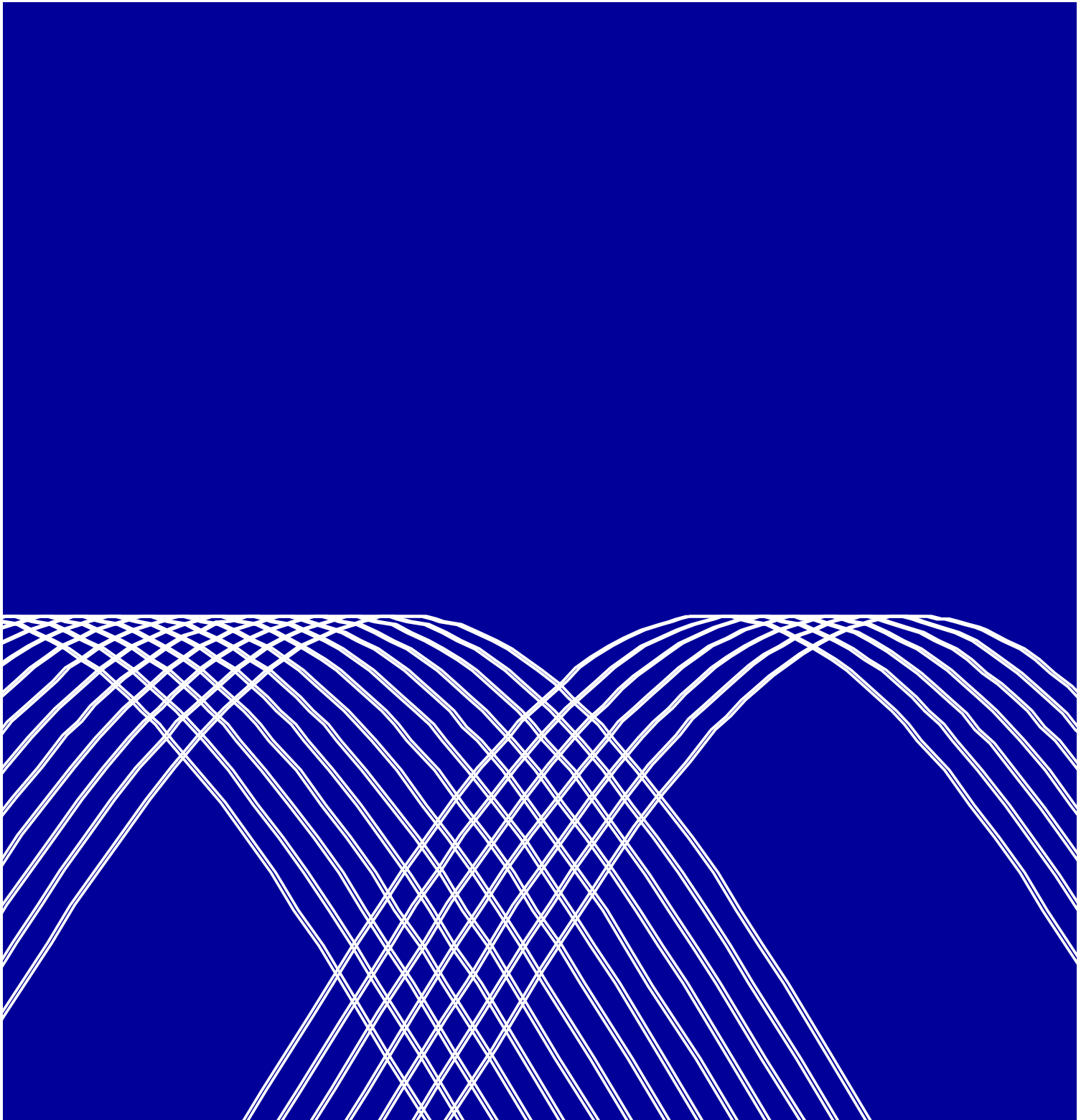




Using the mobile telephone to develop public services effectively



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Introduction

Background

The “Transformational Government enabled by Technology” strategy sets out the Government’s commitment to:

“improve access for people on the move or without fixed phone lines a step change will be made in the use of mobile phones and other mobile devices to exchange information and transact directly with citizens and front line staff”

Mobile phones have rapidly gained a unique place in the life of the ordinary citizen, and now offer strong potential to be a primary channel through which public services can be accessed. Government is keen to develop this channel, and use mobile phones as a platform for access to services because of their wide use, and ability to help address social inclusion factors due to their reach to all cross-sections of society. This paper explores how the Government’s commitment can be taken forward.

Purpose

The purpose of this paper is to provide guidance, and promote debate, within Public Service Organisations on how they can use the mobile telephone to effectively develop their service delivery in a way that capitalises on the mobile’s strengths of:

- Immediacy
- Convenience
- Personalisation

The paper describe the current status of the mobile telephony market, and case study examples of how mobile is being used in the UK and abroad to encourage citizens to adopt the medium to access services.

Grateful thanks are extended to the industry and departments that made contributions towards the creation of this document.

Target Audience

This paper is aimed at strategic planners and communications professionals in public service organizations who are responsible for service delivery. It also aims to inform a wider audience of industry stakeholders and citizens of the Government’s commitment to the use of mobile phones in public service delivery.

Principles

The following principles have been developed as a result of consultation with Public Service Organisations (PSOs), industry and the general public. They form the guidance for PSOs to assist them in developing secure effective and efficient electronic service delivery through the use of mobile communications.

The Strategic Intent

The principles support the Government's strategy outlined in "Transformational Government enabled by Technology" which is to ensure that services enabled by IT must be designed around the citizen or business.

In order to help meet this intent, Public Service Organisations should:

- 1. Evaluate mobile as a key channel for service delivery.**
- 2. Focus on applications that harness the existing large base of handsets already deployed in citizens' homes, and provide a compelling mobile "self-serve" alternative for those that draw on public services regularly.**
- 3. Build mass take-up through harnessing existing familiar applications and usage habits deployed across all demographic sectors.**
- 4. Concentrate on SMS services that require "opt in" by the citizen, and not develop push based services.**
- 5. Make services available by DirectGov as a primary route to market. If this is not possible, services should be constructed on open standards and common components.**
- 6. View the mobile phone as an access device, and not a substitute Internet browser or download vehicle.**

Further explanation of these principles can be found in Section 6 of this document.

1. Mobile – Current Position

This section outlines the current position regarding the use of mobiles in the UK in terms of ownership, usage, costs, and future trends.

1. Ownership

In the UK as many homes now have a mobile phone, as have a landline phone (90%), and ownership extends across all demographic groups¹. In March 2006, there were 66.2 million UK mobile subscribers, with some people having subscriptions to more than one mobile. The trend continues for many homeowners to run mobile phones as their home's main or only telephone device.

