

BEST PRACTICE IN LOCAL E-GOVERNMENT: A PROCESS MODELLING APPROACH

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Abstract

All UK local authorities have been working towards becoming “100% e-enabled” by the end of 2005. As the deadline approaches, there is recognition that the current target-based agenda for local authorities needs to evolve towards a deeper understanding of the process improvements that will be necessary to meet efficiency and effectiveness targets while simultaneously delivering enriched multi-channel services focussed on meeting needs from the citizen’s perspective. To achieve this new tools and techniques will be required to support a fresh approach which goes beyond simplistic assumptions that investment in e-technologies will automatically result in “business transformation” and “best practice”. This paper demonstrates how the application of a Variety and Best Practice (VBP) model, grounded in established software engineering theory and techniques, can be used as part of the transformation process to explore evidence of variety and identify context-specific opportunities for best practice solutions.

Keywords: local e-government, citizen portal, best practice, service delivery, process modelling.

1 INTRODUCTION

Local authorities in the UK provide direct support to meet a diverse range of citizens’ needs including housing, social services, education and the management of a complex service infrastructure that supports communities and business. The diversity of the sector can be traced to a complex legacy of institutional and political arrangements within which these local public services are embedded and within which they need to evolve (Bevir *et al.*, 2003). While part of the UK public sector, local authorities are significantly independent from central government and most have long histories with considerable autonomy under a variety of governance arrangements. The result is that each local authority has developed its own organisational, bureaucratic and more recently information technology solutions to match politically interpreted local needs. It is not surprising that local authorities display enormous variations in the way that their processes to provide public services are actually implemented. This variety presents a unique and potentially monumental challenge for the e-government agenda.

Over the past two decades, the transformation and reform of local authorities has been a key feature of the political programmes of the UK Government. The Labour Government’s “Modernisation & Improvement” agenda aims to develop local authorities that are more dynamic, entrepreneurial, efficient, effective and in touch with their citizens (Newman *et al.*, 2001). In 2003/4 nearly one quarter of all UK e-government spending was by local authorities - total spend on e-government was £12.2 billion in 2003/4 of which £2.9 billion was by local authorities (KableNet, 2005). This spending on e-government by local authorities has been largely under the auspices of the Office of the Deputy Prime Minister (ODPM) which believes that local e-government is indeed helping to transform the quality of local services making them “more accessible, convenient, responsive, and cost-effective”

(ODPM, 2002). The ODPM funded a range of innovative projects to explore many of the practical aspects of electronic government under the Pathfinder and National Projects programmes. However the primary mechanism for controlling the investment in local e-government has been based on linking funding to each local authority's self-completed declarations of progress towards a target of becoming "100% e-enabled" by the end of 2005. As the deadline approaches the definition has been modified to "100% capability in electronic delivery of priority services" (ODPM, 2004) and there is a growing recognition even if technical compliance with the targets is achieved this will be insufficient to deliver the deeper process transformations that are at the heart of the e-government agenda.

This paper provides a brief analysis of the local e-government agenda to date and then focuses on the data results from the only one of the 25 government-funded Pathfinder projects which specifically examined the variety in administrative processes between different local authorities. The BASE.gov (Beacon Accessible Services Electronically) project examined process variety across four quite different local authorities with "Beacon status" - the Beacon status means that the authorities were nationally recognised as delivering best practice (BASE.gov, 2002). Evidence of variety and consensus notions of best practice emerge from across the four authorities but, in our view, the researchers did not go far enough in developing models to represent their results. In earlier work (Johnson & King, 2005) we describe the Variety and Best Practice (VBP) model - an approach to modelling based on the synthesis of several perspectives from software engineering and the process literature. In this paper we present a more detailed examination of the variety in administrative processes evident in the BASE.gov literature and demonstrate how the model can be used to identify context-specific views on best practice solutions.

2 LOCAL E-GOVERNMENT: CASH CARROTS AND TARGET STICKS

People usually think of government as a hierarchical bureaucracy (Margetts, 2003) and bureaucracies are often criticised for their rigidity, proceduralism, inefficiency and inability to serve "human clients" (Ho, 2002). E-government is seen to offer an opportunity to "create a new mode of public services where all public organisations deliver a modernised, integrated and seamless service for their citizens" (Silcock, 2001). According to Margetts (2003), just as Max Weber's followers viewed bureaucracy as the basis of modernism in the first half of the 20th century, advocates of e-government have seen Information Technology (IT) as the basis of modernism in the second half and beyond. In the UK, the Prime Minister is committed to achieving "Information Age Government" (Mower, 2001) - IT is expected to displace bureaucracy as the primary vehicle for effecting the delivery of services leading simultaneously to cost reductions and service improvements.

