Customer Centric Design: Who Should Be in the Center of the Design?

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USER CENTRIC DESIGN: WHO SHOULD BE IN THE CENTER OF THE DESIGN?

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Abstract

The paper reports experience and lessons learned from applying the principles of User Centric Design (UCD) to articulate user requirements for designing one of the social services’ websites. Based on a collaboration with one of the local authorities in the UK, our aims are to create a website that satisfies as many users as possible, as well as to find out the practicality and potential of UCD as a methodology for IS projects in the public sector context. Our findings suggest that highly regulated areas, such as social services, often involve numerous user groups with very diverse interests. The challenge to select user group(s) as the focal position of the design is clear. The gap between users’ requirements and how they will actually use the system can be substantial. Such a gap needs to be understood at the early stage of the design to avoid unnecessary waste in resource. Moreover, the potential difficulties to settle and sort out different and often contradictory requirements from different user groups cannot be underestimated.

Keywords: User-centric Design, Public Sector, Social Services, Case Study.
1 INTRODUCTION

The growing demand for increasing user satisfaction has become a driving force in the advancement of User Centric Design (UCD). Compared to some of the conventional approaches which often put users in a passive position, the underlying principle of UCD is to engage users into the design in order to clearly articulate their requirements (Gulliksen, et al., 2006; Vredenburg et al., 2002) and to achieve early buy-in from the users. Despite of the apparent benefits, the complexity behind applying UCD principles into an IS project or a technical product innovation is often underestimated, in particular taking into account the political and social contexts where the developed system will be consequently used.

To address this shortfall, we used the empirical evidence collected from a UCD-based project and the experience we gained from collaborating with the case organization to shape the foundation of this paper. The case organization Littleshire County Council (a pseudo name) is one of the 410 local authorities in England and Wales. The project was to develop a dedicated website to improve the take-up rate in one of the government’s social services reform initiatives. This initiative is called Direct Payments (DPs) which provides money to eligible service users, so that service users can decide the type of service they need, who should provide the service and when they should receive the service. The DPs initiative aims to give service users with more flexibility and autonomy to make their own choices and decisions. It is a significant improvement compared to the traditional allocation of service by the council.

With more than 300 potential users to engage with, articulating and collecting their requirements was a resource-extensive endeavour. While collecting user requirements was very challenging, integrating and translating these requirements into the design was even more daunting. Due to the limited space, this paper does not include the actual design of the website into the scope. Three lessons learned from this research project are highlighted. First, it is the difficulty to select user groups whom should be allocated in the central point of the design, when a large number of user group was identified. Second, the gap between what people want from the system and how they will use the system can be substantial and misleading. Third, it is the issue of how to address different and often contradictory requirements. While UCD literature was useful in outlining the general guideline, very limited insights were offered to explain how different requirements should be managed and settled.

Following the introduction, we review the current UCD literature to identify the research gap that we aim to address. In the methods section, we illustrate details of how the project was carried out. The case and findings section details the context and content of the project. Finally, the discussion and conclusion section highlights the key lessons learned from this project.

2 CURRENT DEBATES AND PERSPECTIVES

UCD has become a mainstream design strategy for technical products and information systems that are often highly interactive with end users (Gulliksen, et al., 2006; Jokela, 2004). It is vital to know that UCD is not just another term to highlight the role of a ‘user’ like ‘human factors engineering’, ‘ergonomics’, or ‘usability engineering’ (Rubin, 1994). UCD has its own specific definitions, operational processes, benefits, and inevitably limitations.

2.1 Definitions

Table 1 highlights a selection of definitions that are widely used in the literature. Despite of the differences in their foci, these definitions commonly pinpoint the importance of very early user
involvement in each process of development. These definitions outline the fundamental nature of UCD as a continuous iteration between users’ feedbacks and the system under development. Therefore, UCD needs to be an integrated and iterative loop across different phases of development, i.e. pre-analysis, design, develop and testing.

