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Coordination Offices for e-Government

**Elsa Estevez, Tomasz Janowski, Adegboyega Ojo and
Irshad Kamal Khan**

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Abstract

Electronic Government offers a great potential for improving performance, increasing quality of services and reducing costs in the public sector. In order to gain these benefits, organizational changes and re-engineering of administrative processes within and between public agencies has to take place. This, in turn, requires strong government leadership. Countries considered the worldwide leaders in e-government have all created central coordination offices to lead, manage and promote e-government initiatives. In this paper, we present the experiences of Australia, Canada, Germany, Hong Kong, the United Kingdom, Singapore and the United States in e-government coordination, as well as discuss the best practices in organizational structures for managing e-government. We also present some recommendations for establishing a central coordination office for Macao.

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1 Introduction

Electronic Government is a tool to achieve better government [1]. The most visible results of e-government include: delivery of high-quality customer-focused services, the achievement of better policy outcomes and more efficient use of public funds.

Most benefits of e-government can be achieved more efficiently when subject to central management. For instance, the delivery of customer-focused services is about providing citizens and businesses with a coherent interface with the government, reflecting their needs rather than the structure of the government. The development of customer-focused services requires not only greater cooperation between agencies but also re-engineering of business process. This, in turn, may require assigning new and re-assigning existing roles and responsibilities between different functional areas within an agency or even between different agencies. Individual agencies are likely to resist change when they perceive the change to undermine their own interests. The whole process of change is likely to stall if not promoted, conducted and managed by a central unit with sufficient authority.

Consider the achievement of better policy outcomes through e-government. These outcomes can be gained in major policy areas such as taxation, health, environment, social affairs and others. A critical factor for all of them is increasing the sharing of information between government agencies while enabling data consolidation about existing government resources. Increasing data-sharing within an organization may imply some organizational changes, such as the changes to data ownership to avoid the risk of redundancies and inconsistencies. A concerted management effort is needed to gain acceptance of the new arrangements, and this is best achieved by a party not related to any individual agency, such as the central government unit. This unit should be also responsible for the development of government infrastructure and standards, and the definition of common procedures to be reused by individual agencies, resulting in more efficient use of the public funds.

Central coordination is the basic feature of the strategies for e-government promoted by the Organization for Economic Cooperation and Development [1]. In general, central e-government coordination involves a formal organizational unit located within public administration or linked to a broader Information Society. Several approaches have been applied to provide central coordination. These include establishing a government agency dedicated to e-government coordination and forming a committee of agency heads or chief information officers. The involvement of non-government representatives from industry, academia and other organizations has also proved effective.

The responsibilities assigned to a central coordination unit for e-government includes: providing guidance and control for implementing e-government projects across the government, providing a framework for collaboration across agencies that ensures interoperability and non-duplication of efforts and resources, developing the shared e-government infrastructure, keeping e-government activities aligned with the broader government strategy and vision, developing and implementing government policies related to the use of ICT, and others.

The rest of this paper is as follows. Section 2 presents the experiences in managing e-government initiatives of the seven countries considered the leaders in e-government. In some cases, we also discuss the evolution of governance structures vis-à-vis e-governance. Section 3 presents some recommendations for establishing a central coordination office for e-government in Macao. The final Section 4 presents some conclusions.

2 Experiences in e-Government Coordination

Different countries established their own models to carry out coordination for e-government. The current section presents the experiences of seven e-government leaders: Australia, Canada, Germany, Hong Kong, the United Kingdom, Singapore and the United States.

2.1 Australia

In September 1997, the Prime Minister announced the establishment of the National Office for Information Economy (NOIE) [2]. NOIE was created as a separate office within the responsibility area of the Minister for Communications, Information Economy and Arts. The role of the Office was to develop, coordinate and provide broad policies related to establishing the legal and physical infrastructures for online activities, facilitating electronic commerce, overseeing policies for new technology adoption and providing electronic services. Originally, the Office was advised by the private sector board, managed by a full-time CEO and employed project managers. Concurrently, the existing Office of Government Information Technology (OGIT) was assigned new responsibilities to provide better whole-of-government delivery of on-line services and to streamline business dealings with the government. OGIT was later transformed into the Office for Government Online (OGO).

