Shared Values/Conflicting Logics: Working Around E-Government Systems

Amy Voida[1], Lynn Dombrowski[2], Gillian R. Hayes[2] & Melissa Mazmanian[2]

[1]School of Informatics and Computing
Indiana University, IUPUI
amyvoida@iupui.edu

[2]Department of Informatics
University of California, Irvine
{ldombrow, hayesg, mmazmani}@uci.edu

ABSTRACT

In this paper, we describe results from fieldwork conducted at a social services site where the workers evaluate citizens' applications for food and medical assistance submitted via an e-government system. These results suggest value tensions that result—not from different stakeholders with different values—but from differences among how stakeholders enact the same shared value in practice. In the remainder of this paper, we unpack the distinct and conflicting interpretations or logics of three shared values—efficiency, access, and education. In particular, we analyze what happens when social services workers have ideas about what it means to expand access, increase efficiency, and educate the public that conflict with the logics embedded in the e-government system. By distinguishing between overarching values and specific logics, we provide an analytic framework for exploring value tensions as values are enacted in practice.

Author Keywords

E-government; Social Services; Values

ACM Classification Keywords

H.5.3. [Information Interfaces and Presentation]: Group and Organization Interfaces—Computer-supported cooperative work

INTRODUCTION

All technology has politics [32]. E-government systems—technology used to engage citizens and support public sector operations and services [4]—are even more explicitly political. They reflect values from the very political context in which they are borne: the values of the lobbyists and advocates who frame narratives and influence opinions about these technologies; the values of the elected officials who vote on whether or not these technologies should receive funding; the values of the many bureaucrats who determine in what contexts the technologies will be used, for what kinds of end-users the technologies will be designed, against what criteria they should be evaluated, and what organizations will design and mange these technologies; and the values of the workers and citizens who engage with these technologies and enact values through use and non-use.

It should come as no surprise, then, that these many values can be in conflict—surfacing, for example, in debates over whether e-government systems should be designed to support managerial values of efficiency and cost-effectiveness or to foster democratic values, such as equality or engagement (e.g., [4, 6, 13]). Human–computer interaction researchers have been strong advocates for engaging with a breadth of stakeholders and negotiating value conflicts in situations such as these (e.g., [19]). To the extent that values of import can be identified in advance of or in parallel to design—whether through the use of value-sensitive frameworks and heuristics (e.g., [8]) or fieldwork (e.g., [1, 17])—these methods often enable value tensions to be anticipated and negotiated in ways that have shown promise in enabling more empathic technology design. However, research has yet to explore the possibility that even when core values align, tensions may still exist about how to achieve desired ends, or what these values mean in practice.

In this research, we unpack data from fieldwork conducted at a social services site where the workers evaluate citizens' applications for food and medical assistance submitted via an e-government system. Given the political nature of this field site, we were surprised at the extent to which core values are, in fact, aligned. Social services workers expressed very similar goals and values to those reflected in the e-government system. Yet values tensions still exist—a result of different interpretations or logics about these shared values and about how they are best achieved in practice. In the remainder of this paper, we unpack the distinct and conflicting interpretations or logics of three shared values—*efficiency*, *access*, and *education*. In particular, we analyze the impact on work practices and client relationships when social services workers have ideas about what it means to expand access, increase efficiency and educate the public that conflict with the logics embedded in the e-government system.

CHI 2014, April 26 - May 01 2014, Toronto, ON, Canada

ACM 978-1-4503-2473-1/14/04…$15.00.
http://dx.doi.org/10.1145/2556288.2556971

By distinguishing between overarching values and specific logics, we provide an analytic framework for exploring values tensions as values are enacted in practice. We argue that research engaged with values and design will need to consider not only the potentially differing values across stakeholders but also the various assumptions about, implications of, and orientations towards how to put values into practice to fully engage with and address values tensions.

THE VALUES OF E-GOVERNMENT

A growing subset of the e-government research literature engages explicitly with the values embodied in and fostered by e-government systems (e.g., [4, 6, 13]). At the coarsest level of granularity, discourses about e-government systems often reflect the highly value-laden nature of the political context in which they have arisen [31]. Conservative discourses, for example, tend to emphasize values of cost savings and efficiency while liberal discourses tend to reflect values of equality—fostering universal access or closing the digital divide. Additional discourses, which often reflect conflicting values as well, include discussions about democratic participation, education, organizational reform, dependency, consumerism, and information security, among others (e.g., [14, 30, 33]). Three values, in particular, are foregrounded prominently in the e-government literature and are most salient to our own research—access, efficiency, and education.

The value of *access* is most commonly invoked in reference to the design and evaluation of new service channels—new media that are used to enable access to governmental services (e.g., [23, 24]). Access is a multi-faceted construct that encompasses the physical availability of information and communication technologies [25] as well as the 'how to' skills that are necessary to make those technologies useful [2, 21]. Access is also understood to require social support, whether through public awareness of the availability and relevance of these technologies [10] or through the help of local intermediaries assisting with access [7]. Generally, issues of access have been central to researchers interested in reducing the digital divide (e.g., [2, 21]).