In 2003 the UK was ranked fifth in terms of global e-government readiness (United Nations, 2003) and investment in UK e-government is forecast to be £17.9 billion in 2007/8 (KableNet, 2005), among the highest in Europe. Despite this strong lead a more recent report examining the maturity of the e-government programmes of 22 leading countries ranked the UK jointly 10th with Germany, the Netherlands and Sweden (Accenture, 2005). The United Nations (2003) report concluded that few governments were using e-government applications to enable transactional services (Stage IV in their benchmarking framework). The Accenture (2005) report notes that most governments continue to "make their service investment decisions without a clear view of the outcomes they affect" and that many of the leading countries are approaching "saturation point in terms of services that could be put online" but that, for most, there remains considerable scope for extending the depth of service cover in terms of its sophistication and value. In the UK and elsewhere, e-government agendas need to be focussed more clearly on carefully designed approaches that will deliver a more complex set of outcomes and move beyond information provision via Web sites to enable citizens to interact and transact via multiple channels. The Prime Minister's Strategy Unit (Cabinet Office, 2005) appear to

recognise the need for a paradigm shift in e-government thinking - noting that three quarters of government services are available electronically but that beyond this there is a need to set out a robust strategy for the “transformation of the delivery of key public services”. These views are echoed in the influential Independent Review of Public Sector Efficiency (Gershon, 2005) which recommends that “there is a need for reinforcement of planning and implementation processes to achieve high levels of take-up of e-enabled transactional services” and that there should be a “stronger focus on the delivery of services” through the established DirectGov and BusinessLinks websites.

While e-government holds a great potential to improve government performance, Holden & Fletcher (2001) argue that there are virtually no systematic research results justifying a rapid transition. Indeed there is a significant body of evidence that suggests the bureaucracies of government will prove resistant to such change. In the USA, Fountain (2001) paints a picture of government agencies embedded in institutional arrangements that frustrate attempts to exploit IT particularly where such IT is multi-agency and aimed at joined-up government. In the UK, the multi-agency working research project (AMASE) seeks to address “the organisational, managerial, regional policy and technical problems and issues involved in delivering joined-up services” (McLoughlin *et al*, 2004). In the Republic of Ireland, Bannister (2001) describes the development of IT ‘silos’ within the Irish Civil Service which, after decades of introspective development, rigidly mirror the organisational structure. The “integrated and seamless service to citizens” described by Silcock may prove elusive although Bannister does offer the attractive notion that there may be huge latent value locked in these systems if the challenges facing joined-up government can be overcome.

Moon (2002) concludes that e-government has been adopted by many local authorities, but it is still at an early stage and has not achieved many of the expected outcomes such as cost savings, downsizing, etc. Collinge (2003) believes that local authorities are in an awkward position. From above, central government is demanding to see a return on investment. From below, citizens are demanding to see improvements. Local authorities have been required to submit planning statements which set out how they are approaching the task of “implementing e-enabled service delivery” (ODPM, 2004). The IEG programme represents a top-down approach to implementing the e-government agenda with elements of both “carrot and stick” for local authorities. To date there have been five rounds of Implementing Electronic Government (IEG) statements. Round 1 was completed in 2001 and required councils to set out broad plans for implementing e-government. Round 2 in 2002 required more detailed plans and evidence of progress but, once the ODPM confirmed that all statements were satisfactory, the councils were rewarded with a further round of capital grants. In 2003 the third round (IEG3) included requirements for self-assessment, benchmarking and measuring progress towards the ODPM’s target of “100% capability in electronic delivery of priority services, in ways that customers will use” by 31st December 2005. Round 4 (IEG4) was due in December 2004 and the results are being analysed while an interim round 5 (IEG4.5) was due on 18th July (eGovMonitor, 2005).

Early analysis of the most recent IEG returns indicates 79% of services should have been e-enabled by 31 March 2005 and that most local authorities will claim to meet the 100% e-enablement target of December 2005 (ODPM, 2005). The pursuit of the “100% e-enabled” target reflects the international e-government findings that most countries have pursued service-breadth at the expense of service-depth (Accenture, 2005). Anecdotal evidence from the Local Government breakout session of the Government UK IT Summit (2005) indicated a general recognition that, despite some great successes, many other e-enabled areas lacked service-depth. The current “e-enabling” initiative for local authorities may only be skin deep – the genuine and radical transformation of public sector bureaucracy is still likely to prove elusive. At the Summit, Ian Watmore, the Head of e-Government at the Cabinet Office, noted the need to change the substance and perception of e-government – citizens expect their transactions with public sector bodies to be efficient and straightforward.

In conclusion, there appears to be recognition at international, national and local government levels that the major benefits of e-government will only be realised when it matures to include deeper and more radical process transformation - moving from a legacy of bureaucratic delivery mechanisms to faster, simpler and more flexible technology-facilitated delivery processes. The transformation this

requires involves a deeper understanding of the organisational, human, process-oriented and technical challenges involved in successful process transformation than has so far been evident. While recognising the wide range of challenges that transformation requires, this paper takes as its focus the development process-oriented models to help understand *current-actual* and *potential-future* process designs. In particular it explores the established wisdom of “best practice” and the development of analytical techniques for considering the implications of evident process variety. The work is particularly relevant for local e-government with its wide diversity of current service delivery practices in heterogeneous and largely autonomous local authorities. We believe that understanding of how notions of best practice fit with existing and requisite process variety will be essential for the local e-government agenda to make wide-scale progress in transforming delivery processes.