<table>
<thead>
<tr>
<th>UCD Definition</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCD is a set of awareness, understanding, and action. Users are an essential part of each step because the product should be aiming to design for use. The design process is a repeated loop: have a pre-analytic vision, discover, design, use, and then reiterate again.</td>
<td>Cato (2001)</td>
</tr>
<tr>
<td>To fully identify the user necessities, UCD is required to be enrolled with end users in whole of the design activities. It is a frequently process and including different skills and disciplines.</td>
<td>Garrety &amp; Badham (2004)</td>
</tr>
<tr>
<td>UCD is an integrated and iterative design. It early continually focuses on users and user testing.</td>
<td>Gould (1995)</td>
</tr>
<tr>
<td>UCD is a series of user-centred design activities or frameworks. The aim of UCD is to achieve the best development of useful products.</td>
<td>Jokela (2002)</td>
</tr>
<tr>
<td>UCD is a multidisciplinary orientation of design. Through users’ involvements, designers are able to understand their features and requirements. It follows repeatedly redesigns and re-evaluations to achieve the target.</td>
<td>Mao, et al. (2005)</td>
</tr>
<tr>
<td>UCD includes technology and philosophy layers. Users’ needs are the first priority. The general UCD operation discipline is the users should involve in the processes as early and often as possible. Keep asking users’ ideas to improve the final production.</td>
<td>Pearrow (2000)</td>
</tr>
<tr>
<td>In the process of product development, in order to identify and adjust the expected achievements, UCD keeps inviting aimed groups to evaluate each result.</td>
<td>Rubin (1994)</td>
</tr>
<tr>
<td>UCD means the fact that designers treat customers as the core of design. Its purpose is to be familiar and well adopted all customers’ or users’ experiences into the design of product.</td>
<td>Vredenburg, et al. (2002)</td>
</tr>
</tbody>
</table>

Table 1. UCD definitions

2.2 UCD principles and benefits

To make UCD principles into a reality, IBM UCD Research Centre (2007) has recommended 6 principles for practitioners to follow. Despite the fact that each principle is slightly different in their foci, the main requirement to involve users as much as possible remains the same.

- Setting business goals and objectives by identifying the targeted market, users and primary competition is crucial to design and user participation.
- Commitment to understand and involve targeted users is essential to the design process.
- Superior UCD requires ongoing monitoring of the competition and the targeted customers.
- UCD cannot succeed through dealing with the segments. Instead, UCD is to design the total user experience which includes everything that a user will potentially experience. The total experience can include issues related to how a system is advertised, ordered, delivered, maintained, installed, administered, and supported.
- User feedback is collected early and often as a means of evaluating the design.
- End users’ feedbacks are a vital source of market intelligence to inform the changes in the market and competition.

The following table outlines key benefits that can derive from the use of UCD.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>UCD Benefits</th>
<th>Related research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td>Increased usage</td>
<td>The more useful a product is, the greater users’ acceptance and desire will be (Cato, 2001).</td>
</tr>
</tbody>
</table>
| **Increase usability** | Users have greater control of the system with less limitation (Lazar, 2001).  
Increase data accuracy | UCD is the best way to achieve the website usability (Nielsen, 2000; Pearrow, 2000; Vredenburg et al., 2002).  
Easy to learn, easy to remember and less error (Lazar, 2001)  
Increase user satisfactions | UCD utilises users’ perspective rather than designers’ to decrease blind spots. The designer-centred perspective may result in a serious gap between organizations/designers’ expectations and users’ usages. Therefore, UCD method could avoid these gaps (Lazar, 2001; Lynch & Horton, 2002; Mayhew, 1999; Schaffer, 2004).  
UCD emphasizes user requirements and experiences instead of functions or features to shape the focus (Pearrow, 2000).  
Increase user friendliness (Lazar, 2001).  
Through UCD, trust from users will increase (Cato, 2001; Jokela, 2002; Lazar, 2001; Mayhew, 1999; Schaffer, 2004).  
Increased efficiency and productivity | UCD helps users to perform in their preferred way, so that users can be more effective and efficient in their work. Consequently UCD improves users’ productivity (Cato, 2001; Jokela, 2002; Mayhew, 1999; Schaffer, 2004; Vredenburg et al., 2002).  
UCD results in consistently supportive user-sensitive manner to save operating cost (Cato, 2001; Jokela, 2002; Mayhew, 1999; Vredenburg et al., 2002).  
UCD can significantly reduce time and cost because the design is based on users’ habit and expectation. UCD decreases the effort of developers to modify or fix the end product. (Cato, 2001; Jokela, 2002; Lynch and Horton, 2002; Mayhew, 1999; Schaffer, 2004; Vredenburg et al., 2002).  
UCD tools simplify the process of gathering user input and feedback. The more quickly the design team can gather users’ inputs and feedback, the more usable information they will have to assist their design (IBM UCD; Research Centre, 2007; Vredenburg et al., 2002).  
UCD enables best quality development through accurate understanding of the users. It enhances the profit, performance and competency of an organization (Jokela, 2004; Mayhew, 1999; Vredenburg et al., 2002).  
UCD allows developers to engage and communicate with users efficiently. Therefore, the development can avoid the development of less useful functions and achieve a higher level of efficiency. As a result, team members achieve higher satisfaction from the development process (Kiekel and Cooke, 2005). |  
Protected privacy | UCD system guarantees the privacy of personal sensitive data (Lazar, 2001).  
Development Team | Reinforce team member satisfactions |  |
| **Table 2. Benefits of UCD** |  |
2.3 Some potential pitfalls and challenges

