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Services where needed
Best practices enabling the next stage of e-government

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Best practices enabling the next stage of e-government

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Introduction

Background

The Dutch Ministry of Economic Affairs is interested in global best practices which enable e-government to grow to its full potential. Gartner distinguishes between four maturity levels of e-government[1]:

Presentation — which means providing access to applications through a single website, portal or intranet but where the underlying applications and data remain distinct.

Data exchange — in this level data is exchanged between applications. This requires common definitions. Still this level lacks and end-to-end data and process flow integration.

Transaction — here data and process flows are integrated across organizational and hierarchical boundaries.

Sharing — at the highest maturity level application components, data elements and process steps are shared across organization boundaries.

Today most Western government agencies struggle to move to the higher levels of maturity. Especially the transition to the sharing level appears to be a tough call. At the same time there are government agencies from all over the world that have proven to be capable to realize this very transition. How did they manage? What is their key to success?

Objective

This essay will present insight in a coherent set of best practices that enable administrations to grow towards the sharing level of e-government maturity. The title of this essay "Services where needed" not only reflects the final goal of e-government. It also relates on how the e-government applications should work together. Besides, as the reader will discover, it also links to the way the market can help both central and local agencies in their effort to implement e-government.

As stated this essay focuses on global best practices. This essay does not assess the current situation in the Netherlands with respect to the best practices presented.

Intended audience

This essay is written for:

Policy makers — Policy makers who are looking to bring e-government to its full potential will discover what strategies to follow and how to deal with autonomous agencies.

Executive staff — Officials involved in e-government initiatives will find pointers on architectures that work and advise on how to proceed with their programs.

IT vendors and system integrators — IT vendors and system integrators will understand what products and services to offer to make the e-government dream come true.

Outline

The challenges that come with the move towards the higher e-government maturity level are manifold and concern policy makers, administrations, citizens, businesses and technology. Examples of the challenges to be faced are the lack of IT skills and the budgetary constraints, a colorful landscape of legacy applications, a variety of autonomous agencies, at both the national and local level, each with their own agenda and last but not least demanding citizens with high expectations set by slick commercial websites.

Gartner studied many e-government initiatives from all over the world. From all successful projects Gartner derived the following recommendations which appeared to form the key to a thriving migration towards the sharing level of e-government:

Horizontal layers — Take down the vertical barriers in the existing application portfolio to lay the foundation for the ultimate level of e-government.

Private intermediaries — Let IT solution providers accelerate the realization of e-government and share resources to empower government agencies.

Change offices — Set up permanent change offices on a central and local level to manage the constant flow of change as part of everyday business.

The first chapter of this essay elaborates on the challenges. Then each subsequent chapter examines a recommendation in more detail. The recommendations are illustrated with underlying best practices. The last chapter of this essay wraps up the key findings and suggests next steps for each group of the intended audience.

Challenges towards the sharing level

This chapter discusses the challenges most government agencies face when they try to move towards the e-government sharing level.

Citizens

For most citizens the volume and frequency of transactions with the government are rather low. Tax declarations occur once a year. A driver's license, ID card or passport is renewed every five to ten years. Relocation occurs even less frequently. Still, the challenge is to meet citizens' expectations. Citizens like to have easy access. It should require them only a couple of clicks to locate the information they are looking for. This information should be presented in a clear and concise way. The fulfillment of a transaction should be just as simple. Furthermore citizens expect the same direct feedback on their actions as they get from commercial websites. Timelines and decisions should be made transparent, also for services involving more than one agency.

Another challenge is the ability to deliver the same services through different channels such as Internet, phone, mail and desk. Resolving this challenge automatically also solves the challenge of serving of the digitally agnostic part of the population. For example the Dutch Tax and Customs Administration started with electronic forms for income tax back in 1997. Because of the huge success the tax administration decided to promote usage of electronic forms heavily since 1999. To be able to serve the digitally agnostic the tax administration invoked intermediaries, i.e. applied a multi-channel approach.

