Introducing a Novel Market Segmentation for e-Government Services

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Abstract

A critical element of the overarching realm of e-government is the appropriate delivery of government services over the Internet. To date, guidance for government service design has been based on usability and, lately, security issues of the new medium and simple demography-based segmentation approaches aimed at structuring the presentation of government to its constituents. This paper introduces a novel market segmentation approach that allows e-government service designers to prioritise and target online services at individual constituents in a way that is expected to increase adoption of online government services. The segmentation approach and the characteristics of the segments that result are described within the broader context of e-government in Australia. After describing the segmentation, four key issues impeding e-government implementation in Australia are discussed with insights into priorities developed from the segmentation. The paper concludes with a summary of ongoing research in the area that this paper introduces.

Keywords: e-government, market segmentation, service design

Introduction

It is received wisdom that e-government services are targeted at one of four broad constituencies: businesses, citizens, other governments and employees (Australian Government Information Management Office, 2006; Central IT Unit, 2000; Deloitte Research, 2000b; Government of Canada, 2002; Jackson & Curthoys, 2001; Jupp & Shine, 2001; McClure, 2000; Tapscott, 1996). Each of these broad customer groups, or market segments, will adopt and use e-government services differently, and for different reasons (Clarke, 2000; Mellor, Parr, & Hood, 2001). But is this segmentation really sufficient? Market segmentation assists in focusing efforts at profitable customers, or alternatively aiming products at subtly different demand characteristics (Carrick, 2001; Central IT Unit, 2000; McColl-Kennedy, Kiel, Lusch, & Lusch, 1994). Some pundits claim that e-commerce technologies allow us to consider 'markets of one' (Carrick, 2001; Watson & Mundy, 2001); i.e. services customised to the exact needs of each individual that uses them. Market segmentation to that level, however, reduces the likelihood of identifying benefits from addressing common needs across broad groups of the market (Clarke, 2000; McColl-Kennedy et al., 1994).

Identifying market segments for e-government is expected to reveal groups of users for whom adoption and use of e-government services is high, and other groups where it is low (Barker, 1985; Changchien, Leeb, & Hsu, 2004; Engel, Fiorillo, & Cayley, 1972; Forsyth, Lavoie, & McGuire, 2000; Kim, Nam, & Stimpert, 2005; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Ryan, 1991; Spratlen, 1981; Wedel, 2001). This additional understanding of narrower, more homogeneous market segments is expected to aid e-government service developers to pick services where quick wins might reasonably be expected and to avoid complicated web-based delivery projects for groups where adoption and use is low (Changchien et al., 2004; Engel et al., 1972; Forsyth et al., 2000; Kim et al., 2005; Peltier & Schribrowsky,

1997; Pires & Aisbet, 2003; Ryan, 1991; Spratlen, 1981; Wedel, 2001). This is a simple extension of the idea already practiced that separates 'Citizen' services from, say, 'Business' and 'Government'-related services. The intention behind the presented segmentation is to partition the problem of how to design, develop and deploy effective e-government services into narrower focus areas. E-government services are aimed at making interactions with government easier, faster and more convenient. The segmentation will enhance the design of services to this end by helping to organise, analyse, and manipulate ideas, designs and data more efficiently.

This paper proposes a middle ground in market segmentation for e-government services between the 'one size fits all' approach typical of traditional government service delivery (Burn & Robins, 2001) and the 'mass customisation' approach (Carrick, 2001; Watson & Mundy, 2001). The segmentation is adopted from the work of Henry Mintzberg (1996) rather than being developed through more classical segmentation approaches (Claycamp & Massy, 1972; Haley, 1981; Johnson, 1981; Kotrba, 1972; Smith, 1972). The paper develops its position in the following manner. Firstly, a definition of e-government is provided. Secondly, one of the broad constituent groups, 'the citizen', is refined into narrower market segments. This segmentation is then tested for usefulness by reviewing how it might influence some key e-government service implementation decisions (Australian Government Information Management Office, 2006), particularly:

- identifying the need for the authentication of identity within an e-government service

- the level of security and privacy required for e-government services, and

- when private-sector players might reasonably be involved in e-government service delivery.

Finally, an outline of ongoing research using this segmentation is presented.

What is e-Government?

E-government, or electronic government, is a conceptual extension of the common terms e-commerce and e-business. E-commerce has been defined as "the enablement of a business vision supported by advanced information technology to improve efficiency and effectiveness within the trading process" (December, 1997). The emphasis here is on the trading process; the buying and selling of goods and services between trading partners (Kalakota & Whinston, 1996; King & Clift, 1999; Lawrence, Corbitt, Tidwell, Fisher, & Lawrence, 1998; Webopedia, 2005).

E-business is the electronic enabling of business processes internal to the organisation, which usually includes the purchasing and selling processes (King & Clift, 1999). E-business extends the impact of the introduction of e-commerce internally to improve performance and management across a larger-than-organisation value chain.

E-government is, by extension, the electronic enhancement of interactions between governments and their constituents (Jackson & Curthoys, 2001; Mellor et al., 2001). However, the definition of e-government remains problematic in the information systems (Gronlund, 2005) and the public administration literature (Brown, 2005). The

wide variety of elements that might be included within the definition has not yet coalesced into some broadly accepted statement. Some elements appear common; for example, the idea of using the Internet as a basis for government service delivery. But even these commonalities do not really allow us to understand exactly what someone means when they speak of e-government. It is important to have a clear, meaningful, definition of e-government for at least two reasons. A single, clear definition will act as a core for a collection of disciplined research that can be clearly linked to the central proposition (a definitive field of study). A clear definition will also allow researchers and practitioners to connect their ideas and experience meaningfully to reinforce and expand this field of study. This section attempts to establish what the concept of e-government is given the obvious context of government *per se*.

In his *Philosophical Investigations* (Wittgenstein, 1953), Ludwig Wittgenstein describes social action as 'games' (Hollis, 1994). His central argument focuses on the ideas of language games, but he specifically likens such games to more commonly understood games; notably, Chess. Wittgenstein claims that games are made up of three sets of 'rules': those that define the game, those that regulate the play, and those used to train players in the game (Wittgenstein, 1953, p. 27e). He says that if we can identify the rules of the game, we can understand the game (Wittgenstein, 1953, p. 42e). He contrasts coming to understand with discovering anything new through this process (Wittgenstein, 1953, p. 42e).