Citizens living in rural areas are equally as likely to own and use a mobile phone as others in towns and cities, with those on low income or having any disability not far behind. Nearly half the population over 65 owns a mobile phone, increasing from 37% the previous year. For the first time, the proportion of households relying on mobile phones exclusively is the same as the proportion who only use landline phones (10%). Mobiles are becoming the preferred means of making calls in many households, including those with both mobile and landline phones. The 18 – 24 year old group uses mobile phones extensively on average making seven more calls and sending 42 more texts per week than the UK population.

Ofcom's report on media literacy among children (2006) revealed that two-thirds of children aged 8-15 own a mobile phone, with a sharp increase in ownership between the age of 10 (40% ownership) and 11 (78% ownership). Children from minority ethnic groups are significantly less likely to own a mobile phone. The top reason for children having a mobile phone is to keep in touch with friends and followed in decreasing popularity by keeping in touch with family, emergencies, friends have got one and parents wanting their children to have one,

The most popular use of mobile phones for children is sending text messages followed in decreasing popularity by making calls, playing games, taking photos, photo messages, taking videos, Internet access and video messages. For the 12-15 year olds using a mobile phone is the second most popular media activity behind watching television, followed by using the Internet. In contrast, the 8-11 year olds find mobile phones only the sixth most popular media activity with only reading newspapers and magazines and listening to a portable music device being less popular. More popular are TV, computer games, watching videos/DVDs, internet and radio.

There is also strong take up of mobile phones by the physically impaired communities. Ofcom's report on media literacy of disabled people (2006) says that although there are significant differences between sub-groups of disabled people, overall, there are few major differences between disabled people as a whole (i.e. those who have any kind of impairment that limits daily life or work) and the overall UK population aged under 65.

Ownership of mobile phones for disabled people is somewhat lower (82%) than the all-UK adults under 65 average (90%), with people with hearing impairments less likely to own than people with either visual or mobility impairments. Compared to all UK adults under 65, disabled people aged under 65 show similar levels of weekly calls and texts.

The top three weekly uses made by disabled people aged under 65 match those for all UK adult users, with calls coming first (81%), texts second (70%), and looking back at stored text messages third (26%). Over three-quarters of disabled people aged under 65 say they can do a variety of tasks relating to mobile phones with confidence, for example storing a new contact (88%); changing the ring-tone (79%); and listening back to voicemail messages (78%).

¹ Many of the facts and statistics in this paper are drawn from Ofcom 2006 reports.

2. What are mobiles used for?

The average mobile subscriber uses their phone to make around 100 minutes of calls a month. Mobile phone usage increased as a proportion of all telephone call minutes, accounting for 31% of all call minutes (up from 28% in 2004 and 20% in 2001).

The most used services are voice and Short Message Service (SMS), often referred to as texting. 72% of people use their mobiles to send and receive texts and 27% take photos and videos. 16% do a combination of sending photos and videos, watching videos and making video calls, and sending and receiving emails. 20% use their mobiles for entertainment e.g. playing games alone or with others, and listening to the radio.

57% of those surveyed regard their phone as essential, (an increase) almost as many as those regarding their landline as essential (63% which is decreasing). These people have their mobile on 24 hours a day. They fear missing a call as not being available is to cut themselves off from their social network. Phones are rapidly replacing address books, diaries, watches and alarm clocks as people turn to their handsets more to help manage their lives. Phones are also becoming photo albums as people personalise their handsets with things dear to them, such as pictures of friends and family.

3. What are people spending on their mobiles?

Costs for mobiles have reduced - from 2001 to 2005 monthly spending on mobile voice and text in households fell steadily from £44 to £31.50 at 2005 prices. Easily the highest spending on mobiles was by the urban dweller living in densely populated areas at £58 per month. The £31 figure compares with monthly figures of £23 for landline, £30 for multi-channel TV and £19 for Internet access.

4. Future trends

There are various trends now helping the popularity of mobile phones which are likely to continue. A trend emerging over the last few years for many homeowners to run mobile phones as their home's main or only telephone device is continuing. For the first time, the proportion of households relying on mobile phones exclusively (10%) is the same as the proportion who only use landline phones.

The appeal of calling a mobile was helped by fixed calls to mobiles falling 30% in real terms over 2001-2005. However the average minutes per active mobile connection has remained similar hovering around 22 minutes between 2002 and 2005

Highest ever mobile subscriptions of 66.2 million in March 2006, may have been helped by increased growth in multiple mobile device ownership. For example, the growth of e-mail devices like BlackBerry means that many business users now carry two mobile devices.

During 2005 and the first half of 2006, the availability of TV programming over mobile (and broadband) increased significantly. 2005 saw 3G mobile networks introduce streaming TV channels as part of their product sets, and a number of mobile operators also trialled TV using a variety of technologies. The success of TV delivery to mobiles may be largely dependent on the quality of the user experience. This experience includes the device over which the programmes are viewed, the quality of service, and the environment within which viewing takes place. For mobile TV, the form factor (the look, shape and design), battery life and usability of consumer devices are all likely to be important. There may still be some way to go before the right design, technology and manufacturing processes are found for handsets.

2. What does mobile offer the citizen?

To understand why mobile plays such an important role in the lives of citizens, it's necessary to appreciate what makes it different from other communications media. The main facilities it offers are:

Immediacy

Unlike most other devices, the mobile is truly location independent and 'always' on. It is immediate in the way that even web based email or instant messenger services cannot be (i.e. the recipient may not be at a computer terminal) – this is true for both data and voice.

Convenience

The mobile is simply convenient (lightweight, portable). It also has the ability to enable information sharing with one individual or many, via its display characteristics. Unlike a laptop, it is lightweight and immediate and the ubiquity of the mobile device, combined with its size, makes it a good medium for the user to show things to other people, or to review themselves. It is harder to show pictures on a PC/laptop (that needs to be booted up) or a TV (does not move at all) than a phone. On the other hand, a lot of content, e.g. catalogues, will not be suitable for display through the mobile phone.

Personalisation

Users perceive mobile phones to be highly personal devices. This is often attributed for the popularity of services that enable users to personalise their phones. This suggests mobiles have the ability to add value and emotional significance to communications received upon them. Naturally the personal aspect comes from its main use as a voice device. The address book is probably the most powerful tool on the phone in that it represents the user's own network. This is a potential reason why operators are keen to take control over this feature away from handset manufacturers.

