Intentional Modeling of Social Media Design Knowledge for Government-Citizen Communication*

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Abstract. Social media can be employed as powerful tools for enabling broad participation in public policy making. However, variations in the design of a social media technology system can lead to different levels or kinds of engagement, including low participation or polarized interchanges. An effective means toward learning of and analyzing the complex motivations, expectations, and actions among various actors in political communication can help designers create satisfactory social media systems.

This paper uses the *i** modeling framework to analyze the impact that alternative configurations of a social media technology can have on the goals and relationships of the actors involved. In doing so, we demonstrate and provide preliminary validation for a research-informed model creation and analysis approach to assessing competing design alternatives in an online climate change debate community.

1 Introduction

Town hall meetings, radio call-in shows and citizen surveys have been traditionally used by politicians to learn of the issues facing their constituents. The goal of this process is often to aid government policy conceptualization [3,22,29] or policy feedback [9]. Increasingly, politicians are using social media as channels to support this citizen opinion elicitation. For example, YouTube has been employed by a number of politicians who answer most of the popular questions posed to them by their online audiences. In this regard, it is the collective opinion of social media users that help to set a political agenda [5].

Participatory policy making [33] can be supported by social media when a community collectively evaluates and assesses important issues. In many social media discussion environments, users assign a positive or negative valuation (a "vote") on each other's posted comments. This arrangement results in a 'collaborative filter'; the highest-valued comments are shown prominently, while

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content of low value is hidden from view[1]. Ideally the highest-valued comments would represent the rationally-determined important issues facing the community. However, 'online deliberation' scholars and policy makers are finding that variations in the arrangement and organization of the user-generated content result in changes to user contribution and 'democratic' debate [16,17]. These variations thus help to shape the system's underlying social values [22].

Design choices tacitly embedded in a technology help to constrain and facilitate user behaviour, participant goal achievement and interdependent relationships [34]. However, online deliberation-focused scholarly findings that could help inform system design activities are not being adequately synthesized, which limits the development of a reciprocal academic and practitioner community that builds on one another's work [8]. In pursuit of such reciprocity, we propose that by carefully referencing existing academic literature at an early stage in the design process, a designer may incorporate past evidence in an analysis of the impact of various system configurations on stakeholder goals and potentially avoid replicating some of the failures of past work.

Models support this kind of reasoning activities by abstracting domain concepts into a representation structured to aid in answering analysis questions. For example, as we have been discussing, a designer can model how different configurations may contribute to the success or failure of a system. This can be demonstrated in a model of the alternatives available to the designer of a collaborative filter situated in a government-citizen communication system. Such a system can benefit from precise, model-supported analysis of its complex socio-technical domain.

In this chapter, we describe a research-informed early requirements modeling approach meant to address the above issues. We first provide a concrete example of a context in which such an approach would be helpful, followed by a demonstration of the method. We conclude with a brief discussion of our ongoing work in further systematizing a framework for social media design knowledge codification and recontextualization.

2 Designs, Goals and Politics

A mark of a well-designed system is that it supports the satisfaction of stakeholder goals better than feasible alternative designs. By conceiving of the system in terms of goals to be achieved, rather than solutions to implement, designers can effectively consider the granular impacts of various design choices [6]. The utility of this approach increases alongside the complexity of the setting; a rigorous methodology can aid in understanding the multifaceted relationships of interdependent stakeholders with competing goals.

As a simple example, the designer of a collaborative political comment filter can benefit from analyzing the goals of the client politician supporting the project as well as those of the citizen users whose contributions are essential to

[1] See the comment sections of www.youtube.com, www.reddit.com, www.digg.com for popular examples.

the system. A basic functional requirement could be that the system organize the user-created content in such a way that the most important comments are the highest-ranked. However, there are various ways of interpreting what is meant by the "most important comments", and correspondingly, different possible configurations of the collaborative filter that would help to fulfill the requirement.

This scenario is a concise example used to demonstrate our approach to modeling design alternatives in a socio-technical setting. In practice, it is likely that a designer would consider many diverse methods for eliciting and rating user-generated content. Collaborative filtering, our focal design concept, is but one of these potential methods.

