IFMIS SYSTEMS
IN PACIFIC ISLAND COUNTRIES -
LESSONS LEARNED

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ABBREVIATIONS AND ACRONYMS

ADB     Asian Development Bank
a.k.a.   also known as
ASYCUDA Automated System for Customs Data
AusAID  Australian Agency for International Development
CA      Certificate Authority
CD      Conceptual Design
CoA     Chart of Accounts
CoP     Community of Practice
COTS    Commercial Off The Shelf
DBMS    Data Base Management System, or Database Management System
ESC     Executive Steering Committee
FASB    Financial Accounting Standards Board
FMIS    Financial Management Information System
GAAP    Generally Accepted Accounting Principles
GFMIS   Government Financial Management Information System
HR/HRM  Human Resources / Human Resource Management
IASB    International Accounting Standards Board
ICT     Information and Communication Technology
IFMIS   Integrated Financial Management Information System
IFRS    International Financial Reporting Standards
IMF     International Monetary Fund
IP      Internet Protocol (Internet data communication standard)
IT      Information Technology
KM      Knowledge Management
LAN     Local Area Network
LDAP    Lightweight Directory Access Protocol
LL/LLs  Lesson Learned / Lessons Learned
LM      Line Ministry
MoF     Ministry of Finance
MS      Microsoft
MTBF    Mean Time Between Failures
O&M     Operations and Maintenance
ODBC    Open Database Connectivity, or Open Data Base Connectivity
OS      Open Source
PAYE    Pay As You Earn
PFM     Public Financial Management
PFTAC   Pacific Financial Technical Assistance Center
PICs    Pacific Island Countries
PIFMA   Pacific Islands Financial Managers Association
PM      Project Manager / Project Management
POC/PPOC Point of Contact / Primary Point of Contact
PSC/PSO Public Service Commission / Public Service Office
QA      Quality Assurance
R&D     Research and Development
RICS    Rural Internet Connectivity System
RSS     Really Simple Syndication
SDLC    System Development Life Cycle
SOE     State Owned Enterprise
TOR     Terms of Reference
TSA     Treasury Single Account
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>VAT</td>
<td>Value Added Tax</td>
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<tr>
<td>WAN</td>
<td>Wide Area Network</td>
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<tr>
<td>Wi-Fi</td>
<td>Wireless Fidelity, a wireless network technology</td>
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EXECUTIVE SUMMARY

Several Pacific countries requested Pacific Financial Technical Assistance Center (PFTAC) assistance in assessing their Integrated Financial Management Information System (FMIS) systems following a regional Pacific Islands Financial Managers Association (PIFMA) conference in October, 2008. The workshop was entitled "Computerized Financial Management Information Systems and Asset Management and Fraud Prevention (Internal Audit) Workshop." In addition to assessing their systems, countries sought for suggestions regarding options for moving forward, either by improving existing systems or suggesting development of more modern systems. As a result of the requests, PFTAC initiated studies of six Pacific Island Countries (PICs) between November 2008 and December 2009. These studies covered the Cook Islands, Kiribati, Tonga, Tuvalu, Vanuatu and the Republic of Marshall Islands.

Findings from the six Pacific countries reviewed, as well as similar assessments in eleven Caribbean Island Countries, indicate a number of IFMIS issues are similar between countries. Of course, each country's uniqueness cannot be discounted. However, it was felt that the degree of similarity between warranted an overall lessons learned document with general guidance for implementing, upgrading, and improving IFMIS systems, especially in the context of small island countries.

Examples of common IFMIS related issues and suggestions for moving are listed below in three broad categories of technical, functional, and management related, or discussed in other sections of the document. Of course, many of these issues may not fit neatly and exclusively into any of the three categories. Therefore, the issues are categorized according to what is felt to be the key aspect of the issue.

