Who’s Down?

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ABSTRACT

There are numerous new and exciting ways to connect people. Each new technology offers new advances in aural, visual, and textual communication, but when it comes to organizing people and making plans to do something, the organizational onus remains on the user. The flaw is that the technologies for these communications are unaware of the content of the communication. Communication tools allow people to trade information, but the technology which carries the information from one person to another just passes the information along. That information which is being carried has valuable pertinent data contained within it.

In addition to the existing many communication tools which allow users to trade unstructured information, like a conversation. There are also many ways to share structured information, like calendar invites, and shared to-do items. These systems of sharing structured information force their users to conform their information to the units of data that system understands. For example: a calendar invite may require a date associated with it, even if a date is unknown.

Who’s Down aims to create a way for people to communicate in the natural, unstructured, conversation-style communication which is natural and avoids the need to learn how a structured system works. Who’s Down is an application and service which makes it easy to make plans with people on a relatively small scale. The application acts as the interpreter and mediator of the information buried in the back and forth communications so as to give meaning to simple plan-making communications. The application will mimic the tone of a conversation, as it extracts all the necessary details from people by asking them a series of structured questions. Who’s Down gives meaning to the discourse and affords users the data needed to make plans without the friction. The goal of Who’s Down is to make it easier to spend time with people in the real world.

1. INTRODUCTION

People always try to organize themselves into groups. Groups can serve many different purposes, but the group as a fundamental organizational unit runs through most of human experience. Groups are how people live together.

People tackle the organizational problem of forming groups with language. As technology advances the number of ways to send and receive ideas increases. And with each new advance, a new obstacle is overcome. Whether that obstacle is physical distance or emotional import, there is a technology that attempts to overcome it. Each of these new technologies serves as a tool for communication, but in essence these technologies do not change what it is people are sharing: language. Language is the core piece of information sent back and forth over these many communication pipes. Language brings people together, but when using all of these increasingly ubiquitous communication tools, people are still the ones doing the organization. It is still a person who interprets email responses, letters, phone calls, and video chats into the information that is needed for a group event. The tools themselves are impartial to the communication they relay.

The impartiality of communication mediums is what Who’s Down aims to change. At times, impartiality can be a good thing. Impartial communication tools are unbiased toward the content they convey, which makes them very versatile. But when a common thread of information is being conveyed the neutrality can be a hindrance. We define a term, “uninterpreted,” to help us discuss the fundamentally meaningful information, to which neutral technologies add no meaning. Data or information conveyed in language via one of the myriad communication avenues is almost entirely uninterpreted. The user acts as the interpreter of that uninterpreted data. The user recognizes that an email is actually an indication that a person will not be able to attend an event. When people communicate in language, they encode ideas in that language for others to decode on the other side. The data is the meaningful factoids in that encoded language.

In addition to the impartial mediums of communication there also exist many structured forms of communication. These forms of communication offer categorized fields in which to coordinate data. Calendars serve as valuable examples of a form of structured communication. Calendars have a structure of time on which to layout events, and ultimately they are very effective tools for planning and remembering what events have happened, will happen, and are planned to happen. In the end the data that is most important to an event is the answers to the following questions: Who can make it? When will it happen? and Where will it happen? Who’s Down aims answer these questions for you without ever having to bring to mind the fields in which the answers to those questions might be situated.

Who’s Down uses the back and forth conversation and discourse between people to answer these questions for the user. Who’s Down aims to create a communication tool with a narrow scope of discussion – planning. The goal is to cre-

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ate a decidedly non-generic form of communication which is centered around the idea of doing something with people. By specifying the purpose of the conversation, Who’s Down can add interpretation to the previously uninterpreted language. The application is present during a group conversation with the invitees and Who’s Down tries to answer the Who, When, and Where questions. Who’s Down uses natural language processing (NLP) to tokenize, evaluate, and ultimately give meaning to the conversations it is party to. All of that interpretation happens concurrently with the conversation itself and structures the data with the clarity of a calendar without the need to categorize and segment the information.

