



Text messaging application notes

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Confidential

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Background

This white paper describes text messaging technology and how the Agent511 solution can help companies and individuals market themselves and their products. It will also describe novel applications outside of mobile marketing.

What is text messaging?

Text messaging, also called Short Message Service (SMS), is a messaging system operated side-by-side to the cell phone voice network (call SS7). The SS7 network is not Internet based and is offered by almost every mobile carrier in the world.

A message is limited to 160 characters. Text messaging has been extended to include picture and video messaging (called multimedia messaging service—or MMS). It is also suitable for sending ring tones and wallpaper.

Who text messages?

Although text messaging is typically associated with the youth market (over 80% penetration in the 18-24 year old US market), nearly 42% of American adults regularly text message. With over 250 million cell phones in the US, the target audience for text messaging applications is large. Interestingly, text messaging has crossed the age gap by connecting parents with their children.

In 2004, when home broadband penetration passed 50%, the market for interactive services such as YouTube, Craig's List, and MySpace started to take off. Text messaging is now approaching this milestone and interactive text services are poised for significant growth.

“nearly 42% of American adults regularly text message...with over 250 million phones in use, that means a sizeable audience for text messaging-related services.”

E-mail, IM, and Text Messaging

E-mail costs nothing to send and is easy to hijack—as such, it has become a cyber thief's best friend. Even with the best SPAM tools, e-mail offers an inconsistent experience. Instant messaging (IM) is not plagued by SPAM and conversations do occur in real-time, but like e-mail it also uses the Internet to transport messages. Many phones are currently “locked” by the cell phone carrier—and as such, they do not support instant messaging (although this is changing). Text messaging, however, only requires a basic cell phone connection, thereby satiating the need for instant information anytime, anywhere. And further, it is not nearly as susceptible to SPAM as is e-mail.

Text messaging landscape

As the number of text messaging users in the US gains critical mass, we should expect to see more interactive text services. “GOOGL,” while poorly advertised has become an important search service. The current landscape is filled only with search services, text chats, and simple outdoor advertising campaigns. But money from the venture community is now starting to flow into services such as text conferencing and shopping sites. Now is the time for more interactive mobile concierge services that meet the public's need for instant information on-the-go. A few examples as follows:

1. Visiting NYC and looking for a restaurant? Don't have a travel guide and not in the hotel? Text FOOD NYC to 511-511 for a list of reviewed restaurants (unlike GOOGL which returns any restaurant).
2. You are at home when your power goes out. You want to report the outage and/or check the status. Text COMED to 511-511 for interactive information.
3. You are thinking about applying to college and see a billboard with a note Text DEPAUL to 511-511 for more information. You are returned the admission officer's contact information and the time and place of the next recruitment meeting.

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Text vs. Interactive voice recognition

Text messaging provides users richer interactive menus with the ability to retrieve multimedia content. In addition, text messaging works in noisy environments and avoids the sensitivity to voice accents which impedes the delivery of travel related services using interactive voice recognition (IVR). In general, many consumers frustrated by a missed IVR command, opt for the operator "O;" thereby mitigating its value.

Cost of text messages

The cost for text and multimedia messages to the consumer for the five largest US carriers is shown in Table 1.

Smart Phones

Although new sophisticated Internet devices such as Blackberries, iPhones, and mobile PDAs have hit the market, text messaging works on virtually any phone on any network. Further, even the most sophisticated devices are limited by network speed, screen size, and the number of websites which work on the mobile phone. This renders most Internet applications too cumbersome for regular use. Text messaging is easy and doesn't

require special software or hardware on the cell phone.

An emerging trend in the cell phone industry is that phones are being "unlocked" from the carrier network. This means that users will have choice both in the phone as well as applications running on top. This does not, however, mitigate the value of basic text commands in accessing focused information. Agent511 will leverage "unlocked" phones by building new applications that leverage other platform technologies such as location based services for geographically targeted promotional campaigns.

E-mail over SMS

Most US cell phone customers can receive and send e-mail, including pictures, over the text messaging network. The address for a cell phone subscriber is: <cell phone number>@carriername.com. This service is good for sending messages from Outlook to the cell phone. Unfortunately, most mobile carriers restrict the quantity and volume of messages using this technology making it unsuitable for sophisticated applications.

