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Online Community System Development, Case PROFCOM

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Examiner: Kari Smolander

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Erno Vanhala 0259384

ABSTRACT

Lappeenranta University of Technology

Faculty of Technology Management

Department of Information Technology

Erno Vanhala

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The purpose of this bachelor's thesis is the development of online community. Nowadays Internet lets user to collaborate and share information online. Internet is also full of communities and the number of community users is continuously rising. Companies have also noticed this and want to make use of it.

The result of the work was an online community for the use of PROFCOM research project. At the same time information was gathered about what kind of platforms are available as a backbone for an online community. Designing and developing of the online community provided experience about Drupal-environment. It also gave pros and cons of Drupal's features. Drupal is a multifunctional software, which can handle big online communities, but its installation and maintenance is, however, reasonably simple.

TIIVISTELMÄ

Lappeenrannan teknillinen yliopisto

Teknistaloudellinen tiedekunta

Tietotekniikan osasto

Erno Vanhala

Online Community System Development, Case PROFCOM

2008

42 sivua, 5 kuvaa

Tarkastaja: Kari Smolander

Avainsanat: verkkoyhteisöjärjestelmän kehitys, Drupal, yritysten isännöimät verkkoyhteisöt

Tämä kandidaatintyö käsittelee verkkoyhteisön kehitystä. Nykypäivänä Internet antaa käyttäjille mahdollisuuden työskennellä yhdessä ja jakaa informaatiota. Internet on lisäksi täynnä yhteisöjä, joiden käyttäjämäärät ovat aina vain kasvussa. Yritykset ovat myös huomanneet tämän ja haluavat hyötyä siitä.

Työn tuloksena muodostui verkkoyhteisö PROFCOM-tutkimushankkeen käyttöön. Samalla kartutettiin tietoa siitä, millaisia erilaisia alustoja on käytettävissä verkkoyhteisön selkärangaksi. Verkkoyhteisön suunnittelu ja toteuttaminen toi kokemusta Drupal-ympäristöstä ja antoi kuvaa Drupalin ominaisuuksista, niin hyvistä kuin huonoistakin. Drupal on monikäyttöinen ohjelmisto, jolla voidaan hallita suuriakin verkkoyhteisöjä, mutta sen käyttönotto ja ylläpito on kuitenkin kohtuullisen yksinkertaista.

PREFACE

This Bachelor's thesis was written during summer and autumn 2008 in the Department of Information Technology at Lappeenranta University of Technology.

I thank my examiner and supervisor, Kari Smolander, and project manager of PROFCOM research project, Sami Jantunen, who has almost as many "good" visions as I do. It's good to work with guys who have sense of humor.

Nonetheless, the biggest thanks go to Marianne. Last five years have been strange and rough, but I have never thought you would leave me alone. Many times you have earned praises for your support and many times I have forgotten to say them. Now is the time: thank you.

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ABBREVIATIONS

CAPTCHA	Completely Automated Public Turing test to tell Computers and Humans Apart
CMS	Content Management System
CSS	Cascading Style Sheets
FOC	Firm-Hosted Online Community
GUI	Graphical User Interface
HTML	HyperText Markup Language
IHTE	Institute of Human-Centered Technology
IM	Instant Messaging
MP3	Moving Picture Experts Group Audio Layer 3
OCR	Online Community Research
PC	Personal Computer
PHP	PHP Hypertext Preprocessor
PROFCOM	Product Internationalization with Firm-Hosted Online Communities
RSS	Really Simple Syndication
TBRC	Technology Business Research Center
YLE	Yleisradio Oy

1 INTRODUCTION

World Wide Web has been advertised to have reached the second generation, often referred as Web 2.0. First generation Internet's portals didn't pay attention to users, but the second generation version lets users to collaborate and be social – share information online (Lappeenranta University of Technology 2007, p. 1; Hintikka 2007, p. 6). Already in 2004 over 80 percent of Internet users had contacted or participated in a virtual community (Porter 2004). Potential for firms to, for example, get positive word-of-mouth from users and to make brand stronger.

When users develop services, they want them to be better than respective commercial services (Hintikka 2007, p. 23). Thus, in online communities users have the power to decide what they want – their desires and wishes can help improving business. Developing a Firm-Hosted Online Community (FOC) is a complex task and a firm should not only understand its own goals but also the needs of community members (Lappeenranta University of Technology 2007, p. 2).

The main purpose of this bachelor's thesis is to research what solutions could be used to build a community-based web-site for a research project. Secondly, this study will tell how the selected platform, Drupal, was implemented for use. It will also be discussed what kind of system Drupal is from an online community developer's point of view.

My job in the Product Internationalization with Firm-Hosted Online Communities (PROFCOM) project is to create a web site for online community purpose. The site handles published research results as in online guidebook, works as a system for researchers' blogs and suggests further material in hyper link format. The system has to be capable of handling different kind of content. Project also has own internal site where researchers can collaborate privately.

1.1 Goals and limitations

The goals of my job were to research possible tools, software and systems and then recommend what kind of solutions we could use to build up our own online community intended to support PROFCOM research project. After the first meeting with Sami Jantunen, project manager, and Kari Smolander, responsible leader, the target we were looking for was quite clear: a system that can handle different kind of content – and users –, is easy to use and finally can be expanded with different kind of modules. On one hand the system had to be easy and extensive enough, but on the other hand it had to be powerful and so simple that it could be easily implemented for our use.

However, it was decided from the beginning that commercial software could not be the solution. It had to be free – open source. In other words, no money should be spent on any tools or software on our online community development. In a nutshell, my primary job, goals and research questions were described to be the following: 1) *What kind of free / open source content management and online community systems are available?* and 2) *Which one suits best to our situation and how should we implement it?*

1.2 Structure of the study

The study is divided in seven chapters, which will give a view in online community system development in top-down method. First we'll discuss online communities in a general way and then go deeper to the developing part.

This first chapter, introduction, describes the main structure of the whole thesis. The second chapter includes general information about online communities; what they are and what their purpose is. Chapter number 3 lists different kind of systems that are available as a backbone for an online community. The fourth chapter, Expectations and Requirements, then discusses what was expected and required from the system.

System Selection, the fifth chapter, tells why we decided to use Drupal. Sixth chapter unwinds our experiences with Drupal and it gives reader an idea how one can build an online community with Drupal and what kind of problems might occur during the process. Finally, the last chapter summarizes the content of this study.

1.3 Basic Concepts

This study has a lot of information, which needs to be clarified before continuing. Here are a few terms described to ease the further reading.

