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The tension between user-centred design and e-government services

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The absence of user involvement in the design and development of e-government is often cited as a reason for the lag in e-government uptake. Drawing on our involvement with PortNL, an integrated e-government service for expatriates in the Netherlands, we explain this absence as a result of an inevitable tension between user-centred design – the most common way to involve users – and e-government. User-centred design is a structured approach to produce interactive systems by involving users or potential users and addressing their needs at every stage of the design process. Governments, while concerned with their users' needs, have their own considerable needs to address. We outline four manifestations of the tension between user-centred design and e-government: users' and governments' contradictory visions of the tasks to be accomplished; governments' mandate to design for exceptions, as well as for the mainstream, governments' and users' differing commitments to the law and governments' and users' contradicting desires about the nature of their relationship. We conclude with observations about the design and development of e-government services to improve their quality and, thus, increase their uptake.

Keywords: user-centred design; e-government; electronic services; adoption; service design

1. Introduction

Governments all over the world are working on a broad array of e-services, re-designing services as diverse as tax filing, applying and registering for social security, obtaining birth and marriage certificates, procurement for business, government transactions and customs declaration. An e-government service, as any other e-service, can be defined as the 'overall transactional journey, constructed of smaller encounters between employees and customers, customers and technology, and technology and employees' (Gutierrez as cited in Forlizzi 2010). The transition from traditional service delivery to electronic services allows or forces the consumer, citizen or client to take a new role in the delivery of the service or the product. Hence, both the transactional journeys and the encounters must be (re-)designed, a task that often falls to the interface and interaction designers of the electronic kiosks and Internet or mobile phone applications used for e-services. Human–computer interaction (HCI) designers increasingly work as designers of services (Kimbell 2009, 2010).

Services, as has been stated over and again, are different from economic goods, because they are largely intangible and are created in close contact and cooperation between the party that delivers the service (the organisation, the employee) and the party that requests the service (the customer, citizen or client). In IT-enabled service interactions, even more than in other interactions, the service concept must fit seamlessly with the expectations and mental model of the service that the customer or citizen brings to the service. E-services must be designed with a clear view of the prospective users' prior knowledge and context of use and must meet users' expectations to be considered satisfactory. Customers will only accept and adopt e-services of parties they feel they can trust, so the design should represent the trustworthiness of the organisation and create in the customer a sense of confidence and control. When technology-mediated service encounters lack those qualities, they are not perceived as a good alternative to other modes such as face-to-face interactions between employees and customers or government officials and citizens.

The service design research community emphasises that services, in order to be satisfactory, must address the needs of both end-users and organisations, that is, that services need to be designed in a user-centred way. Services need to be designed from the perspective of a service concept that 'defines the how and what of service design, and helps mediate between customer needs and the organization's strategic intent'

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(Goldstein *et al.* 2002, p. 121). This focus on the customer–organisation relationship has proven to be a valuable approach for services that are complex and large-scale in nature, such as in retail, marketing and e-commerce. E-government services are particularly suited to a service design approach, as they intertwine online and offline interactions over disconnected periods of time and incorporate numerous stake-holders and information providers. Furthermore, many governments have a pre-existing disposition to incorporate service in their interactions with their users and already have established relationships with their constituencies.

Yet despite the oft-expressed intention to be customer-centric, many e-government services remain far less useful and easy to use than intended. Users remain a challenge for e-government service designers and providers. Despite a decade of considerable investments of public funds, only about half of European businesses and citizens are using e-govern-ment services, and those users are only moderately satisfied with them (Capgemini *et al.* 2009, p. 46). Far fewer than anticipated are benefiting from e-govern-ment services, the use of digital technologies, such as the World Wide Web, email, and short message services, to retrieve or receive government information or services and to facilitate communication with their governments. And e-government's lack of user cen-tricity and its correspondingly low quality of user experience are held at least partly responsible for the lack of user uptake of e-government services (Capge-mini *et al.* 2009).

We suggest that governments' difficulty in centring e-government services on users is due, partly, to a fundamental tension between the needs of users and those of governments. User-centred design – a well-known approach with roots in the HCI field – prioritises the needs of technology users, supporting their approach to tasks and information seeking, as well as advocating for the importance of users' needs even, when necessary, over the needs of e-service builders. In an e-government context, however, the service builders represent governments and not en-terprises. And as centuries of history have demon-strated, governments – in their various forms – have their own needs and goals, which do not necessarily succumb easily to those of their users.

In this article, we discuss the tension between e-government and user-centred design that manifested during our research for and participation in the design and development of a prototype of an e-government service in the Netherlands. First, we briefly discuss e-government and its relationship to user-centred design and then we describe our case of an e-government integrated service, the PortNL website prototype.

Drawing on our involvement in this service, we discuss four points of tension that emerged between user-centred design and e-government services: (1) users' and governments' contradictory visions of the tasks and transactions to be accomplished; (2) governments' mandate to design for all, that is, for exceptions, as well as for the mainstream; (3) governments' and users' differing commitments to the law and (4) governments' and users' contradicting desires about the nature of their relationship. We conclude by sharing observa-tions that are not only relevant to improving e-government services but also to other large-scale, complex administrative processes that have a public character and or are meant to serve a very large and diverse audience.

2. Theoretical background: user-centred design in e-government services

2.1. E-government services: governments' vision of their citizens

Governments at every level – local, municipal, state, regional, national, supranational – are engaged in e-government services. The scale of these services range widely; some governments simply post information on a website, while others enable users to engage in transactions, such as filing income tax or requesting permits, through a combination of kiosks, websites and mobile applications. Some services attempt to coordinate between government agencies (G-to-G services) or between governments and businesses (G-to-B services), but most of these services target individual end-users, usually citizens (G-to-C services). Governments have committed considerable financial and personnel resources to e-government services.

