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# System Development for Group Discussions Support in Lectures

～Using Table Top Interface(TTI)～

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## Abstract

In this study, I constructed and evaluated a place of group discussion in the lecture using Table Top Interface. First, I constructed some sets of system for supporting group discussions. Then, I researched which sets of system are useful for supporting group discussion when I tried to use these systems in our laboratory's seminar. Finally, I evaluated a value of supporting group discussion in classes with evaluation forms and interviews for students and a lecturer. In addition, I analyzed conversations in some lectures quantitatively and qualitatively.

The system can construct some places of group discussion from a piece of System structure chart \*<sup>1</sup> using Table Top Interface. This study constructed Dual TTI Space and Quad TTI Space and Remote TTI Space.

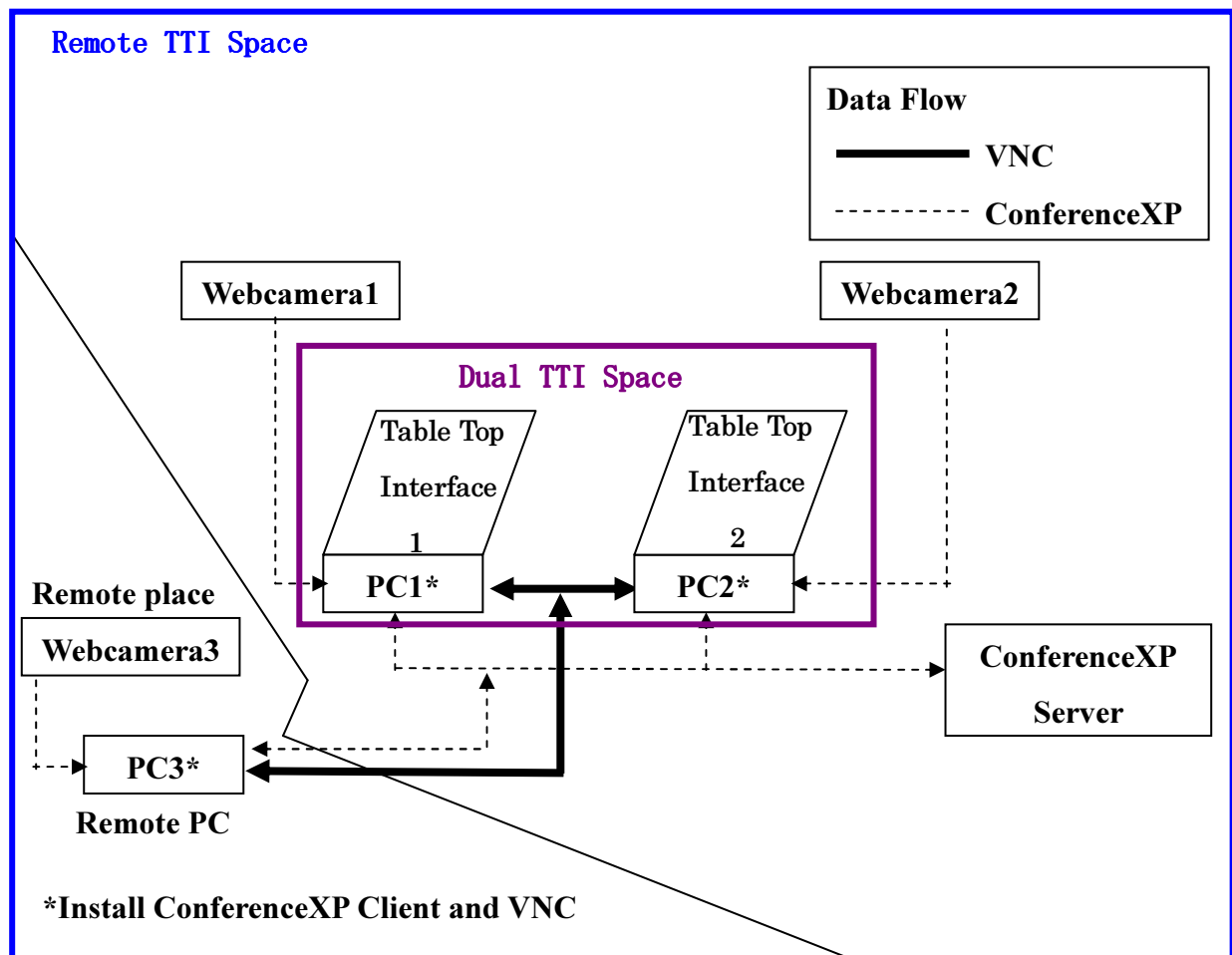
Dual TTI Space is the place that can conduct a group discussion with setting two racks of Table Top Interface confronting each other.