Captcha (Completely Automated Public Turing test to tell Computers and Humans Apart) checking is a way to notice the difference between a human and e.g. spam-bot (www.pcmag.com). Captcha checking is implemented for example in a way that user has to calculate some basic math problems, like 3 times 5.

Open source program must be freely distributed and source code must be included. Anyone must be allowed to modify the source code and modified versions can be redistributed (www.opensource.org, 2006).

Web 2.0 is neither a model nor technique, but a term or concept to gather new practices in the designing of www-service, programming, marketing, producing and also in strategy. Central blocks in Web 2.0 are for example RSS-feed (which is a short, often updated message like news topic), blogs, sense of community, collectivism and implementation of pc software in web-platform. (Hintikka 2007, p. 8-10.)

2   ONLINE COMMUNITIES

The more the Internet grows, the more online communities are being established. Why are online communities a hot topic nowadays? Who use them and why? How are they different from normal communities? This chapter will give us some answers to those questions.

2.1   Online communities

According to Kim (2000, p. 28), a community is a group of people who have a shared interest, purpose or goal and who get to know each other better over time. Just being a fan of same things, for instance a Star Trek series, is not enough, you have to be in touch with other people with similar thoughts. Of course being in touch could today mean just using the same irc-channel or some Internet message board. While talking with others via email, message boards, chats or by words, you learn to know how other people think and you familiarize yourself with them. That is how you become a member of a community. An important thing to notice here is that communities are neither designed nor do they just emerge – it is people's interaction in a community which shapes its long-term evolution (Preece 2000, p. 6). Notable is also that not everyone thinks (online) communities are warm, bright and helpful, some may think that they are dark places of conspiracy and criminal behavior (Preece 2000, p. 8).

Here is an example to demonstrate the terms community and online community: KISS, an American rock band, has KISS Army fan communities all over the world, including a division in Finland too. KISS Army Finland (KAF) has often meetings in real life and fans have fun together. They are a community. Besides these real life experiences they also have a web-site[1] and a whole new area to use on their community purposes. They have their online community where they can discuss, argue and have fun with each other without the need of being physically together at the same place at the same time.

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[1] http://www.kissarmyfinland.com

2.2 The purpose of an online community

There is definitely no need to build a new community just because you can do it. A new community should bring value of some kind – at least to someone. According to Grant (2008, p. 35) one should, firstly, create value for customer and, secondly, extract some of that value in the form of profit for the company. If you do not know why your site exists then you cannot judge the effectiveness of any policy and even worse: how would visitors know if they feel like joining your community or not (chromatic 2002)?

Before writing a single line of code you should consider several questions: what type of community am I building? Why am I building it? Who am I building it for? After asking these questions you may have a clearer picture of what you are doing, but you should remember that online communities evolve over time (Kim 2000, p. 3-6).
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3   AVAILABLE PLATFORMS AND SYSTEMS

There are many different possibilities to set up an online community. Some software are small and very limited, but also easy to use. Others can be much more powerful and harder to use. The following will introduce some of the available platforms and systems to be utilized in establishing an online community.

3.1   Online services

First, it should be mentioned that there is no need to invent the wheel once again. Many times there is already a site or a community providing services that are needed. In that way, a community can be started without installing anything, just by logging in some service like Wikia[2] or Blogger[3] and start creating content without installing anything.

For example Wikia's slogan says: "Find and collaborate with people who love what you love" and that is exactly the thing what makes a site a community. Flickr[4] provides image and video hosting and organizing services community and via Delicious[5] one can easily share interesting URLs and tag them along surfing. All these new web 2.0 services take great advantage over new techniques and power of communities. New applications are developed constantly.

3.2   Platforms and software

Platforms are systems that can handle third party software or plug-ins (PC Magazine b). These systems become platforms running those third party components. These software platforms are always two-way pipe; they provide functionality to communicate back and forth with the software (PC Magazine b). For example Drupal is software and it's a

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[2] http://www.wikia.com
[3] http://www.blogger.com
[4] http://www.flickr.com/
[5] http://delicious.com/

platform. One can develop modules for Drupal and Drupal gives functionality to get data from database and also ways to show results in the web page.

3.3 Segmentation of the solutions for online community

There is variety between different kinds of systems, solutions and platforms. Segmentation can be done in many ways. Kim (2000, p. 28-46) mentions several different solutions how to form a community. When we add few new things to that list we get the following nine types of solutions to ease the work with an online community:

- Blogs
- Chats / Instant messaging
- Content management systems
- Galleries
- Mailing lists
- Message boards
- Virtual worlds
- Web application frameworks
- Wikis

Next the solutions will be described more precise. Examples are also written to demonstrate the implantations of these solutions.

3.3.1 Blog

Blog is an abbreviation for Web log. There is no single definition for it, but blogs can have thoughts of one or more persons, they are like diaries (Blogger). Blogs are being updated irregular and all the old posts are available. Commenting, RSS-feed and hyper linking are common features in blogs (Blogger).

There are plenty of easy-to-install-and-use blog publishing systems, like WordPress. Their strength is, when you have some server and database space, you can easily set up your blog in minutes. The most simple blog systems are only for blogging and they do not include user account control or sophisticated content management. Another possibility is to create own account in online blogging service e.g. Blogger[6] or LiveJournal[7] and start blogging there.

For example Microsoft uses blog as a way to give teasers of new features of Internet Explorer 8[8]. They also gather user feedback directly from blog comments - benefit straight from it and users can collaborate in the development of Internet Explorer.

3.3.2 Chat and instant messaging

Since developing IRC in 1988 the number of instant messaging (IM) services and chats has increased greatly. Their main purpose is to provide conversation service i.e. you can chat with your friends and colleagues over the Internet. Users of the software can send short messages to each other (Preece 2000, p. 138). Some of the chat programs are (also) browser-based and thus many web-sites communities have chats included to their site. Chats give user a possibility to chat in real-time with another person. Chat rooms are a great way to offer real-time support and guidance and they are also a place just to hang out (Kim 2000, p. 39-40).

3.3.3 Content management system

Content management system (CMS) is a computer application used to create, edit, manage, and publish content in a consistently organized fashion. Online communities can be build over CMS and all the community's produced content can be handled in CMS. One of the major benefits from using CMS is that you can separate content,

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[6] http://www.blogger.com
[7] http://www.livejournal.com
[8] http://blogs.msdn.com/ie/

structure and design. New layout needs no more copying and pasting everything to the new layout, but the CMS uses old content and new layout seamlessly (Typo3).