The value of *efficiency* is most commonly invoked as a rallying cry to encourage public administration to become more streamlined and cost-effective (e.g., [13]). Heeks, for example, argues that information systems make governments more efficient by cutting processing costs and enabling strategic connections across and within governmental agencies [12]. Efficiency is advocated most strongly by proponents of New Public Management, a style of public administration that applies private sector values to the management of public sector services (e.g., [13]). While such an emphasis may be prudent, there are significant concerns that private sector values alone may be too limited a basis for the future of e-government [4, 6]. Researchers arguing for a "public value" perspective, in contrast, argue that governmental information systems should support values and policy goals that come from the public [6]. This perspective reflects a more situated understanding of values, derived within a given sociotechnical context [18].

Within the literature on e-government systems, the value of *education* is typically foregrounded in discussions about the extent to which these systems provide citizens with information about governmental operations and services [22]. The value of education can also be seen in efforts to support citizen reflection on political issues, efforts aimed toward fostering democratic dialogue [14] and civic participation [26].

Beyond the discussion of individual values, the field of e-government has also engaged in broader debates over which values, whose values, and whether or not a conversation about 'values' is helpful in moving the domain forward. West, for example, argues that the politicization of e-government is problematic as it stands to limit funding [31]. He contends that if these systems are foregrounded as being solely technical and apolitical, the future of e-government is less apt to stall out in political quagmire. However pragmatic this perspective may be, it conflicts with a legacy of research in science and technology studies and human–computer interaction asserting that all technology is political; all technology embodies some values and not others (e.g., [1, 8, 32]).

There are numerous vigorous dialogues and debates related to values within both the e-government and human–computer interaction literature. Nevertheless, there are some resonances between some of the research in each domain. Researchers from both domains, for example, have asserted the need for a more situated understanding of values [3, 6, 17]. And researchers from both domains have also come to question whose values predominate (e.g., [1, 6, 16, 27]).

In both the e-government and the human–computer interaction literature, much of the emphasis has been on identifying the values in play. When researchers in either domain unpack values tensions, they refer to conflicts between different values held by different stakeholders. We extend these bodies of research to describe values tensions that arise even when the values in play *have* been successfully identified and even when those values are *not* conflicting or contested. We provide empirical evidence to demonstrate that not only do we need to understand values as situated in and contingent upon a particular sociotechnical context, but in addition, any given value has to be understood as capable of being enacted in multiple, conflicting ways within that context.

METHOD

We carried out qualitative fieldwork at the social services office responsible for processing all of the applications that are submitted via an online e-government system by residents of one California county. We interviewed 12 participants within the first year of the new system's deployment and analyzed the data iteratively and inductively.

Research Context

The Mail-In Center

We undertook this research at the social services office responsible for processing all applications that are submitted by residents of one California county via the e-government system, Benefits CalWIN. This county is 1 of 58 counties in California and services a population of ~3 million residents. Like many across the state, this county suffers from an underutilization of social services; citizens are not receiving the help for which they are legally entitled. The rollout of a public-facing online application system is seen by stakeholders—including government employees and community-based advocates—as a key investment in increasing participation.

In the county in which we carried out this research, applications submitted online are processed at the "Mail-In Center." This name reflects a long-standing distinction between two types of offices where applications are processed: (1) the open-to-the-public social services offices, staffed by people trained to serve clients who travel to the office and apply in a face-to-face meeting and (2) the Mail-In Center, staffed by people trained to serve clients who apply remotely (historically, through the mail via paper-based forms). In addition to processing 17 different paper-based applications, workers at the Mail-In Center now also process applications submitted via two online systems—Benefits CalWIN, the public-facing web portal, and One-e-App, a system designed for certified ombudsmen at community-based organizations to submit applications on clients' behalf. In this research, we have focused on the use of Benefits CalWIN. One-e-App has very different affordances and involves additional stakeholders and additional politics that are beyond the scope of this paper.

Benefits CalWIN

Benefits CalWIN is the public-facing online portal for individuals and families to apply for government-subsidized social services, including nutrition, health, and financial assistance (CalFresh, Medi-Cal, and CalWorks). Application data submitted via Benefits CalWIN is imported directly into the social services' internal database, through which the eligibility determination process for each social service is managed.

A confluence of three events is key to understanding the context of work and use of Benefits CalWIN at the time of this study:

- *Rollout of Benefits CalWIN.* Benefits CalWIN was launched in January 2011 and had been in use for 4 months prior to our first interview and for 12 months prior to the remainder of our interviews (see the timeline for data collection below).
- *Departmental Hiring Freeze.* Because of the tenuous economic situation in the state prior to and during this study, the Mail-In Center had been operating under a hiring freeze for several years. Managing the increased workload of the remaining employees was a key concern, as was ensuring that clients were receiving assistance within a mandated timeframe.
- *Increase in the Number of Applications.* The recession works as a double-edged sword for social services. At the same time that the Mail-In Center was prevented from hiring additional staff, the demand for social services spiked. This increase in the number of applications occurred during the same timeframe in which Benefits CalWIN was rolled out. During this timeframe, one administrator cited a 50% increase in the number of applications received; another administrator verified that there was a 40% increase in the county beneficiaries pool.

Participants & Data Collection

Data collection at this field site began in May 2011 when one researcher interviewed a social services administrator who oversees more than 1400 staff members distributed among 7 different offices. This interview lasted 90 minutes and provided a high-level orientation to the social services organization and their deployment of the e-government system, Benefits CalWIN. This interview also enabled us to build rapport and gain entre at the Mail-In Center.

