TiBiD - Trust Building and Matchmaking Support for Virtual Enterprises

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Abstract

Virtual enterprises mostly renounce formal contractual guarantees as coordination mechanism in order to ensure overall flexibility. However, when formal coordination mechanisms vanish, informal coordination immediately gains increasing importance. As a consequence, trust becomes a decisive issue for all kinds of loosely coupled organizations and virtual enterprises in special.
This paper presents some of the results of the three year interdisciplinary research project TiBiD that explored the issues of trust and reputation in the initiation phase of virtual enterprises. The project brought together researchers from three different disciplines - psychology, management research and informatics – to design, explore and evaluate a field experiment on the key question how trust is build and how trust-building can be supported in the early phase of cooperation processes between distributed and only loosely coupled organizational units.

1.   Introduction

Virtual enterprises mostly renounce formal contractual arrangements as a basis of coordination in order to ensure overall flexibility. They are seen as a loosely coupled network of physically dispersed individual actors and organizational units that temporarily come together to jointly fulfill a common task. A broad body of research exists that tries to explore and explain their specificities as a 'new' organizational form (e.g. Wigand et al. 1998). As a result, research usually suggests that virtual organizations need a substitute that accounts for the lack of coordination that would traditionally be provided by formal organizational structures, control mechanisms and formalized incentive systems.

Trust based on shared interest, a shared identity, a common culture, shared value systems or especially high reputation is mostly seen as the substitute needed in order to achieve the necessary coordination in virtual organizational forms. Still, however, literature provides no answer to the question how this trust can be established in virtual settings and how and why virtual organizations therefore should emerge in the first place (for related research see e.g. Jarvenpaa et al. 1998; Jarvenpaa & Leidner 1999).

How do locally dispersed individual actors and organizational units get into contact? In what 'places' do they meet for the first time and how do they build the level of trust needed to engage in a joint project and virtual cooperation that usually bears additional risk? In the project TiBiD[1] these questions were addressed in an interdisciplinary setting. Researchers from management research, psychology and informatics were looking at how virtual enterprises form and how trust-building and matchmaking as key issues throughout this formation (initiation phase) can be supported. We selected these three disciplines because they usually address the topic separately from different sides, and we felt that everybody would benefit from combining the different viewpoints.

The researchers from the three disciplines started with well-defined complementary, hence interdependent research questions (see also Figure 1):

- *Management research* had to start with the standard economic assumptions of opportunism and self-interest as key characteristics of human behavior in organizational settings. The management research perspective, therefore, had to look at the impact of the negative side of human intention throughout the initiation phase of virtual enterprises. The resulting key risks with regard to the emergence of virtual cooperation between distributed actors had to be analyzed. A discussion of the *key risk factors* of adverse selection, moral hazard and hold-up was consequently at the forefront of this perspective of

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1 TiBiD (Telecooperation in relationship networks for information based services) was conducted from 1999 to 2003 at Technische Universitaet Muenchen and was funded by the German Ministry of Research and Education (BMBF), FKZ 01HG99901/2. See http://www.tibid.de/ for more information.

analysis. A key question to be answered was: What kind of mechanisms can help to avoid the risks of adverse selection, moral hazard and hold-up throughout the initiation phase of a virtual enterprise?

▪ Research from the *perspective of psychology* had to focus on the positive aspects of human behavior and how they can be supported and fostered within the context of distributed cooperation. *Key success factors* had to be analyzed with regard to the building of trust, the emergence of relationships and the matching of joint interest. Following Rousseau, Sitkin, Burt & Camerer (1998) trust was conceptualized as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another". A key question to be answered was: What kind of mechanisms can be expected to support the initial trust-building throughout the initiation phase of a virtual enterprise?

