Smart Industry | Business IT | Transformative Learning

#ICTProjectMaster
LAMK

Sariseelia Sore & Ulla Kotonen (eds.)

Lahti UAS ICT Projects 2016

Lahti University of Applied Sciences
Lahti 2016

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LAMK Lahden ammattikorkeakoulu
Lahti University of Applied Sciences

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Preface

Many workplaces are currently facing the so called skills gap problem. Businesses are struggling to find suitably qualified employees. Possible solutions include different forms of cooperation with educational institutions.

A key role of the Finnish universities of applied sciences is to train skilled workforce for their local regions. One solution to the skills gap problem is to introduce a model of active cooperation between the local higher education institution and the economic sector in order to help employers find suitable candidates from among students already during their studies. Students can meet the needs of the region's businesses in various ways (e.g. through projects, practical training, thesis projects, etc.) and develop their skills according to real-world workplace requirements. In addition, cooperation between students and employers provides an excellent recruitment channel: employers can reinforce a positive image among potential recruits and gain a better understanding of students' suitability to their organisations' needs.

Since its inception Lahti University of Applied Sciences (Lahti UAS) has given students opportunities to develop their expertise in workplace-oriented projects. In recent years, in addition projects originating directly from working life, development assignments offered by externally funded projects have been an important learning environment for students. When studying and solving real professional problems, project work skills have an increasingly important role. Project work is typical of the IT industry, which is why project work skills are at the core of the information technology degree programmes offered by Lahti UAS. From the first semester on, students begin to develop problem solving and project work skills in projects combining theory and practice. During the final part of their studies, students work in small international teams on extensive workplace development projects that enable them to apply their skills in real development tasks. Resolving topical problems has proven a meaningful way to build diverse skills sets.

This publication provides an overview of the current state of project-based learning in the information technology programmes of Lahti UAS and introduces real development projects

conducted by students in the spring of 2016. Moreover, the publication describes some of the possibilities externally funded projects may provide for students to develop their skills. In addition, customer advisor Jonna Sirviö from the Customer Guidance Unit Siiri of the city of Lahti discusses cooperation projects from a workplace organisation's perspective, and Lasse Seppänen, the principal lecturer in information technology at Hämeenlinna University of Applied Sciences (HAMK), writes about projects from teachers' perspective.

We are extremely grateful to all of you who contributed to this second ICT Project Annual Review.

Lahti, 14 October 2016

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Easy and fruitful cooperation: Lahti UAS student projects

The Customer Guidance Unit Siiri is part of the seniors' services and rehabilitation organisation of the City of Lahti, and it comprises the PalveluSantra advisory service and the local services guidance unit. The customers are primarily people over the age of 65 and their families. The services offered at Siiri are designed to support independent living and help find everyday life solutions in cooperation with customers. The aim is to identify the right type of assistance offered at the right time. PalveluSantra offers advice on the available services. The advisors explain what options are available and help customers identify the services they need. If a more extensive service needs assessment is required, the advisors schedule a home visit.

The unit responsible for community care and rehabilitation services for seniors conducted a project focusing on the use of new assistive technologies in order to develop and implement technologies that would support senior and disabled citizens in living independently. The aim is to help customers live in their own homes as safely and as long as possible. To many senior citizens, the word ”technology” means equipment that is difficult to use and even frightening. The Customer Guidance Unit Siiri set up a technology demonstration station for seniors where social and healthcare students from Lahti UAS demonstrated assistive technology to customers twice a week together with employees of the City of Lahti.

In cooperation with independent service providers, the project leader Eija Repo and customer advisor Jonna Sirviö started to develop ideas for a browser-based application that could easily deliver information to customers and their families. The aim was to create an easy-to-use application for elderly people. The development and implementation stage was carried out in cooperation with Lahti UAS students and senior lecturer Antti Salopuro. The execution of the project was very successful.

The students quickly understood the client's requirements and worked independently during the development stage. Cooperation was highly productive. The students visited Siiri regularly to test the visual design of the application and to consult seniors' opinions on what they need and how the application should work. The end result was an application called REINO that has its own URL and can be accessed from all types of network devices. We were given clear, well-written instructions for the updating and

Picture 1. Eija Kakko (left) and Jonna Sirviö (right). Photo: Antti Salopuro.

maintaining the application. Cooperation with the students was productive and rewarding, and I am sure this will not be the last project we conduct with Lahti UAS students.

We had cooperation with Lahti UAS in the different stages of the project. Physiotherapy students produced content for virtual visits in municipal home care and helped develop software for the welfare robot ILONA. Cooperation with Lahti UAS students was very positive and productive, and the students were highly active and motivated. We highly recommend conducting this type of project work and collaboration to other municipal organisations and private organisations.

Antti Salopuro

Lahti UAS BIT project activities 2016

Once again, many projects have been implemented at different levels during the 2015-2016 academic year of the Business Information Technology degree program (BIT) at Lahti University of Applied Sciences (Lahti UAS). Projects are crucial to developing and consolidating students' professional skills, and project activities in curricula have also been actively developed this year.

Implemented projects

During this academic year, the Lahti UAS BIT degree program implemented five different project courses, along with many projects related to specific courses. The three Green ICT Project courses and the ICT Project course with its two implementations (autumn and spring) were followed by the Agile Web Application Projects course (5 ECTS).

In the Green ICT Applications Project course, the last project course of the basic studies, the aim is to develop a desktop application that applies both an object-oriented programming paradigm and a database. As in all Green ICT project courses, the given project task also depends on the course implementation. In the international implementation, for example, the task was to create a system for general resource booking that could be used in a service business such as a hairdresser or car repair company.