As with many other kinds of services, the goals of e-government services are efficiency maximisation, reduction of administrative burden and/or improve-ment of service delivery. For example, governments, much like organisations in other domains, have embraced shifting the administrative burden of many transactions from the organisation to the user (Castro *et al.* 2010). Governments, too, have implemented channels of service and utilised self-service technolo-gies, such as automated voice information systems or e-forms in Web applications.

However, unlike in other domains, governments also ascribe grand visions of their desired relationship with their citizens to their e-government services. For example, a late 2009 declaration by European ministers responsible for e-government states, 'We aspire to a vision whereby European governments are recognised for being open, flexible and collaborative in their relations with citizens and businesses' (Ministerial Declaration on e-Government 2009). Democratic

countries, particularly those in northern Europe, often see e-government services as a way to foster active citizenship in the democratic tradition, assuming that it will reaffirm and renew citizens' engagement with and commitment to their governments. The governmental view on active, co-creating citizens is not unlike Zuboff's and Maxmin's (2004) vision of a new generation of customers with a strong tendency to psychological self-determinism and a desire for efficient and self-controlled service delivery and who have a relationship of advocacy and trust with supportive market parties.

The mere presence of e-government, however, does not necessarily reflect a desire for more open or accessible and supportive government. Less democratic governments also implement e-government services with their own goals in mind. For example, in their analysis of e-government in the Central Asian countries of Kazakhstan, Kyrgyzstan and Uzbekistan, Johnson and Kolko (2009, p. 30) conclude that 'authoritarian governments can manipulate the medium of the Internet and [that] the simple presence of e-government sites does not represent a more accountable, transparent, or democratic government'. Similarly, even in strongly democratic countries, the goals of e-government are shaped largely by the governments themselves. For example, based on their study of e-government in Sweden, Elovaara and Mörtberg (2007, p. 415) note that while e-government often expresses a dream of accessibility, in reality 'there is a script that underlines that activity and participation should not transgress the stable and ordered forms of representative democracy'. And observers of e-government in democratic countries such as the United Kingdom note the degree to which e-government enables governments to surveil its citizens more effectively (Lyon 2009).

Far from being a simple exercise of porting government services from the offline to the online, e-government reflects a specific vision of how governments view their current and future relationship with citizens. Many governments, however, choose to downplay the normative element of e-government and, therefore, design and develop services based on their ideal, rather than the actual, relationship between governments and citizens, which, in turn, has adverse consequences for e-government's user centricity and, ultimately, its adoption and use.

2.2. E-government: lack of users and lack of user centricity

Despite the idealised and grand aspirations of e-government (Bekkers and Homburg 2007), the simple fact is that people are not currently using available e-government services to the extent to which

governments expect and need (van Deursen *et al.* 2006, Capgemini *et al.* 2009, OECD 2009). According to a 2009 study of European countries, citizen services in particular suffer from 'low levels of user take-up' (Capgemini *et al.* 2009, p. 11). Even in countries with a relatively small digital divide, users are not taking advantage of the potential benefits of interacting with their governments digitally. Not only are citizens using e-government less frequently than expected (Capgemini *et al.* 2009, Noble 2009), but even when they use it, they are often not satisfied.

The lack of user centricity in e-government services has been identified as a core reason for the lack of user uptake of e-government services (van Deursen *et al.* 2006, van Dijk *et al.* 2007, Damodaran *et al.* 2008, Capgemini *et al.* 2009). A recent audit of European e-government websites found that less than half of the screened websites respond positively to usability assessment and less than one-third of websites provide users with the ability to comment on problems they experienced with electronic services or websites (Capgemini *et al.* 2009, p. 41).

Many governments pay lip service to user-centred design, but even those with the best of intentions find that incorporating users into the design and deployment of a technology and meeting users' needs is rarely an easy feat. The most common way to develop and design user-centric technologies is through a full user-centred design process, rather than simply conducting isolated usability evaluations or implementing user satisfaction questionnaires. User-centred design is a structured approach to producing interactive systems – most commonly websites and software – by involving users or potential users and addressing their needs throughout the entire design process. The approach has its roots in the field of HCI and, more formally, in the international standard, ISO 13407, 'Human-Centered design processes for interactive systems', which, as shown in Figure 1, outlines four activities that should take place throughout the design and development of a system: understanding and specifying the context of use, specifying the users and organisational requirements, producing design solutions and evaluating designs against requirements (ISO 1999).

User involvement is explicit in the user-centred design process and in each of the stages of the human-centred design process. What it means to involve users, however, varies greatly, both in theory and in practice. A user-centred design approach can be applied by using a variety or combination of methods (Maguire 2001). Users may be interviewed about their needs that the system would address (through interviews), observed when completing tasks for which the system will be designed with a special focus on all the process
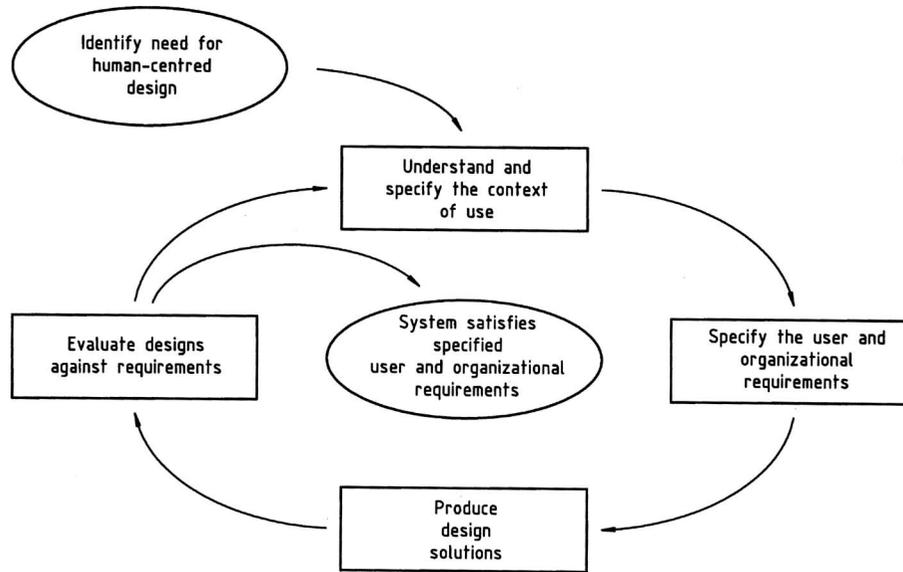
Figure 1.   ISO 13407 interdependence of human-centred design activities from human-centred design processes for interactive systems (ISO 1999). This figure is reproduced with the permission of the Danish Standards Foundation. The figure is based on the International Standard 'ISO 13407:1999 – Human centred design processes for interactive systems'. © Danish standards.