Business

Businesses more or less have the same expectations of e-government as citizens. Except that for businesses a speedy delivery and a predictable timeline are even more important.

The single supply of basic data concerning the business organization (e.g. turnover and employee data) is another issue which is more prevalent in the business area

than with citizens. A business organization applying for a permit for the transport of hazardous materials through several municipalities would be eager to fill in just a single form. However, it is common practice today that each administration asks for all the information needed to deliver a certain service while this information is already available with other agencies or sometimes even within the same agency.

Policy makers

Policy makers embrace e-government because of its promise to bring efficiency and effectiveness to government business processes. One of the topics on the political agenda today is the cost reduction of agency operations and cross agency operations. In the long run e-government should lower the costs per transaction, both for the government and the businesses and/or citizens.

On top of that transparency is an important issue. Politicians would like citizens and businesses to have a clear understanding of both the policy making process and the service delivery process. Citizens and business should be able to retrieve information on how, when and why the government or the government agency has made decisions.

One of the biggest challenges for policy makers is the relatively high autonomy of the various agencies. Making a decision at the highest level and issuing a directive does not work like in commercial enterprises. Government agencies, each with its policy objectives and related accountability, form a complex network rather than a straight hierarchy.

Administrations

Although most agencies are willing to implement e-government to the full extent two major challenges are holding them back. First of all: a certain operational scale helps when it comes to implementing the best practices which this essay will present. Only a few agencies have the required IT skills and budgets at their disposal.

The second challenge concerns a lack of serious incentives. Although governments are working hard on performance contracts with their agencies, in practice agencies are not really held accountable for the way they deliver services to the public. The prevailing culture within administrations shows a management that tends to focus on extending their power base instead of smoothing their operations.

IT departments

The IT departments of government administrations face the challenge of leveraging mission-critical legacy applications rather than treating them as liabilities that prevent e-government objectives from being met. Legacy applications challenge the transition towards true e-government in three ways. The first obstacle to overcome is the traditional stovepipe architecture as this hinders real-time functionality reuse. The sharing level of e-government implies that various business units across administrations should be able to invoke the same elementary business function. However this implies a degree of cooperation and coordination among administrations that is usually beyond their intentions and capability.

This essay defines an *elementary business function* as the largest possible step a civil servant performs within a single timeframe as part of a sequence of steps to deliver a specific service. E.g. the service of issuing an electoral certificate consists of the following elementary business functions: check citizenship, check age, check residence and check criminal record.

The second challenge is that business processes are hard coded in the legacy applications. This means that the implementation of each business process change requires IT specialists that are expensive and in short supply. Easy and fast changes in business processes are nowhere near.

The high cost of a big bang approach is a final hurdle to make the transition. The commonly high investments in current business processes and applications makes a big bang transition an unviable option. An approach is needed which supports a gradual migration from the stovepipe applications to an e-government enabling architecture.

A last challenge worth mentioning here is the IT maturity level of agencies. Often there is no clear governance model defined and there is no clear distinction between business and IT responsibilities. In most situations this results in an overburdened IT department and a fragmented collection of information systems delivering bad service and demanding high operational costs.

Enable independent change

Recommendation 1 Take down the vertical barriers in the existing application portfolio to lay the foundation for the ultimate level of e-government.

Bringing e-government to its full potential compares to baking a great pizza. Both start with a solid foundation. For a pizza one needs the right dough. Best practices world-wide show that the foundation for e-government consists of the horizontally layered architecture introduced in figure 1.
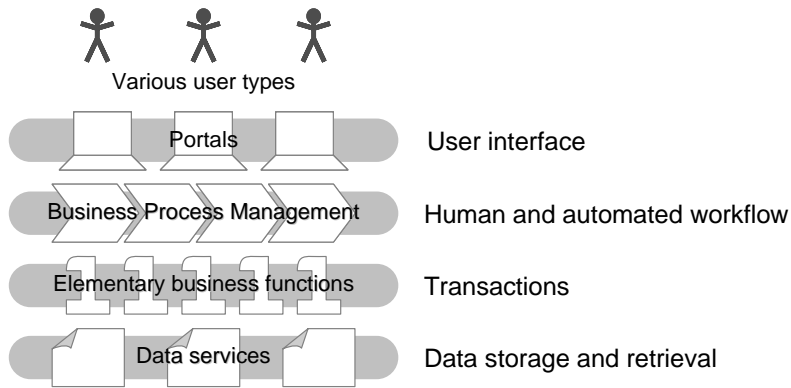