The students were asked to design and implement a desktop application that allows the reservation of location(s), set(s) of tools, person(s) or any other resources that fulfil the qualitative criteria related to the given service at a specific time. The qualitative criteria could be, for example, the specific professional skills of a person or the equipment available at the location.

The Agile Web Application Development project course continued the work of the previous year's implementation of the Green ICT Applications project course (Salopuro, 2015). The student groups redesigned and implemented the shopping list and household menu tool for web architecture.

A total of ten different projects were run during the two ICT Project course implementations. These projects included two separate cases for online service marketplaces, an online information booth and an online platform to train the end users of a software product. Some of these projects are reviewed in detail in this publication.

Many project activities have also been implemented as part of substance courses. In the Website with Content Management System course, students created websites with popular

CMS tools such as WordPress or Drupal. Some of the websites were developed for external clients.

Best ICT Project

An award was given to the best ICT Project of the BIT program for the second time in 2016. This award aims to encourage students to further improve the quality of their work. The winning group is selected from among the projects done in the course ICT Project.

The 2016 award was given to the PS Academy group including the following students: Nuutti Toivola, Tiia Valtonen, Mikko Puustinen and Lauri Karlsson. The client company, Production Software, needed a platform for online courses and user manuals of their software products. The platform allows the end users of the product to learn to use and apply the software whenever and wherever they want.

Overall, the project ran well from beginning to end and the group stayed focused on the target. The group's resource allocation was realistic, and communication was kept clear and relevant for all the stakeholders. The final implementation fulfilled the client's needs

Picture 1. The PS Academy group with Nuutti Toivola (left), Lauri Karlsson, Tiia Valtonen and Mikko Puustinen won the award for the best ICT Project 2016. The managing director, Jari Kukkonen, of Production Software handed out backpacks and certificates to the winners. Photo: Alexis Oksi.

and was adopted by the client organization. The managing director, Jari Kukkonen, of Production Software Oy was very satisfied with the end result.

Curriculum development

The ICT Master Badges programme, described in last year's edition of this annual review (Salopuro, ICT Project Master Badges, 2015), has continued and the original idea has also been adopted in other fields of studies at Lahti UAS. For example, language and communication teachers have implemented a similar programme to encourage students in improving their language and communication skills (Kamaja & Kuisma, 2016). The principle of online badges and their application at Lahti UAS were also presented at the ITK 2016 conference in Hämeenlinna (Meriläinen & Salopuro, 2016).

The term ICT Project Master has now been expanded to include a more comprehensive way of organising the curriculum around the project work theme. This expansion is described in detail in another article in this publication. Through this development, project work and the required meta skills have been brought into the spotlight of the BIT curricula.

In short, in the context of practical projects, the newly defined concept of ICT Project Master includes many innovative pedagogical solutions that support the learning of both technical and soft skills needed in ICT project work.

References

Kamaja, H. & Kuisma, T. 2016. Kielitaito on opiskelijan kilpailuvaltti. Lahti university of Applied Sciences. News [accessed 28 January 2016].
Available at: http://www.lamk.fi/ajankohtaista/Sivut/Kielitaito-on-opiskelijan-kilpailuvaltti.aspx

Meriläinen, J. & Salopuro, A. 2016. Metataitojen kehittämisen tukeminen open badge -osaamismerkeillä. ITK2016. Presentation material [accessed 15 April 2016].
Available at: http://www.itk.fi/2016/ohjelma/foorumi/129

Salopuro, A. 2015. ICT Project Master Badges. In Sore S. & Kotonen U. (eds.), Lahti UAS ICT Projects 2015 [accessed 23 September 2016]. Available at: http://theseus.fi/handle/10024/103874, Lahti: Lahti University of Applied Sciences, 19-25.

Salopuro, A. 2015. Project activities of BIT programmes 2015. In Sore S. & Kotonen U. (eds.), Lahti UAS ICT Projects 2015 [accessed 23 September 2016]. Available at: http://theseus.fi/handle/10024/103874, Lahti: Lahti University of Applied Sciences, 12-18.

Sariseelia Sore

Learning new skills in projects

One of the key roles of universities of applied sciences is to strengthen and develop their regions' skills base. Externally funded projects provide important opportunities for this activity. Such projects allow learning to take place as part of research and development activities conducted in cooperation with various regional actors. At their best, projects have a clear link to a UAS's educational role and provide a motivating learning environment in which students can gain new skills.

In order to facilitate projects alongside studies, the skills requirements defined in projects should match the skills needs of students both in terms of timing and content. Even if this is not always possible, Lahti University of Applied Sciences implements numerous projects intended to help students gain new skills. Typical methods include project work, thesis projects and assignments integrated into courses.

The digiMensa project as a learning environment

Successful Finnish Customer-Wise Organizations - The Management and Measurement of Customer Value in Business Models in the Digital Era (digiMensa) is a project funded by Tekes, the Finnish funding agency for innovation. The project is managed and implemented by Lappeenranta University of Technology (LUT) and Lahti University of Applied Sciences (Lahti UAS). The project provides more understanding on customer wisdom in the digital business environment. In practice, through research and development, the aim of the project is to create tools and methods that businesses can use to obtain and apply customer information to support their business. The project outputs are created in active cooperation between the participating businesses, researchers from LUT Lahti, and the staff and students from Lahti UAS.

Lahti UAS students are involved in the digiMensa project in various ways. The students conduct individual projects, learning assignments and thesis projects. In addition, one of the participating businesses has had a student intern to support the implementation of a development task. The project is also integrated into a course offered at LUT as a learning assignment.