In December 1998 the e-Commerce Branch of the Department of Industry, Science and Resources was integrated with NOIE. In 1999, the Department of Communications, Information Technology and the Arts (DCITA) absorbed IT responsibilities and NOIE commenced operations within DCITA. In October 2000, NOIE was established as an executive agency and was merged with OGO and parts of the DCITA's Information Communication Industries Division. The latter was concerned with strategic aspects of information industry development. Therefore, NOIE expanded its role and functions, acting as a central focal point for information economy issues and leveraging the synergies emerging in e-government and e-commerce policies. NOIE was established as an independent executive agency within DCITA and assigned more authority. The new authority was to develop and coordinate government policies related to information economy and to promote the benefits of online technologies to businesses and the public.

In September 2001, the Management Advisory Committee (MAC) established the Information Technology Architecture and Governance (ITAG) Sub-Committee. MAC comprises the heads of federal departments and key agencies advising the Australian Government on the matters related to the management of Australian Public Services (APS). ITAG was created to investigate and provide recommendations on the appropriate governance and investment frameworks for ICT usage. The outcomes produced by ITAG comprise a new governance model built upon existing management structures. The new responsibilities defined by this model include:

- 1) Secretaries are responsible for agency-level strategic decisions on business processes and ICT investments.
- 2) NOIE is responsible for coordination of the application of new technologies to government administration, and information and service provision.
- 3) Information Management Strategy Committee (IMSC) is to be created to provide leadership and advice on multi-agency and whole-of-government information management strategies. IMSC will oversee the development of policies, standards, specifications and guidelines for ICT. Currently, IMSC comprises members at the Secretary and CEO levels and is chaired by the Secretary of the Department of Finance and Administration. The membership is drawn from the agencies that play central roles and hold major responsibilities for delivering services online.
- 4) The Chief Information Officer (CIO) Committee is to be created and will report to IMSC. The Committee will be responsible for identifying strategic issues, addressing issues referred by

IMSC, and developing options for adoption and implementation of ICT at agency and whole-of-government levels. In addition, the Committee will promote research, development and knowledge-sharing through working groups. The members will be drawn from the key central agencies and heavy ICT users.

- 5) Working groups will be created to address specific matters identified by IMSC and CIO Committees. Memberships in these groups will be determined by the CIO Committee and by the willingness of the agency heads to contribute resources.

The dependencies and interactions between these entities are depicted in Figure 1.

In April 2004, NOIE became the Australian Government Information Management Office (AGIMO) [3], with some functions transferred to the Information Economy branch of DCITA. The head of AGIMO is given the title of the Australian Government Chief Information Officer. In October 2004, AGIMO was incorporated into Department of Finance and Administration, ceasing to be an executive agency but retaining the title of the head.

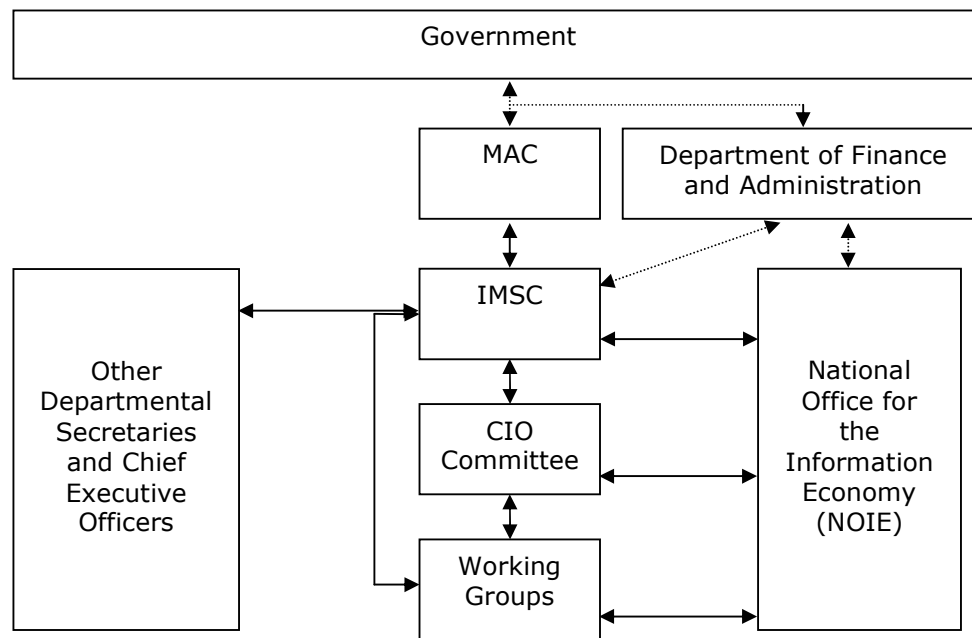


Figure 1: Australian Governance Model

AGIMO's functions and responsibilities include:

