

# 'Be a Freeporter!': Enabling a Mobile News Publishing Community

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## Abstract

The incredible spreading of mobile phones and recently even of camera phones throughout society is preparing a new kind of news publishing culture. It could enable everybody to be a reporter of events as they happen. Events can be recorded and commented on and finally published immediately to a large audience by the witnesses themselves. Such a grass roots news reporting network over everybody's mobile phones has the potential to dramatically increase the quality and quantity of news-coverage, because:

*Topicality:* it could make news accessible within a minimal delay in time,

*Scale:* such a network could contain reports of global interest as well as reports relevant only within certain locations (e.g. a city) and even personal messages (e.g. holiday reports),

*Objectivity:* it could provide several independent points of view of the same event and

*Personalisation:* each consumer of these reports could receive a personal newscast, selected from a wide variety of opinions and topics to suit his/her personal interests and taste.

The recent development and the wide adoption of Weblogs confirm the users' demand for this kind of news publishing and also show interesting paradigms for its technical realisation: social networking and local reputation.

**Keywords:** mobile audio Weblog, social networks, local reputation system, peer-to-peer

## Introduction

### Chances, developments and perspectives for a new kind of journalism

Imagine journalism as a profession not limited to a group of well-trained journalists any more. Information monopolies and the corporate media would be obsolete. Everyone who wants to publish his or her own newspaper article or radio broadcast goes out on the street and reports about everything interesting going on there. Does that sound too much like future? It should not because this is the way things have been developing in the last years. The Internet is one of the most promising platforms for such newcomers in journalism. Writing and reading in the Internet can be done at low expense, fast, and from all over the world, encouraging a "mass amateurization of publishing" (Shirky 2002).

An emerging technique of publication on the web is the so-called Weblog, or Blog for short (Tscherteu 2003). These are informal news reports, often only short notes, usually published on private websites. Weblogs have gained special attention recently as Warblogs (<http://www.warblogs.cc>) and as a form of protest under repressive regimes, e.g. in Iran (Schäfer 2003). Thus Weblogs serve as a network for free and decentralised information. They are said to be an important tool in order to build identity and form the freedom of thought (Tüshaus 2004). The activity in the Weblog scene is already quite high. The Blog tracker Weblogs.com (<http://www.weblogs.com>) was pinged 5638 times in the time from 4:59:03 PM to 5:59:03 PM on the 1/13/2004 (*Weblogs.com news: high water marks*). Each ping usually indicates a new entry in a Weblog. Another example for an important meeting point for self-made reporters in the Internet is Indymedia (<http://www.indymedia.org>). It is a network of volunteer, non-professional journalists who are seeking an independent way of publishing as a counterbalance to commercial press coverage, originating in the trade protests of the late 1990s (Beckerman 2003).

The Internet is already playing an important role as a source for news, a fact confirmed by surveys: "[...] from a structural point of view, [...] consuming online news has grown and will continue to do so. The Internet will definitely become a major news medium of the future." (Nguyen 2003). The New York Times says that about one fifth of the young adults in America think of and use the Internet as a top source for news, especially for the presidential campaign (Pew Research Center, 2004).

### Flash Mobs

Possibilities of the Internet and modern mobile technology are not limited to news publishing. Publications are even used as preparations and starting points for activism. Thus they also bring up new kinds of social grouping. A peculiar form of this are Flash Mobs which are part of Rheingold's theory of Smart Mobs (2002). This method of spontaneously gathering hundreds, thousands, or even more people in order to do some action together can be viewed primarily as fun. A prominent Flash Mob took place in the luxurious Hyatt Hotel in Manhattan in the summer of 2003 (Sixtus 2003). 250 people were activated by email, came to the hotel and stood up at the balustrade on the first floor. All of a sudden they started applauding and kept doing so for 15 seconds and then immediately left the hotel to spread out in all directions – just as unexpectedly as they had been gathering. People participate in Flash Mobs voluntarily for a collective motivation which makes them come together even if they have never met before and might not meet again afterwards.

