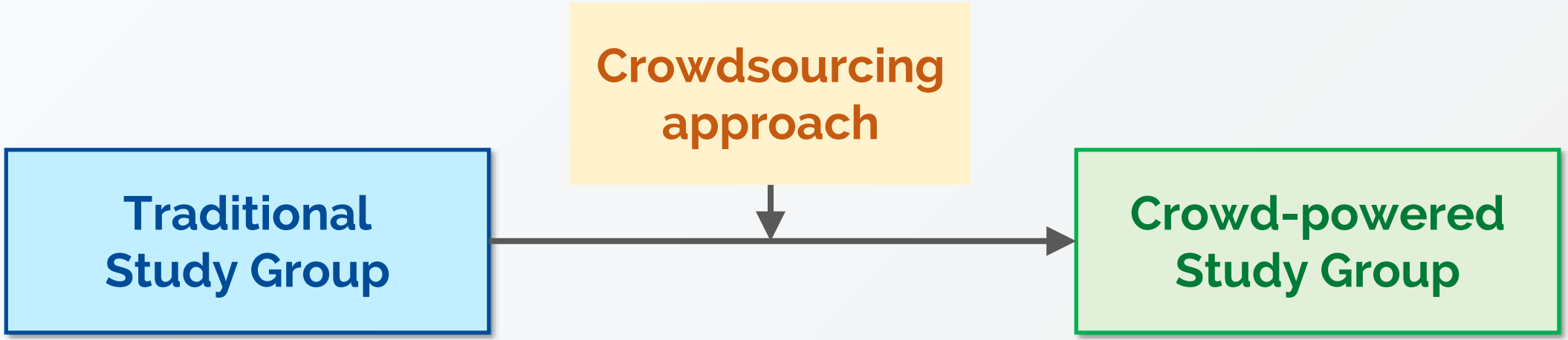
Goal & Tasks

Overall Goal



Crowdsourcing platform for study groups

Scope of prototype: A crowdsourced study group for studying English words

Tasks

Making a card

Users should be able to make a word card easily in a brief time

Solving a card

Notification messages should not be annoying & They should give an increased incentive for learning