Three Business Information Technology students from Lahti UAS created the asiakasviisaus.fi website for the digiMensa project. This allowed the students to gain first-hand experience in CMS systems, website development and customer collaboration. The website, on the other hand, provided online

visibility for the project soon after its launch.

During the academic year of 2015–16, information technology and service design students from the Faculty of Business Studies provided ideas related to customer wisdom for a Lahti-based company participating in the digiMensa project and operating in digital business solutions. The information technology students developed ideas and created web-based interface demos related to digitised service provision processes and customer service paths before, during and after service provision. This allowed the students to learn about collecting and utilising customer information in various contexts in the digitised world. The service design students developed GPS-based service solutions, which the company can develop further together with its clients. The students were able to identify new approaches to utilising customer information for various purposes, for instance in service optimisation and automated marketing solutions.

In the spring 2016, the digiMensa project was integrated into the Successful Performance Management course offered at LUT, which gave the participating students the opportunity to work on a management challenge in cooperation with the participating company. The students produced a scenario and developed indicators for monitoring the scenario.

In the autumn 2016, two Lahti UAS courses (Digital Service Design and Practical eBusiness Development) aimed at information technology students were integrated into the digiMensa project in order to provide ideas on customer value creation in online business. This broad theme is being approached from various perspectives by students from two different year groups. Small student teams examine online business from the service provider's, the user's and the customer's perspective. Among others, the following themes are examined: online business as a service process, the success factors of online business and how to measure them, online business capabilities, multichannel customer service, user-centred approach, and customer experience.

In addition, the project's themes are examined in theses, including four in progress in the autumn 2016. One of these discusses the use of robotics in process development, and the other three explore online business from different perspectives. Integrating thesis work into more extensive projects allows students to study current topics in the context of real development assignments.

Antti Salopuro

Versatile project work skills with LAMK ICT Project Master concept

Introduction

As most work is nowadays organised in projects, especially in the ICT field, it is very important for ICT students to gain experience in project work during their studies.

Any ICT project includes many different roles and tasks. The roles do not necessarily have strict boundaries, and project team members must often be able to master versatile responsibilities even within just one project. In addition to technical skills such as programming, design or testing, a long list of so-called soft skills is also required. Among others, soft skills include the ability, courage and willingness to communicate with all stakeholders via different channels and in different languages and to constantly learn new skills.

In order to support learning and improve students' self-awareness of these project skills, the Business Information Technology (BIT) programs of Lahti University of Applied Sciences (Lahti UAS) have launched a specific concept, LAMK ICT Project Master. This is an innovative collection of pedagogical solutions that combines the theoretical knowledge and skills acquired in substance courses with practical project work along the whole study path. Its role is also significant in communication and making the student work, and its results are visible both internally and externally.

Concept structure

The LAMK ICT Project Master is based on about ten different elements. Its complete structure is outlined in Figure 1.

The whole concept is based on the curriculum (1) and its structure (1.2). The project courses (1.3) are implemented in conjunction with subject courses and the different pedagogical approaches (1.3, 1.4, 1.5) are applied to support this integration of theory and practice. The studied modules usually consist of two or three subject courses which are bundled together in a hands-on project. The flipped classroom principle is naturally implemented with these problem and project-based learning models, and the project documentation and communication tasks are an integral part of the accompanying language and communication courses. Some of these projects involve a real-life business client (3) which builds a natural network between the university and the business but also between the students and the companies. Real-life problems are also a great source of motivation to students.

Applying the Kanban method tool Kanboard (4) in project supervision plays an essential role in lowering some barriers of project-based learning. This method allows the project tasks

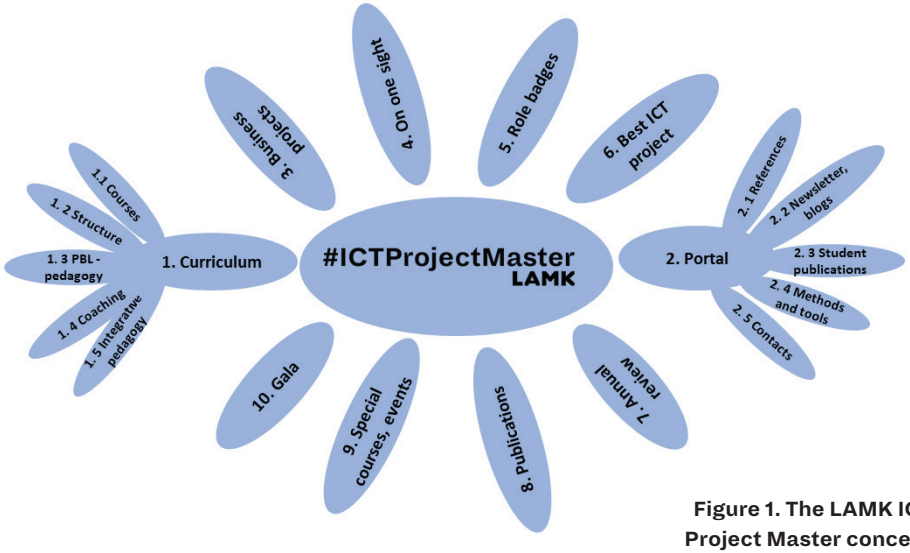


Figure 1. The LAMK ICT Project Master concept

and work progress to be visualised, keeping the different stakeholders abreast of the project status. In addition, it is easier to distinguish the individual work of each student from the group result. The teacher's work is also facilitated, and the students are better motivated. (Paananen, 2015.)

