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Trust in Virtual Healthcare Communities: Design and Implementation of Trust-Enabling Functionalities

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Abstract

Trust in online communities, particularly in the healthcare domain, provides (apart from other success factors) the foundation for a successful implementation and operation of a virtual community (VC). A look at existing communities however leads to the conclusion that many VCs fail to meet requirements upon which trust is established. Based on the researchers' experience, this paper describes how trust-enabling functionalities can be systematically designed and implemented in a virtual community for cancer patients. The presented components support the process of creating trust in the VC and contribute to the successful implementation and maintenance of the community. The paper concludes with a discussion on aspects of trust yet to be implemented and recommendations for further research in this area.

1. Introduction

This paper presents work which is part of the research project “COSMOS (Community Online Services and Mobile Solutions)”. This initiative is a collaborative project between several partners¹. The main objective of the project is to examine the design, development and maintenance of virtual communities (VCs).

The objective of the work described in this paper was to design and implement trust-enabling functionalities in a virtual community for cancer patients in the German healthcare system (for a closer

look at the community, please visit the website www.krebsgemeinschaft.de). There are two reasons why trust and trust-enabling functionalities are of major importance for this community: Firstly, the members of the community are mostly elderly people, because in general, the occurrence of cancer is correlated to age. Even if they are interested in the internet and the community, they treat the ‘new’ media with skepticism. Secondly, the life-threatening situation of cancer patients and the taboo-topic “cancer” itself requires a higher level of trust.

The paper begins with an introductory discussion of the phenomenon trust. In the first section, trust is analyzed as it applies to organizations in general. These concepts are elaborated upon and further discussed in relation to aspects of online applications and healthcare solutions in particular. Section 2 provides a discussion of the design of components to support trust. Section 3 points out a selection of implemented components. Preliminary findings of the implemented components of trust in this study are described in section 4. The paper concludes, section 5, with an overview of tasks and challenges facing developers of virtual communities and poses questions to be addressed by research in this area in the future.

1.1. Fundamental considerations

Trust has been defined from several scientific perspectives - e.g. sociology, philosophy, socio-psychology and economics [1]. For purposes of this study, we used the following definition by Gambetta [6]:

“... trust (or, symmetrically, distrust) is a particular level of the subjective probability, with which an agent will perform a particular action, both before [we] can monitor such an action (...) and in a context in which it affects [our] own action.”

¹ COSMOS is a joint research project of Hohenheim University, the Technische Universität München and O₂ (former Viag Interkom GmbH & Co). The project is funded by the German Ministry of Research and Education under contract No. FKZ 01 HW 0107 – 01 HW 0110. For further information please visit: <http://www.cosmos-community.org>.

Based on this definition of trust, social scientists have generally identified three types of trust [1]:

- (1) *Interpersonal Trust*: The type of trust one agent has in another agent on a personal level. This trust is both agent- and context-specific. For example Jane may trust Peter regarding a consulting service for financial assets but may not trust him in the context of babysitting her children.
- (2) *System Trust*: This type of trust is not based on any property or state of the trustee as defined in interpersonal trust. It is rather based on the perceived property or reliance on a system or institution within which trust exists, for example, the monetary system.
- (3) *Dispositional Trust*: Describes the general attitude of the person seeking trustworthiness towards trust. Therefore it is also called “basic trust” which means it is independent of any other party or context.

These three types of trust differ in the way in which they can be established within a virtual community. Interpersonal Trust and System Trust can be attained more easily than Dispositional Trust. Consequently the following sections will focus on establishing Interpersonal and System Trust in virtual communities.

1.2. Trust and reputation in the context of online applications

In order to maintain an online application, we need to find ways to enable trust systematically. To do this, reputation indicators are helpful [10]. They compensate for a certain lack of primary information and refer to personal experiences as well as experiences made by others. Therefore, reputation is defined as “(...) an expectation about an agent’s behaviour based on information about or observations of its past behaviour” [1].