▪ Research from the *perspective of informatics*, finally, had to focus on the support aspects provided by web applications and community-support platforms. Key support concepts had to be developed and implemented that take into account the risk factors resulting from potentially negative human behavior as well as success factors resulting from potentially positive human behavior throughout the initiation phase of a virtual enterprise. The broad understanding of trust-building as a combination of blocking negative factors and supporting positive factors helped to relate different support concepts and find an integrated solution.
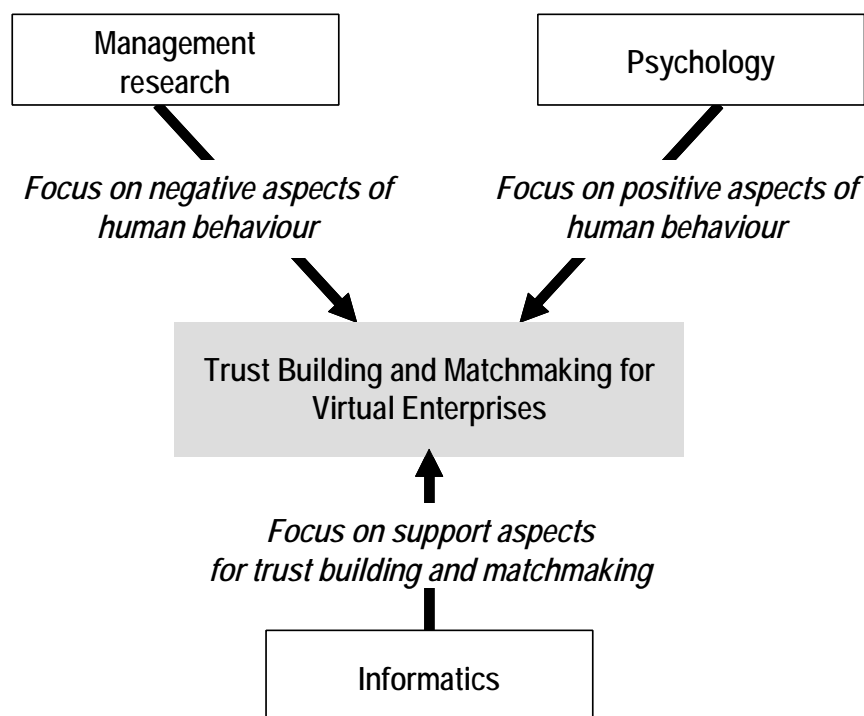

Figure 1: The TiBiD research design

In the first phase of the project the researchers started with their focus, and tried to communicate the ideas among each other. The result was a basic concept for supporting trust building and matchmaking in virtual enterprises. In the second phase we then fed these results back to virtual enterprises, both in questionnaires and in the form of a prototype platform. Based on the results of the evaluations the platform was extended and rolled out in the third phase and went through further evaluation. UnternehmerTUM GmbH, the entrepreneurship center of Technische Universitaet Muenchen (TUM) provided the real world context for the prototype platforms in the second and third phase of the project, and decided to operate and maintain the resulting support platform on a long-term basis (see www.unternehmertum.de).

2.   Virtual Enterprises and Matchmaking

Virtual enterprises are considered as a counterbalance to traditional organizational forms with long-term internal and external boundaries, a fixed location, and relatively permanent resources. They develop through a network of physically dispersed people and organizational units, participating in a coordinated value-added process. A multitude of diversely organized people works in professional core areas. These people accomplish their assignments internally or externally and, in addition, they themselves are associated with others through several cooperative arrangements. Thus, virtual enterprises manifest themselves as dynamic networks of organizational units. Single network nodes can be set up either by individuals, by organizational units or by entire organizations. The connections among single nodes are established dynamically and in a problem-oriented manner. Therefore, task-oriented assignments determine the structure of a virtual enterprise at any point in time.

Organizational virtualization can be seen as one of the main strategies of organizational innovation in order to adapt to changing internal and external conditions (Reichwald et al. 2000). In this context, strategies of virtualization are said to be particularly well suited for tasks that are characterized by both their high level of complexity and a correspondingly high level of market uncertainty. Uncertainty here is the inability of an actor to predict the outcome of an event because the actor lacks information about the intentions and competence of another actor who directly controls this outcome. Finding partners and initiate a relationship includes a high level of uncertainty and risk. Because of this, the need for trust between the potential partners arises (see Wigand et al. 1998). According to Johnson-George and Swap (1982) and Mayer et al. (1995), trust can be defined as the willingness to take risks. When forming a virtual enterprise, the risk at hand is to engage in a relationship although the available information about a potential partner does not allow for definite predictions about his or her future behavior.

