

Intention Broadcasting

A Model for Computer-Mediated Intention Sharing and Coordination

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Abstract: Social media innovations, together with rapidly improving data sharing methodologies, are enabling individuals and groups to instantly disseminate, or “broadcast”, messages across many diverse networks. This phenomenon, combined with the growing use of social media services for sharing and coordinating intentions, led me to develop the concept of “intention broadcasting”. In this paper I present a model for computer-mediated intention sharing and coordination. It was created to help guide web practitioners in the development of intention-broadcasting related systems.

Keywords: intention broadcasting, intentions, pragmatic web, context, coordination

Categories: A.0, C.0, C.2.0, C.3, J.0, J.4

1 Introduction

Cognitive science recognizes that a high-level ability to share and coordinate intentions is a uniquely human attribute, which has helped us to develop cultures and build civilizations [Tomasello et al., 2005]. This ability is far from perfect, however, and many problems arise when we are ineffective in sharing our intentions. If it were possible to improve our abilities to share and coordinate intentions, the positive impact on our lives would be profound.

The ability of *individuals* to quickly disseminate and coordinate intentions has advanced rapidly as a result of the Internet, social networking services and the growing trend for data sharing between web services. It is this capability and the resulting phenomena that I have termed “Intention Broadcasting”.

Already services are starting to use aspects of intention broadcasting, however, there are no dedicated models that can be used to analyze the processes involved and the main aim of this paper is to start filling this void.

This paper is a summary of my master’s thesis¹, which drew on research and work undertaken at Zipipop – a social media agency I co-founded in July 2007.

¹ Richard von Kaufmann 2009, Intention Broadcasting – A model for computer-mediated intention sharing and coordinating, MA, University of Art and Design Helsinki (Media Lab).

2 Definition of the key terms in the context of this paper

2.1 Broadcasting

The term “broadcasting” is most commonly understood as the transmission of television or radio programmes to a wide audience. In relation to the concept of Intention Broadcasting, however, it is used metaphorically to create a simple, concrete and “sticky” conceptual model.

The concept of Intention Broadcasting is also a catchall term that includes other less well know forms of casting, for example, narrowcasting (for selected or specialist audiences) or multicasting (for distribution via networked connections).

What they all have in common is the ability to instantly disseminate information to many people.

2.2 Intentions

Since intentions come before actions, those wishing to better facilitate actions should pay attention to how people formulate and communicate their intentions.

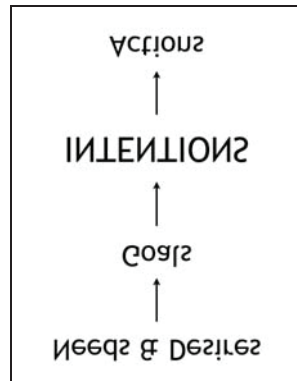


Figure 1: Everything starts from needs or desires that become goals. In order to achieve their goals people frame intentions that lead to actions.

2.3 Computer-mediated

The use of the term ‘computer-mediate’ in my model title was inspired from ideas related to computer-mediated communication (CMC). CMC applies to any human communication achieved through, or with the help of, computer technology [Thurlow, 2004]. CMC also covers the social effects of networked, two-way communications and how this fundamentally differs from the previously highly governed models (e.g. radio broadcasting), which “were designed to send messages from a centre to a periphery” [Lister, 2003]. CMC allows for one-to-many, many-to-many, synchronous (live) or asynchronously (without time constraints) communications. It is this ability of individuals and organizations to easily “broadcast” their messages to specific or wide networks, and for their audiences to be able to respond just as easily, that has catalyzed and enabled the greatest change in the way we communicate since the

introduction of the Internet. With that in mind, I describe intention broadcasting as *computer-mediated* intention sharing and coordination; i.e. the sharing and coordination of intentions through, or with the help of, computer technology.

3 Intention Broadcasting

3.1 Introduction

Intention Broadcasting (IB) is the process of computer-mediated intention sharing and coordination. An IB process can be observed in its simplest form when people use “status messaging” or “micro-blogging” services, such as Facebook and Twitter, to “broadcast” their intentions, e.g. “Anyone up for a drink after work?” or “Who wants to go for a picnic at the weekend?”. Friends can then respond through the commenting or reply features.

A fully functioning intention broadcasting system (IBS), however, should provide a feedback loop to allow participants to work together to convert intentions into fixed plans. For example, recipients of an invitation to an event should be able to easily and quickly indicate whether or not they intend to accept the invitation. The individual responses should then be collated and coordinated so that the inviter will know who and how many will attend the event.