The conversation itself is had via SMS (Short Message Service) text messaging. This simple, ubiquitous tool allows Who’s Down to appear to be nothing more than a conversation while concurrently collecting data and making sense of it. The importance of Who’s Down is to ease the struggles of organizing people by living alongside the already natural conversation. Then, once the proposed event is under way, there is one place where all the information about the event lives, as opposed to being existing across many different conversations and media.

The interpretation component of Who’s Down is its value, and that component is a very hard problem to solve. By capturing the one instance of conversation – event planning – Who’s Down can take what is still an effortless interplay of language, and give it meaning to the user. The focus, is what makes the interpretation problem a solvable one. Instead of having to interpret all of conversation, Who’s Down need only interpret the planning component, and therefore can offer a more tailored and useful set of features a calendar might offer but without the externally imposed structure.

2. RELATED PRODUCTS & SERVICES

Many products and services aim to solve the event planning problem. The most notable ones currently in use are features of social networking services. That relationship, in many ways, seems like a natural progression; social networking sites already have social graphs to build from. Facebook and Google+ both have these event features. These services solve an event planning problem adjacent to the one which Who’s Down aims to solve and that is the problem of exposure. These social networking features serve as posters to advertise and broadcast the existence of events. Social networking services are largely centered around the timeline, and the stream of what is happening. These event features are no different; they are centered around the fact that the event is happening, but do little to ease planning. Any emendations to the event, display as mere comments, and become other pieces of uninterpreted data. The onus is then put on the user to liberate and interpret any valuable information from the comments.

It is important to acknowledge that these social networking services solve one piece of the event planning problem: the who. Both Google+ and Facebook events interpret the piece of data indicating attendance from potential attendees and give it meaning. These are valuable event planning services. They work best at scale, when informing many people via billboard or poster makes sense. These services do offer regions in which to answer some of the other questions, which are connected with the planning of an event such as: where, and when. Though these fields might be considered interpreted data, they are not functionally meaningful pieces of data. In opposition to this, in Who’s Down, the conversation is functional. The conversation is the tool for planning, not a supplement to the already planned event. On Facebook or Google+ the data that lives in these who and where fields only changes when the event creator changes them. This is useful, but this only serves to separate the Facebook or Google+ event in its permanence. These services remain useful in solving this related event planning task but do not act as event planning tools so much as they serve as event exposure tools.

One limitation of these services is that they are fundamentally opt in. They only are valuable if an entire group of friends is on that service. Who’s Down aims to avoid such an opt in approach. As an event creator, one can invite anyone who has a phone number. Through the democratized phone number Who’s Down can reach anyone without forcing that person to join Who’s Down.

Some other services which work to solve one piece of the event planning problem are calendaring services. These services help attendees and creators answer the question: when will the proposed event occur? Calendaring server products offer ways to, by looking at the schedules of potential attendees, schedule events with those attendees. The problem is that these services are not a fluid part of a conversation, they are a separate, when-specific part of the event planning puzzle. They are more likely the place to store the interpreted when data after that data has been conveyed by another communication tool, whether it is speech or email or any other. This service is successful at solving this organizational part of the problem, but, similar to social networking-based event services, the events serve more as tent posts marking the location and existence of an event and do less to ease the actual planning of the event.

One service which is successful at easing the planning of events is when2meet [1]. This site, like calendaring services, works to answer the when question associated with every event. When2meet does a great job at creating a purely interpreted way to collaboratively decide upon an event time which fits all potential attendees’ schedules. It even overcomes the reach limitations of the social networking-based event services and some of the calendaring services. No account or signup is needed to use when2meet. It makes itself ubiquitous; users of the service only need direct their browsers to a unique, event-specific, URL to use the service. When2meet is very useful at solving the problem of when should some event or meeting happen. Who’s Down is informed by the utility of when2meet when helping users answer the when question.