To minimize risk, uncertainty, and costs for relationship building, the initiators of virtual companies often limit their search for potential partners to those they already know and whom they trust because of their personal experience. However, the weakness of this strategy is that it restricts the number of possible partners,

with the risk that the best partner for cooperation may be not be taken into consideration because (s)he is not a member of the pool.

These findings lead to a need for electronic matchmaking. By considering and automatically filtering a large number of potential partners, the perfect partner in a virtual organization could be found more easily. If you look beyond virtual organizations you see that electronic matchmaking is currently the most successful business idea in the Internet [TBD1]. More and more services emerge that not only address finding partners for marriage but also finding business contacts. One example in this area is the Open Business Club (www.openbc.de).

3.   Trust-Building and Initial Trust

In the economic environment of virtual enterprise structures and electronic markets cooperation structures are goal driven, efficiency oriented and focused on value generation and competitive advantage. Trust is often seen as not much more but a risky investment that might lead to sunk cost in case of disappointment. However, also the set up of formal contracts requires investments that might prove to be not less risky. The decision to invest in either type of contract – formal or informal and trust-based – therefore can be taken as a given.

The question, however, is how trust between unfamiliar actors evolves as a basis that allows for informal contracts to substitute formal ones. The focus of the psychological research by Andre Buessing and his team consequently was on initial trust, i.e. "trust in an unfamiliar trustee, a relationship in which the actors do not yet have credible, meaningful information about, or affective bonds with each other" (Beagly & Pierce 1998). Building on McKnight et al.'s model of initial trust (McKnight et al.,1998) Buessing and Moranz developed an exploratory research design and executed a series of empirical studies based on expert interviews, focus group discussions with think aloud protocols as well as online surveys (for details refer to Buessing & Moranz 2003). Their results basically confirmed McKnight et al.'s suggestions and led to basic insights on factors affecting the emergence of trust in the specific setting of distributed economic actors in the service and high-tech industry.
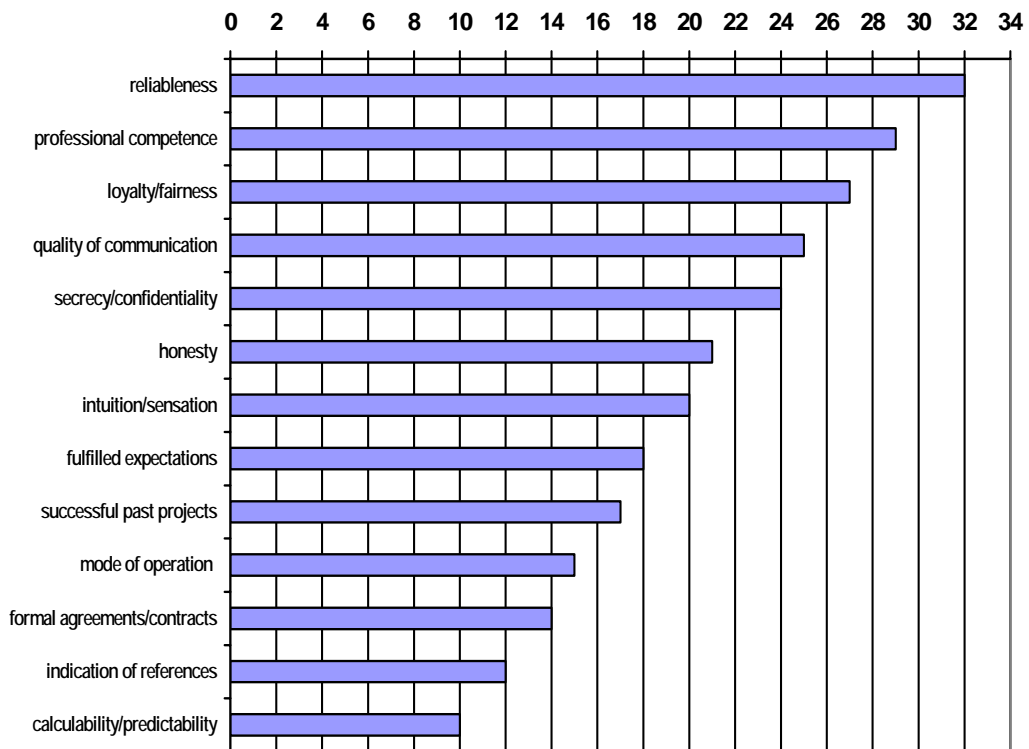
Figure 2: Factors affecting the emergence of initial trust
(Buessing & Moranz 2003)

Figure 2 shows the result of one of the online surveys conducted among 36 small-sized companies from the service industry with a strong history in internet-based, distributed work. It shows a basic ranking of factors that the participants rated as most influential for building trust in their business interactions.

