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**ICT GOVERNANCE: TOWARDS FEDERALIZED
STRUCTURE AND SOLUTION**

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ICT GOVERNANCE: TOWARDS FEDERALIZED STRUCTURE AND SOLUTION

Abstract:

The ICT (Information and Communication Technology) Governance means actively identifying the service needs of the Government and her customers and to focus on planning and delivering these services to meet availability, performance, and security requirements. It also aims at managing service level agreements to meet agreed-upon security, quality and cost targets. Successful operation of an ICT unit of the government would require it to be fully integrated with the complete lifecycle of Government's processes, improving service quality and Government agility. The paper identifies appropriate international standards for ICT Governance, and ICT Management around which solutions for ICT governance should be built.

I. Introduction: Background and Strategic Context

In this paper we'll attempt to draw out following key areas:

- Is there a need for change?
- What do we have in place today and where would we rather be?
- Defining ICT Governance and ICT Management
- What Frameworks can we use?
- Refining an Organisational Structure to best achieve ICT Governance and ICT Management
 - o Available Organisation Structures for ICT
 - o An extended look at a Federal ICT Structure

The need for change

The 'IT' (Information Technology) revolution has changed everything. It has also changed the way people think and behave. Thus the Governments all over the world have realized the need to change they way they handle public operations. They have come to recognize the need for more strategic use of ICT in delivering better service for the citizens. In many countries the attempts at creating a "Central IT Support Body" have failed. Part of the failure can be traced back to how the concerned officials are doing things. The necessity for better accountability, better utilisation, and better management of Government ICT resources is plainly apparent. Our aim in this paper is to find a solution that addresses the needs of the Governments world over in present context.

The case of Tonga: Present Scenario and Future Projection

Tonga is a medium sized pacific Islands economy, most similar to its neighbour, Western Samoa. It has a modern telecommunications regime, although planned regulation appears to outstrip its communications capabilities at the moment. Teledensity is eight, ranked at 136 out of 224 in the world. Tonga is ranked at 82 out of 252 in the latest Domain Name survey conducted twice annually. There is a credible approach to policy and strategy although it is very early in the process. Tonga may need some technical assistance to complete this process. Training is, as ever, a clear requirement, from end user and beginner right through to specialist skills, although, for once, the public service is better placed than the private sector in this regard. Communication costs are high and an inhibitor. Even though there are adequate connections, many are in schools and the public sector. The lack of skills availability is a distinct inhibitor to private sector take up. The trade development system has made a good start but now needs significant upgrading of network, access, content and procedures to achieve best practise. The banking industry and the Customs processes have reached the stage that can be expected for an economy of the size of Tonga, although there cheaper and more flexible and practical options.

ICT AND GOVERNMENT SERVICES

The Government of Tonga need to streamline their internal processes, better disseminate information and establish data access links between ministries and departments. The two most crucial systems in Government are in the Ministry of Finance; the financial management and the payroll systems.

Financial Management Issues

The disbursement of public funds is only through Ministry of Finance (MOF). MOF check, authorize and make all government payments based on the approved budget but committing funds are by the line ministries. The problem arose when these ministries overcommitted their budget allocations and MOF cannot pay their outstanding commitments.

Background

The Ministry of Finance is responsible for managing the Government annual budget. The Government has been using program budgeting for the last couple of years whereby budget allocations are linked to programs objectives. The approved annual budget allocates funds to all government ministries and departments. These ministries and departments can commit these funds by issuing an order. Upon receiving an invoice they prepare a voucher which is then forwarded to Ministry of Finance for payments. Due to previous late payments suppliers are no longer confident that funds are available for order issued by line ministries. They insisted on getting paid first. This is a direct violation of the government policy of only paying for goods delivered or services rendered. In summary, the issues are:

- Late payments as funds are reallocated to top up the over-allocated budget votes (items).
- Suppliers insisting on payments rather than a purchase order before delivery of goods or providing a service.
- Disruption to programme objectives as funds are reallocated to other programmes that have over-committed their allocations.