With the LAMK ICT Project Master role badges (5), the students are motivated to experiment different project roles with a public certificate (Salopuro, 2015).

The LAMK ICT Project Master Portal (2) provides a channel for different types of communication and at different levels. For students, the portal offers information about available project opportunities (2.2) as well as examples of past projects (2.1). As a result of technological surveys and research, a data bank (2.4) is formed on useful methods, tools and best practices which the students can utilise in their projects. The portal also offers an accessible channel for publishing student reports (2.3) that could raise interest outside the community.

For companies and other organisations, the portal offers information on potential collaboration with Lahti UAS. The reference list, articles and other publications showcase what has been done in the past, and the portal makes it easy to get in touch with the personnel in charge of different services.

In addition to the portal, this concept generates publicity through this annual collection of ICT project related articles (7)

and encourages the personnel to publish articles in journals and to give presentations at conferences (8).

Finally, the Lahti UAS BIT program organises special courses and events (9) under the brand name LAMK ICT Project Master. An annual award is granted to the best student project (6) at the annual LAMK ICT Project Master gala event where all successful student projects are also recognised.

Benefits

LAMK ICT Project Master benefits Lahti UAS students, regional businesses and Lahti UAS itself in many ways.

For students, this concept strengthens professional identity. By becoming aware of the different roles and tasks available in the profession, students begin to understand their own traits and abilities. This helps individuals realise the professional fields in which they could contribute the most as well as the fields in which additional training could improve their performance.

Intensive training in projects with real business orientation prepares students to better face the challenges in working life. Despite ample group work, the applied supervising methods are able to recognise unproductive individual work in student teams.

The companies and other organisations in the region benefit from LAMK ICT Project Master by learning more about the services that the BIT programme can offer. The reference list serves as an example of possible projects and may also give ideas for business development.

For Lahti UAS and the BIT programs, this brand is a way to stand out from similar programs. If adequately exploited in marketing, for example, the BIT program could attract more applicants. More applicants to the program would, in turn, raise the overall level of the students and reduce the number of program dropouts in the long run. And that, of course, would mean a greater number of alumni.

This brand could also make the Lahti UAS BIT programme more interesting among industrial and business partners, creating more possibilities for collaboration in the future.

References

Paananen, H. 2015. Visualising Work with Kanban in School Projects. In Sore S. & Kotonen U. (eds.), Lahti UAS ICT Projects 2015 [accessed 23 September 2016]. Available at: http://theseus.fi/handle/10024/103874, Lahti: Lahti University of Applied Sciences, 26-29.

Salopuro, A. 2015. ICT Project Master Badges. In Sore S. & Kotonen U. (eds.), Lahti UAS ICT Projects 2015 [accessed 23 September 2016]. Available at: http://theseus.fi/handle/10024/103874, Lahti: Lahti University of Applied Sciences, 19-25.

Jemina Wallenius, Niko Mäkinen, Sami Rosendahl, Vilma Ruoho & Antti Salopuro

Online info tool for assistive health technology devices for elderly

Introduction

This project was about creating a standalone web application and a technological setup for an online healthcare technology information booth for the elderly. The client organisation of the project was the Customer Guidance Unit Siiri, part of the Health Care and Social Services of the Municipality of Lahti (Siiri).

The client needed an application to help the elderly in finding assistive health technology devices. It had been discovered that the people in need of assistive technology are not aware of the possibilities that the technology has to offer. Similarly, the information about the service providers and their contacts is not easy to find. The solution should address available devices, services and technologies for different kinds of needs and health conditions. For each aid introduced, there should be simple graphical and written instructions on how to use the device and in what kinds of situations it could be helpful. Moreover, for each device of this kind, the solution should list potential service providers from the region along with an estimated price for purchasing or leasing the service.

As the application is meant to be used by the elderly people and their family members, it should have a very simple design and be easy to use. This affects things like font style and size, the colours used and the contrast between different objects. The user interface of the application should also be intuitive and self-explanatory.

Jemina Wallenius, Niko Mäkinen, Sami Rosendahl and Vilma Ruoho were selected from among the applicants as the team members based on their wishes and reported skills that suited the topic. The group members understood how the abilities of the end users affected the design requirements and knew the potential technical solutions that could be applied.

The final implementation, named Reino when it launched, was built on the content management system (CMS) Wordpress. In a comparison between the different options, this platform was deemed to be the best match for the client's needs. For the system owner and administrator, Wordpress is easy to use and update even without previous experience. It also allows a design that fulfils the end-user requirements.

Project phases

At the start of the project, the group received a brief description of the project task. The first task was to obtain more precise details about the project in order to better plan the project phases. The group organized a meeting with the client and managed to get a relatively good impression of the client's needs. The client also informed the team that they were expected to cooperate with another group of students but from the Faculty of Social and Health Care. This other student team would contribute to the application by providing information about the different aid devices and also at a later date by creating videos that show how the device is used in practice.

As the group became familiar with the project goals, work started on the project outline. This included writing the project plan, defining project tasks and subtasks and setting up a schedule to meet the project deadline.

After finishing the project plan, the group started to design and implement the actual website. Different CMSs were evaluated and finally Wordpress was selected as the applied platform. The group arranged meetings with the client every two or three weeks which was found to be an appropriate frequency for the process.

In addition to Wordpress, the group applied PHP, HTML and CSS along with several framework plugins to modify and extend the functionalities of the platform. Initially the service was installed and developed on the Niisku server provided by Lahti UAS to allow the client to avoid extra costs until the service fulfilled the client's needs and was ready to be deployed. For this, the final product was moved to a server provided by webhotelli.fi.

