Make it so! Jean-Luc Picard, Bart Simpson and the design of e-public services

DEARDEN, A. M., LAUENER, A. M., SLACK, F., ROAST, C. R. and CASSIDY, S.

Published version

DEARDEN, A. M., LAUENER, A. M., SLACK, F., ROAST, C. R. and CASSIDY, S. (2006). Make it so! Jean-Luc Picard, Bart Simpson and the design of e-public services. In: Proceedings of the Ninth Conference on Participatory design: Expanding boundaries in design, Trento, Italy, 01-05 August, 2006. New York, ACM Press, 67-76.

Make it so! Jean-Luc Picard, Bart Simpson and the Design of E-Public Services

Andy Dearden[1], Angela Lauener[1], Frances Slack[1], Chris Roast[1] & Steve Cassidy[2]

Communication & Computing Research Centre
Sheffield Hallam University, Howard Street,
Sheffield, S1 1WB, UK.
a.m.dearden@shu.ac.uk

Cassidy Consultancy,
34 Allott Close, Ravenfield, Rotherham,
S65 4NY, UK
steve@cassidyconsultancy.co.uk

ABSTRACT

In this paper, we report on a project applying participatory design methods to include people who have experience of social exclusion (in one form or another) in designing possible technologies for e-(local)-government services. The work was part of a project for the Office of the Deputy Prime Minister in the UK, and was concerned with 'access tokens' that can provide personal identification for individuals accessing public services, based on technologies such as multi-functional smartcards, flash memory sticks, mobile phone SIMs or similar devices.

In particular we report on our experience using the 'pastiche scenarios' technique recently developed by Mark Blythe. Our findings indicate that the technique can be effective and engaging in helping people to create realistic scenarios of future technology use and highlight some possible pitfalls to consider when using this technique.

Author Keywords

Pastiche scenarios, smartcards, e-government, DATES project

ACM Keywords

D2.1 Requirements / Specifications: Elicitation methods (e.g., rapid prototyping, interviews, JAD).

INTRODUCTION

This paper explores lessons from participatory design exercises conducted on behalf of the Office of the Deputy Prime Minster (ODPM) of the UK Government, to guide the design of electronic services provided by local government and associated networks of service providers. The aim of this investigation was to identify possible hardware and software solutions that could be used to support public sector institutions to offer e-government services that are explicitly tailored to personal needs, based on the ability of service providers to identify individuals whenever they seek to access a service. This technology was described in the title of this project as 'Developing Access Tokens for e-Services' (DATES) which are electronic tokens that can be used to identify an individual and carry information about that individual. Such tokens can be implemented using a variety of technologies, including but not limited to: smartcards, high-capacity flash memory 'sticks', mobile phone SIMs, contactless cards etc.

Our investigation methods involved focus groups, individual interviews, and narrative techniques for participatory design, specifically the technique of 'pastiche scenarios' [1, 2]. We report findings about our participants' sense of priorities in relation to possible uses of access tokens, and we discuss in detail some strengths and some issues in the use of the pastiche scenario technique.

Proceedings Participatory Design Conference, Aug. 2006, Trento, Italy
© 2006ACM ISBN 1-59593-460-X/06/08...$5.00

BACKGROUND

Personalisation of Government Services

Increasingly, our interactions with e-enabled service providers in the private sector are modified and personalised based on information that those service providers have collected from us (either with or without our explicit consent). Examples of such systems are cookies in browser-based applications, personal user accounts on web servers, and 'loyalty' card schemes with retailers. By being able to identify the individual who is using a service, and having some knowledge of their needs, preferences and contractual arrangements, these service providers are able to offer services that are explicitly tailored to particular needs. The success of these approaches in the private sector has led to a concern by public sector service providers to offer similar capabilities in their interactions with citizens. However, personalisation of public services surfaces complex democratic and ethical issues that may remain hidden in private sector efforts.

The Capabilities of Smartcards and Token Technology

This project followed a previous effort investigating the specific technology of multi-functional smartcards, but extended the investigation to explore the possibilities available using other high capacity portable memory devices such as contactless cards, flash memory sticks, and storage embedded in mobile phones or other personal devices. A multi-functional smartcard or smart memory device could be used to support a person's interaction with multiple service providers, e.g. a single card could act as a library borrowing card, a banking card, a health information card for emergency services (indicating specific conditions such as diabetes or allergies), a bus / tram pass, etc. The aim of the project was to design, prototype and deploy a range of innovative solutions for use by local government supported institutions, using the common abstraction of 'access tokens'. The logic of this development was to create a single local 'access token' that could offer users easy ways to interact with a variety of services (from multiple service providers), so that the different service providers could share the infrastructure costs associated with the system. The business plan envisages initial development led by a local authority in partnership with local businesses, voluntary sector bodies (NGOs), and private sector partners.