There are other event planning services that aim to solve the event planning problem: hatchplans [4] and deciapp [7] to name just a few. One clear disadvantage of many of these services is that many seem to be entirely unmaintained and forgotten. Fundamentally, they create an entirely structured experience, and the conversation is secondary. Hatchplans is very similar to Who’s Down, but it does too much; hatchplans seeks to capture the entire experience and ends up complicating the problem instead of simplifying it. The main functional problem most of these share is the reach problem. Most of the services require that event creators and attendees all become members of the service. Because these services are, by design, not ubiquitous it is hard for users to use them freely, for any event or group action.
All of the proposed solutions to the event planning problem either do not solve the entire problem or leave a large part of the data associated with the event uninterpreted. Who’s Down will use the ubiquitous SMS and an interpreted conversation as a means of solving this event planning problem. The goal is for the application to feel natural and familiar by making language the fundamental communication mechanism. And, at the same time, to give value to the natural conversation via interpretation.

3. SYSTEM

Who’s Down is a small scale event planning solution with the goal of reducing the friction around the process of planning an event. The core purpose of Who’s Down is planning, not advertising, awareness, or sharing past events. The goal is to have the focus be on the event itself, not the documentation of the event during or after it has occurred. It is non-trivial, with the communication tools and event products currently available, to plan a lunch with a friend for later today, or a potential camping trip this upcoming weekend. These events are too small and ephemeral for a Facebook or Google+ event. Who’s Down is the simple bidirectional and interpreted event-planning conversation tool. Using a ubiquitous conversation mechanism like email or SMS allows Who’s Down to feel like a conversation, and yet be the event planner.

3.1 System Model

Who’s Down is split into two main pieces to maximize modularity and mitigate complexity. There is a web server which has a number of the larger system and data management roles and in addition there are a collection of thin clients, an iPhone, Android, and web application, which act as portals to the underlying system. From a user perspective there are two main modes of interaction with Who’s Down. There is the client, used by an event creator. And the other main mode of interaction with the system is through SMS messages, used by invitees to respond and discuss the event.

The interaction flow for a user is as follows: using one of the clients a user creates a Who’s Down event. This entails selecting potential invitees and composing a message. The event creation step is akin to initiating any kind of group messaging session. Now Who’s Down assigns a new phone number to this event and sends all of the invitees the composed message. From now on invitees just reply to this phone number and have a simple SMS conversation. From the creator’s perspective, they use a client to have the same conversation, but the creator has access to the interpretation Who’s Down does. The creator can easily see who from the invitees is “down” and who is “not down” without having to read threw all of the discourse in the conversation.

The flow from a high level:
3.2 System Implementation

Each client is a native application on its platform. The iPhone application for example will be available in the Apple App Store. The clients present a number of user interfaces. One interface is a chat interface which allows creators to see invitee replies and send messages to invitees. The other main interface is the one which presents the result of the interpretation. The client itself does not do any of the analysis and processing, that is all delegated to the server via an HTTP api.

The server itself is a node.js [2] web server which is being hosted. Node.js is a powerful, heavily asynchronous javascript runtime. The server catches HTTP requests and delegates its tasks to its internal modules. Each server module controls one component of Who’s Down and delegates specific tasks to outside services.

There is a messaging system module which manages all of the phone interaction components of Who’s Down. This module chooses the right phone number for a given event and sends out invites and subsequent creator messages to all those who have been marked as “down.” The messaging module uses Twilio [9], an service which simplifies the task of sending and receiving text messages. Twilio presents an HTTP api so that the messaging module can easily send out messages. Twilio also makes HTTP requests of the messaging module when invitees reply to the event phone number.

There is a database module which manages all of the user, event, and messaging data. The database is built on MongoDB [5], a NoSQL datastore who’s dynamic structure is very powerful and adaptable.