Thus, reputation is an indicator that signals experiences. Figure 1 demonstrates the importance of reputation indicators in the development of trust:

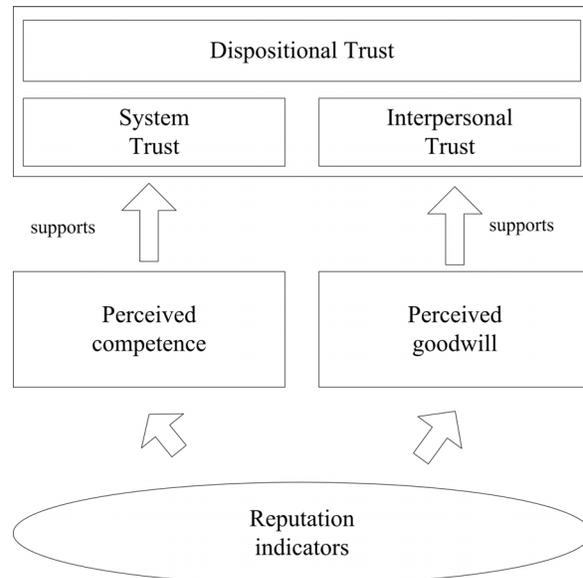


Figure 1. Reputation Indicators and Trust

Perceived competence in the offline environment is monitored by organizations that investigate and evaluate the reputation of other organizations; for example the German “Schutzvereinigung für allgemeine Kreditsicherung (SCHUFA)²” or other credit rating organizations for industry and trade (EuroRatings AG). These organizations collect and analyze information about their business partners and provide this information as a commercial service [10].

Within the context of online applications many so-called “trust partners” have been established. As independent organizations, these trust partners guarantee compliance with standards; for instance for secure payments and encrypted secured data transmission. Examples in Germany include: “Trusted Shops”, “TRUSTe” and “Shopinfo” [4]. Through continuous examination of, for example, the handling of privacy regulations, these institutions support the development of trust. Additionally, they may force business partners to adhere to standards in order to ensure that customers receive the goods and/or services they expect [14].

Perceived competence is supported by clear definitions of the various responsibilities of the individuals providing goods or services. For example, the disclosure of all prices, delivery times, taxes or cancellation fees is meant to be an advantage for the buyer or consumer. Binding terms of use and codes of behaviour are applied accordingly.

² The SCHUFA is an organization that supports enterprises while the process of giving credit to a private person. They check up on the liquidity of these private persons.

A further indicator to support perceived competence is the disclosure of patterns of past performance, e.g. airlines' report on on-time percentages for arrivals and departures and realtors' statistics on the number of houses bought and sold. The disclosure of performance reports may attract users, as does information about the organization and its management. Even skeptical consumers may be engaged and assured by the transparency of performance numbers [14].

Perceived goodwill is more difficult to describe. It can be experienced as the discovery of a cooperating partner's good intentions and can further lead to the development of interpersonal trust. In the following, three possibilities are presented which promote the communication and visualization of reputation [10]:

- (1) *Mutual appraisal of transaction partners*: Many online auction platforms have created the possibility for involved partners to mutually evaluate themselves after a transaction. Often this appraisal is a combination of a standardized rating (e.g. based on a scale of one to five stars) and a field for open comments. The problem with this type of evaluation is that users may remain anonymous and thus the power of expression of the individual evaluation is rather minimal. The persuasiveness of the whole evaluation is dependent on the number of evaluations from different users. Therefore, the greater the number of positive evaluations from transaction partners, the more likely other users will trust the value of this positive feedback [5].
- (2) *Appraisal of Opinions*: The usual practice of online auction platforms is that no direct appraisals of transaction partners takes place; rather, it is only the recommendations and/or information which are evaluated (for example as realized at <http://www.ciao.com> with "very helpful", "helpful", "little helpful" and "useless"). The average of the appraisals can be calculated and represented visually.
- (3) *Relationship Networks*: The idea behind this concept is to find a reputable person who provides information as to the trustworthiness of a potential cooperation partner. To accomplish this, data about the relationship between the cooperating partners must be collected prior to the transaction. The developed relationship networks can then be visualized.