This framework for viewing social action provides us with a means of positioning the concept of e-government within the broader field of government on a philosophical basis. This paper will attempt to identify 'rules' that relate to the social action of e-government. In so doing, the definition of e-government might be narrowly located.

Social Actions as a Game

Wittgenstein says that one cannot meaningfully ask for the name of something before understanding what it is (Wittgenstein, 1953, p. 15e). Furthermore, he says that the name of something represents "[w]hat cannot be destroyed; what remains the same in all changes" (Wittgenstein, 1953, p. 29e). However, he also claims that "[f]or a *large* class of cases—though not all—in which we employ the word 'meaning' it can be defined thus: the meaning of a word is its use in language" (Wittgenstein, 1953, p. 20e - original emphasis). So, we are unable to ask for the name of something until we understand it, yet we can come to know what using its name means by the use of that name in language. Surprisingly, this seems to exactly mirror the emergence of "e-government"—many people used the term without understanding what it meant and others have defined the term on the basis of its use in language. Clearly, a more substantial basis than this is needed if there is to be any serious academic study of the field (Gronlund, 2005).

Hollis (1994) describes two of Wittgenstein's fundamental 'rules' of 'games' as: 'constitutive' rules—those rules that define the game and how to play it—and 'regulatory' rules—those 'rules' that describe how to play the game well, or appropriately. Constitutive rules might involve defining the playing field, the number of players, or the taking of turns and the moves of particular pieces, penalties for incorrect play, etc. Regulatory rules seem to involve strategies and tactics, timing and coordination, as well as etiquette, dress code, etc. If you do not follow the regulatory rules, you are not playing the game well or 'properly'. If you do not follow the

constitutive rules, you are not playing the game at all (Hollis, 1994, p. 153). Wittgenstein goes on to "distinguish between the essential and the inessential in a game too. The game, one would like to say, has not only rules but also a *point*" (Wittgenstein, 1953, p. 150e - original emphasis).

E-government is a social action. It involves individuals and organisations participating in interactions which, as Wittgenstein suggests, are usually characterised by rules. And e-government has a point, or the efforts of most governments over the last ten years in e-government are an extravagant waste. So, can we see the constitutive rules and regulatory rules that make up e-government?

Rules for e-Government

The constitutive rules of e-government must be the same as the constitutive rules of government. There is nothing in the examples and implementations of e-government to date that is some new function of government. There is a large literature in the public administration field about 'what is government?' that will not be repeated here. Suffice it to say, the constitutive rules of e-government are founded in and a subset of the constitutive rules of government; a subset because not all constitutive rules of government are amenable or applicable to e-government (Deloitte Research, 2001) (e.g. perhaps, foreign diplomacy).

So, is e-government just government as some pundits say? No; e-government is constituted by an additional rule: "The act of government is mediated by the Internet". This is a 'regulatory' rule of government, but is a 'constitutive' rule of e-government. Importantly then, e-government is a regulatory rule-set for government that shares constitutive rules with government and has a single additional, defining, rule. It is a means of conducting government well, or better (if you believe the e-vangelists), by mediating government through the Internet.

The choice of "…mediated by the Internet" is deliberate. If the rule said, say, "…conducted electronically", it would certainly encompass activities such as telephone-based service delivery that are frequently included in the scope of e-government. However, it would also encompass all computer-processing within government, for which there is a long tradition already established as well as a substantial body of literature. This is not, typically, what practitioners or academics think of when they say "e-government" (although consulting firms usually do!) and, as noted earlier, we are looking for the meaning of the word in its use. Similarly, "…mediated by electronic networks" would include mobile phone-based interactions that are generally discussed under "m-government" (albeit, mostly by consulting firms). To the extent that the Internet is available through wireless connectivity, e-government would include such interactions and the distinction is not required.

"Mediate" is used here in the sense: "To effect or convey as an intermediate agent or mechanism" (from www.dictionary.com). The Internet provides a mechanism by which the act of government is carried out or affected. The Internet plays an infrastructural role forming an electronic channel between government and its constituents. However, in the e-government context there is an implication in the use of the word "Internet" (or common-use synonyms such as "World Wide Web") of applications that the parties manipulate as part of the act of government, hosted on, accessible through, but separate from the Internet itself.

In summary then, the constitutive rules of e-government are within the well-established set of rules that describe government with the additional rule that the act of government is mediated by the Internet.

What, then, are the regulatory rules of e-government? In the same way that the constitutive rules of government apply to e-government, so do many regulatory rules of government become regulatory rules of e-government. That is, e-government will not (necessarily) waive regulatory rules already established through the operation of government; rules around eligibility, timing, authority delegation, etc. Such regulatory rules in government are usually instantiated in policy. But Wittgenstein warns that regulatory rules may not be "set down in a list of rules. One learns the game by watching how others play" (Wittgenstein, 1953, p. 27e). In this case, part of the typical role of e-government as a set of regulatory rules for government is to decide how many of the unwritten (regulatory) rules of government action are to be maintained because these unwritten rules must be formalised to be instantiated in an e-government solution. This means that e-government tends to make explicit how government action is to be conducted. Formal policy and informal practice must be specifically integrated. That, in turn, can lead to ethical or moral outcomes such as a reduction in corruption or nepotism through enhanced transparency. The introduction of e-government in developing countries is often seen as a means of eradicating corrupt and inefficient practices of officials (Economic and Social Council, 2003). However, e-government is not, of itself, a moral or ethical effort.

Taking a different view, e-government regulatory rules might include many of the regulatory rules that apply to any Internet-based activity; rules around useability, accessibility, managing throughput, attracting attention, 'stickiness', etc. But these are not definitive of e-government and might only really be regulatory rules of e-government if there are specific variations that apply to internet-based government activities (in contrast to similar private sector activities, say). I have previously established that there is a small set of such rules (Turner, 2002b).