3 BEST PRACTICE AND PROCESS VARIETY

There is an implicit assumption behind the e-government agenda that generic, IT enabled processes will somehow fit with, or overcome, local variety. There is evidence to support this assumption in industry's adoption of enterprise systems such as SAP. The SAP R/3 Reference Model (Keller & Teufel, 1998) shows that processes grounded in software packages can be made generic and reused successfully by a wide variety of large and complex organisations. The challenge for local e-government is often therefore seen as one of scale and of central control vs. local autonomy. However within enterprise systems, there remain concerns that the poor fit between the current generation of packaged software and the needs of the client organisations has led to significant problems (Davenport, 1998; Shang & Seddon, 2002). This has led to a debate over whether ERP packages truly embody best practice and therefore whether client organisations should modify or replace their current processes with those supported by the package (Swan *et al*, 1999).

Walsham (1993) describes two organisational metaphors seen to dominate management thinking: the organisation *as a machine* and the organisation *as an organism*. The machine metaphor is exemplified by Taylorism and uses phrases such as ‘predictability’, ‘optimisation’ and ‘best method’ (Taylor, 1911). Taylor's description of ‘best method’ can be seen as the foundation of modern notions of ‘best practice’. While Taylor's work was based on using time and motion study to discover the series of motions which can be made quickest and best in a factory environment, ‘best practice’ can be seen to extend the concept to the ‘organisation as machine’. Interestingly, even Taylor saw ‘best methods’ as transitory; he notes that they should become the standard only until they are superseded by quicker and better methods. Walsham (1993) adds that, historically, approaches to developing information systems have often been based on a view of the host organisation as a machine and have consequently resulted in rigid and inflexible systems. The idea that there is a single best practice to be discovered and implemented is outwardly attractive to software engineers who see their job as building and then embedding defect free software within deterministic organisational systems. Checkland (1981) identified the inadequacies of this machine perspective and developed a view of organisations as ‘human activity systems’. Soft Systems Methodologies (Mingers & Taylor, 1992) encourage software engineers to adopt richer perspectives on the organisation. The influential Viable System's Model (Beer, 1979) suggests that organisations must have sufficient “requisite variety” to meet the variety they face in their environment and remain viable. With these richer perspectives, variety must be accepted as inevitable, and even desirable, while best practice becomes a more elusive concept.

Pentland (2003a & 2003b) observes that process variation is not in itself a problem, because there may be a need to respond to local circumstances in different ways. Pentland describes a work (business) process as a “generative structure” which varies according to content, tasks and the sequence in which these tasks may be done. Processes constitute a key building block of organisations (Davenport, 1993; Hammer & Champy, 1993). In e-government these processes can be closely associated with service delivery and can be defined as the set of activities carried out in order to deliver a service to citizens. Our understanding of a process is necessarily a generalisation about complex human activity and is

based on assumptions about a set of common characteristics. Of interest to this study is whether there are local circumstances and to what extent best practice solutions accommodate these in order to ensure high quality citizen services.

There is a growing body of process-oriented literature which uses the language of patterns to describe “good” or “best” practice. Alexander *et al* (1977) first proposed patterns in the field of architecture as a means of recording and disseminating good practice, enabling students to learn from those with greater experience. The pattern represents a recommended solution to a “problem” within a given context and can act as best practice template for designing the actual solution. Patterns are used in systems development at both the design level (Gamma *et al*, 1995) and more recently at the analysis level (Fowler, 1997). Analysis patterns have much in common with the SAP business process blueprint concept (Kagermann & Keller, 2000). Fowler (1997) proposes a catalogue of commonly found analysis patterns to describe common abstract processes such as “accountability”, “observations and measurement”, “planning” and “trading”. In e-government in the UK, the Office of the e-Envoy provides a road map for developing joined-up services that advocates Reusable Business Patterns for common tasks such as “address verification” and “person matching” (Cabinet Office, 2001). Where business patterns are defined to model processes that are widely recognised as best practice solutions the patterns framework provides a set of tools for modelling best practice.

To summarise, the Taylorist view that variety should be eliminated in favour of a single best practice is challenged by recognition that variety to meet local circumstances is an essential characteristic of organisations. The literature also suggests that software solutions that embed best practice while remaining sufficiently adaptable to local variety are more likely to be successful than those which impose a blanket solution by fiat. Within local government process variety is clearly significant but, to date, there has been little work examining the influence this variety may have on our understanding of best practice. A richer language for expressing “best” or, at least, “good” practice is emerging with explicit recognition of the need to match best practice solutions to context specific problems - patterns provide a convenient framework for this discussion.

