Thesis Work in a Cloud Environment - Case PROksi

Tuomas Korkalainen
Helsinki Metropolia University of Applied Sciences, Helsinki, Finland
tuomas.korkalainen@metropolia.fi

Markku Tähtinen
Helsinki Metropolia University of Applied Sciences, Helsinki, Finland
markku.tahtinen@metropolia.fi

Robert Arpo (Media studies PHD)
Head Of Degree Programme
Helsinki Metropolia University of Applied Sciences, Helsinki, Finland
robert.arpo@metropolia.fi

Anna-Maria Vilkuna (PHD)
Head Of Research And Development
Helsinki Metropolia University of Applied Sciences, Helsinki, Finland
anna-maria-vilkuna@metropolia.fi

Abstract:

In Finnish Universities of Applied Sciences it is recommended that the topics of students' final theses be based on the needs of working life. Unfortunately, in practice, this is not always the case. The final thesis is the biggest single investment of students' time and effort during their studies. How could employers better benefit from the young energy the graduating students channel into this work? Employers also wish to participate more generally in the curriculum: they have a desire to influence the contents of teaching to ensure for themselves future workforce with relevant knowledge and skills.

The European Social Fund project *Reititin* (*Router*) has created a new kind of open learning platform that makes it possible for representatives of work life to participate in students' thesis work in real time by using cloud services. This learning platform, PROksi, also serves as a new kind of recruiting platform for employers, with the focus on thesis work. Via the platform PROksi, students and employers can engage in professional dialogue. Technically, PROksi has been combined with already existing cloud and social media services such as Windows live skydrive, Google Docs, Dropbox and Facebook to ensure easy adaptability.

The pilot project of integrating PROksi to thesis work has been carried out in the Faculty Of Culture in Helsinki Metropolia University of Applied Sciences. From the start it has been clear that the technical knowhow of students and staff has differed. Students' and teachers' varying attitudes towards this new open working style have been followed during the project. A new kind of working culture and tools have aroused both interest and suspicions in students and teachers. To promote open collaboration, training on using cloud services and social media have been provided to all stakeholders.

The project has shown that the platform PROksi has successfully given students a chance to demonstrate their professional knowledge. It has also become clear that there is still a great need to further develop the transition phase from studies to working life.

In conclusion, it can be observed how cloud service platforms such as PROksi serve three different groups of stakeholders and provides them with different opportunities:

Employers (companies, public sector, NGOs)
- A new recruiting channel
- Benefit from final theses that develop the employers' organizations
- A chance to influence contents of teaching

Students
- Possibility to demonstrate own knowledge
- Topics for final theses that are relevant to working life
- Networking with working life

Teachers and the University of Applied Science
- Tool for thesis work
- New working environment, new possibilities
- Possibility to share knowledge related to developing own field

PROksi can be found at: http://proksi.metropolia.fi/ (the site is in Finnish language)

Keywords: open collaboration, authentic learning, cloud computing, work based learning, final thesis

1. Project Introduction

The Reititin project was launched in late 2011 with funding from the European Social Fund. The aim was to develop thesis work in Helsinki Metropolia University of Applied Sciences and create links between graduating students, employers and the teaching staff. The need for such a project in this specific university was already spoken out in previous publications on the topic of the latest trends in Metropolia Univeristy, where the increasing need of working life partners was thoroughly emphasized. [1]. The Reititin-project is based on using social media and it is a crucial tool in creating new kinds of working methods.