Figure 1   *The best practice horizontally layered architecture enabling easy and fast business process changes and service delivery.*

The four layers can be described as follows:

Portal layer providing a customized and personalized user interface for each type of user.

Business process management layer providing a means for implementing the workflow (e.g. the sequence of steps to issue a construction license).

Elementary business functions providing the basic transactions that make up the services provided to citizens and/or businesses (e.g. a single step in issuing a construction license).

Data services providing data storage and retrieval (e.g. agency specific data and documents, shared elementary data)

Service oriented architecture facilitates smooth transitions

Service orientation is an imperative to reap the benefits of the architecture proposed in figure 1. Service orientation means that each horizontal layer offers a collection of services to other layers. A service is an interface through which functionality is invoked and results are delivered. Services encapsulate the inner workings and therefore establish a degree of independence.

This degree of independence enables organizations to gradually migrate towards the horizontally layered architecture. Besides a gradual migration path, service

orientation also facilitates smooth transitions when priorities change or when agencies merge and split. With service orientation applied in the right way failure prone "big bang" approaches become a thing of the past.

Open standards are a critical component of a service oriented architecture because they break the barrier of proprietary vendor solutions and enable true cross platform cross vendor interoperability. What exactly makes a standard an open standard? A standard is called to be an open standard once it complies with the following criteria:

There are no constraints on the re-use of the standard.

The standard has been published and the specification is publicly available.

The standard is adopted and maintained by a not-for-profit organization.

The development of the standard occurs on the basis of an open decision-making procedure available to all interested parties.

The intellectual property of the standard is irrevocably made available on a royalty-free basis.

This definition is often used by administrations and disputed by some vendors. There are quite a few standards out there that belong to a gray area, i.e. they comply with a limited number of criteria. E.g. Adobe PDF is a semi-open standard. It only complies with the first two criteria. The more criteria a standard complies with, the less vendor-dependent it becomes. The use of true open standards enhances flexibility and strengthens the negotiation position of administrations.

The remainder of this chapter focuses on the layers depicted in figure 1 in more detail.

Portals and business process management suites allow easy and fast business process changes

A clear and successful example of the use of portal technology is the One EASE E-Link program of the State of New Jersey (USA)[2]. New Jersey's vast social service system has always been thought of by consumers and providers alike as fragmented, dispersed, and diffuse; thereby making adequate communication and information sharing among its many service delivery agents frustrating and difficult.

This state has developed a single online point of entry for doing business with social-service agencies. The product of a cooperative effort between three state departments, the portal currently allows more than 2,000 case managers and 800

social service agencies in 17 of New Jersey's 21 counties to identify the services for which a client is eligible; identify service providers; share client information; and complete certain service requests.

The critical success factors of the One EASE E-Link program were a total buy-in of top state management, well thought-out authorization levels to meet the legislation, an incremental approach to deal with the complexity and a cultural change program to decrease natural resistance among staff.

An example were business process management proved to be highly successful is South Africa's new e-Justice program[3]. E-Justice replaces the mountain of paperwork that used to clog the justice system, reduces the backlog of cases and the number of awaiting-trial prisoners and eliminates lost and missing cases. South Africa's awaiting-trial prisoner population ballooned from 24,000 to 60,000 over the last six years. At a cost to the state of $11 per prisoner per day, this represents a daily outlay of $660,000, or $241 million a year. The reduction of the awaiting-trial population to 40,000 saved the government $80 million a year.