In this document content management systems refer to a web-based content management. It is also good to notice that all CMS programs introduced in this document can do much more than just manage content. With CMS, people with different technological knowledge can do operations (create, edit, manage, publish or tag) to a variety of content such as text, graphics, video and documents (Contentmanager.eu.com 2008).

Bonfield and Quinn (2007) compare CMS to e-mail: You can stay in touch with friends without an e-mail. But like an e-mail, CMS makes life a lot easier. It provides, for example, web-based publishing tools, discussion forums and tools to handle different user groups. This all comes without the need of a programming capability.

3.3.4 Gallery

In this document gallery means software that can handle pictures – like CMS can handle text-based (and other) content. Gallery tools and services provide a way to share pictures with other people.

Digital cameras made photographing everyone's hobby. When you have to, or you want to, publish your photos and servers list of files is not enough, you can install your own web-based gallery, like Gallery2. Alternatively you can use gallery, photo sharing and management application Flickr.

3.3.5 Mailing list

Mailing lists can be created by email programs that allow you to insert a group of email addresses into the "Send to" field by typing a single word or phrase. Mailing list more of a convenience than a gathering place.

A mailing list is a very fast and easy way to inform a big group of people. It is also a great tool for new users, because they don't have to learn to use new service (Kim 2000, p. 30), assuming they are familiar with the e-mail client. If you are unwilling to install any software, you may use some web-based mailing list provider like Yahoo Groups.

3.3.6 Message board

The bigger the community is the more likely it has a message board. Message boards are also known as forums, bulletin boards or discussion forums. Users can leave comments and thoughts on the message board. They are similar to mailing lists in the way that users don't need to be online at the same time to have a conversation (Kim 2000, p. 34). Conversation can sometimes be a little bit dilatory and last even months. On the other hand this all gives a context and history to a community. Present message boards allow users to embed images and even videos to their posts. For instance, Star Trek fans have an online community message boards in the Internet[9].

In the end of previous millennia Sampsa Kurri, founder of IT news site Muropaketti[10], put out online service to give news for Finnish speaking people interested in computer over-clocking. After that much has happened and Muropaketti has now a very alive discussion board MuroBBS[11]. It has millions of posts and that's a lot in the country of 5 million people. The online community has grown form zero to present situation in ten years. The power of the online community has also been noticed by the Finnish police force (Elonen, 2008).

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[9] http://boards.startrek.com/community/messages.html
[10] http://www.muropaketti.com
[11] http://keskustelu.plaza.fi/muropaketti/bbs/

3.3.7 Virtual world

Not until recently were virtual worlds possible to build. Now the bandwidth and processor capacity have increased enough so virtual world like Second Life and World of WarCraft have seen the daylight. The value of these kinds of community solutions is that you can see other users and objects in 2D/3D environment "for real". Virtual worlds are great for real world simulation, viewing 3D data, multi-player games and creating fantasy environment (Kim 2000, p. 48). You can, for example, walk while chatting and you can decide what kind of look your character has.

Being a part of a team in virtual world can be good even for job seeking. IBM and Harvard have said that it is actually worth mentioning if you are leading a group in World of WarCraft online role-playing game (Peliplaneetta 2008). The game helps you to deal with people from different countries and time zones. These attributes are needed in multinational companies when business is running 24 hours a day and 7 days a week.

3.3.8 Web application framework

Web application frameworks provide help and ease to developing. Their purpose is not to give end-user solution click-and-use kind of simplicity, but when you are building your own CMS these frameworks decrease the need of new code as they provide classes and functions to, for example, handle database connections.

3.3.9 Wiki

Wikis are systems that provide collection of web pages and tools to handle that content, which users can add, remove, and edit every page using a web browser (Stafford & Webb, 2006). In addition, community can write documents together and edit another's writing.

Since Wikipedia was founded in 2001 several wiki software have increased their popularity. Wikis are used for information delivering and showing. One of their main purposes is to be easy to use. The user needs no training in handling wikis' simplified markup language.

3.4   Tools to help decide between platforms

When you need to set up your own blog, message board, wiki or web-based, feature-rich content management platform and you have no time to read the description of every software, you should ease your job by doing a little bit of requirements analysis and then use some service to list features of software. Check required features and you probably see every software is different and you can drop off those which do not have features you need.

When you have decided what kind of type of platform is right, you can use matrix services to check out what software there are to choose from. CMS Matrix[12], WikiMatrix[13], WeblogMatrix[14] and ForumMatrix[15] are places to help decision making.

3.5   Examples of different software

As said earlier there are plenty of different kinds of solutions and software to check if you want to publish something in the Internet. Of course, some of them are more popular than others and have better community to help a beginner. Open source solutions provide software that everyone can develop, report bugs and test developer's releases. In the following is a brief description of five different systems.

MediaWiki[16] is the wiki that runs Wikipedia and many other wikis. MediaWiki has a syntax that is very easy to learn. You do not need to have html, css or programming

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[12] http://www.cmsmatrix.org
[13] http://www.wikimatrix.org/
[14] http://www.weblogmatrix.org/
[15] http://www.forummatrix.org/

skills to create and edit content. You can set up your community on wiki platform. It is a good solution if you want a mass of people to contribute text – for example to write history of some incident.

If you just want to share your thoughts in the Internet, solution could be a blog. Then *WordPress*[17] could be the tool. It is widely used blogging software. It is used on hundreds of thousands of sites (WordPress 2008a). WordPress is focused to be a blogging platform, so it is not a gallery or anything else, but there is plenty of plug-ins to expand core installation. WordPress is used by for example New York Times (WordPress 2008b).

If you have a lot of pictures to show to the public, you probably want to use the Internet to spread all the material. *Flicker* is one way to do it, but to have more control over the layout, feeling and administration; you may want to consider, for example, Gallery[18] which provide tools to share your pictures.

In large communities there is a place to discuss, that is, some kind of forum. There are a few forum software available and *phpBB*[19] is the most widely used open source forum (phpBB). It gives community users good tools to discuss and contribute.

You have no need to understand html or any other coding language when using software listed above. They have graphical user interfaces (GUI) to administrate settings, users and layout. There are, however, differences between them: for example MediaWiki doesn't provide as good image handling tools as Gallery, and phpBB has no real blogging tools. But there are also many software that provide these all.

The first version of Drupal came out in 2001. Since its debut this content management platform has been developed into a well-known and much-used software package which contains tools to publish, manage and organize various different types of content in a

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[16] http://www.mediawiki.org
[17] http://wordpress.org
[18] http://gallery.menalto.com/
[19] http://www.phpbb.com

website. Drupal has its own core and hundreds of plug-in modules. With Drupal you can build community web portals, discussion sites, Intranet application and personal websites or blogs. In 2007 Drupal won an award being the best open source content management system (Packt Publishing 2007).