HR issues

The Public Service Commission is responsible for centrally administering government HR policy. As a result some of the process involved can be too slow. In

processing a leave application, that ministry has to approve the application and forward it to the PSC for final approval. This application may take more than a week to process. In addition, notification of Ministry of Finance can also be late which usually result in salary overpayments or non payments.

The Government of Tonga has long recognised the need for more strategic use of ICT in delivering better service for citizens and Government. Formal statements date back to as early as 1999’s “Information Technology Strategic Plan 1” approved by Privy Council. Unfortunately, this and later attempts have failed. Most ICT Staff in Government will readily agree that ICT is failing in Government. Our problem is to find a solution that addresses the needs of the Government of Tonga within our current context.

In a classical Organisation Structure, ICT Governance for all of Government is non-existent and may partially be in place within different bodies of Government. The management of ICT is de-centralised, with each Ministry having independent control and management of their ICT Staff and ICT resources. Although the decentralised structure allows full autonomy for Ministries, it has compounded waste, duplication of effort and ensured non-optimal use of our limited resources (staff and technology.) Sallé Matthias of HP Laboratories provides a nice diagram that visually describes stages of increased value/functionality of IT within an organisation (Maturity of IT Function) over time, and the relevant optimal management of those IT functions/services 2.

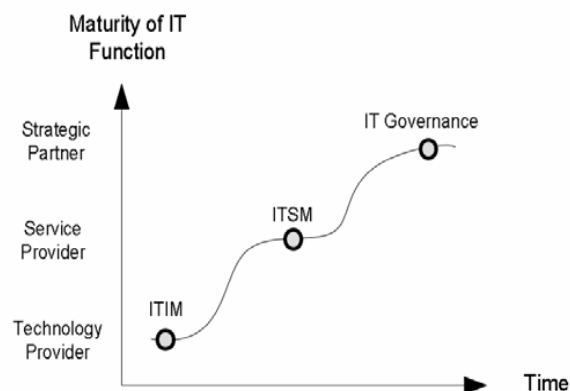


Figure 1 : Evolution of the IT Function and Optimal Management Strategies.

Keys: ITIM – IT Infrastructure Management, ITSM – IT Service Management.

The beauty of the above Maturity of IT Function Chart is it quickly tells shows where management needs to be for optimal utilisation of the IT Function within the organisation. As IT Functions evolve/matures, so too the need for management practises to assimilate the new functions and adapt new practises. The diagram implies that the better place to be on the chart is where Maturity of IT Functions is at Strategic Partner, and the equivalent management practises at IT Governance. We aspire for IT Functions within Government to partner with Government's Strategic directions with a level of management equivalent to IT Governance.

Technology Provider

With the introduction of IT into an organisation, ICT is initially a set of tools (technology) to augment existing tools (such as word processors improving on typewriters, or email improving timeliness of memos.) Management of these tools is essentially management of the introduced infrastructure. We know that current management of the tools is still poor but fortunately has thus far had minimal effective on the functions of Government. Management during this period is mostly concerned with Infrastructure, taking care of the computers, networks, and connected tools. The IT Maturity chart labels this level of management as IT Infrastructure Management.

Service Provider

IT Maturity to this level has been achieved for some of Government's ICT Functions principally the Ministry of Finance's accounting systems and Revenue Services' tax records. E-mail and the Internet are also IT Functions providing services as communications platforms. To optimally make use of this IT Function, management needs to address expanded needs in Governance and Utilisation such as actively identifying the services customers need and focusing on planning and delivering those services to meet availability, performance, and security requirements. In addition, IT is managing service-level agreements both internally and externally, to meet agreed-upon quality and cost targets. Service Level Agreements (SLA) are a valued tool for both managing inter-agency services, and

for managing external vendors who may be better employed for certain services. Vendor services that should be monitored, administered through SLAs include hardware acquisition, maintenance, website development, security services. Unfortunately, the Tonga Government's ICT mechanism is not capable of providing IT Services Management appropriate for quality functioning of IT Services.