Appraisal of Opinions and Relationship Networks usually use experts to guarantee the correctness of the data provided. Furthermore the expert has to have access to the data about the relationship between the cooperation partners. Therefore these solutions are

rarely implemented. In contrary to that, Mutual appraisal of transaction partners is used very often, because it provides reputation based on transactions by minimal costs.

1.3. The Healthcare Sector: Characteristics of a breast cancer community

Two key characteristics of a VC need to be considered in addition to the aforementioned general components necessary for the development of trust: the target group and the topics discussed in the VC. In this case, the target group is breast cancer patients and the topic is cancer.

This target group demands special requirements for the user interface and the composition of the platform.³ Due to factors related to disease incidence, the topic (breast cancer) attracts a somewhat older female population; thus age and gender characteristics of the target group were taken into consideration in designing the VC.

As "cancer" is a personal experience which is still associated with negative social stigma, participation of the community members takes place on a particularly personal and intimate level. From the patients' viewpoint, being diagnosed with "cancer" is the beginning of a period of extreme physical and psychological stress, whose end cannot be predicted because of the possible occurrence of relapse.

In order to deal with this stress, patients and their relatives need comprehensive information in all stages of the disease. A diagnosis of cancer can be life-threatening and therefore the trustworthiness of the information given is of critical importance. Thus hospitals, medical professionals and care-givers remain the most important source of information [8]. However, the seeking of information and interaction are often ubiquitous desires for the patient and seldom coincide with the physicians' work schedule. Patients experience other needs in addition to the simple retrieval of medical knowledge. The desire for social peer-to-peer interaction, emotional support and mobility are commonly expressed in self help groups [7]. Interestingly, self help groups only attract 3% of cancer patients according to Hasebrook [7]. Possible explanations for the low participation rate are that interested persons are unable to locate a group in their vicinity or group meeting times do not fit individual patient's schedules [11].

The results of focus groups consisting of individual cancer patients and members of cancer self help groups which were held during the COSMOS project

³ The conception of a development model for healthcare communities is done by [2].

indicated that a large number of potential community members expressed interest in using the Internet, but are skeptical about issues relating to the protection of privacy. In particular, the fear of abuse of personal data for advertising purposes deterred persons from using online services.

In summary, members of cancer communities have a higher demand for trust compared with members of 'normal' communities. The following design of functionalities accommodates these requirements for the case of the VC *krebsgemeinschaft.de*.

2. Design of trust-enabling functionalities

The components discussed in this section represent concrete possibilities to support the process of trust building. According to the different types of trust explained in section 1.2, this concept differentiates between components required to support System Trust and those which support Interpersonal Trust.

2.1. Perceived competence

Transparency, high quality content, the operator's model and access rights are essential components for an increase of perceived competence in a VC.

2.1.1. Criteria of transparency. The adherence to standards established by external regulatory agencies or influential institutions is necessary in order to increase perceived competence in the VC, the "Health Information System Action Forum" (afgis) was established in 1999. The aim of this non-profit forum is to develop a sustainable quality assurance process for German-language health information on the internet. To attain this goal, the task force "Quality Assurance" drafted the following ten criteria of transparency [12]:

- Transparency of providers (name and address of the provider is clearly visible at the site);
- Transparency of goal, purpose and target groups of information (the targeted audience is clearly defined);
- Transparency of authors and data sources (names, functions of authors and sources of data are identified);
- Transparency of actuality of information (dating of information is indicated); Transparency of feedback mechanisms (opportunity of providing feedback, for example, via email, to the providers of information)
- Transparency of quality assurance procedures (statements relating to the quality of information are published)

- Transparency of separation of advertising and editorial contents (product advertisements are clearly separated from factual content)
- Transparency of financing and sponsoring (financial support from companies and organizations is clearly identified)
- Transparency of cooperation and networks (any and all associations with companies or governmental/political organizations are indicated);
- Transparency of use and protection of data (indication of whether and how user information may be collected or used is clearly stated).