Though Flash Mobs are usually harmless non-political actions, the potential of these crowds goes way beyond fun activities, as history has shown in the Filipino capital (Rafael 2003). The Filipino people, it seems, have their own way of political problem-solving. Already twice a political leader in Manila was overthrown by big crowds forming large demonstrations. What is so special about the case of President Estrada's dethroning in 2001, though, is the way in which protests were organised – with mobile phones and SMS. Each user who received a message about the demonstrations quickly forwarded the information to others, thus acting like a broadcasting station. This made the messages spread easily and quickly. As shown, mobile devices can reach a big group of selected receivers which makes them an extremely powerful tool in social environments and social activities. "While telecommunication allows one to escape the crowd, it also opens up the possibility of finding oneself moving in concert with it [...]. In the first case, cell phone users define themselves against a mass of anonymous others. In the second, they become those others, assuming anonymity as a condition of possibility for sociality." (Rafael 2003).

### Wearable Computers

Wearable computers are usually characterised as tiny computers which are worn like clothes and which are always running and ready for interaction with the user (Rhodes 1997). In 2001, Gartner Research estimated that by 2004 30 percent of the US population will carry or wear WIDs (wireless interactive devices) for six hours a day (Fenn, Linden 2001). The mass adoption of mobile phones which are equipped with more and more processing resources reinforce this

estimation. The usage of mobile phones in 2002 was already 50 percent among the US population and 70 percent among the European population with the Finnish population being in the lead with approximately 80 percent (Vehovar 2003). Wearable cameras (Mann 1997) can be used to take pictures in situations when the presence of a hand-held camera could be dangerous to the operator. This is for example the case, when it comes to witnessing wrongdoing, especially the abuse of human rights (Mann & Guerra 2001). Mobile phones with embedded cameras already give a prediction for the use of truly hidden cameras: these devices are already prohibited in several US companies (Sydow 2003) and also in some countries, e.g. in Saudi Arabia (Wearden 2002). A tiny commercial wearable camera – Camwear 100 – was announced by Deja View Inc. (<http://www.mydejaview.com>). It is a lipstick-sized camera which is worn unobtrusively on one's eyeglasses or baseball cap. The pictures taken are processed by a small device worn on the hip. The camera is constantly monitoring but not saving until the user hits the record button. The camera then saves the last monitored 30 seconds – a good tool for the documentation of accidentally witnessed wrongdoing. The other side of such a pervasive possibility for making a report is, of course, being subject of a report. People would place themselves under constant surveillance.

The technology paves the way for society's demand for alternatives in news publishing. There are platforms to bring readers and writers together, there are mobile and wearable devices to support the reporters' activities.

### **Scope and purpose of the Freerporter**

The Freerporter is a concept to realize the described shift from the traditional model of centralised news dissemination to the emerging culture of everyday people becoming mobile reporters of events as they happen. The ongoing prototypical implementation of services and features is used to explore and evaluate the concept. It currently focuses on news items as spoken audio messages.

There are three components, which need to be in place to enable the envisioned community:

*C1. Cheap and easy-to-use reporting devices:* today, the mobile phone has already become commonplace for a large group of society. Mobile phones can easily be used to record an audio comment or to enter a short text message about an event and to transmit the report to a special service for publication. With the availability of cameras which are either integrated in mobile phones or attachable via Bluetooth, images also become available as a medium. UMTS and the corresponding devices even promise to record and to transmit live video streams.

The current implementation provides a voice gateway which can be used with most telephones simply by dialling a specific number. A voice control interface lets the user record a message and subsequently publish it.

*C2. Comfortable presentation of personal news broadcasts:* for an alternative news system to succeed, the consumption of the news items has got to be at least as comfortable as it is in traditional systems.

The consumption of traditional audio news broadcasts is as simple as turning on a radio receiver, tuning to one's favourite station and waiting until the next hourly broadcast. Moreover, if one is listening to music from the radio anyway, no action is required at all to receive news. On the other hand, this tight interconnexion of music and news is a disadvantage, since it is not possible to select a different source of news, or even multiple sources, while keeping the same music.