4 BASE.GOV: EXAMPLES OF BEST PRACTICE AND PROCESS VARIETY

4.1 The BASE.Gov Project

The BASE.gov project (BASE.gov, 2002) was unique among the government sponsored Pathfinder projects in that it specifically examined the issue of variety in the approaches to delivering services across different local authorities. The project consortium included four local authorities: Leeds City Council, West Sussex County Council, the London Borough of Lewisham and Knowsley Metropolitan Borough Council – each of them quite different in size, demographics and organisational legacy. The project provides an insight into the tensions between simplistic notions of “best practice” and the need to recognise that local solutions may provide a better fit to local problems.

The primary aim of the project was to define a best practice process model and design architecture for joined-up citizen’s access to local government. The starting point was an assumption that a citizen’s need for local government services is often triggered by a major, and potentially traumatic, life event such as moving house. The life event may prompt a wide range of different needs including changes to housing benefit, finding suitable schools, re-arranging specialist support services, moving furniture and registering the new address. The range of different services required crosses the traditional departmental boundaries within local authorities, e.g. housing, education, electoral services, and extends to non-government support services such as private care. Such life events can clearly expose disconnected systems and organisational processes. The life events concept for citizens’ access was developed in the UK by the Life Events Access Project (LEAP, 2002). It mirrors similar work in other

e-government projects, notably Austria and Singapore (Leben and Vintar, 2004) and the European Commission funded e-Gov project (Tambouris, 2001).

4.2 Generic Activities: Patterns

BASE.gov examined two of the LEAP life events, Moving House and Bereavement and identified supporting processes called “process slices”. These process slices potentially occur within several life events, the Pupil Admission process slice, for example, occurs in both the Starting/ Changing School and the Moving Home life event. The project traced *generic activities* such as Request Information and Contacts to specific examples within the life events and process slices. This definition of *generic activities* echoes Fowler’s analysis patterns and the UK government’s Reusable Business Patterns (Fowler, 1997; Cabinet Office, 2001). Behind the scenes these activities may require communications between a number of local authority departments, central government departments/agencies and external organisations. The task of the citizens’ portal is to minimise the effort required from the citizen to get the services they need. The portal presents the citizen with a façade of joined-up government without requiring the total re-engineering of disparate legacy systems and practices. In software engineering the Façade Pattern (Gamma *et al*, 1995) is a recognised solution for hiding a disparate set of legacy programme code behind a single unified interface presented to the outside world, BASE.gov have simply extended this best practice pattern to the architectural level.

4.3 High Level Best Practice: A Generic Architecture

The proposed architecture envisaged using CRM technology to provide a rich interaction layer to guide the citizen through the services they may need. The architecture supports multi-channel access to information and services either directly via the Web or interactive Digital TV (iDTV) or via a telephone call or face-to-face with a mediator who uses the portal on the citizen’s behalf. The portal is integrated with back-office systems, such as council tax and housing benefits, and the necessary processing is triggered automatically on receipt of the citizen’s data. A prototype of the architecture was developed by IBM for BASE.gov and presented to stakeholders at the Labour Party Conference in 2002. The architecture is designed to link to other local authorities (e.g. when Moving House between authorities) and other government departments and agencies and, potentially, private institutions by electronically exchanging complete, validated and authenticated service requests to the relevant service providers in line with the UK Government’s e-GIF and e-GMF standards (Cabinet Office, 2001). A similar version to the original BASE.gov architecture has more recently been cited as best practice by the BuyIT ICT Best Practice Network (2005).

The generic function of the portal can be summarised by a single process: “Access Information and Services”. The aim of this process being to support a citizen through a life event by providing carefully filtered information to meet their specific needs and helping to identify and initiate requests for appropriate services. These service requests are generated electronically by asking the minimum number of questions to establish suitability, eligibility and where necessary authenticate the individual. The process can be repeated until the citizen is satisfied that they have the services and information that they require.

4.4 Evidence of Local Process Variety

The BASE.gov documentation describes detailed process flows of the Moving House process and the Bereavement process supplemented by text-based descriptions of how variations exist between the four local authorities. The “Pupil Admissions” process slice (part of the “Moving House” process) was described for all four authorities and provides an example which gives a rich view of the local variety found.

Many different ways of providing information about schools to parents and prospective pupils were evident. The key dimensions that varied were: information source, range, media, the channel and whether this was mediated. In Leeds, “most schools” had developed their own websites by early 2002 and these were linked to the council’s central site whereas Knowsley provided limited information about schools centrally and enquirers were advised to contact the schools directly. In Lewisham, staff at the one-stop shops could also provide “mediated” telephone enquires to the Education Department. As to the future, Lewisham and West Sussex were exploring call centre support for admissions, which raised a debate as to whether front-line staff should be trained to handle education queries or whether they should simply hand the call on to the Education Department. Knowsley was looking for a radical change – moving from a largely manual process controlled by the schools, to a largely electronic process controlled centrally. A single central website would support the process with links to schools’ sites. The site would include FAQs and “intelligent” guidance. But Knowsley estimated that only around 5% of citizens had web access and IT literacy was low, whereas around 50% had access to iDTV so the proposed central “website” would have to be made available via iDTV too. In terms of site content, West Sussex, a county with large rural areas, were exploring providing catchment area information to citizens which would take account of the demand for places at the schools and would require linking to a Geographic Information System (GIS).