Strategic Partner

We aspire for ICT Services to mature to being a "Strategic Partner" as in the above chart, and the subsequent improvement of ICT management to be at the "IT Governance" level. Government recognises the value of ICT to national development and this is succinct in *The Strategic Development Plan 8*, where ICT is an integral part of providing a successful Government service. The development and management of ICT will make a significant impact on the success of the Strategic Development Plan 8. Today, ICT decisions are mostly made on their immediate utility with little consideration or planning to review processes and ensure value or ROI.

II. Defining ICT Governance and ICT Management

Although principles of Governance and Management are intermingled, it is appropriate to use a framework where we can begin discussions and planning towards implementing cohesive and best practise services. R. Peterson 2003 provides a clear differentiation:

"Whereas the domain of IT Management focuses on the efficient and effective supply of IT services and products, and the management of IT operations, IT Governance faces the dual demand of (1) contributing to present business operations and performance, and (2) transforming and positioning IT for meeting future business challenges"3.

His diagram gives a visual indicator of IT Governance and IT Management lie in relation to Business Orientation over Time.

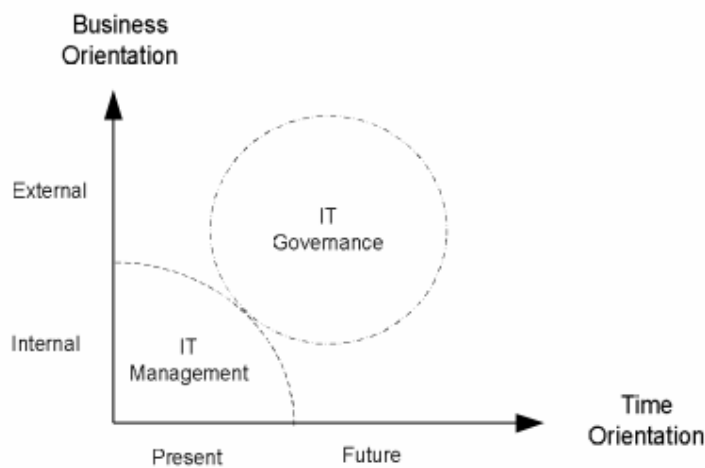


Figure 2: IT Management and IT Governance

M. Sallé simplifies it even further with:

IT Governance and IT Service Management serve two different purposes. IT Governance is often perceived as defining the “what” the IT organisation should achieve and the ITSM as defining the “how” the organisation will achieve it. 4

ICT Governance: What

Although various definitions of ICT Governance exist, a simplified definition is provided by the IT Governance Institute (ITGI) <http://www.itgi.org/>:

“IT governance consists of the leadership and organizational structures and processes that ensure that the organization’s IT sustains and extends the enterprise’s strategies and objectives. IT governance and the effective application of an IT governance framework are critical in helping enterprises gain more value from information and information technology while ensuring that IT remains aligned with the enterprise strategy, values and culture.”5

The Institute emphasises the value of leadership, structures, processes, and alignment of strategies, values and culture. The Australian Standard for Corporate Governance of ICT AS8015 defines Corporate Governance of ICT as:

"The system by which the current and future use of ICT is directed and controlled. It involves evaluating and directing the plans for the use of ICT to support the organisation and monitoring this use to achieve plans. It includes the strategy and policies for using ICT within an organisation."

ICT Governance, as demonstrated by the University of Southern Queensland (USQ) may best be implemented as a separate body from the organisation's ICT Management. The USQ ICT Governance was 'managed' by an oversight "ICT Strategy Committee" that co-ordinated work with other Governance committees such as the Audit Committee and the Budget Management Committee.

