Secrétariat
du Conseil du trésor
Québec

GOVERNMENT ENTERPRISE ARCHITECTURE

EXECUTIVE SUMMARY

Sous-secrétariat à l'inforoute gouvernementale
et aux ressources informationnelles

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INTRODUCTION

This summary presents the target government enterprise architecture for the Business, Information, and Application layers. The process used to produce this architecture was guided by a continuous, iterative approach. Thus, a high level version of the architecture was submitted in December 2000. The target architecture, unveiled to government departments and agencies in March 2002, consists of integrating conventional service delivery channels (telephone, regular mail, service counter) and adding certain structuring elements for the Business, Information, and Application layers. The Technological Infrastructure layer and Security and Document Engineering sublayers are being developed separately and are not covered in this document.

An enterprise architecture development and review approach was drawn up by the SSIGRI based on the Québec government's specific circumstances and taking into account internationally recognized practices (notably those advocated by Meta Group, Gartner Group, Zachman, and the U.S. government's CIO Council).

The Business layer of the target architecture presented below will be of special interest to government managers, while system architects and developers will be most interested in the Information and Application layers. They will all find a general process for transforming the way government operates with the ultimate goal of improving services to individuals and businesses by optimizing product and service delivery efforts throughout the government apparatus.

In concrete terms, the Business layer provides government departments and agencies with a process that makes the expectations of individuals and businesses the key focus of changes to the Québec government apparatus. Stated needs drive the definition of services to be offered. This in turn allows for the development of a service model to shape the service delivery process. In fact, this client-centered process of bringing together products and services will ultimately lead to the standardization of practices, a key element of the architecture.

The Information and Application layers for their part are defined according to an object-oriented approach, with an emphasis on the definition of business objects underpinning service delivery. The definition of generic objects for the entire service delivery process allows for the establishment of information and application zones with a high standardization and sharing potential for improved government performance.

1 OVERVIEW OF THE GOVERNMENT ENTERPRISE ARCHITECTURE

1.1 Objectives of the Government Enterprise Architecture

Development of the government enterprise architecture (GEA) is a high level exercise in keeping with the government's broad service quality improvement objectives. The goal is to understand, define, and depict the new service delivery model as well as to specify the potential contribution of information resources (IR). More specifically, this architecture is meant to serve as a reference model (tool) allowing government departments and agencies to orient their projects and anticipate opportunities to share, integrate, and reuse.

The objectives of the government enterprise architecture are therefore the following:

- Enhance consistency across the government by fostering better coordination of actions based on the government's strategic objectives and the integration of services for the various client groups
- Understand, define, and depict the new model for the delivery of services to citizens
- Provide orientations for the Business, Information, Application, and Technological Infrastructure layers as well as the Security and Document Engineering sublayers (other sublayers may be added as the need arises)
- Enable the identification of common components that can be shared or reused by government departments and agencies
- Provide the basis for a more informed choice of the required technologies