- 1) supporting the work of IMSC and CIO committees
- 2) working with government agencies to develop standards to integrate services across agencies
- 3) introducing new approaches for discovering and distributing government information, publications, services and programs
- 4) promoting whole-of-government telecommunications and volume software sourcing arrangements
- 5) identifying and promoting the development of ICT infrastructure necessary to implement the emerging Australian whole-of-government strategies
- 6) managing online and printed directories, managing government websites and providing guidance on the use of the Australian Government brand online

- 7) developing and managing infrastructure applications such as: e-procurement, authentication, digital signature certification and secure online communication between different government agencies.

In cooperation with other government bodies, AGIMO manages international contacts and represents Australia in world ICT forums. AGIMO is also the manager of the gov.au domain, and develops and implements the policies to guide its use.

2.2 Canada

Canada established in 2000 the Organizational Readiness Office (ORO) [4]. The role of ORO is to help departments address culture and workforce issues related to the implementation of government change agendas. Essentially, the government change agendas include the Government On-Line (GOL) and Service Improvement initiatives. The ORO strategy is to encourage the whole-of-government focus on departmental change-management initiatives. ORO is also responsible for the adoption of modern management approaches and modernization of human resources management.

In addition to this central office, Canada presents an innovative governance structure called Communities of Practice (CoPs). CoPs are workplace social networks for supporting the development and maintenance of human capital through sharing experiences and knowledge across vertical government structures. The justification for these communities is based on the assumption that integrated client-centred services require horizontal coordination across departments and jurisdictions. CoPs promote the whole-of-government perspective, identify the issues involved with implementing major changes, prepare the workforce to carry out decision-making within individual departments, and sustain commitment and align individual efforts to corporate change agendas. There are three CoPs within the government: Service Delivery Championship Committee (SDCC), Information Management Championship Committee (IMCC) and Information Technology Championship Committee (ITCC). In addition, the governance structure includes other committees to implement and control special e-government programmes. For instance, the Treasury Board Senior Advisory Committee (TBSAC) has defined TBSAC Information Management Sub-Committee (TIMS). TIMS has a Service and Information Management Board (SIMB), and receives advice from the Service Canada Partners Committee.

The Committee structure for managing e-government in Canada is shown in Figure 2.