2.1 Goals and Design Alternatives

In our collaborative filter example, the criteria that define an 'important' comment depend on the goals of the stakeholders, such as the client political institution. Based on the literature, politicians often desire to advertise themselves [3] and advantageously frame a publicly discussed issue [21] in order to manage citizen expectations on what is plausible [15]. Therefore, depending on the issue, the politician may desire that shared opinions be framed either as a consensus or as an open debate. Consequently, an 'important comment' would be defined either as 'popular' or 'controversial'.

Based on a recognition of the above goals, a system designer can choose to configure the collaborative filter either to highlight popular and agreeing opinions or conversely, diverse and conflicting views. The former design alternative, hereafter referred to as the "complementary filter" would compare user comments, voting activity, and profile information with those of other users in order to display familiar content and ideas to the user. This would likely encourage users to consolidate and clarify existing positions [4]. The latter alternative, the "contestatory filter" would compare the same items, but display unfamiliar and potentially challenging content, likely inciting debate [11]. These alternative designs of a collaborative filter would have variable impacts on the goals of multiple stakeholders, as described below in Section 3.3.

Concurrently, important comments must fuel the sustained activity of the community of citizen users. Otherwise, there would not be enough activity on which the collaborative filter bases its processing; the filter thus would not be able to present a comprehensive overview of citizen opinion to the politician stakeholder. As such, a designer's definition of an important comment must also consider the concept's relationship to citizen goals.

The literature suggests a wide range of motivating factors that encourage or discourage a citizen's opinion expression in a web-based political setting. Primarily, a vocal citizen is interested in and feels connected to the topic issue [22,28,31]. These motivations may be encouraged by the ability to personalize an information system and filter information based on interest [23,29]. The degree to which the citizen has faith in and a connection with government [22,23], a sense of citizen identity [28], and the sense that participation generates meaningful outcomes [23,36,25] are all shown to encourage citizen involvement.

Based on a synthesis of scholarly literature related to the domain and actual stakeholder interviews, the designer may conceive of how alternative design choices based on one stakeholder's goals affect those of other, interdependent stakeholders. In our particular case of the collaborative filter, the designer would consider how the employment of either a complementary or contestatory filtering mechanism might affect the participation of citizens. High-level system requirements could then be derived from this analysis.

However, as interrelationships among the goals, actors and design features under consideration become more concretely understood, the designer's ability to simultaneously consider all potential factors may be reduced. Complex contexts require analytic approaches designed to deal with this complexity. As mentioned above, prescriptive modeling of software processes, domains and organizational dependencies have been used effectively in software engineering and information systems design disciplines as a means to help deal with such problems.

2.2 Modeling the 'Why' Questions

Goal- and agent-oriented requirements engineering modeling techniques have been recognized as effective means of eliciting organizational-level requirements based on stakeholder needs [6,7]. Models of this sort generally depict a tree-like hierarchy of goals. High-level 'root' goals are abstract, generalized concepts, while lower-tier, 'leaf' elements are more specialized and concrete. These goals may be conceptualized as functional software requirements, software qualities, or stakeholder objectives[2].

By employing such a technique, the designer may decide on specific design feature configurations based on their efficacy in fulfilling the stakeholder goals in question. Proponents of this approach argue that it facilitates analysis centered on the design *problem*, rather than on a particular *solution* [37]. Alternative means towards the accomplishment of the same goal can be simultaneously considered as competing solutions with different benefits and trade-offs associated with each.

This approach enables knowledge from the literature to be concisely expressed in easily understandable 'means-ends' relationships. This focus on relational codification is quite similar to other design knowledge reuse approaches from the architecture and engineering fields. For example, architectural knowledge has been stored as a series of 'precedents', each made up of a relationships among design issues and the concept and form of the designed solution [30]. Other approaches include a method from aerospace engineering that divides design knowledge into issues, the process of design, the product, and the function of the artifact [2]. An approach from the requirements engineering discipline structures knowledge of agile software development 'method fragments', which are related to 'objectives' those fragments may satisfy and 'requisites' which are required for the fragment to function properly [12].

