

ICT SHOWROOM – A JOINT STUDENT PROJECT EXHIBITION AND COMPETITION OF THREE UNIVERSITIES

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ABSTRACT

Project-oriented courses are important tools to learn core engineering knowledge, skills and attitudes. However, it is not always that easy to motivate the faculty to create these types of learning activities or to facilitate the students to utilize the opportunity to join a design-build project. Turku University of Applied Sciences, University of Turku and Åbo Akademi University have a set of project-based courses in their programs. After the ICT education units of these institutions moved into the same campus, efforts to further improve the co-operation was launched. One initiative was to facilitate the student projects somehow and, simultaneously, to get both students and faculty members to get familiar with each other and their ongoing activities. The result was ICT Showroom, an exhibition and competition event open for all student projects of the campus. In this paper, the ICT Showroom Student Project Exhibition and Competition event is described. The background of the idea, concept and practical issues and experiences are documented.

KEYWORDS

Project-based learning, competition, collaboration, change management

INTRODUCTION

As promoted also in the CDIO standards, project-oriented courses are important tools to learn core engineering knowledge, skills and attitudes. Hands-on opportunities to get familiar with the product and system lifecycle development and deployment are important for the students to develop their product and system building skills, as well as the ability to apply engineering science. [1]

However, it is not always that easy to motivate the faculty to create these types of learning activities or to facilitate the students to utilize the opportunity to join a design-build project. Thus, different actions to promote the project-oriented approach both among the teaching

staff and the students are required in order to make the achieved teaching and learning results visible to the community and spread the spirit of design-build activities and best practices further.

Turku University of Applied Sciences, University of Turku and Åbo Akademi University (all located in Turku, Finland) have a set of project-based courses in their degree programs. After the ICT education units of these institutions moved into the same campus in autumn 2006, efforts to further improve the co-operation was launched. An initiative by the authors was to facilitate the student projects somehow and, simultaneously, to get both students and faculty members to become familiar with each other and their ongoing activities.

The challenge was that the profiles of the degree programs in and within the universities differ significantly from each other. For example, there is an undergraduate program in Arts & Media as well as a graduate program in Microelectronics – and many others. Thus, the concept should allow participation of different types of students and projects and, if possible, even facilitate co-operation between students from different disciplines or even different universities.

The decision was to develop a joint competition between the student projects that focused not only on technical implementation details but also on the business ideas behind the project, as well as on the presentation skills of the teams. The result of this brainstorming was ICT Showroom – an exhibition and competition open for all student projects of the campus. The intention was to create an event with good spirit and relaxed atmosphere – but still set up a real competition with an industrial jury and considerable prizes for the winner team.

The marketing of the pilot implementation was started late autumn 2007. The number of participating teams was finally almost doubled from the original goal; 42 teams presented their work at the exhibition March 2008. Local industry decided to sponsor a significant prize for the winning team, as well as to send their representatives to a jury to award the winner. The first event was a success and the second round with a slightly improved concept took place with about the same amount of competing teams in March 2009. One of the improvements to the concept for 2009 was a new visual image for the event as shown in Figure 1, designed by Media and Advertisement students of Turku University of Applied Sciences.

In this paper we present the ICT Showroom Student Project Exhibition and Competition event, a concept that successfully facilitates both students and faculty to develop, implement and join project studies, share ideas and learn from each other over institutional boundaries. The background of the idea is described, the concept and practical arrangement issues documented, and experiences as well as future directions discussed.



Figure 1. ICT Showroom '09 visual image (designed by the Media & Advertisement students of Turku University of Applied Sciences).