The core component of the e-Justice system is a business process management suite which gave the magistrates of the various courts the insight they needed to streamline the case handling process from its origin to the sentencing phase, including the handing over of the accused to the prisons, welfare and other authorities. The solution connects the police, prisons, social welfare and the courts across the country.

A *portal* is a set of technologies to provide uniform and personalized user interfaces to access an extensible set of applications. A portal gives each type of end user his own tailored user experience in a similar way users are now familiar to customize their Windows desktop. A portal allows e.g. a city to create a website for its inhabitants, a front desk application for its civil servants and a third application for an outsourced call center and let all three access the same underlying layers.

A *business process management suite* is an integrated collection of software tools that enables the control and management of business processes. It represents a significant evolutionary step for organizations because it empowers the business users to define business processes in a user-friendly manner without the need of scarce IT specialists. Business process management suites also empower management because they make the real-time monitoring of business activity a snap.

Gartner expects portals and business process management suites to converge into a single type of technology in the coming five years[9].

Reusable elementary transactions enable the business process management layer

The Centrelink initiative of the Australian government[4] aimed to modernize, streamline and "join-up" the federal administration as a part of the broader strategy to rationalize and downsize government agencies. Centrelink has simplified the delivery and disbursement functions of 13 human service departments, and now delivers service using a life events model. The result has been a 20 per cent reduction in costs, and a 50 per cent increase in call centre responsiveness.

Behind this success story lays the strategy to open up the existing legacy systems and make the elementary business functions accessible for different channels in a standardized way. The channels include 401 offices, a central call center, a website and a range of mobile and remote-link services for remote and rural Australia.

A run-time accessible collection of elementary business functions is a prerequisite for the business process management layer to deliver its value. Elementary business functions are the building blocks the business process architects can literally drag and drop within the business process management suite to design and implement business processes.

The main question is: where do these elementary business functions come from? As the Centrelink example shows most often these elementary business functions reside in the existing application portfolio.

> There are several ways to make elementary business functions implemented in legacy systems available within the layered architecture:
> - wrap them,
> - incrementally migrate,
> - rebuild them.
>
> Wrappers are a good temporarily solution. It allows the legacy application to be integrated within the new architecture while it can continue to provide its services through its own built-in user interface. A wrapper is a piece of code build on top of the legacy application abstracting the inner workings and providing the elementary business function as a service to other components of the architecture. A wrapper can plug into the legacy application at various levels, e.g. the database, the business logic and the user interface level.

Reusable elementary data facilitates efficiency and raises quality

The bottom layer of the architecture consists of data services providing storage and retrieval of agency specific data and shared elementary data. The sharing of elementary data across authorized agencies facilitates efficiency, raises quality and

lightens the administrative burden of businesses and citizens. Elementary data is data which holds the key features of the most important objects for the government. These include people, organizations, real estate, topography and vehicles.

One of the older and most successful implementations of such a layer is the Dutch system of municipal registers. In the early 90s the Dutch government realized that the quality of basic citizen data and the distribution of this data among the various agencies needed improvement. A major effort was started to standardize the exchange of basic citizen data where the responsibility of the implementation and data quality remained at the municipal level. The key success factors of this effort were a central program office that linked-in both the cities and the industry and the standardization at the interface level which left the cities a sincere amount of autonomy.

Empower government agencies

Recommendation 2 *Let IT solution providers accelerate the realization of e-government and share resources to empower government agencies.*

The federal Office of Native American Programs (ONAP) oversees over US$600 million in grant programs annually and has a widely distributed staff — over 180 employees in seven cities throughout the United States[5]. Each ONAP office used different systems for processing grants. ONAP decided to establish a shared service center in order to increase efficiency and to obtain a more equal service offering throughout the offices.