These approaches all assign a degree of importance to the goals, objectives, or issues that a specific design feature can address, though less explicitly so

[2] Among other definitions.

than the means-ends relationships codified in goal models[3]. However, they lack a formal means of representing relationships between interdependent actors, which are arguably highly important factors when designing *social* media systems. As such, a more useful representational scheme would include a means of modeling such relations.

A prominent goal- and agent-oriented modeling framework is *i** [38], which focuses on systems of intentional strategic actors. Due to its focus on relationships, we believe this approach is well suited for the modeling of socially-situated information systems design knowledge. Indeed, a modified version of the framework has previously been used in the modeling of an e-government service [10]. We have extensive experience using this modeling approach, and now turn to a brief introduction of its major concepts.

2.3 The *i** Modeling Approach

The central modeling construct in *i** is the *actor*, an entity whose autonomous behaviour is based on reasons and motivations. *i** models conceive of the social world as a network of interdependent relationships; an actor may *depend* on another to fulfill a *goal*, furnish a *resource*, or carry out a *task*. If an actor depends on another and that dependency is not met, the actors own internal goals may fail.

In this manner, *i** can depict the relationship between individual actor intentionality and the broader social setting. Furthermore, an intentional ontology allows for the analysis of 'why' an actor may prefer one possible design alternative over another.

This contrasts with KAOS, another prominent goal modeling framework, where actor interdependency is not explicitly related to the represented goals [35]; the model is somewhat decontextualized. This is not the case with *i**, and thus this technique provides suitable support for a designer's contextually situated, goal-based analysis of design choices. Indeed, an empirical assessment of *i** has found that the modeling framework provides valuable expressive power for representing and assessing the social relations of interdependent stakeholders as well as how certain activities can impact their goals [32].

There are several important conceptual elements which make up the *i** meta model. The above-described *actor* may desire to fulfill various *soft goals* – elements that depict quality characteristics that cannot be objectively satisfied or denied, but require a more qualitative assessment of their acceptability. *Goals* (or *hard goals*), are more concrete, clearly satisfiable objectives. *Tasks* are means to achieving a goal, or contributing to a Soft Goal. *Resources* are often required for tasks to be completed.

Importantly, tasks may be used to model competing design feature alternatives. For example, two tasks could both be modeled as means towards an actor's goal. However, the tasks might also have varying *contribution links* to other goals or soft goals. In this regard, *i** can clearly indicate how different system

[3] With the exception of [12], which is goal-oriented.

configurations might variably affect stakeholder goals. An *i**-specific evaluation methodology [20] provides a clear process for analyzing these contributions and supporting the selection of satisficing design feature configurations. We employ *i** in the following sections as a framework for codifying and analyzing the effects of design alternatives in a government-citizen communication context.

3 A Demonstration of Research-Informed Domain Model Creation

The following modeling demonstration exemplifies the potential of goal- and agent-oriented modeling methodologies in aiding early stage requirements analysis of social media for online deliberation. We undertook a small exploratory case study, and proposed a sample technology – the above-described collaborative filter – to be introduced in the design of an climate change online debate community.[4]

Many *i** and related modeling approaches employ knowledge extracted from the literature as a source for model construction [6,12,27]. We build on this work by explicitly focusing on a clear method for research codification, abstraction and synthesis as a means toward model construction. This approach should be seen as complementary to traditional requirements gathering activities in an application environment [13]. As such, recalling our earlier discussion of the context-dependent characterization of an "important comment", it is important that requirements gathering efforts unearth such constraints and consider how they will interact with less contextually situated relationships uncovered from the literature. Therefore, when they are employed in design projects, research-informed design knowledge models should be contextually tailored and synthesized with other requirements analysis efforts. Below, we demonstrate an approach to doing so.

3.1 Model Construction

In order to extract relevant research knowledge pertaining to our focal domain, a small review of social science, IS, CSCW and HCI literature related to online deliberation and e-democracy practices and system designs was undertaken. Citations relevant to the motivations of stakeholders involved in such practices were excerpted from the sources[5]. Of special concern were motivations having to do with information and opinion sharing, as our example's proposed technology – the collaborative filter – would primarily facilitate such practices and their projected consequences on stakeholder goals and motivations.