workarounds users have created (through task analysis, ethnography or contextual design), be asked to contribute directly to the design (through participatory design) and evaluate rough drafts or prototypes of the product (through usability evaluation).

Not every instance of user-centred design follows the official process outlined by the ISO standard or academic theories, but elements of it are incorporated into service design, and the on-the-ground practice of user-centred design mirrors many elements in formal academic literature and theories. Despite the challenge of measuring user involvement and assessing its external and internal return-on-investment, common wisdom and some evidence indicates that involving users in the design process is a way to avoid potentially costly mistakes and to create high-quality products that meet users' expectations and needs (Bias and Mayhew 2005, Tullis and Albert 2008). The formality and extensiveness of user involvement in software and websites projects is difficult, if not impossible to measure (Kujala 2003), which makes assessing its effects on products and users a challenge.

Adhering to a user-centred-design approach should not be confused with blindly following users' dictates. While integrating users' observed behaviours and articulated needs is at the core of user-centred design, the application builders have discretion about incorporating users' input. For example, an oft-quoted maxim in the software engineering world advises people involved in programming to 'listen to your users, but ignore what they say' (Borenstein 1991). While most practitioners of user-centred design would

not go so far as to advocate ignoring what their users say, in their commitment to representing their users' interests and needs in the development process, they selectively incorporate users' feedback.

While commercially successful websites regularly implement user-centred design as a matter of course, from most accounts, e-government rarely engages in a full user-involved process (Capgemini *et al.* 2009, van Velsen *et al.* 2009). Common ways of ensuring customer centricity in service design include use case scenarios, critical incident techniques, assessment frameworks (e.g. SERVQual) and other qualitative and quantitative approaches grounded and applied in the HCI profession. Pre-design research, in particular, in e-government systems is rare. Governments, in general, do not complete the first steps in the design cycle: understanding and specifying the contexts of use or specifying users' requirements (Schedler and Summermatter 2007). Nor do governments appear to be routinely integrating users into the evaluation process necessitated by user-centred design in ways that go beyond mere expressions of satisfaction; hence, confounding such diverse triggers for (dis-)satisfaction as prior knowledge or skills levels, expectations about service quality, trust in the government organisation and the technology used and relief because an IT-enabled task is successfully completed.

Within Europe, few governments are starting to engage in regular user satisfaction monitoring; less than one-third of the EU27+ countries allow users to rate the website online (Capgemini *et al.* 2009). While often popular politically, user satisfaction measures

have limited value for user-centred design. First, most user satisfaction measures do not provide feedback detailed enough to identify the strengths and weaknesses of the design in question. Second, user satisfaction measures are useful to user centricity only when organisational mechanisms are in place to integrate feedback into the design cycle, which is not the case for most e-government websites. Third, users' numerical expression of satisfaction is often unrelated to the quality of the service's user experience. For example, we have often observed users rate a poorly designed service highly simply because they were able to accomplish their task, without consideration of how complex or time consuming the task was.

The scarcity of user-centred design in e-government has a few possible explanations. First, e-government at its broadest is a relatively new endeavour, dating only back to the 1990s. E-government services may simply not have matured to the point of incorporating user-centred design techniques. It took several decades until the software industry began to incorporate user-centred design, and the battle to improve the user experience by incorporating user-centred design in current software is far from over. In addition, much of the attention paid to usability of e-government websites has been spurred by legislation requiring governments to ensure that people with physical challenges, such as visual impairments, are able to access government websites. As a result of such legislation, efforts to improve user experience in e-government seem to have dwelled more on the issues of accessibility rather than other considerations such as usability, functionality or affective aspects of electronic public services (Bertot and Jaeger 2006, p. 165).

Second, market pressure spurs commercial entities to implement user-centred design, and e-government is largely impervious to market pressures. Usability is a competitive advantage for products and services, particularly for those purchased or delivered through websites. E-government services, of course, remain largely immune to these pressures. Governments suffer relatively low costs, financial or otherwise, for implementing poor quality or unusable e-government services. They might suffer low adoption rates by end-users, but they do not go bankrupt or enrage shareholders if people do not use e-government. People have alternative routes of access to their governments (Pieterson 2009), and, therefore, the pressure on e-government is not as high as in commercial contexts. Governments, in this regard, have a monopoly, and application of the concept of market mechanisms to e-government is inappropriate.