Examining user's achievements

Visualization of user's current status is necessary to motivate learning process

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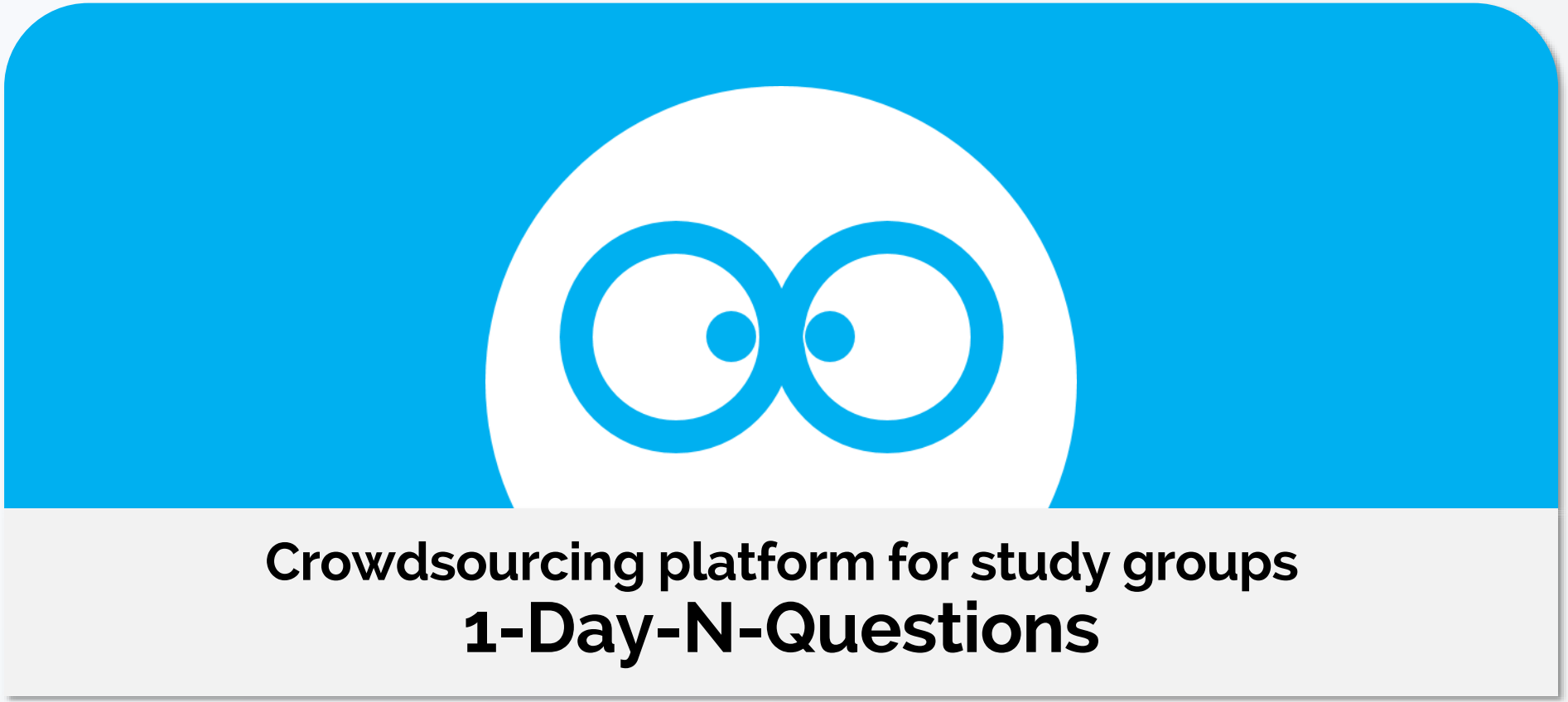
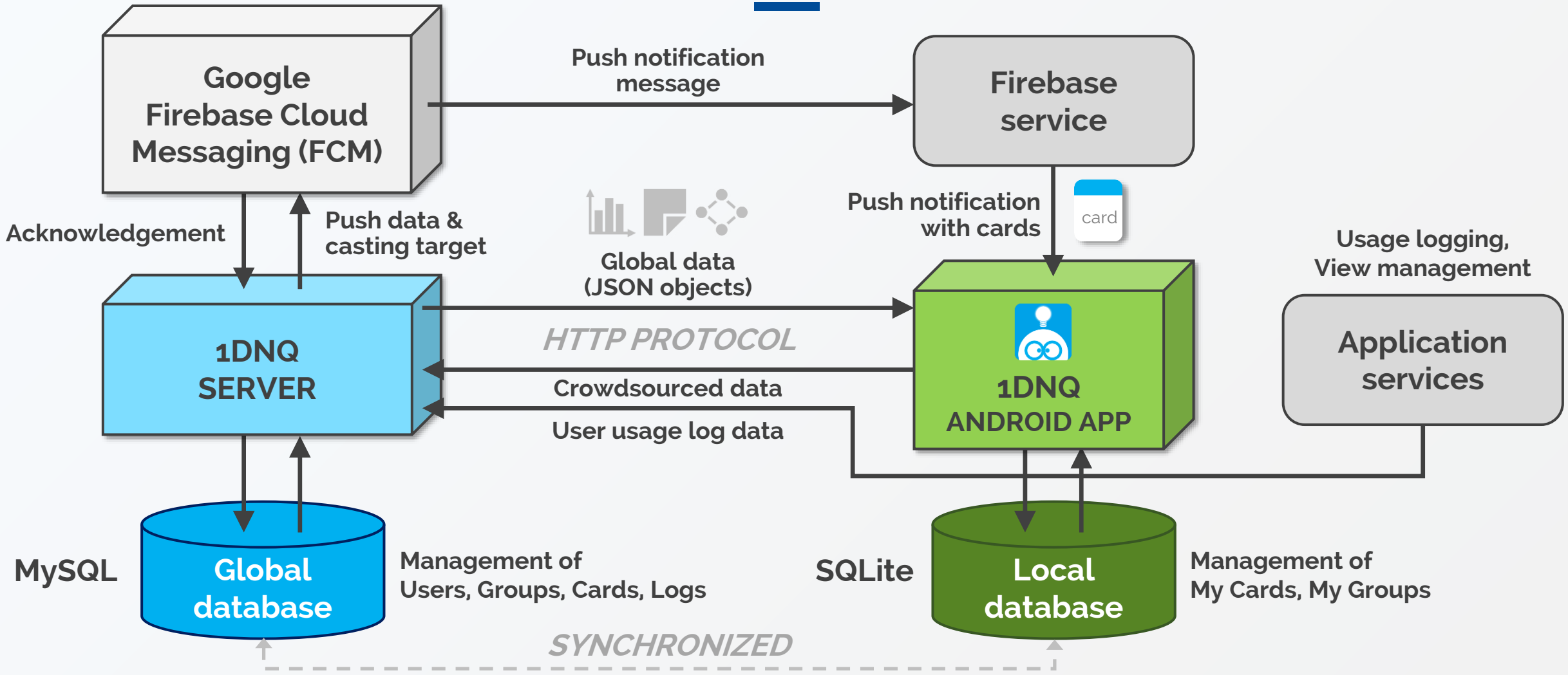
Solution: 1-Day-N-Questions

