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Case study based working model of e-Government that gives a single view of people and places

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Introduction

How can government satisfy people that tax revenues are used prudently? Fundamental flaws in high profile e government projects are often traced back to information supplied which is incomplete or has no independent measure of truth or accuracy. Without reliable, transparent intelligence, e government projects will not deliver a dependable link between policy and the real world of people, goods and services or command the confidence of voters. In short, e government requires transparent, evidence based decision making focused on the citizen.

The need to define a citizen's whole relationship with government

At the heart of e government is the need for an accurate, detailed definition of each citizen's whole relationship with the public sector. Combine these definitions and you quantify a government's service delivery and financial exposure to the population it serves. This intelligence can be used to:

- Improve service delivery - defined as minimising the risk of bad service/policy resulting from inadequate or failed internal processes, people, and systems, or from external events. This also covers technology risks, management- and people-related operational risks, and legal risks.

- Manage costs - defined as minimising public sector cost exposure to each citizen by effective management of service delivery according to need.

- Support democracy - defined as:

  Enabling citizen access to hard evidence on which decisions are based.

  Holding senior government executives to account based on hard evidence

  Ensuring hard evidence is audit friendly and transparent.

Only by reviewing its entire service delivery and financial relationship with the whole population based on hard evidence will government be able to improve performance, minimise costs and carry public support. History shows us that lack of hard evidence means ineffective monitoring and evaluation, wasted resources, under performance and lack of accountability. The resulting costs take billions out of investment budgets and impact service delivery.

The complexity barrier to defining a citizen's whole relationship with government

Governments store citizen data across a range of diverse IT systems which makes it difficult to:

- assess government service delivery/financial exposure to individual citizen's
- aggregate exposure values to calculate overall government exposure
- relate costs to total budget
- prove accountability to the voter

1

A major reason is IT inflexibility. Defining the relationship between variable quality citizen records on different systems across multiple departments is very complicated:-

- Citizens relate to different parts of the government in different ways at different times and for different periods.

- Each relationship is dynamic and is defined using a combination of variables such as name, address, date of birth, NI, PAYE, NHS number and so on.

- Each extra variable <u>doubles</u> process complexity i.e. the increase is exponential.

As most government institutions require lots of match variables to adequately express the relationships they have with citizens, process complexity is the norm not the exception. Adding new match variables greatly increases the complexity of tracking and auditing changes to keep each individual relationship map current. Thousands of new records generate millions of potential new cross references and increase the complexity of record to record relationships by an order of magnitude.

Existing IT infrastructures were never designed to cope with such complexity and programming new IT to cope with millions of continuously changing potential links is not possible at present. As a result, complexity is a key factor in the failure of a large number of high profile government IT projects over the last few years - National Insurance/Paye integration, Passports, Criminal Records Bureau, CRAMS Probation Service and so on. Complexity is also the greatest threat to the following planned/ongoing e government projects including :-

- The Inland Revenue project to create a single view of the citizen across the Revenue and the Department for Work and Pensions

- Home Office plan to introduce ID cards

- NHS Electronic Patient Records

- NLPG/LASER/NLIS and similar national address/naming projects

The following case study shows how the complexity barrier can be successfully tackled by resolving it *in isolation* from the existing IT infrastructure. in order to create/maintain a "single view of the citizen". It is exploitation of this single view via existing IT that delivers joined up e government.