Although UCD does provide benefits in a number of different ways, some pitfalls and challenges can often be neglected or overlooked. It is, therefore, essential for the managers and developers to be aware of these pitfalls and challenges at an early stage. Some of these pitfalls which are discussed in the current literature are outlined as follows:

2.3.1 Systematically identifying right people and context

The most difficult point of UCD is how to ask the right questions to the right people (IBM UCD Research Centre, 2007). The lack of a comprehensive evaluation of potential user groups and adequate techniques to sample the users often result in costly misjudgements and inappropriate interpretations of users and users’ requirements (Wixon, et al., 2002).

Kemnitzer (2005) highlights that creating a correct user profile is the most essential element in UCD. Given the basic requirements of UCD to involve users in the process of planning, design and development, how to identify right users and then to create the user profile can easily become a conceptual fantasy than a practical reality. For instance, for many products which will be broadly used, such as an automobile or a television, the user group can be so large and unmanageable. In relation to this aspect, it is clear that UCD only offers generic information with little workable guidance.

2.3.2 Unique project management requirements

Due to the fact that a UCD-based project can involve continuous redesign, the control of revision and management of project complexity are two of the very essential project management issues that need to be adequately addressed. The unique characteristics of UCD call for radically different project management approaches, and often invalidate the traditional system development lifecycle method (Albert et al., 2004). Therefore, project management stands a key role, in particular in controlling time, cost, and quality.

2.3.3 Identifying and involving qualified resources

Another challenge of a UCD-based project is related to resourcing, in particular issues related to how to find qualified members for the project team. Despite the fact that identifying qualified resources and the approaches to manage them are fundamental to UCD-based projects (Vora, 1998), yet extensive skills and experience of UCD are often lacking (Pearrow, 2000). For instance, a website development project typically needs expertise in project management, architecture and design, programming, 3D/animation/video/audio, content, marketing and so on (Turner, 2004). When developing a website based on the principles of UCD, the expertise requirements can be shifted towards the composition of multidisciplinary professions like UCD project leader, visual designer, industrial designer, technology architect, marketing specialist, service and support specialist, internationalization and terminology specialist, user research specialist, user experience design lead, human-computer interface designer, user assistance architect, and of course, aimed users (Vredenburg et al., 2002).

2.3.4 Management commitment

Similar to most of the IT and IS-related initiatives, UCD-based projects also require a very high level of commitment from the management (Gulliksen et al., 2006; Vredenburg et al., 2002). The commitment is a reflection not only in the management’s general understanding and attitude towards UCD, but also the level of support, in particular allocating time and resources, for UCD-based projects. Moreover, the management commitment is required for the long-term development of UCD
expertise which can often be gained only through trial and errors and only be accumulated through time.

Summing up from the above, it is clear that the potential benefits derived from UCD-based projects can be substantial, both in terms of its financial and organizational impacts. Nevertheless, the unique characteristics and requirements of UCD have also reminded us that to benefit from this development approach calls for some deeper understanding which includes not only the identification of right user groups and context, but also the required project resources, project management skills and management commitment. While prior studies in UCD have provided some useful insights, our understanding of how to identify user groups, manage their involvements and address their diverse needs in conjunction with the understanding of organizational and social contexts where the development will take place remains limited. To address this shortfall, we report and conceptualize the experience that we gained from a UCD-based project carried out to design a website for one of the social services functions of a local authority in the UK.