Building on the broad range of findings from our research partners from psychology, some key factors for building initial trust were selected as a basis for the conceptualization, design and implementation of the TiBiD support platform. Among these key factors were *"quality of communication", "professional competence"* and *"reputation"* as a multi-faceted construct of the perceived characteristics (including aspects like reliableness, loyalty/fairness, and honesty) of a potential cooperation partner. Additional focus was set on the collection and provision of "basic background information" that allows for a leap of faith between unfamiliar actors. The design of the Internet-based TiBiD platform, reflects this focus primarily through the provision of

- *"information"* based on company and people profiles,
- *"meta-information"* based on relationship networks and reputation, and
- *"communication"* based on communication tools of different communication richness and reach.

We will come back to these categories in Section 5 after discussing different (informatics focused) possibilities for supporting trust-building in the following section.

4.   Support for Trust-Building

When talking about support for trust-building on virtual platforms one has to face the problem that trust building is a complex process and cannot be reduced to simple information items on the platform. The complexity of trust building is supported by several authors. Locke (2001) for example argues that trust can only be built, through a "sequential process that blends together elements of 'encapsulated self-interest', government intervention, and the development of mechanisms for self-governance and monitoring by the actors themselves". Hence, trust building does involve different aspects, and depends on ongoing direct interaction. Because of the need for interaction it is also discussable if trust-building can be speed up a lot.

Our idea in this context is that indeed trust building from zero is not possible on virtual platforms for high stake risks like they are in virtual enterprises. However, helping people to find initial trust is possible. According to this we could also speak of support for the communication of (initial) trust instead of support for trust-building.

For selecting mechanisms to provide in the platform we went back to the conceptualization of enhancing the positive aspects of human behavior (initial trust), and at the same time reducing the potential risk of negative aspects of human behavior (opportunism and self-interest) throughout the initiation phase of a virtual enterprise (for details see Schlichter et al. 2003):

- Psychology focused on trust and trust building and contributed design suggestions for supporting the building of trust in virtual environments.

- Management research focused on the potential risk when trust as a positive expectation in the behavior of others might be disappointed due to opportunism and self-interest. Design suggestions were derived that aimed at supporting the avoidance of disappointment when engaging in virtual relationships.

Blocking the negative aspects of opportunistic behavior mainly can be facilitated on a virtual platform by providing visibility, awareness and persistence. There has to be a cost for cheating in business encounter, and there has to be a reward for cooperation. Hence, good and bad behavior has to be visible to the other actors in the market. Persistence (in identities) is needed so that the cost related to misbehavior cannot be avoided by changing identities too easily.

Enhancing the positive aspects of the willingness of people to risk something on the basis of their experience and of trusted information (initial trust) again leads to the possibility to be supported by visibility - visibility of potential sources for initial trust. These sources usually are already trusted entities that provide references for a potential partner. Finding the trusted link can be supported by virtual platforms. If we look further into the main issues psychology has identified for the initial trust, quality of communication, professional competence and

reputation, this again leads us to provide visibility and communication possibilities.

To summarize so far, a trust-building support platform should provide means for making the attributes and relationships between people visible (for the communication of (initial) trust), and provide possibilities for communication. See Schlichter et al. 2003 for a more detailed discussion of possibilities for supporting trust-building, including indirect measures like providing templates for contracts. In the rest of this section we will first discuss two distinct tools for supporting the communication of trust, *reputation indicators* and *(visualizing) relationship networks*, and then address community support as a generalization of communication support.

Reputation Indicators

In a technical setting trust can be described as "explicit rating of a user on other users". Online-feedback mechanisms, also known as reputation systems (Resnick et al., 2000) are using the Internet's bi-directional communication capabilities in order to artificially engineer large-scale word-of-mouth networks in which individuals share opinions and experiences on a wide range of topics – including ratings of other users.