3. Mobile and Government services

Government is keen to use mobile phones as a primary platform for access to services because of their wide use, and ability to help address social inclusion factors due to their reach to all cross-sections of society. The use of mobiles will give the citizen benefit from services that can be:

- Immediate
- Localised
- Personalised

Mobiles can offer access to services ranging from basic voice and text propositions, to richer media alternatives including the Internet. The mobile phone's physical characteristics dictate that it cannot be considered as an effective Internet browser in itself, but the flexible connectivity the mobile offers, and increasing data transfer speeds enable it to act as an access device in combination with other platforms. Mobiles also offer strong scope for building converged solutions to further enhance the delivery of Government services to citizens e.g. return channel propositions for digital TV.

Finally, the prospect of accessing services via a mobile could encourage those who have been reluctant to use electronic services to start doing so.

4. What services could mobile be used for?

The chart below shows the types of services that Public Service Organisations could consider delivering via mobile.

PUSH (Citizen is told)	PULL (Citizen asks for something)	ENGAGE (Citizen tells government)
<ul style="list-style-type: none"> • Serious Weather Warnings • Flood / disaster alerts • Traffic Accidents • Doctors Appointment Reminders • Progress reporting • Foot & Mouth Breakout • Car Park Payment Running Out • Next Job notification for remote workers 	<ul style="list-style-type: none"> • Council Office Opening Hours • Government Directory Services • Tennis Court Availability • Receipt for Car Park Payment • Directions or Maps to local amenities • Availability / location of health resources e.g. late night chemist 	<ul style="list-style-type: none"> • Building applications - informing council of acceptance or not for proposed activity. • Influence certain aspects of public spending e.g. citizens for choice of: <ul style="list-style-type: none"> - paint colour to be used to refresh public buildings - plants /flowers in public garden areas • Engage citizens in debate regarding what services are provided to the community etc. • Reporting environmental issues

The following examples show some of the variety of services currently being offered in the above three categories. (N.B. Those marked with an asterisk are covered in more detail in section 7 - Case Studies, which contains further examples of services delivered via mobile).

Push

- NHS trials in England have found that use of text-messaging reminders reduces the number of missed appointments with GPs by 26-39% and the number of missed hospital appointments by 33—50%. Rolled out nationally, this would mean annual savings of £256-364m*.
- The Environment Agency are providing flood alerts via text messages to citizens living in a vulnerable area.

Pull

- Residents of Hillingdon can now sign up for the new text alerts and email on the council's website. This gives them access to the latest news from Hillingdon Council on consultations, roadworks, licensing applications, jobs and much more via text message to their mobile phone and by email.
- The Greater London Authority (GLA) is working on a mobile phone messaging service for use in marketing communications targeted at Londoners. Using the shortcode that spells MAYOR on the telephone keypad (62967), GLAS's supplier will support advertising and other campaigns including the development of location-based 'Find My Nearest' services, 'Ticket Request by SMS' and maps accessible on mobile phones for visitors to City Hall*.

Engage

- Renfrewshire Council has piloted the use of mobile phone text messaging to communicate with a variety of groups in the community as part of their 'Reaching Renfrewshire' programme. "A key part of our vision is to have information and

services available to citizens, businesses and organisations where and when they want by whatever means they prefer," said Sarah Gadsden, Customer Services Manager at Renfrewshire Council. "Mobile phones and text messaging are so widely used nowadays we were keen to evaluate how this could help us to continue to improve our communications."

- In Lewisham you can report offences, e.g. fly tipping and graffiti by sending a picture to the "Love Lewisham" website. After each sighting has been cleared up, the person who reported it receives a text to say it has been done. Offences are being cleared up in most cases the same day as reported and three times more quickly than before*.

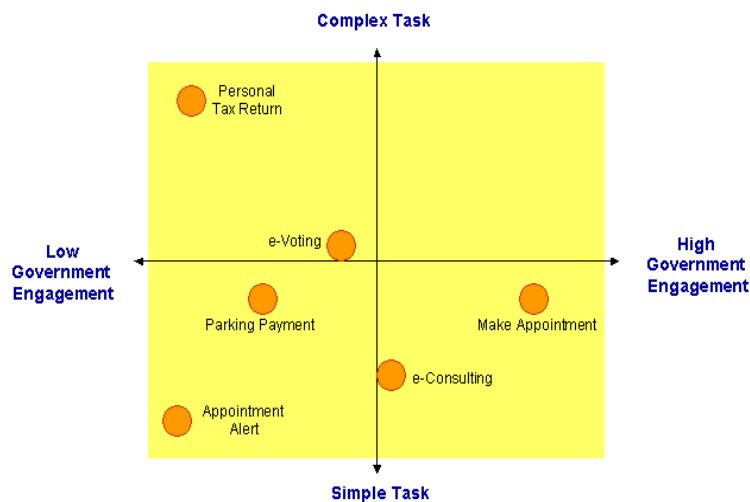
5. How should government develop mobile services?

This section describes a process that can be used by Public Service Organisations to assess their services' suitability to be accessed via mobile.

1. Fitness by task: check the service is good for the channel

The first element to consider is how easy is the service going to be for government and the citizen. The citizen, faced with the limitations of a handset, will want to do things easily and quickly. From a government perspective anything that minimises time and engagement (saves costs) while meeting citizen needs is likely to be desirable.

The diagram below provides a useful tool on which to map potential service ideas, and establish what is, and is not, desirable to do on mobile. The vertical axis represents task complexity from the user's perspective; the horizontal axis represents degree of Government engagement required. A complex task might for instance require lots of data being input on a long form. Conversely, a simple task might be requesting a document or brochure.



A high degree of government engagement probably requires considerable human intervention, on the other hand a low degree can probably be automated. The most suitable services to be accessed by mobile are those found in the bottom left hand corner of the diagram as they are simple tasks with low engagement.

Some general rules can be overlaid onto the map:

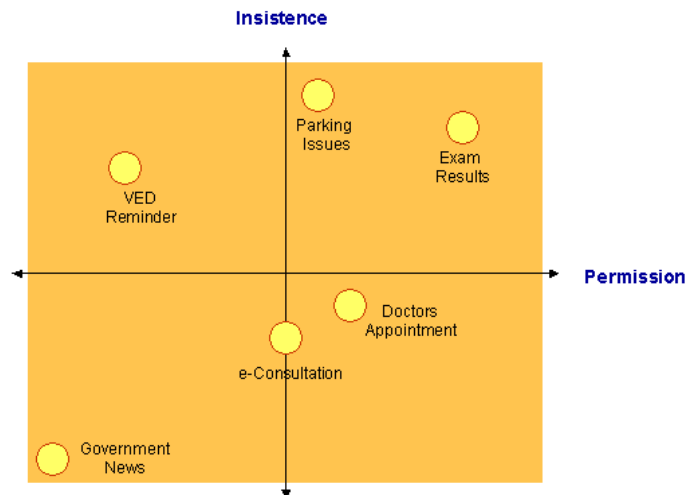
- Do not try and implement services that are complex for the user
- Lowering complexity may make a service work well on mobile
- Reduce engagement, but never to the detriment of quality of the service or user experience, may work well for mobile.