The Freerporter overcomes the mentioned limitations and keeps the benefits by using the Internet instead of radio waves as the transmission medium. Through an extension of music

playing programs, it can interrupt whatever music one is listening to in favour of a periodic newscast which may be composed of messages from different sources.

*C3. Mechanism for distribution as well as personalised selection of relevant news items:* while the World Wide Web can be used – and actually is used – straightforward for the publishing and distribution of news items, there are serious problems that remain unresolved, particularly with regard to the automatic generation of personalised newscasts. The required mechanism has to assure a certain quality of the resulting newscasts. It should also have the ability to discover new topics of interest which the receiver never specified before. It should also facilitate the mixing of local news, which are only relevant to a small community, with news of global interest. Finally, the user needs a way of interacting with the system to influence the automatic selection process.

The Freeporter uses a social filtering and recommendation system which is described in detail in the following sections.

Besides these three building blocks, the whole system must be designed with an additional condition in mind: it is a matter of particular interest for the emergence of this community that the users can protect their own selfish interests against the interests of other users. This aspect is ambivalent:

*Spam:* the community needs tools to protect itself from a flood of spam messages as it happened to the email users. The problem is even more critical because the newscasts shall be generated and presented automatically.

*Censorship:* nobody will have the possibility to censor any reports in the system.

In other words: everybody will say whatever he/she wants to, as long as nobody is forced to listen. In a broader sense, this is an issue of social scalability. Internet communities need mechanisms to avoid or to resolve conflicts arising from a large set of users. It is not sufficient to address the problems arising from the connexion of a large set of machines. This problem was also encountered in the context of the submission and curation procedures for the human genome database (Letovsky 1995).

### **Social networking with Weblogs**

News publishing systems have quite a long tradition on the Internet and its predecessors, with BBSes, Usenet and mailing lists being developed and deployed in the 70's and 80's. The 90's brought the World Wide Web and gave birth to several communities dedicated to making their own news for the masses, e.g. Indymedia.

Recently, at the end of the 90's, a new trend came up: Weblogs. What separates Blogs from the earlier web communities is that Blogs are usually authored by individuals and reflect their owners' personal points of view. Compared to communities like Indymedia, personal Blogs foster a much richer spectrum of opinions. In a community, there are always a lot of compromises which restrict their members' opinions to the common goal of the whole community. On the other hand, the disadvantage of the independence of individual authors is their disconnectedness. A community means strength since it can reinforce their members and bring them together for discussions. Weblogs do not form exclusive groups, but rather make the aspect of social networking explicit. So-called Blogrolls are part of Weblogs and refer to other Weblogs which are interesting in the authors' opinions.

The news items themselves are encoded in RSS (Bege-Dov et al. 2000). Version 1.0 of this format builds on the Semantic Web standard RDF (Beckett 2003) to make the separate items on a website available for standardised interchange. As a result, RSS enables the aggregation of news

from different sites in so-called RSS reader programmes. An RSS reader regularly fetches the RSS feeds from a list of sites and usually displays them through a GUI which is similar to that of email programmes. The user can efficiently scan a large quantity of news with this technique. It is also common practice to republish items from other Weblogs in the own one. RSS and Blogrolls connect the individual Bloggers much tighter than the plain HTML links could. A new community called the Blogosphere emerged which connects all Bloggers, regardless of their opinions and backgrounds. The open spirit of the Blogosphere unites diverse authors without restricting them to the policies of closed groups.

The Freeporter builds on the promising development of the Blogosphere to achieve the proposed goals. The following section briefly reviews related approaches to information selection. It considers the problem from a social network perspective and gives a model for the functioning of the community. The next section explains the realisation of the Freeporter and compares it to the Blogosphere. The conclusion follows.

## **Freeporter's local reputation system**

### **Information selection systems**

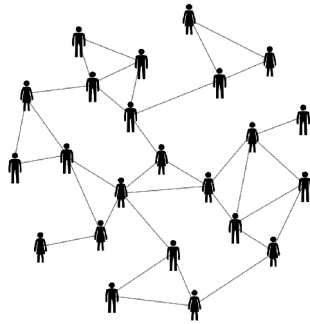
The design of the information selection component C3 can be seen from different sides, which can lead to totally different approaches for a solution. Further, combinations of different approaches can be created.