The Faculty of Culture and Creative Industries at Metropolia UAS was an obvious testing ground for Reititin and it's main product, the PROksi-platform, because of its experience in testing and researching new kinds of pedagogical and project management tools. [2] The Faculty has an attractive selection of different degree programmes and is experienced in different R & D projects in cooperation with working life partners.
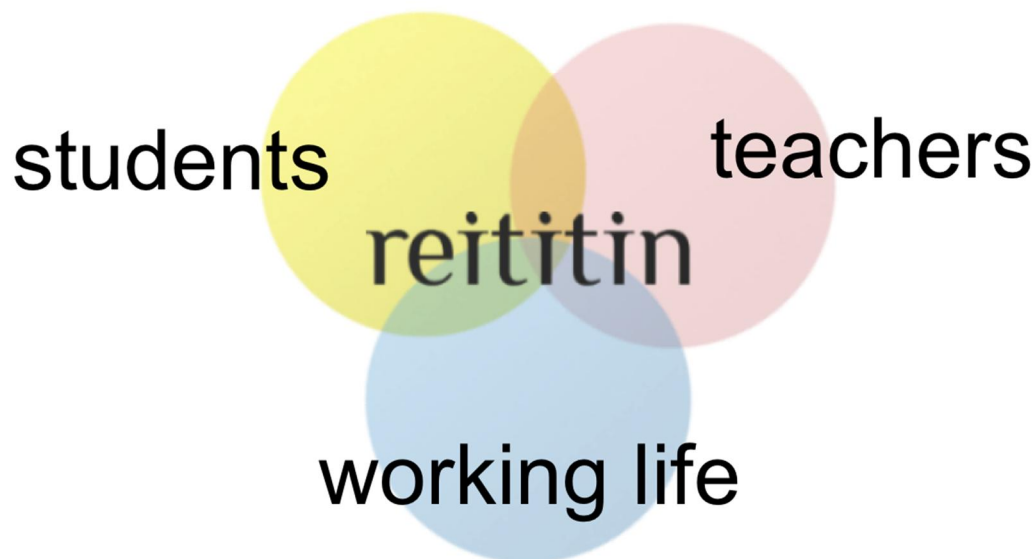
Figure

1. Project stakeholders

Metropolia is a considerable stakeholder in the Finnish university landscape, where it is the largest university of applied sciences. It educates professionals in the fields of culture, business, health care and social services, and technology. 16,700 students study there in 68 different degree programmes. Nine Bachelor's degrees and four Master's degrees are offered in Culture and Arts. [3] In order to obtain comprehensive results of experiences of an initiative linking students to working life, all of these degree programmes take part in the Reititin Project. Almost all of these programmes have been represented in social media workshops and testing of the PROksi platform.

In addition to creating a new kind of working method, part of the Reititin project has been organizing events and publishing information around the theme of open collaboration. With these methods the project aims to change attitudes related to the matter inside Finnish universities and different working life organizations.

2. Context

The motivation to apply for funding for the Reititin-project arouse of research results that demonstrated a need to develop final thesis work. Results of a study to develop final thesis work, conducted by Oulu University of Applied Sciences, showed that the communication between teachers, students and companies needs to be improved [4] In his study on developing final thesis work in Finland, Rissanen states that the concept and possibilities of a final thesis completed in a university of applied sciences has not yet opened up to the working life partners. Hence, the need to develop the employer - thesis work dialogue is high. Also the the methods to give feedback on theses and for teacher's to keep in contact with students need rethinking. [5]

Currently there are many different social learning platforms available that are using cloud services and creating communities around different subjects. Cloud services can be defined in many different ways. One of the definitions, which has served as a basis for this case study, according to Buyya, Yeo and Venugopal defines a cloud as a *"type of parallel and distributed system consisting of a collection of interconnected and virtualised computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements established through negotiation between the service provider and consumers".*[6]

Following the above definition, it can be noted that cloud services supporting study projects have been developed by various actors. For example, both Teamie [7] and Canvas [8] are web-based learning environments that use modern technology and allow to add rich content to study projects. However, as a significant difference to the founding ideology of Reititin project, both of the services are commercial and lack a truly open access and a working life participation option.

Of especial interest in the development of Reititin, were similar ventures by other Finnish actors. Inspiring is the case of Finland-based company, Viope-solutions, which has developed an online service that teaches programming skills. [9] In addition to learning institutions Viope also provides tools to help optimize organisation's recruitment, training and development, and other organisational functions. However, although the service has some open knowledge functions the course licences need to purchased separately.