4 EXPECTATIONS AND REQUIREMENTS

In this chapter we will talk more closely about what was expected and required from the system to be selected. In addition, we will discuss what kind of solutions we would have liked to have and what could be the real result.

4.1 Goals and expectations

In a nutshell, after research, my goal was to develop a system that can be used to 1) *publish research reports*, 2) *work as an online community to get collaboration for FOC research* and 3) *establish an internal site for project*. It was decided also that one system should handle all these parts.

The picture we had in mind was having two different sites, which are linked with same user accounts. External should have all the published articles and the internal would be a platform for project's internal discussion and scheduling.

We expected the software to handle different kind of content like blog posts, discussion forum topics, books, instruction pages, images and maybe even videos. Second thing assumed was some kind of a user accounting and controlling, so that not everyone can access all the material, and modifying can be made by registered users only. It was also wanted that users can easily create new accounts and permissions can be controlled without difficulties. After a few meetings we also decided that we want only one system, so we expected it would handle all the needed features and be suitable for both internal and external use.

4.2 Requirements

We used Checklist tool provided by Nancy White (2006) to clarify what we are going to do. Appendix 1 shows the whole results. The first question "*What is the purpose and*

desired outcome for the owners?" is the most important one as we want to build a community that has a purpose. Answer is "Purpose: 1) *To disseminate research results to companies in easy-to-use format* and 2) *To enable internal collaboration*; Desired outcome: 1) *Community where researchers are willing to publish their research results in easy-to-use format and where industrial partners are actively participating in exchanging ideas.* 2) *Private community, which is protected from others and in which members have rich set of tools to work collectively*. As these answers indicate, our purpose was to develop a community which would provide tools for easy-to-use collaboration. And we needed a system that can handle publishing.

We wanted to have a system that could take plain text, html/css modified text, text with pictures and tables or text with attachments and show it in readable same looking format. This means that user can write plain text or copy it from word processor and it fits in. Of course, all data is stored in database. To allow collaboration between different users it is possible to different user to work with same material if necessary, although parallel working is not allowed. All content can be commented to increase the collaboration. Commenting doesn't require registration, but if you want to write pages you need to have permissions. In addition, we established internal community to serve researchers related to this project.

Other important questions were for example user permissions, way to handle different kind of content, revision control and easy theming. When this all is summarized in four principles it looks like following 1) *easy to use* 2) *different user groups and permissions* 3) *ability to publish different kind of content* and from the developer's view 4) *easy maintaining and theming and lot's of plug-in modules*. Of course these main categories could be broken into pieces, like publishing could be divided to different content, permission, tools and revisions.

4.3 Online Community Research

It was decided that our community would be called Online Community Research (OCR). The main purpose is to create opportunities for a dialogue between researchers and companies. The site is going to provide the knowledge we have gained regarding FOCs in a practical and easy-to-use form. That's what our ebook is going to handle. In addition to this, we will write blogs to help members and visitors stay on track and we will also provide another ways to help user to get knowledge about firm-hosted online communities. Discussion forum and link pages are coming in near future.

The site is available at the address http://tbrc-community.lut.fi/ocr/

5 SYSTEM SELECTION

Based on requirements mentioned earlier we selected one system. In this chapter we will have a closer look at the selected system and its specifications.

There were quite a few needs so we didn't have that many solutions to choose from. All bare chat, blog, image gallery or mail systems were dropped off. We – just like Reed (2008) – wanted software that can handle as much as possible, even all the required things by itself so that there would be no need to install any additional software. The selected one and its modules should do it.

We selected Drupal to be our software, because it fulfilled the needs listed in previous chapter. We wanted a system that is *easy to use,* and by Drupal's web-based administration, navigation blocks and module-based hierarchy, we got a system that needed no additional software to handle updates or database insertion and navigation blocks provide navigation tools to help surfing on the site (Drupal 2008e). *Different user groups and permissions* was the next principle and with Drupal's role based permission system we got what we wanted – as many user groups as needed with different permissions (Drupal 2008e). Drupal also gives tools for collaborative books, polls, comments and discussion forums (Drupal 2008e). So we got the *ability to publish different kind of content*. Finally templating, logging and reporting and already mentioned web based administration give the *easy maintaining and theming*. Drupal also has over two thousand modules, so many times the wheel was already invented and we could use the turnkey solutions (Drupal 2008c).

We had a server space rented from Tietohallinto (IT-center) and after getting all the systems to respond we started the real development. Server-side techniques included solutions like Linux, Apache, PHP and Mysql, which were all supported by Drupal. Although Drupal only needed PHP, others could be replaced with other techniques.

6   EXPERIENCES

All in all, we actually designed and implemented an online community, so we gained experience of how it can be done technically with Drupal. Of course we encountered some problems, hard parts, bugs but also positive surprises. Appendix two shows screen captures taken from the OCR web-site.

The first time I heard the word Drupal, was when Visa Kopu, founder of The DailyRoxette[20], updated the site to use Drupal. Second time I met Drupal was when I was asked to be the PROFCOM developer. I had always been a guy who does everything by himself and thus I had already coded my own CMS, but when I started to work with Drupal I saw its power. When I had created my own code, I had to, for instance, program all the MySQL queries and then format the result to show them in right way on web page. With Drupal I could do the same by dragging a block to a certain region and Drupal would do the rest.

6.1   Installation and maintenance

Installation of Drupal was not complicated at all. Actually it was so easy that I would say that it's even easier than installing some Microsoft Windows software. You have to know something about the platform you are installing to, but not much. The best part of this is that installation has been made more user-friendly when Drupal has changed to next major release. For example installation script can now comment real-time whether user's password is good enough or not.

Drupal also has multi-site feature, which allows the developer to set up as many sites as he wants with only single Drupal installation. For instance, if we want to have sites like my.blog.com, your.blog.com and nobodys.blog.com we can have single Drupal installation in main directory of the blog.com and then create 3 multi-site installations,

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[20] http://www.dailyroxette.com

which produce different databases for different bloggers. The greatest part of this is that if these three users want to cross-use other blogs, it can be done with the same user accounts. To really understand the usefulness you can think about Finland's national broadcasting company's, YLE's, sites. As one can guess, broadcasting company has thousands of sites and topics. Some parts are implemented with Drupal. YLE has approximately 50 Drupal sites, but only few real Drupal installations, they use multi-sites (YLE 2008). It eases the maintenance, when same modules and themes are available for all sites.