The idea behind reputation indicators is to collect ratings about potential partners from other users who already have worked with them, and to calculate a reputation indicator from this information. This indicator then is made accessible for potential partners to help them evaluate each other.

The most well known usage of reputation indicators can be found for building trust in electronic markets like online auction platforms like eBay (www.ebay.com) or comment platforms like dooyoo (www.dooyoo.com) (Kollock, 1999; Koch et al., 2000). Dellarocas (2003) lists some more noteworthy examples of reputation mechanisms on the Internet, e.g. BBC World news or eLance. The latter is a marketplace that lets small businesses outsource projects. On eLance contractors can rate their satisfaction with subcontractors (www.elance.com).

One weakness of a reputation indicator as defined above is that it merely represents the aggregation of anonymous ratings, whereas valid information about the identity, competence, and trustworthiness of the raters as well as about the context and background of the ratings is lacking, even if the history – i.e. how the indicator is constructed, who contributed to the rating and how the contributors themselves are rated – is displayed to the users. This weakness can only be overcome when there is no longer anonymity and the support for someone can be rooted by to someone that already has gained trust.

Another weakness of reputation indicators is the possibility to use short term identities and change of identities. In this case the cost of cheating can be quite low, and therefore the temptation to cheat can be quite high. To address this problem the cost for changing identities has to be increased, either by linking the

virtual identity to the real identity, or by making it hard (expensive) to gain the initial trust that is needed to participate in the system.

Relationship Networks

Presumably because of the anonymity in virtual encounter, it is obvious that if risk increases, people tend to ask for direct confirmation, i.e. for personal statements about potential partners instead of anonymous ratings. As we argued above, it seems that trust is predominantly built from ongoing interaction in a common context, either through the partners' direct common history or through a third party's history with the potential partner.

When there is no time to build up trust from zero the initial trust in a potential business partner (or in reputation information about a potential business partner) could come from already trusted entities. Our research showed that these entities can either be people or organizations. Trust in an organization (e.g. a university) can result in initial trust in people who are certified by this organization (e.g. alumni of the university).

This potential of relationship networks and the possibility to support using the relationship networks also shows in services already emerging. Applications like tribe.net or Friendster make whole networks of friends available in the Internet. This enables potential partners to look for references before making contact. Spoke Software from Palo Alto for example operates a pilot system that digs into email archives, address books and calendars of a whole enterprise and provides an overview of relationships of people in the enterprise to other enterprises etc. This is supposed to help in finding business partners. Companies like Visible Path, LikedIn, Ryze and ZeroDegrees are going to provide similar systems in the near future. Several developments rely on the FOAF (Friend-of-a-friend) standard. This standard allows people to describe their trusted peers in a decentralized way as part of a "Semantic Web". Different services than can work on this information. More information on the current state of the representation and visualization of relationship networks can be found in (Galla 2004).

Hence, for TiBiD we do not only aim at finding potential partners, but also in finding indirect links to potential partners via persons or organizations whom the users trust and who can be asked for a confirmation

Community Support

In addition to visibility, providing possibilities for communication has been named as one of the core features for supporting trust-building. If you view communication support in a broader view, this brings us to "community support".

When looking behind the hype around the term "community" one can see communities as what they are: places that give people a context to communicate and to find like-minded people. In general a community is a group of people who share some interest or another common context, e.g. students in a university department or people interested in collaborative filtering. Thus, a community can

be seen as a describing identity for a set of people. Mynatt et al. (1997) concretize further: "[A community] is a social grouping which exhibits in varying degrees: shared spatial relations, social conventions, a sense of membership and boundaries, and an ongoing rhythm of social interaction".

Community support applications usually provide one or more of the following functionalities:
- A medium for direct communication and for exchange of comments within the context of the community.
- Detection and visualization of relationships (membership in the same community, existence of common interests).
- (Semi-)automatic filtering and personalization on the basis of knowledge about relationships.