There are examples of regulatory rule-sets that are e-government-specific; for example, delivering e-government services through portals (Deloitte Research, 2000b; Di Maio, 2002; Jupp & Shine, 2001) in contrast to through individual agency websites, or constructing service packages around 'life events' (e.g. "having a baby", "going to school", "moving home", etc) or particular demographic characteristics (e.g. "youth", "aged", "family", etc). None of these rule-sets are definitive, nor have any been shown to be 'best'. But they are all called e-government. They are all variations on the e-government 'game'. Equally, because of their influence on organisational structures and processes 'behind' the Internet front-end, they can become regulatory rule-sets for government *per se*.

The regulatory rules of e-government are not wholly defined; indeed, Wittgenstein warns that they may never be. This vagueness underlies the uncertainty in the definition of e-government itself. What we can say is that e-government is a collection of regulatory rule-sets for government mediated by the Internet. Some of these rule-sets already exist (even if not rigorously defined). Furthermore, e-government as a field of study involves identifying where alternative rule-sets apply, their consequent influence on government practice, and recommending what actions to take.

Before introducing the e-government market segmentation, it is appropriate to briefly review what market segmentation is and how to develop a 'good' segmentation of a market.

A Brief Introduction to Market Segmentation

The principle of market segmentation is attributed to Wendell Smith (1972), who positioned it as an alternative strategy to product differentiation. Product differentiation, then and now, involves convincing the market that your product is different to, and better than, all other alternatives available to that market (Smith, 1972). The approach massages buyers' demands to meet the characteristics of the product delivered by the supplier.

Market segmentation is in contrast to this approach. It actively classifies buyers by characteristics related to how and why they buy (Bloom & Novelli, 1981; Claycamp & Massy, 1972; Dubow, 1992; Engel et al., 1972; Haley, 1981; Rossiter, 1985; Smith, 1972; Wedel, 2001). Suppliers adopting this approach then develop products to meet the needs of these groups (Barker, 1985; Bloom & Novelli, 1981; Claycamp & Massy, 1972; Engel et al., 1972; Hütt, Le Brun, & Mannhardt, 2001; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Smith, 1972; Wedel, 2001). In 1956, Smith claimed that the "present emphasis upon … self-service and similar developments tends to impose a requirement for better adjustment of products to consumer demand" (Smith, 1972, p. 34). This sentiment is still true today, 50 years later.

Smith (1972) noted that a product differentiation strategy results in a horizontal share of a broad, generalised market and a market segmentation strategy results in a vertical share of a narrow, specialised market. A government can generally guarantee their market share across the whole market by the nature of their activities (Edwards & Creagh, 1991; Mintzberg, 1996; Ryan, 1991). As Edwards and Creagh note: "Government agencies tend, because of political and administrative constraints, to treat clients alike even though their needs differ" (1991, p. 6). That is, governments tend to inherently adopt a product differentiation strategy. But, such a strategy is unlikely to increase the use of e-government services by the public as adoption appears to be related to individual characteristics (Bhatnagar & Ghose, 2004; Forsyth et al., 2000; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Wedel, 2001). Adopting a market segmentation strategy, which considers such characteristics, may permit governments to tailor e-government services to increase adoption of those services (Bhatnagar & Ghose, 2004; Forsyth et al., 2000; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Wedel, 2001). At a technological level, the segments would allow different focuses on security, monetary transactions, the requirements for authentication, etc, as discussed below.

Rossiter (1985) identifies six alternative bases for segmenting markets, starting at behavioural characteristics that directly affect the purchasing act and moving out to media vehicle characteristics that relate to how the market is reached. Rossiter's second best segmentation is benefit segmentation, a broadly accepted approach (Bhatnagar & Ghose, 2004; Dubow, 1992; Haley, 1981; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Rossiter, 1985). "The belief underlying this segmentation

strategy is that the benefits which people are seeking in consuming a given product are the basic reasons for the existence of true market segments" (Haley, 1981, p. 309).

Segmenting Government Constituents

We now turn to who government serves to understand how moving to e-government might affect that service and its recipients (Deloitte Research, 2001; McClure, 2000; 2001). As already introduced, government serves four broad constituencies: citizens, businesses, other governments and employees (Australian Government Information Management Office, 2006; Central IT Unit, 2000; Deloitte Research, 2000b; Government of Canada, 2002; Jackson & Curthoys, 2001; Jupp & Shine, 2001; McClure, 2000). This paper adopts a refinement of this received wisdom in the 'citizen' constituency to illustrate the usefulness of such further segmentation on strategies for implementing e-government (Clarke, 2000). The citizen constituency is regularly referred to by a variety of names: citizens, customers, clients, the public, etc. Sometimes, these titles are used interchangeably, for example: "The emancipated citizen is a highly demanding client, who wishes to be treated in a customer-friendly way" (Lapre & van Venrooij, 2001); but they should not be (Mintzberg, 1996; Scholl, 2001). This paper defines and uses these terms with more precision.

Mintzberg (1996) proposes that constituents of government can be classified into four groups: *customers*, *clients*, *citizens*, and *subjects*. He specifically establishes that the view of government from each of his segments is different; that an individual acting in that role will expect very different outcomes and behaviours from government (Mintzberg, 1996). These outcomes and behaviours are 'benefits' of government service (in a benefits segmentation sense) (Dubow, 1992; Haley, 1981). It is appropriate, therefore to categorise the adopted segmentation as being a benefit segmentation.

Mintzberg's segmentation categorises constituents into segments through the lens of their intent as they seek to and do access the service, which does not lend itself well to 'scientific', quantitative measurement. However, the purpose of the segmentation is not for conducting empirical research to prove hypotheses but to frame advice on how to account for the needs of members of each segment. An exhaustive account of the dimensions of segment measurement should suffice. This section considers each segment and identifies defining characteristics of relevant benefits. These are consolidated into a multi-dimensional measurement scheme. The scheme is then considered as a separate entity for completeness.

Customers

Customers are those constituents of government that purchase commodities from government agencies; for example, utilities, lottery tickets, etc (Mintzberg, 1996). The interactions are usually brief, and the relationship between the customer and government is a commercial one (Deloitte Research, 2001; Mintzberg, 1996). Similar interactions are often conducted by customers with non-government entities. Mintzberg (1996) questions why government still maintains roles that involve such transactions or service such constituents as the government rarely adds any value in these transactions simply because it is the government. Addressing market failures and managing public goods are two reasons for government participation here though.