In the political context of the UK at the time of the work, any discussion of smartcard technology in government applications cannot be divorced from debates about the idea of a National Identity Card, and the associated questions about privacy and relations between the individual and the state. One key technology that the DATES project specifically investigated was the application of biometric information (specifically thumb-print information) in using such identity tokens. However, it should be made clear that the work reported here was explicitly separate from that wider political project, focusing only on services provided by local government in a particular area, rather than records that might be held by national government. Whilst the solutions generated could theoretically be integrated with a national ID card scheme, the partners in this project were more interested in schemes that could be implemented on a local level, and which would be most flexible if they were kept independent from the national database system.

E-Inclusion

An important aspect of any push towards e-government is the need to address issues of marginalisation and exclusion engendered by technological changes. Whilst richer, better educated, middle-class citizens may be empowered by additional electronic services, it is possible (even likely) that groups who are already disadvantaged in society, in their access to services and to political power and influence, may be further disadvantaged by barriers to them taking up such new facilities. The reasons for such exclusion are too many to explore in detail here, but include: lack of access to technical infrastructure (connection) to use services; lack of practice using new technologies making it hard to acquire the required skills; limited usability / accessibility of new technologies creating barriers for people with physical or cognitive impairments making technologies 'disabling' rather than 'enabling'; and lack of fit between new technologies and people's individual lifestyles.

THE DATES PROJECT

In order to address these issues, the DATES project was commissioned with the brief of exploring the aspirations and desires of citizens who were suffering from social exclusion in relation to possible access token technologies. The specific groups represented within the work were: elderly people, young people attending re-training centres as a result of unemployment, including some recent immigrants seeking asylum in the UK; people who were excluded by their role as carers; young women from an ethnic minority; people with a range of physical disabilities; people who were members of credit unions, having been excluded from mainstream financial services.

Methodological Challenges

The context of the DATES project presents a number of interesting methodological challenges for participatory design. Grudin [6] highlights three distinct frameworks under which IT development might take place, each of which has different implications for the ethics and practice of participatory design. The situations Grudin examines are considered below.

- Bespoke in-house development in a work-setting: For participatory design this may be the most readily accommodated, since it is possible to identify the intended end-users clearly. Additionally, end-users can be expected to have a degree of shared interests and common characteristics (as a result of conducting similar work roles) and there is at least some overlap between the interests of the developers and the end-users, in that both sides are part of the same organisation and may hope to benefit if the organisation benefits. On the other hand, bespoke development for a workplace brings with it an ethical responsibility because end-users are likely to be obliged to use the systems that are created.
- Bespoke contracted out development for a work setting: in this setting the end-users can be clearly identified, but the commonality of interests may be more problematic in that the development organisation may seek to maximise income whilst the commissioning organisation will want to minimise costs.
- Commercial product development for a market: in this setting design may involve explicit decisions to focus on a particular market segment, or particular end-user groups to the exclusion of others. Representatives of that intended user-group can then be involved in the design process with a goal of maximising the desirability of the final products for the marketplace. A key ethical dimension of this setting is that potential

customers or end-users are free to choose whether or not they wish to purchase and use the product.

It should be noted that this account involves an enormous simplification of the complex relations (and conflicts of interest) between the purchasers of software systems in a work setting and eventual end-users of those systems [9].

This setting of designing public services can be regarded as lying somewhere between developing for a marketplace and contracted out development. In a democracy, the public contract out the design of their services to intermediaries (representatives in local or national governments) who aim to create solutions that have broad appeal to their electorate. These intermediaries in turn may contract out the development of technical solutions to other organisations in the marketplace. This makes distinctive demands on participatory design because, although development is contracted out, there is a need to directly address issues of social inclusion. The range of end-users for public services is potentially universal. End-users may be required to accommodate the technological solutions that are deployed, or may find that their lives and choices are adversely constrained if they choose not to adopt the technologies provided. For participatory designers, this implies a challenge. How can we ensure adequate representation for the diverse voices of different people in shaping technologies that can impact everyone in our society?

A second challenge in the DATES project arises because of the stage of the design and development life-cycle. On the one hand, the discussion taking place involves technologies that may become deeply embedded in people's everyday lives, but on the other hand, the discussion is taking place at a very early stage in the development cycle for such technologies, making it difficult for participants to envisage what the technology might be like to use. This challenge is also different for different user groups. For example, we began this work with an implicit assumption that young people who make extensive use of technology in their everyday lives, will be more able to envisage and think through the consequences of new technologies for services, than would elderly people who may have limited experiences of such technology.