Installation was good, how about maintaining? Drupal tells gently when some parts need updating and gives a link to updated module/theme/core. What is the hard part then? Drupal is open source, so there are different developers all over the world. New versions come very often, not so often or not at all. Drupal was founded in 2001 and the sixth major release saw daylight in February 2008 (Drupal 2008a, Drupal 2008b). Basically there will be need for major upgrade annually. Upgrading is not just clicking the update button. Drupal provides a 14-step-guide how to upgrade (Drupal 2008d). When I upgraded for the first time it took me hours to get all done. It's not bad if you just had to upgrade Drupal few times a year, but as I said, module developers work when they have time and updated version will come when they are ready – if they are. The more you have different modules the more there will be updates.

Now (in the latter part of the year 2008) there are two officially supported Drupal versions: 5.11 and 6.5. Then there are still many people using Drupal 4 and developer's version of the 7th Drupal is also available. This is a huge problem when you are trying to find help for a problem. Information is often out-dated, it refers to a wrong version or there are some incorrect statements. For example, when I was working with multi-site installation, the first place to start searching for manual was drupal.org. It provided me some help, but it was mainly for Drupal 5 and we were using version 6. Google gave also lots of information, but when I saw that articles were written in 2007 or earlier it was no use. There were also situations when I was doing hours of work for some problem, but afterwards I realized that instructions weren't valid with Drupal 6 and everything was easier in the end, because of improvements in Drupal 6.

Another problem occurred when there was need for a specific module. Search gave many potential candidates, but it could turn out that some of them were only available for earlier version of Drupal and some would need some other module, which was only designed for the earlier version. Often there was no working version for Drupal 6 and that was a disappointment for me.

6.2 Modules and themes

Drupal is very modular, it has a small core with few functions and the rest are modules. It allows users to have more efficient site because you don't have to have anything useless on your Drupal site. If you compare Drupal to Microsoft Word you can think it like Word loads every time all the drawing tools and image handling, but if you don't need them it's just overhead. While using Drupal you can decide what components, modules, need to be installed and loaded. Figure 1 shows how some modules are utilized. Figure also tells us how Drupal notifies when one module is using another's services. Forum, Tracker and Advanced Forum need comment module, so one cannot turn it off until these three other modules are turned off.

Figure 1: Some Drupal's core modules.

Drupal users and developers have contributed over two thousand modules and their purpose varies from content rating to tag clouds and mp3-file taggers (Drupal 2008c). You have to have a very specific need if you can't find a module that meets the need.

Theming is the thing that community's users will see first. Drupal site provides few hundred themes and theming is possible with little effort if you know html and css. Some of the themes also have the possibility to be customized to use different colors. Figure 2 shows how the basic Garland theme can be customized to use other color scheme.
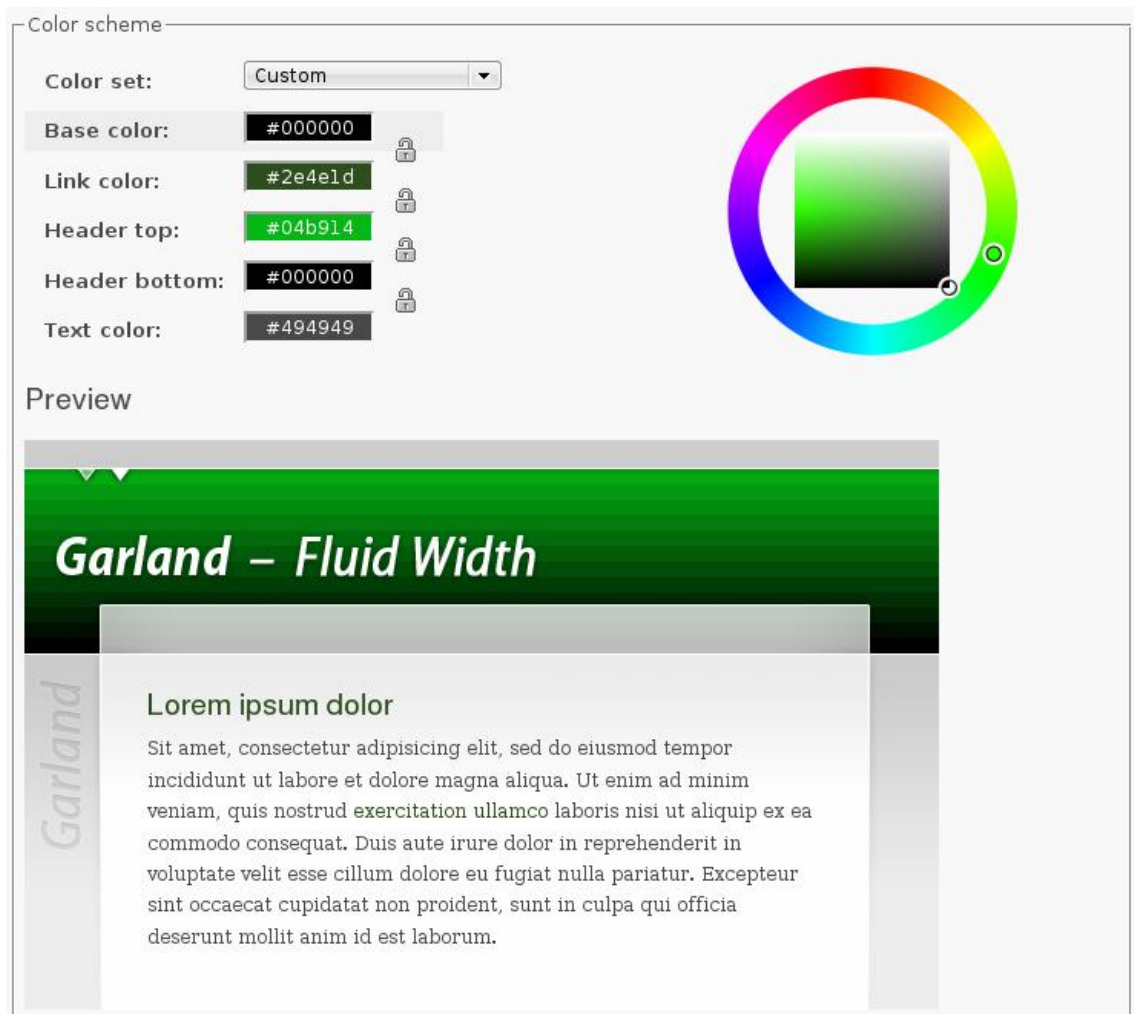
Figure 2: Some Drupal themes have the color scheme feature.