Carrier	Capability ¹	T, MM	200-250 Bundle ⁵	UNLIMITED Bundle
AT&T/Cingular	T, P, V	\$.15/.25	\$.05	\$20
Sprint	T, P	\$.20 ²	\$.017	\$10
T-Mobile ³	T, P	\$.00/.00	\$.00	\$0
US Cellular ⁴	T, P	\$.20/.20	\$.025	\$15
Verizon	T, P, V	\$.15/.15	\$.02	\$20

Table 1 Consumer text messaging costs

¹ T is text messaging, P is picture messaging, and V is picture messaging. P and V comprise multimedia messaging, MM.

² Sprint only offers MM messaging through its Vision plan which is optionally purchased for \$15.

³ T-Mobile offers unlimited messaging at no additional cost.

⁴ US Cellular offers free inbound (to the subscriber) messages.

⁵ 200-300 bundle is the cost per message purchased in bundles.

⁶ In order to send MM over the mobile internet, the approximate cost (as part of a bundled data package) is \$0.10 per picture.

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Mobile clients

Some services require that users install software, called a client, on their cell phones. Invariably, most users are either hesitant or incapable of downloading the software to their cell phones. For those who even try, the installation is not always completely successful.

Text messaging services

Text messages are traditionally communicated between two cell phones, however, a couple of recent advances have bridged the gap between the text messaging networking and the Internet.

The most important development is the implementation of the common short code which is the text messaging equivalent of a website address. The short code (US) is a 5 or 6 digit number that is unique to the application provider. In the US, short codes are administrated by the CTIA, the wireless industry's trade group and assigned by the US Common Short Code Administration (CSCA) and Neustar. The cost for a dedicated short code is \$1,000 per month.

Once a short code is secured, the application provider must be interconnected and provisioned with every applicable mobile carrier. Unlike the Internet where content is generally available to all broadband subscribers, text short codes must be carried by the cell phone customer's carrier. This process is facilitated by the SMS gateway.

Carriers, in an effort to ensure the integrity of the text messaging network, require that application providers provide the following functionality:

- STOP—the ability for any subscriber to instantly opt out of any service.
- HELP—the ability for any subscriber to get help from the application provider.
- UNDER 18— content must be suitable for those under 18 (unless otherwise provisioned).
- SERVICE TYPE— the application must conform to the agreement between the carrier and application provider.

An alternative to the short code, especially in international markets where short codes may not exist, is to use a modem device (such as an Internet air card) that converts cell phone text messages into Internet data. The device is plugged into a server and sends the Internet data to an application provider like Agent511. Agent511 successfully used this technique before acquiring its short code.

Premium services

Text messaging services can be directly charged to the cell phone user by informing him/her of the cost. As an example, a user may want a restaurant recommendation without purchasing the ZAGAT subscription service; as such, the recommendation may cost \$0.49 each time. The fee is added to his/her cell phone bill and the cell phone provider, SMS gateway, and application provider split the revenue.

Multimedia messaging

While text messaging technology is relatively mature in the US, multimedia messaging services (MMS) are starting to emerge. A multimedia message is typically a picture or video. While many carriers permit picture messaging between cell phones, only a few permit picture and video messages to be sent from an Internet application to the cell phone.

Another way to send picture and video messages is using WAP push and WAP 2.0 (wireless application protocol). In this case, the multimedia content is sent over an Internet connection to the cell phone. Many phones support these technologies, and especially Smart Phones, however, the service is inconsistent.

Due to the reliability of multimedia messaging, a marketing campaign should combine a reliable text message with the multimedia content to ensure the cell phone user receives a response. For this purpose, Agent511 typically sends both an SMS message and MMS sent from its own gateway.

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Text advertising

In addition to subscription and premium services, companies wishing to deliver mobile applications to its subscriber base can do so using interactive advertising. When information is delivered to a mobile user it is accompanied by either a text or pictorial advertisement. The user can be offered the option to REPLY for more information, in which case he/she would be offered a coupon. Interactive advertising can be used to monetize other services as well such as a Wi-Fi hotspot. In general, advertising campaigns like all other text service must be opt-in by the mobile user.

Why "Agent511"?

The name Agent511 was derived with the recognition that a branded short code is important. Agent511 has secured the short code, 511-511 which is being branded to denote "information." Many marketing campaigns use meaningless, generic short codes. The name "Agent" describes the automated platform that delivers information to potential customers on a company's behalf.