The highlighted cases are only a few of many research projects around the world that are also active in the field of open knowledge. Aspiring to the same principle of open knowledge and fostering of scholarly knowledge as Reititin, is the noteworthy The Public Knowledge Project, which is operating through a partnership among Simon Fraser University, the School of Education at Stanford University, the University of British Columbia, the University of Pittsburgh, the Ontario Council of University Librariesand the California Digital Library. [10] The Public Knowledge Project aims to explore whether and how new technologies can be used to improve the professional and public value of scholarly research.

3. Methodology

Design and development

PROksi is built using the open source content management system Wordpress. The main social functionalities of the platform are implemented with a free Wordpress plugin called Buddypress. It offers some ready features that turn Wordpress into a social platform including friendships, groups and activity streams [11]. Wordpress and Buddypress have strong developer communities that ensure frequent updates and reliable code. Some of the other features are implemented with carefully selected plugins and own code in custom theme. The platform has been under constant development and the members of the community have had a major part of the development process.

Mobile users have also been taken in consideration on the design of the platform. The layout of PROksi is implemented with Responsive Web Design so that it automatically scales to match the dimension of the device rendering it. In his study, Macotte argues that hence the user is ensured to get the best possible user experience regardless of the device at hand. [12]

The finished theme of PROksi and the functionality built in it will be available for other universities and schools to install on their own systems. One reason of choosing Wordpress and Buddypress instead of building everything from scratch, was the need of little or none programming skills for the further development of other organizations to make the platform match their needs.

Evaluation

The evaluation of the Reitin project and especially it's main product, the Proksi platform has been built into the project via automatic questionnaires sent out on user experiences. Throughout the pilot phase of PROksi, user feedback has been systematically collected by sending online questionnaires to students and teachers. The thus obtained qualitative data has been analyzed to note main tendencies. Though the feedback has been based on participation in this specific project and platform, general tendencies applying to all open workspace initiatives can be noticed.

Of the teachers, a high percentage of approximately 85 answered the survey. From the students the total was significantly poorer, approximately 20. Answers from teachers had a high degree of repetition and general tendencies were relatively easy to note. As the survey did not gather a high quantity of responses from students, a Feedback and Development section was added to the PROksi platform. This proved significantly more fruitful for obtaining feedback, with a total of 17 feedback-messages. Feedback was also gathered from individual project pages within the PROksi paltform. It is to be noted that in a university setting informal conversations on the subject also served as a channel of information on issues in the background relating to the success of using PROksi.

The questionnaire consisted of several questions about experiences using PROksi (see Attachment 1). Questions addressed amongst others, the ease of using the platform, it's role in promoting student-employer relations and developing thesis work.

5

For teachers with a more active role in the project open answer questions were addressed on the achievements and goals of the project in their particular field.

4. PROksi Platform

The PROksi platform is an open learning environment and the main outcome of Reititin project. It was launched in early January 2012 and is now being actively used in different degree programmes in Metropolia UAS. The main goal of the platform is to make final thesis and other student work easily accessible to the working life partners, teachers and co-students.

An open learning environment as defined by the European Social Fund *provides free access to content managing tools and basic materials aimed to all citizens. It also provides guidance for the usage of the materials and the technical equipment related to it.* [13]

With the help of PROksi, the philosophy of sharing your completed work only with your teacher is complete remodeled. Users can interact inside different study projects and post comments, links to new research or even hire the right person.

In the modern age, it is highly difficult to find time for meetings or guidance sessions between students and teachers. PROksi provides easy tools for remote working. It has been credited for giving more possibilities to get guidance from the teaching staff. In addition, it also brings the working life partner's comments and advice to benefit the student.