All the sites' automatically generated blocks have been named automatically by Drupal and the other regions and sections are named by designer. Thus it's easy, for example, to focus styles to right block.

6.3   User Permissions

With Drupal you can handle, not only "read/write/execute" permission, but role-based permission for different modules and their features. For example, we divided our user in five different roles: anonymous user, authenticated user, blogger, producer and admin. After that we can decide what different roles can and cannot do. Figure 3 shows how,

for example, anonymous user cannot do much, but every other can skip captcha checking.

Permission	anonymous user	authenticated user	blogger	producer
advanced_forum module				
administer advanced forum	☐	☐	☐	☐
aggregator module				
access news feeds	☐	☐	☐	☐
administer news feeds	☐	☐	☐	☐
block module				
administer blocks	☐	☐	☐	☐
use PHP for block visibility	☐	☐	☐	☐
blog module				
create blog entries	☐	☐	☑	☑
delete any blog entry	☐	☐	☐	☐
delete own blog entries	☐	☐	☑	☑
edit any blog entry	☐	☐	☐	☐
edit own blog entries	☐	☐	☑	☑
book module				
access printer-friendly version	☐	☐	☐	☐
add content to books	☐	☐	☐	☑
administer book outlines	☐	☐	☐	☐
create new books	☐	☐	☐	☑
captcha module				
administer CAPTCHA settings	☐	☐	☐	☐
skip CAPTCHA	☐	☑	☑	☑

Figure 3: Drupal gives role, module and feature based user permissions.

We gave producers and bloggers permission to edit their own created content, but not others. Admin can do anything. When some new module is enabled, Drupal doesn't give permission to any role, but admin sets them. This makes sure that no role gets improper permissions without admin's approval.

6.4 Positive surprises

Developing an online community with Drupal as back-end is sometimes hard, but mainly because lack of knowledge of Drupal. In many occasions we also encountered positives surprises.

Basically the first positive outcome was the installation, which was extremely easy. After the installation was the first meet with the Drupal's admin tools, which are pretty good. I found it quite natural to navigate and after a while everything seemed to be mostly in the right place. Not all think the same and it has been studied, that Drupal's tools can be incoherent and give too much information on one screen (Scollan et al, 2008, p 3). Figure 4 illustrates some of the main categories for admin use. Also after having installed few modules I became familiar with them and understood how easily they can improve site's usability.
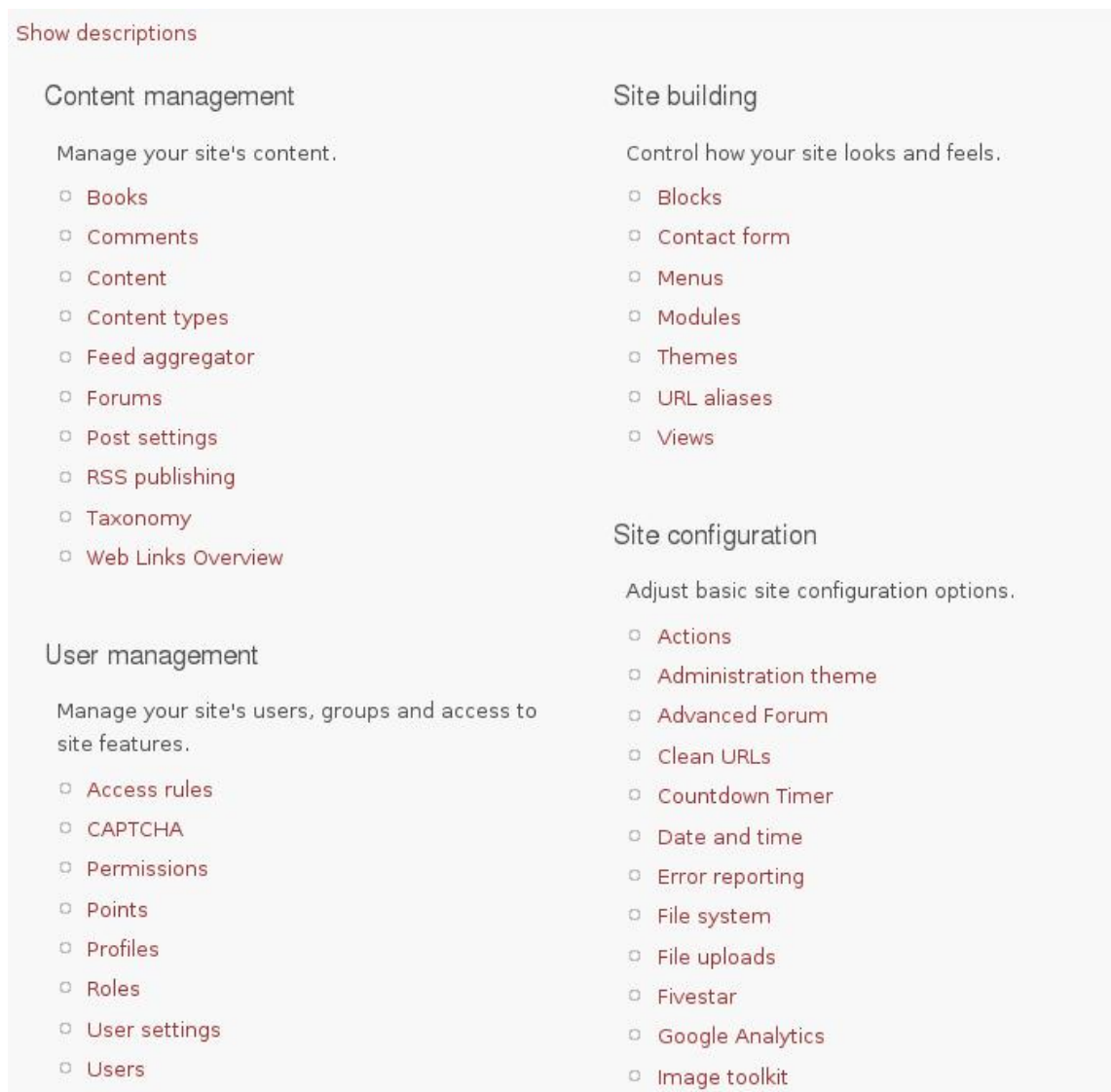
Figure 4: Main admin menu.

Also the ease of theming was a positive surprise. After downloading Zen theme and using it as a starting point a new theme could be created to respond the needs very quickly.