511-511 is provisioned with the US Short

"Agent511 has secured the unique short code, 511-511 which is being branded to denote 'information.'"

Code Administration and the major US mobile carriers. Each mobile carrier must individually approve each short code before it is provisioned. While text messages can be sent from one cell phone to any other regardless of the country and network, short code service works only in the respective country in which it is provisioned. For Agent511, this means that 511-511 only works in the US. However, the Agent511 technology can be connected to any international text messaging network.

What is Agent511?

Agent511 is a hosted service that is available to companies and individuals to create text messaging marketing campaigns. It is built upon a high-reliability software platform. The platform is comprised of databases, a processing engine, an interface to the SMS gateway, and interfaces to the web and/or 3rd party applications as shown in Figure 1.

The database consists of user profiles, content to be text messaged, and records. Text messages from the cell phone are received by the processing engine which then applies logic to determine the next action. The content can be easily uploaded to the web without any technical savvy by the marketer. 3rd party applications are those that require access to external content such as an airline reservations system or municipal towing database.

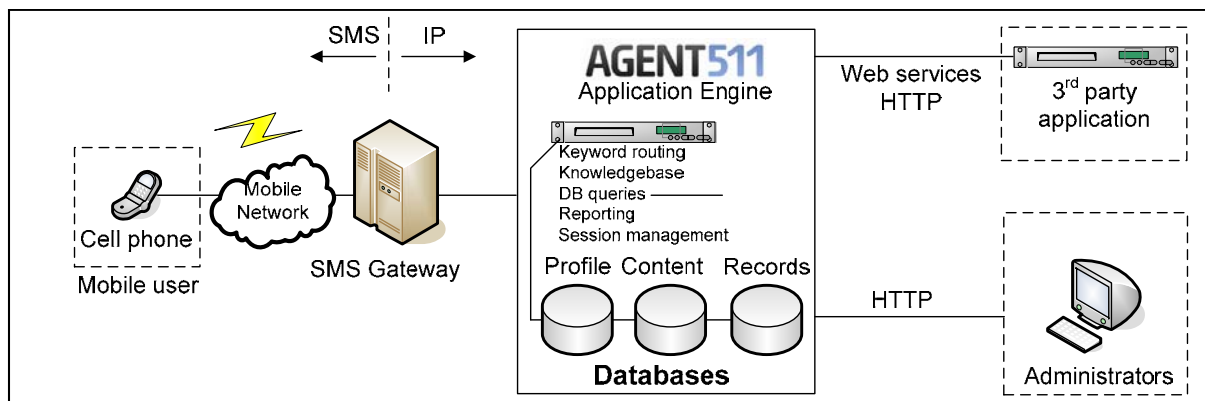


Figure 1 Agent511 platform architecture

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Reliability

The system is designed in a robust, application-friendly software language called Java. It has been designed to scale with both the growing number of users and diverse applications. It sits on a server (a fancy name for computer) in a data center. Our system is better than many competitors because it was built to scale, especially as new applications are developed.

Platform capabilities

Parsing

The Agent511 system starts an action with an external trigger. An example trigger is: a consumer sees a real estate sign with a unique ID and texts the ID to 511-511. The text message and cell phone number are then forwarded from the cell phone network to the Agent511 server. The Agent511 system extracts, or parses, the text message body (e.g the unique ID) to determine what the ID means. Agent511 matches the ID with a property listing in the database and returns the listing to the user's cell phone. Agent511 also forwards a copy of the message to the real estate agent.

The parser is capable of identifying more sophisticated messages—not only property IDs—but complex commands, such as "FOOD NYC IT" whereby FOOD means search for a restaurant, NYC is the location, and IT, Italian. A ZIP code could be used in place of NYC and the lone command FOOD could instead prompt the system to return a menu of options.

Rules processing

The core of the Agent511 system is set of rules that dictate what actions should be instigated as a result of the trigger. An example rule is as follows:

If KEYWORD = "FOOD" then

{Send text message to consumer asking which city and type of restaurant is being requested}

A rule may cause more than one action to occur to more than one cell phone. New applications can be developed using Agent511's flexible rule set.