Governments clearly expect that more people – and an increasingly wide variety of people – will interact with them through e-government services. However, as the stunted rate of user adoption demonstrates, these expectations are for naught unless governments improve the user experience of e-government services. As one report scathingly remarks, 'There is no use in delivering eGovernment services if these are not used or do not deliver the expected benefits to users' (Capgemini *et al.* 2009, p. 40). However, designing user-centred technologies is challenging in the best of circumstances. Governments face added complexities integrating users into their design because of the complexity of their actual and desired relationships with their users. Through our involvement in the design of an e-government service as discussed in the next section, we had the opportunity to observe and analyse some of the complexity of implementing user-centred design in a context that was ideologically and practically committed to user centricity.

3. Tension between user-centred design and e-government

3.1. Case study: PortNL website

As experts on user-centred design, we participated in the development of a website, PortNL, as part of B-dossier, a larger e-government service design project in the Netherlands. B-dossier was a multi-year (2006–2009) research and development project created in order to explore integrated electronic public service delivery in the Netherlands. Integrated service delivery, which is also known as one-stop government or joint government, is a way governments envision reducing the administrative burden for citizens, businesses and government agencies and to ensure that services are appropriate for the variety of potential users. Such services often centre the user experience around scenarios or life events, masking for users the number of government agencies and processes behind a single coherent service. Initiated and managed by the research institute Novay, the B-dossier project is a collaboration of municipalities, government agencies and universities.[1]

As an attempt to define and expand the view of integrated personalised services, the B-dossier project carefully selected cases for which it would develop innovative practices, mock-ups and prototypes of integrated services or service-supporting applications. The ideal case was one in which users have to interact with what appears to users as an undifferentiated assortment of government agencies and where the procedures, decision-making rationale and status in the process tend to be complex and murky. The project's word, dossier, was a metaphor for a file or an account that the user shares with officials, employers and other invested parties. Cases that B-dossier tackled include an entrepreneur starting a cafeteria, an

unemployed person re-entering the labour force and the application for subsidised domestic help.

The final case of B-dossier was PortNL, a prototype of an integrated service portal, supported by Netherlands government agencies, companies and not-for-profit organisations. PortNL's target audience was people who relocate to live and work in the Netherlands on a temporary basis. These people are often referred to as expatriates ('expats') or international employees. This particular audience, in addition to its economic importance to the Netherlands, is also one who interacts intensely with various branches of the government of the Netherlands. The intensity of this audience's interaction with the government, as well as its (assumed) high level of Internet experience, made it a highly suitable target group for the B-dossier project.

The parties involved in this e-government service were committed to implementing user-centred design. Following the user-centred design processes defined and refined in the earlier cases of B-dossier (van Velsen *et al.* 2009), the PortNL development process followed the cycle recommended by the ISO standard for human-centred design processes (see Figure 1). We functioned in this process both as user researchers and as user-centred design experts. First, we conducted a pre-design study, familiarising ourselves with the various processes required to move and work to the Netherlands and conducting 14 in-depth interviews with expatriates. The goal of this study was to investigate people's official interactions, their 'paperwork,' with the Netherlands Government, before their entry to the country and in the first weeks after arrival. We asked people about their relocation tasks, such as opening a bank account or finding a school for their children, as well as giving them the opportunity to volunteer any information they wanted. The main outputs of this research was a set of user requirements, workflow diagrams ('service mappings') of common administrative processes as experienced by interviewees, workflow diagrams of interviewees' relocation experience and a list of emergent themes of the expatriate experience (Kotamraju and van der Geest 2009). Second, using a paper-based prototype of the Web portal, we conducted a user acceptance study with 12 potential users, soliciting feedback about users' expectations, preferences, perceptions, first impressions and concerns (van der Geest and Kotamraju 2009).

Third, in addition to presenting our user research findings and advocating for our users in development discussions, we attended regular stakeholder meetings, participated in email discussions and critically reviewed interface designs from the perspective of our users' self-reports. Our involvement in this e-government service afforded us the opportunity to participate in, observe and experience firsthand the challenge of creating user-centred design e-government services.

3.2. Findings

We suggest that governments' difficulty in centring e-government on users is due, partly, to a fundamental tension between user-centred design and e-government service design. In the context of e-government, the needs of users sometimes conflict with those of the government. Of course, in any user-centred design process, conflicts might exist between the needs of the users and those of the application builders. However, in e-government, the builder is the government, and the governments' needs carry more weight, and more weight in crucial life matters, than those of the typical application builders. Governments need to compel people to perform all kinds of tasks that people might prefer not to do or find inconvenient: paying taxes, getting licences and permits and registering for services. Governments – even the least repressive and most democratic – are coercive institutions: their task is to provide for its citizens' needs, even if it means overruling their citizens' wishes.

Evidence of the tension between user-centred design and the goals of the e-government service manifested itself throughout the PortNL project. We analysed the data we collected through interviews and cognitive walk-through studies specifically for signs of tensions or contradictory needs. The design process, in its many guises and with all of its complexity, renders visible the social relationships between people, as well as between people and institutions. Our involvement in the user research, design and development of PortNL offered us a unique perspective in which to observe the design process. In this case, as designs were researched, planned, implemented, reviewed, evaluated, revised and assessed, the underlying tension between user-centred design and e-government became apparent. Drawing on our user research and involvement with the design and development of an e-government service, we present four manifestations of the tension between user-centred design and e-government:

(1) users and governments hold contradictory visions of the tasks to be accomplished
(2) governments must design for all, that is, for exceptions as well as for the mainstream
(3) government and users differ in their commitments to legal rules and regulations
(4) government and users have conflicting desires about the nature of their relationship.

Though these findings emerge in the context of e-government services, we consider them relevant to the design of e-services that are complex and public in nature, such as for insurance, financial and health services.