The sub-group "Quality Assurance" is presently working on the transformation of these criteria into precise and detailed guidelines.

2.1.2 Quality assured content. The quality of the content published on a VC is an important factor in establishing perceived competence. In the case of *krebsgemeinschaft.de* the content is provided by the reputable German medical institution Krebsinformationsdienst (KID) at the German Cancer Research Center in Heidelberg. KID plays the role of content manager for the VC. This institution has a long track record in supporting cancer patients via telephone hotlines and email-services. Through KID's association with the German Cancer Research Center, the latest research results are available and integrated into the website in a timely fashion. Each text module of the website is proofread by a recognized expert in the field of oncology in terms of correctness and relevance.

2.1.3. The operators of *krebsgemeinschaft.de*. The motivation and background of operators of a VC play a central role in regards to perceived competence. For example, sites of pharmaceutical companies producing chemotherapeutic agents seldom publish information related to competing treatment options or alternative treatments. Information on alternative treatments would be better answered by an independent operator with no known ties to commercial entities.

For this reason, the accurate disclosure of information regarding the site operators is important in the establishment of trust within a virtual community.

2.1.4. The Access Rights Concept. Access rights refer to the determination of accessibility to various functions within the VC and are assigned according to the status of the individual member.

As stated in section 1.3, interaction offers patients not only information, but serves as a source of support as well. In order to enhance the supportive aspects of the VC, we designed and implemented the so-called “exchange services” *Discussion Board*, *Ask an Expert*, *Contact Search* and *Chat*.

The Discussion Board supports in particular the asynchronous exchange of information between the members of the community. Ask an Expert represents a special form of the Discussion Board. This service offers members the opportunity to address questions to an expert (physicians with specialized knowledge) during a limited time range. Only the designated expert answers questions. The Contact Search component serves the community members by connecting them with others who are in a similar situation in life or have similar interests. The exchange service Chat offers the community members the possibility to communicate synchronously with each other, independent of location.

The access right concept assigns permission to use the exchange services to the members of the VC. The concept follows the five social roles which were originally identified by Kim from her studies of the development of VCs. Kim distinguishes between visitors, novices, regulars, leaders and elders [9]. Following Kim’s social roles, three levels of authorization are assigned at *krebsgemeinschaft.de*. Visitors who are simply lurking at the site, own the authorization level Guest. On registering with *krebsgemeinschaft.de*, they are promoted to the level Member. During the course of membership a member can receive the authorization level VIP Member.

Additionally, within *krebsgemeinschaft.de*, the authorization level Expert and several administrator authorizations have been appointed. These other types of authorizations needed to be established due to specific characteristics of the domain and specificities related to project organization. The authorization level Communitymanager is occupied by a physician from the “Onkologischer Schwerpunkt Stuttgart“, a network of several hospitals which provide cancer treatment in Stuttgart (Germany). This Communitymanager is responsible for the medical care within the community. The “Krebsinformationsdienst (KID)” at the cancer research center in Heidelberg provides cancer-related content and is thus assigned the role of Contentmanager.

In total, there are seven authorization levels within *krebsgemeinschaft.de*:

Level	Authorization title	Description of authorization assignment
1	Guest	Unregistered user of the website
2	Member	Registered user
3	VIP Member	Registered user with special authorities – upgraded by the <i>Community-manager</i> (permanently); upgraded by another VIP Member within the <i>Chat</i> (temporary)
4	Expert	Professional expert – appointed by <i>Community-manager</i> ; special authorization for “Topic of the week”, otherwise authority level <i>Member</i>
5	Community-manager	Supervision of the community (e.g. answering members’ inquiries and recruiting experts) – appointed by the project team
6	Content-manager	Responsible for procuring and maintaining content appointed by the project team
7	Administrator	Technical administration of the platform – appointed by the project team

Table 1. Authorization levels of *krebsgemeinschaft.de*

By dint of these levels of authorization, the rights for individual functionality are assigned. The most important states of the concept of authorization are summarized as follows:

- Unregistered users of the platform (guests) may browse the summary pages of both the Discussion Board and Question an Expert; however, they are denied access to the content of the contributions to these sections and are themselves unable to contribute. Guests do not have access to the services Contact Search and Chat.
- The functionality “Change Contribution/Question” is restricted to the person making the contribution or posing the question. A question may be changed only as long as the Expert has not yet answered it. These two restrictions apply to Members and VIP Members.
- It is possible for Experts and Administrators (authority level 5-7) to change and/or delete the contributions of community members in order to adhere to Discussion Board rules.