Eight months after that initial interview, in January 2012, an administrator at the Mail-In Center organized a three-day visit for one researcher. During that visit, the researcher interviewed 11 additional social services workers for one hour each. Because of concerns about employee workload, interviews were limited in duration so as not to interfere with the functioning of the center. Due to regulations about the privacy of client data, the researcher was not able to tour employee workspaces or observe their use of any of the systems they use to carry out their work. All interviews were conducted in the center's conference room.

The 11 additional interviewees represented five different positions in the organizational hierarchy, from the on-site manager who directs the center, to supervisors in multiple middle management positions, and eligibility technicians who process the social services applications and determine eligibility. We also interviewed an administrator responsible for implementing social services policy mandates within the county. With the permission of informants, interviews were audio recorded and transcribed.

To protect anonymity, we refer to participants as either being eligibility technicians (a class of six individuals with eligibility technician as their job title) or administrators (an aggregate class of six individuals including directors, managers, and supervisors). We also refer to all participants with female pseudonyms to protect the anonymity of the small number of male informants in this study (one eligibility technician and one administrator).

Data Analysis

Because of the fixed and intensive period of interviews, all data analysis occurred after data collection. We conducted our data analysis iteratively and inductively using open coding, memoing and affinity diagramming techniques (e.g., [5]). In our first round of data analysis, we primarily tried to disentangle the various practices associated with different job descriptions and phases of the application (intake) process. In our second round of data analysis, we began to draw out themes related to the goals of the participants' work and the frustrations they experienced processing applications submitted through the online system. Subsequent rounds of data analysis and re-engagement with the research literature helped us to shift our framing from goals to values and to tease apart the different and sometimes conflicting logics for enacting these values present within the sociotechnical system.

SHARED VALUES/CONFLICTING LOGICS

In our interviews with social services workers and through our exploration of the Benefits CalWIN system, we found that the same values discussed in the e-government literature—*access*, *efficiency*, and *education*—were key values in our research context, as well. These values manifest through the ways in which social services workers describe their jobs, in general, and their interactions with clients, in particular. These values are even corroborated by language on the front page of the Benefits CalWIN website, which promises access ("apply"), efficiency ("fast and easy"), and education ("learn about" and "get more information") [Fig. 1].

Given that the social services workers and the e-government system appear to share the same set of core values, we were initially surprised by the amount of frustration voiced by the informants in this research. A sizable amount of research in values and design, after all, emphasizes the identification of shared values as being key to successful technology adoption (e.g., [19]). However, in examining the frustrations that came up repeatedly in interviews, we discovered significant tensions between how the social services workers understand each of these values and how the system reflects these same values.

In this paper, we discuss the ways in which the values of *access*, *efficiency* and *education* are enacted in the sociotechnical system through two distinct logics—the logics of the system and the logics of the social services workers. By "logics of the system" we refer to how the infrastructure and interface of the system direct lines of action and engagement, suggesting how values are instantiated in the technology[1]. By "logics of the social services workers" we refer to how people in various positions within the organization think about values and how they describe putting those values into practice[2]. By articulating these distinct and often conflicting logics we are able to locate many of the social service workers' frustrations at the place where these logics fail to align.

Figure 1. The client portal to Benefits CalWIN

Expanding Access

Both the social services workers and Benefits CalWIN evidence a value for expanding access, although how access is operationalized differs. The online system supports clients' 'getting in the door,' providing twenty-four hour web access for individuals to submit an initial application. Yet, the social services workers understand access more broadly; they describe an understanding of access that doesn't stop once the initial application has been submitted. Social services workers want to support applicants through the entire intake process and are frustrated by the ways in which the online system hampers their efforts.

Benefits CalWIN provides an additional "access point" to apply for social services. Social services workers recognize that an online portal reduces many of the barriers for individuals and families to submit applications.

> *Benefits CalWIN is another resource to allow our population to utilize a variety of access points. In the traditional method you must walk in … [which] is not effective for all populations and demographics…. Truly successful access means a variety of port methods based on an individual comfort zone.* (Gloria, Administrator)

> *It gives people more opportunities of how to apply, because I think a lot of people can be really hurting and hungry and*

[1] These values may have been intentional or unintentional consequences of the design process.

[2] We present our results under categorical labels that reflect the perspective of our informants—they perceive their values and goals to be their own and to be distinct from that of the system. However, we want to be clear that we believe all values are enacted within complex sociotechnical systems. To be more precise, albeit linguistically unwieldy, "logics of the social services workers" are their logics as influenced by their use of the system and through their interactions with clients who also use the system. The "logics of the system" are the logics (a) that the social service workers attribute to the system through their experiences working with clients who have used the system and (b) that we have been able to verify through an analysis of the features of the public-facing online portal.

so forth and just not want to come into the office. (Alicia, Eligibility Technician)

On the website, applicants are advised that they can "complete an application" online and that the "process may take 10 to 20 minutes." CalFresh applicants are also advised that they "have the right to submit an application with just your name, address and signature." The logic of the system, then, suggests that access is operationalized as 'getting in the door'—submitting an initial application.

In contrast, the workers at the Mail-In Center view access as both 'getting in the door' *and* as navigating the remainder of the application (intake) process. From this perspective, the system's logic of access is problematically incomplete.

'Getting in the Door'

Social services workers have experienced numerous ways that Benefits CalWIN expands access through a reduction in the travel and opportunity costs associated with getting to the social services office.