There is also the interpretation module which is used to make sense of responses and event information. This module exists on the server, and relies heavily on external apis to
add value to the information it receives. The module itself is responsible for deciding which is the best NLP tool to use for the task at hand and then making sense of the response. The interpretation module uses Maluuba [3] to extract date and time information from event message and return that time as the set time of the event. At the same time the module uses Maluuba to pick an apt title for the event just from the message. The module makes sense of the tokenized response and chooses the pieces of information that is most pertinent. The module will also use Maluuba’s categorization features to classify the query into one of categories for customization in the clients. When it comes to deciphering whether an invitee response is a “down” or a “not down” the interpretation module delegates to the sentiment analysis component of Text-Processing [8]. This is an api exposing the power of the Natural Language Tool Kit (NLTK) [6].

Whenever Who’s Down has trouble classifying the potential attendee’s response, Who’s Down can prompt the creator to do the interpretation for it. Who’s Down is still managing all of the planning details of the event, the creator would just need to categorize a response as a “down” or a “not down”. Who’s Down would take that interpreted response and use it to inform the next action. This fallback allows Who’s Down to escape mistakes of accidentally rejecting a response that was truthful.

3.3 Future Work

Right now Who’s Down is most successful at answering the who question. This means that it makes it easy to see who is available and “down” and who is “not down.” However, there are other questions that Who’s Down might help a user answer in the future. Who’s Down’s next question to help users answer is the when question. Who’s down will allow users to converse and decide upon a date just by naturally discussing possibilities. Then Who’s Down can present these possibilities in a cogent way broken out of the conversation. And then Who’s Down will make it easy to further break that information out into a more focused when-specific system like a calendar.

There are many opportunities to add value to the discourse around planning events. Each requires a different type of NLP and a different user interface element to present to the creator. But with each added level of interpretation Who’s Down can take on more of the weight of the experience of planning.

3.4 Ethics

Who’s Down is tasked with managing peoples’ conversations. These conversations are sensitive important parts of peoples lives and need to be treated with respect. This means that the conversations themselves will not be stored beyond event expiration dates. Users will also have the ability to fully delete their account information. This is an important feature for making it easy for users to converse freely knowing that they can remove their sensitive information at any time. In addition to that, Who’s Down is transparent about what information it is taking from the users contacts so that there is never a breach of trust. Trust is one of the most important factors in making Who’s Down a successful and valuable tool.

4. CONCLUSIONS

Who’s Downs components together create a user experience much like a group messaging application but with the added value of interpreted, focused conversations. The power of Who’s Down is in its simplicity. Instead of asking for all the information with countless form fields Who’s Down remains unimposing. Who’s Down lets a planning conversation unfold naturally and extracts the information that it needs to be valuable to the user.

5. REFERENCES

APPENDIX

A. POTENTIAL CONVERSATION (AFTER FUTURE WORK)

This is a sample conversion from the point of view of one potential attendee:

Key:
- Received message
- Sent message

The event creator make a new event, and does not specify a location. Who’s Down notes this gap

Who’s down for dinner at 6pm today?
  I can’t make it.
Sorry to hear that. Is there a time that works better for you?
  7pm could work

- A note is now sent to the event creator saying that this potential attendee suggested an alternate time, and they can approve it and compose a response message.

  That’ll work, see you then!
  Where are we meeting?

- This message is curried to the event creator, and they are prompted to suggest locations, or allow the potential attendee to suggest locations. They then enter: my house, downtown, and uptown.

  How about:
  (A) my house
  (B) downtown
  (C) uptown
  Reply with your letter of preference
  Ok, lets do (B)

- The event creator will then receive all of the preferences, and can confirm the location.

  Downtown it is!

- Now any discourse is allowed, up to the time of the event

  Looking forward to it
  me too!
  wd: when is it again?

- Who’s Down is there to answer any relevant data questions.

  dinner is planned for 7pm