Further development of the Chat will allow each member to become a temporary VIP Member. This occurs when a member opens up a new room with a new topic within the Chat. The member now has the

rights of a VIP Member, but this applies only to his/her (own) room and applies only for the duration of his/her stay in the room. Members seeking more privacy can establish a private “room”.

2.2. Perceived goodwill

Perceived goodwill can refer either to the operators of the VC or to other members of the community. In order to signal to the members of *krebsgemeinschaft.de* the greatest possible goodwill of the operators, the motivation of the institutional partners is clearly stated on the website and it is noted that no commercial interests guide the community. The perceived goodwill of the users among themselves is supported by the possibility for members to forego anonymity by displaying data contained in the user profile (see table 3). Through this step, members demonstrate their goodwill by revealing personal data to other members within the community.

2.2.1. User profile. The user profile contains compulsory and optional information which a member provides upon registration with *krebsgemeinschaft.de*. If a member of the community publishes a contribution or asks a question, the contributor’s name is shown as a hyperlink. By clicking on this hyperlink, one obtains the user profile of the corresponding member. The extent of information other members see on the user profile depends on the level of anonymity the member has chosen. Furthermore, the information contained in the user profile serves as data base for the service Contact Search

Table 2 describes the optional fields of the user profile:

Ref. ⁴	Field Name	Remarks / Format
<i>Personal information:</i>		
/D05/	Salutation	Values: “Mr.“, “Mrs.”
/D15/	Title	Format: text field
/D130/	Birthday	Format: “DD.MM.JJJJ”
/D140/	Family Status	Values: “ <u>no reply</u> ”, “single“, “married“, “divorced“, “separated“, “cohabit“ and „widowed“ - Format: list to select

Ref.	Field Name	Remarks / Format
/D150/	Own children	Values: “ <u>no reply</u> “, “no“, “yes“ - Format: Radio Buttons
/D160/	Portrait	Format: JPEG or GIF
/D170/	Own Homepage	Format: URL
/D180/	Mobile Telephone	Format: text field
/D190/	Private Telephone	Format: text field
/D200/	Fax	Format: text field
<i>The illness</i>		
/D210/	Connection with the illness	Values: “ <u>Survivor</u> “, “Relative“, “Expert“, “other”
/D220/	Connection (other)	Format: text field
/D230/	Date of diagnosis	Format: “DD.MM.JJJJ”
/D240/	Type of cancer	Values: “ <u>breast cancer</u> “, “leukemia“, ”other“, “no reply“ - Format: list to select
/D250/	Type of cancer (other)	Format: text field
/D260/	Phase of illness	Values: “ <u>no reply</u> “, “before therapy“, “in therapy“, “remission“, “no metastases“, “metastases“ - Format: list to select
/D270/	Type of therapy	Values: “Radical surgery (removal of the breast)“, “X-ray therapy“, “Removal of lymph nodes“, “Breast saving surgery“, “Hormone therapy“, “Breast reconstruction“, “Chemotherapy“, - Format: Check box
/D280/	Type of therapy (other)	Format: text field
<i>Personal interests:</i>		
/D290/	Leisure activities	Values: “Music“, “Opera/Theatre/Musical“, “Dancing“, “Walking“, “Cinema“, - Format: Check box
/D300/	Interests (other)	Format: text field

Table 2. Optional data contained in the user profile

⁴ For referencing the long-term stored data Balzert suggests the format as follows: /D10/ etc. [3].