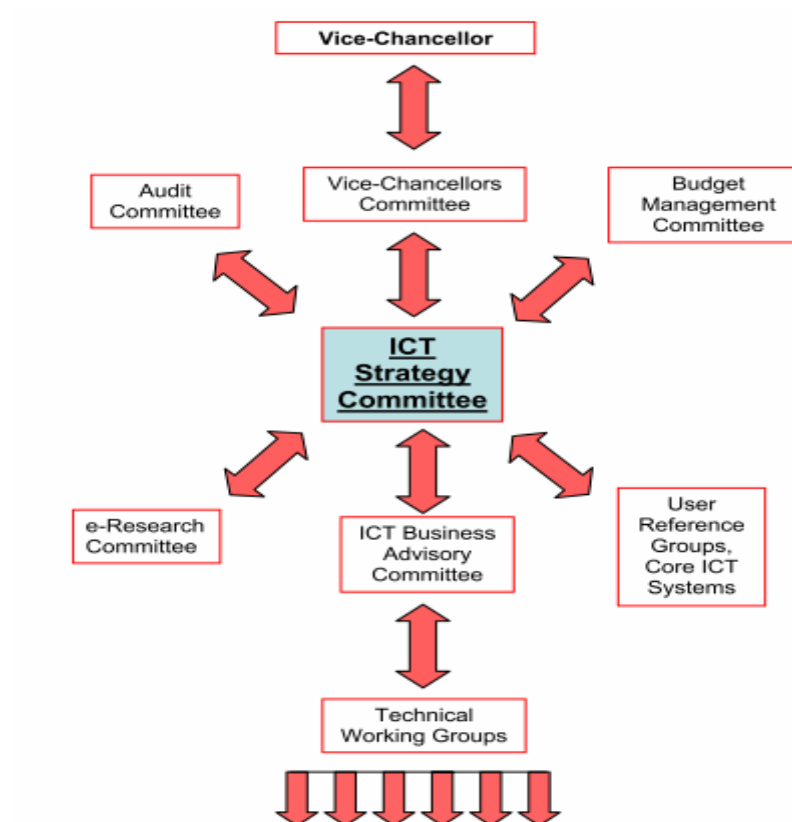


Figure 3: USQ ICT Governance Structure

The value from the USQ Strategy Committee included providing strategic direction, ensuring alignment of ICT and the organisation's strategic plan, leadership and control of IT operations and management, providing a forum for resolving resource allocations and ensuring top management support for ICT activities. Not surprisingly, having senior leadership in the Committee ensured visibility for ICT Projects.

Membership of the USQ ICT Strategy Committee were the CEO (Vice-Chancellor), most senior ranking executives (Deputy Vice-Chancellors), the Chief Information Officer (CIO), Chief Technology Officer (CTO), and a nominee from industry with ICT expertise.

ICT Management: How

It is intuitively evident that the mechanisms for successful IT Infrastructure Management successful with the first introduction of ICT to an organisation will be vastly different to management required when provisioning services and service level agreements. It is another level of Management to incorporate Strategic Partnership. As defined by R. Peterson earlier, IT Management focuses on the efficient and effective supply of IT services and products, and the management of IT operations. There are many aspects of ICT Management to ensure that services are efficient, effective and managed. Broad responsibilities will include:

- Financial Management
- Problem Management
- Service Level Management
- Change Management
- Availability Management
- Business Continuity Management
- Incident Management
- Capacity Management

Frameworks

We are constantly being told that we need to Benchmark and use International Standards to meet, review Best Practises. As discussed earlier, there are overlaps between Governance and Management so frameworks will have overlapping components between Governance and Management. One classification of existing International Standard Frameworks for our needs could be:

ICT Governance Frameworks

- Control Objectives for Information and Related Technologies (CobiT)⁶
- IT Balanced Score Card⁷
- Information Technology Control Guidelines (ITCG)⁸

ICT Service Management Frameworks

- Information Technology Infrastructure Library (ITIL)⁹
- British Standards Institute 15000 (BS15000)¹⁰
- HP IT Service Management Reference Model¹¹
- Microsoft Operations Framework¹²
- IBM's Systems Management Solution Lifecycle

Sallé visually summarised the above frameworks to posit that “ITIL acts as the de-facto standard for the definition of best practices and processes that pertains to the five disciplines of **service support**, and the five disciplines of **service delivery**.”