1-Day-N-Questions



1-Day-N-Questions

System Architecture



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1-Day-N-Questions

Key Functionalities

Key Function 1	**Create/save/check an English word question**
Key Function 2	**Receive an question through a push alarm**
Key Function 3	**Check user achievement on the app.**
Key Function 4	**Check important English words for the user**

1-Day-N-Questions

Motivating Users & Quality Control

Motivating users

- Visualization of user's current achievements
- User's experience management
- Leaderboard of a study group

Quality control

- Fixed format of creating cards
- Quality evaluation of other users' cards
- Card maker's quality points

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Demonstration

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CS492, 2016-Fall
Crowdsourcing

1-Day-N-Question

Crowd-powered Study Group Platform

Team MEDDLER
Sunggeun Ahn, Young-Min Baek, Sungjae Hong

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Deployment & User Study (in-progress)

User study

- **Preliminary study**
  - How users feel about the creating question task
  - How users respond about the interrupted push alarm

  - In group study environment

- **Usage Pattern analysis (in-progress)**
  - 2 day's long
  - Which factors are affected to motivate to create new question card
  - How they behave group study with interrupted alarm

  -in vivo

Recruitment

❖ Recruitment

- Participants are same in both preliminary study and (will be) in-vivo study
- 3 or 4 members of each labs, total of 9 participants were recruited.
  - age: mean 31.11, STDEV 8.43, 1 female 8 male

- All of them are belonging in our team members lab
- 6 of them have experience of group study

Study Results (1/3)

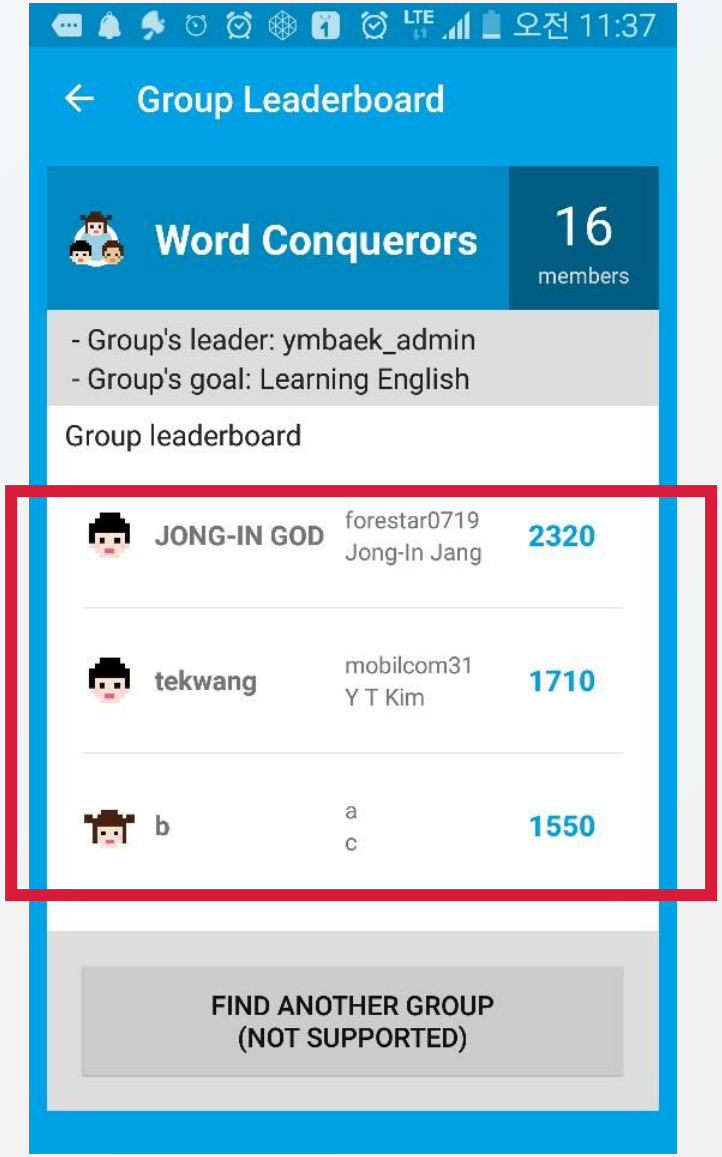
- **User comments from preliminary study**

  "Real people in group makes me a interesting and challenging problem"
  "Creative hint makes me funny in study"
  "Feeling of belonging makes me more careful when making a word set"

  "Isn't there any way of simplest way to create a card?"
  "I need dictionary"
  "Need more gamification"