PROksi also aims to work in other ways as a channel of communication. It provides working life partners an opportunity to give feedback directly to the teaching staff in an open environment. Universities of applied sciences provide workforce to the companies and other institutions. Employers are the experts on what kind of experts and job descriptions are needed in the future. PROksi will provide a new forum to discuss new trends in a specific field of expertise. And vice versa - universities are also creating new kind of field-specific information and working methods. Traditionally the dialogue has been conducted by the HR-departments of the company, but in the future the need for a new kind of expert driven discussion forum is high.

The current developers and administrators of PROksi are acting as facilitators and community managers. When a student is interested in a topic proposed by a working life partner in the topic bank, the two stakeholders can start interacting without the permissions of a teacher or administrator. When an idea for a study project is formed, the member of teaching staff can have a say, if the project is suitable as an thesis or a smaller credit project.

PROksi can be viewed as a part of a bigger global project to support open knowledge, which allows the production distribution of knowledge in an open manner. Open knowledge has it's owns set of rules on principles. [14] Future generations of students can easily access and comment on other theses and it will stay online as an collaborative source of information.

It is understandable that not all students or companies want to share all parts of the thesis in progress or even after it is finished. Although the project encourages students to write in an open environment, the option is still available to change the security settings. In some cases the working life partners might also ask that the thesis is placed under quarantine before it can be published.

Although it is highly recommended that the students would get at least a formal reimbursement, it is still a matter that is settled between the employer and student privately. Metropolia provides guidelines for student work reimbursement, but the amounts vary in different fields. Whereas it could be considered normal to get paid for designing a website for a company,

but organising a children's musical workshop could done without remuneration. In no ways is PROksi designed to be a tool to get cheap or free student-labour nor it is meant push down salaries in different fields of expertise.

5. Features of PROksi

The amount of features in PROksi is consciously left to a minimum to keep the service simple and easily learnable. Like in all design projects, adding feature after feature ultimately overloads the software and makes it difficult to use. Such as phenomenon is referred to as Feature Creep [15]. For a target group with varying skills and experience in web environments, it was of high priority to avoid such a risk.

Registration of a user account on PROksi is needed if the user wants to contribute to the platform. Registration has been made easy with simple one-click Facebook registration, which uses the user's photo and email address obtained from the user's Facebook account, in PROksi. Regular registration is also provided for non-Facebook users and for those who don't want to share their Facebook info for third party applications. Each user's own Profile page is fully customizable and can be expanded by linking profiles on other sites like LinkedIn or personal portfolios.

Users can add each other as contacts. This gives them an opportunity for private messaging. Other benefits of adding people to contacts is the possibility to filter the activity stream and project listings to only show activity and events by their own contacts. The front page of PROksi shows a site wide activity stream from all public activity by all users. This makes it possible for the students to show their know-how to a bigger audience and to perhaps unexpectedly collaborate with people with know-how from different fields. For regular users though, who want to quickly see what their contacts are up to, it's important to have a possibility to filter the content to only show info that's relevant to them.

Figure 2 PROksi front page showing all recent activity.

On their project pages users may link documents from cloud services like Microsoft SkyDrive or Google Drive. This provides users a chance to have a single copy of a document in the works always available for project members so that everyone always has an access to the latest version of the document. If the user saves the document to a cloud service that offers a link to the document, it's not needed to upload the file to the server every time the document is updated. Copying the link once to PROksi is enough.

There is a Facebook style post wall on every project group page. Students can use it as a micro blogging channel for the project or just as a place to share links and ideas or ask questions regarding the project. Teachers can give tasks to students and comment on their work there. Employers and other users outside the academy can share their professional know-how and help the project to meet the needs of the working life.

Figure 3 Project Group home page.

Project group admins and members can create group hierarchy by creating sub-groups that have same functionalities as root groups. This gives group members a chance to gather in smaller independent groups within the project. It also makes it possible for teachers of project courses or thesis seminars to create a root group as a base group for the course and let the students create their own sub-groups underneath it. This way the sub groups the students create function as independent project groups and can be set private or public regardless the privacy status of the root group. Group hierarchy makes it easy for the teachers to follow the projects started in a course and was a requested feature by early users of the platform.