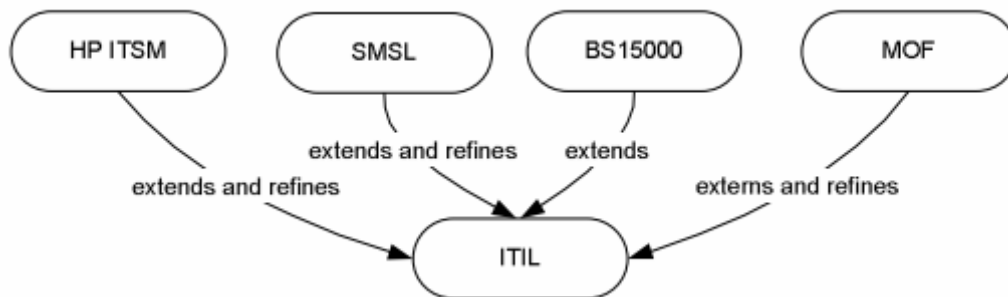


Figure: Relationship between ITSM Frameworks

It is left for this project to assess the added value these extensions provide and which would best be used for Tonga. For the case study described above,

University of Southern Queensland, they implemented their ICT Governance and ICT Management using a combination of CobiT and ITIL.

Refining an Organisational Structure to best achieve ICT Governance and ICT Management

The above frameworks do not cover with much depth the various organisational structures and how they respond to the implementation of their frameworks. This section of the Background and Strategic Context will review some of the available Organisational Structures within which ICT plays a role.

Available Organisation Structures for ICT

There are three categories of structuring a functional area within the organisation, the previously recommended Centralised Body, the existing Decentralised hierarchy and a combination of the two or hybrid system (also known as a Federal System ¹³.)

Decentralised ICT

The decentralised organisational structure for ICT is what we currently have. In this structure, each Ministry and Agency separately determines governance and management of their ICT. Significant benefits of this hierarchical structure include total control. A significant failure, as currently observed, of this arrangement is the duplication of effort and poor utilisation of limited resources (staff and equipment.) It would seem apparent that this organisational structure is sub-optimal for addressing National Development.

Centralised ICT Body

The ICT “Central Body” rests total control of ICT resources within one function of the organisation structure. The benefits of this arrangement are that the Central Body can make immediate decisions, and directions with

emphasis on optimal and effective use of resources. The potential failings of this arrangement is that if Ministries and Agencies are not serviced by the Central Body, things will quickly devolve to the existing decentralised structure. A centralised ICT body will require a considerable amount of submission of authority and territory from largely autonomous bodies (Ministries and Agencies.) Service Level Agreements will be increasingly difficult for Ministries to monitor and evaluate as the complexities of the service extends beyond non-ICT staff's ability to comprehend. The fear of poor service is already prevalent in Government today.

Federalized ICT System

Chanchal Kumar Sharma defines a Federalised System as a “balanced approach between the contrasting forces of centralisation and decentralisation,” or “combining the political and economic advantages of unity while preserving the valued identity of the sub national units.”¹³

Thus, in a Federal ICT System, compromises are made between the Federal ICT authority and Government Ministries, agencies with the priority of ensuring optimal services. This arrangement is not a one-off affair, but is an evolving confederation as the National Strategy evolves, Ministries and Agencies increase in size and ICT use, and as the Federal ICT unit improves in competence and service delivery.