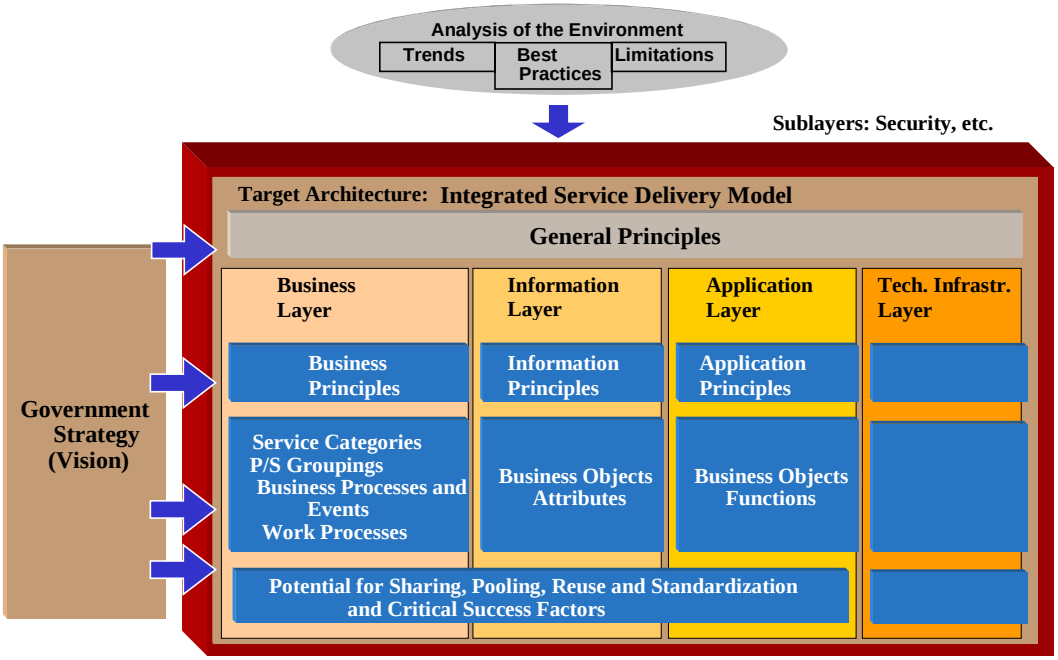
1.2 Scope of the Architecture

The GEA model is intended to specify the following key elements:

- Describe the service delivery model and general principles
- Define specific principles, concepts, and approaches
- Identify potential product and service groupings
- Depict the Business, Information, and Application layers in the form of models
- Determine the potential for the sharing, pooling, and reuse of the various components identified as well as specify critical success factors for the GEA

The diagram below shows the layers of the GEA (the Technological Infrastructure layer as well as the Security and Document Engineering sublayer are covered in separate documents).

Scope of the Government Enterprise Architecture



2 SERVICE DELIVERY POLICY DIRECTIONS

2.1 Government Strategy

To better identify service delivery policy directions, it is worth recalling the government's public service modernization strategy, which aims to create a public service with a reputation for the following:

- The high quality, accessibility, and streamlined nature of services provided to citizens
- Optimal utilization of resources
- Results management

In terms of service delivery, this strategy translates into the organization of services based on client expectations and needs as follows:

- The grouping of products and services in such a manner that citizens do not have to worry about administrative structures and the management constraints inherent in large organizations
- The establishment of diversified processes that accommodate the client's personal preferences, maintain conventional modes of service delivery for as long as necessary, and take into account the level of technological sophistication among citizens

The government strategy also requires a significant contribution from information resources.

2.2 Integrated Service Delivery Model

The integrated service delivery model is a representation of the eight broad, high level domains of government service delivery management as well as the outside interventions involved in the delivery of services to clients. The government enterprise architecture depicts a new service delivery model that emphasizes direct client service by electronic means.

The government's service delivery policy also takes the client's level of knowledge of technology into account and maintaining multiple modes of service delivery (in person, by phone, by mail, via the Internet, etc.). In this regard, the integrated service delivery model shows how the electronic mode of delivery coexists with conventional methods as well as the management changes that this coexistence engenders.

Implementation of this service delivery model means putting in place business solutions that integrate the various service delivery modes and use electronic applications and techniques to provide a higher quality of service to the general public and improve the performance of government departments and agencies.

3 TARGET ARCHITECTURE FOR THE BUSINESS, INFORMATION, AND APPLICATION LAYERS

3.1 General Principles

The general principles of the government enterprise architecture govern the architecture development work both at the general government level as a whole as well as within individual departments and agencies. For the most part, these principles are based on the laws and policies governing the government's information superhighway.

3.2 Business Layer

The Business layer of the government enterprise architecture presents the tools that will allow departments and agencies to depict, share, pool, and reuse their practices.

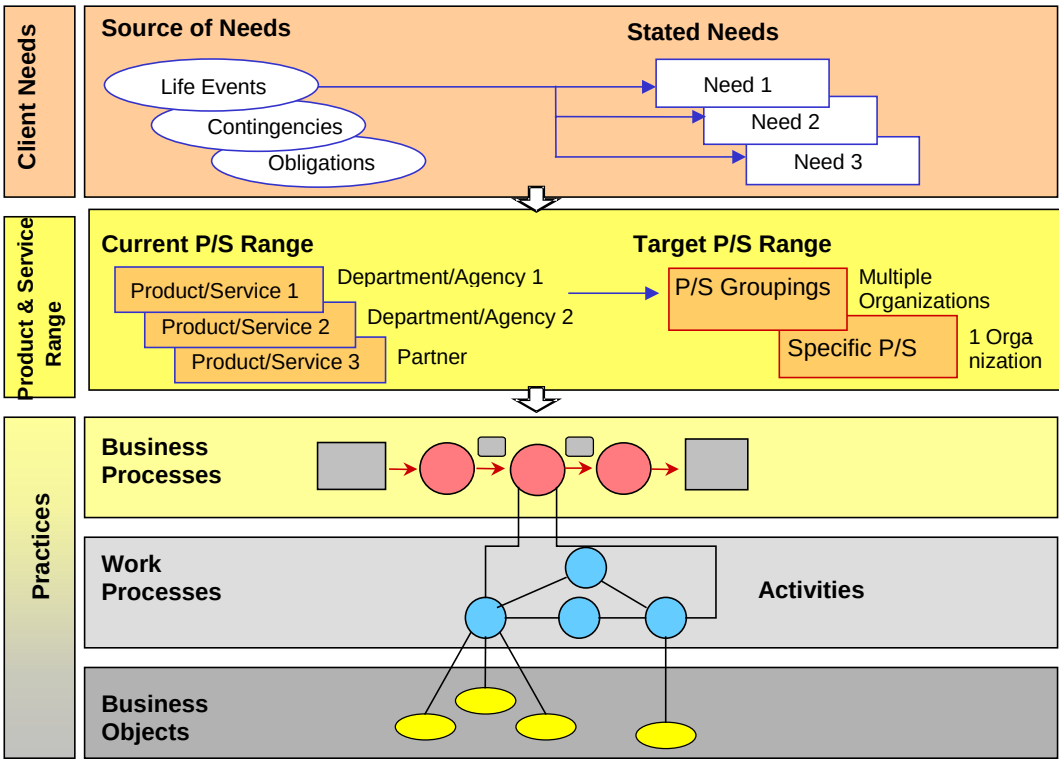
3.2.1 Specific Business Layer Principles