Investigating User Aspirations

The approach adopted in the DATES project combined: focus group discussions; scenario based methods [3] specifically pastiche scenarios [1, 2]; a resource allocation game using monopoly™ money; participatory evaluation of prototypes, and an on-line review of design concepts presented in the form of storyboards.

The investigations were undertaken in three stages. A round of focus group discussions, a round of participatory design meetings using scenario based techniques, and a round of prototype evaluation. Participants in the first two rounds received a small compensatory payment to cover for their time and expenses.

Focus Groups

The initial round began with a series of focus group discussions with different groups of users exploring the potential of access token technologies, in particular smart-cards. Six different focus group discussion sessions were conducted with the following groups:

- A group of elderly people who were active community members in various voluntary groups, and participated in a network of lunch clubs for elderly people in Sheffield;
- A group of young people who were unemployed and attending an IT training centre in Wolverhampton;
- A group of people of mixed ages who were trying to re-enter the jobs market and were attending an IT training course in Walsall;
- A group of women for whom English was not their first language, who met at an Islamic community centre in Sheffield;
- A group of members of a credit union organised at a centre that provides activities and support to vulnerable people in the community in Sheffield;
- A group of people with a variety of physical and cognitive impairments who were involved in campaigning on disability issues in the Sandwell.

The structure of these focus group discussions began with introductions and discussions of various lifestyle issues where participants could explore their interactions with public services and utilities. Key elements that were discussed in these sessions were the objects that individuals always carried with them, their use of chip & PIN (smartcard based) cards for accessing banking services, the other cards that they carried (bus passes, driving licences, loyalty cards, membership cards etc.), their attitudes to national identity cards and biometric identification. This discussion was then directed towards the potential of smartcards and other smart media to support daily living. The media considered included traditional smartcards, high capacity flash memory sticks and contactless smartcards or chips that could be embedded into devices such as mobile phones. The discussions were supported by prompt materials including smartcards that are already in use in various local government applications such as libraries and training centres. The aim of these discussions was to elicit initial responses to existing proposals for using smart media, additional ideas for possible services, as well as attitudes to issues such as national identity cards. The focus groups also provided insights that were used to help the investigation team in creating realistic 'personas' and analysis scenarios that could be fed back to the larger design team.

Design Meetings

The second round of activities adopted a more explicit 'design orientation'. The groups involved were similar to

™ Monopoly is a registered trademark of Hasbro Inc.

those in the first round but with some changes. In particular, a different group of credit union members recruited through a credit union development organisation, and the young women from the Islamic centre did not wish to participate further.

Each group was invited to participate in three activities.

After an initial warm-up exercise, participants were invited to create 'pastiche scenarios' [1, 2]. This technique extends the notion of scenario writing by providing participants with suggestions for characters to include in their scenarios (as well as appropriating styles and settings). These characters are drawn from familiar fiction, for example Blythe & Monk give an example using the character 'Scrooge' from Charles Dickens' 'A Christmas Carol'. One important characteristics that Blythe & Monk claim for pastiche scenarios is that these 'real' characters can bring out design issues that might otherwise be missed. For example, using 'Scrooge' allowed them to investigate issues in technology for older people without working with scenarios that implicitly assume that all elderly people are sociable and trustworthy.

In the DATES project, the names of possible characters were written onto cards and distributed to the participants. A range of possible activities such as going to the gym, visiting the doctor, going shopping, making deposits into the credit union were also presented on cards. Finally, some 'googlies' – possible special events or failures that might change the way a scenario evolves were on a third set of cards Participants were then shown examples of rich pastiche scenarios – printed on large sheets (A1) - and encouraged to create their own scenarios using the characters, their own experiences and the everyday activities to stimulate their thinking. The scenario writing was conducted in small groups of 3 to 5 participants, with one participant (usually, but not always, one of the facilitators) acting as a scribe to record the evolving story.

The use of cards to present the characters, context and 'googlies' was intended to introduce a playful element to the exercise. Each of the scenarios was then analysed (either by the group, or post-session by the facilitators) to identify possible design implications or challenges that might arise from the scenario.

Figure 2 shows an example of a scenario written by the participants in the elderly group, together with some of the design issues that were raised in the discussions that folowed. 'Victor' is based on Victor Meldrew a character in a long running UK TV comedy 'One foot in the grave'. Victor is a pensioner who is constantly frustrated by what he sees as the absurdity of the organisation of modern life (telesales, untrustworthy services etc.), but who rarely adapts his own behaviour to take into account practical considerations. Eventually, as he is involved in increasingly frustrating experiences, he will reach his catch phrase of 'I don't believe it!'