3 METHODS

This research is part of the larger UCD development project based on the collaboration between the research team and LCC. The overall project aims to develop a website to support one of the UK government’s ongoing objectives of transforming the way of which social services are provided to the service users. The project is planned and carried out based on the principles of UCD, and has two distinctive yet related parts, including the initial research and the construction of the website. Empirical evidence presented here is mainly based on the information collected for the initial research of the project which was carried out by a team of 5 people in June, July and part of August 2007.

Despite of the project’s practical orientation, the initial research was conducted based on the case study research guideline recommended by Yin (1994). A case study protocol was developed to facilitate the division of tasks between the research team. Key actions for data collection performed during this period were documented in Table 3. Multiple data collection methods were deployed to ensure the comprehensive coverage and to enable the triangulation. In addition to the conventional semi-structured interview with various stakeholders within and outside LCC, three conferences were organized in June and July 2007 as a means of engaging service users to communicate their requirements with the staff from LCC. A total of more than 300 participants, including service users, council staff and representatives from other public sector organizations have attended the three conferences. While most of the service users only attended one of the three conferences, most of the council staff have been involved in all three. Participants were organised into a focused group of 10 to 12 during each conference. Researchers visited each focused group to articulate their requirements that were later used to form the basis for the UCD-based website project.

The sheer amount of data collected during this period was overwhelming. Given that prior studies of UCD mentioned very little in terms of how to analyze the collected user requirements, the decision was then made to apply Strauss and Corbin’s (1990) open coding technique to group the data into different categories. Despite the fact that the coding technique was useful in reducing the quantity of the collected data, it offered very limited help in linking users’ requirements with the effort in shaping the foundation of the UCD-based project. As a result, the research team came up with the idea of mapping out the key processes and their related stakeholders, as shown in Figure 1, and used this process map to make sense of the requirements.
Table 3. Data collection timetable

<table>
<thead>
<tr>
<th>Task</th>
<th>June</th>
<th>July</th>
<th>August</th>
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<tbody>
<tr>
<td><strong>Documentations</strong></td>
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<tr>
<td>Operatioinal Guidance</td>
<td>1st-15th</td>
<td>16th-30th</td>
<td>1st-15th</td>
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<tr>
<td>Statistic Reports</td>
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<tr>
<td>White Paper</td>
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<tr>
<td><strong>Archival Records</strong></td>
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<tr>
<td>Personal records (linkman’s</td>
<td>1st-15th</td>
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<tr>
<td>diaries, calendars or teleph</td>
<td>16th-30th</td>
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<td>one listing)</td>
<td></td>
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</tr>
<tr>
<td>Service records</td>
<td></td>
<td>1st-15th</td>
<td></td>
</tr>
<tr>
<td>Website report</td>
<td></td>
<td>16th-31st</td>
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<tr>
<td>Warwickshire official website</td>
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<td>1st-15th</td>
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<td>Department of Health website</td>
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<td>Other local authorities’ websites</td>
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<td>Organisational charts</td>
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<td><strong>Physical Artifacts</strong></td>
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<td>Direct Payment leaflets</td>
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<td>Direct Payment DVD</td>
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<td>Direct Payment brochures</td>
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<tr>
<td><strong>Interview (with stakeholders)</strong></td>
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<tr>
<td>Practitioners</td>
<td>1st-15th</td>
<td>16th-30th</td>
<td>1st-15th</td>
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<tr>
<td>Team Manager</td>
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<td>Financial Assessment Team</td>
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<tr>
<td>Team Administrator /Secretary (for mental health)</td>
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<tr>
<td>Monitoring Services</td>
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<tr>
<td>Existing/Potential Customers</td>
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<tr>
<td>Customer Contact Center</td>
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<tr>
<td>Support Scheme (Rowan Org.)</td>
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<tr>
<td><strong>Participant Observation</strong></td>
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<tr>
<td>Conference</td>
<td>1st-15th</td>
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<tr>
<td>Seminars</td>
<td>16th-30th</td>
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<td></td>
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<tr>
<td>Meetings with managers</td>
<td>1st-15th</td>
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4 CASE & FINDINGS

Littleshire County Council (LCC), a pseudo name of our case organization, is one of the 410 local authorities of England and Wales. Every year, each local authority is reviewed by the Audit Commission. Audit Commission is an independent public body assessing performance of local authorities by producing a Comprehensive Performance Assessment (CPA) report. In 2006, LCC achieved an overall of a 3-star CPA rating (highest rating is 4-star). However, the area of social services only managed to receive a 2-star and was apparently one of the weakest in the 7 targeted services of Audit Commission. Aiming to achieve an overall 4-star rating, improving social service was unsurprisingly the first area to tackle, in particular in the area of Direct Payments (DPs) enrolment.