> *We have had applications come in at 2am, 3am, 5am…. People that are nurses that come home at 2am and are wide-awake. They are not making enough money, so they apply at 2 in the morning. We know because it shows the date and time when they submit the application.* (Sara, Administrator)

> *Many of our clients, the reason they do it online is because they don't want to deal with our offices, and I don't blame them…. because our offices are pretty hairy. Sometimes even 'out the door' hairy.* (Alicia, Eligibility Technician)

Benefits CalWIN is also viewed as supporting the value of access by reducing the stigma that might be associated with being seen applying for social services in person.

> *This is not traditionally someone who would have accessed our services. This is where a little bit of hesitancy of walking into social services offices… and that stigma that they feel that it adds to it…. So we are seeing that population take advantage of the technology to get their family's needs met but still maintain the perceived anonymity they desire.* (Gloria, Administrator)

Benefits CalWIN enables individuals to apply for multiple social services at once, and many of the Mail-In Center's eligibility technicians have been trained to process applications for multiple social services. In contrast, when individuals apply for social services via most other methods, they must submit a separate application for each social service, even if all of the applications are submitted as part of one face-to-face visit. Each application requires redundant information, partially overlapping documentation, and, sometimes, different eligibility technicians to process the application.

> *That's one of the benefits of this, by doing it electronically, it also adds the potential of them getting screened and evaluated for CalFresh, where in the past, if they were only doing MediCal, and that's it, they are out the door, you are done. So that means the client, after they get out, if they get out, they have to come back in and submit another application to apply. So now, they are doing it simultaneously.* (Ruby, Administrator)

> *I'd like to see a universal approach to the families' needs…. I think Benefits CalWIN is definitely an example of that. It's a one-stop screening tool that allows a family to sort of pre-assess whether they may be eligible, and they can apply for everything that they are potentially eligible for at one time. It's a one-stop tool. I think the more we remove the individual barriers that each individual program may have, the easier it is for access.* (Gloria, Administrator)

The social services workers acknowledge certain up-front advantages offered by Benefits CalWIN—the system's logic of access expands clients' ability to 'get in the door' and submit an initial application. However, this same logic also undermines social services' attempts to assist clients in navigating the entire application and intake process.

Navigating the Intake Process

When clients apply for social services via Benefits CalWIN, they are required to submit basic information online, including their name and address. However, this initial application is merely the beginning of a multi-phase "intake" process. After the applications have been assigned to eligibility technicians at the Mail-In Center, those eligibility technicians call the applicants for a phone interview that serves several important functions. First, it allows the eligibility technician to clarify any ambiguous information that was submitted online and to acquire any additional information that might be needed. The interview also allows the eligibility technicians to advise applicants of any additional documentation they will need to provide, to educate applicants about their rights and responsibilities, and to set expectations for continuing interactions with social services. After the interview, the applicant and eligibility technician typically coordinate the exchange of any additional documentation that may be needed and are in contact to address any remaining questions that the applicant might have.

Benefits CalWIN allows people to submit applications with minimal information—a small subset of the information that will be needed eventually. Although social services workers understand the multi-phase nature of the intake process, they have found that clients who apply online have different expectations of the process and frequently think they are "done" once they have clicked the submit button.

> *I think they just go online, and they just think that they don't have to do anything else. Because maybe they don't know…. This is my thinking: they just go online and don't even give you the right phone number sometimes…. And they are just thinking: "Okay, I am done. I am just going to have to wait for my benefits."* (Ana, Eligibility Technician)

> *They think it is easier: "Oh, I will just do the application and that will be it." But it's more than… just doing an application online.* (Selena, Eligibility Technician)

Once eligibility technicians have received applicants' initial information, they must ensure that there is appropriate justification for making an eligibility decision. None of the informants in this research reported ever having received a Benefits CalWIN application containing all of the information and documentation required for them to actually verify eligibility.

> *When you go public access… the majority [of applications] do not come in complete.* (Gloria, Administrator)

> *One that is completely filled out? We never have any of those. We can have all the questions answered, but… we never have any where all the documents are there.* (Alicia, Eligibility Technician)

> *The system allows them to skip questions and even skip important questions…. It's really not beneficial to not trouble them because in the end, we are going to have to trouble them anyway because we have certain regulations and information that we need. So if they skip those questions, all it does is make our interview longer and the letters we write to them longer, the checklist that we write to them longer."* (Alicia, Eligibility Technician)

So while in most cases, the online application does not require applicants to enter all of the necessary information, in some instances, the system does not even request it.

> *The application is not comprehensive. It doesn't have everything we need. It doesn't ask for vehicles. It doesn't ask for the absent parent. We have a lot of single parents, and it does not ask for that information… but it is still stuff that the workers need to enter, so they are doing all this manually.* (Raquel, Administrator)

Here, the logic of the system embodies the value of access by reducing the initial informational overhead for applicants, but in doing so, leads applicants to have an incomplete understanding of and incorrect expectations about the end-to-end application process. Ambiguity about what information is actually needed to complete the intake process creates tensions between eligibility technicians and applicants. For example, one eligibility technician reported talking to an applicant who became somewhat confrontational after being asked to provide additional information.

> *You try to help them…. "No problem, I just need this from you." "Why do you need that?" "Because we need to, you know, we have your income here, and you have to provide…. That's how it is."* (Ana, Eligibility Technician)

Social services workers find themselves frustrated by the system's logic that does not make explicit what information is and is not required to complete the eligibility determination process fully or require applicants to enter all of the requisite information. In turn, the social services workers report being hampered in their efforts to support applicants through all phases of the intake process.