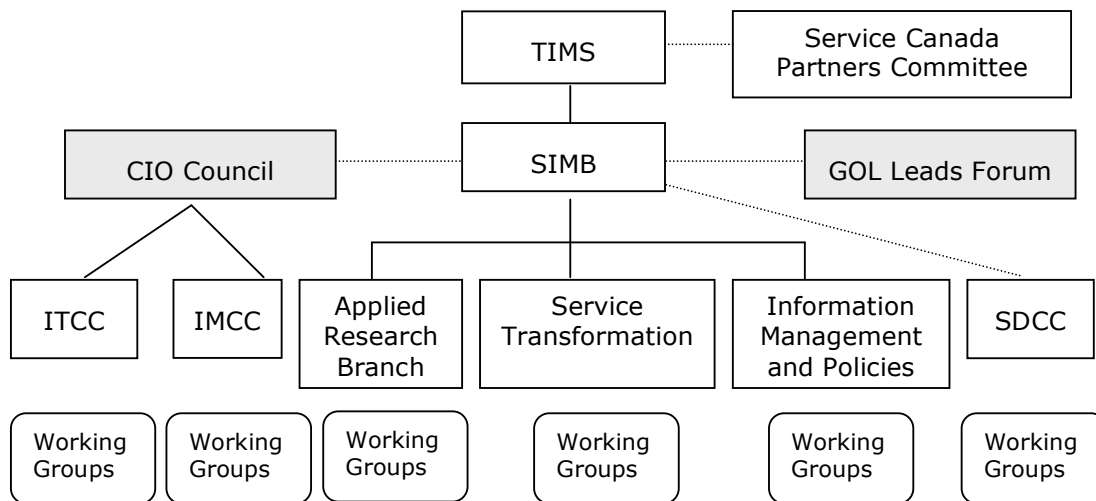


Figure 2: Canada Committee Structure

2.3 Germany

Germany created in 1968 the Federal Government Coordination and Advisory Agency for IT (KBSt) [5] under the Federal Ministry of the Interior. KBSt's main role is to ensure that the federal administration optimizes the use of information technology. The Agency's responsibilities include advising the federal authorities on their strategies, publishing recommendations and methodological guidelines on IT strategy, and providing methodological guidance to implement these strategies. KBSt is also responsible for the issues related to software architecture and its standardization. It develops frameworks that are approved by the Inter-ministerial Coordination Committee for Information Technology in the Federal Administration (IMKA). After approval, the rules are published as general recommendations to be adopted by government agencies. KBSt publishes the Standards and Architectures for e-Government Applications (SAGA). This document contains IT standards for federal administration and constitutes an essential compendium for all IT decision-makers.

2.4 Hong Kong

The Chief Executive of Hong Kong SAR stated in his 1997 Policy Address the vision to make Hong Kong a leader and not a follower in the information world of tomorrow [6]. By 1998, two organizational entities were created to implement this vision: the Information Technology and Broadcasting Bureau (ITBB) and the Information Infrastructure Advisory Committee (IIAC). ITBB was set up in April 1998 to lead and coordinate the work of all government IT staff and the related areas of broadcasting and telecommunications. In August 1998, IIAC was set up to assist ITBB. As one of the first outcomes, "Digital 21 Information Technology (IT) Strategy" was published in November 1998. The document announced the government vision to drive Hong Kong development as a leading digital city in the globally connected world.

The continuous developments in information economy and government needs related to the revision of the IT strategy led to the promulgation of "2001 Digital 21 Strategy: Connecting the World" in May 2001. The new strategy set several e-government targets and also defined a strong governance

and management framework to ensure successful implementation of the strategy. IT responsibilities were divided as follows:

- 1) Information Technology Services Department (ITSD) is the executive arm for e-government implementation. ITSD develops and supports central facilities and infrastructure, provides advice and facilitates references to IT solutions. It also assists other government units in funding and technical implementation of specific IT projects, as well as developing their IT management and capability.
- 2) e-Government Coordination Office (EGCO) [7] was established in August 2001 within the Information Technology and Broadcasting Bureau with strong support from the highest levels of the government, and the responsibility to: set targets, coordinate and drive e-government initiatives, and steer their implementation.
- 3) All government bureaus and departments designated an e-Business Coordinator (EBC) at a very senior level. EBCs take ownership of the IT Department planning, and coordinate individual e-government programmes and initiatives.

The responsibilities of EGCO include:

- 1) monitoring and driving e-government to meet policy targets
- 2) coordinating with different departments and addressing inter-departmental issues
- 3) facilitating IT projects to speed up their implementation
- 4) presenting a coherent picture of e-government agendas
- 5) prioritizing projects having maximum impact on citizens and businesses

To better integrate IT in the core business of departments, special departmental units called IT Management Units (ITMUs) were established early in 2002. The role of ITMUs is to enhance departments' ability in shaping their demand for IT, develop IT plans, set expectations on service levels, deliver e-business solutions and participate in inter-departmental IT collaboration and sharing.

In July 2004, the Office of the Government Chief Information Officer (OGCIO) of the Government of Hong Kong SAR was created [8]. OGCIO was set up to provide leadership for the development of information and communications technologies within and outside the government. OGCIO was formed by merging the functions of the former Information Technology Services Department and the IT-related divisions of the Communications and Technology Branch (CTB) of the Commerce, Industry and Technology Bureau (CITB). OGCIO is headed by the Government Chief Information Officer (GCIO). The Office provides a single focal point with the responsibility for ICT policies, strategies, programmes and measures according to the new e-government strategy - "2004 Digital 21 Strategy". In addition, it provides information technology services and support within the Government. GCIO is accountable for the investment of the Government in ICT. The Office is part of CITB, under the Secretary for Commerce, Industry and Technology. At the same time, a high-level e-Government Steering Committee, chaired by the Financial Secretary, was created. The Committee provides sponsorship at the most senior level for e-government programmes, approves strategic directions of e-government, sets targets for outcomes and coordinates inter-agency implementations.