3.2 Existing Intention Broadcasting Services

IB-related services can utilize any method of one-to-many computer-mediated broadcasting strategies. In almost any situation in which you can define a clear intent/desire/need you can build an IB-related system. Aspects of intention broadcasting are already appearing on the web, as illustrated by the following examples:

- **Dopplr** (travel): Narrowcast your intention to travel to a particular city so that friends can “serendipitously” meet up with you. [www.dopplr.com].
- **Kiva.org** (micro lending): An organization that connects private lenders to entrepreneurs in developing countries. The intending borrowers first post (broadcast) how much they need and what the loan would be for. [www.kiva.org]
- **Lending Club** (peer-to-peer banking): Peer-to-peer lending of consumer credit at much better rates than traditional banking. [www.lendingclub.com]
- **National Carshare** (car-pooling): Broadcast your wish (intention) to travel from A to B so that you attract others to share cars and travel expenses – and help save the planet. [www.nationcarshare.co.uk]
- **CouchSurfing** (hospitality exchange network): Enables members to broadcast their intention to travel and then receive offers to stay in the private accommodation of fellow members. [www.couchsurfing.org]

These examples are based around sharing intentions with *people*, however, often intention broadcasting involves letting *systems* know your intentions; for example, the airline industry handles intentions well with many services such as eDreams

providing lists of possible alternative flight choices for the same routes across many different carriers. This has been made possible by decades of enforced standardization and highly specified ontologies.

It is interesting to note that in the mobile communications sector one of the few services to be maturing and generating significant revenues is turn-by-turn navigation. This service deals with clear intentions, i.e. intentions to get from A to B. Picking up on the broadcasted intentions enables the services to provide preference-based, contextually relevant advertising, i.e. where is the next most convenient petrol station. Could it be that such services, which can clearly identify their users' intentions, have a better chance of succeeding?

Many services are now starting to offer real-time searches that notify you via email or RSS when something of interest comes up; for example, the popular US listings service Craigslist has a real-time (or constant) search that will notify you if what you are looking for comes on the market. And it has become almost a standard for online real-estate services to provide the option to receive notifications when a potentially interesting property (based on your criteria: place, size, cost, etc) becomes available. Such services could be viewed as using real-time search criteria to input and transmit intention-related information that will facilitate future actions, such as making purchases.

3.3 Potential Intention Broadcasting Services

Intention broadcasting has many potential uses:

- **Social plans:** Broadcast your social intentions so that your friends will be aware and can join you.
- **Baby-sitting:** Broadcast your need for (intention for finding) a babysitter and use collaborative rating to evaluate trustworthiness.
- **Buying/Selling:** The customer broadcasts an intention to buy a product (either new or second-hand). Sellers see this intention and make direct offers. The customers benefit by being able to see and compare offers in one place and get more open independent expert advice. The sellers benefit from the direct contact to active customers and a better understanding of the customer needs. They also save money on inefficient, and often unwelcome, marketing intermediaries. Both benefit from the collaborative feedback censorship system that rates the reliability of buyers and sellers (as in eBay).
- **Freelance work:** To find skilled labour organizations often prefer to engage freelance workers. However, it is not always clear who to contact or what is a fair wage. To overcome this dilemma those who need work done could broadcast their needs and freelance workers could determine the offers that are best suited to them. A ratings system would help customers avoid unreliable workers.

4 Model Research

In the previous section I outlined a number of services that use some intention broadcasting concepts. From such examples it is possible to identify common

features that could be used to create a coherent model showing the components and dynamics that would exist in a generic Intention Broadcasting System (IBS).

After analyzing various “action” models and theories in the fields of interaction design (particularly D. Norman’s Seven Stages of Action model), situated cognition, and cognitive science (particularly the work of Michael Tomasello), I created the diagram below to help identify how an intention broadcasting system might change how agents/actors go about organizing social get-togethers.