Case Study Based Model for Achieving Successful E Government

This model is based on work Infoshare has done with colleagues in:

Organisation	Single View Goal	Business Driver
Barclays Bank plc	Measure individual client exposure	FSA compliance
Home Office Jupiter Project	Share data to fight crime & disorder	1998 Crime & Disorder Act
Hutchison Telecom	Merge content from multiple sources	Information delivery
London Borough of Barnet	Improve service delivery/reduce costs	E Government deadline
Octagon Motorsport	Integrate customer data from 6 sources	Merger and Acquisition
Shepway District Council	Improve service delivery/reduce costs	E Government deadline
Torbay Council	Improve service delivery/reduce costs	E Government deadline

- Each required a single view of a subject across the organisation
- Data types to be integrated were very similar – organisation names (**o**), individual names (**i**), building (**b**), street (**s**), postcode (**p**), NI numbers (**n**), dates of birth (**d**) and so on.
- Match variable needs ranged from match on name and postcode (**ip**) to match on everything (**oibspnd**).
- In all cases, the number of match variables needed to adequately reflect business reality caused exponential increases in matching complexity
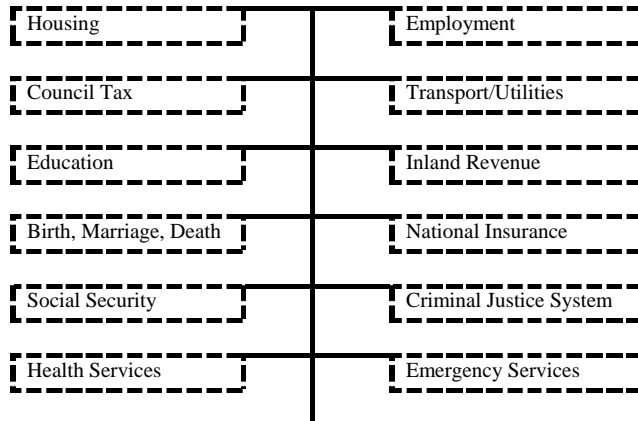
Infoshare software is an artificial intelligence based expert system, which mimics decisions made by humans in order to link data records from different sources. The more business rules collected in a sector i.e. banking, or about an issue i.e. fraud, the more the system learns about relationships between records and the more automated the process becomes. By learning, the software automatically makes data transformation processes reflect local business rules and relationships, *whether logical or not,* and ensures data is "fit for purpose". Once most business rule based data relationships have been trapped there is little need for expert involvement and processing of and synchronization of local data changes to central data sets is automatic.

Information was used to create and maintain a data map – see below - defining each subjects complete relationship with the organisation. For example, the single view diagram below seeks to quantify the relationship each citizen has with government in terms of exposure to service delivery and cost.

Individual data maps are the basic building blocks for targeting, monitoring and evaluating all aspects of service delivery and operational performance in e government. Aggregating maps defines the total relationship. Each data map is maintained at the highest level of accuracy and detail - sub building level. The intelligence is then fit for any purpose at any level of aggregation and for any analysis.

Single View of the Citizen Data Map and E Government

Data driven management is a powerful tool in establishing e government. When a cross section of community stakeholders meet to look at local issues and needs the discussions inevitably lead to more effective solutions and stronger stakeholder relationships. Local e government exists to service these needs. Data driven decision making is a key element in e government

Housing	Employment
Council Tax	Transport/Utilities
Education	Inland Revenue
Birth, Marriage, Death	National Insurance
Social Security	Criminal Justice System
Health Services	Emergency Services

Data map of the whole relationship a citizen has with the public sector
i.e. a flat text file of record entity and business relationships across multiple source data systems. This is accessed to provide a single view to the end user.

**SingleView Intelligence Data Link
For Data Driven Decision Making**

Using eEnabling Technology for Council	**Citizen Contact Points With Council**
• Document Image Processing and Workflow	• Local Service Websites
• Geographical Information Systems	• Digital TV
• Mobile Technology	• Contact Centres
• Customer Relationship Management	• Telemetry
• Case Based Reasoning/Query Handling	• Smart Cards
• Knowledge Management	• Specialist Portals
• Customer Database	• One Stop Shops
• Land & Property Database	• Home/Site Visits and Contact
Using eBusiness techniques to cut Council Costs	**Citizen:Council Transactions**
• Intranet	• Providing Information
• Extranet	• Providing Benefits/Grants; Collecting Revenue
• Financials	• Consultation and Regulation
• Procurement	• Application for Services
• Human Resources and Payroll	• Booking Venues, Resources and courses
• Asset Management	• Paying for Goods/Services; Procurement
• Office Systems and Teleworking	• Providing Access to community networks

