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Building Community Networks, Internet Communities and Interconnecting Services

Research Plan

Version History

Version	Date	Changes
0.1	10.9.2007	Initial version
0.2	26.9.2007	Preliminary version of research area description written
0.3	1.10.2007	Schedule update, risk management
0.4	1.10.2007	Analysis of Existing Research
0.5	1.10.2007	First draft to advisor
1 .0	5.10.2007	Version 1.0, approved by advisor

Introduction

Current Internet and Internet services are evolving from Internet and telecom service provider driven client-server architectures to carrier independent, service provider driven, community services. These new community services are often based on hybrid service architectures, which embrace both client-server and peer-to-peer technologies, as well as overlay networks, in delivering the service to customer.

Several of the technologies needed for this kind of service paradigm change already exist and the rest are being actively researched and developed around the world. As building WWW based services has developed from building single inhouse solutions to combining services and components from several providers into mashups, so will, in author's opinion, develop also network communities and services.

In first phase of his research, the author aims to find, analyse and understand the reasons and incentives behind network communities, community services and services providers as well as technical, social and business aspects of the community and community service creation. In second phase the author plans to research the architecture and methods to combine and connect different communities and community service providers to each other thus creating interconnecting communities instead of the regular separate ones.

The author aims to conduct his research for the topic in a mixed environment of academic research work in universities as well as architecture, product and service research and development in the service of companies active in this field.

Research Area Description

To define what are the research topics in the area of community networks one must first define and classify what exactly a community and what kind of communities already exist in the world. The following is author's own classification of the communities and community networks existing already today.

Single Provider Communities

Single provider communities are the most common form of network communities They usually concentrate around some specific issue, service, product or platform, and are driven and controlled by single organisation or company. Most equipment vendor initiated communities fit to this category as do most of the community networks. Some well-known examples of these kind of communities are:

Community networks:
- Fon, an international WiFi community network, http://www.fon.com/
- Sparknet/Openspark, a Finnish WiFi community network, http://www.sparknet.fi/
- Wippies, an international WiFi community network backed by a Finnish Operator, http://www.wippies.com/

Community networking:
- IRC-Galleria, a Finnish community portal, http://www.irc-galleria.net/
- Facebook, an international community and social networking portal, http://www.facebook.com/
- LinkedIn, an international business networking service, http://www.linkedin.com/

- MySpace, an international community portal, http://www.myspace.com/
- Orkut, an interenational community portal owned by Google, http://www.orkut.com/

Gaming/Entertainment communities:
- World of Warcraft, the most popular multiplayer online roleplaying game, http://www.worldofwarcraft.com/
- and several others

Specific interest communities:
- Flickr, a Yahoo owned photography enthuastics' community for sharing photographs and other pictures, http://www.flickr.com/

Vendor communities:
- Apple Developer Connection for developers utilising Apple platforms, http://developer.apple.com
- Forum Nokia and S60 developer communities for devices utilising Nokia technology and S60 mobile terminal platform, http://www.forum.nokia.com/ and http://www.s60.com/
- OVI community by Nokia for sharing mobile multimedia content, applications and utilising additional services for Nokia devices, http://www.ovi.com/
- Microsoft Developer Network (msdn) for developers working on Microsoft platforms, http://msdn.microsoft.com/

Multi Provider Communities

Multi provider communities are usually formed by several different companies and organisations as a cooperation or co-development platforms. The difference to single provider communities is that the goals of the multi provider communities usually aim to interoperability, cooperation or technology distribution, adoption, development and deployment among participants. The goals and form of the communities is not decided by single provider but instead reflect on the goals and needs of various participants. Examples of these kind of communities are:

Technology providers:
- Google: Google has released public interfaces and developer kits for almost all of its services to help to integrate and connect them into so called service mash-ups.
- Yahoo: Also Yahoo has released public interfaces and developer kits for almost all of its services to help to integrate and connect them into so called service mash-ups.
- Nokia: the Maemo open source platform, http://www.maemo.org/

Community networks:
- eduroam(tm), an international cooperative WiFi roaming alliance for higher education and research organisations and networks, http://www.eduroam.org/
- Langaton Tampere, a Finnish cooperative WiFi community network, http://www.langatontampere.fi/

Open source communities:
- SourceForge, an Internet service for open source software developer and development, http://www.sourceforge.net/
- Center of Open Source Software (COSS), a Finnish open source cooperation and information portal for connecting companies and research organisations and advocating open source use and development, http://www.coss.fi/
- Open source development communities in general are multi provider or more precisely multi developer driven communities

Natural Communities

Natural communities are the network communities, which are formed based on an existing community structure like an enterprise, company or organisation. A natural community may be a department, workgroup or just an ad hoc group traveling. It may also be a loosely bound and changing group of people wanting to exchange information or share content like for example peer-to-peer network communities. While this kind of natural communities are already familiar in the Internet, the community services in companies are usually limited to company intranet services like wikis or software repositories. One of author's research objectives is also to research the creation and utilisation of the community services in companies and enterprise environment as well as other natural communities.