3.2.1. *Government's tidy story versus reality's messy experience: contradictory visions of tasks*

The first and most obvious way in which user-centred design and most e-government services conflict is in their fundamental description of the processes. Our analysis of existing e-government services in the Netherlands and our pre-design research clearly indicated a mismatch between what the government and users viewed as the tasks to be accomplished or the problems to be solved. Contrasting visual representations of both the Netherlands Government and potential users' experience illustrate the mismatch in the vision of the task. In the case of people emigrating to the Netherlands, the Netherlands Government as a whole – correctly – sees their responsibility as screening potential visitors and providing specific permits or administrative statuses: entry visas, residence and work permits and personal identification numbers. Each government agency provides its piece of the puzzle, each with its own website run independently. Rather than provide a single comprehensive overview of the process of moving to the Netherlands to live and work, the Dutch government provides several websites that offer access to the particular services or touch points required in this transactional journey.

Our pre-design research revealed that potential users viewed the relocation process in a completely different way. Interviewees experienced the process of relocation as a dense knot of interrelated tasks and processes. Figure 2 portrays the process as elicited from one of the 14 semi-structured in-depth interviews conducted in the pre-design phase. The interviewee is a woman from the USA, who moved to the Netherlands when her husband's company transferred him to a subsidiary near The Hague. This particular informant's experience is illustrated here not because it was particularly challenging but rather because her experience was better than most. She was in an excellent position structurally to handle this kind of transition: she had a university education, possessed above average financial resources, as well as logistical support from a large international company, and, most important, had already had the experience of relocating once for a previous stay in Denmark.

The complexity of the process represented in the Figure 2 is not, in and of itself, remarkable, nor is it applicable only to interactions between governments and citizens. Users' mental models of their tasks and processes as they experience them are complicated, but they provide insight into users' expectations about the world in which they need to accomplish their tasks (Hackos and Redish 1998, p. 41). A premise of user-centred design is to encourage designs that support users' natural workflows and adapt the e-service to the way in which they prefer to accomplish tasks. We think the users' mental models and process maps are descriptive and not prescriptive. Proper user-centred design would not simply replicate users' mental models, nor would it allow the blind imposition of the organisation's – in this case the Netherlands Government's – view of the task. For example, each grey-filled box in the model represents a problem the user experienced. In the design process, we paid particular attention to the grey-filled boxes in our interviewees' mental models because they represented pain points in the process and opportunities for the service design to improve on existing practices while accommodating the needs of both the users and the organisation.

Governments and users have conflicting idea of the tasks to be performed. Furthermore, even when a project is as committed to involving users as PortNL, the government needs to ignore much of users' perspective – in direct contrast to the tenets of user-centred design – because much of it was beyond the government's purview. The government cannot address the users' experience entirely, nor can it concern itself with the mismatch between how it and its users view the process. The government has needs too, and its needs, understandably, focus narrowly on enabling people to satisfy a well-defined set of legal requirements of moving to the Netherlands rather than on providing an optimal user experience. The challenge is that even if the e-government service wishes to follow a user-centred design process and, therefore, design for the users' experience, the government can only concern itself with part of the users' workflow and must ignore much of the rest of it, which has negative consequences for the quality of the user experience. Also, governments might have to come to negative decisions concerning the users' eligibility for a service, status or product, which in itself already makes for a negative user experience for which a more user-centred design process cannot compensate.

3.2.2. *Governments must design for exceptions, as well as for the mainstream*

Second, while user-centred design prizes making users' tasks simple and easy, governments are obligated, often legally, to provide comprehensive information, which more often than not, is neither simple to formulate nor easy to apply to one's particular
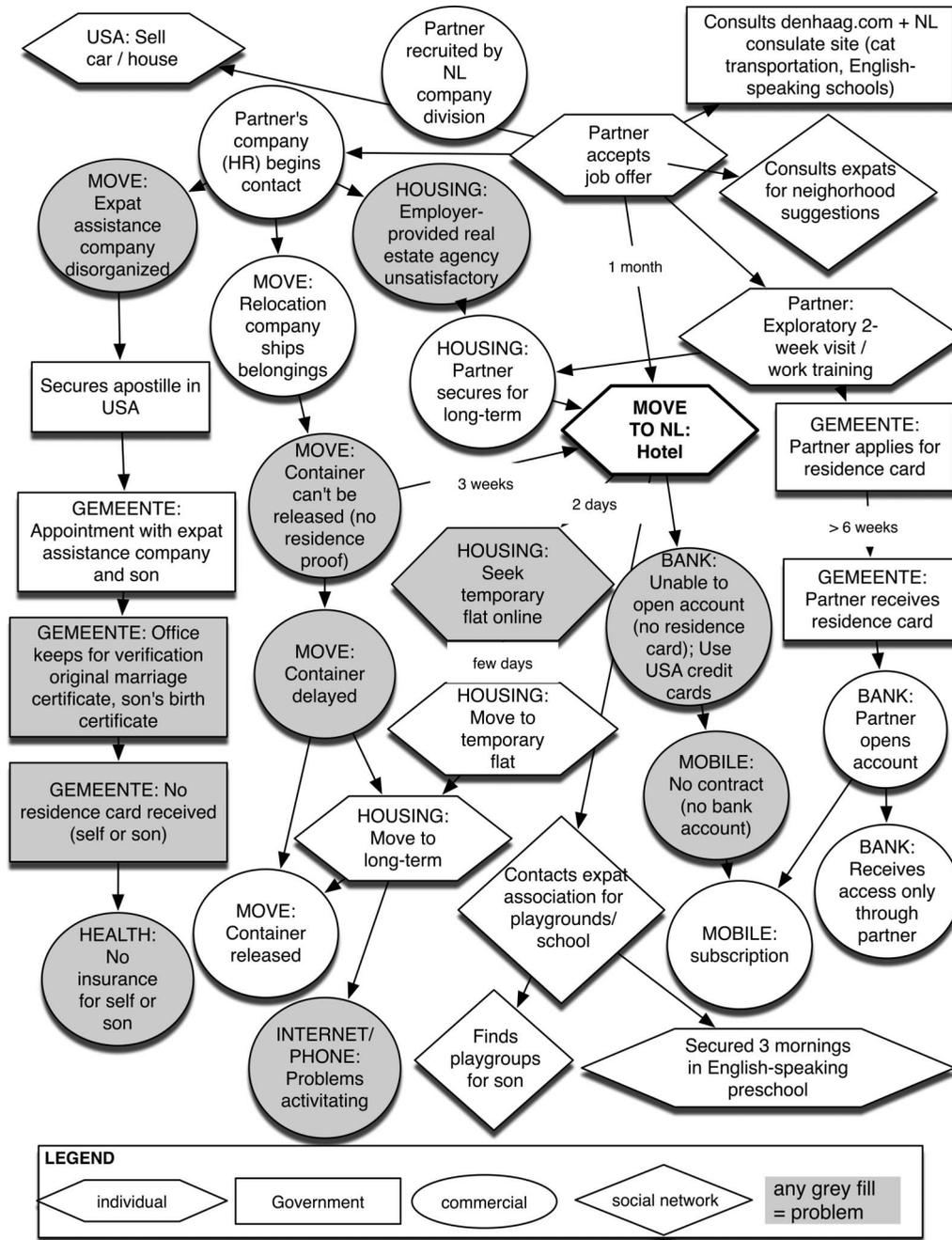
Figure 2. 'Moving to the Netherlands' workflow. Interviewee 4: not employed, citizen of USA, female, 33 years old, partner (legal, from USA), one son (under 5 years old), in Netherlands for 8 weeks at the time of interview.