2.5 United Kingdom

In 1997 the Government of United Kingdom was considering to introduce a cabinet-level e-minister. Instead, three new offices were created to oversee the country's online strategy [9]: Office of the eMinister, Office of the eEnvoy (OeE) and Office of Government Commerce (OGC).

OeE was established in September 1999 following the recommendation from the Performance and Innovation Unit. OeE's vision was to bring UK on-line and ensure that the country, its citizens and

businesses derive maximum benefits from the knowledge economy. OeE refined its vision into three core objectives: to make UK the best environment worldwide for e-commerce by 2002, to ensure that everyone who wants it has access to the Internet by 2005, and to make all government services available electronically and in a customer-focused way by 2005. In order to assure the fulfillment of its strategy, OeE organized its activities into two teams: the Policy Team focused on the strategies for operational and infrastructure, and the Delivery Team drove the implementation of specific e-Envoy projects [10].

OGC was set up in April 2000 to become responsible for buying IT services and managing large technology projects. The main benefits gained by OGC result from the government's consolidated buying power to negotiate better contracts. The formal link between OeE and OGC is that the heads of both offices are jointly responsible for a monthly report to the Prime Minister on the development of the United Kingdom's online strategy.

The Office of the eMinister has the overall responsibility for the implementation of the country's e-government agenda.

In June 2004 OeE was replaced by e-Government Unit (eGU) [11] within the Cabinet Office. eGU took up most of the tasks assigned to the Office of the e-Envoy. Its main responsibility is to ensure that the government capitalizes on the potential of IT by transforming service delivery and also by achieving operational efficiency [12].

Specific responsibilities of eGU include:

- 1) developing policies and plans for ICT supporting the vision of e-government
- 2) providing policies, designs, standards, advice and guidance for ICT for the central government
- 3) commissioning government-wide infrastructure and services, and addressing issues of systems integration
- 4) providing high-level advice to government units on innovative opportunities arising from ICT and their potential to improve efficiency
- 5) monitoring major government IT projects and providing advice on major investment decisions
- 6) identifying and communicating key technology trends, opportunities, threats and risks to government
- 7) overseeing the government's IT security policy and standards, and monitoring and planning contingency for critical national infrastructures
- 8) managing the top-level relationship with strategic government suppliers and conducting supplier analysis

eGU is also responsible for leading the development of "Directgov" - the new portal of United Kingdom government. eGU is divided into teams, groups and units with specific roles as follows:

- 1) e-Government Strategy Team is responsible for developing central policy and strategic planning.
- 2) e-Economy Group provides strategic support to the eMinister and eGU on their e-economy responsibilities.
- 3) e-Communications Group is responsible for e-service delivery, improvement of information sharing across government by delivering the knowledge network infrastructure, coordinating the initiatives to improve quality of government websites, promoting best practices and innovation, and developing the professional community of e-communicators.
- 4) Security and Authentication Unit supports the Cabinet Office to introduce information security standards. It also provides guidance for the eGU strategy of increasing the Internet access through the application of new technologies.
- 5) e-Delivery Team is responsible for the implementation and operation of projects initiated by eGU.

- 6) eGU Local Government Unit provides governance of the local government National Projects Programme, and coordinates the eGU representation with the National Projects over the delivery of local e-government services.

2.6 Singapore

As information and telecommunication technologies are widely used to support business and citizen needs, the government decided to have a single agency for integrating planning, policy formulation, regulation and industry development of information technology and telecommunication sectors. The Infocomm Development Authority of Singapore (IDA) [13] was created in December 1999. IDA is a statutory board formed as a result of the merger between the National Computer Board (NCB) and the Telecommunications Authority of Singapore (TAS). Two years later, in December 2001, anticipating the interaction needs between IT, telecommunications and broadcasting, IDA was moved to the Ministry of Information, Communications and the Arts (MITA). Consequently, IDA is currently a peer to the Singapore Broadcasting Authority (SBA).

At present, the Ministry of Finance (MOF) owns the overall e-government programmes. IDA supports the e-government agenda and provides the role of the Chief Technology Officer (CTO) and the Chief Information Officer (CIO) to the Government of Singapore [14]. The responsibilities of IDA include:

- 1) providing technical advice and recommendations to MOF
- 2) defining and recommending ICT policies, standards and procedures to MOF
- 3) performing service-wide ICT master planning
- 4) managing central ICT infrastructures
- 5) managing projects related to central ICT initiatives

In addition, permanent Secretaries of Ministries, Heads of Government Agencies and Chief Executive Officers of Statutory Boards are responsible for agency-specific ICT infrastructure and services within their own organizations.