The focus of attention when considering the interactions of government with *customers* is that of driving cost out of the transaction (Bellamy & Taylor, 1998; Deloitte Research, 2000a). The government must respond to commercial pressures or lose its customers to competitors; either private sector delivery, or other governments (Deloitte Research, 2000b). This objective is typical of the drive towards using electronic commerce to deliver transactions to customers in the private sector to protect and increase market share (Kalakota & Whinston, 1996; Lawrence et al., 1998; Tapscott, 1996).

A *customer*, by definition, adopts the approach and attitudes of a typical online shopper (Mintzberg, 1996; Turner, 2002a). Online shoppers use the Internet as a time-saving device, a convenient means of accessing the service, and as a research tool to determine the 'best' match to their needs, usually comparing various product (service) characteristics and price (Changchien et al., 2004; Hütt et al., 2001; Kim et al., 2005). They will complete the transaction online and usually in one session (Changchien et al., 2004; Colet, 1999; Dieringer Research Group, 2002a, 2002b; Hütt et al., 2001; Kim et al., 2005). With this level of research and comparison of product attributes and price, online shoppers can be expected to be fickle and require careful soliciting to develop an on-going relationship (Changchien et al., 2004; Colet, 1999; Dieringer Research Group, 2002a, 2002b; Hütt et al., 2001; Kim et al., 2005).

Therefore, e-government service *customers* will be considering the service as one of a range of alternatives, will seek initial information with which to make a decision, will transact their business online, and cannot be expected to return without careful attention. We can presume that the characteristics of e-government services that would meet their needs would be:

- Either transactional in nature (i.e. they receive, or at least initiate, the service online) or informational about the service.

- The nature, scope, and cost of the service are unaffected by the personal circumstances of the recipient; a commodity, or at least mass-produced (i.e. some selection from a 'menu' of pre-defined alternatives).

- Commercial in nature, implying the likely presence of a fee and the presence of competitive offerings or substitutes from other (possibly non-government) suppliers in the market.

Just as important is what they would not be seeking in a service. *Customers* would not be attempting to establish a long-term relationship unless it was of specific benefit to them (a characteristic that encouraged the service consumption over other offers) (Changchien et al., 2004; Hütt et al., 2001; Kim et al., 2005). And the nature of such a long-term relationship is likely to be passive on the *customer*'s part. For example, a subscription requires activity to initiate but the recipient then remains passive while the service is provided.

Clients

Clients are constituents that purchase or receive professional services from government over a period of time, possibly over their whole lifetime; for example, health services, education, job location services, etc (Mintzberg, 1996). These interactions are similar in character to professional services offerings (Deloitte

Research, 2001; Mintzberg, 1996) where the longer the relationship goes on, the more complex and tailored the service is for the individual client. The relationship between the client and government is a professional one. Government is frequently, but not always, the sole source of such services.

In interactions between governments and *clients*, the focus of attention is on delivering a commercially appropriate, quality outcome for the individual (Bellamy & Taylor, 1998). Government frequently delivers such services as a lower-cost alternative to commercial offerings to cover 'market failures'; for example, legal aid, and education (Davis, Wanna, Warhurst, & Weller, 1993). These services are offered to guarantee access for all government constituents, regardless of their inability to pay (Davis et al., 1993). Governments attempt to ensure that clients receive the correct, appropriate and complete service that they require at the minimum government cost. Again, interactions of this type are enhanced by e-commerce technologies, although there are clear potential benefits from e-business techniques.

Clients, by definition, are seeking professional, long-term services (Mintzberg, 1996; Turner, 2002a), a service to meet a complex need or set of needs that cannot be satisfied with a single transaction. The need will be unique to the *client*—although the service they receive may not be—and they will consider a range of alternatives looking for the service that most closely matches their requirements (Colet, 1999; Dieringer Research Group, 2002b; Turner, 2002a). Information that pertains to the nature of the service, eligibility to receive it or for discounts to the cost of the service, and how to apply for and receive the service would also be of interest to the *client*.

We can presume that the characteristics of e-government services that would meet *client* needs would be:

- Both transactional (either for initiation or for on-going step/s in the overall service) and informational about the service, its parameters, and *client* eligibility.

- The nature, scope, and cost of the service would be significantly affected by the personal circumstances of the recipient.

- Once the relationship is established, there would be regular further interactions (e.g. medical check-ups, rent payments, etc).

- Commercial in nature, implying the likely presence of a fee and the presence of competitive offerings or substitutes from other (probably non-government) suppliers in the market.

Again, what the *client* would not be seeking is helpful. They are not seeking 'instant gratification' as their needs are too complex. They are also not necessarily seeking a government response.

Subjects

Subjects are constituents that receive mandatory service from government, without the opportunity to influence the parameters of service provision; for example, prison inmates, tax and rate payers, and national service conscripts (Mintzberg, 1996). These interactions tend to be personal, to the extent that the service is applied tailored to individual circumstances, however the relationship is subjugatory; the government

compels the subject to accept the service as the government deems that it should be received. The delivery of these services is generally seen as a government obligation, although there are examples of these services being delivered by outsourced providers under the guidance and monitoring of government.

The focus of attention for interactions between governments and *subjects* is to seek a fair, consistently applied, service delivery. These services are a direct expenditure of government funds and consequently must be expended with utmost regard to efficiency and probity. The nature of these services demands that attention also be paid to the correctness or appropriateness of the delivery (Bellamy & Taylor, 1998). Mechanisms that support this focus lie within the realm of e-business, as defined here. Electronically-enabled internal processes provide greater efficiency in delivering these services, and provide the necessary management information to ensure that the services are efficiently and appropriately delivered to the relevant constituents.

Subjects receive services from the government largely without choice (Mintzberg, 1996; Spratlen, 1981; Turner, 2002a). To a large extent, the electronic services that will pertain to *subjects* will focus on improving communication and operations internally to the relevant government bureaucracy, rather than delivering services to *subjects* directly. However, any service that aids constituents to routinely comply with their obligations under law falls into *subject*-targeted service. The characteristics of services that *subjects* would seek are:

- Frequently informational in nature regarding obligations and means to comply, but can include transactions such as payment of rates.

- The nature and scope of the service will be substantially affected by the personal circumstances of the recipient.

- Transactions would occur on a regular, if not frequent, basis.

