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E-Governance Risk Assessment
Alignment of Business Needs and IT Requirements

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1. Scope

In the past decade, e-government has become a world-wide phenomenon, and has been touted as a panacea against bloated, inefficient and costly governance, and Oman is no exception to this trend, with increasingly acceptability and adoption of e-government. However, the benefits have been hyped up on the basis of anecdotal evidence, as no systematic reviews and evaluations have been conducted as yet.

SAI-Oman plans to conduct a systematic review of e-government to validate the benefits and justify the enormous interest and sizeable investments being made in this area. As part of this review, a risk assessment of the e-government process has been conducted, to generate a detailed audit plans, as well as a preliminary audit hypothesis of the e-government initiative.

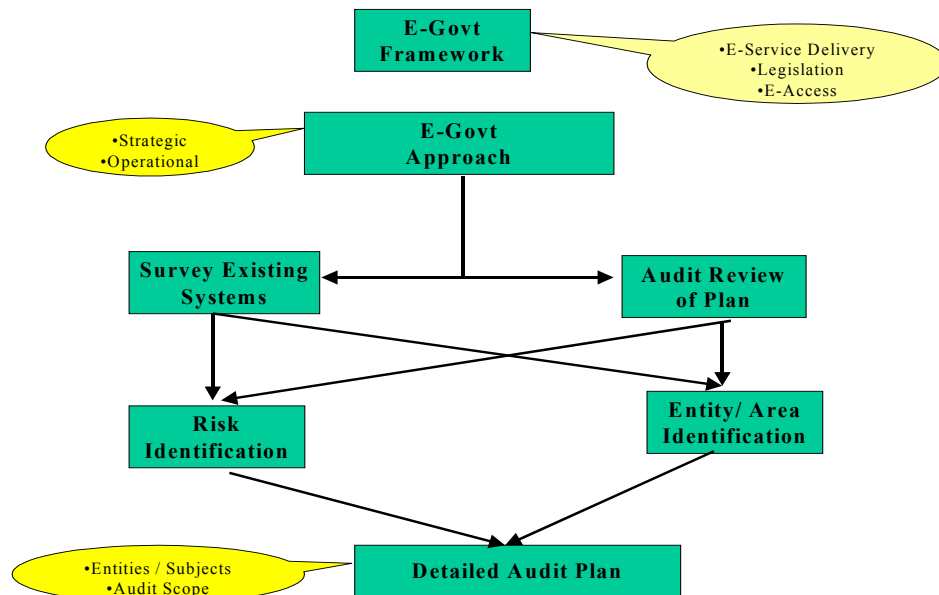
Our preliminary assessments indicated a mismatch between business needs and IT requirements as one of the major risk areas for the successful planning and implementation of e-governance. This paper represents the first phase of SAI-Oman's review of e-government, covering the strategic and policy issues, leading up to a risk assessment.²

We have modeled our audit review of e-government on the basis of a framework, which is depicted as follows.

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² Since the SAI's audit mandate precludes it from making its audit findings publicly available, we are constrained in our ability to provide details of findings. We are therefore concentrating on the audit methodology and strategy, rather than on details of individual findings.