Increasing Efficiency

Both the social services workers and Benefits CalWIN demonstrate a priority of increasing efficiency. However, like access, the ways in which efficiency is understood by the workers and operationalized by the system differ. If efficiency is about processing information as quickly and easily as possible to approve benefits for eligible applicants, it requires getting information both *quickly* and *accurately.* However, Benefits CalWIN appears to privilege speed over accuracy, reflecting an assumption that information is objective and that data entry can unproblematically be outsourced to clients. Social services workers, left to clear up all the mistakes and confusion, value accuracy, as well, and saw the need for more dialogic interaction to help get the information "right."

Transferring Objective Information

Benefits CalWIN fosters efficiency through the transfer of so-called 'objective information' from the applicant to the social services worker. Applications submitted via Benefits CalWIN appear in the Mail-In Center's virtual queue, and any information that clients enter or documents that they upload are accessible to social services' staff.

> *Once the client has punched in their information, we have a way of transposing all the information in the system, so it's less work for us… we don't have to punch in the last name or social security, the system will automatically do it for us. I think that for us, it cuts time for us to process.* (Jada, Eligibility Technician)

> *You have more information, meaning they are filling out more information from the get go, you have where they were working, where they have checking accounts, banking accounts, whatever it is that their situation is. If they fill it out, I know it.* (Paula, Administrator)

Yet, these workers report that, overall, applications submitted via Benefits CalWIN take *longer* to complete than do their in-person counterparts. For social services workers, then, efficiency does not merely relate to the speed of data entry. Efficiency refers to the ease and expediency with which all of the information and documentation can be obtained and verified. And for the social services workers, any initial benefits from offloading data entry to the client are thwarted by the drawn-out and frustrating process of trying to remotely obtain and verify all this information.

> *I am going to say it doubles the difficulty of our job. At least doubles it. And not only that, but it takes longer. Because it takes longer for us to get it to them and it takes longer for them to get things back to us. So it really complicates the whole process.* (Alicia, Eligibility Technician)

> *It's just more work because… they are online so they don't have to come in and they think it is just going to be faster for them to be approved there…. But we still have to do the interview; we still have to send the letters and get the verifications. So, it's a little bit more work for us.* (Selena, Eligibility Technician)

A Dialogic Process to Get it "Right"

Participants recounted numerous ways that Benefits CalWIN undermines the efficiency of the intake process, from failing to error-check data to stopping short of supporting the kind of synchronous and asynchronous communication that makes up a significant part of the intake process. Eligibility technicians rely on the dialogic interview process to verify much of the information that is entered via Benefits CalWIN.

And a lot of people… they fill it in and don't do it right. That's why we do the interviews. We call them and verify everything. (Selena, Eligibility Technician)

Yesterday, a client didn't put on her social [security number, a unique identifier in the United States] on there, but her birth date was on there. The birth date and the last name matched a different record with a social. So, do we use that or not? I wasn't able to contact the client so we are going to try and appreg it [register the application] without [the social security number]… and just try to let it get going that way…. Those questions are not answered as quickly as… if the client was standing there. (Paula, Administrator)

Back in the day, I remember getting up to 10 applications a day, but it was so much easier, because I had the client in front of me where if I didn't understand a question or an answer I could easily clarify [with the client]. Where these workers don't have that advantage. (Raquel, Administrator)

In addition to having to verify information that may or may not have been entered correctly, eligibility technicians also have to verify information submitted for questions that are frequently misinterpreted by clients. For example:

If the client goes online and he sees the question "How much do you make?" they go by the net [instead of gross], right?... They don't know. You can't assume that they are doing it right, so you have to talk to them. (Ana, Eligibility Technician)

However, one of the biggest impediments to the efficiency of the intake process is the extreme difficulty that eligibility technicians report in contacting clients for the follow-up interview. To protect the privacy of client data, follow-up communication must happen via phone, postal mail, or in person. Eligibility technicians attempt to contact applicants first via phone, but the synchronous nature and unpredictable contexts of phone communication make connecting challenging, particularly with the ubiquitousness of mobile devices.

Now with everyone having cell phones, I hear some workers tell me that, gosh, they call their clients while they are driving, or they are picking up their kids, and they don't want to ask, "Well, do you have time for an interview?"…. Our best time to contact the client is not necessarily their [best] time even though [the contact information they entered in the system] says "Call me between this time and this time." And even when you do they are in the middle of something…. You know life happens, it happens to all of us. I think that can be challenging too, for our workers, and they are like: "We have deadlines. When am I going to get this done?" But they feel bad for the client, too. (Raquel, Administrator)

Those kinds of things are always challenging because we don't have the luxury of the client just sitting there in the office for an hour waiting for us to ask them for information. They are out, at school, at work... so you have limited time to try to call them or talk to them, and then is it a place where I can talk to you? (Paula, Administrator)

If the eligibility technicians are unable to connect with applicants via phone, they are forced to resort to postal mail, which draws out the intake process and undermines the initial efficiencies of an online system.