The core of the newly deployed Electronic Office is an ONAP website that allows the general public to apply for grants online, while also aggregating information required by ONAP staff to work efficiently. The project has reduced costly duplication of effort no longer do multiple ONAP offices perform the same research, analysis and documentation. For Native Americans applying for grants, this means faster and more skillful reviews of their applications.

Shared service centers have been a big thing with most governments since the beginning of this millennium. The ONAP example shows how the challenge of the local lack of IT skills and budgets can be tackled by establishing a shared service center. Figure 2 shows how the benefits of shared service centers can be leveraged to accelerate the implementation of the horizontally layered architecture.
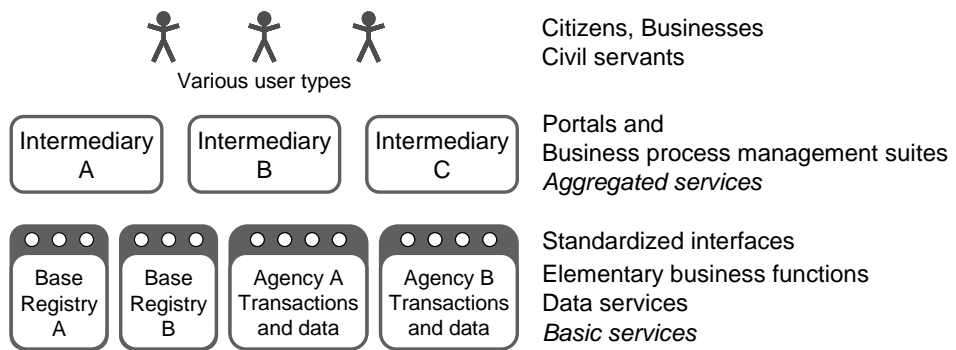
Figure 2   Generic responsibility landscape

In figure 2 government agencies are responsible for providing the basic services, i.e. the elementary business functions in such a way that they are available in a standardized way. Private intermediaries are responsible for providing the necessary portal and business process management technologies to deliver aggregated services in a "white label" fashion. "White label" means that the intermediary is capable to give the services a different look-and-feel. E.g. the same physical portal can function for the city of Marseille as well as for the city of Lyon while e.g. the citizens experience the portal as two different sites.

Stimulate the advent of competitive intermediaries

Today it is not uncommon for groups of similar local administrations to form an alliance in order to reach the scale necessary to outsource shared activities effectively. There are already examples of local administrations cooperating to select an external service provider for the provisioning of portal and business process management services. Although this type of initiatives is a step in the right direction, it leads to suboptimal solutions. The resulting intermediaries are dedicated to the members of the alliance only. Besides, it is difficult for an alliance member to switch to another external service provider.

A solution is to stimulate the advent of competitive private intermediaries. Competition implies that agencies can choose the private intermediary whom they think would service them best. Competition will stimulate private intermediaries to watch their pricing and service levels. The use of standardized interfaces and open standards is a guarantee that agencies will not be confronted with high costs when switching from one intermediary to another.

For call center services it is already more or less common to use an external service provider. The accomplishment of a similar situation for portal and business process

management services will likely stimulate local agencies to make a step forwards with their e-government programs. Competitive "white label" private intermediaries can prove to be a powerful instrument to overcome the autonomy issue.

Once intermediaries come into existence another responsibility emerges: the licensing of intermediaries. Licensing will ensure that an intermediary deals with sensitive data according to the rules and that a minimal level of service can be offered to citizens and businesses.

Manage the constant flow of change as part of everyday business

Recommendation 3 Set up permanent change offices on a central and local level to manage the constant flow of change as part of everyday business.

The government of Canada is confronted with a fragmented collection of IT systems delivering bad service and demanding high operational costs. It is difficult to pull together information and the service levels offered vary greatly among the different agencies. In 2000 a plan was made to migrate towards a horizontally layered architecture realizing cost savings through economies of scale and delivering citizen-centric services. Unfortunately this program failed due to its isolated approach.