- Specifically sourced from the government, although some services may be provided by third-parties under contract or other arrangement (e.g. tax accountants).

Citizens

Citizens are constituents that receive services from the government at a broad level; for example the provision of infrastructure such as sewerage, roads, air traffic control, etc (Mintzberg, 1996). These interactions tend to be more impersonal, and are generally provided in a one-size-fits-all manner. The relationship between government and its citizens is essentially one of benefactor and beneficiary, although this is not a strict definition. The government is generally accepted as the appropriate deliverer of these services. However, recent trends in infrastructure outsourcing are pointing back to times when government did not have a large hand in such activities (Officer, 1999). Importantly, government maintains the role of policy setter and regulator where these services are delivered by non-government bodies.

Citizens also have another important relationship with government, that of 'owner' (Swedberg & Douglas, 2001). Governments act to address the needs of citizens as expressed by them through actions such as voting, lobbying, and direct feedback through agencies and to elected representatives (Caldow, 1999; Davis et al., 1993;

Government of Canada, 2002; Watson & Mundy, 2001). Citizens interact amongst themselves to form and promote the needs governments seek to address (Caldow, 1999). These activities can also be enhanced by electronic interaction (Bellamy & Taylor, 1998; Caldow, 1999; Government of Canada, 2002). As early as 1996 Tapscott (1996) describe 'Internetworked Government' that included the idea of government "foster[ing] the launching of 'virtual interest groups,' which can contribute to societal well-being."

The focus of interactions of governments with *citizens* is to ensure a consistent, equitable, and appropriate outcome from the whole sequence of interactions involved in delivering the service. These interactions encompass the idea of a two-way interaction between citizens and government to determine the nature, delivery means, and outcome of the service that government provides (Caldow, 1999; Clarke, 2000; Government of Canada, 2002; Lapre & van Venrooij, 2001). The level of sophistication that such interactions might ideally achieve requires significant complexity in any under-pinning information technologies.

The majority of services that *citizens* receive are in the nature of public goods and are rarely delivered electronically (Mintzberg, 1996; Turner, 2002a). However there are some services that *citizens* would seek, for example, information on the operations of government, or details of current or proposed legislation or policy. These examples point to the characteristics of e-government services that *citizens* might seek:

- Largely informational in nature, although providing feedback on policy or legislation might be considered transactional.

- The nature of the service is unaffected by the personal circumstances of the recipient; either a commodity or a 'menu' selection.

- Specifically sourced from the government, both as the originating source and as the authoritative provider.

Summary

These service characteristics can be formulated into dimensions against which constituent behaviour can be compared to determine a segment. Figure 1 describes the dimensions and where each proposed market segment lies upon it.

Segment	Interactions		Differentiation		Reliance on Government	
	Single	*Multiple/ Repetitive*	*Commodity/ 'Menu'*	*Individually Tailored*	*None*	*Complete*
Customer	▓		▓		▓	
Client		▓		▓		▓
Subject		▓		▓		▓
Citizen	▓		▓			▓

Figure 1: Summary of Segment Characteristics on Three Dimensions

One dimension that is missing is the one on which the nature of the service (informational/passive to transactional/active) might appear. However, this is not a dimension for measuring the 'benefit' of a service and so it is not used. The grouping of the repetition of a transaction with multiple transactions and 'menu' items with commodities is done for convenience. Although there is a distinction between these

ideas, their effect on the segmentation does not warrant complicating the table. Figure 1 shows only four of the eight (2 x 2 x 2) possible combinations of these dimensions. To reinforce the usefulness of the dimensions, we will now consider the others.

The combination 'Multiple–Commodity–No Reliance' implies a set of transactions to acquire a commercially available service that is not tailored to consumer needs. It is difficult to imagine the need for multiple transactions to acquire a commodity, especially given the lack of tailoring, but such a pattern of activity would still constitute a *customer* transaction as the commodity and commercial nature drive the concept of 'customer' here. The combination 'Single–Individually Tailored–No Reliance' implies a single, complicated transaction, or a small level of tailoring. If the transaction is complicated, the service is appropriately classified as *client*. If, however, the transaction has only a small level of tailoring, the transaction is actually a *customer* segment service. Combining these two observations reinforces that for the segments that are not reliant on government participation, the level of personalisation or tailoring of the service is the key determinant for segmentation.

The combination 'Multiple–Commodity–Reliant on Government' does not remain comfortably within the *citizen* transaction as the implication is that the government would oblige the user to conduct a set of transactions for some 'commodity' government service. Such obligation implies that such a combination is a *subject* activity. The 'Single–Individually Tailored–Reliant on Government' combination can be considered in the same light; a complicated transaction is still a *subject* transaction, a small level of tailoring is a *citizen* transaction. Here the key distinction between segments where government participation is required is the extent to which the constituent is involved in a series of transactions; i.e. the extent of the on-going relationship between the government and the constituent. These conclusions allow us to modify Figure 1 to form Figure 2:

Segment	Interactions		Differentiation		Reliance on Government	
	Single	Multiple/ Repetitive	Commodity/ 'Menu'	Individually Tailored	None	Complete
Customer	Don't care					
Client	Don't care					
Subject			Don't care			
Citizen			Don't care			

Figure 2: Segment Characteristics on Three Dimensions (All possible combinations)

The preceding argument establishes that the proposed segmentation is a benefit segmentation. The paper will now briefly return to the marketing literature to assess if the adopted segmentation is 'good'.

Key Characteristics of Market Segmentation
The literature proposes six necessary characteristics of good market segmentation (Barker, 1985; Engel et al., 1972; Kotrba, 1972; Roberto, 1991):

- "Mutual Exclusivity—each segment should be completely separate from all other segments;

- Exhaustiveness—every potential target adopter should be included in some segment;

- Measurability—each segment's size and profile should be measurable;

- Accessibility—each segment should be capable of being effectively reached and served;

- Sustainability—each segment should be large enough to be worth pursuing independently of other segments; and

- Differential Responsiveness—each segment should respond differently and not exactly like other segments with respect to different marketing inputs and mixes" (Roberto, 1991, p. 82)

Mutual exclusivity

It is both easy and difficult to show compliance to this requirement. Initially, there is the proposition that by definition the segments are mutually exclusive—the easy answer. Of course, the slightest reflection reveals that an individual will fall into any or all of the categories over time (Mintzberg, 1996), and may occasionally feel as if they are in more than one category at once. The answer to this is that the nature of the services and the attitude that individuals adopt when seeking and receiving them means that they are mutually exclusive *while being used*; an individual will not seek a *customer* service and a *citizen* service at the same time (although he/she may seek them consecutively). Importantly, I have not yet discovered circumstances where the benefit bundle offered in a government service appears to address needs sought by more than one segment. Greater future integration of government services (Australian Government Information Management Office, 2006) might alter that perspective.