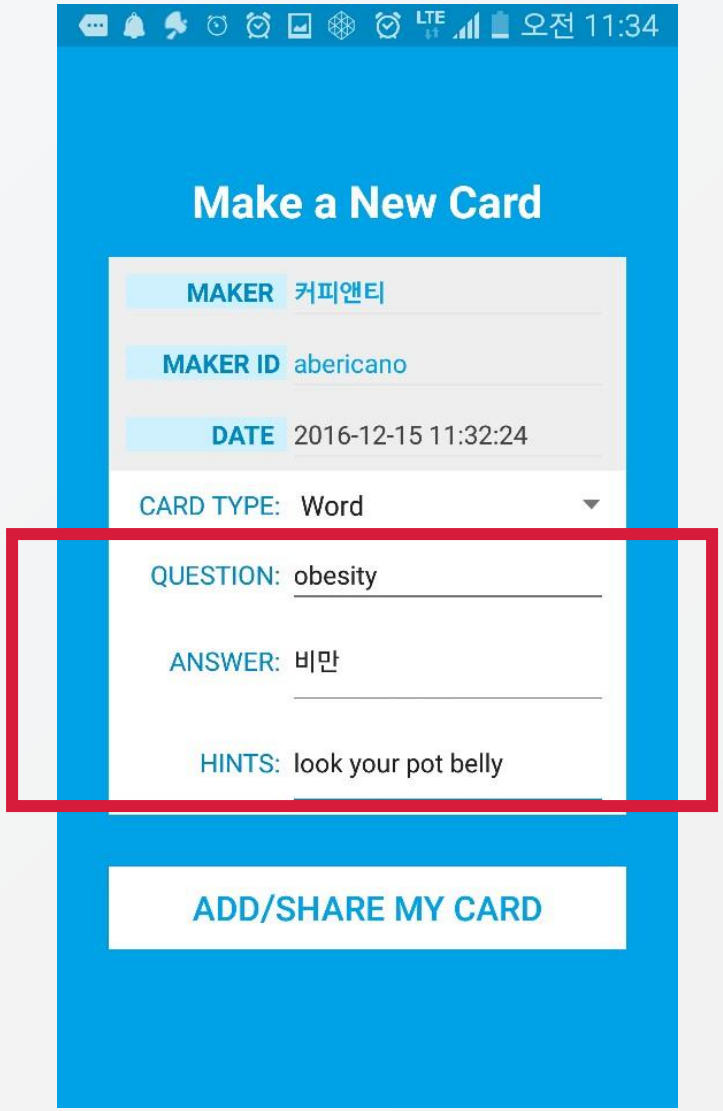
Study Results (2/3)

- **Finding from preliminary study**
  - Feeling of presence makes workers more mandatory
  - Users feel presence when they meet pushed questions card which are relative to their study context



Study Results (3/3)

- **Finding from preliminary study**
  - When users faced creative and impressed hint, tend to take more time to make a question
  - Restricted form filling area tend to make workers consider about their study context



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Limitations & Future Work

Limitations & Implications

Limitation 1	**Need of level classification**
Limitation 2	**Need of more motivation for card making**
Limitation 3	**Lack of fun components to let users stick on**

Future Work

Future Work 1	**Proper user-question match system**
Future Work 2	**Attractable reputation system**
Future Work 3	**More gamification components**
Future Work 4	**Fine-granularity user study based on user logs**

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CS492 Crowdsourcing - Final Project

Final Presentation: 1-Day-N-Questions

Thank You.

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20165161	**Young-Min Baek**	**ymbaek@se.kaist.ac.kr**
	Front-end client Android app, UI/UX design, quality control	
20163703	**Sungjae Hong**	**yain@kaist.ac.kr**
	Server (+DB) management, data integration & distribution	

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Appendix

Crowdsourced Approach

❖ Why do we use crowdsourcing for the problem?

	Easy access to new problems	Diversity/Variety of the problems
Without crowds	• Those who want to study something have to purchase some textbooks/ workbooks. → Expensive • Or, they have to take private educations/lessons. → Expensive	• Automated machine cannot create a set of diverse problems for specific learners. → No creativity • A certain person or group has the limits of diversity → No diversity
With crowds	**Lowering the cost of access to study** • Crowdsourced platform can reduce the cost to get the problems or the answers for the education.	**Creative & diverse problem set** • The more creative workers can help, the more effective and diverse problems can be made and shared.