In Knowsley, parents applied directly to the schools and schools could “pick and choose” students but the intention was to move to a central, “impartial” allocation system run by the council. Lewisham was grappling with the same issue. Leeds already operated centralised admissions via the Education Departments while West Sussex operated several Regional Education Offices. West Sussex also reported problems with their system in that some parents “circumvented” it and applied directly to schools and the aim was to “tighten” this process up.

4.5 Low Level Best Practice: School Web Sites and Central Applications

The process variety found by the BASE.gov research appears to reflect the complex legacy of institutional arrangements predicted by the literature with some evidence that demographic factors must also be considered. Each local authority is at a particular present, faces a different future and each is acting with reasonable autonomy to meet the problems that it views as highest priority. Despite this, consensus views on best practice also emerge. If schools do have Web sites then maintaining a local authority Web page with links to the School is clearly sensible. If the application process can be centralised then the councils believe it should be. The notion of best practice appears conditional on the local context. In West Sussex, attempts by parents (and presumably also some schools) to circumvent the centralised admissions also suggests that the council’s view of best practice may be challenged; as well as being transient and set within a context, best practice may also be “in the eye of the beholder”.

5 APPLICATION OF THE VARIETY AND BEST PRACTICE MODEL

5.1 Background to the VBP Model

Processes are typically viewed as having a number of attributes, including a set of activities, resources consumed by the activities and outputs produced by the activities. Lindsay *et al* (2003) offer a constructive debate on a range of definitions of a process and suggest that an output focussed (deterministic) view is preferable to defining processes in terms of their internal structure. A large number of process modelling languages have been developed over the years, including data flow diagrams (Yourdon, 1989), event-driven process chains (Keller & Teufel, 1998) and process maps (Rummler & Brache, 1995). Traditional process-oriented approaches have focussed on techniques for

defining processes in detail – decomposing processes into component sub processes and activities. Such attention to detail moves away from a consideration of outcomes and is also of limited effectiveness in situations where high levels of process variety are evident – what is needed are techniques which explicitly identify differences and similarities between processes.

The MIT Process Handbook (Malone *et al*, 1999) is one of the most extensive sources of generic process models in the public domain. Malone *et al* argue that, while decomposing processes is a valid approach, process modelling can also proceed in a second dimension - specialising processes into different types. Peristeras & Tarabanis (2000) used the MIT Process Handbook to propose a Public Administration General Process Model which specifies major processes including “Provide Service”. The process is decomposed into sub-processes but also into specialisations, namely “provide what?” (regulations or public goods) and “provide how?” (centrally, regionally or locally). This concept of process specialisation relies on *inheritance* – a specialised process inherits the characteristics of its more general parent.

Inheritance is one of the founding principles of object-oriented systems development approaches (Booch, 1991) and associated modelling languages have emerged which aim to capture not just activities and data, but also richer concepts such as component-based design, reuse and resource dependency (King, 2000; Yoshioka *et al*, 2001; Lee & Wyner, 2002). Bannister (2001), for example, considers how to model public administration processes in a reusable form, and suggests a Business Object Architecture that includes objects such as citizen, licence, payment and life event. The Unified Modelling Language or UML (Booch *et al*, 1998; OMG, 2003) has become established as the de facto standard for visual modelling within the software industry (Kobryn, 1999) and was designed to bring together the best features of a wide range of earlier analysis and design modelling approaches and includes well established techniques such as state chart diagrams and a variant on flowcharts know as activity diagrams. A rich extension for business modelling with UML is described by Eriksson & Penker (2000) who use UML’s meta-language to define a set of stereotypes for activity diagrams which bear a strong (and deliberate) similarity to earlier process modelling flowchart techniques. Marshall (2000) used the UML extension mechanisms to build on the MIT Process Handbook (Malone *et al*, 1999) but neither the Eriksson-Penker extension nor Marshall’s work specifically address process variety or best practice.

Of particular interest to modelling process variety is the use case diagram. Use cases were first proposed by Jacobson *et al* (1992) as a technique for modelling required outcomes independent of technical implementation details. A use case represents a generalised case of using a system to achieve a particular goal or outcome. The appeal of the use case concept is that descriptions of the process in terms of *how* it is realised are not mandatory; rather the process can be described in terms of what *type of* process it is, the outcomes it has and who it benefits. Use cases support both specialisation and decomposition but decomposition into sub-processes is only recommended when the sub processes themselves result in externally measurable outcomes. An approach consistent with the output focussed definition suggested by Lindsay *et al* (2003). The activities or tasks that describe the internal structure of a process can be modelled using UML Activity diagrams. These diagrams offer a rich syntax for describing sequencing, conditional branching and tasks that could potentially be done in any order or simultaneously and are used by Eriksson & Penker (2000) to modelling the variety in how processes are realised identified by Pentland (2003a & 2003b).

