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Abstract

One of the critical success factors for the future development of the agri-food sector is the increased integration of enterprises and other stakeholders in horizontal and vertical ‘communities’. Tracking and tracing, agreements on quality policy, improvements in logistics, dissemination of innovations, cooperation in quality planning and market orientation, access to knowledge bases, etc. are all examples which build on an increased horizontal or vertical integration in information and communication activities. The paper will discuss ongoing research on the conceptualization, design and testing of online communities that provide the functionalities that might improve cooperation in the different (horizontal and vertical) dimensions. It builds on initiatives from the area of ‘collaborative working environments’, sometimes captured under the heading ‘electronic community house’. First prototypes utilize freely available software modules and demonstrate the capability of today’s level of development if one has a clear conceptual base.

Key words: *e-community, collaborative working environment.*

1. Introduction

The European Union's 7th Framework Programme for Research and Development (FP7) defines Information and Communication Technology sector as a main factor to improve competitiveness of European industry worldwide and to meet demands of its society and economy. The goal of the FP7 is to help to meet the renewed Lisbon strategy objectives in competitiveness, growth and employment in Europe. Current Research and Development actions are strongly supported by the European Union especially in areas of creating flexible and configurable working environments, e.g. platforms for mobile and remote work or collaborative distributed work in networked organisations and virtual communities. Electronic Collaboration Platforms have to provide improved communication possibilities and better access to information which should be crucial for sustainable growth and development of European society (European Communities, 2006). Because costs of the Internet access decrease and the Internet network builds up, virtual collaboration can become geographic independent. We can assume, that the future development of the agri-food sector depends on improved integration and communication between enterprises and other stakeholders. Electronic Collaboration Platforms can effectively support this process with its IT tools.

2. Virtual Communities and Collaborative Working Environments

There's no unequivocal definition of virtual community in the literature (Leimeister and Krcmar, 2004, p. 3). According to Hagel III, J. and Armstrong (1997, p. 143) „virtual communities are groups of people with common interests and needs who come together on line”. This definition describes a community as a group of people that e.g. chats in a chat room, discusses a problem using USENET newsgroups or writes posts in various discussion boards. Internet users are members of different virtual communities. Community members play, talk, chat, share photos or links, blog or discuss together and as a part of formal and informal virtual groups use them for business and private issues. The future research will be focused on improving and developing collaborative technologies, and virtual communities should become more specialized and constitute collaborative working environments – virtual e-professionals groups using electronic collaboration platforms in their individual or cooperative work. Electronic collaboration platforms should support individual work, collaborative work in the scope of company or many companies or even deliver public services to the citizens. The expansion of collaborative working environments should have impact on all sectors, including digital services, business, government or home-work. Because work is a part of human life, existing work-styles should change and migrate online. Shared resources and group work, building knowledge bases and networks between co-workers in company, citizens, companies and societies will probably constitute the new philosophy of life, where collaborative working environments using electronic collaboration platforms increases competitiveness of European industry and economy worldwide (European Communities, 2006, p. 11).

3. Electronic Collaboration Platforms

Electronic Collaboration Platforms support collaborative work for e-communities. They offer a variety of functionalities that make virtual collaboration alike a regular face-to-face cooperation. Computer environment tries to act like a natural environment offering a wide range of functionalities that make cooperation using computers easy and without boundaries.

3.1 Synchronous and asynchronous collaboration

To make collaboration effective and as natural as possible, electronic collaboration platforms offer different functionalities and communication tools differed in two groups – synchronous and asynchronous (Table 1). Electronic collaboration platform consists of suitable combination of these two types of communication tools.

Table 1. Asynchronous and synchronous collaboration tools

Asynchronous	Synchronous
Email	Video conferencing
Private messaging	Audio conferencing
Discussion boards (forum)	Chat
Wiki	Instant messaging
Calendar	Whiteboard
	Application sharing

Electronic collaboration platforms support not only group work, but combine managing of self-work with a group work.

3.3 Self- and group organization

To create an effective electronic collaboration environment it's necessary to combine synchronous and asynchronous communication tools with functionalities that enable self-work-management and group work management as well. Created environment should serve as a shared personal desktop combining mentioned functionalities. The power of e-community is that it's users gain opportunity to find other user with certain skills and interests. It's crucial when there's a need e.g. to find a professional or a consultant. Own profile describes in details every user's interests, skills, companies or projects that he used to work for. Published dates or events inform about users activity. Blog enables users communication with other users and sharing point of view or discussing interesting topics.

Table 2. Self-organization and group-organization collaboration tools

Self-organization	Group-organization
My profile	Time management (group calendar)
My blog	Project, task management (ToDo's, tasks)
My events (calendar)	Document management (workflow)
My links	Social management (groups)
My photos	Knowledge base
My documents	

3.3 Shared and private resources

Enabling effective self and group work in electronic collaboration platforms requires a suitable access rights management. Divided into many 'working groups' virtual community acts as virtual society with users-citizens that create their own working groups for different tasks. Adequate access-right management needs to be implemented to prevent unauthorised access to resources. Electronic collaboration platform should enable user to keep resources private or to share them to other users, group of users or share them public with different access rights (read-only, full control).