Therefore, Canada decided in 2005 to make a restart in the so called BTEP program[6]. Key to the success of this program so far is the involvement of both IT and business people. Part of the effort is the creation of a common language between business and IT to guide the transformation process. The program has led to serious involvement of the business and already more progress has been made than during the entire first attempt.

Another program where the unification of IT and business proved to accelerate developments is the State of Hesse in Germany[7]. Although Hesse is centrally located in Europe and one of the strongest economic regions of Europe, Hesse is also confronted with the German economic crises. This crisis forces policy makers to grasp that without a carefully and skillfully planned IT strategy it is impossible to fight off bureaucracy, reduce taxes and public grants and enhance the efficiency of public administration at the same time.

The Hesse program goes beyond the on-line service delivery and deals with the entire business and IT alignment of the State. One of the first steps was to create a central change office in which both IT and business representatives take part. An IT

strategy, architecture and master plan were drawn up. At the same time the legislation was aligned with the ambitions of the program. Currently Hesse is in the phase of executing the pillar projects residing under the master plan: resource management, document- and process management, portal and corporate network. Thanks to the integral approach progress is being made as planned.

Setup change offices that unite business and IT

The best practices above show us that a sound governance model is a fundamental prerequisite for success. A governance model defines who is responsible for what. The business should be responsible for defining its requirements to deliver services. The IT department should be responsible for keeping IT up and running. When it comes to defining a common framework, determining priorities and delivering change a third pillar is needed: a permanent, yet virtual change office where representatives of business and IT cooperate together. As depicted in figure 3 this change office reports directly to the top management.
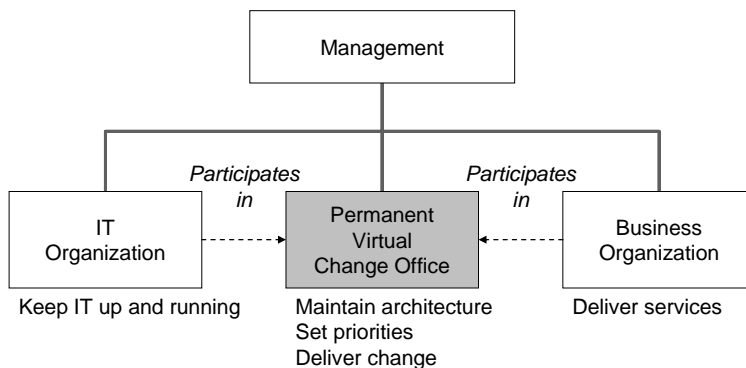

Figure 3   Best practice governance model for managing change

Change offices appear on both the central and local level of government. On the local level of e.g. a municipality the city IT department appears as the IT organization whereas the business organization consists of departments like recreation, economic development, public works and tax administration. Here each of the business departments is responsible for defining its own requirements relating to IT. Representatives of the business departments are united in a change office together with representatives of the IT department. As a unity they determine a common set of standards (maintain architecture), they determine which projects to execute (set priorities) and they execute these projects (deliver change).

Change offices are responsible for the advent and setup of private intermediaries

The private intermediaries introduced in the previous chapter are external service providers. Once an agency has contracted an intermediary the IT organization is likely to be responsible for coordinating the operational relationship with this intermediary as IT organizations are responsible for vendor management. The change office of the agency is likely to be responsible for the initial setup of the services provided by the intermediary.

The entire stimulation of the advent of competitive intermediaries facilitating agencies resides on the central level. Typically a central change office should be responsible. This change office should also setup the necessary private intermediary licensing program. The daily execution of the licensing program is a responsibility residing on the business side.

Manage change for each group of individuals involved

It may seem trivial but the most import factor to consider in a change process is the human factor. Change is against human nature. Like it or not, most people prefer a stable environment. When it comes to change individuals involved always ask the same question: "What's in it for me?" A successful change process therefore makes perfectly clear what the incentives are for each group of individuals involved.