One high-level committee and one panel complement the tasks of IDA. The e-Government Policy Committee (eGPC) coordinates the e-government policy, sets directions for specific targets and monitors the progress of e-government initiatives. eGPC comprises Permanent Secretaries of the Ministries and is chaired by the Head of Civil Service. The e-Government Advisory Panel advises the government on global trends in e-government, their impact on Singapore, and provides recommendations to the government in the areas where e-government efforts can be improved.

2.7 United States

In February 2002, United States proposed in its e-government strategy document [15] an e-governance structure within the Office of Management and Budget (OMB). The document pointed out that the major requirement for success in implementing this strategy was substantial long-term commitment from senior management. The President's Management Council (PMC) was charged with ensuring that objectives were met. PMC members can volunteer as 'managing partners' for each proposed initiative and other members are selected to participate in developing those initiatives as partners. The managing partners establish program offices to ensure implementation of initiatives, and cooperate in their planning and implementation. OMB supervises the process and interaction with different government agencies to provide the financial resources for the initiatives.

Four portfolio managers report to the Associative Director for Information Technology and e-Government and they are responsible for overseeing the progress in e-government initiatives. In

addition, the CIO Council with participation of other federal management councils form portfolio steering groups to focus on e-government in each of the different sectors of e-government: G2C, G2B, G2G and also in Internal Efficiency and Effectiveness (IEE). These portfolio steering groups are composed of the members of government agencies that make up the project team for each of the initiatives. The G2G Steering Committee includes representation from the federal government and local government organizations. The responsibilities of the Steering Committee include advising the agency managers with respect to their initiatives and facilitating the implementation of the initiatives.

The e-governance structure described in the strategy is depicted in Figure 3.

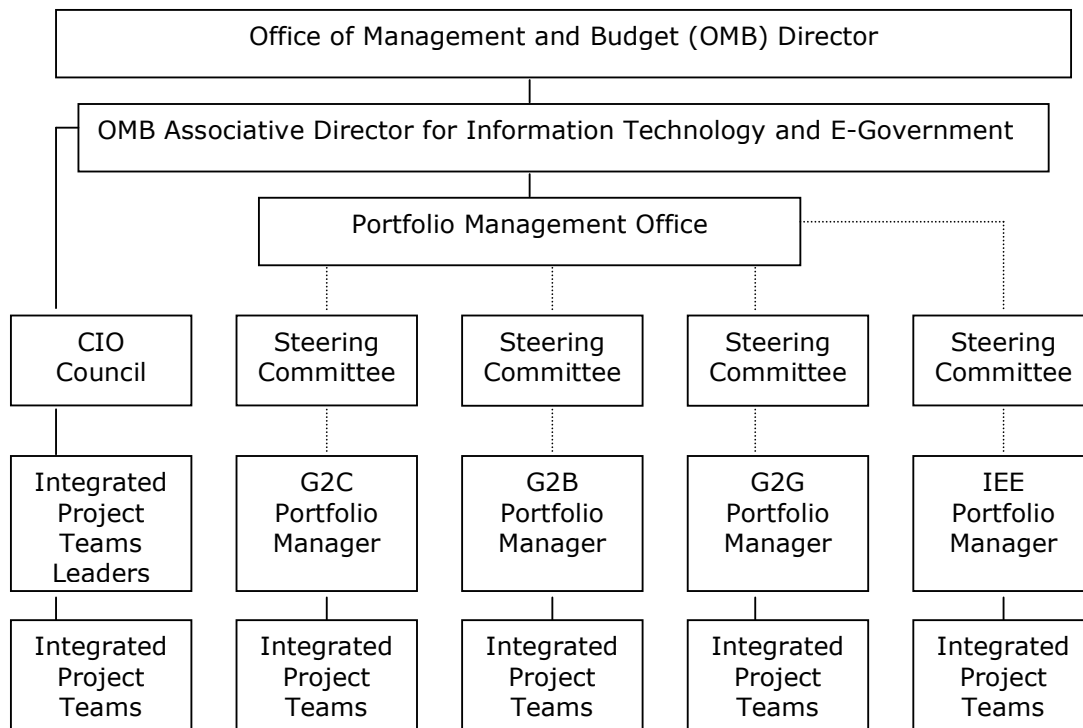


Figure 3: United States Governance Model

3 Establishing a Central Coordination Office

The main role of the central coordination office is to be a focal point for promoting e-government development within the public administration. Following the survey of coordination structures in Section 2, this section presents the possible benefits, placement, structure and responsibilities of such an office for Macao.