Exhaustiveness

The segmentation was adopted on the basis that it appeared exhaustive. So far, there have been no instances where individual-oriented services have been found to not fit into a single segment. The segmentation does not attempt to exhaust all possible government services; the services directed to businesses and other governments are explicitly excluded. The segmentation is claimed as exhaustive on the basis of its definition and the lack of evidence (yet) of services or individual-level needs that are outside the segmentation proposed.

Accessibility

The segments are accessible as any individual can be part of any group, all individuals are part of all groups at some time, and they are so by their requirements (needs) not their nature (i.e. demographics). Also, although this research uses this segmentation for e-government services, the approach is applicable for all government services, hence even the alternate definition of accessibility in an information technology sense is not a stumbling block.

Sustainability

Again, as the segments can and (over time) do contain all individuals in the government's market, the segments are all sustainable. A threat to this might arise if government was to divest itself of all services in a particular segment (*customer* seems most under threat), but although there are some trends in this direction in recent years (Bloom & Novelli, 1981; Edwards & Creagh, 1991), the broad underlying

government responsibility to address market failures means that all segments are likely to always be addressed and necessarily considered sustainable.

Differential Responsiveness

As the nature of services offered to each segment varies to meet the different characteristics of the needs of segment members (refer to Measurability discussion below), each segment will have a different responsiveness to marketing stimuli (Bloom & Novelli, 1981; Changchien et al., 2004; Hütt et al., 2001; Kim et al., 2005; Ryan, 1991). *Subjects*, for example, are largely compelled to adopt the service (Mintzberg, 1996; Spratlen, 1981) and hence would require and respond to different marketing signals than *customers* who are being variously lured by the variety of potential service deliverers in the market (Changchien et al., 2004; Hütt et al., 2001; Kim et al., 2005).

Measurability

In this benefit segmentation, segments are based on the type of service to access and the relative priorities for different services (Haley, 1981; Spratlen, 1981). Measurability is therefore a matter of how we identify the nature of services that makes them beneficial to different constituent groups. Members of each segment must be identifiable through the measurement of some characteristic(s) (Bhatnagar & Ghose, 2004; Bloom & Novelli, 1981; Engel et al., 1972; Peltier & Schribrowsky, 1997; Pires & Aisbet, 2003; Rossiter, 1985). Obvious and frequently used examples are characteristics such as demographics, or (social) values (Rossiter, 1985). More potent measures in a commercial environment are previous buying behaviour, brand awareness and brand attitude (Bhatnagar & Ghose, 2004; Bloom & Novelli, 1981; Changchien et al., 2004; Hütt et al., 2001; Rossiter, 1985; Ryan, 1991).

In benefit segmentation, the definition of benefits involves a combination of factors that complicates measurement (Haley, 1981; Peltier & Schribrowsky, 1997). Similarly, the requirements of government to meet the needs of all constituents can blur measurement dimensions (Bloom & Novelli, 1981; Ryan, 1991). Nevertheless, the dimensions proposed above offer a way of measuring which segment an individual is acting within. As mentioned above, the segmentation is being used to suggest approaches to e-government service design, not to quantifiably prove hypotheses, so this level of 'measurement' is seen as sufficient. Of course, as the segmentation is being 'back-fitted' to these criteria, this claim is not absolute. However, the segmentation is sufficiently convincing to be worthy of further exploration. The next section uses the segmentation as a lens through which to assess decisions when faced with inhibitors to e-government implementation as an example of how the segmentation can be used.

Testing the Segmentation

Key issues impeding the development of e-government at present include: how to address security and privacy concerns, determining which services to integrate, and deciding whether to outsource the service delivery either entirely or through public-private partnerships (Australian Government Information Management Office, 2006; Central IT Unit, 2000; Chamberlain & Castleman, 2001; Deakins, Caves, & Dillon, 2001; Di Maio, 2001b; Office of the e-Envoy, 2001; Rimmer, 2001). Market segmentation can provide alternative lenses through which to view these issues (Clarke, 2000; McColl-Kennedy et al., 1994). Not all constituents of government have

or need the same view on these important matters (Clarke, 2000; Deloitte Research, 2001; Mellor et al., 2001; Scholl, 2001) and nor is it practical to make decisions about, say, service delivery partnerships on a one-by-one basis. There is little guidance to assist implementers of e-Government services to address these issues (Office of the e-Envoy, 2001; S. Singh et al., 2001). Singh and Foley (2001, p. 404) acknowledge that a key element of decisions about e-government service implementation rely on specialist knowledge of "users/customers". We will now review how the adopted market segmentation can throw light on the decision-making processes in these issues for individual constituent services.

Individual Identification

A key issue for e-Government services is whether and how to identify individuals using the electronic service (Australian Government Information Management Office, 2006; Carrick, 2001; Chamberlain & Castleman, 2001; Cohen & Eimicke, 2001; Office of the e-Envoy, 2001). The characteristics of the market segmentation proposed provide insight into this issue. By considering the nature of the services delivered to each segment, and the use to which those services would be put, guidance on the need for identification can be developed.

Customer interactions as defined are usually simple purchase-like transactions or the collection of information provided by the relevant source, usually for free. Such interactions are usually or could be conducted anonymously, even where payments are involved. (Although credit cards are a form of identity, the use here is not to identify the user.)

Client interactions are heavily dependant upon the identity of the recipient, usually because the individual's circumstances dictate the nature and extent of the service. In keeping with this high-individuality in service delivery, *clients* are probably already identified by some reference number provided by the agency(s) providing the service. This identifier could be used for identification in online service delivery, possibly with the addition of a password or PIN for authentication.