The pastiche scenario exercise was complemented by an activity in which participants were asked to evaluate and rate the importance of different possible services and features that might be offered using smart media. To support this, each participant was given a fixed amount of 'Monopoly™' money and asked to place it on cards that represented the various possible services that had been suggested by the first round of focus groups. These services were written on A4 cards, and the participants could indicate their interest in the services by placing their money on top of the cards. Blank cards were also provided so that new service possibilities could be identified. The total allocation to each of the services was then recorded to give some indication of the relative priorities attached to the different services.

Victor gets in the car & drives round to the supermarket to get some petrol. He fills up and goes to the kiosk. He pays using a chip & PIN card and gets back into the car[1].

He drives to the doctor's and parks in the surgery car-park and goes into the surgery.

He goes in to see the doctor[2]. The doctor decides that Victor needs a new prescription, so Victor hands over his card to the doctor[3] who records the new prescription and hands it back.

Victor goes out to the car & drives to the exit. He puts the card into the reader to open the car-park barrier[4].

He drives to the chemist. Finds a parking meter & selects 1 hour[5]. He goes to the chemist & collects his prescription. The Chemist takes his card into the back of the shop to make up the prescription[6].

NOTES:

1. Presumably there are 2 separate cards involved here
2. Does victor need to hand his card to the receptionist when he arrives?
3. Does victor need to hand over the card anyway when he sees the doctor?
4. This was a high street surgery that needed control over limited parking space.
5. But parking meters don't have an interface for doing this – Maybe you need to put the card back in the slot when you come back – but then if you forget do you get charged for the maximum possible time?
6. Problem here – could the chemist have unlicenced access to information on the card at the back of the shop

Figure 1: An example pastiche scenario plus analysis.

In a previous project we had tried a similar exercise using the pastiche idea of allocating 'ducats' (100 ducats per participant) to various kinds of services during a 'fantasy phase' of a future workshop [7, 5], however participants

found it difficult to monitor their allocations to ensure that they kept to their 100 ducat budget. Using monopoly money ensures that the 100 unit budget is built into the exercise as a physical constraint.

Finally, an early prototype systems exploring the notion of using pictures instead of 'personal identification numbers' (PINs) was demonstrated (using the InDesign prototyping tool,[4]) to stimulate discussion of whether and how such technologies might be applied.

Communicating to the Design Team

Initial findings from the first series of focus groups were reported back to the design team via a traditional presentation to a formal meeting of representatives from all of the project partners. After the second phase of participatory design investigation, the scenarios and priority findings were used to structure a collaborative design workshop involving both the project development partners and a 'user panel' of individuals representing a mix from the different user-groups who had taken part.

The workshop agenda was designed to take the product and service suppliers and application providers through a process to enable them to couch their own products in users' terms. An important element of this exercise was to require the development teams to explore their initial understandings of the users and the domain in advance of receiving information from the requirements elicitation exercises. So, for example, the participants were asked to guess the allocations of monopoly money (as a percentage) to a range of services from each of the different design focus groups. Only when they had explicitly stated their initial understandings were the findings from the investigation made available.

The reporting back workshop followed the following regime:

1. *Inventory Exercise*: asked suppliers to succinctly describe their products/service/applications in a way that could be understood by ordinary users.
2. *Guess the Priorities*: introduced the users' resource allocation exercise, and invited participants to guess the outcomes. This exercise was designed to challenge systems developers' assumptions about users' aspirations and expectations.
3. *Persona Development*: introducing the persona concept and personas derived from the user workshops. The developers were then asked to develop personas of their own, based on the key target groups.
4. *Scenario review:* the 'pastiche scenarios' were placed on posters around the meeting room and the participants were encouraged to read as many as possible over lunchtime.
5. *User Panel*: a four member user panel joined the group to comment on the personas developed in step 3, and to review the technology proposals as described in step 1. The members of the panel were two young people from the credit unions group/ a representative from the disabled users group / a representative from the Islamic cultural centre.
6. *Concept Brainstorm:* the development partners were then asked to generate applications around the personas to address some of their particular needs. Importantly, the development partners were challenged to clarify the key user benefits that their proposals might deliver. These were then reviewed by the user panel.
7. *Challenges and Solutions*: Finally, the proposed solutions were evaluated by the group including the user panel, ranking the proposals in terms of their feasibility for delivery as part of the DATES project.