⁵ The pre-selected value (standard) is presented underlined.

2.2.2. Concept of anonymity. Each member of the community decides which kind of personal data and how much data is revealed to other members. Guests are not able to obtain any data. Each person deals individually with his/her illness and it is the right of members to decide on the level of anonymity he desires within the VC. Member can choose between four different levels of anonymity.

Table 3 provides a description of each of the four possible anonymity levels:

Level of anonymity	Effects on the representation of the user profile
Display nothing	Indicated: "User does not want to indicate his personal data!"
Anonymous	Indicated: User name, Country, Status of user, Connection with the illness, Data of diagnosis, Type of cancer, Phase of illness, Type of therapy, Hobbies, Interests (other)
Anonymous - Show Friends all	Indicated to members: User name, Country, Status of user, Connection with the illness, Data of diagnosis, Type of cancer, Phase of illness, Type of therapy, Hobbies, Interests (other) → all entered data is indicated to friends
Show everything	Indicated: All entered data

Table 3: Anonymity levels and their effects on the representation of the user profile

The anonymity level "Anonymous - Show Friends all" offers a unique differentiation to the members of the VC. If a member has established friendship through chatting or participation in the Discussion Board, he/she can add this person to the personal list of friends. Members included on the list of friends are able to view all data entered; members not noted on the list receive the anonymous form of a user's profile.

3. Implementation examples of further components in *krebsgemeinschaft.de*

This section provides an overview of the components which have been implemented in *krebsgemeinschaft.de*. Firstly, we describe the components implemented to support perceived competence. Secondly, the components implemented to secure perceived goodwill are described.

3.1. Implementation: Perceived competence

As previously discussed, perceived competence is crucial to the success of a VC. In order to achieve and demonstrate perceived competence, the

mentioned afigis criteria of transparency were implemented in *krebsgemeinschaft.de*.

Transparency of providers is fulfilled by the imprint placed in the section "Über uns" ("About us"). Furthermore, the logo of the VC is placed on every site as a visible label. The Transparency of goal, purpose and target groups is already visible by the URL: www.krebsgemeinschaft.de. (Translated: "A Cancer Community") In addition, a statement on the home page clarifies that the focus of the community is on survivors of breast cancer, relatives and other interested people. The link "Geführte Tour" (Guided Tour) links to the site map. The content management system guarantees that all published information is up-to-date. With these instruments the Contentmanager (KID) ensures the Transparency of authors and data sources as well as actuality of published content.

There are many options for feedback within the community. On one hand, users can comment on or criticize the layout and content of the website by clicking on the link "Anregungen und Kritik" ("Comments and Suggestions"). On the other hand, visitors can contact the Communitymanager directly via Email in the section "Kontakt" ("Contact"). Finally, the section "Über uns" ("About us") presents additional routes to contact all involved project partners.

The Transparency of quality assurance procedures is more complex. By the item-based editing of the content, information concerning date, item category and author can be collected, saved and presented. Thus, the users know which person is responsible for the content. In addition, the information (which is quality assured as indicated in section 2.1.2) is clearly separated from other (user generated) content by the navigation und further comments. Especially in the Discussion Board, the user is informed that he is responsible for his own contributions, and that the operators do not accept liability for any user postings on the board.

The demand of afigis for transparent separation of advertising and editorial content does not apply to this community, since it does not finance itself by advertisement. Thus, Transparency of Financing and Sponsoring is given. The homepage gives information about the research project operating this VC (COSMOS), the project partners and the source of funds (by the German Ministry of Research and Education). To disclose cooperation and networks the section "Über uns" (About us) lists all cooperation partners with contact information.

During the registration process all users have to read the terms of use and the data security declaration. Thus

the demand for Transparency of use and protection of data is fulfilled.

3.2. Implementation: Perceived goodwill

The user profile and the concept of anonymity have only been implemented to a certain extent. Some of the designed optional fields have not yet been included in the user profile.