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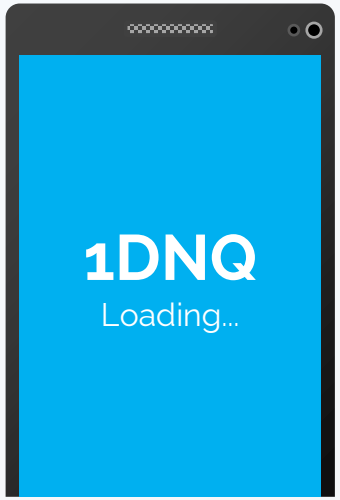
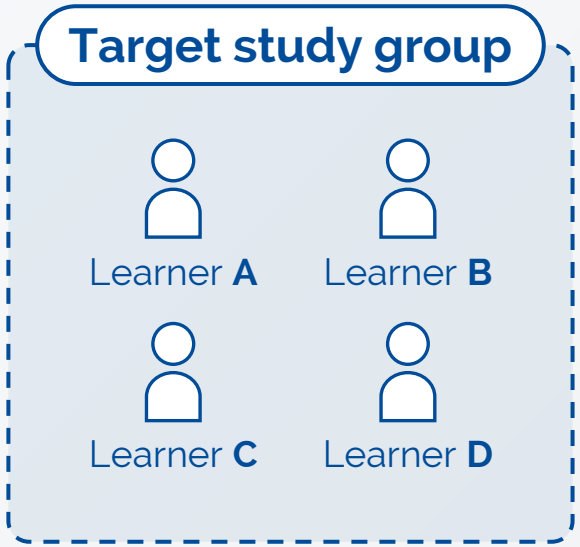
I want to write down a word in my vocabulary notebook using 1DNQ app

Learner **A**



1-Day-N-Questions
Workflow



1-Day-N-Questions
Workflow

I want to write down a word in my vocabulary notebook using 1DNQ app

Learner **A**

Learner A's new word

Target study group

Learner **A**
Learner **B**
Learner **C**
Learner **D**

1-Day-N-Questions
Workflow

Learner **A**

Learner A's new word

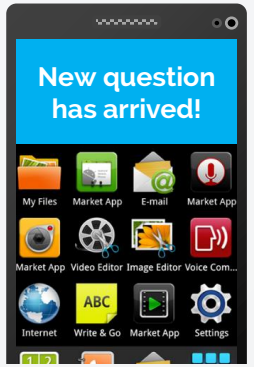
Target study group

Learner **A**
Learner **B**
Learner **C**
Learner **D**

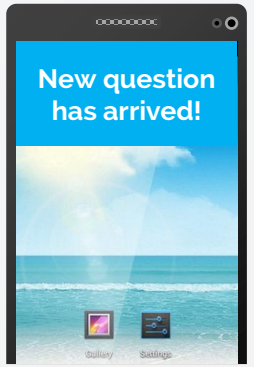
New word

New word

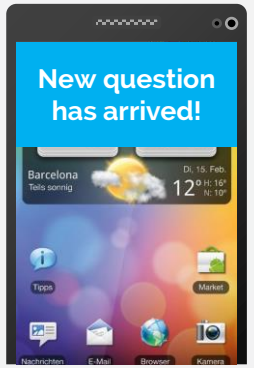
New word



Learner **B**



Learner **C**



Learner **D**

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1-Day-N-Questions
Workflow

Learner **A**

Target study group

Learner **A**

Learner **B**

Learner **C**

Learner **D**

Learner **B**

Learner **C**

Learner **D**

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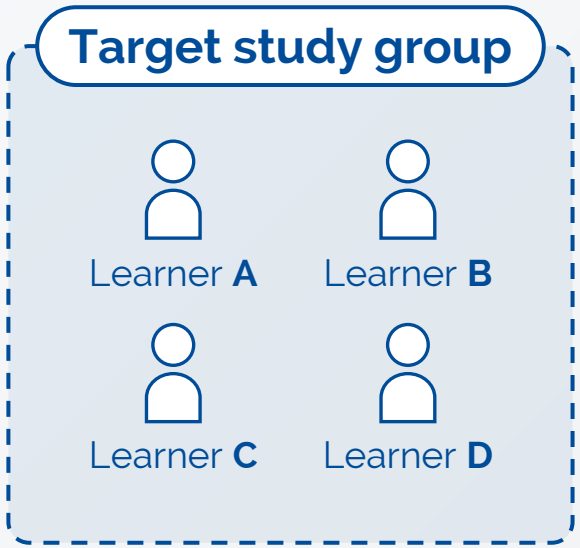
1-Day-N-Questions
Workflow



Answer

Answer

Answer

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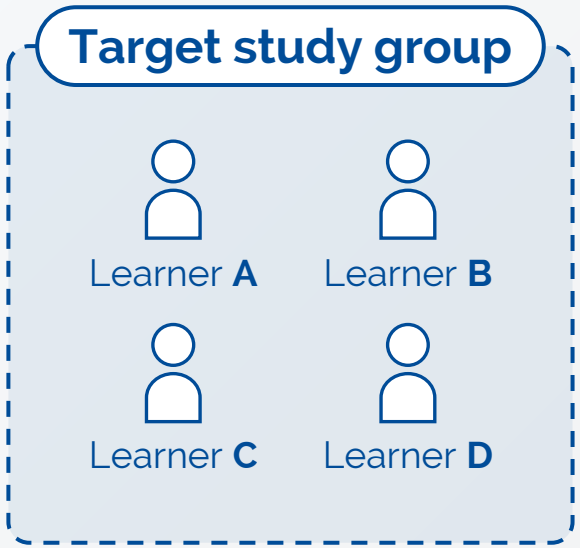
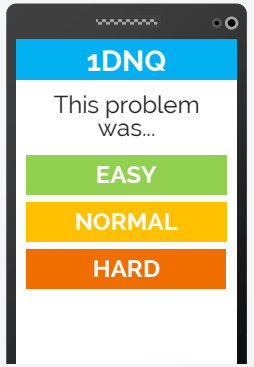
1-Day-N-Questions
Workflow