As shown in the below figure, *i**-related concepts were then identified within and among these citations, from stakeholder interviews (see section 3.3), and subsequently codified in *i** model syntax. Since we were consciously searching

[4] Note that the modeled scenario was not implemented in an actual usage environment; we merely utilize the context as a setting in which to demonstrate this modeling approach.

[5] Figures 1 and 2 visually depict the extraction and codification process.

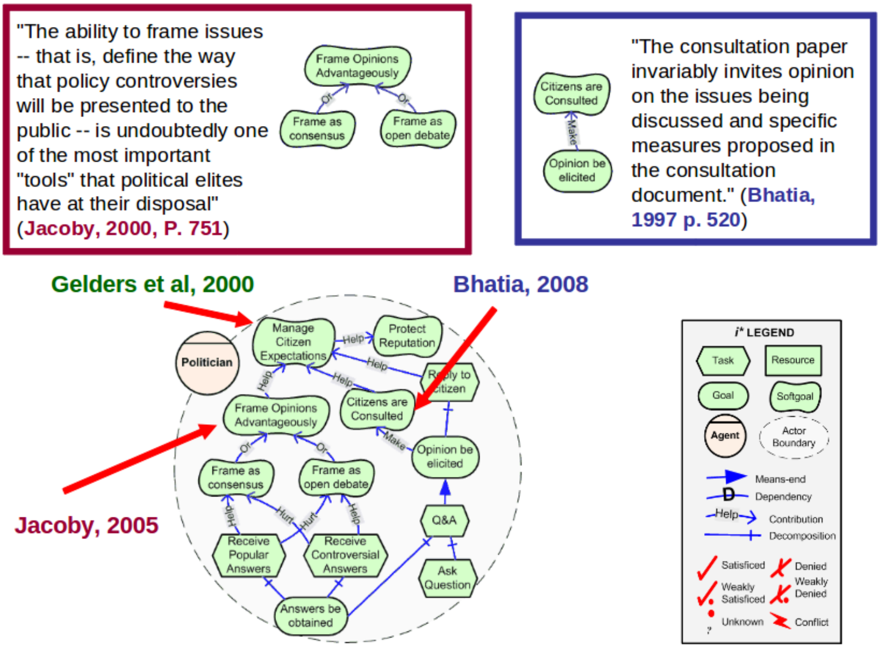

Fig. 1. Qualitative abstraction, codification and modeling of the politician actor

for and identifying stakeholder motivations, most extracted knowledge is expressed as *(soft)goals* and their interrelationships (expressed in the syntax as *dependencies* and *contribution links*.) The *actor* associated with the goal was also extracted, and all goals corresponding to that actor were associated in the model. Some intuitive connections between the modeled were needed in order to connect disparate elements. The researcher's domain knowledge played a large role in the identification of these correlations. In a sense, our role at this stage appears analogous to the knowledge management concept of 'knowledge intermediary' [26]; we identified relevant knowledge, represented and contextualized it so as to be useful to practitioners who could then utilize it towards some other end (eg: research-informed system design modeling).

Following this extraction and synthesis process, the planned functionality of the collaborative filter including two alternative configurations was modeled and intuitively linked to the various actors' goals. To do this, we assessed what the collaborative filter would require and what it would provide in the context described below. This permitted the evaluation of two simple alternatives in relation to their predicted contributions to stakeholder goals (see Figure 3 for the complete model).

3.2 Application to Climate Debate Community

Based on the literature review and research synthesis modeling method described above (respectively in sections 2.1 and 3.1), we modeled and evaluated several research-informed predicted effects of alternative collaborative filter configurations on the goals of real-world stakeholders. The application setting is an online community where users debate climate change issues and create plans on how to mitigate its effects.[6]

This demonstration example does not claim to be a complete synthesis of all relevant literature nor a full presentation of the setting's complexity. Specifically, we have simplified the number of actors, design features, goals and interdependencies in order to present a clear and concise summary of the modeling technique and evaluation method.[7]

3.3 Contextual Analysis: Stakeholders and Technology

Here we briefly outline some of the other requirements engineering activities (namely interviews with several stakeholders) we undertook in order to understand the application context and determine the type of relevant literature that would be beneficial to identify, extract and contextually synthesize.