Developing Council Staff to Deliver E Government
- Leadership
- Change Management
- Project Management
- Business Process Reengineering
- e Skills
- Marketing and Selling

Elements of Local E Government
Adapted from Fig 2 local e organisation, p22, e-gov@local, DTLR, April 2002

Data Map Creation for E Government

Data is extracted from source systems – defined in the data map diagram above - and processed *in isolation* from existing IT. This approach has the advantage of :

- Disrupting neither existing IT operations nor customer service

- Enabling existing legacy IT to service new internal/external business needs

- Minimising the need for investment in new IT or legacy coding

A data map of each subject's whole relationship with the organisation is produced. The main output is a flat text file of record entity and business relationships across multiple source data systems. The process is as follows:

- extract data from source systems

- analyse and orchestrate the data to create the map of entity and business relationships

- integrate changes in source systems with the data map since the start of the process

- deliver the final data map to the existing IT infrastructure as a"fundamental corporate intelligence resource" and regularly process source system data changes against it to maintain currency

The output:

- delivers a single map of each citizens relationship with the public sector *which is regularly updated.*

- can easily be changed to meet emerging internal and external reporting needs

- plays an important role in transparently proving good corporate governance

- is a fundamental source of up to date intelligence to inform the e government process

It has the following advantages:

- The solution is turnkey and simple to operate, maintained in house and complements any IT

- It accurately links millions of records across multiple systems without disrupting data source systems or customer services

- Each data map is at the highest level of detail and quality allowing exposure to each individual subject to be calculated and evidenced. It enables the organisation to answer the question "what is your exposure to a particular subject be it a citizen, customer, product or service risk?"

- Aggregating data maps provides total organisational exposure to subjects in order to be able to relate service delivery to costs and to enable easy checking of data validity.

- All data actions applied are fully audit trailed on a record by record basis to justify business rules used and why relationships or decisions are made. They require little expertise to understand.

- Senior executives can link corporate governance and risk management needs to individual records in order to manage legal responsibilities

Exploiting Data Maps to Deliver E government

The effectiveness of key e government processes such as data sharing, privacy enhancement, authentication of identity, fraud investigation, and regulatory compliance, is directly linked to core evidence accuracy. Securing the ongoing support of taxpayers is directly linked to core evidence transparency. The data map delivers both but is only the start of the process. The intelligence then needs to be exploited.

In terms of e government this means using the intelligence to inform leadership, policy, economic competitiveness, citizen services, technology and collaboration with all partners. It also means giving access to evidence behind decisions to voters. All this requires expert staff and a strategy which works.

Training such expert staff may not be possible in time to achieve the government's e targets. The National Land and Property Gazetteer project clearly demonstrates that data accuracy, and therefore, e government service delivery, is a local issue. Staff need to find out how one data decision in one part of the organisation impacts another, elsewhere. Often, this is a trial and error process.

Few such experts exist i.e. those who know how data decisions at **A** impact costs at **Z**. As such expertise can only be gained based on experience, there is a need for a strategic route map to be developed depicting how local e government can be achieved. Data maps would then sit within this process.

Local authorities like Barnet, Shepway and Torbay are quite close to creating such a strategic overview. It will provide a proven routemap for going forward and significantly reduce learning curves for staff involved in delivering the e government project.

Conclusion

To a certain extent, we're all still "reading the tea leaves" of an e government future in which all public sector processes and interactions are digitised. However, one thing is clear, there are enough indicators, harbingers and warning signs along this path to begin to effectively navigate the terrain.

It does not help, of course that official papers like the April 2002 "e-gov@local"- a DTLR/LGA consultation on local e government ignore data quality - it is not mentioned once. Without data quality e government will not happen.

For further information

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