5.2 Constructing the VBP Model

Johnson & King (2005) describes the rationale for formulating the Variety and Best Practice (VBP) model based on a synthesis of established techniques from the above process modelling literature. In summary the model is based on four assumptions:

- That processes must have a meaningful outcome for external actors such as Customers or Citizens and as such can be represented using the software engineering concept of *use cases* (Jacobson *et*

al., 1992). The use case concept allows processes to be modeled as generalizations or specializations of other processes providing direct support for describing local variety.

- That selected processes for an organization can be described in terms of a hierarchy of *types of* and *parts of* other processes providing that each process, in itself has a meaningful outcome. This approach includes the use of a Process Compass (Figure 1) which supports two dimensions of process specialization (*types of*) and decomposition (*parts of*). Its use was first proposed in the MIT Process Handbook (Malone *et al.*, 1999) and used in conjunction with UML by Eriksson and Penker (2000).

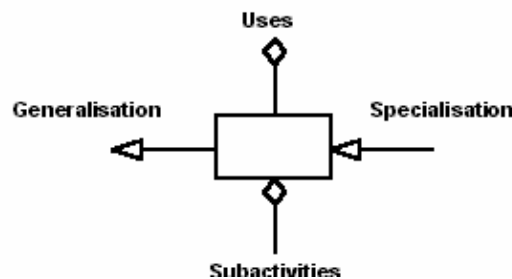


Figure 1: A UML process compass illustrating the two dimensions of process modelling (adapted into UML from Malone *et al.*, 1999)

- That contextualized best practice can be regarded as a *pattern* and represented using the UML notation for patterns (Figure 2). This enables a best practice pattern to be attached to the specific *type of* process to which it relates.

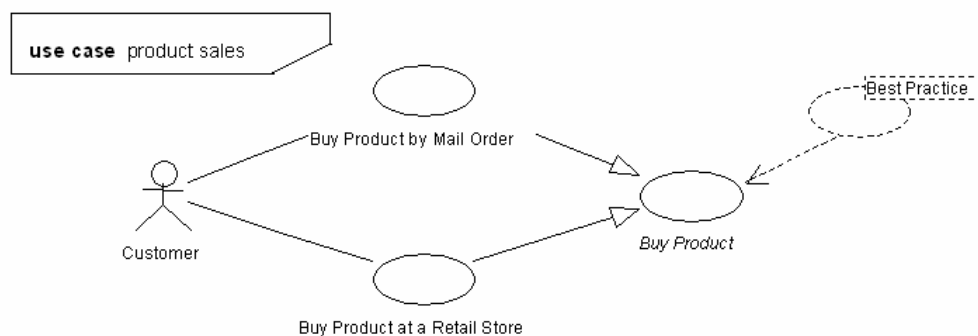


Figure 2: Two specialisations of a process called Buy Product represented as Use Cases with a best practice pattern for the generalised process attached (adapted into UML from Malone *et al.*, 1999)

- That the detailed flow of activities that take place during the execution of a process can be described following process modeling standards for UML activity diagrams and that, even at a detailed level, inheritance can be applied to describe common *types of* activities and best practice patterns can be attached.

5.3 Applying the VBP Model

Figure 3 shows how the BASE.gov model of a generic portal solution can be represented using the VBP model. The figure contains two linked models: a use case model showing all services provided by the local authority and a UML activity diagram modelling the recommended 'best practice' pathway. In the use case model all services provided by the local authority are generalised as a common type of service represented by the use case Access Information and Services. A key element of the proposed design is multi-channel access providing for direct electronic access for the individual (via interactive TV, the Web and portable devices) and indirect mediated access via a call centre operative who works with and on behalf of the individual. The VBP model represents the individual and call centre operative as different actors but uses the UML syntax for inheritance to show that they are both acting as a *type of citizen* in relation to the portal. The *types of* service providers are described in a similar way. The activity diagram on the right hand side of Figure 1 uses the UML syntax to show the generic sequence of activities that BASE.gov suggest as the basis for a best practice solution to the design of the citizen's portal – the description of the activities has not been changed. The activities include pre-populating form based requests for information or services, electronic confirmation and the ability to repeat the process for a variety of services.