The principles specific to the Business layer are intended to guide and redefine the business processes used to deliver products and services to clients. They are geared toward putting the client at the center of government actions and thereby ensure the delivery of concrete results. They also help the government achieve its strategic objectives by integrating and reviewing practices and grouping the activities of departments and agencies.

3.2.2 Service Delivery Modernization Process

The Business layer sets out a process that puts the expectations of citizens and businesses at the center of changes within the Québec government. Stated needs drive the definition of services to be offered. This in turn allows for the development of a service model to shape the service delivery process. The final result of this client-centered reform process is the pooling of functions and services.

Service Delivery Modernization Process



Needs can come from three sources: life events, contingencies, and obligations. Each of these sources can generate multiple needs. Once the client's needs are identified, the next step is to draw up an inventory of products and services currently on offer and define a new mix of services allowing the government to satisfy, where possible, all the identified needs through a single service delivery channel. We therefore have a *grouping of products and services*, as opposed to a *specific service*.

Groupings of Products and Services for Individuals

- Find a point of service
- Having a child
- Registering for studies
- Finding a job
- Traveling and working abroad
- Moving
- Taking a vacation/planning recreational activities
- Living as a couple (marriage, divorce)
- Victim of a disaster
- Victim of a road or work accident
- Getting health care
- Taking a case to court
- Exercising one's obligations or rights as a worker
- Going through bereavement

Groupings of Products and Services for Businesses

- Starting a business
- Filling job vacancies
- Expanding a business
- Fulfilling one's obligations
- Doing business with the public sector
- Relocating
- Closing a business

Business processes are the means through which the government delivers products and services to meet expressed client needs. A business process can be defined more specifically as a series of business events executed according to a value chain to deliver a result (a specific product or service, a grouping of products or services) in response to a client's need. A business event for its part can be defined as a step in the business process consisting of a series of activities performed to produce a concrete result (intermediate or final) for the client.

3.2.3 Potential for Sharing and Pooling

Gauging the potential for sharing, pooling, and reuse involves drawing up lists of generic events and activities that can be used or adapted by departments and agencies to construct their business processes. By associating activities with events, it will be possible to design reusable patterns or practices. Once refined and documented in service delivery plans, these patterns will allow departments and agencies to share, pool, and reuse business practices, i.e., the ways in which they organize the delivery of products and services to clients. The GEA therefore includes a list of objects with a high reuse potential—an evolving list that will be updated regularly.

3.3 Information and Application Layers

This section provides details on the Information and Application layers of the GEA. These two layers are discussed jointly from the "business object" perspective. A business object can be defined at various levels of the architecture to support business processes.

More specifically, a business object represents a tangible or intangible reality within government that is identifiable by pieces of information (attributes) and functions for managing that information. An attribute can represent a domain, facet, or entity underpinning a business process, while a function can represent a system, subsystem, function or task unit providing access to information within the framework of a given process. The various security-related functions are within the business objects themselves and are aligned with the government digital information security architecture (GDISA). A business object can, for example, be a client record, form, procedure manual or contract.

It should be noted that only business objects of great interest to the GEA have been presented in the model. More specifically, business objects of interest include the following:

- Those that have a **structuring** effect on the implementation of the service delivery model (e.g., resource (GIRES[1]), product and service range)
- Those it would be beneficial to **standardize** to ensure quality services to clients (i.e., record, transaction, document, sharing)
- Those with a high potential for **sharing between departments and agencies** or government-wide **pooling** (e.g., resource, payment)

The business object model includes all the objects, with their attributes and functions, required for the end-to-end operation of business processes in such a manner as to allow efficient exchanges between the back office and client services.