One important class of information selection systems are content-based filter systems. These systems analyse the contents of the given items to infer a classification. There is a multitude of approaches to the analysis of content data. Rule-based classification is described by Pollock (1988), Bayes networks are used in the Autonomy Inc. product (2002) and a linguistic analysis is used by Inxight Inc. (2003). All these methods work only with texts and not with audio data and are expensive in terms of computing resources. Moreover, content analysis is not well suited for the recommendation of items with other characteristics than specified beforehand.

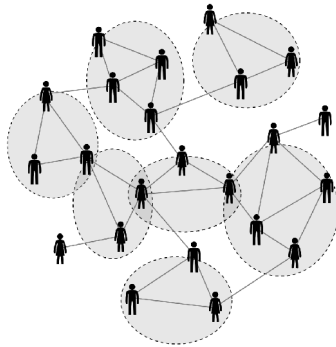
Collaborative filtering systems or recommender systems (Resnick & Varian 1997) rely on the users to analyse and rate the contents of items: "Collaborative filtering simply means that people collaborate to help one another perform filtering by recording their reactions to documents they read." (Goldberg et al. 1992, p. 61). This makes recommender systems independent of the contents type and accounts for the fact that the human user is better in making such a rating. Therefore, new problems are introduced: how to encourage people to participate in this joint venture and how to facilitate the connexion between them. With a growing user base, the opinions of the users might drift apart, rendering some ratings useless or even deceptive for others. This problem gets worse once people consciously enter false ratings or try to influence it to their own advantage. This is where the notion of trust becomes useful.

Reputation systems introduce trust into a large group of people by collecting, distributing, and aggregating feedback about the past behaviour of the users. "Though few of the producers or consumers of the ratings know each other, these systems help people decide whom to trust, encourage trustworthy behavior, and deter participation by those who are unskilled or dishonest." (Resnick et al. 2000). Ebay (<http://www.ebay.com>) for example is using a system where the buyer and seller rate each other's performance of the transaction (Resnick & Zeckhauser 2001). Reputation can be accumulated and is stored in Ebay's central database.

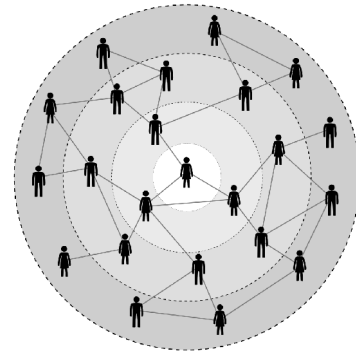
There are problems in adapting this system to the domain of news filtering. The kind of reputation Ebay is building can be called global, as an individual's reputation is the same for the whole community. While this works well for selling items, it cannot work well for the recommendation of news items because of local interest groups and different attitudes. What is needed for the



**Figure 1: Individuals in a community are connected by ties.**



**Figure 2: Groups emerge as clusters.**



**Figure 3: The degree of separation creates a gradient which can be used to determine local reputation.**

proposed community is a local reputation system (LRS), in which one would have a different reputation, depending on who is asked for it.

To model local reputation, we should take a closer look at the group or community of our concern. The reviewed approaches treat a group as an unstructured set of individuals. Indeed it is not, and a better understanding of group structure can lead to better models for large communities.

### **A news network as a social network**

The discipline of social network analysis has developed a model of group structure which is well suited for the explanation of the proposed community: the social network. "Just as a computer network is a set of machines connected by a set of cables, a social network is a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange." (Garton, Haythornthwaite & Wellman 1997). This section applies the elements of social networks to a community of independent news publishers and consumers.

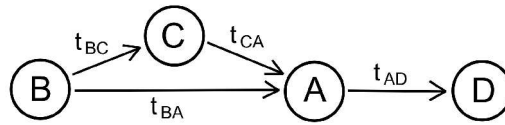
*Node:* the nodes in a social network usually represent individual actors. In regard to a news publishing community where every actor has the possibility to publish and consume news, the nodes should act as combined information sources and sinks. These nodes can be maintained by individual persons or organisations. A node may hold a set of news items.