The online climate community employs a discussion forum with multiple subtopics, interactive climate change mitigation plan creation tools based on a climate prediction model, and community-building features such as user profiles. Based on interviews with project staff, a major goal of the website is to become a resource for citizens to access and become informed about the various perspectives and plans that exist in the public sphere. These interviews motivated the literature search for resources about government-citizen communication in electronic environments, which we outlined above in section 2.1. Another identified need is to attract and retain users. Interviews with potential participants reflected what was found in the literature; some key goals include "feeling connected" to the issue and a sense that their participation has some kind of tangible effect.

Policy makers do not currently play an overt role in the website. However, as the preceding literature synthesis outlined, evoking a sense of citizen identity and providing a glimpse of a meaningful outcome is an important incentive for citizen communication.

3.4 An *i** Model of the Climate Change Community

The modeled scenario (see Figure 3) supposes policy makers (simply modeled as `politician`) take on a more active role by asking questions to the community, who then may respond in a discussion forum.

A collaborative filter is proposed for introduction, in order to organize the resultant content. This technology has been chosen partially for demonstrative purposes and because the tool can leverage the collective opinion of the community and present salient and relevant information to the politician [14]. Additionally, this tool would be employed by users, who may easily respond to relevant or

[6] The climate community is loosely based on the Climate Collaboratorium [1].

[7] We expand on this note at the end of section 3.4.

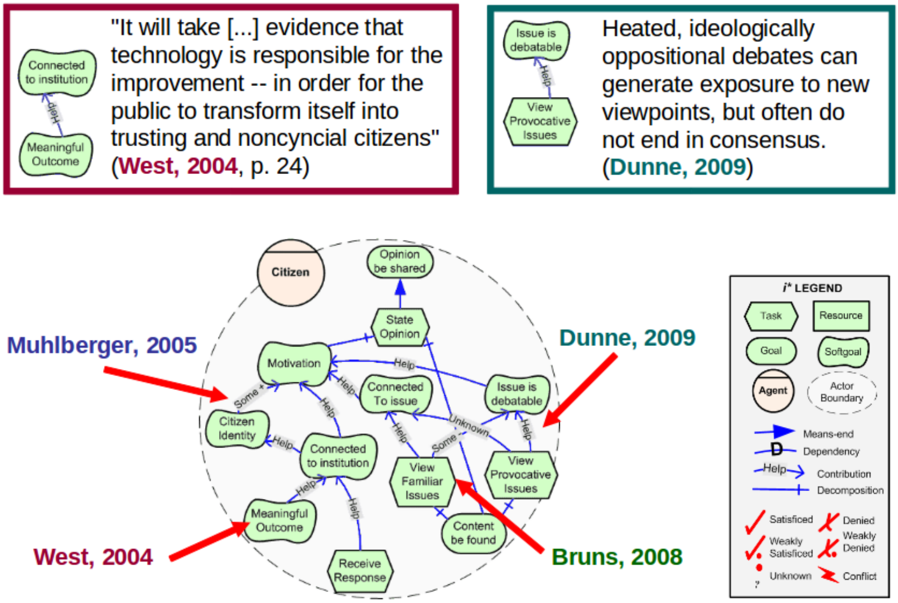

Fig. 2. Qualitative abstraction, codification and modeling of the citizen actor

provocative posts. We do not model the technical details of the collaborative filter (the *how*), but only its functionality at a high-level of abstraction. If we were to 'drill down' into these technical considerations, it is likely that further, more concrete design alternatives might emerge. Our design alternatives are analyzed at the conceptual level; we look at *what* the alternatives functionally require and provide, as well as *why* the alternatives should be selected for inclusion in a design.

The $i*$ strategic rationale model of the setting (shown in its entirety in figure 3, below) attempts to answer the question "How does the configuration of a collaborative filter recommendation system affect the elicitation of citizen opinion by a politician?" We structured our approach to this question by modeling three actors: the `politician` (upper left area of the model) the `citizen` (upper right), and the `collaborative filter` (lower centre).[8] For simplicity of presentation, we depict a small number of interdependencies that we feel are representative of how a collaborative filter would interact with the *(soft) goals*, *resources*, and *tasks* of the other two actors. The modeled goals build upon the discussion of the literature in Section 2.1 and the model's construction followed the method described in the previous section.

