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Dimension of Non-Trivial Online Forms

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Non-trivial online forms are an interesting prevalent means of providing services to many users. While using traditional form constructs they are significant in that the services supported are considered to be ones of high potential impact upon quality of life. In this paper we propose a nascent model for the analysis of such forms, based upon three foundational dimensions: risk; complexity; and resourcing. We propose these simple concepts are valuable in the broad-brush analysis of forms and their structure and usage.

Non-trivial Online Form, Dimensions, Characteristics, Form Filling, Risk, Complexity, Resourcing.

1. NON-TRIVIAL ON-LINE FORMS

Non-trivial on-line forms (N-TOFs) are a type of form that we believe is becoming widely prevalent with the preference for on-line services in many areas of everyday life. We define N-TOFs as forms that are critical to the life and wellbeing of the form filler (aka user). By virtue of this, they are frequently complex in terms of structure, mechanics and content required. Forms providing access to government, financial, employment and educational services are commonly N-TOFs, depending upon the specifics of the service to which they relate. Other examples of N-TOFs include: tax forms, benefits forms, immigration forms, social housing applications, etc. The non-trivial nature of such forms principally arises from their close relationship to the quality of life of their users.

A pernicious feature of service provision through N-TOFs is that form design could in fact reflect a design bias that limits access to a service. Put simply, an N-TOF could by its character impair legitimate access to a service. For example there are forms that could be judged as unnecessarily complex for the user. Hence the interest in N-TOFs relates closely to the agendas of: design for all; and professional ethics. On a related matter it is evident that in N-TOFs some of their onerous elements serve as a means of user authentication. For example, having to enter comprehensive personal details is used to help confirm a user's identity. Hence an onerous or repetitive aspect of a form can be accounted for as a legitimate design choice.

2. FOUNDATIONAL DIMENSIONS

Unsurprisingly there are numerous factors that can be identified as of potential relevance in understanding, characterising and analysing N-TOFs. Following initial user consultations through focus groups and desk research factors identified

include: consistency, complexity, familiarity, accessibility, security, guidance, accuracy, clarity of language, expert support, stress and resource requirement (Majnu, 2016) (Galitz, 1980) (Gould & Lewis, 1985) (Wroblewski, 2008) (National Audit Office, 2003) (National Audit Office UK, 2003) (May, 2015). Our working assumption is that the good design of N-TOFs should be differentiated from established design guidance for on-line forms in general.

We analysed forms affecting quality of life issued by government bodies, financial institutions, educational institutions, NHS, employers etc. These forms were identified by the context of use and impact of a negative result after processing of the form by the issuing authorities. From the forms that we have analysed, we propose three concepts that provide broad-brush dimensions for structuring the discussion and analysis of N-TOFs. While other concepts may be relevant we judge these to reflect core factors characterising N-TOFs identified in the initial findings

2.1 Risk

The risk associated with an N-TOF is one of its core characteristics, one that defines it as non-trivial. Risk of not filling in the form as expected would include concepts such as accuracy, familiarity, stress and clarity of language. In the case of, say, a housing application the risk is that of losing a roof over one's head, despite having a legitimate claim. While risk can lead to serious consequences, a good N-TOF, should, through its structure minimise the likelihood of those consequences arising from the use of the form (Obrist, Tscheligi, Ruyter, & Schmidt, 2010). The risk sets the psychological context in which a form is used.

2.2 Complexity

The mechanical complexity of a form clearly adds to the psychological and physical demands that it

places on the user. The use of branching, or of conditional elements, within a form impacts upon the likelihood of successful task completion. Good form design addresses such factors, but in many N-TOFs there is additional complexity because online forms often ask for significant amounts of information that must be correct. Also, it is common for one form to serve several purposes have a complex flow. In addition, the inherent risk of an incorrectly completed form can cause stress for the user and thus influence their psychological capabilities. For example the information required by an immigration application is extensive and detailed and requires preparation by the user. Complexity can be made to contribute to enhancing the user experience of N-TOFs if converted into benign or agreeable complexity. (Janlert & Stolterman, 2010)

2.3 Resourcing

The information requirements of N-TOFs can be difficult to access or provide correctly. For instance an immigration form can require a comprehensive list of international travel over the past ten years. This has a resourcing implication for the user – gathering that comprehensive list may in itself be a long term off-line activity of recalling details of one holidays (and consulting family members). Other resourcing issues include employing relatives and professionals to help understand opaque, or technical, form guidance. For example, a solicitor may be engaged to complete parts of a form. Resourcing for N-TOFs has implications on overall effort and cost of accessing the service interfaced to.

3. IMPLICATIONS

While we would ideally like to view these dimensions as independent, it is clear that they are inter-related and, to some extent, they feed off one another. In simple terms 'risk' drives the N-TOF, since it captures the importance of the task of completing the form. As a simple example, consider an extremely high-risk form, one that was possibly life-threatening. Even if such a form required your phone number as an entry, the high-risk would focus attention upon what is precisely required: the international code or not; hyphens, spaces or neither; and which number (mobile, domestic or office)? Clearly in low risk cases these issues hardly cross one's mind. Hence, the risk creates demand for resourcing, such as a user may engage experts to resolve the risk inspired ambiguity.

3.1 Risk

Reducing the impact that risk has is very difficult to do through the design of the N-TOF. Rather than attempt it, the probability that the risk will arise can be reduced. Techniques for doing this can come from both form design and more general user

interface principles. For example, good and timely feedback (transparency), in-form verification, the ability to save and return to partially completed forms and the ability to freely edit data within the form, have resemblance to previous versions of the form or similar forms to make it familiar.

3.2 Complexity

The task that the form represents becomes more difficult when the forms itself is complex. The complexity of a form arises from its structure, from the ways in which questions are written and from the data that is being solicited. Complexity may be reduced through good design that divides the form into coherent sections or that uses separate forms to gather a single set of data – although that would have implications for form selection (May, 2015). Data may be re-used between forms so that interacting with a set of services from Government or health service. Embedding low-impedance guidance such as short, context-sensitive videos within the interaction increases the likelihood of success. N-TOFs present opportunities for the reduction of complexity or converting to benign complexity that may not be available in other formats such as on-line verification of inputs and auto-completion of fields and sections. The power of rich interactions should mean that an N-TOF could be supported with portable open formats, freeform note making and annotations placed directly onto the form.

3.3 Resourcing

Resource demands are high for most N-TOFs. Managing these resources is difficult for many people – especially if the act of completing the form has raised their stress levels and if the complexity of the form exceeds their competence (Riedl, 2013). Users can be helped through this by ensuring that the appropriate resources are available when they start to work on the form. This may mean that guidance through notes or videos include information about preparation and that check lists are made available. Users need to be able to start forms and return to them later and, related, be able to tackle sections in any order. The latter, of course, requires that the structure of the N-TOF and the meaning of each section is made clear throughout the process.

4. CONCLUSIONS

We are in a process of developing a framework for exploring, analysing and assessing N-TOFs, as characterised here. The topic appears to be of increasing relevance when one considers the current reliance upon on-line services of all sorts. Currently we are exploring model support N-TOF design informed by user studies and interviews.

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