The primary output from this workshop was a set of design proposals for prototypes and services to be considered within the DATES project. The design proposals were divided into three categories: systems to be developed, prototyped and deployed in public by the project partners, systems to be prototyped to support initial usability testing and public response, and prototypes to be developed only to the level of storyboards and scenarios for consideration by the Office of the Deputy Prime Minister for future exploration.

Evaluating Prototypes

The final stage of the process was to evaluate the prototypes. One set of evaluations was based on standard co-operative evaluation techniques following Monk et al. [8]. The second set of evaluations was designed to explore the idea of 'e-democracy' as part of the project. For these evaluations, storyboards were developed by professional graphic designers. These were then loaded onto a simple weblog (blog) developed using the open-source content management system 'PostNuke' (www.postnuke.org). Visitors to the site could view the storyboards and discuss them by leaving comments. Although only a small number of participants actually made comments on the site, the exercise demonstrated the feasibility of conducting open evaluations using such tools.

FINDINGS

As we had initially expected, the application areas of most interest to the different focus groups were transport related (e.g. bus passes, car-parking), financial (making small payments) and health related (holding emergency medical information). There were substantial differences in the perceived priorities for the different groups of users. For example, the elderly group and the group with disabilities showed more interest in health related applications, preferring to use cash to deal with small financial transactions, whilst the young people at the training centre were more interested in financial applications, particularly being able to pay for mobile-phone credits or other electronic services such as internet services.

General Findings

However, there were some observations that we had not predicted that directly reflect the experiences of these people and their relation to public institutions and the experience of social exclusion. We consider these below:

- Only a very small number of our participants expressed concerns about the use of biometrics in proving their identity, despite explicit prompts within each session to discuss this issue. Those who did indicate that they would not be prepared to have biometric records on the card were one individual in a group of mixed adults at a training centre, and one entire group – the women at the Bangladeshi community centre. There are many possible explanations for this finding. On the one hand, there may be significant elements of peer-pressure in operation when discussing privacy issues in a focus group setting. The argument that "if you have nothing to hide, then you have nothing to fear" expressed in two of the groups, may make it difficult for individuals to contradict the majority view. In the case of the Islamic women, we initially hypothesised a possible religious objection to the idea of using biometrics, but discussions with other Muslims led us to reject this suggestion. Indeed two predominantly Islamic countries (Egypt & Pakistan) have already implemented biometric identity cards. Another possibility, may concern the level of trust that these women are prepared to put in the state as a universally beneficent actor (both in the UK and in Bangladesh). Another argument raised in one group was the rather fatalistic view that ""the government's already got your information anyway - it'd be no different …".
- In contrast, the young men from the training centre viewed the use of biometrics as a potentially valuable feature. For example, one participant "I'd feel lot securer if I had to put my thumbprint on something". Another participant said that the ability to prove their identity beyond doubt could be empowering for them in their relationships with authorities, particularly the police. This idea of empowerment in dealing with authority came out very strongly when discussing the idea of using the personal information on the card to complete application forms. Their experience of interaction with public bodies was one of constantly filling in complex forms: "To get on this course I had to fill in 2/3 separate forms – ridiculous", "You get sick of filling in the same forms", "You've filled it in once so they should have the details already", "I once got 2 questions wrong and they ripped it up in front of me". The young people who had been through the unemployment benefit system were the most sensitive to the idea of automatically filling in forms, but this type of functionality was also of interest to the other groups who participated.
- Another feature that the young people rated highly was the ability to personalise the images displayed on their cards. "I'd like to personalize it – it's all about me". When shown a card that included an image of the marketplace in their home town, they were not impressed. One suggestion was "a website where you can go on and mix and match to design your card before you get it".

Ranking of Services

Table 1 shows the range of services discussed with the different workshop participants, and the percentage allocations of resources within the monopoly money exercises.

As stated earlier, the young people at the training centre were very interested in applications of the technology that could relate to their computer games playing, resulting in a possibly excessive ranking for that particular option in the outcome. However, the design team decided that the allocation decision should be reported directly, since the choices indicate the potential of computer games facilities as a way of encouraging young men from this demographic group to adopt any solution.

After that, the major applications of interest seem to be medical applications, transport applications and the ability to automatically fill in forms when interacting with government services (in the case of the DATES study we were only considering local government services). Notably, the young retrainers did not allocate much of their money to the form filling applications, despite the fact that they had been most vocal in describing their negative experiences of filling in forms for government authorities.