An extended look at a Federal ICT Structure

In a Federalised ICT Structure, the Central ICT Body serves the Function of Managing the ICT Resources of Government, but not complete ownership of all ICT Resources. ICT Employees assigned within a Ministry or Government Agency report directly through that organisation, whilst also having a dotted line of additional responsibility and accountability to the Federal ICT Body (Matrix Management.) Day to day administrative responsibilities for the employee (such as making sure they are at work on time) is managed by the

line agency. Functional activities such as goals and objectives, career directions are managed by the Central ICT Body.

The Federal ICT Body is responsible, through Service Level Agreements (contracts), to the Ministries, Agencies for provisioning ICT services at an agreed level of quality, and cost. The Federal ICT Body is responsible to the Ministry ICT employees for providing a career path, ICT specific training and other ICT specific needs of the employee to ensure they can meet the Service Level Agreement.

The Line Ministries, Agency's have a right to maintain ICT Staff and their performance requirements are set together with the Federal ICT Body as part of the Service Level Agreement. Management of these staff increases the requirement for communications between management to ensure staff do not receive conflicting orders and are likewise not erroneously evaluated.

An example use of a Federalised System would retain some of the existing Ministry IT Staff in place, and centralise services/body counts where such action can improve a Ministry's ICT service. For example, where certain ICT services are critical for a Ministry's function it is most likely that to provide the Service Level Agreement, the Federalised ICT unit must retain ICT staff at the Ministry.

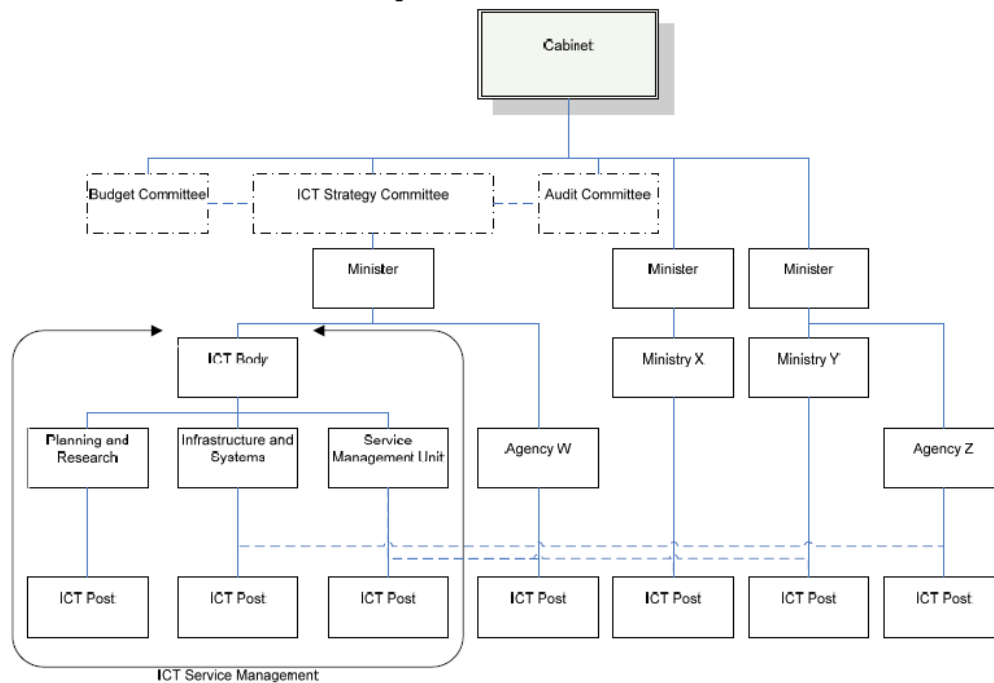
Where current application development and network administration is failing within Ministries, such as the development and maintenance of data repositories, databases, websites, network services, firewalls these skills may be better acquired and expanded upon in a central unit where Service Level Agreements ensure Ministries are gaining a higher quality and timely service. An immediate effect where a Federal ICT Body can affect Ministries and Agencies today include:

- Strategic Alignment
- Security Evaluation and Planning,

- Business Continuity Planning, what happens if your current IT staff gets sick or that one computer with the Minister's reports dies?
- Procurement Management, are you going to use all those features you are buying? Can you get more value for the same amount of money?
- Return on investment, are you getting value for the dollars already spent?