2. Fitness by relationship: let the citizen initiate the dialogue.

The second stage is to look at the degree of *permission* a citizen gives the government to enter their lives and the *insistence* of the issue at hand. *Insistence* is defined as:

“activity (the amount of things being done with the government) plus urgency (the push felt to accomplish a task)”.

From the model below, relationships in the top right quadrant are the most important to a citizen: they are both insistent and have a high degree of permission to engage the citizen.



An example of this is shown in the diagram. A text message informing the user of his exam results is an example of something that has both levels of high insistence and permission. A reminder for a doctor's appointment tomorrow may have less insistence (there are other ways a person could remember), but nevertheless enjoys permission.

However notification of a parking fine or of a need to renew a tax disc is not something most people would wish to receive on a phone – post will do fine, even if it is insistent. Conversely they might be happy to pay by mobile phone at a parking meter and receive acknowledgement – in this case they have explicitly given permission.

The model also shows that the context of the user is of paramount importance: only they know how insistent a task is and what permission they give it. Realistically it is very hard for the public service provider to know what the context of an individual user is at any moment. Therefore it must be up to the citizen to provide permission, because only they know their context. The Public Service Organisation's job is to make sure the user knows the service is available if he wants it.

3. Service initiation: the task for government is to open up the channel

Once the service has been identified as suitable in terms of task and relationship, the next stage is to establish how contact with the service is initiated. There are two main kinds of contact to consider.

- Push (with permission): “Citizen is told”
- Pull: “Citizen asks for something”

There is also a third type, a subset of Pull, but complex enough to consider on its own

- Engage: “Citizen tells government”

The following diagram shows examples for each of the three types of contact. They also look at how permissions are given and the challenges involved:

Example	How is Permission Given?	Challenges	To Note...
Push (“ Citizen is told”)			
<p>Reminders (don’t forget the appointment)</p> <p>Alerts (blood transfusion service back in the area)</p> <p>Reassurance (payment has been received)</p> <p>Feedback (we hear you)</p> <p>Status (application is due to be seen shortly or here are your exam results)</p>	<p>Explicitly – e.g. giving a mobile number & agreeing to receive reminders, alerts, status etc...</p> <p>Implicitly – to engage via Pull (see below). For instance request an appointment, and the process continues via SMS</p>	<p>System changes:</p> <ul style="list-style-type: none"> to capture mobile numbers (and permission) through other media at key transaction points. changes to store numbers for dealing with responses, for example to an alert 	<p>These are short term/quick wins that should be capable of implementation soon. Government to bear cost.</p>
Pull: “Citizen asks for something”			
<p>Search for information (are roadworks planned?)</p> <p>Demand (please send me...)</p> <p>Contact (who do I talk to)</p> <p>Request (I’d like an appointment.)</p> <p>Confirm (pay parking charge)</p>	<p>Implicitly – by engaging with government the user asks for a response They may be prepared to extend the dialogue (for instance with appt. booking, and later reminders)</p>	<ul style="list-style-type: none"> System integration issues Culture change (make government personnel contactable?) Response times must be optimal Dependent on ICT and/or human intervention e.g. appointment booking 	<p>Likely to be harder to implement. Issues with pre-pay (subscriber address not known by operator). Users can bear some costs, though not all</p>
Examples	How is Permission Given?	Challenges	To Note...
Engage: “Citizen tells government”			
<p>Inform (I saw a crime)</p> <p>Share (these are my views)</p>	<p>Tacitly – User may or may not expect a response: if only acknowledgment of their input</p>	<ul style="list-style-type: none"> Culture change required to accept and respond to (free text) incoming information Feedback: Critical: who does it? 	<p>Innovative government opportunities may lie in this area.</p>

To summarise the “Push”, “Pull” and “Engage” contacts are suitable for the following types of services

- The “Push” approach is most suitable for alerts and reminder based services.
- “Pull” areas would typically be suited for services where citizens can request information or names and addresses to confirming availability or cost.
- “Engage” based services are those where the mobile user can give information or feedback.

4. Exploit what mobiles are good for

A further consideration is to ensure the key strengths of mobile are exploited in relation to its use to access services. These strengths are:

- The flexible connectivity the mobile offers and increasing data transfer speeds enable it to act as a leading access device in combination with other platforms.
- From a cross channel perspective, the mobile is a good linking mechanism, with an easy to use return path
- The mobile’s personalized status and potential for identity provision makes it a strong contender as an individual remote control for individual’s access to shared devices and services, notably for emerging Digital TV personal video recorders (PVRs.)

5. Avoid what mobiles are bad for

It is also sensible to avoid the weak areas of mobile for service access. The mobile is likely to be constrained for the foreseeable future by problems inherent in its size and shape. Some of the key issues are:

- It is not a good device for text input compared to the PC. Even with handwriting recognition and use of a stylus this is not improved enough to make a difference.
- Despite larger colour screens, the mobile phone is not a good device for reading lengthy documents.
- Mobile phones are poor Internet browsing tools, and unlikely to become significantly better. This is chiefly because of the small screen and limited menu options.

6. Cost / benefit analysis

Mobile data usage is not free, and consumers are very aware of this. Every service that is being considered for development must address this issue. The key questions to be answered are:

Is the citizen prepared to pay to request a service?

In most cases, this should be yes especially when SMS use costs less than a call or a letter.

Does the service acknowledge receipt of a message?

In most cases, it should. Government needs to show it is listening. On the Internet it is good commercial practice to acknowledge interaction or else users worry their message is lost.

Is the mobile channel simply adding cost for little real benefit?

This needs to be addressed from the user and government perspective, e.g. lengthy complex interaction with a high volume of citizens could rapidly add cost.

Can costs be covered (e.g. using premium rate)?

Commercial users of text cover their costs (at least) or aim to make a profit by charging users premium rates, confirmed by text and added to the bill by the operator. Are there any circumstances where government could justifiably do this?

7. Consider applications for solutions

Another consideration is dedicated JAVA applications which can offer key advantages such as better user experience and richer functionality. Accordingly, there may be merit in developing them for government/citizen communications. The use of JAVA applications would be appropriate in the following circumstances:

- Where the audience is savvy enough to be able to download an application, for example this would be standard practice for games players.
- When the level of interaction is going to be frequent, and possibly complex - although the mobile device constraints should limit ambition.
- When the user need (or insistence) is high.