The implementation was made in a process during which the team would design and develop some new feature and then let the client test the website. During later iterations, valuable feedback was also collected from end users as the solution was demonstrated at Siiri for its clients. This was possible on a weekly basis since the student group from the Faculty of Social and Health Care demonstrated the real devices every week on site to members of the target group. Based on the prototypes and the collected information, the project team modified the website and gradually improved it to provide the desired properties.

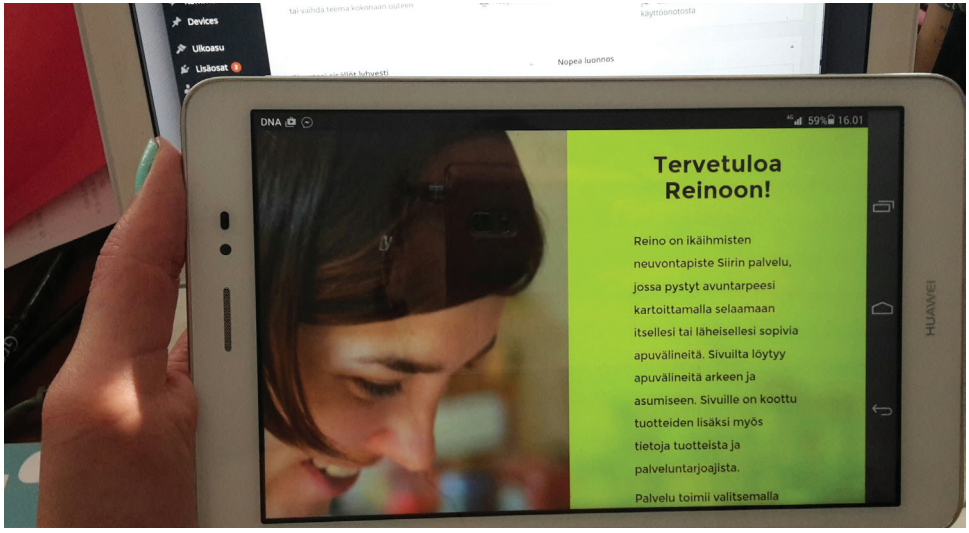
At the end of the development phase, the final product was transferred to the host server acquired by the client. This was achieved using a Wordpress plugin called duplicator, which creates two different files for transferring Wordpress easily. The team ran into some issues when attempting to transfer the existing mySQL tables from the development server due to issues with host server rights, but this was later resolved. The product delivery was deemed a success by both the team and the client. The client representatives were trained on the administrative tasks associated with the service and the consortium of the client and the service providers approved the final design of the application.

Successes and failures

The project was successful in many ways. The few difficulties experienced were all related to communication. The representatives of the client organization were often very busy with other tasks and therefore hard to reach, or they would not respond to inquiries. This led to confusion and frustration in the project team as it caused uncertainty about the feasibility of the project. The project manager adequately addressed this problem by deciding not to rely only on emails. Instead, she decided to contact the client representatives by phone. After this, the team was able to keep in touch with the client. Moreover, regular meetings with both parties were planned to further improve communication.

Time management did not turn out to be an issue during this project. The project team had clear plans for scheduling effective group work. Working sessions were planned with the entire group present if needed, whilst other tasks were handled individually. Although the team had some trouble scheduling the prototype sessions at Siiri, it was easy to figure things out with the client organization during the project meetings.

The work distribution was fairly easy in this project. Different group members had different skills, and both the project requirements and the team members' wishes were satisfied.



Picture 1. The prototypes of the application were tested on different kinds of devices. Photo: Vilma Ruoho.

Lessons learned

In general, the team learned about real project work involving a real client. The team became familiar with the practices used to develop a web service, including project scheduling, task and project management, along with proper communication with a client. The team manager was mainly responsible for communicating with the client about project work, and meeting times and plans, though during the organized meetings, all team members had a chance to participate in an open discussion.

During the later stages of the project, the importance of proper planning was emphasized because of unforeseen problems in the development phase, in communication and within the team. The project gave insight into evaluating the proper methods and tools in the planning phase and into the importance of thoroughly considering whether the available options meet the project's needs.

The developers became increasingly familiar with the Wordpress framework and its coding principles. The project involved creating a custom Wordpress theme with the necessary template files whilst incorporating additional libraries into the said files. The developers are now proficient in delivering a customised Wordpress website based on client specifications.

Overall, the feedback received from the client and the project supervisor was positive. The feedback from the end users on the final product was mostly positive. The end users were seemingly excited about the new informational website service, and they were willing to try it and test it. Throughout the whole project process, the client gave the group positive feedback about effectiveness and scheduling.

Ideas for further development

In the future, the website could be developed to better meet specific requirements of different end devices and browsers. At the moment, Reino is a website, but it could also be created as an application. Creating an entire application would certainly be a more difficult and time-consuming project, but it could yield positive results as a future project. During development, the team faced challenges in optimising the page to fit the end user's needs. The site could be fine-tuned to assist the elderly in using it, adding interactive instructions and controls to modify the page elements such as text size and colours, making the site more interactive overall to assist these users.

The project was successful in its aim to provide an online informational service for the elderly to search and view products displayed at the Customer Guidance Unit Siiri. In summary, the project provided valuable experience in communication and group work for the team's future projects.