Drupal's way to inform about updates is also informative. If there is a core update available, system tells it in a very aggressive way, but if there is just a new developer's release of one module then the system just slightly notices about it. Figure 5 clarifies this: Advanced Forum and Javascript Countdown Timer need upgrades, and Drupal

offers developer's version for Google Analytics, but without alarms. Fivestar is up to date.

Figure 5: Drupal tells when updates are available.

Drupal's CMS has many ways of content tagging, viewing and listing. You don't have to start from scratch for Drupal has very powerful tools to categorize content. We decided to tag all our content and create a tag cloud on the front page to give the visitor a fast way to see the most handled topics.

6.5 Outcome

All in all, Drupal has it pros and cons, but how did it actually suit for our use? To sever the external and internal user, we used Drupal's multi-site feature to have two different

sites - with one real installation - for different use. They have shared user table in database, so same accounts fit in both sites, but only accepted users can use the internal site.

In chapter 4 were listed four features we thought to be important. First of all, we needed a system that would be easy to use and that's what we got. If one thinks Drupal-site from a basic user's point of view it looks like a normal web-site, which has a possibility to comment content. If you look Drupal-site with contributor's eyes, it provides for example automatic revision control, tools to put links easily to a navigation menu, a way to create easy-navigation books and means to promote new content in the front page. From the admin's point of view Drupal does a lot of work automatically and thus reduces the need of different status checking.

Then we had the need for different user groups and permissions. Drupal gave us tools to create different groups. We have five groups for a start: anonymous user, authenticated user, blogger, producer and admin. An anonymous user can only comment content and he has to pass captcha checking. When the user has registered, he can also edit his own comments and in future participate in forum's discussions. The producer group has the persons who create content. They have rights to create new pages, upload images and other files and they can moderate their own pages. Bloggers are like producers, but their only purpose is to write a blog post. And lastly admin can do everything from posting to updating the whole site.

Third feature to have was the ability to have different kind of content. We decided that we are writing an ebook, so research results are written like a guidebook to help readers with their community development. We also write blog posts to clarify on-going activities. Latest thought is to build a section to community, that gives users a way to post, view and search useful links. There are also many plain "page" typed content pages in the internal site.

Fourth feature needed was the ease of maintaining and a good plug-in module base, so that we don't have to code them by ourselves. That goal fulfilled pretty good: Drupal's

maintaining is easy, although it needs work sometimes, and features we needed were found from Drupal's module library. So far we have only coded few modifications to get better suitability for our use.

Appendix 2 shows two screen captures from the actual web-site. Fist one has the main page layout. It's been divided in five parts, plus the logo-menu-section, which we now think serves our visitors best. Second figure shows a blog post and a comment field with captcha checking active. The blog post page shows how a "normal" page is divided in two parts: the bigger part having the main content and the left side bar having supporting features.

7 CONCLUSIONS

The goal of this work was to search open source tools for online community developing, select one and develop an online community to support PROFCOM research project.

Starting point of this work was to learn what online communities are, how they differ from traditional communities. Then it was needed to do research on what kind of platforms and systems there are available to be as a backbone for online community. Also it was described how they separate from each other. After some researching and requirement analysis we gained enough knowledge to discuss what features we want to have and what platform we want to use. After that we decided that Drupal would be the one we use. Then I started to develop online community with Drupal as back-end for our research community which got the name Online Community Research.

After summer 2008 I had gained a lot experience with Drupal and how it could be used as platform for online community. I run into several problems and difficulties, but all them were solved out and OCR community started to look like a real online community. Drupal also gave several positive surprises.

In the end of August 2008 we had a site that could be advertised, but that was still the beginning. Our community is going to evolve over time.

Next step is to gather members to vitalize OCR community. We need people, for example, to write content, comment existing content and discuss the future: what kind of articles the community should have. This also gives a topic to research: How online communities gather and could gather their members and what features members respect in an online community.

REFERENCES

Blogger. What's a blog? [retrieved 29.11.2008]
From: http://www.blogger.com/tour_start.g

Bonfield, Brett, Quinn, Laura, 2007. Comparing Open Source CMSes: Joomla, Drupal and Plone [retrieved 24.9.2008].
From: http://www.idealware.org/articles/joomla_drupal_plone.php

chromatic, Building Online Communities [retrieved 19.8.2008].
From: http://www.oreillynet.com/lpt/a/2828

Coar ,Ken 2006. The Open Source Definition [retrieved 29.11.2008]
From: http://www.opensource.org/docs/osd

Contentmanager.eu.com, What is a Content Management System, or CMS? [retrieved 11.10.2008].
From: http://contentmanager.eu.com/cms.htm

Drupal, 2008a. Drupal history [retrieved 4.10.2008]
From: http://drupal.org/node/297669

Drupal, 2008b. Drupal 6.0 released [retrieved 4.10.2008]
From: http://drupal.org/drupal-6.0

Drupal, 2008c. Modules [retrieved 5.10.2008]
http://drupal.org/project/Modules/name

Drupal, 2008d. Upgrading [retrieved 4.10.2008]
From: UPGRADE.txt (comes with Drupal installation)

Drupal, 2008e. Features [retrieved 26.11.2008]
From: http://drupal.org/features

Elonen, Piia, 2008. KRP ei tutki sijoitusklubin katoamistemppua [retrieved 10.11.2008].
From:
http://www.hs.fi/talous/artikkeli/Krp+ei+tutki+sijoitusklubin+katoamistemppua/113523
4873623

Grant, Rober M, 2008. Contemporary Strategy Analysis, Blackwell Publishing

Hintikka, Kari A, 2007. Web 2.0 – johdatus internetin uusiin
liiketoimintamahdollisuuksiin, TIEKE Tietoyhteiskunnan kehittämiskeskus ry

Kim, Amy Jo, 2000. Community Building – Secret Strategies For Successful Online
Communities, Peachpit Press

Lappeenranta University of Technology 2007. PROFCOM - Product
Internationalization with Firm-Hosted Online Communities RESEARCH PLAN

Packt Publishing, 2007. Drupal Wins Overall 2007 Open Source CMS Award [retrieved
4.11.2008].
From: http://www.packtpub.com/article/drupal-wins-overall-2007-open-source-cms-
award

PC Magazine a. Definition of: CAPTCHA [retrieved 29.11.2008]
From: http://www.pcmag.com/encyclopedia_term/0,,t=captcha&i=39272,00.asp

PC Magazine b. Definition of: platform [retrieved 3.12.2008]
http://www.pcmag.com/encyclopedia_term/0%2C2542%2Ct%3Dplatform&i%3D4936
2%2C00.asp

Peliplaneetta, 2008. Pelikokemus ansioluetteloon? [retrieved 10.11.2008]