situation. A common admonition in design is not to design for the exception, that is, not to design for a very specific nonrepresentative target group or task. Designing for exceptions is costly and inefficient, and good practice demands that design should support primarily the most commonly performed tasks or requests, for the largest or most important target groups.

However, e-services that are public in nature or 'e-services for all' face a special challenge in that they have a very broad, diverse audience, usually including 'potentially everyone'. While services in other domains might be technically available for all, they, unlike government services, do not have to guarantee relevance and availability for all. In the context of e-government, exceptions cannot be ignored. Governments are obligated, often legally, to take into account the entire, exhaustive array of possible users and scenarios, not just the majority or the most common situations. By extension, their electronic services are in

the unique position, first, of having to provide a vast amount of complete information and services; second, of having to provide it to the entire population, which is diverse in many aspects, and, third, requiring compliance, which requires cumbersome processes that might often run counter to user centricity.

First, while certainly websites in various domains face the challenge of providing a large quantity of complex information, government services bear a heavier burden in this regard. The content that governments have to provide is far from simple. Regulations are often archaic, historical conditions and contexts remain relevant to present-day situations, and dense texts in official, non-accessible language cannot simply be rewritten because of their legal or administrative status. Governments cannot pick and choose which content to make available on a website; they need to make it all available and in ways that pass legal scrutiny, which, of course, as we found, created information overload for service users.

In the PortNL case, the necessity of providing complete, comprehensive information was further complicated by the complexity of the laws and regulation governing immigration. The e-government service could not simply provide relevant information for the most common immigration cases, but it also needed to provide information for the exceptional cases, which often required different processes and procedures. The design had to incorporate the legal, occasionally arcane distinctions that immigration law requires, such as those governing reasons to come to the Netherlands (e.g. to visit relatives, for readmission, upon marriage to a Dutch partner or as an au pair) or determining status (e.g. whether being a theatre artist or having an advanced university degree, which would qualify one as a highly skilled migrant with a set of specific skills that allows for entry in the Netherlands).

This necessity for complete and exhaustive information complicated almost every aspect of the PortNL design process, as it created an information overload for users. In the pre-design and user acceptance studies, users consistently asked for reassurance that the information or services they sought online were complete and accurate. Some users wanted reassurance that they had seen everything related to their personal situations, for example, an overview of the entire process they – in their specific situations – needed to undertake. Correspondingly, users responded well to a feature in the website prototype that allowed them to see a single overview that integrated all of the steps and agencies with whom they had to interact.

Second, e-government services face the unique challenge of having to design for their entire populations. Commercial entities can largely choose their audience and ignore or purposefully exclude others;

governments cannot (Silcock 2001, Carter and Bélanger 2005). Commercial websites do not have to target entire populations of countries, and furthermore, it is difficult to imagine that they would be profitable if they did so. E-government websites, on the other hand, need to design for even the most rare exceptions, rather than focusing solely on the majority of the population. The availability of services in different languages and to people with visual impairments, for example, is one obvious consequence of governments' need to include their entire population.

Furthermore, governments are often responsible and particularly accountable for the numerically marginal sectors of populations. In perversion of intent, the experiences of previous e-government services demonstrated that important groups, ironically often the disadvantaged that interact with the social service, medical and other assistive government agencies the most often, were benefiting the least from e-government services (van Dijk *et al.* 2007).