*Tie:* a tie connects a pair of nodes by a maintained relationship. It can be weak or strong, depending on the frequency or intensity of activity of the tie, and is directed. Ties are durable edges in the network. In the news publishing domain, a tie represents the recurring transfer of news items between two nodes. Such a tie can be facilitated by means of a subscription to a news provider. A subscription is associated with the subscriber's trust in the provider. Trust, in this case, is the belief that a source will provide interesting information in the future. This trust may also be weak or strong and is unidirectional.

*Network:* a network is a set of nodes and ties as shown in figure 1.

Node, tie, and network are the basic elements of this model. Other elements can be derived from the set which help to better understand the resulting structure:

*Group:* groups are a special kind of pattern in the network. They emerge as highly interconnected sets of nodes known as clusters which are densely-knit (most possible ties exist) and tightly-bounded (most relevant ties stay within the defined network) as shown in figure 2. Groups



**Figure 4: Trust and information flow. The trust  $t$  which one node has in another one is indicated by the arrows. Information flows over these ties in the opposite direction.**

in the news network correspond to thematic clusters which focus on certain kinds of topics or share the same opinions.

*Network of networks:* groups do usually not exist in isolation. People are members of a number of social networks, each one possibly based on different types of relationships. The same is true for nodes in the news network: each may have subscriptions to various nodes which are not densely-knit. This places it in a number of groups and interconnects them, thus forming a network of networks.

*Path:* there are not only direct connexions. Nodes are also connected indirectly by paths. Paths connect two nodes by a sequence of ties and intermediary nodes. The length of a path is the number of ties in the sequence. Paths are unidirectional and there may be several paths of the same or different lengths connecting two nodes. Since the whole network may be partitioned, a path may not exist between two given nodes. Paths are of special interest for the distribution of news items. An item may not only be transmitted from the original author's node to its subscribers. It may also be passed on to third nodes. Since every node in this model is source and sink at the same time, a node may be used to republish or recommend an item. Through this mechanism, an item may quickly be distributed to the directly connected nodes in a first cycle. In a following cycle  $n$ , it can be passed on to nodes with a path length of  $n$  from the originating node. This effect can be used to create a gradient which results from the concatenation of the trust levels that are attached to each tie in the corresponding path (figure 3). Thus paths can be weighted by trust levels which are automatically derived. This leads us back to the concept of local reputation.

*Local reputation:* in this model, the reputation a node A has in relation to another node B corresponds to the aggregated trust levels of all paths leading from B to A. If there is no path from a node D to A, A has no reputation in relation to D. In figure 4, the reputation of A in relation to B is  $R_{AB} = t_{BA} \diamond (t_{BC} \circ t_{CA})$  and  $R_{AD} = 0$  with  $\diamond$  and  $\circ$  representing aggregation and concatenation respectively.

## Dynamics in the news network

The Freerporters' news network is not static, but can change dynamically with the actions of the participants. As there is no authority in the network, anyone is allowed to participate and become a maintainer (or owner) of any number of nodes by creating them. A maintainer may also remove his/her maintained nodes from the network. To establish connexions, a maintainer can create ties between an owned node and any other node. This is an explicit expression of trust in the other node as explained above. These ties are always directed from the own node to the other node and news items can only be transmitted in the opposite direction. When the maintainer of the other node also draws a tie in the opposite direction, news items can be transmitted in both directions. A maintainer can also affect the trust levels on ties he/she has established or remove such a tie.

The trust level of a tie shall represent the belief that interesting messages will be published on the source node. To take advantage of this arrangement, a value of interestingness is connected to each news item to reflect the interest the maintainer of a node has in an item it holds. When an item

travels along a tie, its interestingness is concatenated with the trust of the tie. The resulting value represents the automatically calculated interest of the receiver and replaces the previous value. When a node receives an item through several paths, the different interest values are aggregated into a single value. The changing of a tie usually happens as a reaction to the contents of received news items. If the receiver is satisfied he/she is likely to increase the trust level on the corresponding tie, otherwise he/she may possibly decrease it or remove the tie completely. If a maintainer thinks that only individual news items do not measure up with the automatically calculated value, he/she may adjust it accordingly. The corresponding items might be marked as *rated* to make the action of the maintainer transparent to others.