[8] Technical artefacts may be modeled as actors according the the $i*$ syntax; as with human actors, a collaborative filter exists in interdependent relationships with others, and requires and provides certain resources in order to accomplish some goal.

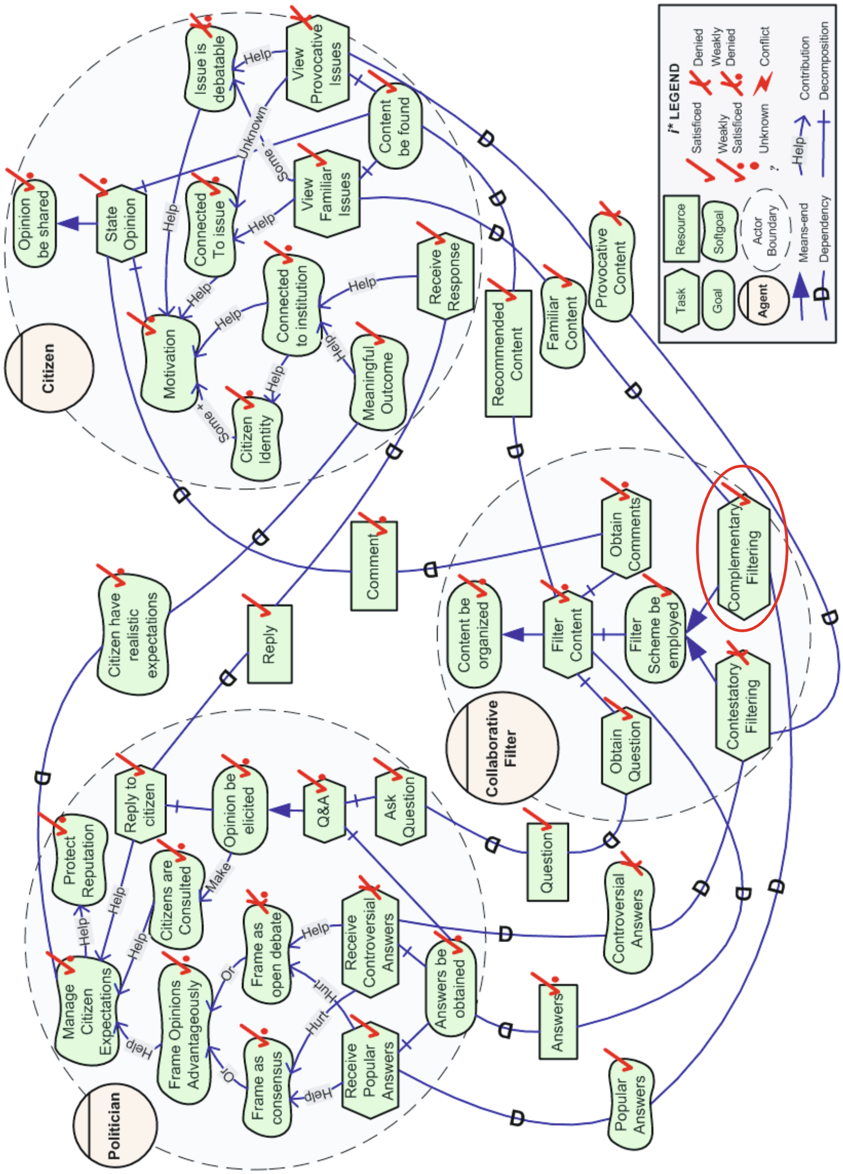

Fig. 3. Evaluating a Collaborative Filter Design Alternative for a Climate Change Debate Community

The model considers the two conceptual alternative configurations of the collaborative filter introduced in Section 2.1. Each are presented as distinct tasks, means of accomplishing the goal `filter scheme be employed` (shown in the lower area of the filter agent). The leftmost function intends to present users and politicians with contesting views and provocative content; it would be a `contestatory filter`. Alternatively, the technology could be configured as a `complementary filter`, whereby the filtered questions and citizen answers would be largely in accordance with user views. The model shows how the `collaborative filter` *depends* on the `politician` to provide questions (expressed here as a resource). It also depends on the `citizen` to provide comments.