The final main feature of PROksi is the Topic Bank. This is a section where employers can submit suggestions for a topic of a final thesis or a student project. Basically an organisation posts a description or an outline of the project and their contact information. Students may reserve the topics and their teachers are responsible of evaluating if the project is doable and if it meets the standards of the university as a final thesis topic.

9

6. Engagement and contribution

PROksi has gained a fair amount of student users and many of them have started their own project groups, as instructed by their teachers. Ideally, students in PROksi would spontaneously produce more content by networking, blogging about their projects, sharing articles and commenting on other students' content etc. In reality however, this is not the case – at least not yet. Like in every social platform, the users need to be somehow encouraged to contribute. These encouragements may come from people or from the platform.

In many cases PROksi students have found the motivation to contribute only if they are instructed by a teacher. This is not an ideal situation and perhaps the advantages and the potentials of a social media based learning environment are not yet used to a full extent. The kind of scenario where students act only as instructed resembles more of a traditional and formal learning environment.

However, tasks set for students by teachers, are of course efficient motivators for contribution. To start the ongoing social activity, these tasks should also include encouragement to participate in the work of other students – even as little as leaving a comment.

However, it is good to remain realistic when setting goals for student activity. Masud emphasizes in his work that not even in an cloud based e-learning environment can the role of the teacher be replaced. [16]

The teacher's role is not, however, static. Teachers may need to renew their approach to teaching when working in an open social networking environment and adopt some qualities of a community manager. In addition of task setting, creating a motivating and pleasant environment where students feel comfortable to interact openly and spontaneously could be just as important although challenging. However, the encouragement of contribution is also a responsibility of the platform itself. The future development of PROksi should heavily focus on it. What the developers of the platform can do is to focus on the right motivations for use of the platform and to create interfaces that support those motivations. [17] Also in order to get contribution platform needs to provide some features that helps users understand what is wanted for example by requests and goal setting.

7. Evaluation: User experience and feedback

Throughout the project, social media training workshops have been organized for students, staff members and working life partners. Different target groups had different emphasis in their training sessions, but all groups still received complete introductions to use of PROksi. After every training session a survey was conducted, which gave important user feedback to the developers.

After analyzing the students' feedback it was clear that the demand for a training workshops was high. As read one comment:

You should take in consideration, that people have different skills. For example, for some of the teaching staff mastering new technology is not a natural thing. For these kind of teachers it is a source of stress that they have to introduce yet another platform to the class. All the effort that is put in struggling with technical issues is taken away from the actual teaching. -Student after a social media workshop October 19.2012 [18]

10

Feedback is also constantly collected inside the PROksi platform where the developers can respond quickly and other users can participate in the conversation.

It would be great if PROksi would allow to connect other social media profiles. Linkedin is a powerful tool for professional networking. PRoksi is also used for networking, but after the thesis is done these contacts will remain here. It would be great to somehow move my own network to Linkedin. - PROksi Web conversation, 2012 [19]

10. Conclusion: Mainstreaming and future development

Developers of PROksi are working under project funding until June 2014, but by then the system should be running without daily development and administration. The plan is that the teachers will start acting as community managers. Regular Budypress and Wordpress updates are a challenge that need to be overcome before that.

There are no plans to make profit from PROksi in the future, as the whole system is is created under a creative commons license. There has already been inquiries of spreading the use of PROksi outside the the Faculty of Culture and Creative Industries. The ideal and prioritised mainstreaming and marketing strategy would be as follows:

Target organisation	Estimated schedule	Challenges
Other faculties of Metropola	2013-2015	big variety of degree programmes
English language degree programmes in Metropolia	2014-2016	Translations
Other Finnish universities	2014-2016	Different thesis requirements
Other universities outside Finland	2014-	Translations, different working cultures

Table 1. Mainstreaming plan

Mainstreaming PROksi to a wider user base would probably require additional funding. Another option would be that other universities would build their own versions on top of Buddypress and PROksi.