Third, in their role as enforcing compliance, governments must often design for situations that they know compromise the user centricity of the service. For example, our pre-design study highlighted that one of the strongest pain points in the immigration process to the Netherlands was the apostille. The apostille or apostille certificate is a government's authentication of a document as being genuine and, therefore, legal for use by another government, in accordance with a 1961 convention of The Hague Conference on Private International Law (2010; Hague conference website). In the Dutch immigration process, non-European immigrants need to obtain an apostille for their official documents, such as birth certificates or marriage certificates. Users consistently complained about the complexity and hassle of obtaining apostilles. For one user, the apostille requirement meant that while living in Australia, he had to arrange for someone to physically obtain his birth certificate in Tajikistan, arrange for an exemption to the traditional apostille (Tajikistan is not a signatory of the 1961 apostille convention) at the nearest Dutch embassy in Kazakhstan and then send the document to Sydney, Australia. He then had to arrange apostilles for his naturalised Australian citizenship, the birth certificates and citizenship documents of his wife and children, as well as for his marriage certificate. While government agencies fully recognise that the apostille is a frustrating, inefficient and cumbersome requirement for users, they have no choice but to require compliance as it is legally required, which means that the e-government services must also purposefully design for a process that reduces user centricity.

Unlike commercial entities that have the luxury of selecting their target audience, governments face the

challenge of having to design for exceptions, as well as the mainstream. A commercial site has no legal obligation, nor is it necessarily a competitive advantage, to provide information about every type and variety of a product or service on its website. It does not need to provide information about how to handle outdated products, nor does the fact that it is not comprehensive create doubt about its trustworthiness. Governments, however, in their role as trustworthy authorities, must provide a staggering amount of dense, complete, current and legacy information, which runs counter to offering a good user experience.

3.2.3.   *Designing for workarounds and breaking the law*

A third point of the tension between e-government and user-centred design is the fact that the governments cannot support the ways in which users create shortcuts in complicated procedures, possibly by manoeuvring around or bending the law. When faced with regulations or requirements that they perceive as cumbersome, inconvenient or unimportant, users find alternatives – to accomplish their own goals. Instead of considering users' non-compliance with government regulations as possible breaches of the law, from a design perspective, it is more productive to view them as workarounds.

A workaround is a term originally used in computing (Gasser 1986), but now more commonly understood as an 'informal temporary practice[s] for handling exceptions to normal workflow' (Kobayashi 2005, p. 1561). They are particularly prevalent in situations that people find cumbersome. And, in a design context, workarounds often inspire new solutions and improved processes, particularly those that appear consistently and systematically. For example, as Norman (2008) recounts, design teams' observations that people worked around the design limitations of shampoo bottles by propping them upside down standing on their lids to squeeze out the final drops, led manufacturers to design bottles that were designed to stand on their lids.

In our interactions with government stakeholders and our pre-design research, we learned about the ways in which people regularly worked around the official government procedures. For example, in order to open a bank account in the Netherlands, by regulation people must have a unique personal identification number (burgerservicenummer; BSN) assigned by the government. Immigrants to the Netherlands often do not receive their number for several weeks, sometimes months, after their arrival, during which time they urgently need a bank account in order to arrange housing or receive a salary. While the law is clear in these cases, many of interviewees

found creative solutions to work around it. Several interviewees worked around this problem by asking the personnel departments of their company to call a bank branch directly, and one interviewee resorted to emphasising the amount of business his company did with a bank in order to expedite the opening of his account. Yet another recent arrival solved the no-BSN-so-no-bank-account problem by arranging for his employer in the Netherlands to deposit his pay cheque into the account of his Dutch girlfriend. Governments would never condone these workarounds, but the workarounds solved users' problems.

Governments, of course, cannot design for users' workarounds. Governments are tasked with upholding and implementing the very rules and regulations that users skirt. Their role means that they must be intentionally blind to users' actual needs and demands and put their own needs explicitly and unwaveringly in front of those of their users. In practice, however, government representatives, both as reported in interviews, as well as tacitly implied in design meetings, occasionally tried to accommodate users' needs and interpreted rules flexibly and made exceptions. Such an exception occurred in the instance of an Italian woman who needed to register officially with the local city administration, but did not possess a housing contract to prove her residency. The city official, instead of simply refusing to register her, contacted the woman's employer to verify her employment status and then registered her. The workaround accomplished the goal of registering the woman, but no government agency could suggest such a workaround on a website, for example.

Government officials were often well aware of the difficulty that the official laws imposed on people whom the Netherlands wanted to encourage to come enrich the labour force. Therefore, they allow some degree, even if slight, of flexibility in its rules and procedures in order to sustain their societies. This inclination to accommodate the citizen conflicts with notions of transparency of the government. In the best instances, governments adjust their official policies or regulations to accommodate users' needs. For example, our research reinforced other observations of the underlying difficulties around the personal identification numbers that prompted people to use workarounds. The Netherlands Government is now exploring the possibility of issuing BSN-like numbers to non-residents in order to address the underlying difficulties faced in the immigration processes (Registratie Niet Ingezetenen 2010). Such a policy change, in the best of cases, might give governments reasons to re-design the law or regulations, rather than re-design for the users' workaround. More generally, however, e-government service cannot be designed to let their users work around the law.

3.2.4. *Conflicting desires for relationships: identification and authentication*

Fourth, governments and people differ in their vision of their relationship to each other. E-governments want serious, long-term committed relationships with their citizens and inhabitants, whom they like to see as active participants in a transparent public administration. Users, on the other hand, particularly when they are in information-seeking mode, want a quick foray into e-government. Governments, as part of their function to preserve public order, have high incentives to build long-term, cradle-to-grave relationships with their citizens. Part of governments' role in society is to keep records about their citizens and, in particular, about governmental interactions with their citizens. In addition, e-government services, particularly sophisticated personalised and integrated ones, depend on knowing some data and history about their users. These kinds of e-government services are designed for relationships that last at least for a user's current life event but preferably throughout much longer parts of people's lives. Citizens' records are a requirement for exchange and cooperation between various government agencies and a condition for realising one-stop government.

