A Social Media Customer Service

[Extended Abstract]

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ABSTRACT
This extended abstract describes a poster. Its focus is on describing a new approach to customer interaction management by integrating social networking channels into existing business processes. Until now, contact center agents still read these messages and forward them to the persons in charge of customer service and support in the company. But with the introduction of Web 2.0 clients are more likely to communicate with the companies via Facebook and Twitter instead of filling data in contact forms or sending e-mail requests. In order to maintain an active communication with clients via social media, the consumer requests have to be categorized and then automatically assigned to the corresponding business processes (e.g., technical service, shipping, marketing, accounting). This allows the company to follow general trends in customer opinions on the Internet, but also record two-sided communication for customer relationship management.

Categories and Subject Descriptors
H.4 [Information Systems Applications]: Miscellaneous;
H.3 [Information Storage and Retrieval]: Content Analysis and Indexing—Dictionaries, Linguistic Processing

General Terms
Design, Human Factors, Management, Languages

Keywords
social media business integration, contact center application support, monitoring system design for socialized customer service and support

1. INTRODUCTION
Since customers first share their problems with a social networking community before directly addressing a company, social networking sites such as Facebook, Twitter, MySpace or Foursquare will be the interface between customer and company. Almost all large enterprises, especially in the mobile phone sector, already have regularly updated Facebook pages for customer service and support. Until now, contact center agents still read these wall postings and forward them to the persons in charge of customer services in the company. Even though hundreds of social media monitoring tools exist, there is still no systematic, technically integrated solution that provides full support starting with social media monitoring through to direct company response on the Facebook wall.

Our proposed solution towards a web monitoring and customer interaction management system is quite simple. We focus on a modular architecture fully configurable for all components integrated in its work-flow.

Although our first prototype is designed for processing customer messages posted on social networking sites about mobile phone specific issues, it can also deal with other topics and use different text types such as e-mails, blogs, RSS feeds etc. Unlike the commercial monitoring systems, we concentrate on a linguistic, rule-based approach for message classification and product name recognition. One of its core innovations is its paraphrasing module for intra- and inter-lingual product name variations because of different national and international spelling rules or habits. By mapping product name variations to an international canonical form, our system allows for answering questions like Which statements are made about this mobile phone in which languages/in which social networks/in which countries/...? Moreover, our system can be adapted according to user's language needs, i.e. the application can be easily extended on further natural languages. Until now, our prototype can deal with three very different languages: German, Greek and Korean.

2. THE OVERALL WORK-FLOW
In Figure 1, we illustrate the work-flow of our system: For instance, Facebook users post on the wall of a telecommunication company messages concerning tariffs, technical malfunction or bugs of its products, positive and negative feedback. The collector downloads every n seconds (e.g. 10 sec) data from the monitored social networking site (1). In order to retrieve data from Facebook, we use its graph API. In step 2, customer messages will be stored in a database. After simplifying their structure, the requests have to be categorized by the classification module (3). During the

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classification process, we assign both content and sentiment tags as features to the user posts before restoring them in a database. According to the tags the messages are assigned to the corresponding business process (4). This $n:1$ relationship is modeled in the contact center interface before passing these messages as e-mail requests to the customer interaction management tool used in contact centers (5). Finally, the preclassified e-mails are automatically forwarded to the persons in charge of customer service and support. Those agents reply to the customer requests (6) and their responses will be delivered via e-mail to the contact center before being transformed to social network messages in step 7 and send back to the Facebook wall in step 8. Afterwards, the Facebook user can read his answer.

3. SYSTEM DESIGN

SCM (Socialcom Customer Interaction Management) is a web based monitoring and customer interaction management system that combines all technologies, data, software agents and human agents involved in the monitoring and customer interaction process, such as the technologies used for downloading, processing and storing data, the software agents used for classification and similar tasks and the human agents such as grammar experts and customer contact executives. Figure 1 also gives an overview of SCM’s design: Customers post messages in social networks and other web sites. Messages typically concern products and/or services sold or provided by a company. Most messages state that a problem of a certain type occurred with a certain product or service. Some messages also contain expressions of praise or thank. SCM downloads all messages and stores them in a normalized format. It applies its grammar to the messages in order to recognize all product names in it and in order to assign a set of content tags (such as hotline, or delivery or software available?) and a sentiment tag (at the moment either positive or negative). (We will say immediately what we understand by a grammar.) The message, their tags and the list of product names are then forwarded to those customer contact executives that are experts for the recognized type of problem. If a message has been assigned a wrong tag or no tag at all, customer contact executives can assign a tag manually. They have to mark those parts of the message that justify its being assigned the tag. Thus, customer contact executives unknowingly add new constraints to the grammar.

Actually, SCM does not only contain one grammar. It contains as many grammars as there are classifier objects. Each classifier has a (content or sentiment) tag, a set of positive and a set of negative constraints. Put simply, the constraints are regular expressions. Each instance of SCM comes with a predefined set of such special terms. Grammar experts cannot add special terms or change their meaning. They just use them: If, e.g., a grammar line contains foo __mobile_phone__ bar, it will match foo, followed by a space character, followed by any variant of any mobile phone name known to the used instance of SCM, followed by a space, followed by bar.

4. CONCLUSION

Here we presented SCM, a system for web monitoring and customer interaction. This research aimed to provide an initial understanding how effective customer service can be handled via social media.

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