Electronic thesis platform, such as PROksi, is optimal for the fields of culture and the creative industries. Many of the theses are audiovisual products like a webpage, short film, song or even 3D grpahics for a computer game. These end products can be easily linked to the PROksi project page.

11

Reititin-project also aims to encourage interdisciplinary collaboration where students could create joint projects with different experts. A good example could be a music video for pop & and jazz music students. Clothing design, animation and of course film production could provided by other students.

In the near future PROksi is going to be developed more and more towards a recruitment channel where the active and collaborative thesis would be the main representation of a person(s) skillset.

References

[1] Kokkonen, J, Linkola, J. (2011), *Opetuksen avoin suunnittelu,* p.64.

[2] Kokkonen, J, Linkola, J. (2011), *Voihan Wik*i, p.7.

[3] Metropolia UAS website *http://www.metropolia.fi/en/degree-programmes/culture-creative-industries/* (referenced 17.5.2013)

[4] Below, S, Lakovaara H-L. (2005). *Työelämän edustajien näkemyksiä ammattikorkeakoulujen opinnäytetöistä,* p.47.

[5] Rissanen, R, (2007), *Ammattikorkeakoulun opinnäytetyö kehittämiskohteena,* p.109.

[6] Buyya,R, Yeo,C, Venugopal,S, (2008) *Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities*

[7]Teamie - collaborative learning plaform (2013) *http://theteamie.com/* (referenced 17.5.2013)

[8] Canvas Network (2013) https://canvas.instructure.com (referenced 17.5.2013)

[9] Viope Solutions (2013*) http://viope.com* (referenced 17.5.2013)

[10] The Public Knowledge Project (2013) *http://pkp.sfu.ca/about*

[11] BuddyPress website *http://buddypress.org/about* (referenced 17.5.2013)

[12] Marcotte, E (2011), Responsive Web Design, A Book Apart

[13] ESR 2007-2013 *Avoimissa oppimisympäristöissä aktiiviseksi kansalaiseksi http://bit.ly/1aeNizI*

[14] Open definition (2013) *http://opendefinition.org/okd/* (referenced 24.2.2013)

[15] Resnick, P (2012), *Evidenced-Based Social Design Of Online Communities - Getting To Critical Mass And Encouraging Contributions. Lecture at ICWSM 12 Conference in Dublin. http://www.slideshare.net/slideshow/embed_code/12925804# (*referenced *24.2.2013)*

[16] Masud, A, Huang, X, (2012), *An E-learning System Architecture based on Cloud Computing*

[17] Porter, J. (2008), *Designing For The Social Web. New Riders.*

[18] Survey 1] Survey conducted for students that participated in social media course held October 15-19 2012

[19] Web conversation on PROksi development group http://proksi.metropolia.fi/groups/proksin-suunnittelu/ (referenced 24.2.2013)

Tuomas Korkalainen works in Helsinki Metropolia UAS as a Project coordinator. His responsibilities include developing cooperation with working life in the Faculty of Culture and Creative Industries and acting as a publicist for the Reititin-project. Korkalainen was also the editor of a widely referenced micro book, Somepentujen käsikirja (Metropolia, 2013), which discussed the topic of social media based recruiting.

Markku Tähtinen is the designer and the developer of PROksi platform. He works as a project coordinator for the Reititin project of Helsinki Metropolia UAS. His responsibilities include web development and planning of the social media themed courses arranged by the project.

Anna-Maria Vilkuna PhD, Adjunct Professor Anna-Maria Vilkuna University of Jyväskylä at the Departement of History. Specialised in the new modern period. The Research and Development Manager at the Helsinki University of Applied Sciences. In charge of the R&D work based on the needs of the working life.

Robert Arpo Ph. D, Principal Lecturer of Media Production and Management, is Acting Head of Degree Programme in Film and Television. His research and development interests include open learning environments, social media and dialogue on the Internet.