8. Publicity

The final point to make is that once a service is developed, it is very important that Public Service Organisations actively promote and publicise it. Most citizens will not discover government services on their mobile, and service discovery must happen through other means. Below are various channels that can be used to undertake this:

- Posters
- Press
- At Point of delivery (i.e. hospital)
- TV
- Interactive TV
- Teletext
- Web
- E-mail
- Voice call

Cross channel promotion of mobile services will be critical, and service providers will need to ensure this happens on web sites, teletext, interactive TV, print, and advertising.

9. Overall guidelines

In conclusion, these guidelines contain practical advice for Public Service Organisations when contemplating the use of mobile phones as a core platform on which to develop their electronic service delivery:

- **Harness existing equipment** - Services should be created or configured to harness the existing large base of equipment already held by citizens.
- **Deliver in ways that are familiar** - Services should be delivered in ways already familiar and actively adopted by users.
- **Avoid building or replicating services that the private sector is likely to address** - This is because as usage increases, it is likely that the private sector will explore every avenue for making money through mobile data (this has already happened with SMS).
- **Use different channels** - Winning mobile government services are likely to form part of an overall process that runs across different channels
- **Build services that can be accessed directly** - Think about specific products and services to offer that citizens can access directly while on the move and not involving lengthy Internet browsing based elements that will be limited and slow on the mobile.
- **Concentrate on “opt-in” based services** - Individual Public Service Organisations should not develop push based services that could be perceived as unwelcome spam. Instead they should concentrate on “opt-in” based services.
- **Ensure users can find services** - In order to ensure users can find the services, the following questions will need to be addressed:
 - How will users first become aware that the service exists?
 - How will users then access the service?
 - Should services be segmented?
- **Keep mobile communications short and sweet** - The mobile phone is perfect device for rapid and brief interaction. Content should be short, targeted and relevant.
- **Imagine the mobile as a “remote control” device** - It’s a one handed way of demanding wanted things on the move. It also provides a way of getting feedback from/responding to “dumber” media like teletext or advertisements.
- **Combine it with other channels** - Consider where mobile may fit as part of an interaction process. It is likely to fulfil some purposes better than any other medium, but unlikely to do the whole job in addressing tasks of the user or government.
- **Promote task based destinations, avoid portal building** - Government services are simply too large and too varied for a mobile version of DirectGov to work on a mobile. Do not try to build it – even at the departmental level. Focus instead on promoting the specific tools that are appropriate in the best places.
- **Avoid lengthy documents** - Don’t try to provide mobile versions of long documents. Very few people will read them and it is not worth the expense.
- **Don’t ask users to fill in lots of details** - Forms which require repetitive or lengthy data input won’t work. Five input fields may be as much as most people will tolerate.

- **Don't create a service which requires other artefacts** - Services which need other artefacts e.g. birth certificates are not suitable for mobile, as users cannot get documents signed by others on their phone, or attach paper documents.
- **Security must be simple** - Anything requiring security must make minimal demands on the user: for instance PKI key codes of 16 strokes are out of the question.
- **Understand the marketplace** - Government service providers must understand the marketplace. It is critical to understand the industry infrastructure before building a service, plus measuring back office systems development and innovation costs.

6. Principles for delivering government services

This section provides further expansion on the principles underpinning the use of mobile technologies to access government services.

Adoption of these principles will help to ensure that services offered will range from basic voice and text propositions, to richer media alternatives, and be delivered in ways that users are already familiar with and already actively use. This will help to encourage the high levels of usage Government requires.

1. Evaluate mobile as a key channel for service delivery

All Public Service Organisations should evaluate mobile telecoms as a key channel for providing electronic services which benefit from the immediacy, localization and personalisation that the medium offers.

- The Mobile Phone is uniquely placed to assist Public Service Organisations in delivering their services to citizens wherever they may be. As one of a number of available government channels, mobile has particular strengths:
- The Mobile Phone is the most pervasive personal communications technology - able to reach most people when in or out of their homes and offers means of addressing the individual in a personal, private and secure manner.
- It is well placed to address nearly all social, ethnic and cultural divides. It enables immediate communication with the citizen through simple and quick voice and text based applications that most are already extremely familiar with.
- Through the cellular networks, high degrees of localised electronic service delivery can be made to assist, alert and advise the citizen wherever they are and conversely for the citizen to inform government of elements that need addressing in a given location.
- Mobile clearly falls within the wider strategy for how government services are delivered and many organisations are already exploiting the medium to interact with the public.
- Mobile should be considered as both a sole proposition and importantly as part of a combination with other channels to deliver electronic service solutions.
- Public Service Organisations should regard mobile as part of their own channel strategy but in a manner coordinated with other departments to maximize cross-pollination of services and economies of scale.
- The Delivery and Transformation Unit will work to communicate the benefits of mobile to Public Service Organisations and work with Industry to recognize the potential that the government provides for new commercial and compelling mobile solutions.

2. Focus on applications that can harness the existing large base of handsets already deployed in citizens' homes and provide a compelling mobile "self-serve" alternative for those that draw on public services regularly.

In the UK as many homes now have a mobile phone, as have a landline phone (90%), and ownership extends across all demographic groups. The trend continues for many homeowners to run mobile phones as their home's main or only telephone device.

While some citizens change their handsets regularly, organisations should ensure that proposed services are backwards compatible and can reach the mass of products owned rather than aiming at new technologies alone that need to develop take-up. This is particularly pertinent to the older and poorer sections of the public who critically also tend to be heavy users of public services. Enabling them with a simple and compelling mobile solution that their existing basic handset can link with could generate high levels of usage and create major economies within organisations' other areas for handling the public.

3. Build mass take-up through harnessing existing familiar applications and usage habits deployed across all demographic sectors.

This framework aims to develop mobile solutions that can clearly support the Transformational Government strategy and social inclusion objectives set for 2006. These have to be delivered in a manner that can create new efficiencies and economies. This demands services able to quickly develop mass take up. Public Service Organisations should build strategies that deliver services in ways that the owner already uses the mobile phone intensively. Include simple text based services that most citizens use daily already and do not demand learning of new usage patterns. This is particularly relevant to many of those that liaise with Government regularly and will not have the patience, understanding or interest in learning new ways of communicating.

4. Concentrate on SMS services that require "opt in" by the citizen, and not develop push based services.

Central and local government departments will each have particular services they feel will be compelling for their target communities. Each may be inclined to push their service directly to mobile users, but this will be highly frustrating for the end user and perceived as nothing more than undesirable spam. Effective, cohesive marketing communications aimed at the citizen is needed to gain their accepting relevant and worthwhile services for them as individuals.

5. Make services available by DirectGov as a primary route to market. If this is not possible, services should be constructed on open standards and common components.