ICT Governance and Management

Federalised Organisation Structure



Conclusion:

The Government of Tonga need to streamline their internal processes, better disseminate information and establish data access links between ministries and departments. The two most crucial systems in Government are in the Ministry of Finance; the financial management and the payroll systems. A national ICT Strategy will stumble with high probability of failure if we cannot set and implement standards for ICT Governance and Management. The recently released PSTG “ICT Governance Discussion Paper” states that :

“Effective governance is the key component in successfully implementing and, more importantly, sustaining any National Information and Communications Technology (ICT) agenda.”

E-GOVERNMENT: TONGA'S GOTNET SYSTEM

In 1998, Government embarked on the Government of Tonga Network (GoTNet), an intranet project worth several million dollars. A Government Computer Committee was established to develop and monitor the new system—the development of a high capacity wide area network (WAN) linking government departments in the capital Nuku'alofa. The set-up headed by the Ministry of Finance was to provide appropriate ICT infrastructure for online application services (Micropay and SunSystem); online network services (email, web browsing, chat, and video conferencing); better security control and performance monitoring; sharing of resources while complying with regional and national ICT development. What effectively ensued were a computerized government voucher and wage system and a Government Internet Portal. The failure in optimizing the functionality of GoTNet is an example of buying the shoe before measuring the foot. The concern with infrastructure alone meant that capacity outweighed capability exposing a lack of policy and planning

To develop the ICT infrastructure to facilitate better dissemination of information, develop an efficient and more effective service delivery. It was propose to setup a Government Wide Area Network (GOTNET). This GOTNET will

1. Assist in improving service delivery through better communication and dissemination of information.
2. Facilitate moving towards E-Government whereby Government services can be provided online.
3. Facilitation of government wide implementation of the Purchase Order Commitments system. This system will record commitments and only produce an order when funds are available. This should improve suppliers' confidence as they realize that funds are available to meet that commitment. This will also eliminate over-committing of allocated funds.

4. Up-to-date program budget and expenditure data available to program managers, leading to improvements in budget outcomes (in a purely financial sense).
5. Facilitating the use of the Human Resource Management Information System (HRMIS) currently managed by the Public Service Commission, and facilitation of direct entry of staff salary data and HR information by line ministries.
6. Devolution of data entry functions to responsible ministries and the consequent elimination of double handling of data will free up Ministry of Finance and PSC resources to provide increased focus on audit of transactions and analysis of budgetary and economic and social policy issues for consideration by Cabinet.

Other added benefits in establishing this GOTNET include:

7. More effective collaboration between ministries, increased productivity and lower transport costs (through reduction in the use of drivers' time and fuel for delivery of mail documents and almost instantaneous transport of documents over the intranet).
8. Reduction in telecommunication costs. Currently government Ministries and Departments have over one hundred ISP accounts and reducing the external access to one dedicated line will reduce cost by 90%.
9. Improve the manageability and security of the government's overall connection to external sources, particularly the internet. With more than one hundred internet connections it is virtually impossible to manage and secure all connections with our limited resources, leading to increased risk of unauthorized access, virus infections and subsequent loss of information and productivity.
10. Create a wider user group in the Government's two most important pieces of software (Sun System for budgets and accounts and Micropay for the HRMIS and salary payments), thereby improving the level of IT literacy and skills across Government.