The current user profile, however, does offer

community-members the opportunity to get to know each other in an easy way. Through user suggestions, a further functionality was integrated: as a member of *krebsgemeinschaft.de* one can send an e-mail to other members by clicking on the link located at the bottom of the user profile (see figure 2). This is a simple way to start direct and personal communication.

Figure 2 illustrates the user profile with the indicated anonymity level “Show everything”:

Original	Translation
<p>Visitenkarte von Herrn Winfried Ebner</p>  <p>Geburtstag: 07.04.1977 Homepage: anzeigen Email: webner@webner.net Interessen: Speed Reading Jonglage Zaubern Schlagzeug Spielen Volleyball Verhältnis zur Krankheit: COSMOS Projektmitglied Diagnosedatum: Krebsart: Keine Angaben Stadium: Keine Angaben Therapieform: Keine Angaben</p> <p>Privatadresse: Strasse: Schwanthalersstraße 99 Ort: 80336 München Land: Bayern Telefon: 089 - 538 19 455 Handy:</p> <p>Dem Mitglied pu eine persönliche Email schreiben</p>	<p>User profile of Mr. Winfried Ebner</p> <p>Birthday: 07.04.1977 Homepage: Display Email: webner@webner.net Interests: Speed Reading, Juggling, Conjuring, Drums, Volleyball Connection with the illness: COSMOS staff member Date of diagnosis: Type of cancer: no entry Phase of illness: no entry Type of therapy: no entry</p> <p>Private Address: (...)</p> <p>Write a personal Email to the Member pu.</p>

Figure 2. User profile

Source: <http://www.krebsgemeinschaft.de>, access date: 02/04/03

4. Preliminary Findings

The evaluation of trust-enabling functionalities is currently being conducted. Preliminary results indicate that members candidly and empathically interact with one another via the Discussion Board. In her studies on experiencing empathy⁶ online, Preece has stated that a high degree of empathy can often be found in support-communities [13].

Krebsgemeinschaft.de is a type of support-community as it provides not only factual information but also emotional support for its members.

Figure 3 is a translated entry from the Discussion Board and demonstrates the strong emotional relationship often expressed by participants.

⁶ Empathy is the ability to identify with and understand another person's situations and feelings [13].

Original	Translation
<p>Autor Thema</p> <p>20.01.03 22:05 Ich habe ein halbes Jahr Chemo geschafft!!! Ich kann euch gar nicht sagen wie erleichtert ich bin :-) Jetzt freu ich mich auf den Sport den ich wieder extrem treiben werde, auf die Harre die wieder nachwachsen werden, auf die Lebensenergie , die wieder in meinen Körper strömen wird, auf das Arbeiten, welches mir so gefehlt hat und auf die Partys, auf die ich wieder gehen werde. Ich fühl mich wirklich wie ein neuer Mensch, obwohl die Angst, dass ich wieder krank werden könnte jetzt größer ist als je zuvor! Aber wie hat immer gesagt: wir müssen nach vorne schauen und WIR bleiben gesund. Ich grüße auch ganz lieb alle die mich kennen und ich hoffe wir treffen uns jetzt endlich mal wieder im Chat!!!???</p> <p>Reaktionen</p> <p>21.01.03 11:41 oh mensch - I ich bin so froh das es dir wieder gut geht! du hast es geschafft!!!!!!! weil du gekämpft hast und weil du es wolltest. und zum thema chat: " du hast ja nie zeit" *fg wir würden uns alle freuen dich bald mal wieder im chat zu treffen!! (irgendwie vermisse ich deine frechen sprüche) *smile lieben gruß</p> <p>Seite 1</p>	<p>User 1 on 20th of January 2003 at 10.05 p.m.</p> <p>I have made it, six months of chemotherapy!!! I can't tell you how relieved I am☺. Now I am looking forward to so many things: sports (which I will do extremely), my hair growing again, the energy of life running through my body, working (which I have missed so much) and the parties I will go to. I feel like a new human being, even though the fear of getting ill again is stronger than ever. But as XXX always says: we have to look forward and WE will stay healthy. Warm greetings to all who know me and hope to see you all again in chat soon!!!!???</p> <p>User 2, Reply, on 21st of January 2003 at 11:41 a.m.</p> <p>Oh dear User 1! I am so happy that you are fine again! You made it!!!!!!! Because you have fought and because you had the will to do so. And with respect to the chat "you never have time" ;-) we all would love to meet you again soon in the chat!! (I somehow miss your cheeky statements)*smile. Warm greetings, User 2</p>