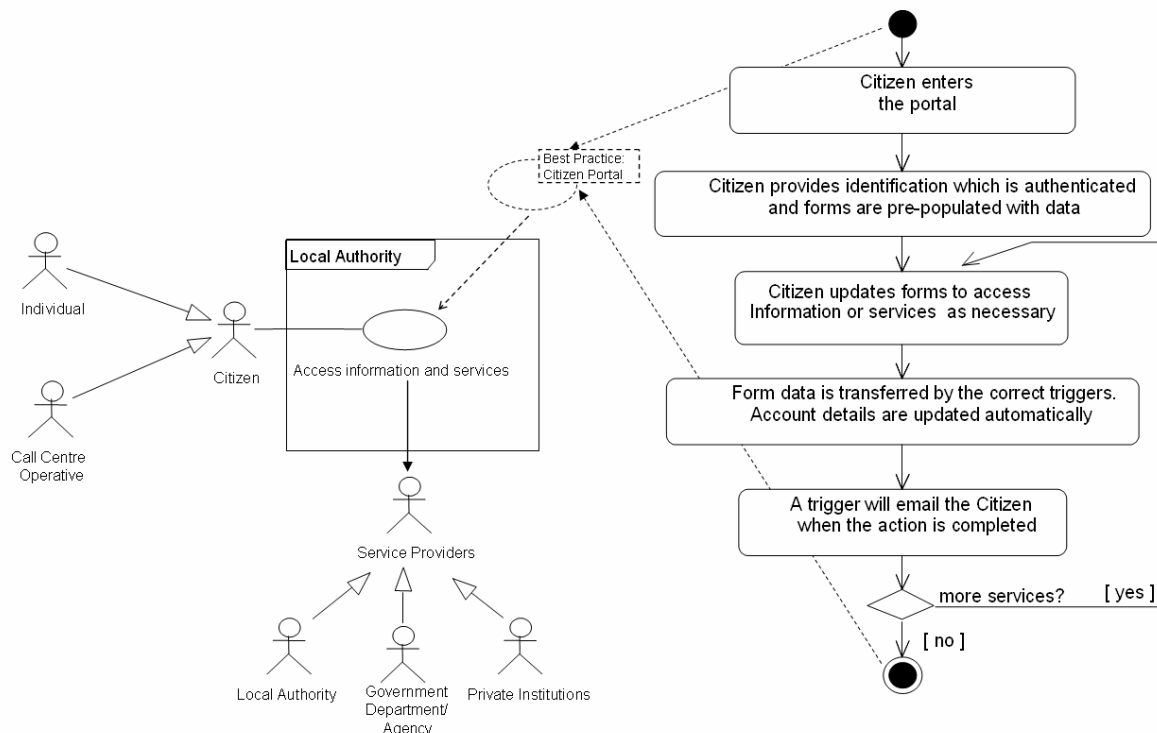


Figure 3 A best practice solution for service provision via a citizens' portal (adapted using the VBP model from BASE.gov 2002).

A single life event may trigger several different *types of* Access Information and Services according to the individual needs of the citizen. Given the diversity of human needs the permutations are near infinite and there is little to be gained from traditional detailed process modelling. The VBP model provides a more useful basis for investigating, discussing and explaining the range of local variety found by the BASE.gov project. Figure 4 illustrates a VBP model for the Pupil Admissions process that shows the two sub-processes identified by BASE.gov – Get Information on Schools and Make an Application. Each of the sub processes are represented as use cases as they both have, in their own right, potential outcome of value to the Citizen. The model also shows how the processes might be

specialised in a variety of ways. The UML notation for a *pattern* is used at appropriate places in the model to indicate at what points and levels in the process specialisation hierarchy best practice solutions might apply.