Directgov is a government service giving people access to the latest and widest range of public service information in one place on the Web, Digital TV via Sky and ntl:Telewest and on mobile.

Current UK penetration of mobile phones reaches far beyond that of other technologies and accordingly a mobile version of the Directgov service has been developed. Directgov is running a pilot mobile service on O2's i-mode platform, with a generic WAP version of the service, due to be launched in early October, 2006, ensuring that the Directgov mobile service can be accessed by all mobile customers with internet enabled handsets and help meet its aim of reaching all demographic and socioeconomic areas of the UK mobile phone population. Directgov also plan to extend the service to the portals of other mobile service providers.

Mobile content must be designed specifically for the mobile channel so that is easy to use. It can be developed as a stand alone simplified variant of an existing service, but can work particularly well for location based content such as the current 'find my nearest service' on

Directgov and for call back services. All telephone numbers on the Directgov mobile service are links allowing the customer to connect directly. Mobile phones could also be used to create a return path to Freeview Digital Terrestrial TV.

Directgov welcomes and encourages other websites to link to the information that it hosts. Departments running or planning mobile services should interface with the Directgov team and establish coordinated means of presenting their service.

6. View the mobile phone as an access device and not a substitute Internet browser or download vehicle.

The computer continues to be the dominant solution for access to the Internet and associated browsing. Additionally computers' hard disks carry superior caching capabilities for taking software downloads or storing new programmes.

Even when taking account of latest developments in the mobile communications sector, it is unable to replace or replicate the PC's abilities. Data transfer rates are improving dramatically on mobile phones to be able to match or beat the typical speeds for fixed broadband. However, the fundamental physical differences, notably in screen size and keyboard make it difficult to browse the full Internet effectively. Mobile Phone displays do not enable large amounts of text and links. This would require the user to step through numerous sub pages to get to material that would otherwise be simply accessed via the PC. On the other hand the mobile phone is well placed to provide access to the Internet when combined with other platforms. Notably the mobile can make the link to the Internet server at speed to feed a laptop PC with large screen and standard qwerty keyboard. Various wired and wireless means of connecting the two devices now exist, e.g. bluetooth, IRDA, and even WLAN.

Section 7 – Case Studies

1. Love Lewisham

Service

'Love Lewisham' is based on a simple premise: residents want to keep their communities clean and safe. The www.lovelewisham.org website gives Lewisham residents, as well as council workers, the opportunity to take digital photos with their mobile phones of any environmental issues, such as graffiti, rubbish and potholes and send them via SMS message to local clean-up crews. Visitors to the site can chart the progress of the clean-up online, or they can request an SMS update, when the mess has been cleared. "Love Lewisham's strength is to focus on a specific community problem and employ a genuine use of new technology to fix it. This is a novel idea that could and should be replicated by more local governments.

Benefits

The software exudes brilliance not only because of its ease of use and simplicity, but because of its sheer effectiveness," Lewisham resident Kamal Uddin said. It changes the way Lewisham Council works. It improves the way things get done, rather than simply recording what happened. It offers a simple one-click solution – no email, no attachments are needed - just point, click, and send. The system works on a wide range of devices enabling the maximum number to participate. It reduces bureaucracy, increases efficiency and can be integrated into existing back-end systems. Love Lewisham puts local politicians in touch with their constituents by making casework follow-up visible and effective as well as enabling staff from all over the council and residents throughout the borough to become 'eyes and ears'.

The public get a quicker response, leading to cleaner streets. Employees have improved workflow and reduced paperwork. Council operatives have increased job satisfaction in responding to environmental issues rapidly and capturing evidence before and after.

Lewisham resident satisfaction levels for street cleaning rose from 49% in 2002, 53% in 2003, 56% in 2004 to 60% in 2005. This is 8% above London average

Background

'Love Lewisham' is an initiative that uses mobile devices (Smart Phones, Pocket PCs etc) to send images and comments to a live web front-end for immediate action by Lewisham's environment staff. It operates using the Cam2Web application created by Lewisham's Head of Environment, Nigel Tyrell, for use by staff and local politicians. Developed on Microsoft's Dot NET Environment, Cam2Web captures images and other information on a mobile device and sends them, via an XML web service, to a database (SQL Server) for viewing and updating on standard web-enabled PCs or other 'wired' devices. Cam2Web has been online since September 2004.

'Love Lewisham' was expanded for use by members of the public, through the development of 'MediaKlik' – a professional software developed by Lewisham's partner 'bbits Mobility'. This application, aimed at the public, is similar to Cam2Web but targets a much wider range of devices. Residents no longer need to download any software, they can use MMS to send Love Lewisham an image from any camera-enabled phone.

These issues are then acted upon and updated by Lewisham environment staff. SMS messages or e-mails are sent to acknowledge reports and update residents of progress. The 'Love Lewisham' MediaKlik application was launched on Valentine's Day 2004.

How it works

The 'Love Lewisham' system works by storing photographic images and comments in a database linked to a web front end. These become available very rapidly to operational managers and to staff who are dealing with street incidents. Initially aimed at dumped waste, the system was quickly adopted by those dealing with graffiti and then for abandoned vehicles. Links are still being extended, e.g. with the enforcement section and with external organisations.

It was developed with Project ENCORE, run by the Department of Communities and Local Government. Try www.lovelewisham.org to see pictures of problems reported and afterwards too see pictures of problems solved.

2. Leicester Bus Information via mobile

Service

The "star text" scheme in Leicester and the East Midlands enables people to access real time bus information on their mobile phones, whilst at the bus stop, at home or in the office.

Benefits

The accurate information provided by "star text" not only inform passengers, but also allows them to minimise time spent waiting at bus stops – an important personal security benefit. Bus passengers benefit hugely from not having to queue unnecessarily, plus they feel better about bus service frequency and quality.

Background

Leicester City Council, in a Quality Partnership with Leicestershire County Council, Arriva Fox County, First and Kinchbus introduced "star trak", a real time bus information system, in November 2000. One of the aims of the "star trak" system was to further the Bus Strategy by improving the passenger's experience of public transport by providing accurate at-stop and in-journey information. The strategy stated that "The fundamental principle underlying the Bus Strategy is to put the passenger first by creating a step change in the quality of service"

As a result of positive public feedback on "star trak", a need was recognised to make accurate bus information available away from fixed sites, and onto mobile phones, using text-

messaging technology. This led to the development in April 2001 of “star text” . “star text” is being rapidly expanded to all star trak services, and will be provided as a standard feature when new routes are added. “Star text” was delivered for less than £40k.

The Leicester system has recently been expanded and is now a regional system serving routes in Nottinghamshire and Derbyshire.