Sessions

A session is defined as a set of actions that starts with a trigger and ends when no more rules are processed. For the real estate application, the session starts when the consumer texts the unique ID to 511-511 and ends when the listing is returned. The session can be extended to include additional exchanges between the user and the Agent511 system. For the FOOD guide, the system could provide interactive menus that extend the session as follows:

1. Consumer texts "FOOD" to 511-511
2. System texts "What City/ZIP"
3. Consumer texts "NYC"
4. System texts "What type of food?"
5. Consumer texts "IT"

Each time a text message exchange occurs, the system records the event and the cell phone number so it knows what to do next. Agent511 supports this interactive functionality.

Interfaces

Agent511 currently incorporates the following interfaces:

- SMS gateway—interface to the mobile phone carriers.
- Database—to a database server for storing profiles, content, and records.

Additional interfaces can be added to the system to facilitate integration with 3rd party applications. Some examples include:

- Property listing— an interface to the MLS or a database to automatically load property listings.
- CRM (customer relationship management)- any company that wishes to include text messaging as part of its customer care process.
- Sabre/Expedia— to facilitate travel services such as last minute hotel deals and airline changes.

Agent511's software can be integrated

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with 3rd party web applications using a web services interface that facilitates interaction between two computer servers.

Security

Unlike an Internet address which can be easily “stolen,” or spoofed by a cyber thief, a cell phone number on a text message cannot be easily spoofed. As such, a cell phone user can access a remote profile using the cell phone number as his/her ID. As long as the cell phone user hasn’t lost his/her phone, the connection is secure. Even if the phone is lost, the unauthorized user could not access sensitive information. Most marketing-related services do not require secure authorization to perform an action.

Web

Agent511 has a web-based graphical user interface (GUI) that allows companies and individuals to create new marketing campaigns. The company or individual registers with Agent511.com and can start a marketing campaign that sends content to the cell phone.

Campaign Types

User initiated- “MO”

Also called “mobile originated” (MO), these types of applications start when a subscriber texts Agent511 for content. This results from one of two possible scenarios—(1) the user reads a signpost or print publication that directs him/her to text a unique ID to 511-511 for information he/she may demand; or (2) the user is aware that by texting 511-511, he/she can access information about a variety of subjects (e.g. food, customer care, travel tips).

“Text messages are authenticated using the cell phone number, which unlike the Internet address, is difficult to spoof.”

This delineation is important because it underscores the marketing challenge. In the former case, in order for any service to be successful, it must be branded and visible. Either Agent511 or the advertisers must display the unique ID and code for consumers to recognize and text. In the latter case, Agent511 or partners must brand, whether via the Internet, radio, print, or word-of-mouth, the importance of texting 511-511 for information. Gaining brand recognition is neither a simple nor “linear” process—it may take time to penetrate. However, if a service is deemed critical to a particular demographic and vertical, say business travelers, word will spread that 511-511 is the destination for a particular service.

MO campaigns are also unique because by virtue of having initiated the message, the cell phone user affirms he/she wants a response. This does not authorize the application provider to re-use or re-sell his/her cell phone number for other applications. It is this protection from SPAM that makes text messaging valuable.

Application provider initiated- “MT”

Also called mobile terminated (MT), the cell phone user opts in to receive text messages either on the web, in-person, or as part of a 3rd party relationship (e.g. a university requires the cell phone number for its records). The application provider also needs to know the cell phone carrier for each number to precisely route the message; otherwise, there is a \$0.005 charge per message to the application provider for the look-up. A couple of applications that would require look-ups include:

1. An emergency notification service that has only the user’s cell phone number.
2. A mobile invite where the host knows only the cell phone numbers (and not the carriers) for his/her guests.

Caution must be further exercised in creating new services where the recipient of a text message has not opted in for the service. In the two examples, it is assumed that the recipients would have no problem receiving the messages.

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Reference applications

Advertising

- Real estate
- Automotive
- Billboards

Retail

- Appointment/reminders
- Promotions [including location]
- Surveys

Broadcast media

- Direct marketing
- Pay-per-inquiry
- Contests
- Comments/requests

Travel

- Restaurant/To Do guides
- Last minute deals
- Reservation changes

Concierge

- Invites
- Greeting cards

Contact Center

- Self-service
- Text chat

Conclusions

Enterprise text messaging applications and promotions are starting to gain traction. While there are a number of restrictions on the type of content intended to protect privacy and minimize SPAM, these restrictions maintain the integrity of the communications channel. To date, most services have not employed interactivity, primarily due to complexity—as such, there is a enormous opportunity to create new, innovative services.