3.1 Benefits

Some benefits of the central coordination unit as mentioned in [1] include:

- 1) Promoting the sharing of information and good practices. The shared information may include central repositories of e-government projects, publications and websites on good practices.

- 2) Facilitating efficient acquisition of ICT products and services. This may include e-procurement, central purchasing of communications services and software, and others. The tangible benefits of centralized acquisition are cost reduction gained by larger purchases and easier control of transactions with government suppliers.
- 3) Promoting and gaining acceptance across government agencies of the frameworks and standards to facilitate interoperability and efficiency. For instance, policy frameworks for the use of ICT, business policies, outline principles governing the acquisition of ICT and technical standards.
- 4) Taking measures to avoid duplication of efforts. Duplicate efforts by individual agencies will be reduced as a result of the measures taken by the central unit. Some measures include: sharing of information, promoting the use of government standards and policies, and facilitating centralized acquisition of ICT.
- 5) Facilitating inter-agency collaboration. The collaboration is a major requirement for efficient delivery of seamless online services and infrastructure products.
- 6) Promoting innovation and risk taking. In general, individual agencies have little scope to encourage innovative projects and the use of new technologies due to the increase of the project risks. A central unit can play the role of a central research and development unit on behalf of the agencies across the government.

All such benefits are relevant and should be expected to follow from the establishment of the Central Coordination Office for e-Government in Macao (MeGov).

3.2 Placement

Best practices show that the central e-government coordination office is typically located under a Ministry. For instance, in Australia, AGIMO depends on the Ministry of Finance and Administration, while in Singapore the overall e-government agenda is supported by IDA under the Ministry of Finance. The Office of Management and Budget oversees the e-government programmes in United States, while OGCIO in Hong Kong is supervised by the Secretary of Commerce, Industry and Technology.

In Macao, it is advisable that MeGov is supervised by the Secretary for Administration and Justice due to its overall responsibility for the whole public administration system. This would correctly reflect the primary importance of the government reform in the development and adoption of e-government, with technical issues playing the supporting role – *e-Government is more about Government than about “e”* [1]. MeGov should act as an autonomous agency and should be charged with authority and responsibility for e-government development government-wide. An advisory role would not be effective.

3.3 Structure

In most cases, coordination offices are composed of project managers leading various teams that are responsible for implementing different initiatives. Project managers are under the direction of a Chief Information Officer. In addition, other structures such as special committees, advisory boards, or communities of practice (the case of Canada) are established to advise and support the central unit. These teams act at a very senior management level and are composed of agency heads and Chief Information Officers of the key agencies. The role of these bodies varies from purely advisory through policy development to implementation monitoring.

In Macao, it is advisable to establish the position of the Chief Information Officer, to also act as the Director of MeGov. The CIO should be a senior civil servant. He/she should have a strong leadership and managerial skills, and international exposure. IT background is secondary. MeGov could be

supervised by the advisory board comprising the representatives of all secretaries and of the key agencies for service delivery and the use of IT. The core staff of MeGov would ideally comprise a highly-skilled, multi-disciplinary team of project managers, business and government specialists and IT experts.

3.4 Responsibilities

In general, the responsibilities assigned to the central coordination offices include:

- 1) facilitating information sharing across government agencies
- 2) ensuring efficiency and use of the overall regulatory frameworks
- 3) managing whole-of-government key projects, frameworks and functions

The responsibilities assigned to special committees generally include:

- 1) ensuring a common vision
- 2) providing political leadership
- 3) strengthening cooperation between agencies
- 4) identifying and solving legal, technical and financial barriers to e-government

The committees are also responsible for keeping e-government activities aligned with the broader public administration policies.

In Macao, it is advisable that MeGov is charged with the responsibilities above and given the authority to carry them through. In particular, a programme could be established for e-government development in Macao, with the CIO, one representative from academia and one from industry jointly acting as programme managers. The staff of MeGov comprising project managers, business and government specialists and IT experts would oversee a portfolio of projects within the programme. The projects would be implemented by the teams comprising local businesses, individual agencies and the staff of MeGov. Existing e-government projects should be utilized. For instance, Macao e-Government Survey [16, 17] and Global e-Government Survey [18] carried out by the e-Macao project would provide a solid basis for the formulation of the overall programme and evaluation of individual project proposals.