Users, however, have a different perspective than do governments about the citizen–government relationship. Our research showed that people, particularly in information-seeking modes, want to be anonymous or at least not personally identifiable to their governments. Participants in both the pre-design and the post-design research repeatedly stressed that they only signed in to websites at the last possible moment, when it was inevitable in order for them to accomplish a specific, highly desired goal, and when they saw no opportunity to use another communication channel. People want to seek information that is accurate and appropriate to their situation, thus somewhat personalised, but they also want to receive as much information as they can before being personally identifiable. They want to know that they are embarking on the correct service or process before investing time and effort. They are often seeking information or services that have serious consequences on their lives, and sometimes they are exploring how to comply with or navigate official requirements, such as remaining within the law by paying taxes, but also seeking to minimise their personal tax burden. Given the regularity with which issues of trust and privacy arise in discussion of e-government (Bélanger and Carter 2008, Teo *et al.* 2008, Reddick 2009), it is unsurprising that users may prefer a less intimate and more distant relationship with government, particularly when exploring rights, obligations or potential problems.

The ongoing debate about identification (a unique user identity; ID) and authentication (knowing that the service user is the owner of the ID) that arose repeatedly during the PortNL design process reflected a broader, more fundamental tension between how governments and users see their relationship. PortNL reflected the service provider's need to know its users by requiring identification in the form of login information, a user account. However, what also quickly emerged in the design process was lack of clarity about what levels of identification and authentication would be required or preferred at different stages of the users' engagement in the service. The Netherlands Government's preferred digital ID system is DigID (2010), a 'system shared between cooperating governmental agencies, allowing to digitally authenticate the identity of a person who applies for a transaction service via Internet'. Such a level of authentication, however, in the first place proved to be unfeasible for the target population of potential expatriates, who did not already have an ID issued by the Netherlands. In the second place, our user research indicated that users would perceive requests for identification and authentication as off-putting and a deterrent to using the service. Identification and authentication, from the government's perspective, were essential to engage in a long-term relationship with its citizens and for providing them with accurate detailed, personalised services However, the users themselves do not necessarily want such an intimate relationship, preferring instead to obtain as much information about the service as possible without surrendering too much personally identifiable information.

4. Conclusion

Our experience with the PortNL case study suggests that while a tension between design and e-government is inevitable, the remedy lies in designing services around relationships, using both service and user-centred design approaches. While the needs of users and stakeholders occasionally conflict in almost all design processes, when the services in question are governmental or public in nature, the tension possesses different characteristics, as discussed in this article. The practices of designing services in commercial environments cannot and should not simply be transferred to e-government (Jorgensen and Cable 2002, Carter and Bélanger 2005). On the one hand, user-centred design in commercial and government contexts, for example, both face the challenge of coordinating disparate stakeholders and convincing them to cooperate in the design and development effort. Coordination between agencies (West 2004) and streamlined decision-making

are serious challenges for e-government (Jorgensen and Cable 2002).

On the other hand, despite their commonalities, e-government and for-profit ventures differ on important axes, including their fundamental goals and how those manifest through technology use, their vulnerability to market forces and the nature and diversity of their audiences. Governments have a unique mandate and capacity to enforce compliance; they have different ethical responsibility to their constituencies and ultimately a different purpose than do commercial institutions. Government e-services are not akin to products, and governments' existence does not rely on their ability to sell enough products to their customers. This reality brings unique challenges to public e-service design. Simple acknowledgement of the tension between the needs of governments and citizens would pave the way for more honest conversation, more accurate expectations setting and better design of services. The claim that user-centred design processes and e-government services have a tense relationship, in no way implies that e-government services should not attempt to involve users as much as possible in their design.

A key way to address tension between e-government and user-centred design is to ensure that relationships are the central focus of design processes. Service design has long placed the relationship between organisations and customers at the centre of the process. In its most ideal form, designing services emphasises 'using two-way dialogue to build customized service offerings, counting on knowledge about the customer to build strong customer relationships' (Rust and Kannan 2003, p. 37). The PortNL case study illustrated the value of conceptualising people's relationships with governments for the service design, using thick, rich data.

User-centred design approaches offer a way to build this kind of understanding and integrate it into the design of services. While service quality measurement often relies on satisfaction measures and post-service assessment, user-centred design with its emphasis on pre-design research and iterative design in conjunction with users provides stakeholders with the kind of information and understanding needed for the design of a given service. For example, the degree to which people moving to the Netherlands wrestled with a lack of identification numbers is the kind of finding that emerged clearly and strongly from pre-design interviews but might have been missed by a survey that measured satisfaction. User-centred design, particularly in government contexts, offers a way to focus on longer-term goals, such as sustainability of relationships and how to nurture users' trust in e-government, which proves to be a considerable stumbling block to e-government adoption and use.

The case study presented here is from the Netherlands, a very small, affluent, Western European democracy, ruled by one of the world's most e-ready governments. Yet, in a country as committed to providing high-quality government services as is the Netherlands and on a project as committed to user-centred design as PortNL, a clear tension between e-government and user-centred design manifested. The four points of tension discussed here – incompatible visions of the necessary tasks to be accomplished, the necessity for complete information, differing commitments to legal rules and regulations and contradicting desires about the length and permanence of citizen-government relationships – demonstrate the challenges, even to the most well-intentioned services, involved in integrating user-centred design into e-government. Yet, if e-government services are to succeed and address as much as possible the needs of both users and government, then we need to sharpen and refine our understanding and practise of what is involved in integrating user-centred design to e-government. The results of such an endeavour will benefit not only future services in government but also in any domain that is large-scale, administratively complex and public in nature.

Note

1. Official partners in the B-dossier project are, among others, Sociale Verzekeringsbank (Social Insurance Bank), Municipality of The Hague, Municipality of Enschede, ICTU (ICT operations of the Netherlands Government), UWV (social security agency), University of Twente, Delft University of Technology, University of Utrecht and University of Tilburg.

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