Riina Alaspää, Riku Autio, Miramaria Ratia,
Toni Turunen & Antti Salopuro

Lahti UAS hackathon

Introduction

The client of this project was Lahti University of Applied Sciences (Lahti UAS), and the aim was to develop and organize a multidisciplinary hackathon event.

Hackathon events have just recently become popular at universities. Wikipedia defines hackathon as

- [a] sprint-like event in which computer programmers and others involved in software development, including graphic designers, interface designers, project managers, and others, often including subject-matter-experts, collaborate intensively on software projects. (Wikipedia, 2016)

At Lahti UAS, the aim was to organise an event during which students would form teams including members from all the four faculties of Lahti UAS to develop a solution based on existing technology for a limited field of applications. This meant it would be necessary to define a task or tasks around a theme that would allow students from all disciplines (i.e. social and health care, technology, business and design) to work together to develop something new. To achieve this, the applied technologies or the final applications should be related to the field of social services and health care. For students in other disciplines, it is much easier to identify responsibilities in a project of this kind. In fact, the roles would be somewhat intuitive: students studying technology could focus on the technical implementation of the project, business students could define the business case and marketing of the developed concepts, and design students could contribute to graphical, architectural and service design.

Although the team was not able to organise the event within the given timeframe, it was able to put together a manual for the possible organiser of such an event.

Project initiation

The students who wanted to participate in a project had to prepare their CVs and a personal application and send them to the ICT Project course coordinator. The required skills and abilities for this particular project were not seen as technologically challenging, but since the concept was new to Lahti UAS and involved many disciplines, a lot of open and active communication was required between the team members and other stakeholders. The students selected for the project were Toni Turunen, Riku Autio, Riina Alaspää and Miramaria Ratia.

After the project task was presented at

Picture 1. Toni Turunen, Riku Autio, Riina Alaspää and Miramaria Ratia. Photo: Alexis Oksi.

the ICT Project course kick-off seminar, the team contacted the client representative, Juha Hyytiäinen. He acted as the project coordinator for Lahti UAS and gave the instructions and requirements for the project work.

For the project team, it was initially difficult to get properly organised. The team had problems in both internal and external communication, and no one in the team really wanted to take responsibility to manage the project. It was also difficult to understand the described task and the big picture, which kept the team members from getting a grasp on the various pieces the project required. This led to further issues in project planning, and ultimately the entire project ended up being merely a series of actions to stay afloat rather than a well-organised sequence of activities.

The team did reach an agreement on team member roles but later determined that the initially defined roles were not all relevant for the given task. The roles were redefined, and finally Toni Turunen was chosen to be the project manager. Riina Alaspää worked as an assistant manager and also handled secretarial tasks. The web development work was done by Riku Autio while Miramaria Ratia was entrusted with time management.

Project implementation

At the beginning, the supervising teacher and the client suggested the team get in touch with some local or regional organisation or company in the field of social services and health care. The idea was to get an external partner for the event that could suggest an applicable problem field for the hackathon event. This external partner could potentially apply the results of the event in its operations afterwards and would, in any case, provide visibility for the project.

The team contacted two such organisations, both suggested by the supervising teacher. Only one responded, but it unfortunately declined the offer due to a lack of internal resources. The team could not come up with any other potential organisations and thus the idea of having an external partner had to be rejected.

The team discussed this with the client and decided that a manual for organising such an event would be a valuable output. The manual would provide a scheduled list of actions that would need to be considered when organising the event. An important addition to the manual would be a website that could be used to inform students about a forthcoming event, collect team registrations and function as a workspace during the event itself.

The client suggested that a specific Lahti UAS organization, Lahti Entrepreneurship Society (LAMKES), might be interested in organising the event in the future. The team contacted the organisation, and it turned out that it could indeed act as an organiser in the future. As a result of this positive response, new goals were set for the team's work as there was now a specific recipient for the manual.

For the manual, the team collected information about past events similar to the one planned. Websites on similar events were identified and the client representative also pointed out a good source. The group managed to collect this information and was able to present both the client and LAMKES with valuable information for later use. The website was also implemented with some required functionalities.

Lessons learned

This project taught the team how important it is to communicate clearly in any project. There should be a clear mutual understanding among team members of how to communicate and when. The responsibilities and roles also need to be very clearly defined. It is also not enough to be able to communicate internally, but the client and other stakeholders also need to be kept informed.

The project topic was new to all, and it was difficult to identify starting points for the work. This difficulty led to further problems in

planning, and it is thus impossible to view the overall project as a great success.

Some new knowledge and skills were gained on how to implement a CMS in a server and how to administrate the site. This was new to some of the team members. Some of these technical issues were technologies necessary in the implementation such as CSS and PHP.

Ideas for further development

Now that the manual has been delivered to LAMKES, the next step would be to go forward and organise an actual hackathon event. There will undoubtedly be many details in the manual that would require further development but with proper preparations, it should now be feasible to organise the event.

Before scheduling the event, it would be important to find an appropriate partner organisation from the region and determine the date, time and venue for the event to take place.

References

Wikipedia 2016. Hackathon. Wikipedia item [accessed 6 October 2016]. Available at: https://en.wikipedia.org/wiki/Hackathon

Nuutti Toivola, Lauri Karlsson, Mikko Puustinen, Tiia Valtonen & Antti Salopuro

A learning management system for a software company

Introduction

The aim of this project was to create a learning management system (LMS) for the client, Production Software. Production Software is a small company located in Lahti, Niemi Campus, and its main product is the Smartmes® software family, applied in the monitoring and controlling of industrial manufacturing processes. The company also provides consulting services.