Quad TTI Space is the place that can conduct a group discussion with setting four racks of Table Top Interface confronting each other.

Remote TTI Space is the place that can conduct a group discussion if there are the WEB camera and microphone and PC and the environment of internet from the remote ground.

#### System configuration

- Table Top Interface(TTI) : Table Top Interface is able to be used some racks, regardless of screen size. It controlled by Windows.
- Virtual Network Computing(VNC) : Remote support free software. Share display keyboard and mouse in real time.
- ConferenceXP Server and Client : Using hardware support for Windows PC. It's possible to remote conference to connect some Web camera. We can participate in the conference if only install clients and broadband-environment.



\*<sup>1</sup>: System structure chart

### Preliminary examination Dual TTI Space and Remote TTI Space

We actually did preliminary experiment in the laboratory using the Dual TTI Space and Remote TTI Space according to above system Dual TTI Space spent about 2 hours at the laboratory seminar and about 5 hours at the group seminar introduced to this system in the general form of seminar. Remote TTI Space spent about an hour to move laboratory seminar teachers to another room under the assumption that teachers are in remote place. The following comments for this system are what we can get through this experiment.

#### Dual TTI Space

- It's close to the information.
- We can have a close affinity with people.
- It's easy to take the floor.
- Tired the eyes. (Using time is one hour)
- It's better to react to multi mouse.

#### Remote TTI Space

##### Comments of people in Dual TTI Space

- Felt as if I telephoned with someone in case of remote.
- I felt somewhat out of place.
- It's seemed to be a few comments.
- Difficult to understand other's emotions.

##### Comments of people out Dual TTI Space

- Problem is echo and noise.(Bad sound)
- It's not enough to communication with only images.
- Difficult to participate in conversation.
- Like a TV, it's not easy if there are specialty cameramen.
- It's better in case that it's enable to go the field.

## Consideration

Therefore, Dual TTI Space can be used to support discussion from the comments gotten in this examination if it use when we do a seminar form of discussion in the lecture about an hour. Remote TTI Space doesn't use because it has much problems to solve.

## Evaluation of Dual TTI Space

Dual TTI Space is used for 2007 years' Representation of knowledge that is real lecture of these studies and evaluated. Raising the way of evaluation and content in the lecture that are used for this examination following.

### Using Lecture : Representation of knowledge

- The number of times : 15 times
- Explanation by lecture : Between once and twice
- Conclusion : 15 times
- Lecture period : 90 minutes
- Content of between 3 times and 14 times : Through a part of the Augustin Berque: Cultural space in Japan, Chikuma-bunko, in 1994, students who were given their turn beforehand, summarize and give out at the presentation. After this presentation, we discuss with teachers using that presentation.(Presentation time is 45 minutes/Discussion time is 45 minutes)
- Members : Japanese boys 4 , Chinese boys 2 , Chinese girls 2

### Evaluation method

- Evaluation Criteria : Evaluate whether the speaking at the discussion by using the system is easy or not.
- Evaluation period : Between 11 times and 13 times(total 3 times)
- Used time : Discussions only(about time is 45 minutes)
- Method of evaluation : After the evaluation, we interviewed for the students and teachers, and do a survey for the students. Also, we wrote in when occurred to some conversations in the discussion.

## Result

- Through the research of interview, we found that it's easy to converse each other.
- Written date makes the time of speaking increase, and makes the count of words equal.
- Cutting the time of silence.

## Evaluation of Quad TTI Space

Quad TTI Space is used for 2008 years' Representation of knowledge that is real lecture of these studies and evaluated. It is the same except for the structure of people who takes the lecture. That is organized of two Japanese men and seven Chinese women. The way of evaluation was interview and survey.

## Result

- Some opinion is that it is easy to speak to other people because it is near to other people, others are it is difficult to speak to other people because it is too near.
- Teachers say that it is worse to share it than share Dual TTI Space.
- Teachers say that it is better Dual TTI Space than Quad TTI Space.

## Conclusion

- According to preliminary experiment, in the case of aiming to support group discussion using Table Top Interface, compare Dual TTI Space to Remote TTI Space, Dual TTI Space is more effective.
- Remote TTI Space makes echo and noise problem bigger and there are many problems such as no place where cameras put and cannot use remote cameras.
- It is easier to speak to other people in Dual TTI Space than to do so in Quad TTI Space.
- From the result of evaluating Dual TTI Space, it is effective to support group discussion in the lecture.

### Future Prospect

- The most serious problems that are echo and noise problems in Remote TTI Space will be solved because of the advance of a microphone and speaker technology.
- Dual TTI Space can be used for other means except for supporting group discussion through the development of the software suited to this place.
- It is better to distance each person by making up about four person when it uses Quad TTI Space.