E-Governance Audit Framework



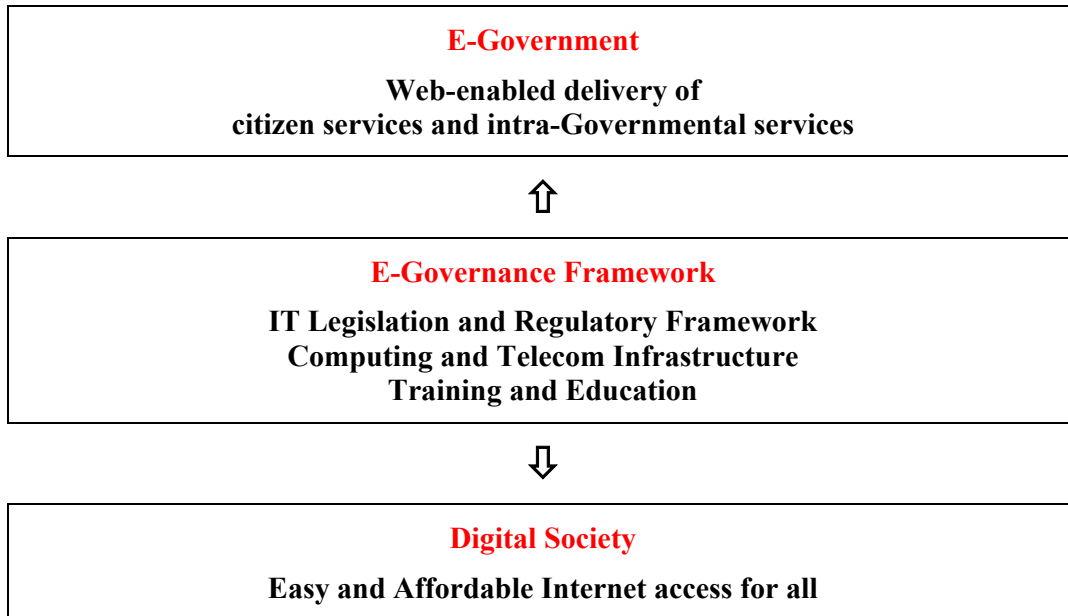
2. Introduction

Conceptually, the e-Government paradigm may be taken as covering the following:

- **E-Government**, which represents the delivery of Governmental services electronically (essentially the Internet) primarily to the citizens and residents, but also secondarily to other internal clients within Government
- **E-Governance framework**, which covers the legislative and regulatory mechanism to ensure effective and secure delivery of e-government services; and
- **Digitally-enabled and connected society**, with easy and affordable access to such e-Government delivery systems to all sections of society

These three aspects dynamically interact with each other at any point of time. It has been the objective of all countries including Oman to ultimately achieve a digital society, with increased connectivity, enabling e-Government and e-Commerce under a tested regulatory framework.

E-Governance Paradigm



3. Development Approach to E-Government & Digital Society

Web-enabling or computerizing existing government applications is often mistaken for e-government. In fact, this has to be a part of an integrated strategy for e-government.

3.1 Strategic Aspects

A successful e-government initiative and ultimately a digital society in a third world country would involve profound strategic shifts, which are as follows.

Vision	Developing a vision for Government as a whole
E-Government Services Delivery Model	Design a model for E-Government services delivery crossing traditional departmental boundaries. This model will have to address economic cost-benefit considerations and business needs at a conceptual level
E-Governance Framework	Develop an e-governance framework, covering legislation, regulations, standards, and infrastructure for supporting e-government services delivery. This would address security and privacy, and a robust and affordable telecommunications infrastructure

Socio-Economic Initiatives	Develop socio-economic initiatives for universalizing affordable digital access for all. This would cover training and education initiatives, as well as innovative models (like information kiosks) for providing affordable access to computing, especially where PC penetration rates are low.
Organisational Structure	Put in place an organizational framework cutting across Departmental silos for planning, implementing and managing e-Government.

3.2 Operational Aspects

In order to implement the strategy, the following operational aspects should be considered:

Detailed Plans	These strategies have to be translated into clear measurable deliverables, involving development of applications and provision of infrastructure, which should be supported by detailed analysis of business needs, re-engineering of business processes and cost-benefit analysis.
Organisational Design Issues	From an organizational perspective, decisions have to be taken on assignment of responsibilities, and degree of centralization and integration and interface between Departmental systems. The Communities of Interest (COI) approach enables such integration to facilitate a one-stop shop for the users of Government services. This would also include setting of standards and methodologies, development of IT strategies and detailed planning for application and infrastructure development.
Implementation, Management and Co-ordination	The above plans for application and infrastructure development will have to be implemented and managed effectively, with co-ordination across Departments. Key decisions would include centralized procurement, software licensing, outsourcing, and maintenance.

4. The Omani Perspective

The Government of Oman is committed towards developing a digital society, and providing e-government services. In fact, it considers development of a digital society, as an important aspect of the socio-economic development of the country. Several key initiatives have been taken up towards achievement of this objective, including the setting up of a Ministerial IT Committee, supported by a high-level Task Force, with representation from top management in different Departments.

The Government commissioned a leading international IT consultancy firm to develop a strategy for e-governance; this was further extended to cover the strategy

for development of a digital society. As part of this study, a detailed readiness survey of all Government entities was also carried out.

4.1 Pre-existing IT Systems

The Government of Oman has a centralized IT system for payments and accounting, as well as basic personnel functions like payroll; this is supported by a robust computing infrastructure and dedicated telecom links in all Government offices throughout the country. All payments and receipts are made and accounted centrally, and the payroll for the entire Government is managed centrally.