From: http://www.peliplaneetta.com/tietokonepelit/uutiset/8653/

phpBB [retrieved 30.9.2008].
From: http://www.phpbb.com/

Porter, C. E., 2004. A Typology of Virtual Communities: A Multi-Disciplinary Foundation for Future Research. *Journal of Computer mediated Communication.* [retrieved 25.11.2008]
From: http://jcmc.indiana.edu/vol10/issue1/porter.html

Preece, Jenny, 2000. Online Communities – Design Usability, Supporting Sociability, John Wiley & Sons, Ltd

Reed, Martin Building a community: Choosing a CMS [retrieved 19.8.2008].
From: http://www.communityspark.com/building-a-community-choosing-a-cms/

Scollan, Becca, Byrnes, Abby, Nagle, Malia, Coyle, Paul, York, Cynthia, Ingram, Maleka, 2008. Drupal Usability Research Report., University of Baltimore [retrieved 27.11.2008].
From: http://groups.drupal.org/files/DrupalUsabilityResearchReport.pdf

Stafford, Tom, Webb, Matt, 2006. What Is a Wiki (and How to Use One for Your Projects) [retrieved 29.11.2008].
From: http://www.oreillynet.com/pub/a/network/2006/07/07/what-is-a-wiki.html

Typo3. So what is a Content Management System? [retrieved 3.12.2008].
From: http://typo3.com/What_is_a_CMS.1351.0.html

White, Nancy, 2007. Online Community Builder's Purpose Checklist [retrieved 6.7.2008].
From: http://www.fullcirc.com/community/purposecheck.htm

WordPress a [retrieved 30.9.2008].

From: http://wordpress.org/about/

WordPress b [retrieved 30.9.2008].

From: http://wordpress.com/notable-users/

YLE, 2008. YLE ja Drupal [retrieved 4.10.2008]

From: http://drupal.fi/files/miitit/2008-05-08/ylejadrupal080508.pdf

APPENDIXES

Appendix 1

Check-list answers from Sami Jantunen

What is the purpose and desired outcome for the owners?

PURPOSE
1) To disseminate research results to companies in easy-to-use format
2) To enable internal collaboration

DESIRED OUTCOME
1) Community where researchers are willing to publish their research results in easy-to-use format and where industrial partners are actively participating in exchanging ideas.
2) Private community, which is protected from others and in which members have rich set of tools to work collectively

What kind of value would the community create?

1) bridges the gap between academia and industry; provides leverage in negotiating new research projects;
2) makes internal collaboration more efficient and effective

Does it have a mission or a vision that you can communicate to potential members?

1) "Bridging the gap between academia and industry
2) "Enabling multi-disciplinary research collaboration

Are there similar communities already in the market?

That would be nice to know, wouldn't it?

Are the benefits measurable and visible to members and potential members?

I can think of following measures for benefits:
   * Amount of feedback for published information
   * Response time for queries

Are the benefits focused on the individual member? The group?

Individual gain by receiving direct feedback. Group gains with increased reputation of the institution

Is the outcome determined by the organizer? Group members? Both?

Perhaps Both. Outcomes will not be that strictly determined.

Is the group's purpose something that can only be done/accomplished online? Will it replace something offline? Or is it some combination?

There is not good existing practices on disseminating research results to industry.

How would you describe the needs?

Researchers have the need to gain relevance to their research. Practitioners have the need to have easier access to research results. TBRC has the need to lift profile.

How motivated are your participants to participate?

With the PROFCOM-project: somewhat motivated because they are paid to do it. Others will not be motivated until they see some benefit of participation

Do you want your community to be public or private? If private, what determines eligibility?

1) community for disseminating research results: everyone can read and comment, researchers can also create content
2) community for internal collaboration: private

What is the ideal size for your group? Is there a limit to how many members can participate?

1) community for disseminating research results: The more the better
2) community for internal collaboration: project members (+ representatives of industrial partners?)

Where might you find potential participants?

PROFCOM-projects industrial partners

How might you communicate with your participants to market your online interaction space?

Through real life project activities

Are you building from an existing pool of participants? Or drawing in new people?

Mostly Drawing in new people

What kind of interaction there is going to be? Information sharing? Knowledge sharing? Social networking? Relationship or focused on helping people find each other? Is it meeting oriented? Is it learning oriented? Is it task oriented? Is it question & answer? Is it discussion focused?

Information and knowledge sharing, learning oriented, question & answer, focused discussions

Will the activities generate content/knowledge that needs to be captured?

Perhaps

Do they have a strong visual component (pictures, diagrams)?

Not sure

Are there specific timelines for a project to be accomplished?

Community should be up and running by the end of July [2008].

Is there the a need for rules, agreements or governance for the online interaction?

Not so much

Will there be strong and defined rules, or more general and/or casual guidelines?

Casual guidelines

How will you communicate this to the members?

By not emphasizing the rules

If this is a work team, what processes and agreements will you need?

We need some processes to coordinate and share the content creation responsibilities.

Do members have to agree to a "Terms of Service" or other form of agreement before becoming members?

No

Who makes decisions in the community about the online interaction space? The owner? The members? Both?

Owner

Who will facilitate in your online interaction space? How will the facilitators be trained? What will be their responsibilities? What kind of reporting will you have them do to monitor as needed?

Good questions. PROFCOM-project members facilitate. Training & responsibilities & reporting should be thought through. Not ready to answer these yet.

Appendix 2

ajax **blog business** community_building Contact design **drupal** ebook **guidebook** heuristic evaluation information online community online participation php problems processes **product** PROFCOM **purpose** raport rating research **sociability social interaction** social media **software** tagadelic theme tinymce update **usability** **More tags »**

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In Wednesday September 24th, 2008, Jenny Preece gave a visiting lecture in Tampere at a seminar arranged by PROFCOM-project and UCIT, Graduate School in User-Centered Information Technology. The subject of her lecture was what motivates people to online participation, and how online communities can be developed. She also introduced community-centered design as a method for evaluating and developing communities.
(For further details, please see the presentation slides and list of references of the lecture given in Tampere, September 24th, 2008.)

In Thursday September 25th, 2008, the project team together with Jenny went to Tekla in Espoo for a seminar with industrial partners of PROFCOM. The topic of Thursday's lecture was "Why people don't participate online?".
(For further details, please see the presentation slides of the speech given at Tekla on September 25th, 2008.)

The lectures were very interesting and provided us with new and practical information on user motivation and success factors of online communities. We hope that our research partners and colleagues got new ideas in their work with online communities as well.

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