How it works

“Star text” is simple to use. Each star trak bus stop has a “star text” plate attached, giving instructions and a unique code.

To obtain bus information, passengers:

- Enter the bus stop code into their mobile phone.
- Send the message.

A rapid text reply gives the waiting time until the next star trak buses from the chosen stop. The cost to the user is the usual cost of a text message via their network provider, plus a 25p return charge. When the system is unable to provide valid information, reply text messages to your phone are free. The service is available to users on all networks.

Should real time information not be available, the scheduled time is given.

3. Enabling more time on the beat

Service

Lothian and Borders Police are using PDA devices within their Mobile Data Project as official electronic police notebooks (e-notebooks) to gather the information required in core police business processes. The Project group include all of the Force Road Policing Branch officers, Community Patrol officers in the West of Edinburgh and all the staff within the Professional Standards and Complaints and Conduct Department. The project has the full support of the Scottish Crown Office, the Procurator Fiscal Service and ACPO(S).

Benefits

The Mobile Data Project has established that by gathering information in an electronic format it immediately improves quality of content, greatly reduces repetitive administrative tasks for operational officers, stops the need for police officers to continually return to police stations and increases the speed of transfer of information. These factors have created an immediate increase of police visibility by one hour, per officer, per shift, per day. In the trial group of 250 officers, this will deliver the time equivalent of having an extra 30 officers working in the same area over one year.

Inspector Norman Dixon the Project Manager states that the system helps the Force make best use of technology, achieve maximum value for money, increase public reassurance by releasing operational police officers from administrative tasks, increases police officers morale, meets customer demands and requirements, all with an ultimate effect of providing a better more focussed delivery of customer service.

Background

The Mobile Data Project is based on ‘System Thinking’ principles of understanding then redesigning core business processes from the perspective of the customer – the public - with an aim to eliminating duplication of effort and reducing waste. This allowed the Force to understand the capabilities of their current processes, and improve them via the use of technology. The Force also aimed to increase the amount of value work being carried out in the various processes by the police staff.

How it works

Operational Lothian and Borders Police officers gather information within an e-notebook at the point of contact with the public. On return to a Police Station they upload the information

into a desktop where they can manage the information and move it on within the various business processes in a format all others in the process can use. Information is being gathered in core police business process such as Crime reports, Vehicular accident reports, Witness statements, Stop search and Breath test returns, Intelligence entries, Sudden deaths, Social Work reports, Licensed premises visits, School visits, Missing persons, Conditional offer fixed penalty tickets, Vehicle defect forms and Domestic abuse incidents.

The PDA equipment they are using is the Qtek 2020i, which is also a mobile phone although the GPRS capabilities are not currently being used. The Project is also using 'Brother' m-print micro printers linked via blue tooth to the PDA devices to issue Conditional Offer Fixed Penalty tickets for motoring offences, victim of crime information sheets etc.

The Project has been ongoing for over a year and currently there are 220 officers who are live users and the Project should have all 250 officers live by the end of October 2006.

Take up and impact

The impact of the new system is best expressed by Constable Lisa Watt, a Community Patrol Officer at Corstorphine Police station, as follows:

'Initially I was sceptical about the new PDAs, but through using them and growing in confidence in its functions and my ability to utilise its full potential, I am now spending less time in the Police Station doing paperwork. Using my PDA I am either able to create documents in the car or write down information once at the scene direct into the appropriate forms. Creating formal witness statements is a lot quicker when you get back to the Station because you just download your work from the PDA rather than having to re type what you have already written.

An example of time savings that I can give is that I have submitted 9 solved crimes on one day it was very easy because I only had to create one and then duplicate that crime with minor changes. That saved a good half hour rather than sitting typing individual e-mail forms. I must have saved about 40 minutes typing time in the Police Station and that was 40 minutes extra I had on patrol.'

4. Stockholm – mCity

Service

Stockholm's "mCity" strategy, is applying new ways of putting mobile services to use within the city. Example applications are:

- social care staff project that involves organising cover for staff when they are not able to work. The system sends off-duty colleagues text messages, offering them extra work
- schools using automated absence management and sending exam results directly to the phone
- customers placing their orders online, orders going directly to store
- traffic information sent directly to the commuter.
- Students get their exam results sent directly to their phone
- Cultural information is spread via SMS and MMS

Benefits

Stockholm is gaining a variety of benefits from "mCity". For example the social care project improves morale because it presents workers with a positive choice rather than a

burdensome requirement. The new system also allows care staff to communicate with each other which nurtures team spirit.

Mobile technology is a driver for change and improvement. Services are improved for citizens and visitors. Conditions for regional IT/telecom business are improved. Stockholm's position as a leading IT city is reinforced.

Background

Stockholm set up "mCity" to promote the development of the city for its inhabitants, businesses and visitors. Stockholm developed mCity projects according to a business case with the focus always on the user. MCity started small, originally with one of Stockholm's district councils. To give it better reach, a city-wide agency has taken over running the programme.

How it works

The corporate project management team works with districts to develop small pilots. They look at processes first then apply the technology. After local implementation, the team decide whether it is successful enough to roll out more widely. This approach fosters low risk innovation on a small scale, maximising the benefits of success and mitigating costs of failure. "mCity" captures and applies the lessons learned from the unsuccessful pilots when devising new mobile projects. "We have seen that the mobile services need to be extremely close to people's everyday life in order to get things going," said Sanna Koritz, project manager for the mCity project. "Today, we use ordinary SMS services since that's what we all have access to. And the outcome of simple use of SMS is surprisingly high. "The technology is simple," said Koritz, "and our goal is to use the same method for as many purposes as possible. Everybody is interested in creating simplified working methods. If mobile solutions can contribute to this, we can save both time and money."

5. Ensuring attendance at appointments

Service

GPs and NHS Trusts are now sending text reminders to patients' mobiles to help reduce missed appointments at hospitals and surgeries.

Benefits

Several trials in England have found that the use of text-messaging reminders reduces the number of missed appointments with family doctors by 26-39% and the number of missed hospital appointments by 33-50%. The trials have made the processes better and improved the patient experience.

Text message service has helped to reduce waiting times by reducing the need to reschedule appointments, and reducing pressure on staff to squeeze extra patients into already busy clinics.

Mobile texts are also being put to other innovative uses such as reminders to patients to take their medicine at the right time, or to encourage compliance with exercise regimes or efforts to stop smoking. Text reminders are also being put to good use in other areas like reminding absent children to go to school.

Background

NHS patients in England missed one in ten of the 45 million hospital outpatient appointments in 2004-2005. One of the major reason patients miss appointments is because they forget, especially where outpatient appointments are up to a year in advance

How it works

A typical reminder scheme automatically sends out an SMS message up to a week in advance of the appointment. This is preferable to phoning patients to remind them to attend as that relies on patients being in, and answering their phones. A text message is a simple reminder the patient can read at their own convenience.