Sometimes it is kind of frustrating, because if you can't get ahold of the client, you have to do everything by paper, pretty much. Because if I can't talk to them, I can't process the application. We can't do that. We have to talk to someone. So, you have to send the appointment letter. Sometimes they don't respond to the appointment letter. So, you have to send the second one… And if they do not respond after 30 days, you deny the case. If you do get ahold of the client, pretty much sometimes or most of the time, you have to make the appointment to come in for face-to-face. So in my opinion… it's double work. (Ana, Eligibility Technician)

In addition, certain documentation must be handled on paper, by fax, or in person, even if the applicant initially applies online. In some cases, an application that is initiated expediently online can stall awaiting follow-up paperwork.

They are not willing to give you the information or mail it in or fax it in…. You call them, say, "We need this and this to evaluate. I can't evaluate if I don't have your income, and it's based on income so I need something." So they say they will send it to me and I never get anything. If the 30th day comes and we haven't received anything, we have to deny the case. (Selena, Eligibility Technician)

It is all fantastical online. They don't have to go to the office, fine. But still *we are mandated to give them information that is in hard paper: example the voter registration form, forms that say, "I agree with the rules of using the electronic card." The signature at the end of the form saying, "I agree with what I have reported," which is this income, people in the home, et cetera.... So we have still this exchange of paperwork although some can be scanned, but there are things that we have to send to them that they have to sign and send to us. There is nothing that we can do yet electronically.* (Sonia, Administrator).

The logic of the system, then, appears to instantiate a view of efficiency that is limited to enabling clients to enter their application information online. But this view conflicts with the logic of the social services workers, who understand efficiency to require not just the entry of information but the provision of information that is "right" and verifiable so that they and/or the system can compute an eligibility determination. Their experiences suggest that gathering the right information requires more dialogic interaction than the system supports.

Promoting Education

Both the social services workers and the system, Benefits CalWIN, promote education. Yet, again, they operationalize this value in different ways. While the logic of the system suggests an understanding of education that is limited to the provision of information, the logic of the workers focuses on ensuring that applicants understand that information and are, in the end, empowered as applicants and potentially clients moving forward.

Making Information Available

The logic of the system suggests that education is enabled through the display of information. As clients step through the application workflow online, they can read information including rules about what services may be applied for if the applicant creates an account or not, a list of documents that "you might want to gather… to help you complete the application," notices about what services and under what conditions they will need to appear in person at the social services office, as well as a four-page, PDF file "cover sheet" that includes numerous programmatic definitions and rules governing eligibility for various programs. One eligibility technician was quite skeptical, however, about whether applicants actually read any of the information that is posted, an apprehension that research in the privacy domain suggests may be well grounded [20]:

> *You know, when you go online you don't read everything. You just try and go fast through the application….* (Ana, Eligibility Technician)

Fostering Understanding and Empowerment

In addition to skepticism about whether or not clients read the information posted by Benefits CalWin, numerous social services workers also articulated a logic of education that extends beyond the provision of information. For these workers, education entails engaging in a dynamic exchange to ensure that clients understand the information, understand how it applies to them, and can project forward in time to imagine the implications of a variety of scenarios in which they might find themselves in the future. These workers understand education as leading to empowerment, a necessary component for individuals to become self-advocates in a complicated governmental bureaucracy.

For the social services workers at the Mail-In Center, the process of educating and empowering clients begins in a critical interview during the intake process. One administrator describes eligibility technicians as being "expert interviewers." When conducting interviews in person, eligibility technicians are confident of their ability to assess whether or not applicants truly understand the information they are discussing. They report reading applicants' body language and providing additional clarification as needed. They also visually step applicants through the sometimes-intimidating quarterly status report.

With Benefits CalWIN applicants, however, this educational process happens over the phone, and eligibility technicians are concerned about their ability to perceive confusion and dynamically troubleshoot when applicants claim that they understand, even though they do not.

> *We go over everything just as we would if they were in person. But like I said, it is difficult because they are over the phone, so they are not looking at your face or at your eyes and they can just say, "Yeah, I understand. I can go to jail and that there are penalties or I can be sanctioned. Yeah, sure."* (Selena, Eligibility Technician)

The prospect of educating clients about the quarterly status report also presents new challenges.

> *When we first started about a year ago, for me it was very, very difficult to explain something to our clients, something that I felt I needed to show them. I felt like they visually had to see it versus trying to explain it over the phone. Sometimes I think there is still that difficulty, 'cause they have to provide a quarterly status report. I try to be as thorough as possible, but it is so much easier when a client is in front of you and [you] just say, "This is when you applied. You are going to get a report that looks like this [she holds a piece of paper in front of herself and points to it] and this is when we are going to need it." And I can even circle when we are going to need it.... But I think that was… the hardest thing for me to do. Where it was just me-showing-you versus me-trying-to-explain-to-you. And you know, sometimes I think… it might be a little more difficult for the clients… because I can't show them a QR7 [the quarterly status form] and they don't know what it looks like. So I don't know if they are understanding: "What is this crazy lady explaining to me?" you know?* (Lucia, Eligibility Technician)

The social services workers in intake also understand that the education they provide is valued throughout the organization; educating clients early in the process helps prevent confusion and extra work for many parties down the road.

> *The workers in continuing, case maintenance, [and] call handling do get upset if we don't explain [the longer-term process] to them [our clients]: "Why didn't you guys explain?" They will tell their supervisors, "Can you guys at the next supervisors meeting let people in intake just to remind their workers…". So this worker goes back to her supervisor upset, "I had to go out there to stop what I was doing just for this address change where it could have been taken care of over the phone. In the next supervisors meeting, can you remind intake to explain?"* (Sara, Administrator)

If clients aren't adequately educated and empowered to take ownership of their cases, they run the risk of missing deadlines or deliverables and losing their program eligibility and therefore their benefits.