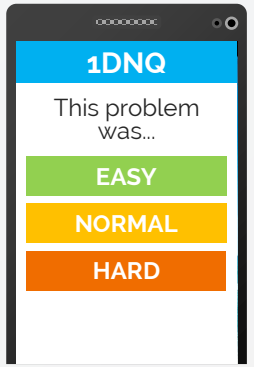
Evaluation

Evaluation

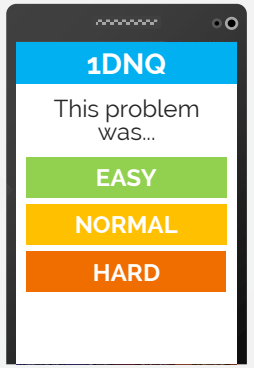
Evaluation



Learner **B**



Learner **C**



Learner **D**

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Task 1

❖ Task 1. Making a new problem

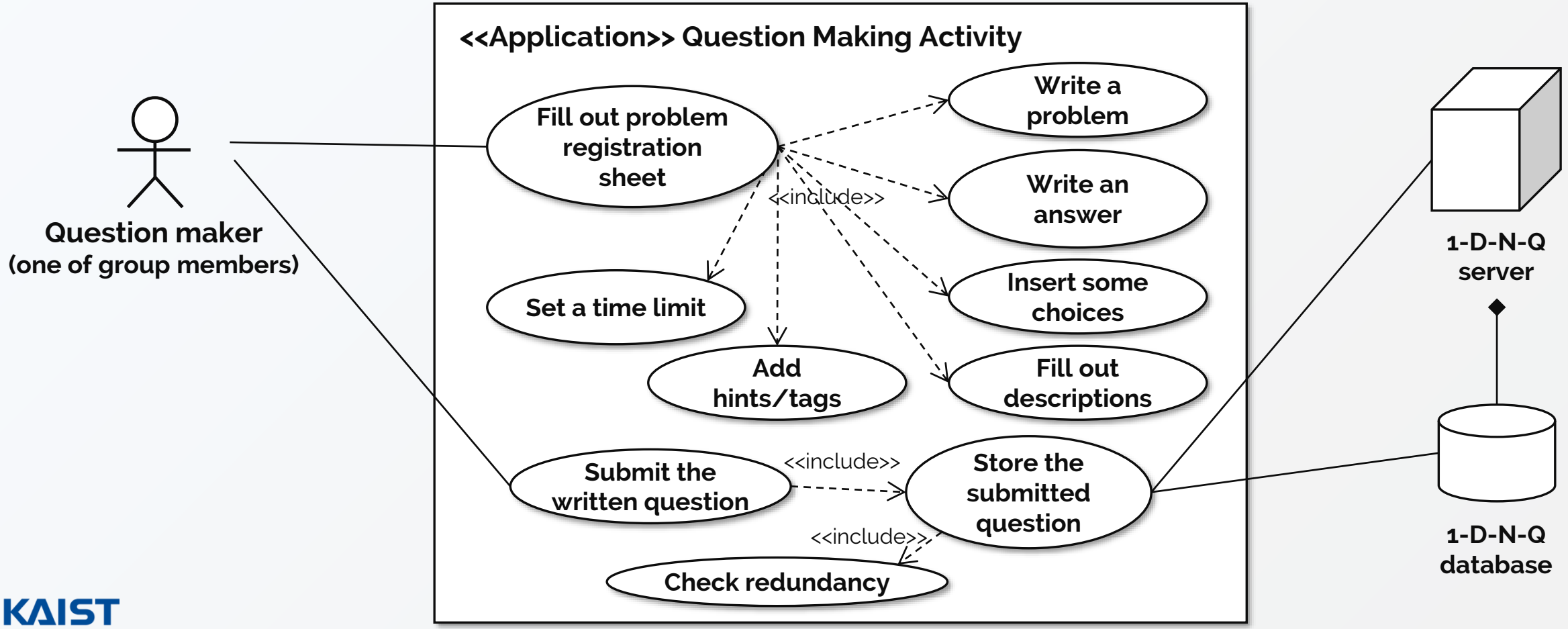
- Motivation: Adding a new problem (word, phrase) into my database plays a role in construction of a crowdsourced question pool.
  - A learner just wants to collect words in a workbook for memorization and review.
  - Learners don't notice that they are making questions for others.