3.3.1 Specific Information Layer Principles

The principles specific to the Information layer cover the management of information service delivery, notably the access by clients to pertinent up-to-date information contained in their records. These principles also govern the protection of information collected in the service delivery process, ensuring its legal value and integrity.

3.3.2 Specific Application Layer Principles

The principles specific to the Application layer cover the design of service delivery data processing applications. They address issues related to consistency within government, customer service, information and process alignment and the production of applications by the assembly of reusable layers.

3.3.3 The Potential for Sharing and Pooling

The potential for sharing, pooling, and reusing Information and Application layer objects lies in the association of business objects to activities defined in processes. A department or agency seeking to introduce an activity will be able to choose from a pool of typical business object/activity associations. Once defined and documented in the service delivery plans, these typical associations will allow departments and agencies to share, pool, and reuse practices when designing a business process activity.

[1] *Gestion intégrée des ressources* ("Integrated Resource Management")

Common Components by Business Function

Business Function	Information Components	Application Components
Front office	• Service fact sheet • Product or service • Agreement • Formality • Point of service • Access Rule	• Welcome • Locate • Initiate • Check clearance • Personalize • Publish
Assistance	• Client • Identifier • Authenticator • Attribute • Agreement • Context	• Welcome • Assist • Identify • Authenticate
Security management	• Access rule • Identifier • Authenticator • Agreement • Authorization • Signature	• Register • Identify • Authenticate • Check clearance • Encrypt • Sign • Manage
Document management	• Classification • Thesaurus • Presentation • Metadata	• Define a classification • Classify • Index • Locate • Publish • Sort • Summarize • Manage
Payment	• Object • Amount • Account • Authorization	• Bill • Collect • Pay • Accept payment

	• Method	• Consolidate payments
Data exchange	• Context • Agreement • Confirmation	• Define • Initiate • Receive • Transmit • Control
Resource management		
• Human resource	• Identifier • Attribute • Contract • Organization	• Hire • Assign • Equip • Pay
• Financial resource	• Account • Credit • Entry • Investment	• Allocate • Make an entry • Account for
• Material resource	• Supplier • Inventory • Allocation	• Acquire • Allocate • Maintain
• Information resource	• Metadata • Object	• Define • Acquire/construct • Share

4 USE OF THE GOVERNMENT ENTERPRISE ARCHITECTURE

The government enterprise architecture is a tool government departments and agencies can use to depict key service delivery components. It is regularly updated with elements from the various departmental and agency projects to provide an overall picture of the government's service delivery structure.

By making policies, principles, and models or reusable components readily available, the GEA also allows planners to simulate changes and develop service delivery solutions.

In this regard, the GEA is a key source of information, a roadmap for the modernization of government service delivery and a cooperation mechanism adapted to the government context.

A Source of Information

As a source of information, the GEA fosters the development of a common language for describing not only needs and client populations but also process components (business objects). It also encourages the definition and implementation of reusable practices across department and agency boundaries.

It should be stressed that the GEA's usefulness is strongly tied to the availability, accessibility, and quality of the information it provides. In this regard, departments and agencies have a key role to play in providing input for this source of reference. Continuous updating with information from individual department or agency activities, i.e., the development of individual architectures or service delivery projects is vital.

A Roadmap

The GEA is a roadmap that facilitates planning and allows departments, agencies and other government partners to align their strategies for the implementation of more efficient service delivery processes.

Architecture improvement or development projects in individual departments and agencies can be compared to models from the GEA. The GEA also facilitates the definition of practices based on shared experiences and architecture layer and sublayer options.

Service delivery projects are also now based on a standard project development format. The GEA reproduces the three main stages of project development—requirements/desirability, framework/architecture, and development/implementation. This makes it possible to assess projects for the delivery of products and services (specific or grouped) on a phase-by-phase basis.

At the requirement and desirability statement phase, this assessment allows departments and agencies to:

- test and evaluate the feasibility and desirability of possibilities and alternate solutions requiring cooperation with multiple stakeholders with a view to providing a pool of products or services, and
- identify existing complete or partially developed practices that are reusable.

At the management framework and architecture phase, the GEA allows project planners to:

- draw on existing models and components for their projects either by incorporating portions of documented and tested practices or reusing business objects.