This application is a legacy application on an IBM mainframe systems on a DB/2 database, but has been running efficiently for the last two decades. Transaction processing is very effective, with MIS functionality being somewhat limited. However, the Government is in the midst of a review to decide whether to upgrade the system and add additional functionalities, or replace it with a new system.

While there are other IT systems in individual Government Departments, almost all of them are confined to organizational boundaries. In a few cases,

- Networking and computing infrastructure in Government Departments is widespread and is not a bottleneck for E-Government initiatives.
- Government Departments have computerized almost all their administrative functions, and in many cases their core business and support functions.
- Almost all departments have a presence on the web, providing varying degrees of information. Most Departments have internal e-mail messaging systems, but access to the Internet as well as external e-mail accounts are restricted.
- In isolated cases, read-only access to the data in individual applications has been provided across Departmental boundaries.
- Web-based querying facilities have been provided on certain key systems to the public.
- In a few cases like electricity and water billing, the third-party billing agent has link-ups with commercial banks for internet-based payments.

There is no IT Law in place, and paper documents are necessary for validation, and supporting applications for Government services. Hence, transaction-processing on the web is not presently available.

4.2 E-Governance Plan

A strategic plan for e-governance was finalized in end-2002, covering the following components:

- Digital Society Readiness
- E-Government Architecture
- IT infrastructure
- Applications and Communities of Interest (COI)
- Telecommunications, Networking and E-Payment Infrastructure

- Quick-win applications
- Budgeting
- Implementation Structures
- Security, PKI, Audit and Business Continuity Planning
- E-Legislation
- Education and Development

5. SAI's Risk Assessment

5.1 Summary

The SAI commenced its evaluation of e-governance in Oman, by reviewing the strategy for e-governance as well as the status of implementation of the strategy. We identified the following key risk areas for e-government, based on our review:

Lack of Clarity of Vision	The business section of the strategy documents were focused on theory and methodology, rather than on identification of specific issues in the Omani context
Communities of Interest Model for Oman not developed	The study focused on the business case for COIs, rather than developing COI models specifically for Oman.
Lack of Business Focus	The study did not adequately analyse existing business processes and the scope and need for Business Process Re-engineering (BPR)
Lack of Economic Cost-Benefit Analysis	The study had not conducted an overall economic analysis of the benefits from e-governance. These have not been followed up by cost-benefit analysis of specific applications.
Lack of Integrated Approach	Despite a centralized strategy, the e-government task force could not force an integrated approach for quite some time.

These are discussed below in greater detail.

5.2 Lack of Clarity of Vision

In our view, the business section of the strategy documents were focused on theory and methodology, rather than on identification of specific issues in the Omani context.

The coverage of the documents included:

- The theoretical concepts underpinning e-government, e-governance, the digital society and the risk of a digital divide
- An e-readiness assessment of Oman on the following categories:
 - leadership,

- governance,
 - management and organization,
 - citizen readiness and support,
 - legal and security,
 - technological aspects, and
 - contextual aspects
- A technologically comprehensive assessment of types of current applications; and
 - Issues regarding certain specific issues

However, in our view the strategy should have commenced with an analysis of :

- The important services or categories of services, presently being rendered by Government Departments, as well as those planned to be rendered
- The current mode and processes of such service delivery for a few key services
- An economic model to justify the movement of IT-enabling these services
- A strategy for review of all services from a BPR perspective – before IT enabling, combined with an actual review for a few key services
- A migration strategy for IT enabling services

This was not done, though there was a section on Communities of Interest from a business perspective, which is being dealt with separately.

Thus, the “way forward” did not have a business case attached to it, to justify the investments. **However, we recognize that the identification of “quick wins” is a good strategy for breeding success and generating momentum for e-governance.**

5.3 Communities of Interest Model for Oman Not Developed

The documents have rightly suggested formation of Communities of Interest (COIs) to group applications, across departmental boundaries. COIs seek to break away from Ministry “silos” and use applications to best meet the needs of citizens and businesses. Within a COI, program modules are shared by government entities participating in that particular COI. This move would:

- Transform department-centric application into customer-centric applications,
- Reduce application development costs and optimize application code, and
- Make IT infrastructure management easier.

However, the study focused on the business case for the concept of COIs and a framework for classifying COIs, rather than developing actual COI models for Oman. There is a brief listing of suggested COIs. However, there is no discussion of the benefits arising from breaking down departmental barriers for the suggested COIs, let alone an analysis of the existing systems within the suggested COI boundaries and a plan for migration of these systems and data to the integrated COI-based applications.