Notes

- 1 Michael Henry**, “Recommendations on the future of IT in Tonga”, July 2007
- 2 Salle Mathias**, “IT Service Management and IT Governance: Review, Comparative Analysis and their Impact on Utility Computing”, HP Laboratories Palo Alto June 2, 2004
- 3 R. Peterson**, “Integration Strategies and Tactics for Information Technology Governance”, in Strategies for Information Technology Governance, Ed. Wim Van Grembergen, Idea Group Publishing, 2003
- 4 Salle Mathias**, “IT Service Management and IT Governance: Review, Comparative Analysis and their Impact on Utility Computing”, HP Laboratories Palo Alto June 2, 2004
- 5** <http://www.itgi.org>
- 6** <http://www.isaca.org/cobit.htm>
- 7 R. Kaplan and D. Norton**, “The balanced scorecard: translating vision into action”, Harvard Business School press, 1996.
- 8** Information Technology Control Guidelines. 3rd Edition. Project objective: Information Technology Control Guidelines provides a practical means of identifying, understanding, assessing and implementing information technology controls in all types of enterprise. The identification of suitable controls is critical to the cost effective management of risk stemming from the development and use of information technology.
- 9** <http://www.itlibrary.org/> The Information Technology Infrastructure Library (ITIL) defines the organisational structure and skill requirements of an information technology organisation and a set of standard operational management procedures and practices to allow the organisation to manage an IT operation and associated infrastructure. The operational procedures and practices are supplier independent and apply to all aspects within the IT Infrastructure.
- 10** <http://www.15000.net/> Formally adopted as the ISO/IEC 2000. ISO 20000-1 "promotes the adoption of an integrated process approach to effectively deliver managed services to meet the business and customer requirements". It comprises ten sections: Scope; Terms & Definitions; Planning and Implementing Service Management; Requirements for a Management System; Planning & Implementing New or Changed Services; Service Delivery Process; Relationship Processes; Control Processes; Resolution Processes; and Release Process. ISO 20000-2 is a 'code of practice', and describes the best practices for service management within

the scope of ISO20000-1. It comprises nine sections: Scope; Terms & Definitions; The Management System; Planning & Implementing Service Management; Service Delivery Processes; Relationship Processes; Resolution Processes; Control Processes; Release Management Processes. Together, this set is the first global standard for IT service management, and is fully compatible and supportive of the ITIL framework. It will undoubtedly have a significant impact upon the whole ITSM landscape.

11 “The HP IT Service Management Reference Model”, White Paper. This model is a significant tool proven to be useful in presenting and describing the many IT Management processes, inter-process relationships, and business linkages IT needs to put in place for the successful development, deployment and support of services in the e-world. As we enter the new millennium, corporate IT organizations are once again being forced to deal with another challenge: "e-everything" - brought about by the emergence of new technology, the pervasiveness of the Internet, and an ever-increasing competitive marketplace.

12 “What is the Microsoft Operations Framework?” Microsoft Operations Framework (MOF) is a collection of best practices, principles, and models that provide comprehensive technical guidance for achieving mission critical production system reliability, availability, supportability, and manageability for solutions and services built on Microsoft products and technologies.

13 Sharma, Chanchal Kumar “The Federal Approach to Fiscal Decentralisation: Conceptual Contours for Policy Makers,” Loyola Journal of Social Sciences Vol. XIX, No. 2, pp. 169-188, 2005. [Munich Personal RePEc Archive May 2003].

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1. <http://www.15000.net/>
2. <http://www.isaca.org/cobit.htm>
3. <http://www.itgi.org>
4. <http://www.itlibrary.org/>
5. Michael Henry, “Recommendations on the future of IT in Tonga”, July 2007
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7. **R. Peterson**, "Integration Strategies and Tactics for Information Technology Governance", in *Strategies for Information Technology Governance*, Ed. Wim Van Grembergen, Idea Group Publishing, 2003
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10. **Sharma, Chanchal Kumar** "The Federal Approach to Fiscal Decentralisation: Conceptual Contours for Policy Makers," *Loyola Journal of Social Sciences* Vol. XIX, No. 2, pp. 169-188, 2005. [Munich Personal RePEc Archive May 2003]