Take up and impact

Yorkhill Hospital in Glasgow, which piloted a text reminder project last year, is now sending out more than 2,000 reminders by text each month. Trials at Imperial College, London, found the number of missed GP appointments fell by up to 39 per cent with text reminders. Addenbrookes Hospital has done an 18 month pilot study and decided it is worth doing on a continuing basis. Return on investment has been estimated as 25-fold within 12 months.

Epsom and St Helier hospitals have brought in text reminders with the aim of cutting down on the thousands of missed appointments. Last year more than 52,000 people failed to turn up for their appointment, losing the hospitals time and money at the rate of between £60-£120 an appointment.

6. Contopronto (Norway) – Enabling payment via the mobile handset

Service

Contopronto have introduced a service called LUUP which enables people to use a mobile phone to send and receive money, and make payments at Pay Points in shops, kiosks, restaurants, service stations and online. Some Contopronto customers also receive their salaries on their mobile phone. It was launched in the UK in May 2006.

Benefits

One of the major benefits of LUUP is its ability to handle payments between individuals. LUUP can move money immediately without going through banks, though it can work in conjunction with banks. Users who want to transfer money to a friend or split a restaurant bill can send money with one SMS to anyone with a mobile phone and a LUUP account. Once the LUUP wallet has been credited, the recipient can save their money in their account, use it for purchases at LUUP merchants, or transfer it to their bank account.

Mobile content merchant partners benefit from low transaction fees for higher revenues and increased margins. With LUUP, merchants typically pay under 10% transaction fees compared to the Premium SMS operator fees which are normally over 25%

Background

The idea was the brainchild of Cotoprontos' founder, Mr XYZ, who felt that it would be useful to pay for things while on the move working in a variety of countries. Following nearly two years of development activities, in 2002 Contopronto received its e-money small issuer's licence from the Norwegian Department of Finance, which enabled them to launch the first mobile payment system and to issue e-money. The Contopronto mobile account was launched to the Norwegian market on July 1st, 2002. Having identified the opportunity that e-money could bring in other countries and to develop the cross border transfer market, in 2003, Contopronto applied for, and was granted, a European e-money licence by the Norwegian Ministry of Finance. The licence allows Contopronto to issue e-money in all European countries as the licence can be passported to other domains. Contopronto was the first company in Europe to receive the full European e-money licence, which was granted in December 2003.

In April, 2005, following a period of further product development, Contopronto launched its new and improved payment solution in Norway. The new payment solution was branded "LUUP". During 2005, Contopronto opened offices in the UK and Germany and started to test the service in these markets as well. Currently there are 21,500 users in the UK, 20,000 in Germany and 6000 in Norway.

How it works

Accounts are available to anyone over the age of 14. Users can register for free online at www.luup.com. A verification code is then sent to their mobile phone by SMS, and they are then signed up to receive all LUUP services.

The service is fully integrated with the U.K. and German banking systems, enabling funds to be accessed from credit cards, debit cards and bank accounts. Once the LUUP wallet has been credited, the user can save money in an account, use it for purchases with LUUP merchants or transfer it to their bank account. For users there is 2.5% charge per transaction and a funding limit of £850.

7. Directgov mobile pilot

Service

Citizens can use their mobile phones to obtain information on their local authorities, legal advisers (via Community Legal Service Direct) and UK online centres. Enter a postcode and relevant local results are returned.

Benefits

The Directgov mobile content has been designed specifically for the mobile channel so that is easy to use. The pilot will ensure that all demographic and socioeconomic areas of the UK mobile phone population will have access to the Directgov service and will be particularly beneficial to those audiences not adequately reached by the internet, particularly younger users.

Background

This Directgov mobile service is a pilot. It is an essential deliverable as part of Directgov's multi-channel proposition and is part of the implementation of the Transformational Government strategy. The mobile pilot is currently running on one mobile platform, O2's i-mode and is providing good generic information to Directgov about its mobile service, such as the effectiveness of Information Architecture, appropriateness of content, usability, functionality and design. i-mode is a relatively new concept for the UK, launched by O2 in October 2005. The total i-mode customer base is currently 250,000 customers.

In order to comprehensively test the mobile market for a Directgov service the pilot will be extended across other mobile service providers. This mobile proposition for the localisation of content from Directgov is a key tranche of the Directgov product roadmap.

A generic WAP version of the service is in development, due to be launched at the end of October and Directgov also plan to extend the service across other mobile service providers such as T-mobile, Vodafone and Orange. This will ensure that the Directgov mobile service can be easily found and accessed by all mobile customers and help meet our aim of reaching all demographic and socioeconomic areas of the UK mobile phone population.

The next phase of development includes a travel service from Transport Direct. As well as live road and rail travel alerts, users can enter a station or stop and the service displays the next arrivals or departures for that location. Directgov is also working with a number of other government departments to add content to the mobile service.

How it works

If you are an O2 i-mode customer, Directgov can be accessed under the Information & Directories section of the i-mode main menu. In October, the service will also be accessible on WAP enabled handsets on other mobile networks via the browser.

Users enter their postcode into a search facility, and the results are in the form of telephone numbers links, allowing the customer to connect directly to that number. In this way, Directgov connects citizens directly with local services. There is also a call-back service with Learndirect for free learning and careers advice. The customer enters their details and a Learndirect advisor calls them back at the time of their choosing.

8. Paying for the Congestion Charge by mobile

Service

Citizens can pay for the Congestion Charge in central London on a daily basis through their mobiles.

Benefits

The biggest benefit is the convenience and speed of paying the charge by mobile – it takes 10 seconds and you get instant payment. Although the level of customer service is no less, it does take longer to pay by phoning the call centre or going into a shop or logging on to the web. Mobile payments account for 23% of congestion charge sales and is rising.

Transport for London is conducting technical trials to take road user charging forward. They are looking at tag and beacon technology and using mobile phones to top up your account. Added value services are being examined - for instance being able to review the status of your account, a pilot giving reminders and linking mobile account holders into traffic updates.

Background

The Congestion Charge started in February 2003. Just before its launch the main service provider Capita came up with the idea of using mobile phones for payment as it is cheaper to run than other channels. There is no extra cost to Transport for London or the citizen to add the mobile channel.

How it works

You register your details with Congestion Charging including credit card and your car registration number. Then on the day you drive through the Congestion Charge area you text the code provided in order to pay. If you want to pay weekly or monthly or annually you need to contact the call centre, website or a participating shop. If you pay monthly, you get three days free. And if you pay for the whole year, you receive 40 charging days free.

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