Figure 3. Postings on the Discussion Board (1)
Source: <http://www.krebsgemeinschaft.de>, accessed 02/04/03

Further postings show how fast users reach a very private level with one another and dwell on their life situation in order to describe their current condition.

The following entry was posted at the end of a discussion about the subject "depression" and shows that enough interpersonal trust has been established to openly discuss taboo subjects.

Original	Translation
<p>vergeben war, habe ich mich mit dem Namen meiner Tochter eingeloggt.</p> <p>15.10.02 11:13 Hallo XXX! Meine diagnose war 01/02. Bei mir konnte zwar brusterhaltend operiert werden, mit Depressionen, Panikattacken und Angstzuständen habe ich aber auch zu kämpfen. Jeder (Ärzte) sagt, das kommt vom Tamoxifen und Zoladex. Aber es ist beruhigend zu erfahren, dass es Leidensgenossinnen tatsächlich so geht. Ich dachte auch immer, dass ich das alles alleine schaffe, aber je mehr Zeit vergeht, je schwerer fällt es mir. Grüße XXX.</p> <p>15.10.02 11:47 Liebe XXX, bei mir kommt die ganze Sache auch immer Phasenweise wieder hoch, und dann könnte ich nur noch heulen. Meine Familie möchte ich dann damit nicht belasten, also fresse ich alles in mich rein. Daher finde ich den Austausch übers Internet auch ne tolle Sache. Alles Liebe XXX.</p> <p>Seite 1</p>	<p>User 3 on 10th of October 2002 at 11.13 a.m.</p> <p>Hello YYY! My diagnosis was in January 2002. My breast was saved in the operation but I have to fight against depressions, panic attacks and fear as well. Everybody (physicians) says that this is because of "Tamoxifen" and "Zoladex". But it is comforting that fellow sufferers really have the same problems. I always thought I could handle this all by myself, but as time passes by it becomes harder and harder for me. Regards, XXX</p> <p>User 4 on 10th of October 2002 at 11.47 a.m.</p> <p>Dear XXX, the whole issue comes up to me in phases and then I can only cry. I don't want to burden my family with it so I swallow it. That is why I really like the exchange with others over the internet. Love, YYY</p>

Figure 4. Postings in the Discussion Board (2)
Source: <http://www.krebsgemeinschaft.de>, accessed 11/01/02

Trust is a multi-dimensional construct, and it has not been decomposed and analyzed in detail in this project thus far. Therefore, it is not yet possible to assign trust-enabling functionalities to a potential increase of trust of the members. However, current user inquiries are being designed that will address explicitly issues relating to trustworthiness of the community itself, its members, the community-managers and site operators.

5. Future Outlook and Research Recommendations

The large amount of activity within the community *krebsgemeinschaft.de* underlines the profound trust which has been established between the community members as well as between members and operators of the VC. Nevertheless, the researchers are of the opinion that the full potential of technical or organizational support of trust has not yet been exploited.

Rating information could be of further support for the perceived goodwill. Rating information in this context means that single information items can be rated by every registered user. Thus the centrally provided and quality-assured content (see also section 2.1.2) could be evaluated by the users in the context of usefulness and comprehensibility. Positive feedback strengthens trust concerning the quality of the content. User-generated content such as postings in the Discussion Board could eventually be rated to further encourage trust among members of the community.

In addition to technical additions geared toward supporting the creation and maintenance of trust, the community management plays an important role in this aspect. Moderation should guide the community according to inter-subjectively comprehensible rules to support trust within the VC. The structure and content of these rules for moderation and management as well as questions such as “What has to be moderated how and when?” have yet to be researched.

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