Several systems already implement some aspects of these basic support concepts. News- and Chat-systems provide a place to meet and a communication medium. Based on News-systems there are different types of so-called community networks which provide an exchange area for a local community, such as the inhabitants of a particular city. Buddy systems like ICQ or AOL Instant Messenger provide detailed awareness information (Michalski 1997). Online communities provide a place to communicate, awareness and a rich functionality for storing and retrieving (community) information. Recommender systems like Movie-Critic, Knowledge Pump or Jester do matchmaking on the basis of user profiles and then provide recommendations based on ratings of other community members. Other systems like Referral Web (Kautz et al. 1997) and Yenta (Foner 1999) focus on expert finding and explicit matchmaking.

Communities and community support platforms are used in the business context in several ways, from communities for marketing, communities for customer support to knowledge communities (communities of practice). In this paper, however, we will focus on another potential of communities: supporting the initiation of virtual enterprises, i.e. helping potential partners to find each other and to start collaboration.

Communities may help to overcome this restriction because they form large relationship networks of loosely coupled partners. However, as community members do not necessarily know each other, personal experience can not be used as a source of trust between potential partners in this setting. As a consequence, if communities are designed to be a pool for initiating virtual enterprises, the formation of trust between community members has to be supported explicitly. One way to do so is to assess and to communicate another potential source of trust: second-hand knowledge or a third party's experience with the potential partner (e.g. McKnight et al. 1998).

5.   UnternehmerTUM Platform

As mentioned earlier, in the project TiBiD we did not limit ourselves to discuss possible drivers for trust and possible technical measures to support this, but also went for building a prototype and evaluate it in a real-world pilot field.

When summarizing the results addressed in the previous sections this prototype should be a community support platform, aimed at helping a community of potential partners to communicate and find each other. As basic functionalities the platform should provide or support:

- "*information*": "cold" information on the companies and on the people registered on the platform (working for the companies) based on company and people profiles; this information usually is provided by the companies and people themselves.
- "*meta-information*": annotations on companies and people by other people (e.g. recommendations, reputation information), and information on links between companies and people and among people (network information)
- "*communication*": possibilities for the people on the platform (the companies) to reach each other and to communicate among each other.

As a specific field of application we have chosen the field of startups and of potential entrepreneurs or freelancers. As distributed actors that have to engage in new forms of virtual cooperation whenever a problem surmounts their own capacity and reach, the small, high-tech start-up companies in the entrepreneurial region of Munich were the ideal pilot partners for the experimental setting. Their situation exactly reflects the scenario sketched by management researchers as the future of work in the virtual enterprise (e.g. Wigand et al. 1998). This group needs partners for cooperation and is not yet bound in rigid networks.

Together with UnternehmerTUM GmbH, the entrepreneurship center at the Technische Universitaet Muenchen we have designed a platform that aims at supporting the specific needs of this group – both in getting relevant information for setting up new companies, and in finding partners and other companies to work with in distributed virtual cooperation forms.

The functionality of the platform can be separated in two major areas. First the provision of edited information for entrepreneurs (the left navigation in Figure 3), and second the functionality for finding partners and for communicating trust (the top navigation in Figure 3). The latter functionality can be classified as mentioned before: "information" based on company and people profiles, "meta-information" based on relationship networks and reputation, and "communication".
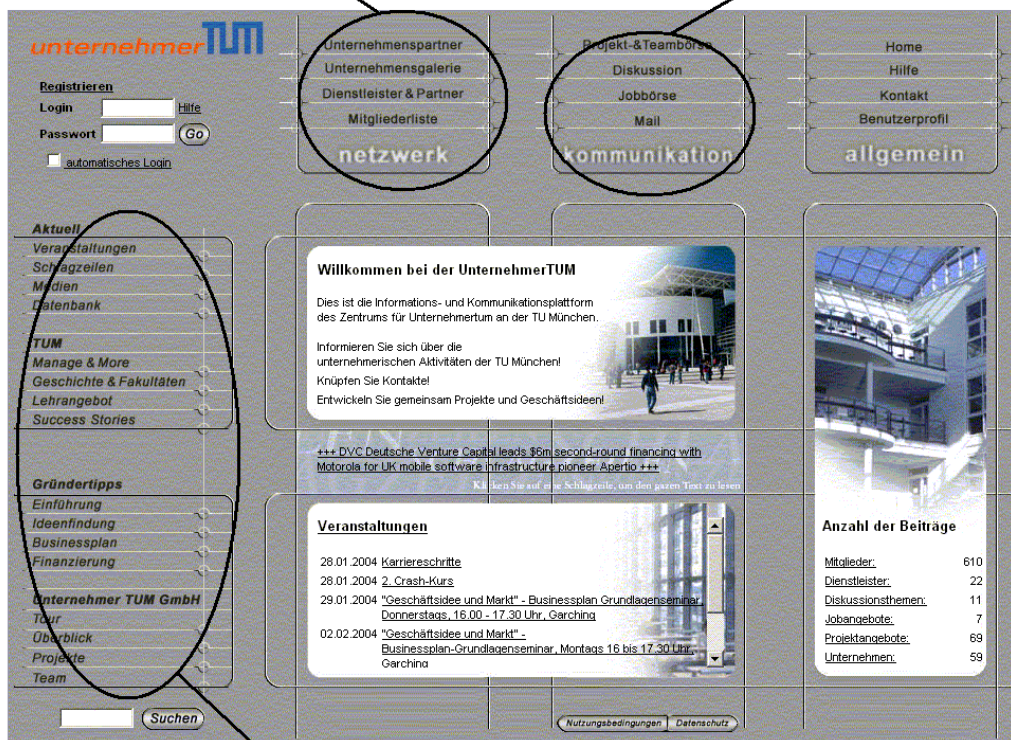
Figure 3: Homepage of UnternehmerTUM

