Government Information Quarterly 31 (2014) 30–41

Contents lists available at ScienceDirect

Government Information Quarterly

journal homepage: www.elsevier.com/locate/govinf

(Hyper) local news aggregation: Designing for social affordances

Andrea Kavanaugh [a,b], Ankit Ahuja [a,b], Samah Gad [b], Sloane Neidig [b], Manuel A. Pérez-Quiñones [a,b], Naren Ramakrishnan [b], John Tedesco [c]

[a] Center for Human–Computer Interaction, Virginia Tech, Blacksburg, VA 24060, USA
[b] Department of Computer Science, Virginia Tech, Blacksburg, VA 24060, USA
[c] Department of Communication Studies, Virginia Tech, Blacksburg, VA 24060, USA

ARTICLE INFO

Available online 14 January 2014

Keywords:
Civic engagement
News aggregators
Social affordances

ABSTRACT

Being able to debate, reflect, form opinions, consider counter evidence and make informed decisions is a foundation of civic life in democratic societies. Government benefits from broad participation in collective decision making in terms of sustainable outcomes (e.g., greater consensus) and quality of life in our cities and communities. These collective decision making capabilities are undermined by a strange combination of diminishing (or extinct) local print media, especially local newspapers, and by its obverse, a plethora of information and communication opportunities that are scattered across numerous disparate and decentralized websites and resources (e.g., webpages, RSS feeds, social network software, email, listservs, podcasts, tweets). To address this problem, a number of news aggregators have emerged that capture local content from dispersed sites. To facilitate civic engagement, these sites also need to support social interaction and information exchange. In this paper we review the state of the art in local news aggregation in the U.S. and their support for social affordances (social trust, networks and interaction) that are essential to civic participation. We present a system we call the Virtual Town Square (VTS) that we have developed for local news aggregation that supports social affordances. We summarize briefly the design strategies and techniques (e.g., algorithms) we used to cluster topics and user generated content derived from existing local sources. This system should lead to a replicable model for other U.S. communities.

1. Introduction

Collective decision-making is central to the quality of life in U.S. communities, towns, and city neighborhoods whether it is routine and long term planning or timely and critical follow up to crises. This painstaking and often divisive civic process is especially difficult for the many towns, counties and rural areas that have little or no coverage in print media, such as a local newspaper. For these small cities, city neighborhoods and towns, most relevant local information is only available by word of mouth or through electronic communication disseminated by information gatekeepers (i.e., various stakeholder and interest groups). How can local residents and organizations engage in effective collective problem solving when there is very limited information flow and limited opportunities for interaction with a broader spectrum of fellow citizens and organizations?

Increasingly, information technologies are playing a role in helping communities share information (and misinformation) and in fostering interaction and communication among local organizations and residents. The availability of web-based information and of opportunities for citizens to share ideas and opinions have generally led to increased civic awareness and for some citizens increased involvement (Chadwick, 2006; Coleman & Blumler, 2009; Kavanaugh, Kim, Pérez-Quiñones, & Schmitz, 2008; Shane, 2004).

Data from Pew's biennial news consumption survey indicated that Americans are spending more time following news —and online sources are increasing in prevalence as primary sources. The report indicates that slightly more than a third (34%) of the public went online for news "yesterday," putting online news ahead of the daily newspaper and at about the same level as radio. When the "online" definition is extended to include cell phones, email, and social networks, the percentage of Americans who indicate they received news yesterday from the internet or a mobile source increased to 44% (Kohut, Doherty, Dimock, & S. K., 2010).

Furthermore, Pew's latest data regarding how people learn about their community demonstrates that the internet plays an increasingly important role. According to Pew, for "79% of Americans who are online, the internet is the first or second most relied-upon source for 15 of the 16 local topics examined. For adults under 40, the web is first for 11 of the top 16 topics—and a close second on four others" (Rosensteil, Mitchell, Purcell, & Rainee, 2011) (p. 2).

In fact, there has been such a plethora of online information sources, even at the local level, with the advent of user generated content and social software systems, that it has become increasingly difficult for interested citizens to identify and track all the appropriate information

E-mail addresses: kavan@vt.edu (A. Kavanaugh), ankit88@vt.edu (A. Ahuja), samah@vt.edu (S. Gad), sloane10@vt.edu (S. Neidig), perez@vt.edu (M.A. Pérez-Quiñones), naren@vt.edu (N. Ramakrishnan), tedesco@vt.edu (J. Tedesco).

0740-624X/$ – see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.giq.2013.04.004

of interest and citizen comments or other responses to a given problem or set of issues. In a small town or large city neighborhood, for example, on the same topic, information has become widely scattered across multiple websites (e.g., government, schools, community groups, news organizations) as well as web-based user generated content (e.g., posts on public Facebook pages, individual blogs, Twitter messages or image collections).

To try to address this problem of the wide dispersion of sources for local information and citizen discussion, various computer-mediated systems and data mining techniques have begun to collect and update content automatically from diverse sources and to build in social affordances in 'news aggregation' websites.

Aggregators are playing an increasingly important role in news delivery for online audiences. Instead of going online to a single local news source, 86% of 18 to 29-year-olds "often" or "sometimes" rely on search engines and aggregators (e.g., Google News, Yahoo!) to search for news (Peer, Malthouse, Nesbitt, & Calder, 2007). If this trend in news searching continues to characterize news consumption, communities have an opportunity to create a virtual space based on aggregator techniques where citizens not only gather for more comprehensive coverage of local news and information but also for social interaction (e.g., content sharing and discussion) about that news.