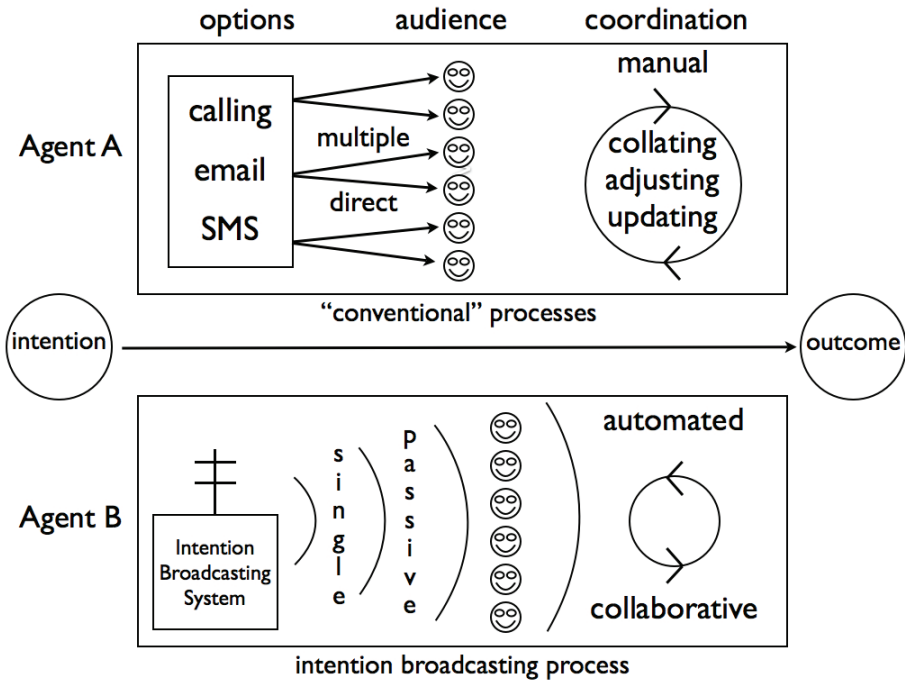


Figure 2: A process comparison between organizing a get-together via “conventional” methods and an intention broadcasting approach.

- **Agent A** chooses a combination of “conventional” options (calling, SMS, and emailing) to let the audience (friends) know that he is planning (intends) to have a party. These methods can be time-consuming since the replies have to be manually collated, adjustments made, and updates sent multiple times.
- **Agent B** opts to use an intention broadcasting system. Agent B “broadcasts” her intention to her friends. The intention is picked up passively through the system or directly via notifications sent out via email, SMS, social networking services, etc. The system would then automatically collate the responses and instantly update participants as the planning process proceeds.

A well-designed IB-system should be able to “funnel” the participants in a smooth collaborative process towards the desired goal and the coordination phase should be as automated as possible.

5 An Intention Broadcasting Model

In the process of seeking out and identifying the common IB process stages, the “broadcasting” metaphor was naturally extended with the added advantage of making it more memorable.

I propose that the key components of a model for an intention broadcasting system should be:

- **Goal:** the agent has a need or desire for a particular outcome.
- **Options:** the agent has various options based on the combined knowledge, skills and the perceivable affordances in their environment.
- **Intention:** the agent selects an intention aimed at achieving the outcome.
- **Broadcast:** the agent broadcasts their intention to a defined target audience (broad or narrow) via computer-mediated networks, e.g. email, social networks, etc.
- **Tuning:** the targeted audience is “tuned in” to receive relevant intentions using any method or technology that can help filter the intentions: groups, real-time searches, etc.
- **Rating:** if necessary a collaborative rating system can be used to help protect both the broadcaster and audience from malevolent intentions or unreliable respondents, e.g. a bad plumber or a dangerous driver.
- **Coordination:** systems for enabling the parties to overcome contextual problems though interaction and collaboration.
- **Outcome:** Outcome achieved.

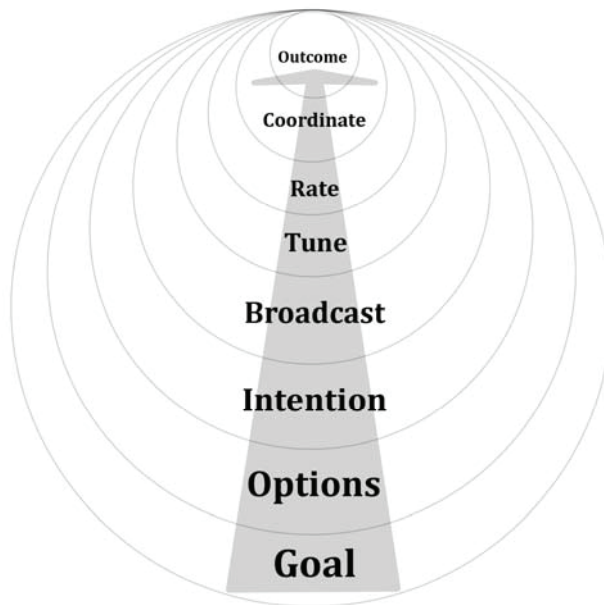


Figure 3: A model for computer-mediated intention sharing and coordination.