4 Conclusions

There are several good reasons for establishing central coordination offices for e-government. For instance aligning individual initiatives with broader government policies and strategies are likely to produce better and more coherent policy outcomes, while establishing common technical standards and infrastructure may facilitate interoperability and result in greater efficiency within government. Shared infrastructure such as authentication components developed in a centralized way can facilitate seamless online services and reduce costs and time for specific agency development efforts. In addition, governments can benefit from the economies of scale. For example, common back-office processes can be reused by several government agencies, while central purchasing of ICT products and services may reduce costs. Moreover, the promotion of whole-of-government frameworks, use of standards and data definitions led by e-government coordinators is crucial for facilitating cross-agency integrated services.

In general, these issues are not tackled by individual agencies as they do not possess the necessary resources or authority, and are generally more concerned with their internal programmes. The main

role of a central coordination unit is providing a framework for collaboration across agencies, steering e-government implementations and aligning activities with broader public administration strategies.

A central dilemma for e-government implementation [1] is, quoting the Finnish Council of Ministers: *a basic problem is how agencies' responsibility for results and autonomous operation can be retained while at the same time ensuring the interests of the government administration at large, in issues related to interoperable systems and shared of information resources*. The best answer for this dilemma is to get the balance right. Central coordination must ensure innovation and efficiency, and should not be a bureaucratic obstacle for development.

References

- [1]. Organisation for Economic Co-operation and Development. OECD-e-Government Studies. The e-Government Imperative. 2003. <http://www1.worldbank.org/publicsector/egov/E-GovernmentImperative.pdf>
- [2]. The Information Economy - September 1997. Australian Government Information Management Office – Australia. <http://www.agimo.gov.au/media/1997/09/18146.html>
- [3]. Australian Government Information Management Office – Australia. <http://www.agimo.gov.au>
- [4]. Organizational Readiness Office – Canada. <http://www.solutions.gc.ca/oro/>
- [5]. Federal Government Coordination and Advisory Agency for IT – Germany. <http://www.kbst.bund.de/doc,-304105/Federal-Government-Co-ordinati.htm>
- [6]. Hong Kong SAR – Information Technology Strategy, November 1998. <http://www.info.gov.hk/digital21/eng/download/download/e-digital21.pdf>
- [7]. E-Government Coordination Office (EGCO) – Hong Kong. <http://www.ogcio.gov.hk/eng/archive/pupr2001/esc010925.htm>
- [8]. Office of the Government Chief Information Officer of the Government of the Hong Kong SAR. <http://www.ogcio.gov.hk/>
- [9]. Who's in charge of the UK's online strategy? The who's who of e-government. Mathieson, S A. Computing, United Kingdom, May 2002. <http://www.computing.co.uk/analysis/1131997>
- [10]. eGovernment Leadership – Realizing the Vision. Visionary Challengers: United Kingdom. Accenture, April 2002. <http://www.accenture.com/xdoc/fr/locations/france/pdf/graseuk.pdf>
- [11]. Cabinet Office – e-Government Unit, United Kingdom, <http://www.cabinetoffice.gov.uk/e-government/>
- [12]. Best Practices in the European Countries: United Kingdom. Centre for Administrative Innovation in the Euro-Mediterranean Region (C.A.I.M.E.D.) <http://unpan1.un.org/intradoc/groups/public/documents/CAIMED/UNPAN019394.pdf>
- [13]. Infocomm Development Authority of Singapore. <http://www.ida.gov.sg/idaweb/marketing/index.jsp>

- [14]. Singapore e-Government. E-Government Governance and Management.
<http://www.egov.gov.sg/GovernanceandManagement/>
- [15]. e-Government Strategy. Simplified Delivery of Services to Citizens. United States, February 2002.
http://www.firstgov.gov/Topics/Includes/Reference/egov_strategy.pdf
- [16]. e-Macao - Macao e-Government Project, 2005, The State of Electronic Government in Macao, Volume 1: Survey
- [17]. e-Macao - Macao e-Government Project, 2005, The State of Electronic Government in Macao, Volume 2: Agencies
- [18]. e-Macao - Macao e-Government Project, 2005, Global Survey of e-Government