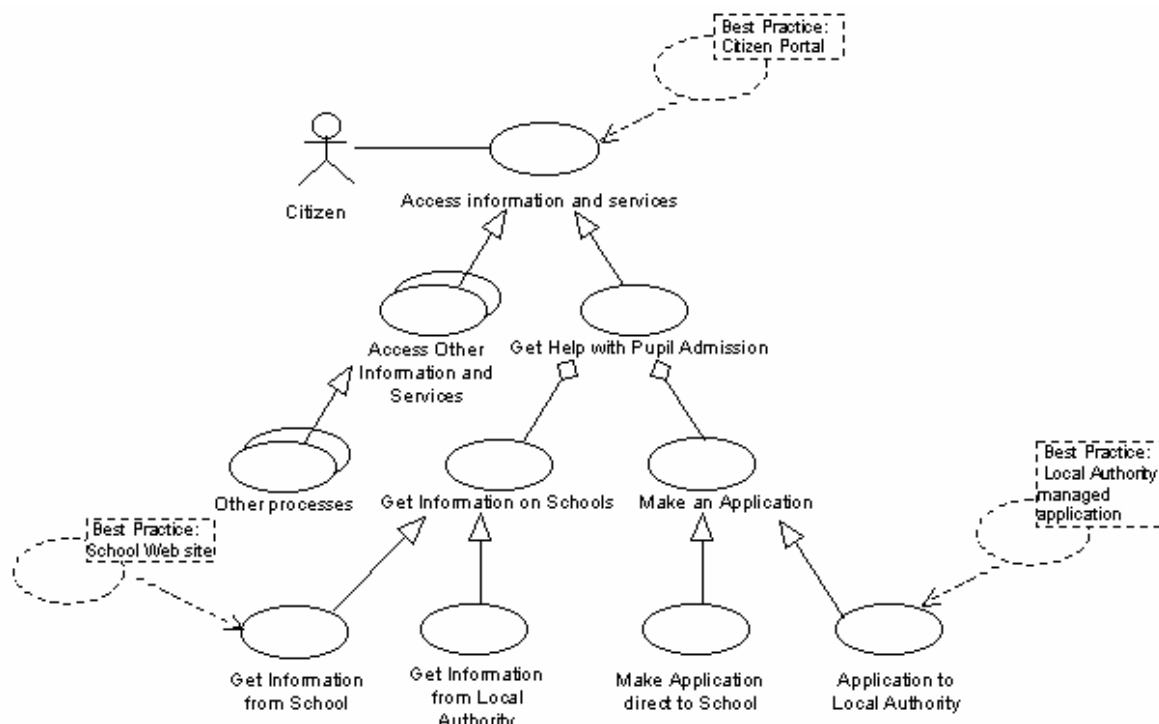


Figure 4. A Variety and Best Practice (VBP) model of the BASE.gov Pupil Admission process slice.

From the model it is clear that the citizen portal represents the consensus view of high-level best practice shared by the four local authorities. At lower levels, local process variety is evident. The model shows that concepts of best practice do still apply but that they are conditional on the local context. For example, school websites were regarded as the best source of portal-based information about a school's culture and values but this is conditional on the schools having appropriate resources – a solution not currently available to Knowsley. The model also shows that an application process run centrally is seen by BASE.gov as better practice than one run directly by schools. Imposing centralised application processes by fiat however can be expected to result in tensions where requisite local variety supports direct admissions to schools. These tensions appear evident in the attempts to circumvent the new centralised system reported by West Sussex.

6 CONCLUSION

The BASE.gov Pathfinder project explored variety in the service delivery processes used by four quite different local authorities. There is clear evidence that process variety exists to meet different local contexts and that the authorities share similar beliefs on best practice - framed within the context of what is achievable and what suits local demography and working practices. Rather than seeing best practice and variety as concepts in conflict, a patterns perspective presents a view of best practice as the best solution to a particular problem within a specific context – a concept that is complimentary with local process variety. The “best method” definition from Taylor (1911) should also remind us that all such ideas are transitory. Best practice can always get better.

In e-government, service delivery processes are often cross-functional, and increasingly inter-agency. Because of this, process-oriented analysis needs to be a central element of e-government projects that focus on joining-up services. The search for “best practice” has been popular in both the public and private sectors in recent years, with its promise of ready-made solutions to organisational problems. This approach has worked for ERP, so can it also work for e-government? But there are dangers in taking a standard solution and applying it in different contexts. The downside of the boom in ERP sales in recent years has been a widespread concern that the “best practice” processes embodied in the packaged software don’t fit the preferred ways of working in many organisations. In other words, standard solutions may stifle local process variety leading to worse performance rather than the improvements expected.

Traditional modelling languages do not express process variety and best practice well. The emerging software industry modelling standard, UML, does however provide a richer syntax for this purpose. The question is perhaps how to use it rather than whether to use it. Our research work has demonstrated that earlier modelling approaches can be recast in UML to good effect. Use cases provide the modeller with a technique for combining inheritance with deterministic descriptions of processes – descriptions that are based on who benefits from the process outcomes rather than their internal structure. As such use cases provide a valuable tool for describing *types of* processes that builds directly on the work of Malone *et al.* (1999) and provides strong support for modelling process variety. The patterns approach to best practice is consistent with the modelling of process variety, it allows best practice patterns to be modelled at different levels of abstraction and poses the question – at which levels of abstraction is it appropriate to advocate a best practice solution?

The Variety and Best Practice (VBP) modelling approach illustrated here has been applied to a major e-government project, BASE.gov, and was used to surface issues that the project documentation had not presented in detail. The BASE.gov solution for a citizen’s portal applies to the generic process of providing citizens with joined-up access to information and services but says nothing about the local, context-specific solutions. However it is at these lower levels in the process hierarchy that issues of variety emerge and it was evident from BASE.gov’s research that a single best practice solution for all local authorities would be problematic. More generally, the approach has potential applications in looking at enterprise system implementations where concerns over package-process fit arise, and at other information systems programmes where the dissemination of best practice forms a major part of the agenda.

As the UK e-government agenda shifts towards the search for deep process transformation innovative techniques grounded in established theory will be required. The Variety and Best Practice (VBP) model provides one such technique, in this case a process-oriented approach for representing local variety and context-specific notions of best practice. It is hoped that the approach has potential applications for other areas of e-government where the identification and dissemination of processes and best practice forms a major part of the agenda.

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