4. Collaborative Community House concept

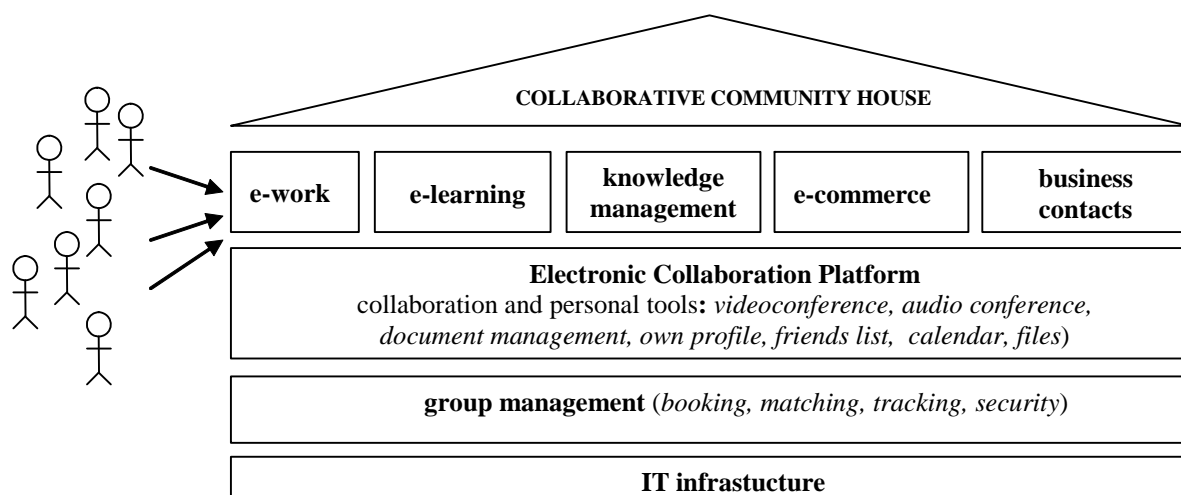


Figure 1. Collaborative Community House concept

The concept of the Collaborative Community House bases on an idea of Rural Collaborative Community House – project of an electronic collaboration platform prepared especially for rural environments in Europe (Hausen, 2006). Collaborative Community House should be developed as a generic, flexible and adaptable platform with on-the-fly created workspaces (rooms) for different collaborative tasks enabling effective collaboration for e-work, e-learning, e-commerce and knowledge management and offering personalized tools. Rooms are based on the functionalities like e.g. video- and audio conference, text chat, document management or shared/group calendar. The room holder gives rights to access the room (group management) with support of IT infrastructure – the fundament of the Electronic Collaboration Platform.

5. Electronic Collaboration Platform – project conceptualization

The concept of an Electronic Collaboration Platform bases on Collaborative Community House idea and is expanded by functionalities offered by different websites for virtual communities. Nowadays there's a plenty of social networking websites for different communities. Their main purpose is to “keep users online”, and they are concentrated on user's entertainment enabling users to create their own profile, upload their photos or music and to keep in touch with their friends by adding them to friends list. Basic functionalities offered by social networking websites are: own profile (user's description with interests list, photos, videos or music), friends list (every user collects his own friends), private (instant) messaging, discussion boards (user can create discussion groups), blog feature or event calendar. Groupware software delivers tools that enable collaborative work, like document and task management, shared group calendar or discussion boards. The concept of Electronic Collaboration Platform encompasses functionalities of the social networking websites and groupware software functionalities to create an effective virtual collaboration environment. Main idea is to create platform that enables better users' self-organization but most of all offers possibilities to work effective in different virtual groups. The Platform should support flexible collaboration, bring together individuals and experts from different companies to increase innovations and enhance the productivity. Electronic Collaboration Platform should support with it's technology horizontal initiatives by building collaboration bridges between different enterprises or in enterprise – by simplifying communication between employees and by making group work or other tasks easier. The Platform should be a base for a knowledge-based community with continuous content improvement. As a support for vertical initiatives Platform should provide a basis for effective collaborative work between users of the specific sector (e.g. rural, engineering). Furthermore, membership in the community should profit in growth of trust between users and on this basis there would be a possibility to implement an online shop or auctions software. The platform should be intuitive and simple to use for every user and accessible by any modern web-browser.

6. Electronic Collaboration Platform – project design

Designing an Electronic Collaboration Platform needs to be preceded by analysis of the key factors that will be crucial by the project implementation. The adequate collaboration environment should consist of the user-, group-centric, synchronous and asynchronous communication tools as well.