At the development and implementation phase, the GEA facilitates:

- the sharing, pooling, and reuse of work processes, which accelerates the implementation and improvement of the final result for clients and
- the sharing, pooling, and reuse of business objects.

Departments and agencies are therefore engaged in the overall effort to achieve consistency across the government by structuring their practices around the client's needs and establishing more efficient and less costly service delivery processes.

A Mechanism for Cooperation

The GEA introduces a new exchange and cooperation dynamic among all those involved in efforts to change and improve service delivery within the Québec government. Be it for the optimization of practices, the addition of new products or services, or the development of enterprise architectures, the GEA is of great benefit to departments and agencies as a tool for plan integration, optimization, and coordination across organizational boundaries.

As a source of information on current and future service delivery, the GEA is also an evolving tool adapted to the government context. It allows departments and agencies to share, pool, and reuse a whole range of components.

Cooperation through out the GEA mechanism will take many forms, including access to a GEA knowledge base, the architecture committee, many support activities, as well as training and ongoing communication.

5 CRITICAL SUCCESS FACTORS

Implementation of the government enterprise architecture to support service delivery poses a number of significant challenges, notably with respect to the integration of this new tool into existing management practices within the Québec government.

Critical Success Factors

Implementation of the government enterprise architecture will only succeed if the conditions grouped under the six topics below are met.

Adoption

For this critical factor, success is contingent on the attainment of the GEA's objective of consistency across the government. This will require either the alignment of the GEA with the enterprise architectures of individual departments and agencies or the actual employment of the GEA in the projects of individual organizations. Ensuring that all stakeholders are properly informed about the GEA is essential if objectives are to be met.

Development of a Common Vision

Consistency or compatibility of departmental and agency strategic plans with the GEA is essential for developing a government-wide vision to meet the GEA's objective of tying government actions more closely to its strategic objectives.

Cooperative Management

Since the GEA is being implemented through departmental and agency projects, their coordination at the GEA level is essential for achieving government-wide consistency.

Review of Management Methods

The GEA introduces new tools for providing services to the government. This creates new roles and responsibilities that must be thoroughly understood. A review of work organization for the introduction of service groupings must also be undertaken and the concepts of reusable components and business objects must be clear to everyone.

Architecture Support

Pilot projects in departments and agencies and the support and guidance they receive from the architecture team are necessary for a good understanding of the GEA and its deployment.

Evolutionary Capacity

The feedback from departmental projects and architectures guarantees that the GEA will continue evolving and providing valuable policy direction.

Use of Common Infrastructures

By providing departments and agencies with common sets of functions, components, and infrastructures as well as policy directions and standards, the GEA allows the whole government to make more judicious technology choices and to reuse practices. This is essential for the GEA to succeed.

CONCLUSION

The government enterprise architecture is a key tool in the modernization of the Québec public service, an undertaking that is particularly significant on two levels. One is the predominant place given to citizens in the design and deployment of service delivery channels. This client perspective is integrated into the process to guide the definition of needs, shape the type of services provided to meet those needs, and inspire new approaches in service delivery.

The target architecture is therefore not only a tool for information acquisition and sharing among departments and agencies, but also a structured approach guiding work at the various stages of service delivery project development. It also provides a framework for determining reusable and shareable components both at the process and system component levels.

The enterprise architecture work accomplished over the past two years for both electronic service delivery and the security layer has raised a great deal of expectations and interest within the public service. The enthusiastic involvement and cooperation by departments and agencies are proof of this interest. All agree that we must now finalize this architectural guide and give it life. This means we must now move quickly to consult, to inform, and to refine the GEA.

Putting in place a government-wide consultation mechanism appears to be indispensable for involving department and agency authorities and managers. This consultation process is geared toward understanding client needs and defining the service delivery strategies for which the GEA is a tool. There is a consensus that this activity must be carried out in cooperation with all stakeholders involved, including the MRCI (Ministère des Relations avec les citoyens et Immigration), which is concerned with the quality of services to individuals, the MIC (Ministère de l'Industrie et du Commerce), concerned with businesses, and the SCT (Secrétariat du Conseil du trésor), which is responsible for the development and refinement of the government enterprise architecture.

As for updating, refining, and promoting the GEA, the architecture committee set up to develop it could be maintained as the authority responsible for the integration and followup of ongoing work. The first order of business for this committee could be to mount a targeted operation to quickly gather and document the first batch of GEA data that departments and agencies are awaiting. This exercise could be carried out within the departments and agencies themselves, drawing on the structuring projects already completed or underway.

Improving the quality of services is a government-wide concern. Since the GEA is one of the key tools in this improvement effort, it is incumbent on all stakeholders to learn about it and to use it.