4.1 Direct Payments

According to the UK’s Department of Health, DPs are cash payments made to individuals whom have been assessed as needing social services. What is revolutionary about DPs is that service users, individuals who receive social services at various forms, are able to manage the sum of money from the local authority to source the type of service they need at the time they need it, instead of traditional arranged services like day care, home care, short-term breaks, equipment and small adaptations. The
payment allows service users to spend the money in a number of different ways, including housing, education, employment, leisure activities, or hiring a personal assistant for individual social events or learning opportunities. Despite of the flexibility, it is vital to note that once the DPs are entitled, service users must use the payment to meet the needs that have been agreed with them during the initial assessment. DPs aim to provide more flexibility in how services are provided. By giving individuals financial payment, instead of fixed social care services provided from local authorities, recipients have greater choice and control over their lives, and are able to make their own decisions about how their cares are arranged. Also, service users can enjoy the freedom by having their own decision-making power on preferred schedules, and providers. Essentially, DPs aim to encourage service users to become more independent, confident, and respectable by fostering their self-esteem and through the achievement of social inclusion.

Increasing the number of DPs enrolment has become a priority for many local authorities. This is because the increase in the number of DPs enrolment per 100,000 citizens aged 18 or over is one of key performance indicators to evaluate a local authority’s adult social service performance. LLC’s 2-star rating in this area was clearly a reflection of the low DPs enrolments compared to most of the county councils and regions in England and Wales.

In addition to the need to address the poor performance, there is another driving force behind the promotion of DPs, which is the compliance with various government regulations. For example, the Department of Health has announced that DPs should be considered as the first option at each assessment and review with the service users. Therefore, it is clear that local authorities are responsible for introducing DPs to eligible service users and processing the applications and monitoring the way of which allocated payments were used by the service users. With the aim of doubling the number of DPs enrolment each year, LCC has considered building eligible service users’ awareness of DPs as one of the key priorities. Key actions that were defined to support this target include providing more training, building network support group for existing or potential service users, developing much clearer and attractive leaflets, and creating a DPs website for internal and external stakeholders to share useful information.

4.2 Preparing for a user-centric DPs website

Two objectives behind the creation of the DPs website are clear. First, it is to create an integrative information platform that is easy to use and makes related information, in particular those lengthy regulatory documents, more accessible to internal and external stakeholders whenever they need it. Second, building a DPs website is crucial in achieving LCC’s e-government target by making as many services on-line as possible. The notion of UCD was recommended by the research team and welcomed by the staff of LCC. Initial research carried out by the team helped to collect dispersed information from different stakeholder groups, as well as unravelling surprising differences amongst some LCC staff in terms of their understanding and practice of DPs. A process map, as shown in Figure 1, was created and agreed to illustrate the key steps of DP assessment and their responsible LCC stakeholders.
Through the discussion with LCC staff and external consultants, eight stakeholders were identified. The eight stakeholders are social care practitioners, social care team managers, financial assessment team, team administration staff, monitoring services team, service users (customers) and their families or cares, social care customer contact centre, and WCC contracted external support schemes like the Rowan Organisation which provides social care consultation service to disabled people.

Analysing the collected data has revealed three key requirement areas, namely accessibility, content and usability. All stakeholders emphasized the importance of accessibility, in particular for service users with disabilities to use the website. This website should be designed fully accessible to everyone with or without impairments. In particular, following the international accessibility guidance to ensure the accessibility was considered as extremely crucial, for instance using easy read version with more pictures and big font size. Videos and audios are also useful. There are many minority ethnic users. It is essential for the website to translate into different languages like the governmental leaflet of DPs. Plain English and not too many terminologies were also highlighted. Besides accessibility, some other features were commonly emphasized by most stakeholders. Table 4 summarizes these general points from the aspects of content and usability.
### Content

- Accurate. Updated.
- Contact information.
- Important announcements of DPs such as legislation changes as well as new policy and procedures.
- Useful information should include:
  - Financial relevant matters such as how to handled money, assessment criteria, payment and cost rate, charge, and calculation samples. On-line self assessment about DPs eligibility and risk management. Examples of common scenarios and confusing cases. Encouraged personal stories. Leaflet. Governmental brochures. FQ&A
  - Links to helpful websites such as, Department of Health, LCC Social Care and Health, Rowan Organisation and Independent Life Fund. Other social care related websites including personal assistants bank, care agents, network support groups, disabled services and facilities (like parking space, hotels, and travel agents).