The users establish ties, keep the trust values adjusted and rate individual items for their own selfish interests. Yet, their behaviours have far-reaching consequences for the whole community, because every change of a single trust value may affect the reputation of several nodes at the same time. The three required properties for reputation systems become manifest in this system: "entities are long-lived", "feedback about current interactions is captured and distributed" and "past feedback guides buyer decisions" (Resnick et al. 2000).

### Features of the local reputation system

The resulting local reputation system assures a certain quality through a social filtering and recommendation mechanism. It is related to the concept of social navigation (Dourish & Chalmers 1994) which enables the system to discover new topics of interest. The mixing of local as well as global news is possible because of the functioning of the distribution mechanism. News items will not spread widely without multiple manual ratings. This is probably the case for local news. News of global interest will probably find several recommenders who increase the interestingness and thus increase the spreading.

Unsolicited commercial electronic messaging (spam) and unsolicited electronic messaging in general is a serious threat to open messaging systems. In the worst case, one individual can force thousands or even more people to see or hear his/her message although the recipients do not have the slightest interest in it. The local reputation system of the Freeporter is resistant against this kind of misuse. Since its filtering mechanism is not dependent on the analysis of the contents of messages, it does not have the problem to define spam. Compared to email spam avoidance strategies, it has similar properties like a referral network (Cranor & LaMacchia 1998). A spammer may create new nodes, but because they are not trusted by anyone, they cannot be used to distribute spam. If a trusted node begins to distribute spam, the trustees will likely reduce the trust level or even remove the tie until the node gets isolated and can do no more harm. Spam clusters which trust themselves for the reason to gain reputation do not work either, because then the whole cluster will get isolated just like a single spam node. These clusters could increase their reputation on a global scale, but not on the local scales the Freeporter network uses.

### Realisation of the Freeporter

This section summarises the characteristic components of the presented news network and describes the prototypical implementation as well as how it could be integrated into existing technologies for a fast adoption.

News items in the network have to be annotated with an *interest* value and a corresponding scale has to be established. The *immediate source* must also be attached to the item so that the node in charge can be identified. An extension to this feature would be that the *whole path* which a news item travelled gets recorded in the items. Additionally, items may be annotated with a *rated* value to indicate that the interest value was not determined automatically. Metadata for the description of the contents of an item is necessary for the automatic generation of newscasts. The *media type* together with details about the *extent* of the contents, e.g. the *duration* for audio messages. The

connexions to other nodes have to be extended with a user-defined *trust* value of a specific scale. Moreover, a protocol for the efficient and immediate transmission of news items between two nodes is necessary to support the spontaneity of mobile users.

### Prototypical implementation

The prototypical implementation provides a single program called *matrixdbd* which is responsible for the storage and distribution of news items. A single instance can contain multiple nodes. Multiple instances of *matrixdbd* can also be connected over the Internet to form a peer-to-peer network of nodes. Nodes can be identified by a URI in the form *mpn:<node name>+<server domainname>*, e.g. *mpn:tomsby+mpn.bloggermatrix.com*. *Matrixdbd* maintains an XML file containing metadata of items as well as a list of trusted nodes for every node. Trust values range from 0.0 (no trust) to 1.0 (absolutely trustworthy). The metadata basically contains a unique identifier, a URI to the content file, details about the author and the characteristics of the proposed concept: an interest value between 0.0 (uninteresting) and 1.0 (very interesting), the path an item travelled as well as details about the media type together with the duration if applicable. An additional value indicates the order in which the items were received.