Analysis of Existing Research

The importance and effect of communities in the innovation development have already been followed and verified in several papers. The open source development model already has a proven record of successful co-development communities with already several papers like *Learning from Open Source Software* by von Hippel [LOSS2001] analysing it. *The Community Based Innovation* conference paper [CBI2004] also describes in detail a case of online community development and utilisation in automotive industry and identifies four general steps and key questions in creating successful online communities:

1. Determination of User Indicators: *Which attributes should the users have to be able to support the innovating company in the development task it is challenged with?*
2. Community Identification: *Within which online community these users can most probably be found?*
3. Virtual Interaction Design: *How the interaction with these users can be designed efficiently regarding the particular development task and the inviduality of the selected online community?*
4. User Access and Participation: *How the community members can be contacted and encouraged to take part in the co-development?*

These steps and questions focus in getting users to participate in co-development environment, but can also be applied in creation of other online communities. It is true that first a target group must be identified and key users to be selected. The second step is a marketing question, where can those users be found, who would be the first ones to participate in the community. The third one is how participation can be encouraged and enabled by usability design. The fourth one is the question of user interfaces, user access and above all the openness of all these and how easily they can be made available to users and developers.

The research on benefits and artificial creation of online communities is mainly concentrated in the innovation and information management research [CBI2004, DOBC2006] while the research of enabling frameworks and technologies [SOPOC2007] is mostly done in the technical universities. Especially community area networks seem to be an area where the encouragement to join and contribute to the community is seen to be solvable by technical methods [SPWCN2006]. There also exists research papers, which concentrate in analysing of the participant demography and motivations by doing direct user surveys [WCNPA2007].

Researching user behavior in the network or online communities is concentrated mainly in the departments of sociology and anthropology in the universities. The research topics in these organisations concentrate for example analysing user interaction and behavior inside a community or a virtual world like World of Warcraft [OCNT2007].

On the area of community supporting platforms or categorisation of communities there has been research on generic architectures [GACSP2000] and typology of online communities and community supporting platforms [TOCCSP2001]. These both papers from same authors concentrate in analysing and categorising architectural and platform features which would help the definition and creation of community services or communities. While the research in these papers is on relatively high-level compared to author's plans, it may still prove to be useful also for author's research by defining concepts and elements in a coherent way.

Research Approach

The existing communities provide already information and experiences about the creation, forming and operation of the communities. They can also be analysed and researched to find out the incentives, business logic and processes which make the communities thrive. This information can be then used to speed the development of existing communities and as a basis for creating the communities and community services in general. The theory and practice of community creation can then be used also to drive further the development and adoption of the community services in natural, and especially in enterprise or company environment.

The author's planned research approach is to concentrate his research mainly to the technological and platform aspects of the research area leaving the sociological and behavioral aspects of the communities and their participants outside direct research focus. The author however sees these aspects as a important supporting research for his own area and will follow the areas through publications, conferences and relevant postgraduate studies.

As community services are gradually transforming from single provider communities to more open multi provider communities, one important research topic is the interoperation and interconnectivity of different communities and combination of the community services from multiple sources. A community service for a company in the future must for example be able to connect other companies' similar services and also integrate the already existing Internet community services seamlessly to a community service mash-up. The best way to research this kind of issues is to participate into research and development of this kind community services, which is why author plans to conduct his research partially in the corporate environment.

Research Project Plan

Goals

- Familiarisation of community networking, community networks and the technologies and business models used to drive them
- Creation of an open source framework and methodology for building communities and community services
- Publishing the findings and new ideas
- Commercialisation of the above
- Doctor of Technology degree

Deliverables

- Various publications: conference papers, journal papers etc.
- Open source framework and methodology for building communities and community services
- Thesis as a compilation of the publications

Preliminary Schedule

Phase	Year	Research Topics and Actions	Research Environment
1	2007-2008	Researching existing community services and networks, familiarisation of the technologies used, analysis of existing research, postgraduate studies in communications engineering	Tampere University of Technology
1	2008-2010	Researching and creating community services, technologies and networks, publications about experiences in deploying services and technology as well as documenting new ideas and approaches, postgraduate studies in technology management, strategy and communications engineering	Tampere University of Technology, Company
2	2010-2012	Researching and creating interconnecting community services, technologies and networks, publications about experiences in deploying services and technology as well as documenting new ideas and approaches, postgraduate studies in technology management, strategy and communications engineering	Company, Tampere University of Technology
2	2012-2013	Finishing postgraduate studies, compiling, writing and defending of thesis, continuation of the research and commercialisation of the community technologies	Company, Tampere University of Technology

Risk Management

Risk level is evaluated by range of 1 to 5 with 1 being low and 5 being critical for continuation of project. The probability is evaluated from 0 to 1.0 with 1.0 being full certainty. Combination effect of level and probability is evaluated as product of level and probability. The realised column is for future use informing if the risk has manifested itself.

Risk	Preventive Action	Corrective Action	Level	Prob.	Level * Prob.	Realised
Lack of time	Selection of research environment, flexible job description	Allocation / priorisation of time, changing research environment / job description	5	0.9	4.5	
Lack of funding	Selection of research environment or job description	Actively pursuing and securing funding, changing research environment / job description	5	0.7	3.5	
Lack of motivation	Aligning research area and focus, selection of research environment, flexible job description	Realigning research area and focus, changing research environment / job description	5	0.5	2.5	
Burnout	Priorisation, adjustment of the schedule, job description and research environment, vacations, taking time off when needed	Vacation, taking time off	5	0.1	0.5	

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