

Copyright © 2009 by the Association for the Advancement of Computing in Education (AACE).  
[<http://www.ace.org>] Included here by permission

# **Australis 4 Learning Benefit and Outcome of Second Life Simulation for Automated Assessment Lab**

T. Reiners<sup>1,2</sup>, H. Dreher<sup>2</sup>, N. Dreher<sup>2</sup>, C. Dreher<sup>2</sup>, C. Kuhlenkampff<sup>1</sup>

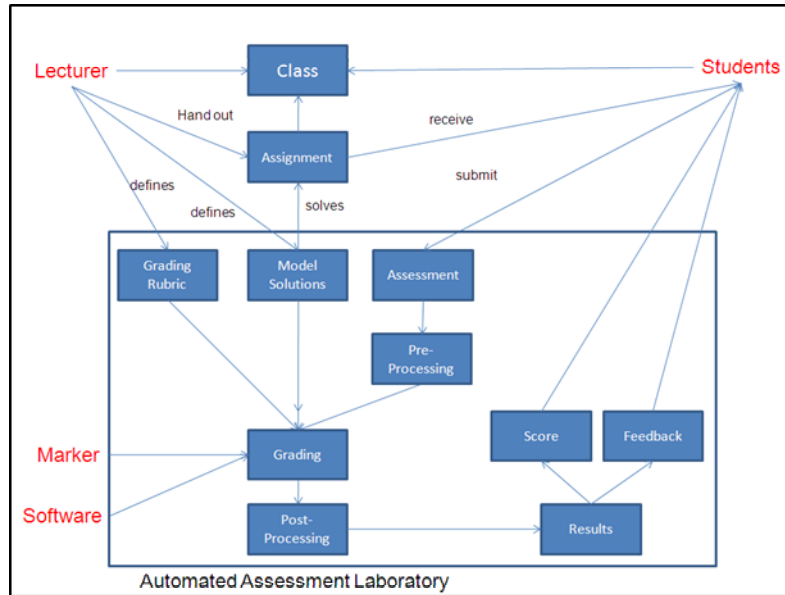
<sup>1</sup>Institute of Information Science, University of Hamburg, Hamburg, Germany  
{reiners, kuhlenkampff}@econ.uni-hamburg.de

<sup>2</sup>School of Information Systems, Curtin Business School, Bentley, Western Australia  
{h.dreher, n.dreher, c.dreher}@curtin.edu.au

**Abstract:** Aim of the Automated Assessment Laboratory (AAL) being established at the School of Information Systems (Curtin Business School) is to provide lecturers with the opportunity to have essays automatically assessed using MarkIT. So far, the process was described by using static and non-interactive media, causing misunderstanding or leaving open questions. To improve the understanding and acceptance of AAL, we decide on an interactive simulation, where everyone can chose their role in the system and experience every step in a given setup. For the 3D simulation, we created the Second Life Island *Australis 4 Learning*, where a virtual course guides the visitors through the AAL allowing to interact with other avatars as well as objects like drop boxes or presentation devices for the results. The results are summarized on a poster as shown in the following proposal.

## **Short Description**

The Automated Assessment Lab involves many roles, scenarios as well as processes. A simplified model is shown in Figure 1: (1) Lecturers present their course material in a lecture, which can be, for example, in a classroom, blended learning, distance learning or virtual world, having a certain number of participating students. (2) To verify the learning process, the lecturer hands out assignments that the students have to process in a certain amount of time. They have to write a document with a number of pages. (3) This assessment is submitted – generally by mail or to a drop box for the corresponding lecture – where it can be collected by the markers after the final date and time for submissions. (4) The marker, which can be either a human or system like MarkIT, collects the assessments and marks each of them according to a grading rubric and model solution. (5) The results are stored in a database, from which each student can request their individual result or an overall feedback, in general with a formative feedback. The automation in this system can be seen in the support of all processes but mainly in using specialized software in the marking process to generate a marking within a very short time period.