The core of the trust-building functionality is the community platform with its communication functionality. Members of the platform can provide information about themselves and their companies, publish announcements, participate in (virtual) discussions, and publish requests or offers in project, team and job pools. The important design issue in this part of the platform is that every contribution is linked to the publisher's identity. Users can easily check who made the contribution and learn something about the contributor by getting an overview of her contributions and of what other people said about the contributor.

The identity information and what is revealed to other users is under full control of the user. In addition to basic information about the user and her company, the user can register information about organizations she is linked to (initial trust by organizational membership) and about people she knows well or who know her well (buddy list). Lists of (reference) projects – i.e. relationships to other companies – are part of the latter category. This information can either be displayed on the user's electronic business card – or be used for automatically finding links to user. Therefore, when displaying the electronic business card the relationship networks are checked and any links found are displayed.

The full platform is in use since October 2003. Until then a live evaluation of the functioning of the platform is being performed by our partners from the

psychology department. We will come back with results from the evaluation when it is finished.

7 Summary and Conclusions

In this paper we discussed different aspects of trust in supporting the initiation process in virtual enterprises. We started with the different viewpoints of economics (opportunism and self interest) and psychology (initial trust), and based our design of support features on these categories.

One result of the project was that support for trust-building can be brought down to the communication of initial trust. Therefore, we have concentrated on reputation indicators, relationship networks and community support in general.

The UnternehmerTUM platform for entrepreneurs already has shown to provide an interesting testbed for our ideas. The preliminary results of the evaluation suggest that the combination of communication support and support for providing and retrieving information and meta-information (about relationships) is a promising way to address the issue of supporting trust-building. Another interesting finding in the preliminary evaluation was that one of the mostly used information for strengthening the initial trust was the affiliation with a well known organization like Technische Universitaet Muenchen. In our research we also have encountered several organizational and technical issues that hinder the full use of the concepts. These issues include interoperability and user interface issues. Our future work will address some of these issues, and will try to improve the abilities of the platform.

It is clear, that such a platform will never replace direct encounter. In order to build and maintain trust on a long-term basis, all kind of support mechanisms can only complement direct personal relationships and face-to-face encounter. However, as we have seen in the TiBiD project, building on this complementarities as a design rationale might be an important success factor when it comes to trust-building and matchmaking in the context of virtual enterprises.

References

Bigley, G. A., and Pearce, J. L. (1998): Straining for shared meaning in organization science: problems of trust and distrust. Academy of Management Review, 23 (3), pp. 405-421.

Buessing, A., and Moranz, C. (2003): Die Rolle von Vertrauen in der Anbahnung telekooperativer Geschäftsbeziehungen, in: Schlichter, J.; Buessing, A.; Reichwald, R.: Telekooperation in Beziehungsnetzwerken fuer informationsbezogene Dienstleistungen, Technische Universitaet Muenchen (TUM), Institut fuer Informatik, TUM-INFO-10-I0316-80/1.-FI, October 2003, pp. 51-84.

