CS486C – Senior Capstone Design in Computer Science

Project Description

Project Title: Agent Alert System	
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Project Overview:

The concept of insurance is one of the hidden pillars of vibrant modern economies, allowing individuals and companies to effectively manage risk of catastrophic loss in order to move ahead confidently in their lives and businesses. Historically, purchasing and maintaining insurance coverage was a relatively sparse and episodic process: one visits a local agent who has strong knowledge of the local area and risk levels to configure and purchase an insurance policy, and then simply makes the premium payments over time. Many policyholders may go years without any significant interaction with their agent.

While modern technologies have enabled a more digital experience to enhance the insurance acquisition process, the relationships built between agents and policyholders still remain the very backbone of State Farm Insurance's emphasis on a relationship oriented business. A prime advantage of local agents is that they have detailed knowledge of local events, including zoning or code changes, evolving price of (re)construction, evolving weather situations, and other local events. Many of these factors are very localized or limited, i.e., they might only affect only a small subset of an agent's clients. State Farm is committed to helping more people in more ways, and enabling agents to communicate with their local clients in a more active, focused, and individually customized manner enables a more personalized level of service. Let's start with a dramatic imaginary use case to envision how this might be useful:

On a dark stormy night in the heart of monsoon season in the middle of rural Arizona, some simple technology State Farm had developed was utilized in a unique way. Agent Bob Miller is just an ordinary insurance agent doing his every job in a small town…or so he thought.

"I really don't feel I did anything spectacular other than keep my customer's well-being top of mind, and just wanted to provide a level of service and protection for good folks here in Superior, AZ. State Farm had released some functionality just a couple months ago that allowed me to visually see all of my clients within a given location on a map. I only played around with it for just a few minutes, not really thinking about all the possible future uses."

Well, as it turns out, Bob Miller taking "just those few minutes" to become familiar with this new technology saved quite a few lives on the outskirts of his small town. As storms rolled across the area that weekend, the small town of Superior was not directly in the storm's path. However, lightening can be unpredictable and very dangerous in areas

scorched by the summer heat and very little rain. At approximately 8:55pm a bolt of lightning hit a nearby wash about 1 mile North of Superior. Agent Miller just happened to see the bolt hit, and within a couple of minutes the ridge lighted up in flames. He knew some policyholders lived in that area, instantly thought of the new technology, and raced home to logon to his computer.

The new technology in question is a tool that allows agents to send out personalized communications to individual clients, e.g., birthday cards, text reminders to remove dead debris from their property, clean out gutters, or e-mails to inform them of changes with their policies. Using this tool's map view, Agent Miller was able to select the entire north section of Superior, get a list of his customers in the possible path of the fire, and send them a warning text message. Firefighters later estimated that Bob's actions probably saved about a dozen of his customer lives and probably another dozen good folks by those State Farm customers forwarding his text message or calling their close neighbors within seconds.

The Problem: Agents need a simple, easy to use notification system for their customers

While the story above is fictional it serves to illustrate a real need for our agency force: The ability to connect with a specific group of customers at a specific time for a specific reason. Smaller rural communities are often particularly vulnerable to fast moving disasters like flooding or fire, but lack the resources and technology to have an advanced notification system in place.

For this project, we would like to create a simple, easy to use web-based and mobile notification system that uses digital mapping technology to identify individuals or groups of people within an agent's set of clients to send notifications. As referenced in our fictional story above, having the ability to specify an area geographically, using an interactive map view, is a key aspect of the project. Of course, there would be many less dramatic use cases as well, and geographic area is only one of many constraints that could be applied to identify subsets of an agent's clients for a wide range of possible actions/notifications. These could include birthday greetings, advance warnings of storms or other perils, reminders to remove debris or advising of policy changes. With a well-elaborated search interface to select (and perhaps save off) targeted subsets of clients matching any number of criteria, the potential use cases are extremely broad, allowing truly focused and personalized contact with clients.

In sum, the envisioned product is a novel customer communications module with a thoughtful and easy to use graphical interface that integrates with our existing customer database infrastructure to give agents an exceptionally flexible tool to manage and individually customize their client interactions. Detailed functions will be explored by the design team (we look forward to your creativity and innovation!), but some of the key features would include:

- Integration with our existing customer management database systems.
- Individual accounts for agents; each agent has a personal profile and customer base that is loaded based on their local clients.
- A dashboard view where agents can easily review their clients, access the search/selection tools, and manage saved searches.
- Ability to search and select subsets of clients based on:
    - Geographic constraints. Supports interactive map based interface that allows drawing outline around area of interest;
    - Other constraints related to individual data elements (e.g. street address, policy type, etc.)
- Ability to name search results into a "named subset". Saved searches can be selected to re-execute them at any time. Also allows edit/delete/export of named subsets.
- Ability to select a variety of actions to apply to a searched subset, e.g., email, text, etc.
- Ability for customer to opt out of notifications, or opt out of some notifications, e.g., all but "emergency"
- Ability to prioritize messages that are sent, e.g., emergency, account-related, social.
- Ability to create "automations" for communications to send certain communications based on defined events or a schedule. For instance, "all clients in this named search subset get message X every year on September 15". Or "all clients in named subset X get message Y every month". Includes ability to edit/delete/manage automations.

These are just a few ideas to outline the key features of the concept. The team will be expected to analyze existing notification concepts from both online and physical world contexts, combining the best elements into an effective client communications tool. In the best case, the team will take this to the next level to not only address our internal

needs, but to create a general purpose solution that could be adapted by *any* company to include this notification infrastructure into their operations infrastructure. The ultimate goal, of course, is helping to enable safer communities with happy informed customers' who feel valued and appreciated by their insurance company.

Knowledge, skills, and expertise required for this project:

- Knowledge of modern Web2.0 programming techniques, web application frameworks, languages and protocols required to create a secure, easy-to-use web-based solution.
- Knowledge of or interest in digital mapping technology, use of Google maps APIs, and other GIS frameworks.
- Knowledge of GUI design, usability testing, and refinement. End-user usability by our non-technical agent workforce will be key to success.

Equipment Requirements:

- There should be no equipment or software required other than a development platform and software/tools freely available online.

Software and other Deliverables:

- The Agent Alert System web application and related software infrastructure as described above, deployed and tested successfully within our work environment.
- Must include a complete and clear User Manual for configuring and operating the software.
- A strong as-built report detailing the design and implementation of the product in a complete, clear and professional manner. This document should provide a strong basis for future development of the product
- Complete professionally-documented codebase, delivered both as a repository in GitHub, BitBucket, or some other version control repository; and as a physical archive on a USB drive