❖ Requirements

- [Req 1-A] Our system must provide a submission form for a user to fill out or customize a problem (e.g., word, phrase, idiom, sentence, etc.).
- [Req 1-B] Each problem (question) has to contain question maker's real-name and time limit.
- [Req 1-C] Our system must check the redundancy of written problems and filter out them in real-time.

Task 1

❖ Use case diagram of Task 1



1-Day-N-Questions

Task 1

❖ Aggregation method

- Submitted problems by multiple crowds are stored in 1DNQ server and user's local DB at first, and they are distributed to a group later.
  - Our system should transform the stored problems to the questions for a test.
  - The distribution is conducted by 1DNQ server using an algorithm, which considers the individual levels of learning.

❖ Quality control

- Simple problem-registration form
- Distribution based on users' real-names
- Real-time redundancy check

Task 2

❖ Task 2. Solving and evaluating problems

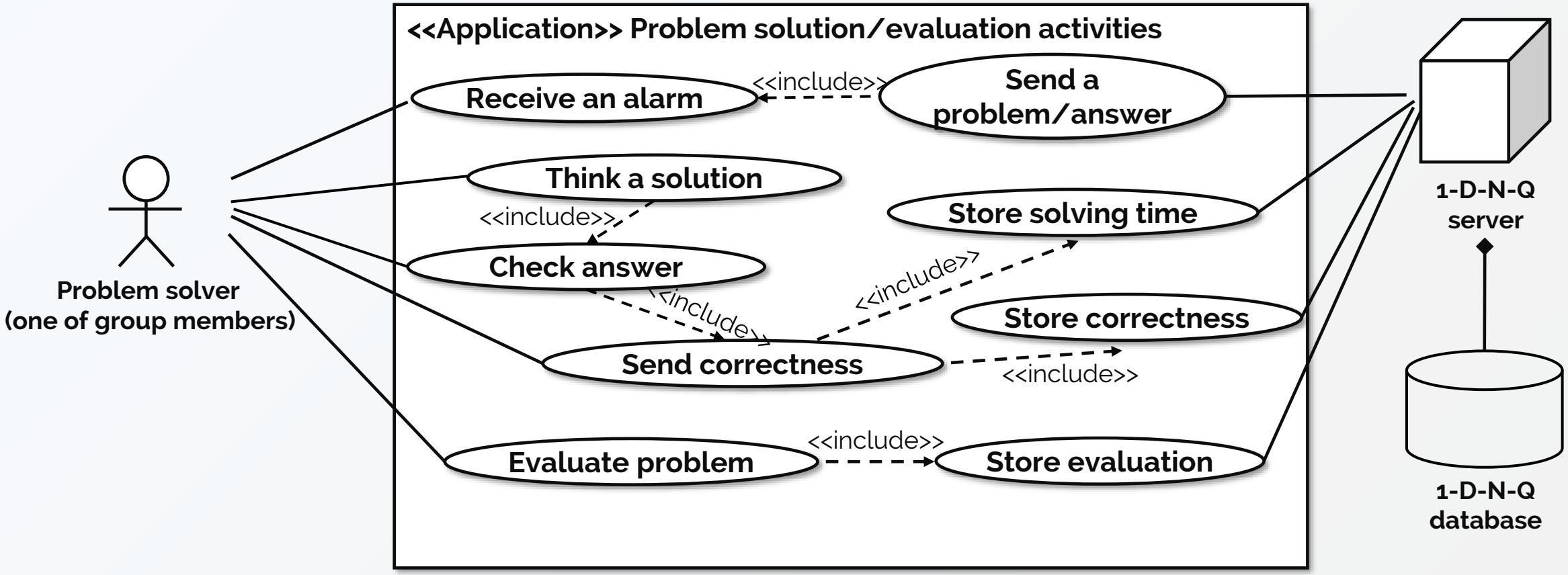
- Motivation: Users want to solve problems in an adequate level.
  - Let users to solve problems and evaluate them for user and problem evaluations.