Dellarocas, C. (2003): The Digitization of Word-Of-Mouth: Promise and Challenges of Online Feedback Mechanisms. MIT Sloan School of Management, Working Paper 4296-03, Mar. 2003.

Foner, L.N (1999): Political Artifacts and Personal Privacy: The Yenta Multi-Agent Distributed Matchmaking System, PhD thesis, Massachusetts Institute of Technology.

Galla, M. (2004): Social Relationship Management in Internet-based Communication and Shared Information Spaces. PhD Thesis, Institut fuer Informatik, Technische Universitaet Muenchen.

Jarvenpaa, S., Knoll, K., and Leidner, D. (1998): Is Anybody Out There? Antecedents of Trust in Global Virtual Teams, Journal of Management Information Systems (14:4), Spring 1998, pp. 29-64.

Jarvenpaa, S., and Leidner, D. (1999): Communication and Trust in Global Virtual Teams, Organization Science (10:6), November-December 1999, pp. 791-815.

Johnson-George, C., and Swap, W. (1982): Measurement of Specific Interpersonal Trust: Construction and Validation of a Scale to Assess Trust in a Specific Other, Journal of Personality and Social Psychology (43:6), pp. 1306-1317.

Kautz, H., Selman, B., and Shah, M (1997): Referral Web: Combining Social Networks and Collaborative Filtering, Communications of the ACM (40:3), pp. 63-65.

Koch, M., Möslein, K., and Wagner, M. (2000): Vertrauen und Reputation in Online-Anwendungen und virtuellen Gemeinschaften [Trust and Reputation in Online Applications and Virtual Communities], in Virtuelle Organisation und Neue Medien, M. Engelien, and D. Neumann (eds.), Lohmar: Eul, pp. 69-83.

Kollock, P. (1999): The Production of Trust in Online Markets, in Advances in Group Processes (Vol. 16), E. J. Lawler, M. Macy, S. Thyne, and H. A. Walker (eds.), Greenwich, CT: JAI Press, pp. 99-123.

Locke, R. (2001) "Building trust" - Paper presented at the Annual Meetings of the American Political Science Association http://web.mit.edu/polisci/research/locke/building_trust.pdf

Mayer, R. C., Davis, J. H., and Schoorman, F. D. (1995): An Integrative Model of Organizational Trust, Academy of Management Review (20:3), pp. 709-734.

McKnight, D. H., Cummings, L. L., and Chervany, N. L. (1998): Initial Trust Formation in New Organizational Relationships, Academy of Management Review (23:3), 1998, pp. 473-490.

Michalski, J. (1997): Buddy Lists, Release 1.0 (6).

Mynatt, E. D., Adler, A., Ito, M., and Oday, V. L. (1997): Design for Network Communities, in Human Factors in Computing Systems: Looking to the Future. CHI '97 Conference Proceedings, S. Pemberton (ed.), New York, NY: ACM Press, pp. 210-217.

Reichwald, R., Möslein, K., and Piller, F. (2000): Taking Stock of Distributed Work: The Past, Present and Future of Telecooperation, ASAC-IFSAM 2000 Conference, Montreal, Quebec, Canada.

Resnick, P., Zeckhauser, R., Friedman, E., and Kuwabara, K. (2000): Reputation Systems, Communications of the ACM, 43 (12), pp. 45 – 48.

Rousseau, D.M., Sitkin, S.B., Burt, R.S., and Camerer, C. (1998): Not so different after all: A cross discipline view of trust, Academy of Management Review (23), pp. 393-404.

Schlichter, J.; Buessing, A.; Reichwald, R. (2003): Telekooperation in Beziehungsnetzwerken fuer informationsbezogene Dienstleistungen, Technische Universitaet Muenchen (TUM), Institut fuer Informatik, TUM-INFO-10-I0316-80/1.-FI, October 2003.

Wigand, R., Picot, A., and Reichwald, R. (1998): Information, Organization and Management: Expanding Markets and Corporate Boundaries, Chichester: John Wiley and Sons.

[TBD1: Artikel zu electronic matchmaking in Zeit]