> *The risk we take is that if we haven't had that encounter in which we could explain exactly what it is and we could not be sufficiently there to help with that then we risk that we have situations where we approve them now, but three months later we lose them.* (Sonia, Administrator).

In the long run, a lack of client education and empowerment can cause additional work for everyone if those clients resubmit an application and end up back in the queue at the Mail-In Center.

MISMATCHES AMONG LOGICS

Our analysis of data gathered from interviews with social services workers and corroborated against our exploration of the features of Benefits CalWIN demonstrate the following: *Even when core values are shared across entities in a sociotechnical system, mismatches in the way values are understood and put into practice can create significant tensions* [Table 1]. During the rollout of Benefits CalWIN in this particular county, these mismatches: caused

Table 1. Overview of conflicting logics and the issues that arise from their mismatch

Value	Logic of the System	Logic of the Workers	Issues that Arise from the Mismatches between Logics
Access	Enabled by lowering the barriers to entry and instantiated in the system by providing a 'low cost' avenue for applying for social services.	Enabled by *both* getting people in the door and helping them navigate the entire intake process.	The logic of the system can impede access to the service by complicating or hindering the acquisition of required information and by creating misleading expectations about how the process will play out. Social services workers, therefore, have to take on extra work to contact applicants, explain the process, procure additional information, and sooth frustrated applicants.
Efficiency	Created through the transfer of objective information from the applicant. This logic assumes that necessary information can be easily identified and entered into the system by the applicant without intervention.	Created when people are guided though the process of providing information. Information is not always objective and can be difficult to find and format without support.	The logic of the system creates extensive additional work for the eligibility technician, who has to go back and forth with client to get information "right" in order for the system to assess whether or not the applicant is eligible for social services.
Education	Supported by ensuring that information is available online without consideration for whether people will read and understand the posted information given the format or context in which it is presented.	An ongoing process that holds empowerment as an end goal. Education emerges slowly through dialogue, interaction, and explanation in modalities that are usable and understandable to the applicant.	The logic of the system does not educate clients in an authentic and reliable way that leads to empowerment and self-advocacy. This leads to confusion and frustration for both parties and potential issues in maintaining the service for the client.

misunderstandings between clients and eligibility technicians; created communication delays between clients and eligibility technicians; caused additional administrative overhead; impeded access to the service for clients; and raised questions about the potential for clients enrolled via the online system to become self-advocates. Tensions that have arisen from mismatches among logics are substantial and have the long-term potential to undermine system use.

LOGICS & THE INTERPRETABILITY OF VALUES

By making an analytic distinction between values and logics, we have foregrounded the multiple interpretability of values. So, beyond asking questions about *what* values should or do drive design and *whose* values should or do predominate, we also have to ask questions about *how* those values are operationalized and embodied. Values are enacted through the use of technology much in the same way that meaning is constructed through use [9]. So just as multiple interpretations arise of the meaning of a single technology [28; 29], multiple interpretations of a single value arise, as well. This insight also builds on prior work suggesting how narratives of technology use in popular culture can portray alternative visions of the 'same' core value [11] by revealing how such tensions emerge in organizational functioning.

The human–computer interaction research exploring value tensions has focused thus far on easing conflicts between multiple, different values that come into conflict in design, often the result of multiple stakeholders wanting to emphasize different values. Building on this work, our research suggests that designers need to engage with a more nuanced and thornier question: how to identify and resolve value tensions that arise when values are shared—tensions that arise from multiple conflicting interpretations of how to best achieve and promote a shared value.

By making this analytic distinction between values and logics, we also affirm the importance of understanding values in practice—exploring how different stakeholders in a sociotechnical system understand and enact a given value in the context of their work. Making this distinction requires a new unit of analysis. It may also require a longitudinal perspective; just as the meaning of information evolves over time [15], the meaning of values may evolve, as well.

Design, then, needs to be understood not only in participatory, reflective, and empathic ways—involving a breadth of stakeholders and acknowledging a plurality of values—but also in an ongoing and iterative way. Design needs to accommodate the evolution of entire sociotechnical systems that occur when technology is deployed, when work practices change, and when the way in which shared values are enacted may change, as well.

In conclusion, our research demonstrates that there are multiple logics—ways of enacting a single value—within a sociotechnical system. Our research reaffirms just how messy and difficult to contend with values are in design contexts, even when the stakeholders share beliefs about the core values that are important.

REFERENCES

1. Alsheikh, T., Rode, J.A., & Lindley, S.E. (2011). (Whose) value-sensitive design? A study of long-distance relationships in an Arabic cultural context. In *Proc. CSCW*. New York, NY: ACM Press, pp. 75–84.
2. Bélanger, F. & Carter, L. (2006). The effects of the digital divide on e-government: An empirical evaluation. In *Proc. HICSS*. Los Alamitos, CA: IEEE Computer Society, pp. 81–88.
3. Borning, A. & Muller, M. (2012). Next steps for value sensitive design. In *Proc. CHI.* New York, NY: ACM

Press, pp. 1125–1134.