During the project, the client representatives from Production Software were CEO Jari Kukkonen and Sales Manager Jukka Nevavuo. The contact person from the company was Mr Kukkonen.

The purpose of this project was to build a web-based platform "Production Software Academy" that could be used to teach employees and customers about Smartmes® and proactively inform the public about the industrial internet and MES. The goal was to make the platform visually appealing to users and intuitive to lecturers when adding material and training courses. In other words, the aim was to make it easy to learn and understand but not overly simplified.

The team members were selected based on their applications sent to the project course coordinator. For this project, there was a need

Picture 1. The team, Nuutti Toivola (left), Tiia Valtonen, Lauri Karlsson and Mikko Puustinen show the LMS they have created to the client, Jari Kukkonen. Photo: Antti Salopuro.

for students with good communication skills, experience in designing and implementing user interfaces and the technical skills necessary to be able to use a completely new LMS software platform. The students chosen for the project were Nuutti Toivola, Mikko Puustinen, Tiia Valtonen and Lauri Karlsson, all from the Business Information Technology program at Lahti University of Applied Sciences. Nuutti Toivola took charge of the team as a project manager, and Mikko Puustinen was the project secretary. Tiia Valtonen was in charge of coding and development, and marketing tasks were assigned to Lauri Karlsson.

Project initiation

The project started with a project assignment session during which the task was presented and a supervising teacher was introduced. This project was supervised by Antti Salopuro, who followed the team's progress at a general level. The rest of the project organisation consisted of the team and the client Production Software with Jari Kukkonen as their representative. The team consisted of four members: Nuutti Toivola, Mikko Puustinen, Lauri Karlsson and Tiia Valtonen.

The team was given a short summary of the client's problem, and it was then the team's responsibility to contact the client and start working on a solution. At first, the team thought that a CMS would be a good option for the marketing and information channel the client required, but after defining the actual need jointly with the client, a decision was made to use an LMS instead. An LMS provides more educational possibilities. This was important for the client because it wants to use the system to educate its employees and customers about Smartmes®. The client was happy with this proposal, so the team started to investigate different LMS platform options.

The project team decided to use Kanboard to manage project tasks. It has proven to be a practical tool in student projects because it allows project tasks to be recognised and split into smaller subtasks. As work was reported through the Kanboard tool, all project participants, including the client and the supervising teacher, could see the progress of the project in real time. Moreover, the tool allowed the tasks to be shared with all parties and also allowed for tracking the workload of each team member.

Project phases and challenges

The project was divided into three phases: initiation, execution and closure. These were based on the tasks the project included. Each phase included a few major tasks that were considered project milestones. The project's phases were kept as straightforward as possible in order to divide them clearly. The next phase could not be started until the previous one was complete.

The first phase, initiation, included all tasks related to the planning of this project; for example, the project plan outline was a major task in this phase. The initiation became the most significant phase because it ended up taking most of the project's time. The team

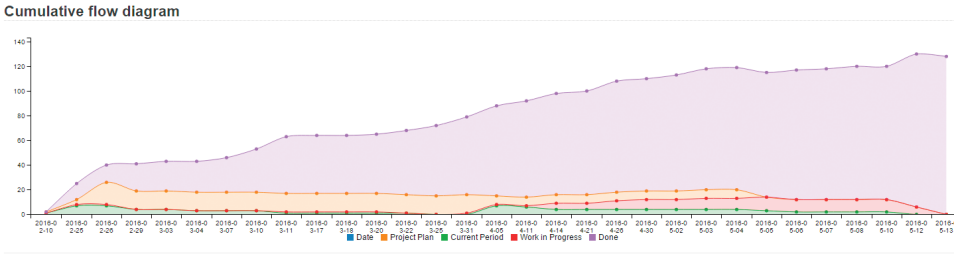


Figure 1. The cumulative workflow diagram from Kanboard shows static workflow throughout the project.

wanted to thoroughly study different platform options so that future issues with requirements could be avoided. Before the requirements were received, the team examined several learning and content management systems based on the client's needs in order to find suitable candidates for the platform. After the platform's type and requirements were decided, four LMS platforms were chosen for comparison. The team created a comparison matrix to examine all the required features and to evaluate the platform on the grounds of whether they would fulfil the requirements. The client was happy with results of the comparison matrix and decided to choose the winning LMS, Moodle.

Once the platform was chosen, the next phase was the execution. This included the installation and modification of the platform as well as the creation of some of the content. The installation was, unfortunately, delayed slightly due to problems with the client's server. Meanwhile, the team installed Moodle on Lahti UAS's server, Niisku. After the installation was done, the team looked for suitable themes for Moodle and then modified them according to the client's graphic instructions. When the themes were shown to the client, the client decided to go with a theme called Academi. Fewer programming modifications were needed than originally expected, so the platform modification task was rather quick. The final step of the execution phase was to create a few sample courses to demonstrate some of Moodle's tools and to provide instructions on how to apply them and use Moodle in general.

The closure phase marked the end of this project since it included all the remaining tasks, such as writing the final report and the delivery of the platform to the client. This phase also included a few additional meetings with the client to ensure that the platform met all the requirements and expectations. When the client expressed satisfaction with the end product, the project was considered to be successfully finished. The project was concluded in a final seminar in which the process and project results were presented.

To conclude, the team was able to deliver

a ready-to-use LMS platform for the client. The team also installed the platform on the client's servers. In addition, the team created a user manual and provided customer support when needed. The client was happy with the end product and did not indicate that any features were missing.