Similarly, *subject* interactions are heavily dependant upon the identity of the recipient, again because the individual's circumstances dictate the extent of the service. Here too, *subjects* are almost certainly already identified by some form of reference number within the relevant service delivery agencies. Furthermore, the nature of the government-*subject* relationship allows the government to insist upon authentication as well as identity, either through passwords or PIN numbers, or through more sophisticated technologies, if required.

Citizen interaction need not inherently be anonymous, but the nature of *citizen* interaction as defined here suggests that anonymity might promote greater uptake of services; for example, anonymity might increase the use of electronic discussion boards with topics related to current government policy areas.

It is clear from this brief review that the market segmentation can assist in decisions regarding whether or not to identify constituents during interactions.

Security and Privacy

The e-government implementation issue probably most concerning for Australians is the obvious implication of significant insight by government on everything about everyone as e-government services proliferate (Accenture, 2003; Australian Government Information Management Office, 2006; Bellamy & Taylor, 1998; Chamberlain & Castleman, 2001; Deloitte Research, 2000b; Mellor et al., 2001; Performance and Innovation Unit, 2000; Privacy Commissioner, 1999). A balance must be drawn between the efficiency of government and the privacy of its constituents (Australian Government Information Management Office, 2006; Bellamy & Taylor, 1998; Chamberlain & Castleman, 2001; Cohen & Eimicke, 2001; Deakins et al., 2001; Privacy Commissioner, 1999). Inevitably, the question must be put to the constituents: '*are you willing to pay, through your taxes or otherwise, for the inefficiencies left in the system to protect your privacy?*' There will also be difficult policy and technical issues around how long information must be maintained, and how long it is validly used in decision making.

This is a non-trivial policy area that cannot be solved by this paper. However, the market segmentation does offer a means of determining where progress can continue to be made while robust policy solutions are developed.

As the government rarely competes for its *customers,* and we have already discussed that *customer* interactions would normally be anonymous, unrelated over time (by definition), and we are deliberately not seeking 'mass customisation' segmentation, there is probably little benefit in remembering the *customer* from one interaction to the next. Consequently, the potential to compromise the constituent's privacy is minimal. Security during the interaction, particularly for payment transactions, is likely to be valued, however, the common levels of security provided by commercial sites (eg, SSL server-based transactions) is probably sufficient.

Interactions with *clients* involve personal information and it may be mandatory to collect the *client*'s history over time as a basis for further service determination. These are exactly the elements that lead to demand for highly secure and confidential electronic channels (Carrick, 2001). The development of acceptable security approaches and believable guarantees of privacy are required for these services to be adopted.

Just as *clients* demand security and privacy, *subjects* will have similar demands for exactly the same reasons. Indeed, because of the subjugatory nature of their role in the interactions, the expectation for security and privacy protections may be higher than for *clients*. As mentioned above, the opportunity to enforce high levels of authentication of identity in *subject* relationships may actually promote the resolution of the security and privacy issues here ahead of the *client* relationships.

Just as *citizen* interactions are similar to *customers* in the identity matter, the need for security and privacy may be similar too. There is probably little benefit in remembering the individual *citizen* from one interaction to the next, although demographic trends are potentially important. This means that their privacy is likely to be assured. Security during the transaction may be necessary, particularly to convince constituents of their anonymity, but this is unlikely to require more sophisticated technology than is already available through SSL-based server security

and anonymising technologies such as crowds, onion routing or LPWA (Gabber, Gibbons, Kristol, Matias, & Mayer, 1999; Goldschlag, Reed, & Syverson, 1999; Reiter & Rubin, 1999).

Again, the segmentation allows decisions to be made about where progress can be made to develop and deliver e-government services while the thorniest issues inhibiting implementation are resolved.

Service Integration

Another key focus of current e-government activity in Australia and overseas is integrating e-government services (Alston, 2002; Deloitte Research, 2000b; Di Maio, 2001b; 2001; Jupp & Shine, 2001; Lapre & van Venrooij, 2001; Office of the e-Envoy, 2001). This is a difficult area with significant technological hurdles to overcome, as well as possibly intractable political issues (Carrick, 2001; Deloitte Research, 2000b; 2001; Jupp & Shine, 2001; Lapre & van Venrooij, 2001). How might our market segmentation assist in this area?

The relative simplicity of *customer* interactions suggests that they are unlikely to benefit from integration substantially. It is certainly possible that bundling transaction services together in a portal and facilitating a single payment for a variety of services would be beneficial, but these are not substantial integration issues (Deloitte Research, 2000b; Jupp & Shine, 2001; Lapre & van Venrooij, 2001).

There may be opportunities for integrating services to *clients* as the nature of the services is more complex and frequently benefit from incorporation in a more holistic view of the constituent (Australian Government Information Management Office, 2006; Deloitte Research, 2000b; 2001; Lapre & van Venrooij, 2001). However, Australian government agencies that deliver *client*-type services are already bundles of similar services to at least some extent as a result of several years of 'customer-centric focus' in government (Australian Government Information Management Office, 2006; Deloitte Research, 2000a).

The opportunities for integrating services to *subjects* stem from the potential efficiencies in administering the service that integration delivers, rather than from adding value to the service itself (e.g. the concept of a completely integrated justice system) (Deloitte Research, 2000b). Integration at this level is exactly where the major difficulties lie and so this segment is likely to be a low priority target for integration activity until the issues can be addressed.

The opportunities for integration in services to *citizens* are likely to be limited, given the nature of the services and the absence of existing infrastructure to integrate.

Assessing integration priorities using the market segmentation developed indicates that there are areas where progress can be made while difficult technical and political inhibitors are removed. The Australian and overseas governments are already delivering *customer* services through portals with some success (Australian Government Information Management Office, 2006; Deloitte Research, 2000b; Jackson & Curthoys, 2001; Jupp & Shine, 2001; Office of the e-Envoy, 2001; Smolenski, 2000). Portals that aggregate *client* services will tend to focus on cross-

government grouping of services and can still add value for the constituents (Deloitte Research, 2000b). The other market segments will remain a lower priority.