4. Chadwick, A., & May, C. (2003). Interaction between states and citizens in the age of the internet: “E-government” in the United States, Britain and the European Union. *Governance 16* (2), 271–300.
5. Corbin, J. & Strauss, A. (2007). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks, CA: Sage Publications.
6. Cordella, A., & Bonina, C. (2012). A public value perspective for ICT enabled public sector reforms: A theoretical reflection. *Government Information Quarterly 29* (4), 512–520.
7. Dombrowski, L., Voida, A., Hayes, G.R. & Mazmanian, M. (2012). The social labor of service mediation: A study of the work practices of food assistance outreach. In *Proc. CHI.* New York, NY: ACM Press, pp. 1977–1986.
8. Friedman, B., Kahn, P.H. & Borning, A. (2006). Value sensitive design and information systems. In P. Zhang & D. Galletta (Eds.), *Human-computer interaction in management information systems: Foundations* (pp. 348–372). Armonk, New York: M.E. Sharpe.
9. Gadamer, H.G. (2005). *Truth and method.* (2nd ed.). (J. Weinsheimer & D.G. Marshall, Trans.). London, UK: Continuum Publishing Group.
10. *Hearing to review federal nutrition programs: Hearing before the Subcommittee on Department Operations, Oversight, Nutrition, and Forestry, of the Committee on Agriculture, 111th Cong., 41* (2010) (testimony of Nancy Swanson).
11. Harmon, E. & Mazmanian, M. (2013). Stories of the smartphone in everyday discourse: Conflict, tension & instability. In *Proc. CHI*. New York, NY: ACM Press, pp. 1051–1060.
12. Heeks, R. (2008). Benchmarking e-government: Improving the national and international measurement, evaluation and comparison of e-government. In Z. Irani & P. Love (Eds.), *Evaluation of information systems* (pp. 257–296). Burlington, MA: Butterworth-Heinemann.
13. Hood, C. (1991). A public management for all seasons. *Public Administration*, *69* (1), 3–9.
14. Jaeger, P.T. (2005). Deliberative democracy and the conceptual foundations of electronic government. *Government Information Quarterly, 22* (4), 702–719.
15. Kidd, A. (1994). The marks are on the knowledge worker. In *Proc. CHI*. New York, NY: ACM Press, pp. 186–191.
16. Knobel, C.P. & G.C. Bowker. (2011). Values in design. *Communications of the ACM 54* (7), 26–28.
17. Le Dantec, C.A., Poole, E.S. & Wyche, S.P. (2009). Values as lived experience: Evolving value sensitive design in support of value discovery. In *Proc. CHI*. New York, NY: ACM Press, pp. 1141–1150.
18. Meynhardt, T. (2009). Public value inside: What is public value creation? *International Journal of Public Administration 32* (3–4), 192–219.
19. Miller, J.K., Friedman, B., & Jancke, G. (2007). Value tensions in design: The value sensitive design, development, and appropriation of a corporation's groupware system. In *Proc. GROUP*. New York, NY: ACM Press, pp. 281–290.
20. Milne, G.R. & Culnan, M.J. (2004). Strategies for reducing online privacy risks: Why consumers read (or don't read) online privacy notices. *Journal of Interactive Marketing 18* (3), 15–29.
21. Mossenburg, K., Tolbert, C., & Stansbury, M. (2003). *Virtual inequality: Beyond the digital divide.* Washington, D.C: George Washington University Press.
22. Norris, D. F. & Reddick, C.G. (2013). Local e-government in the United States: Transformation or incremental change? *Public Administration Review 73* (1), 165–175.
23. Pieterson, W. & vanDijk, J. (2007). Channel choice determinants: An exploration of the factors that determine the choice of a service channel in citizen initiated contacts. In *Proc. dg.o.* Digital Government Society of North America, pp. 173–182.
24. Reddick, C.G. & Turner, M. (2012). Channel choice and public service delivery in Canada: Comparing e-government to traditional service delivery. *Government Information Quarterly 29* (1) 1–11.
25. Riggins, F.J. & Dewan, S. (2005). The digital divide: Current and future research directions. *Journal of the Association for Information Systems 6* (12), 298–337.
26. Sæbø, Ø., Rose, J., & Flak, S. (2008). The shape of e-participation: Characterizing an emerging research area. *Government Information Quarterly 25* (3), 400–428.
27. Sengers, P., Boehner, K., David, S. & Kaye, J. ‘J.’ (2005). Reflective design. In *Proc. Critical Computing*. New York, NY: ACM Press, pp. 49–58.
28. Sengers, P. & Gaver, B. (2006). Staying open to interpretation: Engaging multiple meanings in design and evaluation. In *Proc. DIS*. New York: ACM Press, 99–108.
29. Voida, A. (2008). Exploring a technological hermeneutic: Understanding the interpretation of computer-mediated messaging systems. (Doctoral dissertation, Georgia Institute of Technology, 2008).
30. Wastell, D.G. (2002). Organizational discourse as a social defense: Taming the tiger of electronic government. In E.H. Wynn, E.A. Whitley, M.D. Myers & J.I. DeGross (Eds.). *Global and organizational discourse about information technology* (pp. 179–195). Norwell, MA: Kluwer Academic Publishers.
31. West, D.M. (2005). *Digital government: Technology and public sector performance.* Princeton, NJ: Princeton University Press.
32. Winner, L. (1980). Do artifacts have politics? *Daedalus 109* (1), 121–136.
33. Yildiz, M. & Saylam, A. (2013). E-government discourses: An inductive analysis. *Government Information Quarterly 30* (2), 141–153.