### Usability

- Transparent. Well-structured hierarchy of information such as tree-root style. Clear route and independent entrance for different web users like service users, cares, and staff (including practitioners, team managers, team administration staff, and so on).
- Navigate easily and logically.
- Standard structure/panel/design for each webpage.
- Less annoying messages or fancy images. Do not waste resources.
- Download functions for leaflets, governmental documents, assessment forms, agreement forms, letters templates, sample contracts.
- Get users feedback. Enable service users to reflect their opinions. Allow user to query.

*Table 4. Main content and usability requirements*

## 5 DISCUSSIONS & CONCLUSIONS

Talking to more than 300 stakeholders to define user requirements was a daunting task on its own right. On the one hand, applying UCD principles to prepare for the design of the DPs website has helped the team to articulate valuable insights, in particular in identifying different stakeholder groups’ concerns, preferences and interests. On the other hand, it is also clear that such an exercise surfaced a significant amount of political and operational issues that needed to carefully address. We outline 3 issues here to share with scholars who are interested at conducting research in this area, and practitioners who might consider taking UCD principles into actions.
5.1 So many user groups, who should be in the center?

Similar to many accounts in the UCD literature, we started our research with a simple assumption that users were basically service users and practitioners, as these two were the most obvious and often discussed groups in the documentations that we read prior to data collection. Throughout the progress of the research, 8 distinctive stakeholder groups were identified. Given that multiple stakeholders are not uncommon for some of the systems, we have to be rather carefully when asking and answering the question of whom we should put in the center for the design of the DPs website. From our experience with LCC, we believe that to design a website with multiple user groups in mind does not go against the fundamental principles of UCD. However, the amount of care and thoughts needed to untangle and understand the complexity of different users cannot be underestimated and neglected. More importantly, once these requirements from different stakeholders were surfaced, many of them will expect their requirements to be built into the functionalities of the website. In many cases, such expectations can be difficult to completely fulfil. Therefore, managing stakeholders’ expectations and managing a UND-based project cannot be done in isolation.

5.2 The gap between what people want and what people will use

From the focused groups and interviews, all 8 stakeholder groups agreed the strong need for a new dedicated legated website, as it would be the first tool to get specific information about DPs in LCC. However, when asking about the potential willingness and frequency of using the website, only the team managers and existing/potential service users expressed their intentions to use the DPs website on a regular basis. The support scheme, the Rowan Organisation, only uses its own website as the main reference. Practitioners and team administration staff rely mainly on other sources to get detailed DPs information, such as weekly team meetings, internal communications, and archival documents. The financial assessment team, monitoring services team, and customer contact centre team may not use the DPs website, because they do not need to get specific information about DPs.

Lack of motivation and time to use the website, in particular for the practitioners, has inevitably challenged us to rethink and justify the whole idea of developing a dedicated website to support the promotion and assessment of DPs. Given that most of the practitioners are out in the filed and most of the time without internet access, it is clear that the full potential of the website cannot be reached, unless the technical issue is well addressed. Moreover, for the practitioners whose professional ethos is about protecting service users’ privacy, information security needs to be very thoroughly examined in order to convince the practitioners.

5.3 How to settle contradictory requirements

Despite the emphasis on the importance of articulating user requirements, the UCD literature we reviewed told us very little about how to handle situations when contradictory requirements occurred. For example, service users requested to put the criteria and forms of financial assessment on the DPs website. The financial assessment team refused the suggestion and indicated that these criteria are confidential and not possible to make them available to everyone. Another example is the communication functions, such as on-line chatting rooms and forums. Some stakeholders, in particular service users who look for network supports considered these functions were vital. However, some from LCC did not agree simply because the difficulty to control. In our case, funding and ownership of the website were evident to be two key factors in settling these differences, even though in many situations we did not consider the results to be ideal. This surfaces the challenge of how to apply the basic principles of UCD without be over-naïve about the political hazards and power struggles that many information systems projects cannot avoid. We believe that this is a very crucial aspect. More research in this area will certainly help to extend our understanding and to enhance the practicality of UCD.
References