OTHER EVENTS WITH SIMILAR GOALS – A BRIEF REVIEW

Different types of student competitions have been arranged in very many universities. However, in this case the challenge was to tailor a concept which enables participation of students from different disciplines and degree program profiles. Moreover, the rules and assessment criteria should be such that even teams in the beginning of their studies could have a fair game against those already close to their graduation. A brief review of other events with similar goals was performed for benchmarking purposes:

- The Innomaraton is a joint event of University of Lapland, Rovaniemi University of Applied Sciences and Kemi-Tornio University of Applied Sciences in Finland. The main idea of the marathon is that the local companies provide assignments to student groups which then create innovative solutions to the given problems. The best solutions participate in a final evaluation round, and a winner is selected by a jury that consists of entrepreneurs, regional developers and university teachers. [2]
- Lahti Science Day is an annual event organized by the Lahti University Consortium and the Universities of Applied Science of the Päijät-Häme region in Finland. The goal of the event is to present ongoing research and development activities and other state-of-the-art topics to the local companies and other stakeholders, as well as to serve as a networking platform. [3]
- For more than a decade, the Kenyan chapter of The Institute of Electrical and Electronic Engineers (IEEE) has held the annual Engineering Student's Exhibition. The goal of the exhibition containing a competition (several series) is to drive students to develop their skills and to give them a deeper insight into technology coupled with market demand. The preparation and presentation of projects will challenge them to mix and match their theoretical and practical skills. The exhibitions have been networking opportunities for local and international participants, too. [4]
- The Mechanical and Mechatronic students from the Department of Engineering at the University of Melbourne must complete a final year project. These projects are showcased for the engineering industry, fellow university students, lecturers and secondary school students at the Meridian exhibition event. Through Meridian it is hoped the university will be able to strengthen its links with not only the leaders in industry, but that it will also be able to promote the benefits of engineering to the future generations of engineering students. Meridian '08 also organized a design challenge for the students to participate in. Participating students received promotional material from various sponsors. [5]

Despite the fact that these examples represent only a brief snapshot of the student project events, they contain many elements common to the vision behind the ICT Showroom concept.

BACKGROUND

Project-based courses

The Computer Technology and Computer Science curriculums at Åbo Akademi University have for many years had a joint project course where the participants form groups and perform a project with a larger scope than normal exercises during standard course. The groups have been of size 3-6 persons. The project work has normally been software development, where the groups followed some software process prototype selected by the group.

The length of the course was two semesters, starting directly after the summer holidays in September, and running until mid spring, around Easter. The course itself was started with lectures on software processes and software projects, where after the students formed teams and started to work on projects. The projects were either ideas by the teams themselves, or projects assigned by the lecturers. The teams presented the status of their projects in regular project course meetings once a month. The projects teams were supposed to finalize the projects until the end of the project, but many times the projects overrun, and the final version was delivered late.

Also the Information Technology curriculum of Turku University of Applied Sciences has a long tradition of project-oriented way of working. The second year students have a mandatory Software Engineering project in their program and, especially, the final year students work closely with different projects often based on external assignments. However, there were no common platform to present the results and learn from the other student's project ideas and implementations.

Similarly, the Computer Science and Information Technology curriculums at the University of Turku include several courses containing project work. Currently such courses are found for example in the areas of Mobile Communication and Software Engineering. Also, Master's projects are often viable for inclusion to the ICT Showroom event. Before the event, there was no forum for student teams or research groups to present their projects or research results on campus.

Challenges with student motivation

One basic problem with the courses has been the lack of motivation for doing project work on a regular basis and delivering a final deliverable at the assigned time. Another problem was that the general curriculums did not include education on project skills. For instance, the normal Computer Science curriculum at Åbo Akademi University includes theoretical knowledge on Mathematics, Data structures, Programming languages Databases etc., but when it comes to running live projects, the students were basically on their own. To tackle this problem, lectures with project management basics were introduced in the course, and checkpoints such as kick-off meetings, milestones and definite deadlines were strongly emphasized in the course. However, lack of motivation was still a problem. As nobody did check or need the results of the projects, the groups were not motivated to keep up the pace during the project.