Revealing the incentives becomes easier when the impact of the change process is well understood. One can distinguish between four levels of change. Each level requires its own set of actions to ensure a smooth transition.

Habits — Redesign of individual actions. This merely affects the individual proficiency. A training course maybe sufficient.

Behavior — Restructuring of sequences of actions. Here the working relations and collaborations change. Focus should be on group dynamics, HR policies and career incentives.

Culture — Change the rationale behind business processes. This change requires new working structures and planning. Managing cultural change involves personal and group development, communities of interest, work and organizational design.

Basic assumptions — Here entire business processes cease to exist or come into existence. This level of change requires an institutional message, a shared vision, credibility and business modeling.

The transition to the sharing level of e-government implies all levels of change mentioned above.

Wrap-up and next steps

Most Western government agencies are struggling to deliver the promise of e-government. The transition to the sharing level appears to be a tough call. This essay shows that the challenges that come with the move towards the ultimate level of e-government are diverse and concern citizens, businesses, policy makers, administrations and IT departments. This essay presents the following three recommendations that can be derived from the available world-wide best practices:

Horizontal layers — Take down the vertical barriers in the existing application portfolio to lay the foundation for the ultimate level of e-government.

> Use a so-called "service oriented architecture" to introduce a degree of independence between the layers. This facilitates a gradual migration and avoids failure prone "cold turkey" approaches.
>
> Rely on open standards to limit vendor dependency and ensure cross-agency interoperability.
>
> Introduce business process management suites to empower business units to define and monitor their own workflows.

Private intermediaries — Let IT solution providers accelerate the realization of e-government and share resources to empower government agencies.

> Stimulate the advent of competitive intermediaries providing portal and business process management services in a "white label" fashion. "White label" means that the same facilities are used for different agencies. Competition means that the external service providers involved are forced to watch their pricing and service levels.
>
> A central private intermediary licensing program is necessary to ensure that the required legislation and quality levels are met.

Change offices — Set up permanent change offices on a central and local level to manage the constant flow of change as part of everyday business.

> Make sure that business units and the IT department act as a unity when it comes to defining a common framework, determining priorities and delivering change.
>
> Understand for each group of individuals the level of impact and act accordingly.

As a conclusion this chapter presents suggested next steps for each group of the intended audience.

Policy makers

This essay has shown that policy makers play a key role in enabling the transition to e-government. It is their job to promote a standards framework, to stimulate local initiatives in line with the standards framework, to stimulate the advent of competitive "white label" intermediaries offering portal and business process management services, to direct the establishment of shared elementary data.

Competitive "white label" intermediaries can prove to be a powerful instrument to overcome the autonomy issue. An intermediary licensing procedure will help to endorse quality standards and legislation.

Furthermore it is important to understand that e-government is not a project that can be finished. Bringing e-government to its full potential requires a shift from executing major projects towards a state where change is managed as being part of the daily practice.

Executive staff

Officials involved in e-government initiatives should adopt the horizontally layered architecture and use this as a foundation for further developments. Opening up the existing portfolio of legacy applications and delivering standardized services to any authorized and certified source should be on top of the action list. It is not necessary for officials to wait for the central government to issue guidelines or to offer a helping hand. Officials should seek collaboration with officials from peer agencies to foster the setting of standards and explore the opportunities for creating intermediaries.

Successful administrations make the management of the changing environment, changing political agendas and frequent mergers and splits part of their daily practice. They setup a permanent, yet virtual change office where IT and business representatives act as a unity.

IT vendors and system integrators

IT vendors and system integrators should recognize that open standards are the way to go. The era where proprietary standards lead to a sure base of loyal customers is fading away. IT is becoming just like any other industry where true added value and competitive pricing determine the winners.

As most local government agencies lack the IT skills and budgets to act themselves the setup and exploitation of "white label" intermediaries providing portal and

business process management services based on open standards constitute a
massive business opportunity for IT vendors and system integrators.

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