6 Intentions and the Pragmatic Web

In order to complete collaborative tasks we first have to share our goals and then coordinate them [Tomasello 2005]. This can be on a person-to-person or person-to-machine (system) basis. Such knowledge of intentions is often helpful in resolving many problems such as the need to get to a certain place in a city. By framing destination as intention, and by taking account of context (e.g. current location), a system could guide the traveller across a public transportation network in real-time.

Context is a fundamental part in the linguistic study of pragmatics and it is correspondingly important in pragmatic web developments. It is crucial in all areas of the pragmatic web from the creation of community-based ontologies to facilitating everyday activities. I propose that intentions and context could be used to describe the pragmatic web in the following way: “The coordinating of meaning, context and intention to facilitate communication and cooperation in achieving desired outcomes.”

7 Conclusions

There are many needs, desires, and problems that could potentially be addressed by framing them in relation to intentions. Many aspects of intention broadcasting are presently being developed but there is no coherent approach; however, applying the model proposed in this paper would make it easier to identify and improve future IB-related systems. Having said that, it is important to stress that no IB-related system needs to use all the components of this model.

A true IB type service is one where nothing can start until there has been an initial sharing of intentions, such as peer-to-peer banking, car-pooling or more specific services such as CouchSurfing or Dopplr. However, extending the use of IB beyond that could have a huge affect on many areas of web activity.

An important example of the use of IB is in farming out (“crowdsourcing”) the work of searching for things through the web by matching needs with solutions in a much more efficient manner; for example, finding a plumber or a second-hand tricycle.

I have demonstrated, through the analysis of existing services, that giving due attention to intentions can help find solutions to both business and everyday needs and desires. However, the concept of Intention Broadcasting is still in its infancy and more research is needed to fully assess its implications and potential. At Zipipop we developed our own service for sharing near-future social intentions (e.g. the wish to go for a drink, see a film, have a picnic, etc), but we failed to take into account that the current processes of organizing *small* social events, although inefficient, provide important means of reinforcing social connections, i.e. by calling my friends to invite them for a drink I also have the excuse to catch up with their lives. So although calling around might be time-consuming the effort is not a waste of time – since, even if friends can't join in, other social needs have been catered for in the process.

At the end of the day, the aim is to improve people's lives and, if services pay closer attention to recognizing and defining people's intentions, they will be forewarned and better able to anticipate needs and desires, resulting in more efficient and more personal services.

8 Future Work

My basic concept of Intention Broadcasting (IB) has already started to gain momentum on the web. It remains to be seen, however, if my model for computer-mediated intention sharing and coordination will be as widely accepted.

One of the biggest problems with intentions, particularly from a service point of view, is that they are hard to automate. A way forward could be found in analyzing patterns and data to anticipate people's intentions. For example, if you would like to meet some friends for a drink on a Friday night, a service could recommend a selection of bars that you and your friends often frequent. However, this would require users to actively log the locations they visit – as in the Brightkite service – or for the development of more sophisticated location tracking services with the capability of automatically identifying specific venues. Doppplr (see section 3.2) recently introduced their Social Atlas service, which enables frequent travellers to geographically tag venues (restaurants, hotels, etc.) as places they recommend.

Other aspects of intentions that will be hard to cater for are those important but low-level intentions that we carry around with us hoping to fulfil serendipitously without having to resort to specific plans. For example, if I bump into x I will ask them about y ; if I go past z I will do a . Very advanced systems would be required to handle such low-level intentions but they could be developed. For example, I am constantly intending to get a haircut and always leaving it to the last minute. A potential solution to this could be to let a system know how often I like to have haircuts and then it could cross-reference my own and my hairdresser's calendars to recommend a convenient booking time. For this type of service we will need the Semantic Web and intelligent agents to do the coordinating and it would be interesting to explore the potential of adding intent as a relationship component within semantic ontologies. Then systems could be taught to recognize and process intentions wherever they prove to be useful.

I predict that as information becomes ever more abundant and demands on our attention more acute there will be a growing demand for filtering services. And, like a good butler, services that learn our preferences, habits, quirks and intentions, will be better able to filter out the noise and provide evermore personal, contextually relevant information – for which we will be extremely grateful. In the meantime I will continue to analyze the processes of how people interact with IB-based systems and explore their current and potential sociological effects.

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