Internal exhibition

To deal with the lack of motivation, the teams participating the project course of Åbo Akademi University during the academic year 2006-2007 were asked to produce posters on their projects and present them during a course internal exhibition, to which all personnel of the department was invited. This was a definitive spark for the project work, and all teams were much more motivated to deliver a good project on time. The exhibition was open for two hours in a normal lecture room. In addition to the posters, the teams produced live demos of their projects. The rather simple possibility to demonstrate the projects to an audience, proved to be a very strong motivator for performing and finalizing the work in time.

Immediately following the success of the internal exhibition, the idea of having an even larger audience and larger pool of projects was born. A core organization group was formed, and a common event for the students of the campus was planned for the academic year 2007-2008, combining all project work done in the ICT House.

ICT SHOWROOM

The concept

The institutions participating in the event are the Information and Communication Technology related departments of Turku University of Applied Sciences, University of Turku and Åbo Akademi University. All three departments have been physically located in the same campus and in fact in the same building, the Turku ICT House, since autumn 2006. The first floor of the ICT House serves as the venue for the ICT Showroom event, allowing event guests to walk through the entire building and view the display stands with ease.

The event accepts two kinds of contributions: student projects made during the past year as a part of coursework in one of the departments, and research project presentations. For both types of contributions, the organizers provide a poster stand and a table for demonstrations. For the student projects, the organizers print the posters and cover the poster expenses. The student projects participate in the competition part of the event, where a jury evaluates each participating student project and selects a winning team.

In order to have a non-biased jury, it was decided to invite 4-6 local industry professionals to both act as members in the jury and to sponsor the prizes given to the winning teams. The jury assesses the technical contribution and quality, commercialization potential and presentation of the student projects. However, there are no exact criteria for the evaluations, allowing for different annual emphasis based on the jury composition. The jury spends two hours in the event familiarizing themselves with the student projects, discussing the ideas and solutions used in the projects with each student team. The jury members give immediate feedback to the students about their views on the operability and implementation of the project. After the evaluation round the jury members have a meeting to discuss the student projects and to select a winner and one or more other projects that in their view deserve a certificate of appreciation. To motivate the student teams to really do their best, the organizers have each year made sure that the prize received by the winning team is something substantial and makes the effort in the event worthwhile. In 2008, the prize was an Internet tablet device, and in 2009 a mini-laptop for each team member.



Figure 1. Teams setting up their stands and presenting their projects at the ICT Showroom '09 exhibition.

In addition to the student project competition, the event also includes a public vote in which visitors of the event may vote their favourite presentation and technical content. A certificate of appreciation is given to the winning team of each category. One of the voters is randomly picked to win a prize, which is typically a high quality digital audio player.

Even though the research projects are not included in the competition, the research groups benefit from the event in the sense that they can practice their presentation skills and use the event as a testbed for their demonstrations in preparation for scientific conference exhibitions. For this reason, research projects are allowed to bring their own presentation equipment and material to the event if they so wish - they are not required to limit themselves to the poster stands and tables provided by the organizers. Another advantage for the research projects is that they, using the ICT Showroom, can provide such presentation material that is normally not presented on scientific conferences. On scientific conferences, the emphasis is on new contributions, normally on deep technical details that the project is providing. The ICT Showroom gives a more practical overview of the project; information that you typically provide to a broader audience focusing on the problems the projects will solve.

Schedule and arrangements

The overall schedule of the first ICT Showroom is shown in Table 1, column 2007-2008. In the Kick-off event the ICT Showroom concept was presented to the potential participants. The idea of the Kick-off was to make things moving and to check the initial interest in the competition. Approximately 50 students were present, which was considered satisfactory.

The registrations to the event were done using a web based system, where the participants in the first stage registered the project name, members, abstract and contact information. Later on, the posters were submitted via this system, and then collectively printed at a print house by the organizers. In addition, a program leaflet and other documentation (e.g. team and jury instructions) were prepared in advance.

The exhibition was planned to last for four hours, and was announced to be open for public. During the exhibition the jury visited the teams, and in the afternoon the winners were announced. The key figures of the two first events are presented in Table 1.