The result of this filtering process is the creation of resources that the other actors depend upon. The `politician` receives `answers`, which may either be popular or controversial. Note the *dependencies* that link these two answer characteristics – modeled as a soft goal – to the alternative filter schemes – modeled as tasks. By following the *dependency* and *contribution* links propagating from these two design alternatives, an analyst may chart the path of each feature's contributions to stakeholder goals. A detailed explanation of this evaluative analysis is described in the next section.

Among other elements not modeled, the filter would also require some ranking data from citizen evaluation of comments in order to determine the criteria for filtering content, but we omit this consideration from to improve the model's legibility[9].

In summary, by being provided these resources, the collaborative filter may utilize one of two modeled design alternatives in order to filter these received comments and questions according to a certain scheme.

It is important to consider that design alternatives may impact individual citizen's goal achievement in variable ways; one individual may prefer to debate and another to discuss the familiar [28]. As such, careful requirements gathering, as mentioned above, should attempt to elicit the general feelings of the community and their proclivity towards debate and / or consensus.

3.5 Evaluating Alternatives

In addition to depicting strategic actor relationships and design alternatives, Figure 3 depicts the result of a qualitative evaluation procedure [20]. These results are represented by check marks attached to the *goals*, *soft goals*, *resources* and *tasks*. This evaluation methodology supports the iterative analysis of the effect of alternative choices upon stakeholder goals. In this evaluation scenario, the `complementary filter` is chosen (circled and check-marked in the model) while the design alternative – the `contestatory filter` – is not (marked with an 'X').

The effects of choosing the alternative propagate throughout the model via the values of dependency and contribution links originating from it. For example,

[9] An actual application of the modeling technique might require several models of the same domain, sliced into separate views of interrelated concerns in order to facilitate and simplify analysis [24].

since the `complementary filter` is selected in our evaluation scenario (and thus *satisfied*), the citizen may then view familiar issues which may *help* the citizen feel connected to the issue, but may have *some negative* impact on the amount of debate that can be generated. However, the citizen is *denied* reception of `provocative content`, which depended on the unselected `contestatory filter`. Since the contestatory filter is not selected, the recommendations do not directly help to encourage debate; the goal `issue is debatable` is *weakly denied.* Thus being `connected to issue` in turn helps to satisfy the citizen's goal, `opinion be shared`.

The `Politician` actor may similarly `receive popular answers`, dependent upon the `complementary filter`, which will help the actor to frame the issue as a consensus but *hurt* the ability to frame the issue as an open debate. As the alternative, `contestatory filter` is not employed, the `politician` will not `receive controversial answers`; thus nothing clearly helps to frame the issue as an open debate nor hurts the ability to frame the issue as a consensus. Thus, if the politician desires to present the discussion as having been a consensus, the `complementary filter` is the more attractive alternative to select.

Table 1. Evaluation Propagation Rules Showing Resulting Labels for Contribution Links. From [20].

Source Label		*Contribution* Link Type						
	Name	**Make**	**Help**	**Some+**	**Break**	**Hurt**	**Some-**	**Unkn.**
✓	Satisfied	✓	✓•	✓•	✗	✗•	✗•	?
✓•	Partially Satisfied	✓•	✓•	✓•	✗•	✗•	✗•	?
⚡	Conflict	⚡	⚡	⚡	⚡	⚡	⚡	?
?	Unknown	?	?	?	?	?	?	?
✗•	Partially Denied	✗•	✗•	✗•	✓•	✓•	✓•	?
✗	Denied	✗	✗•	✗•	✓•	✓•	✓•	?

The model also shows that the `politician` may choose to reply to the community's answers. The `citizen` depends on the `politician` to present issues that generate realistic expectations and also to reply to his/her comments. If these are not fulfilled, then the citizen may not feel as connected to the political institution and thus motivation to contribute may suffer. This relationship is independent of the alternative configurations of the collaborative filter; yet it is instructive to include in the model to account for the reciprocal motivations underlying why a citizen might contribute.

Depending on the goals of the politician–whether the issue is framed as an open debate or a consensus–the designer may select the alternative that contributes most beneficially towards the accomplishment of those goals.