Lessons learned

During the spring 2016, the project team learned many valuable lessons as a team and as individuals. This project was one of the biggest the team members have had in the course of their studies and as such, it offered them many possible areas to improve on. Although the team had worked on different projects before, this particular project taught them more about how to work on a project with a real client with demands and schedules of its own. The team's manager learned a great deal about good project management and many helpful tips on how to lead a team without being too controlling.

The team also learned a great deal about communication during the project, as it had to set up clear and easy ways to communicate with all the stakeholders. This meant that the team had to choose the right tools for different communication situations. For example, to create natural internal communication, the team used WhatsApp, a widely used instant messaging software at the time. During the project, the team developed a natural communication cycle that will no doubt help them establish fluent communications in their future projects.

One of the most tangible areas where the whole team gained new knowledge was in technology use. The team learned to use the online meeting tool Adobe Connect more effectively and naturally, as they held online meetings once or twice a week throughout the spring. The use of the Kanboard tool in project management was also a good learning experience.

In addition to the online teamwork, the team installed and explored several different Learning Management System (LMS) platforms. While studying these platforms, they learned different ways an LMS can be implemented and gained an understanding of what LMS works best for specific needs, and when a CMS (Content Management System) is preferable to an LMS. As Moodle was the platform ultimately used in this project, the team focused on learning everything they could regarding that LMS. Some team members also learned about installing platforms on servers and communicating with databases.

All in all, the team members felt the project was a success. Lahti University of Applied Sciences recognised the team members with certificates and a prize for the best ICT Project during the academic year 2016. In addition to other reasons, it was said that the team had control of the project from start to finish. Dividing project tasks was successful, and all the team members contributed equally to complete the project. Most importantly, the client was pleased with the end result.

Lasse Seppänen

Teachers in projects

Teachers have many roles at a university. They of course teach, but that is only the tip of the iceberg, the part that is visible to students. In addition to attending numerous meetings, teachers need to prepare their lectures and workshops with students. Teachers may also participate in teacher exchanges at foreign universities. One interesting area involves projects that teachers may take part in.

Project supervision

Quite often studies include projects that are small at the beginning of studies and get larger as studies progress. These projects require teachers' attention. At the beginning, they are normally oriented to the topic itself. Later, project management features come into play as well. One aspect is related to the client: is the project done for a real company or just for the sake of learning? International involvement is another possible aspect.

Externally funded projects

Teachers can also take part in projects that are funded by an external source such the European Social Fund (ESF) or the Finnish Funding Agency for Innovation (Tekes). These projects may also involve students, but not necessarily. Currently, teachers' primary role in these projects is to do the work i.e. to carry out the actual project. A teacher can, for example, be a project manager, but he or she is participating in the said project, not evaluating it externally.

In such projects, teachers first have to find the time to conduct the project and then change roles. Sometimes, when teachers have a lot of regular teaching work and are on a tight project deadline, they need to prioritise and sometimes work long hours.

In external projects, teachers also gain new knowledge and skills. The knowledge comes from other project participants. All externally funded projects involve many parties. Skills and knowledge are accumulated when working on projects. They may include research or specific outputs as well.

It is sometimes also possible to involve students in these projects.

Picture 1.
Lasse Seppänen, Principal lecturer, HAMK
Photo: Reima Kallinen

Student Projects at HAMK

In the HAMK Degree Programme in Business IT, we have different kinds of projects. First year students make videos and webpages. Second year students create an innovation. This involves an international project for software documentation development with a German university. In January, a project management simulation is run with Swiss students.

During their third year, the students produce a bigger ICT project worth 15 credits. The topics for the project come from local companies or the university. In these projects, students can also work on the project in different roles such as the project manager or take a more agile role.

Externally funded projects at HAMK

Various teachers take part in different projects. The author is currently involved in two projects.

The 10 Paths project is a joint project of ten universities of applied sciences. Numerous courses are developed simultaneously. The material will be published under a CC licence making it available for all. This project is funded by the Ministry of Culture and Education.

The author has both been in the role a supervisor and a project worker. A student project yielded materials for two courses: Big Data Basics and Big Data in Practice. The students first studied the aspects of big data and then created related course material. Videos comprise a great part of the material. The author then expanded on the material with content and tasks.

The nature of the other project, which is about learning analytics, does not allow for student involvement. As student information is examined, students must not see other students' data. It has been interesting to locate timeslots for this project.

One thing all projects have in common is that project work differs a lot from a teacher's everyday work. Most of a teacher's daily work is done between the classroom and email. Fires are constantly burning, and a teacher needs to keep putting them out. So how to find time to work on projects? Sometimes teachers have to disconnect from email, switch off the telephone and lock the door.

Conclusion

Even though the projects I have participated in as a supervisor or project worker are time consuming, they also are very important in keeping my skills as a teacher up-to-date. Networking is another important factor in projects, whether it is with local companies or other project collaborators in Finland or around the world.

Photo: Lasse Seppänen

The second ICT Project Annual Review consists of six articles written by students and experts of Lahti University of Applied Sciences (Lahti UAS), one article written by a cooperation partner in working life and one by a colleague at a partner university. The aim of the review is to describe the current state of the project studies in the Business Information Technology Programme at Lahti UAS, to depict the opportunities offered by externally funded projects as a means of learning environments, and to present the ICT projects carried out by the students in spring 2016.

This publication is a part of publications of the Smart Industry focus area. Smart Industry regenerates production methods and service business operations through the use of digital applications. It creates more resource-efficient technological solutions, products and services, which in turn create new business models. Smart industry promotes business networking and the use of high technology, robotisation and the industrial internet. It promotes social innovation to support welfare through experimental, creative and responsible activities.

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