This paper presents an analysis of existing types of local and hyperlocal news aggregation, and examines the different social affordances that they support in order to help foster greater interaction and civic engagement.

Local news is the set of announcements, events and other information that pertains to one's city or town and environs; "hyperlocal news" relates to the immediate area around a resident, such as "my city neighborhood" or "these five square blocks" or "my area of town". Some websites have both local and hyperlocal information, especially when residents contribute content. For simplicity's sake, we use the term 'local' in the paper to mean both local and hyperlocal contents. We also use parentheses – (hyper) local – for shorthand to designate local and/or hyperlocal.

Affordances are actionable properties between an agent (i.e., a person) and the world (Gibson, 1977). For example, a door handle affords the act of opening a door. In a computer system, various features, such as a keyboard, mouse, and screen display afford pointing, looking and selecting. It is not sufficient to build affordances into a design; it is necessary that a user actually *perceives* the affordances that are offered, e.g., that clicking with a mouse will result in a useful or meaningful outcome (Norman, 1990). In human–computer interaction, affordances have been classified into subcategories including cognitive, physical, sensory and functional (Hartson, 2003). We seek to extend Hartson's classification into the social realm.

2. Design for social affordances

Using a mouse for clicking on a computer screen is an individual affordance. *Social* affordance, by contrast, is the quality of artifacts in any physical or virtual space that invite or facilitate interaction among users (Howarth, Pyla, Yost, & Haciahmetoglu, 2007). Social affordances in a website could include tagging, ranking and sharing. Sometimes the user has specific individuals in mind (friends on Facebook) when they tag a photo, for example. Sometimes, the social interaction is with unknown people, such as correcting an entry in Wikipedia. Evaluations of social affordances in websites have focused on some of the following features (Ahuja, 2009b; Ali-Hasan & Adamic, 2007; Hanrahan, Ahuja, Perez-Quinones, & Kavanaugh, 2011; Wellman et al., 2003):

- *Tagging*: web-based tagging systems let users annotate a particular resource, such as a web page, a blog post, an image, or any object with a freely chosen set of keywords. Tags usually facilitate finding and sharing content.
- *Activity Streams*: flowing commentaries on users' actions on different sections of a site; this feature is helpful in discovering content.
- *User Profiles*: self-disclosed information about the identity of individual users, which can aid in discovery of common interests and relationships.
- *Comments*: the primary conversational medium on social network sites that often indicates social relationships; also present on some public sites, such as news media (e.g., New York Times) and Facebook pages of organizations (e.g., local government, community groups).
- *Ratings and Votes*: reputation systems for users that can facilitate interaction and trust and limit aversive behavior.

These social affordances allow users to be aware of other users' opinions, thoughts and feedback and, in so doing, help to engage users and build social connections (Ahuja, 2009b).

3. Local news sites and aggregators

Aggregators compile information using Real Simple Syndication (RSS) feeds from diverse internet sources, based on the purpose of the aggregator. For example, a blog aggregator site lists on one site all the blogs that bloggers have requested (and site owners have approved) to be listed there. News aggregators can collect news articles based on specified topics from various websites or web applications into one site. Aggregators can also collect user-generated information, ranging from comments on news stories to user-written articles (e.g., blogs and other social media, such as messages, called 'tweets' from Twitter). Aggregators can pull in any content that is made available as an RSS feed. This compilation of sources gives users easy access to continuously updated local information from diverse sources.

Aggregation is an important feature of websites that seek to collect a lot of continuously updated content on an automatic basis. The automatic updating of content keeps the costs of maintaining and sustaining an aggregator site very low because the actual content is being generated elsewhere by others.

We reviewed and compared different types of local (and hyperlocal) news and information websites and aggregators in the U.S., with a view to determining the extent to which some of the most common and popular sites are in fact set up as aggregators, and are acquiring local content, and their support for social affordances. We found that some websites are providing 'local or hyperlocal news' but not through aggregation. Examples of this type of site include national platforms, such as, Patch, NextDoor, and iNeighbors, as well as unique local sites, such as, iBrattleboro, BEV, and RVANews. In Section 3.2 we discuss systems that have (hyper) local news and create that content through aggregation. Examples of this second type include EveryBlock, Topix, Fwix and Outside.in. We discuss the extent to which social affordances are built into the design of both these types of systems.

3.1. (Hyper) local news sites but not aggregators

A "(hyper) local news" but "not aggregator" site is a website that displays local news, but does not aggregate that content from existing local sources.

The AOL website "Patch", based in New York, was founded in 2007 by Tim Armstrong, Chairman and CEO of AOL (Patch.com, 2011). AOL purchased Patch for $7 million in 2009 (Kopytoff, 2011) and has been paying local individuals to serve as journalists. In cu, Patch was delivering local news to over 900 cities in the U.S. (Coddington, 2013; Patch.com, 2011), each of which had its own editor to create and maintain content. Patch allows a variety of user interactions. Users can connect to social media by "liking" or "recommending" news articles via Facebook or "tweeting" them via Twitter. They are also encouraged to post their own blogs, articles, pictures, and videos. User-submitted articles must be reviewed and approved by local Patch editors before they appear on Patch. However, users can directly post their thoughts