Financial applications were valued highly by the credit union members, and this rating is more dramatic if some other financially related categories such as 'shopping / going out', 'small payments', 'rent payments', and 'credit union' are combined. The elderly users were generally less interested in using cards and discussed their preference for using cash for such transactions. One important point was that the credit union members were less interested in applications that assisted them in making payments, but had a strong preference for the ability to make deposits into their credit union accounts. In discussion, they raised the scenario of a young mother on a housing estate far from the city centre wanting to make a £5 deposit into their credit union, but needing to spend £3 to travel to the city centre to make the deposit! The ability to make small deposits via local shops or businesses was a major potential benefit for these people.

Services	*Credit Union Members*	*Elderly*	*Young retraining*	*People with disability*
Games	2%	0%	66%	0%
Medical (Emergencies)	4%	10%	6%	39%
Transport (buses/ car-parking)	7%	25%	5%	5%
Council/general form filling	7%	19%	1%	8%
Medical (Prescriptions)	6%	14%	1%	2%
Medical (GP)	4%	14%	0%	4%
Benefits / services advice	3%	4%	0%	9%
Store & remember appointments	4%	1%	0%	10%
Small payments	0%	0%	4%	10%
Learning course records	4%	5%	2%	0%
Tax & Benefits (help with search for entitlement)	5%	2%	0%	3%
Credit Union	8%	0%	0%	0%
Phone top-up	4%	0%	4%	0%
Prevent junkmail	2%	0%	4%	2%
Mortgage/rent payments	7%	0%	0%	0%
Leisure Centre	1%	0%	4%	2%
Library	0%	4%	0%	2%
Services that were not discussed in all groups				
Shopping/going out	21%	**X**	**X**	**X**
Store loyalty card	2%	**X**	3%	0%
Medical: Remind to take drugs	2%	2%	**X**	0%
General info. storage and retrieval	**X**	**X**	**X**	3%
Other (Unidentified)	3%	**X**	**X**	**X**
Driving licence	**X**	**X**	**X**	3%
Logging receipts	2%	**X**	**X**	X
Course attendance reward scheme	2%	**X**	**X**	0%

Table 1: Ranking of services. X indicates that a service was not discussed within a particular group.

The Pastiche Scenarios

The main methodological innovation in this project was the application of the pastiche scenarios technique. As far as we are aware, this is the first report on the use of this method by people other than the original authors of the technique [1, 2]. Also, our usage differs from the work reported by Blythe & Monk. In their work, the pastiche scenarios were written by the researchers and then used to stimulate debates in participatory design workshops. In our study, we presented some pastiche scenarios to the workshops as examples, but we then engaged the participants in authoring new pastiche scenarios of their own.

Pastiche scenarios bring out richer exploration of potential situations. As can be seen from Figure 2, participants in the workshops had no difficulty in adopting the technique. However, in this particular case with Victor Meldrew, very

little of his character was apparent from the scenario. The elderly participants in the same workshop went on to develop other scenarios using examples of real people who were their friends or acquaintances and did bring out some interesting issues. Most importantly, the participants all appeared to enjoy the activity, based on the amount of laughter we heard.

In other groups, our experience was that the events that unfolded in the scenarios were influenced by the selected characters. For example, after discussing the concept of 'picture PINs' with members of the credit union, a scenario was drawn up using the character of Dot Cotton, from the BBC soap opera 'East Enders' which is set in (a fictional area of) London's East End. Dot is in her sixties, and works as the assistant in the launderette in Albert Square. She is an inveterate gossip, a smoker, and a keen churchgoer. Her son Nick has had a troubled past of petty crime and drug taking, and whilst his mother's Christian charity always leads her towards forgiveness and support for her son, Nick has (so far) always fallen back into his old habits. The scenario involves Dot paying fines for overdue library books.

In developing the scenario, the participants suggested that Dot would never have overdue library books, so she it must have been Nick who is to blame. One participant suggested that Nick would probably have been able to crack Dot's 'picture PIN' very easily, because he would know the kinds of pictures that would appeal to his mother. We suggest that the awareness of the character of Nick Cotton in the design session, arising from the pastiche scenarios, was crucial in allowing the participants to identify this security issue that the research team had not previously considered. This finding is consistent with Blythe & Monk's claims for the pastiche technique. It illustrates what Wright & McCarthy [10] discuss as the 'creative understanding' that characterizes our relationship with fiction.

Whilst the pastiche scenarios technique worked very smoothly with the eldery people and the credit union members, we encountered some difficulties when using the technique with the young learners. The research team had difficulty before the session in identifying suitable characters who might be familiar and engaging for this group. The examples that we developed in advance and presented to the group relied on the TV programme 'Star Trek: The Next Generation'. One example had Jean Luc Picard, having been made redundant from Star Fleet, attending a 'new deal' interview at the local job-centre. Another scenario had Geordie and Wesley commuting to new (less hazardous) jobs in San Francisco.