Table 1
Key figures of the two first ICT Showroom events

	2007-2008	2008-2009
Announcement / Kick-off	Nov 30 / Nov 30	Dec 15 / -
1 st registration deadline	Dec 15	-
Registration deadline	Jan 31	Jan 31
Poster deadline	Feb 29	Feb 27
Exhibition date	Mar 7 (Fri)	Mar 5 (Thu)
Exhibition open for public	11:00-15:00	11:00-14:00
Number of student projects	27	24
Number of research projects	15	14
Number of participants	163	132
Number of public votes	150	190
Jury size	5	6



Figure 2. The winning team the of ICT Showroom '09 competition at the award ceremony.

In general, already the first ICT Showroom event was considered successful and the event was decided to be repeated the next academic year. The first time all practical issues had to be figured out by the organizers; during the second run in 2009, experiences and material from the first event were taken advantage of, which effectively reduced the workload of the organizing committee both beforehand and during the event. The main concept was found to be working; hence only some smaller changes were done.

In 2008, the organizers had to do much of the event disassembly (tables, poster walls); this was in part due to the schedule of the event (prize ceremony took place right after exhibition). Moreover, there was not that much external audience visiting the exhibition during the last hour. Thus, the length of the next exhibition was shortened from 4 hours to 3 hours. This proved to be a good improvement; the jury had just enough time to discuss with all teams and the exhibition was dismantled by the teams themselves while the members of the jury had their meeting. Moreover, this year a member from the foundation for the European Capital of Culture Turku 2011 was invited to join the jury to better support evaluation of projects that dealt with Digital Arts.

Public visibility and media

The intention was to get visibility in local newspapers and other media, too. Before the first ICT Showroom invitations to the media were sent out, but none turned up at the event. Also press releases both before and after the event were sent out, but the reaction by local media was poor. Only when the winning team was found to be from the Swedish speaking Åbo Akademi University, a local Swedish speaking newspaper and radio channels contacted the winners and interviewed them. But on the general level, the event in itself seemed not to be interesting enough.

A new attempt to attract media was made with a slightly different focus even during the second ICT Showroom. This time some minor hits in the local media were noticed – but no real success now either. A completely different strategy must be tried in the future. Maybe the most successful project teams and their topics should be highlighted in the press releases instead of reporting on the event in general?

FUTURE DIRECTIONS AND DISCUSSION

In this paper, the ICT Showroom student project exhibition and competition event was presented. The background, concept and practical issues concerning the event and its planning process were described.

The ICT Showroom has now been arranged twice and the experiences have been very positive. However, the concept will be further improved for future rounds; the tradition is just becoming established. Some directions for future development steps are:

- So far, the exhibition audience seemed to consist on people working or studying at the venue. The event contains a lot of potential as a tool for recruiting students to the institutions, and it could somehow be integrated into the upper secondary school recruitment programs of the universities.
- Acquiring participants to the event has shown to require a great effort – both concerning the student and research projects. Despite the fact that this most probably gets easier with time as the event truly becomes an integral part of the academic year at the campus, further actions should be planned. Getting student teams to participate requires effort from the instructors of the courses that include a practical project work.
- In order to be able to develop the concept further, it is necessary to gather detailed feed-back data from the participants, staff members, event visitors and industrial representatives. We plan to achieve this by means of designing and conducting a set of surveys.

The ICT Showroom event clearly supports the design-build learning activities described by the CDIO framework. It has grown into a multi-institutional and interdisciplinary workspace that “supports and encourages hands-on learning of product and system building, disciplinary knowledge, and social learning” [1], which in our view supports the rationale of adopting CDIO methods and standards in our engineering curriculums.

The ICT Showroom has already now proven to be a successful and easy way to facilitate project-oriented teaching and learning activities and, moreover, it has served as a networking platform for the students, staff and local companies. For example, several members of the winning team of ICT Showroom '08 were employed by one of the companies in the jury. The concept and experiences can be easily utilized also at other institutions and learning environments.

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Biographical Information

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