**Figure 1:** Roles, scenarios and processes in the Automated Assessment Lab

Even though the model covers all major aspects and provides a major support for lecturers who have to correct assignments of several hundred students, it is difficult to communicate the Automated Assessment Lab, i.e. where an automated marking of assessments is involved. We used several media types to describe the process but in general, it was difficult to show the different perspectives that a specific role has within the system. Therefore, we decided to use an immersive system, where we can have a focus on human interaction within the simulation process. We evaluated several technologies and chose Second Life by Linden Lab, as it provides the required freedom to design the whole process (building objects and programming the interactive parts with the build-in language LSL) as well as allowing everyone to chose a role and experience every step in an immersive environment:

- **Lecturer:** Teaching classes using a classroom with state-of-the-art technologies that go far beyond current possibilities in a real classroom. Besides presenting slides and 3D-Objects in various ways, the presentation desk allows an intensive interaction with the students and realization of different teaching strategies. Passing assignments to the students is done with one click, as it is with receiving the later results of each student as well as the aggregated results. Not to mention the possibility to teach from any place in the world.
- **Student:** The main advantage for students is the possibility to join a class from ever place they want or have to be. Furthermore, the environment allows a wide variety of communication tools so that collaboration, group work and socializing is given even in distance learning scenarios. The assignments are personalized and can be done within Second Life so that there is not requirement for any media break. The assessment can be turned in *up-to the last second*, with an immediate feedback according to the philosophy of AAL,
- **Marker:** Assessments are assigned automatically to the markers, who can verify the owner and creator of the document. As all documents are digitally turned in, the following pre-processing and marking processes can start immediately, including a direct feedback to the student.
- **Technical Administrator / external Evaluator:** Due to the visualization and different protocols, the processes are transparent and can be analyzed for errors or accreditation. Especially evaluators have to analyze a system from all perspectives to give their final approval.

Using Second Life for the simulation provides the following benefits and outcomes. Nevertheless, the first experiments where done in November 2008, it is too early to present concrete numbers, but the first impressions and feedbacks of several participants show that the usage of a virtual world was the right choice. Especially to demonstrate the advantages of a new methodology for processing assessments.

- Benefits:

- Process Documentation
- Simulation of the Automated Assessment Lab
- Training for all Roles
- Quality Assurance
- Technology Transfer
  
- Outcomes:
  - Controlled Assignment Submission
  - Immediate rich dynamic formative Assessment
  - Feedback for Student/Assignment cohort
  - Process Logging
  - Configurable Learning Environments
  - 'Smart' Lecture Hall
  - Ongoing Research Collaboration

Figure 2 shows the anticipated poster, whereas the final version includes updates of the AAL as well as the outcome of the planned experiments within the next months. Figure 3–7 are impressions what a participant can do in the different roles.

# Australis 4 Learning

## Benefit and Outcome of Second Life Simulation

**Heinz Dreher, Naomi Dreher, Carl Dreher**  
Curtin Business School  
Perth, Australia

**Torsten Reiners, Christian Kuhlenkampff**  
Institute of Information Systems  
University of Hamburg, Germany



Semantic Analysis & Text Mining  
for Learning & Education  
A Curtin Business School Area of Research Project  
http://www.semanticschool.com/australis



### BENEFITS

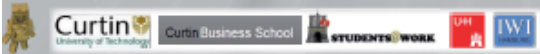
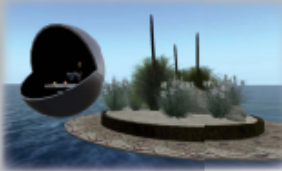
- Process Documentation
- Simulation of the Automated Assessment Lab
- Training for all roles
- Quality Assurance
- Technology transfer

### OUTCOMES

- Controlled assignment submission
- Immediate rich dynamic formative assessment
- Feedback for student/assignment cohort
- Process logging
- Configurable learning environments
- 'Smart' lecture hall
- Ongoing research collaboration

### COLLABORATION

- CBS: Automated Assessment Lab
- UNE: Distance Education, Large Class
- ACU: 12K Teaching Role Play
- UHH: Projects in Synthetic Worlds



Contact: reiners@econ.uni-hamburg.de

Figure 2: Anticipated poster

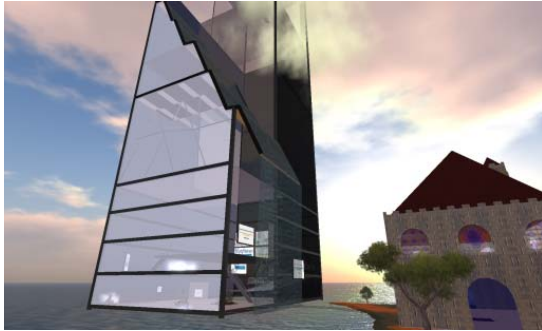


Figure 2: AAL Building



Figure 4: Example for classroom setting (group work)