❖ Requirements

- [Req 2-A] Our system must perform an automatic process for users to receive problems.
  - An alarm system to let users know a problem receipt with a pop box
- [Req 2-B] Our system should provide a simple user interface to solve problems to enable self-evaluation based exams.
- [Req 2-C] Our system should provide a way to evaluate given problems.
  - Three choices (easy-normal-hard) for problem evaluation

Task 2

❖ Use case diagram of Task 2



1-Day-N-Questions

Task 2

- **Aggregation method**
  - Data aggregated in a solution phase
    - Gathering whether an user is right and solving time
  - Data aggregated in an evaluation phase
    - Gathering evaluations for a problem
  - Data will be aggregated for user and problem evaluations
    - Aggregating data by an user and a problem
- **Quality control**
  - Data to filter out: “Bad” problems and malign evaluations
  - A problem solver can report “bad” problem providers
  - A problem provider also can report malign evaluators

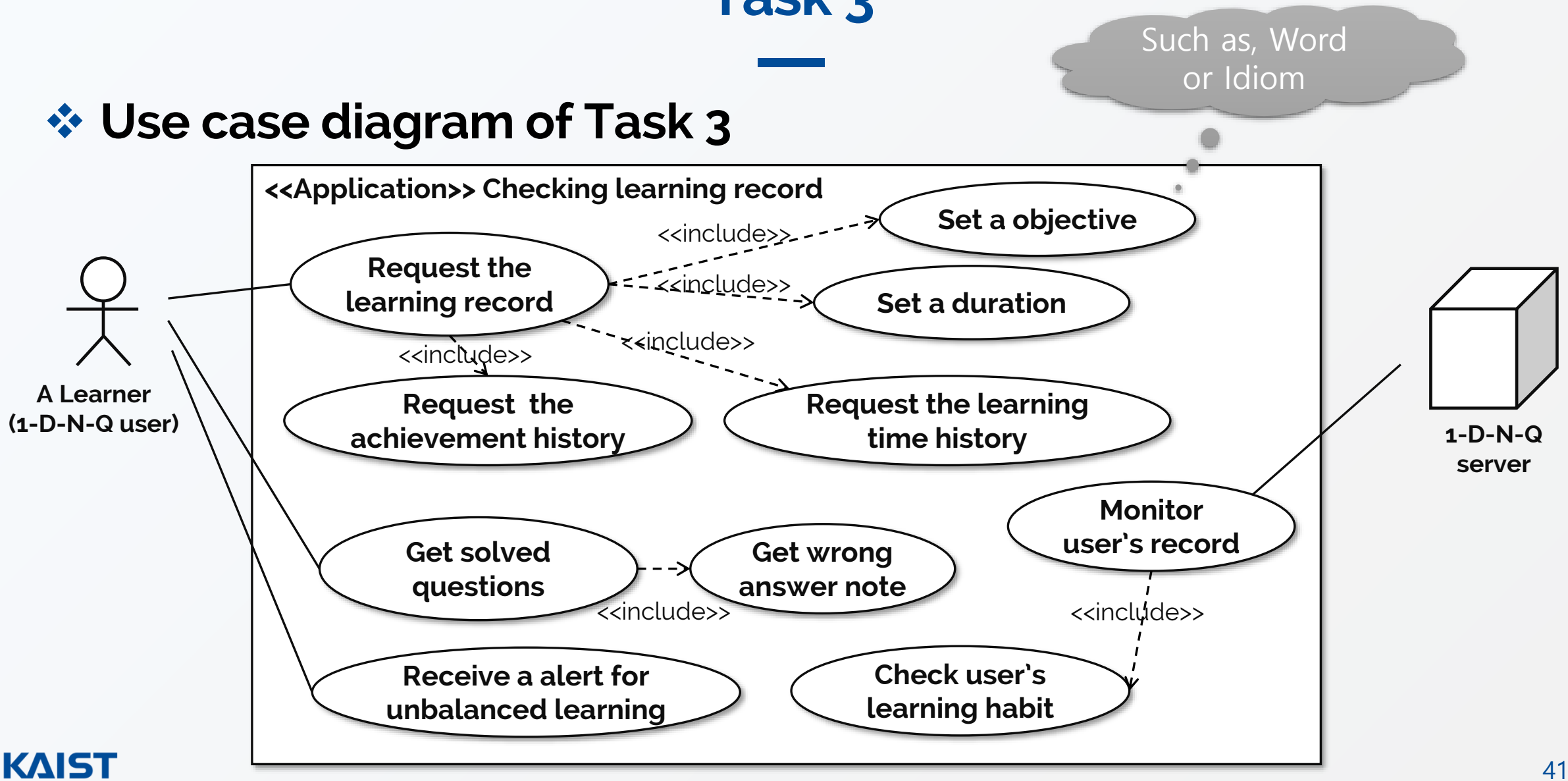
Task 3

❖ Task 3. Checking user's own record for learning improvement

- Motivation: Learners need feedback about their learning behavior.
  - To motivate themselves
  - To monitor their learning patterns

❖ Requirements

- [Req 3-A] A learning record must include an improvement history.
  - Visualization of the level of achievement to motivate learning
- [Req 3-B] A learning record must provide a distinctive dimensions of learning status.
  - Multi-dimensional learning objectives
- [Req 3-C] Our system must provide an alert for unbalanced learning.
  - Based on the level of achievement and importance, or engaged time,

Task 3

❖ Use case diagram of Task 3