5.4 Lack of Economic Cost-Benefit Analysis

We recognize that introduction of e-government would result in both direct and indirect benefits to individual Government Departments as well as the country as a whole. However, like any other developmental project, it is necessary to quantify or estimate the indirect benefits as a whole. This may also be done taking the Community of Interest as a base.

Instead, the strategic documents uses anecdotal evidence from Ireland and case studies in the USA to support the business case for introduction of e-government. While it is instinctively felt that e-government will facilitate economic development, an economic impact study is important requirement to deploy valuable financial and human resources on such a project, as well as to decide the prioritization and timing of various COIs. Such a study would also be useful, while subsequently conducting a post-implementation review.

The SAI has selected the issue of economic cost-benefit analysis as an important risk area for its IT audit review of selected applications.

5.5 Lack of Integrated Approach

We commend the approach to conduct a government-wide survey of IT readiness, followed by a government-wide strategy document for e-government and the formation of an IT Task Force.

However, in practice, the Task Force was not appropriately empowered to enforce the strategy for quite some time. Even during the survey, it was recognized that different Government Departments had developed their own IT applications as “islands”, even though interaction with other systems was desirable. This led to well-recognised problems of lack of integration like duplicate data entry, difficulties in reconciliation of data across multiple systems, and clients interacting separately with different Departments for related services. Data sharing across Government Departments was generally weak. Consequently, even though transaction processing was done electronically, data was not shared across Departments for decision support.

Even after the formulation of the strategy, this situation continued till recently with Departments continuing to develop disparate applications independently, and the Task Force was not empowered to set up COIs, and plan and co-ordinate applications within the COIs. Fortunately, in 2004, the IT Task Force has been empowered to have a co-ordinating role for IT projects of national importance crossing departmental boundaries.

Furthermore, the Task Force was unable to fully enforce standardization for system software, application development and data elements across Departments. However, the Task Force should be commended for its efforts in centralizing Government-wide system software licenses for Operating Systems, RDBMS and office automation software. They are also attempting to standardize middleware for applications across Government.

The SAI has selected the issue of lack of integration as an important risk area for its IT audit review for multi-departmental applications requiring co-ordination, e.g. Geographical Information Systems (GIS).

5.6 Lack of Business Focus

The strategy documents have given a detailed survey and assessment of the existing infrastructure in Government Departments as well as the technical characteristics of existing systems (e.g. RDBMS, programming languages, OS etc.) and created a classification structure on re-use and portability. They have also covered the networking and telecom infrastructure, both present and future, in considerable detail. This is commendable, and will be of use for introducing e-government.

As regards business processes, the strategy recognizes that the re-design of business processes is essential to achieving effective e-government, and that IT investment without process re-design, will not produce the desired outcome. Having said this, it has failed to give a framework for business process re-design. The only example given is that of a One-Stop Shop for Company Registration, which was a precursor for the e-government strategy study. This case has also been handled from a transaction processing and technical point of view. The business and user needs and business processes, and the need for re-engineering and integration across Government Departments, let alone users of other related services, has not been adequately addressed.

In the suggested roadmap, the process re-design is scheduled to proceed simultaneously with application architecture development.

The SAI has identified this as a major risk area for its IT audit review. Our audit experience shows that in general processes in most Government Departments are not mature and stable, and not appropriately documented in manuals and procedures. In such a situation, this would be an ideal opportunity to put a procedural framework in position for the first time, and take full advantages of technology, rather than carry the baggage of manual procedures requiring re-design.

On the other hand, development of IT systems and implementation without a review and crystallization of business processes would result in highly unsatisfactory outcomes. Our experience shows that even well-designed IT systems with appropriate business processes would require high degrees of evangelization and hand-holding support for successful acceptance.

In our view, the study fails to appreciate the cultural context of business processes and change management from a non-Western perspective.

6. Further Action

Our review of the Government of Oman's e-government strategy revealed several risk areas related to non-alignment of business needs and IT Requirements. This review also enabled us to identify entities / subjects for detailed audit.

The second phase of our review will comprise IT audits of selected IT applications forming part of the e-government framework. For this phase, we are presently preparing detailed audit plans, based on the risk areas and entities/ subjects identified by the SAI in the first phase.