Within the sessions, the participants developed one scenario using the character of Scrooge, that highlighted some possible functions that Scrooge might want when using a smartcard on public transport – particularly, he wanted the system to indicate to him when he should get off in order to avoid traveling into a new charging zone. However, at that point we found that the set of characters we had made available in the session was not well matched to the interests and knowledge of this group. Although the participants were aware of Star Trek The Next Generation, it was not a programme that they were particularly engaged by. Hence, we needed to work with the participants to identify possible characters that they could use. One scenario the young people developed used the cartoon character Bart Simpson, with whom many of the group could readily identify. This scenario (see figure 3) brought out some useful features – in particular the desire to use the tools for storing and sharing multimedia entertainment. Note that the events in the scenario reflect life for Bart, particularly the attitude to schooling and the experience of being in trouble with the head teacher.

Dot returns her library books

Dot finds Nick's library books in the bin with the middle pages ripped out. "Oh no!"
She asks Nick but he claims they were all like that when he got them. Dot quotes Ezekiel 4:72 – Nick refuses to admit the problem. The letters start arriving from the library. These books have been overdue for 10 years. Dot phones the library and confesses (she has also moved house). She puts the smartcard in her phone and reports her new address. She says she wants to pay for them all. The library puts a fine of £50 on Dot's account.
Dot walks round to the newsagent to arrange an emergency loan from the Walford Credit Union, to be repaid at £1 per week for 53 weeks. With the loan Dot can now pay the fine. She also changes her photo ID set so that it is secure from Nick.

Figure 2: Dot returns her library books

A second scenario was developed using the character of MasterChief from the popular computer game HALO (www.bungie.net). The initial stages of this scenario raise some interesting possibilities in relation to holding emergency medical data on a card. In particular, how that information might be handled in a real emergency, especially in relation to confidentiality concerns. On the other hand, we found that MasterChief's special power of being able to operate and control any vehicle at any time, and his tendency to violence ("he does not glorify his violent actions, but merely does what he has to do. He does not hate his enemy; he kills them because he knows it is his duty to kill them; to win." [http://halosm.bungie.org/story/masterchief.html]) made it difficult to keep the scenario writing focused on the issues that the designers were trying to address. In developing the later parts of the story there was a constant tension for the facilitator between the desire to work with technologies that might be possible in the medium term, and the highly advanced science fiction world in which MasterChief lives.

Bart goes to a course at TLC

Bart is at home playing up Homer. Bart doesn't want to go to school. Marge explains 'now Bart, you know you need to get education to get a good job like your father's

Bart gets on his skateboard and goes down to the school bus stop. Gets on the bus and the driver (otto) recognises him. "What's up Bart". Bart sits next to Nelson.

He puts his card into the display unit on the back of the seat in front to read a comic he has downloaded. The display warns him when he gets to the stop at Waterloo Road Goes into the TLC class.

He uses the card to sign in and the card also logs him into the computers. He starts showing Milhouse the comic again, but Tom Wear catches him and sends him to the headteacher's office.

At the office the head asks him for the card to see what's on it. But Millhouse goes past Bart and asks what site the comic was on and downloads it onto his pen drive

Figure 3: Bart attends a course at TLC[1]

MasterChief saves the day

Masterchief is sitting in the pub - drinking a pint of mild - with captain keys

Emergency - captain keys grabs his chest and says 'help me'

Masterchief phones for an ambulance, but thinks it might take too long. He phones, then swipes captain keys card in his phone to report the medical data to the ambulance crew. He has to use captain keys thumb to verify the data.

Gets an estimated time of arrival for the ambulance but it is going to take too long.

Ghost is driving by on a hoverbike so masterchief grabs the bike and kicks him off

He plugs in his smartcard and the bike switches language to match Masterchief's, He sets the autopilot for the hospital.

He inserts captain key's thumb to collect the diagnosis.

Figure 4: MasterChief saves the day.

The issue of striking a balance between keeping the activity light-hearted and maintaining a degree of focus on the design agenda was evident in all the sessions. As the scenario writing progresses, it is possible that the participants become so engaged in developing the humour in the scenario that the discussions extend to realms of fantasy and hilarity where little contribution is generated for the design project. Facilitators need skill in recognizing when this is happening, and to what degree, and steering the discussions towards 'productive' areas, whilst maintaining the engagement and enjoyment of the participants.