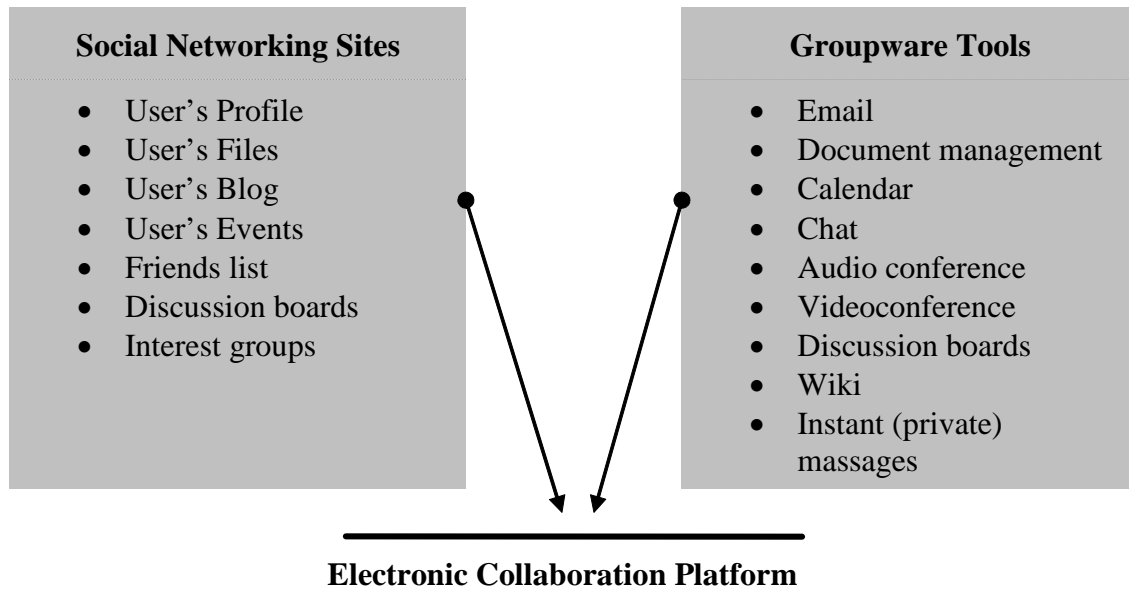


Figure 2. Electronic Collaboration Platform

Analysis of social networking sites gave the answer to the question – which of the features offered by social networking sites are important by creation a “living” community. Analysis of the groupware software was performed to answer the question – which features are essential in virtual collaborative work. Specified scope of tools and functionalities should provide platform’s users with wide range of collaboration possibilities (Fig. 2).

7 Electronic Collaboration Platform – first prototype

The first prototype of the Electronic Collaboration Platform for Communities is based on the analysis of the social networking sites and groupware software. Gathered information allowed creating flexible and configurable working environment with a clear user interface and most of the functionalities selected by analysis. Electronic Collaboration Platform is accessible through every modern browser with installed Macromedia Flash Player. That enables collaboration on almost every computer with access to Internet.

7.1 Synchronous communication tools

There are synchronous communication tools implemented on the Electronic Collaboration Platform that enable “live” collaboration. Components based on Flash Media Server and Flash Components support videoconference, audio conference, text chat and whiteboard in freely configurable combinations (e.g. only text chat, videoconference and whiteboard, text chat and whiteboard or audio conference and text chat) to give users possibility to choose the best environment that’s proper to their requirements. Access rights to the “rooms” are granted by room creator to the other users. Users invited to join the room see those rooms on their rooms’ “invitation list”.

7.2 Asynchronous communication tools

Asynchronous communication tools implemented on the Electronic Collaboration Platform are: forum, private messages and a calendar. Private messages panel enable sending messages to the group of users invited to the defined room. Shared calendar enables defining events (private – visible only by creator, and shared – visible to other users). It's integrated with iCalendar standard functionality – can generate iCalendar (described in RFC 2445) files and send them per email to user. ICalendar standard is implemented and supported by a large number of applications, like Lotus Notes, Microsoft Outlook, Mozilla Calendar, Windows Calendar and other.

7.3 Other functionalities

Other functionalities available on the Electronic Collaboration Platform are: document management, blog, friends list, users list, own profile, auctions portal and online shop.

7.4 Ease of use

User-centric design of the platform requires corresponding application usability to effectively deliver its functionalities. Platform's navigation system was designed to be clear and user-friendly.

8. Expected impact

European agri-food sector industry is mainly represented by small- and medium enterprises and they are responsible in area of job-creation and economic growth in this sector. Their sustainable growth and development depends on increased collaboration and intensive communication. Durable cooperation between businesses depends on tight collaboration – with solid fundament from IT (Brynjarsson, 2006) The use of knowledge management not only intern in enterprise, but also between companies should improve their benefits – combination of knowledge of various professionals from different environments should stimulate research and sector improvements. Use of the Electronic Collaboration Platform should support agri-food sector and enable better cooperation not only in area of knowledge management, training activities or dissemination of innovations, but also in take-up activities and international cooperation.

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