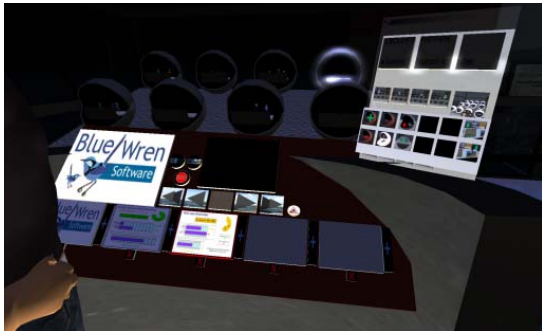


Figure 5: Presenter Desk in the classroom

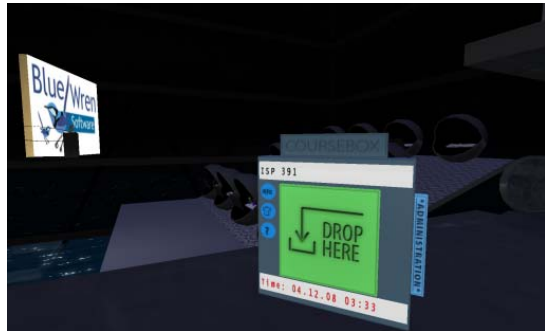


Figure 5: Drop-box to submit assessments in SL

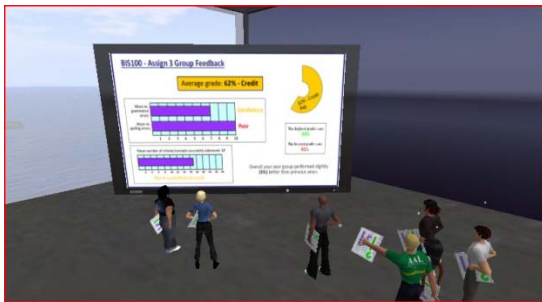


Figure 6: Statistics for a class

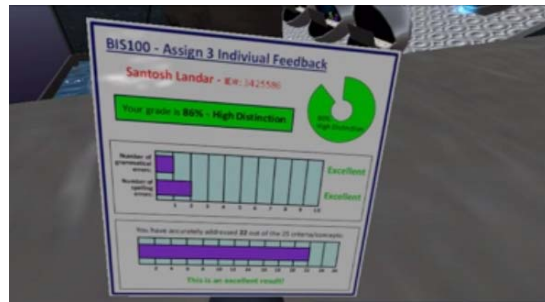


Figure 7: Individual results

## Conclusions

Choosing the virtual world Second Life for the simulation of the Automated Assessment Lab supported our efforts to communicate the processes to the different users. Furthermore, it allowed simulations of every step involving real human beings to control the in-world avatars and report back about their experiences in the different roles, especially if they have the chance to receive a complete new perspective of it. The first results encourage us to continue with the project and do further research on the simulation for the AAL. A further outcome of our Second Life involvement includes new possibilities to collaborate with other institutes all over the world without common barriers like distance. The region *Australis 4 Learning* became the center of three interesting research fields in virtual worlds, whereas all participants collaborate with respect to reuse developments rather than starting from scratch all the time. The institutes on *Australis 4 Learning* are the School of Information Systems (Curtin Business School) in Perth, the University of New England in Armidale, and the Australian Catholic University in Sydney; see Figure 8.

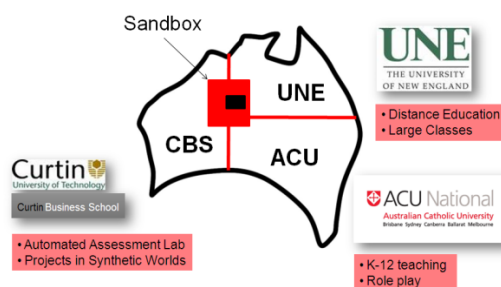


Figure 8: *Australis 4 Learning* in Second Life, map of participating universities