In all the workshops we found that the time taken to develop a scenario (without a googly) was around twenty minutes. Because this is quite an extended period to work on one issue, we did not introduce the googlies in most of the sessions. Also, we observed that participants found it difficult to switch between scenario generation and the analysis of issues within the scenario. Facilitators need to remember that their ability to switch easily between design and analysis is a skill that needs to be learned, and may be difficult for participants to master in a short design session. We would recommend a model where scenario analysis and scenario generation are clearly separate activities.

Another question that remains for us in using the method is what factors need to be in place to use the technique successfully. Three of the four groups who took part in scenario writing were well established with participants having met on multiple occasions before being involved in this activity. The credit union group had not met regularly before, but many of the participants knew each other. This may be an important factor.

One issue that we noticed was that the older participants seemed to be more productive and settled into the scenario writing activity more readily. Certainly, we as facilitators found the workshops with the elderly lunch club members easier to facilitate than the session with the young learners. In one group within the credit union session, that included two men over 50 and two young people in their early 20s, the older participants provided substantially more input than the younger participants and appeared to be more comfortable in the activity. Whether this is a general issue, or merely a chance observation of the small sample of people involved in our study, is something that would benefit from a detailed investigation.

Prototypes and Systems

In the later stages of the project two systems were rolled out: one was used in the training centre to allow students to log into the e-learning system, download and submit assignments using memory sticks, and to build up a personal electronic portfolio of work. The other was concerned with making small deposits to the credit union. Further work is planned developing these ideas towards an integrated, multifunctional smartcard offering.

CONCLUSION

Developing new public service solutions places a particular responsibility on designers to engage with a wide variety of

[1] TLC is the name of the training centre at which the meeting was taking place.

people, including many people who may be excluded from, traditional democratic decision-making processes. In the DATES project participatory design methods were used to engage with people from some of these groups. The results demonstrate that participatory design methods can be engaging and interesting for the participants and can help them find a voice in planning the future of public services.

In particular, the pastiche scenarios technique was effective in allowing the participants to construct stories about ways that smart media might be used to provide services that would be of interest to them. Our experience with the technique suggests that it can be an effective way and enjoyable way of engaging participants in exploring the possibilities of new technologies. However, participatory design is always a process of mutual learning and involves designers in actively seeking common ground with participants. For us, working with the young learners at the training centre was hampered by the fact that we had not identified a wide enough range of useful characters that were both familiar and engaging for the participants. This resulted in us having to rely on the participants to suggest characters. The choice of MasterChief caused us considerable difficulty. In general, the use of characters from science fiction, fantasy fiction or magical fiction seems to make this technique difficult to apply.

ACKNOWLEDGEMENTS

We should like to thank: all the participants in the workshops for their input; Mark Blythe for useful conversations about the pastiche scenario technique; and the Office of the Deputy Prime Minister's e-Innovations programme, which funded this work as part of the DATES project.

REFERENCES

1. Blythe, M., 2004. Pastiche Scenarios, *Interactions*, 11(5) 51 – 53
2. Blythe M. & Monk, A. 2005. Net Neighbours: adapting HCI methods to cross the digital divide. *Interacting with Computers* 17(1) 35 – 56.
3. Carroll, J.M. 2000. *Making Use: Scenario Based Design of Human Computer Interactions.* MIT Press
4. Dearden, A., Siddiqi, J. & Naghsh, A. 2003. *Using cognitive dimensions to compare prototyping techniques*, Work in Progress paper at PPIG 2003. Available at: http://www.shu.ac.uk/schools/cms/paperchaste/publish.htm
5. Dearden, A., Hafeez, K., Slack, F. & Lauener, A., 2004. *Appraisal of options for a regional intelligence & research resource for the voluntary & community sector*. Report for Yorkshire & the Humber Regional Forum for the Voluntary Sector, Leeds, UK.
6. Grudin J., 1991. Interactive systems: bridging the gaps between developers and users. *Computer* 24(4) 59 – 69.
7. Kensing, F & Madsen, HK, 1991. Generating visions: future workshops and metaphorical design. In Greenbaum, J. & Kyng, M. (Eds), *Design at Work*, Laurence Erlbaum Associates, New Jersey, pp: 155 - 168
8. Monk, A., Wright, P., Haber, J., Davenport, L. (1993) *Improving your human-computer interface: A practical technique*. Hemel Hempstead: Prentice Hall.
9. Näslund, T. 1997. Computers in context: but in which context? In, Kyng, M. & Mathiassen, L (eds.) *Computers and Design in Context*, pp. 171 – 200, MIT Press.
10. Wright, P. & McCarthy J., 2005. The value of the novel in designing for experience. In Pirhonen, A, Isomaki, H., Roast, C. & Saariluoma, P. (Eds.) *Future Interaction Design*. Springer