A custom XML protocol is used to access and modify the associated item storage. It uses XSLT as a flexible albeit inefficient query language. The protocol features a delayed query which is used to facilitate instant transmission of items: if a query result is empty, the queried *matrixdbd* keeps the connexion open until the query can be satisfied. In comparison to simple polling, this mechanism avoids the typical delays while it keeps the advantage that the client is in control of the connexion. To calculate the interest value of incoming news, the multiplication is used as the concatenation operation: the previous interest value multiplied by the trust value of the connexion yields the new interest value of an item. If an item arrives through several paths with different interest values, the aggregation is facilitated with the maximum function. The usage of multiplication and maximum is suggested by Richardson, Agrawal & Domingos (2003) and is well suited for a practical implementation.

Several interface programmes take advantage of the network infrastructure by connecting to one's own node. A telephone interface can be used to easily record an audio message with a mobile phone. The system uses line identification to determine the caller and can be controlled through voice commands. Subsequently, it inserts the message into the caller's node for distribution. To realise the presentation of automatic newscasts as described in the introduction, a plugin for the audio players XMMS for Linux and Winamp for Windows was implemented. When a newscast becomes available, it fades out the currently playing music stream, inserts the individual parts of the newscast, and finally fades the music in again. A newscast usually consists of multiple audio messages, eventually from different authors, sorted by the interest value. There are two kinds of newscasts: instant and regular. Instant newscasts happen as soon as a message arrives. A threshold can be defined to determine the minimum interestingness for an interruption. Regular newscasts happen once or twice per hour with a specified maximal duration. If more items are available, only the most interesting messages will be played. A web interface (<http://www.bloggermatrix.com>) was also implemented to access a node.<sup>1</sup> The list of trusted nodes can be modified and the telephone interface can be configured. It displays a chronological list of news items together with the corresponding interest values in two areas: friends and moderated. The friends area contains all items which were received over the trusted connexions. The moderated area contains own items and selected items from the friends area. An item can be moved from the friends area to the moderated area with one click. This action is also interpreted as an explicit recommendation and the interest value is set to 0.9 at the same time which eventually causes the item to reach a broader audience.

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<sup>1</sup> The web interface was implemented in cooperation with [glonz.com](http://www.glonz.com) (<http://www.glonz.com>)

## Extension of the Blogosphere

To foster a fast adoption of the proposed concept, appropriate standards could be extended. RSS is well-suited for this purpose because of its popularity and extensibility. A module needs to be developed which implements the additional item values as discussed above. RSS aggregator programmes need extensions to attach trust values to the subscriptions, make the necessary calculations and republish the items with modified interest values in the own Weblog. However, to facilitate instant distribution of news, a protocol similar to the one developed for the prototype has to be specified.

## Conclusion and future work

The goals of this study were to determine the enabling factors of a mobile news publishing community. Contemporary mobile phones are good tools for occasional amateur reporters. Gateways for voice, SMS, MMS, and email can be implemented to transfer messages into an Internet-based news network. Custom Java programs may be used to make more sophisticated reports. The challenge of the project was the design of an appropriate distribution and recommendation mechanism for audio messages as well as other media. While reputation systems with global reputation are not sufficient, a local reputation system is proposed as a solution which incorporates elements of social networks. A prototypical implementation was accomplished and an integration into Weblog technology was suggested to foster a fast adoption. The bigger part of the necessary technology and infrastructure is already in place. Compared to other social networking systems, e.g. Referral Web (Kautz, Selman & Shah 1997), the goal is not to collect information about the social network of people, but rather to use it as a transfer medium.

Evaluations of different functions for the concatenation and aggregation of trust and interest values and of the impact of these functions on the distribution of news have still to be carried out. Furthermore, a concept for the semantic connexions of news items among each other could be developed. This would allow for a seamless integration of comments, translations, revisions and a general composition of items into the described system. The design of efficient search and routing functions for the network were not addressed in this paper. This would increase the amount of accessible information and enable new applications. Research related to small world networks might be a promising approach for this problems (Watts 2003). The system could also be used to manage messages which could be attached to geographic locations (Persson et al. 2002) or product identifiers, e.g. barcodes. The same advantages regarding information quality would arise in these scenarios. Another application scenario is the search for a helping hand. Since a help call reaches interested persons, there might even be a volunteer among them.

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