Third-party Providers

Finally, we will apply the segmented-market perspective to the issue of whether third-parties can or should be involved in e-government service delivery, either through integration of e-government services with third-party services, or by the formation of public-private partnerships where third-parties act on behalf of the government in service delivery (Chamberlain & Castleman, 2001; Deakins et al., 2001; Office of the e-Envoy, 2001; Performance and Innovation Unit, 2000).

Customer interactions are potentially the most amendable to third-party delivery, either through integration with third-party services or by third-party delivery on behalf of the government. A key qualifier of this might be the need for *customers* to be assured that the information they are receiving originated from the government, and not from the third-party (Al-Kibsi, de Boer, Mourshed, & Rea, 2001; Deloitte Research, 2001). This could be overcome through appropriate branding of government information, even when presented within broader third-party services (Al-Kibsi et al., 2001; Deloitte Research, 2000b; 2001).

Even though *client* interactions are often very personal and long-term, the need for the government to explicitly deliver the service is low. Provided that the third-party deliverer is seen to be professional and to meet appropriate standards in service delivery, *client* services can be delivered on behalf of the government by third-parties (for example, education, health services, etc). Similarly, the ability to bundle *client* services with related services offered in the private sector is seen as valuable (Australian Government Information Management Office, 2006; Deloitte Research, 2000b; Lapre & van Venrooij, 2001).

There is a very real need for the government to be seen to be delivering the service to *subjects*, even if third-party service providers are involved (for example, tax assessments and the role of tax agents). Although private prisons operate in some states of Australia, few prisoners would be of the view that they were not prisoners of the state or the Commonwealth.

Again, it is important for the government to be seen to be delivering the service for *citizens*, although there may be occasions where the government must be seen to absent while the service is actually consumed (for example, an un-moderated political debate on a government-provided electronic forums to facilitate and promote free speech and civic engagement); Lapre and Venrooij (2001) report on research that indicates that moderated debates can still promote substantial engagement though. If the *citizens* feel that they are only being served by lobby groups or other non-government peak bodies (e.g. industry associations) they may feel that their voice is being filtered before the government hears it (Lapre & van Venrooij, 2001).

Table 1 summarises the guidance indicated by the market segmentation as described above:

Table 1: Summary of Market Segmentation Guidance

Issue	Customer	Client	Subject	Citizen
Individual Identity	Not required	Use existing reference number Offer some authentication	Use existing reference number Use sophisticated authentication	Not required Allow voluntary identification
Security and Privacy	SSL-based transactions No privacy issues	High-level security Significant privacy issues	High-level security Significant privacy issues	SSL-based transactions No privacy issues (if anonymous)
Integrated Services	Portal to bundle related services	Portal to bundle related services	'Back-office' system integration	(Probably) Not relevant
Third-party Delivery	Visible third-parties OK May benefit from Government branding	Visible third-parties OK May benefit from Government accreditation	Invisible third-parties OK Must be strongly Government branded	Third-parties NOT OK Government provided, but not necessarily government controlled

Areas that Segmentation Cannot Address

There are some areas where the market segmentation does not provide any particular assistance. We will briefly review two such areas: provision of support for certain services, and over-arching infrastructure issues.

The e-government Australia is currently implementing is more of a 'consumer democracy' (Bellamy & Taylor, 1998), or a 'thin democracy' (Astrom, 2001) than a 'strong democracy' (Astrom, 2001; Bellamy & Taylor, 1998). In Australia, there are only a few examples of support for electronic citizenship; the interaction of citizens among themselves to determine appropriate responses to changing events (Astrom, 2001; Australian Government Information Management Office, 2006; Bellamy & Taylor, 1998; Caldow, 1999; Lapre & van Venrooij, 2001) and which Tapscott (1996) sees as so crucial to an 'Internetworked Government.' Similarly, the role of elected representatives is somewhat unclear. If governments were driven by the data inevitably collected in interacting with constituents, and policy-making public servants are empowered by that data to adjust policy and legislation to respond most appropriately to changing requirements (Bellamy & Taylor, 1998; Chamberlain & Castleman, 2001; Deloitte Research, 2000b; Di Maio, 2001a), what do the politicians do? Although the market segmentation identified here clarifies what scope of services are under-supported (*citizen* services), it does not assist in identifying how to further promote their support at a policy level.

The other key element that the market segmentation cannot assist in is the infrastructure on which to operate the e-government. By nature, government services generally apply to all constituents; at least *citizen* and *subject* services (Bellamy & Taylor, 1998; Central IT Unit, 2000; Deakins et al., 2001; Jackson & Curthoys, 2001; Performance and Innovation Unit, 2000; Smolenski, 2000). Consequently, all constituents must have access to the service. If the infrastructure for the delivery of these services is not available, constituents will be unable to access the services

(Bellamy & Taylor, 1998; Central IT Unit, 2000; Deakins et al., 2001; Jackson & Curthoys, 2001; Kalakota & Whinston, 1996; Performance and Innovation Unit, 2000). Currently the responsibility for the delivery of this infrastructure in Australia rests in the commercial sector, although regulated by government, including a 'universal service obligation' aimed at achieving consistent, equitable access for all Australians (Department of Communication Information Technology and the Arts, 1999). There may yet prove to be a compelling case for the ownership and responsibility for the provision of the electronic infrastructure to lie with government so that it can fulfil its fundamental role (Deakins et al., 2001; Kalakota & Whinston, 1996; Weill & Broadbent, 1999). As suggested in the discussion of security and privacy, it may come to a question for constituents.

Conclusion

The market segmentation presented is useful in the e-government context, where e-government is defined as a 'regulatory' rule-set of the government 'game'. The segmentation further refines the 'Citizen' segment of the classical segments of e-government recipients. By considering what the intent of the 'Citizen' is when they access and use an e-government service, they can be classified as one of: *Customer*, *Client*, *Citizen*, or *Subject*. This classification complies with the common view of a 'good' benefits segmentation.

The usefulness of the segmentation is established by example here with the assessment of potential priorities and implementation ideas for four common inhibitors to e-government service development.

Research conducted with this segmentation has shown that by using the segments existing transactional data can be differentiated between the segments and interesting and unique characteristics in the data are available (Turner & Schwager, 2005; Turner, Schwager, & Guo, 2005; Turner, Schwager, & Imran, 2005). Ongoing research will refine the advice to practitioners that the segmentation offers to the design of e-government services for each segment.

Acknowledgements

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