Through the above example, we have demonstrated how the i^* modeling technique can support reasoning about how configuration choices of the collaborative filter would impact high-level stakeholder goals. Furthermore, we have outlined the basis of a method for retrieving and extracting domain knowledge from relevant scholarly literature and synthesizing it with knowledge from the application environment derived from stakeholder interviews.

These methods are fairly context-independent. Depending on how well-defined the problems within the application context are and/or the degree of domain knowledge on the part of the design team, the balance between traditional and research-oriented requirements modeling could shift. Nevertheless, the research modeled in our climate change example could likely be re-purposed and re-contextualized for many other government-citizen communication situations; particularly in group decision-making or online deliberation environments where similar issues of motivation, exposure to competing ideas and connection to actual policy making would be prevalent.

4 Discussion and Future Work

We have shown how the demonstrated model construction method can produce models that can help organize and refine contextually situated research. Early results from our investigation into the practicality of this method have provided useful and encouraging feedback.

We obtained initial input from interviews with six designers of online deliberation systems. The designers indicated that a goal-oriented approach to codifying this domain's design knowledge can have multiple uses and benefits to system designers. Early results indicate that a small sample of designers in this area do not consult the academic literature related to their field; several participants expressed frustration regarding the length of publications and the corresponding time investment required to obtain relevant information. These individuals have found that a structured representation of their domain's information in terms of goals to be achieved through implementable design features is very relevant and useful to their design work.

Nevertheless, the method we have described does little to address this domain's need for collaborative design knowledge sharing [8] in order to effectively and efficiently support the design activities of practitioners.

We believe our method can be improved to better support design knowledge reuse. One area of improvement is the literature review and codification method, that was conducted informally with a specific case in mind, and not preserved for later retrieval. This process could be tailored towards a systematic means of repositing design knowledge for later contextualization in an application environment. The method could also be more clearly defined and hence more reproducible. A reflection on these limitations coupled with insightful comments by peers and reviewers has inspired the ongoing development of a more robust means of engaging with domain knowledge and creating research-informed early requirements models for social media in support of citizen-government communication, which we next address.

Scholarship and design practice in this domain could be improved if its practitioners were able to better leverage each other's research findings and critically build on past results [8]. As such, designers of social media platforms intended to support deliberative activities such as turn-taking discussion of climate change issues, iterative voting, or structured argumentation stand to benefit from such knowledge sharing. To address such issues, information systems designers, human factors specialists, and design studies scholars have presented methods and knowledge repositories that intend to support the reuse of past design knowledge. Adapting their work to the domain of social media-supported online deliberation could theoretically provide a path towards a solution to the above concerns.

Based on the above motivations, we are currently iteratively developing a framework for the systematic codification, retrieval, representation, and recontextualization of design knowledge for social media. Our two primary framework elements are based on Hevner et al's [18] division between disciplinary and environmental information systems design knowledge.

The first element of our framework is a knowledge base derived from online deliberation-related design literature, conceptualized based on domain concepts and structured primarily according to elements from requirements engineering and design science theories. Second is a methodology for analyzing this knowledge base through incremental association of contextual details with knowledge base items. By combining these two strands, we aim to create a robust, model-supported framework which system designers may utilize in order to reflect, recontextualize, and build upon previous scholarly and practitioner findings from designing for this domain.

We are currently undertaking an empirical study that will examine the validity of our proposed framework. As mentioned in the discussion, interviews as well as tool demonstration sessions with practitioners who design online social media for government-citizen communication and/or group decision making and deliberation are being conducted. Results from these sessions are helping us to refine and better align our framework with contextually-situated design practices.

5 Conclusions

This paper demonstrates an application of goal-oriented analysis techniques to support reasoning about design alternatives. The application example considers citizen opinion elicitation in the context of the climate change debate. Varying configurations of a social medium – a collaborative filter – were analyzed and evaluated based on the goals derived from the literature.

By synthesizing relevant research literature with traditional requirements gathering and analysis methods, as well as adopting a goal-oriented view of the domain designers may build upon and recontextualize past knowledge that may provide additional, reputable perspectives to the various design alternatives under consideration. By analyzing the impact of such configurations at an early requirements determination stage, the designer may ensure that the implemented system satisfies stakeholder goals more effectively than various alternatives.

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