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<th>Category</th>
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<td>Technical</td>
<td>Network Infrastructure – Lack of secure government-wide data network infrastructure on which to deploy a government-wide IFMIS, as well as e-mail and many other government functional enablers.</td>
<td>Countries should be prepared to initiate or take advantage of existing regional or local initiatives that will include new network infrastructure. Examples include eGovernment and government-wide IT/ICT data network projects that can be used by Ministry of Finance (MoF) systems for government-wide deployments. Another approach may include pooling ICT resources in a regional partnership to develop practical regional Internet broadband service options. A regionally coordinated approach should be cheaper and better than...</td>
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<td>IT/ICT Policy</td>
<td>Lack of consistent government-wide IT/ICT policies, especially Internet security policies, contribute to an unstable ICT environment that is hostile for sensitive data systems like an IFMIS.</td>
<td>The MoF should be supportive of government-wide IT/ICT policies, especially Internet security policies. Though not recommended, the MoF may find it needs to assert itself in implementing government-wide IT/ICT policies and develop an over-arching policy in this area.</td>
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<td>Vendor Relations</td>
<td>In many cases, relations with COTS IFMIS software vendors have become strained due to disappointment over high expectations not being met.</td>
<td>Clearly documented technical support agreements that include remote connection technical support delivery will result in faster and much cheaper support. This will help to improve vendor relations through improved satisfaction with vendor services. A simple business case analysis will quickly reveal the relatively high cost of on-site service delivery as compared to remote services. A possible compromise may be a combination of remote support together with regularly scheduled on-site technical support visits, all supervised through consistent local effort.</td>
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<td>Functional</td>
<td>IFMIS Software – Many stakeholder groups report frustration with COTS FMIS software functionality. This is sometimes more of an issue with stakeholder groups that were not involved early and actively in designing new IFMIS related procedures.</td>
<td>Stakeholders will sometimes resist change, especially if they were not originally involved in defining the changes. The best way is to involve them from the beginning. If that was not done, a sensitive outreach effort is essential to make peace and bring reluctant stakeholders into the fold.</td>
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<td>Analysis – Lack of easy to use tools for readily obtaining new financial reports and flexible financial analysis</td>
<td>IFMIS vendor supplied analytical tools may integrate better and be better supported than third party</td>
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1 The technical network infrastructure requirements for remote technical support delivery are modest. Remote support via dial-up or Internet connection generally does not require high speed network connectivity. Also, because it does not require that people fly from one country to another, remote technical support is both more immediate and less expensive than on-site technical support.
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<td>data, including highly stylized report documents(^2) capable of rapid iterative updates.</td>
<td>tools. A MS Excel interface option is desirable because analysts may find it easier to learn. Document management is another desirable feature.</td>
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<td><strong>Systems Integration</strong> – Lack of routine, automated data exchange among government PFM systems, e.g., budget, tax, and customs data not being automatically exchanged with the FMIS.</td>
<td>Data integration is essential to an IFMIS. Integration may be accomplished in a number of ways, with the most common being data integration involving automated data exchange between separate PFM applications. This is most common in cases where legacy systems are in place for functions such as customs, inland revenue, and accounting. To be successful, this requires a consistently applied CoA, as well as adherence to government-wide PFM procedures and data encoding rules. Where legacy systems are not present, or have not become well established, countries may sometimes be tempted to implement a single IFMIS system to provide all PFM functions under the assumption that a single system is integrated by definition. However, experience has demonstrated that it is very difficult for a single PFM system to successfully perform a full range of PFM activities. See section IV for a discussion of the steps involved in moving from an “AS-IS” state to a “TO-BE” state and on steps needed to integrate legacy systems. The general steps discussed there should be followed in all cases, including situations where legacy systems are present.</td>
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<td><strong>Bank Integration</strong> – General lack of secure integration with bank systems, including no automated bank reconciliation.</td>
<td>Banks should be recognized as important strategic partners. Integration of government and bank systems can significantly benefit both the bank and the government.</td>
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\(^2\) Examples of highly stylized report documents include the annual budget, official periodic budget status reports to parliament, financial procedures manuals, long range strategic plans, and business case analysis reports.
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<td>Cash and Checks</td>
<td>– Government receipt and payment operations continue to use cash and checks, which are labor intensive and prone to errors and fraud.</td>
<td>Governments should consider phasing out the use of cash and checks for receipts and payments where feasible, for instance for the payment of salaries. Results will include increased transparency and efficiency, along with reduced risk.</td>
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<td>Management</td>
<td>Staff – Challenges of recruiting and retaining quality IT/ICT staff, IFMIS analysts and administrators, and PFM operations staff.</td>
<td>Recruiting and retaining IFMIS IT and PFM staff is facilitated by having standards compliant systems and procedures, as well as proactive community management and staff development programs, possibly on a regional basis, given the constraints in PICs.</td>
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<td>Inconsistent PFM Perspective – Many PFM staff report feeling isolated, with limited access to current information about PFM policies, systems, and procedures. This contributes to various IFMIS issues, including inconsistent application of PFM procedural and data encoding conventions.</td>
<td>Information portals(^3) and professional PFM community management techniques, including professional certification programs, are powerful but inexpensive ways to develop and sustain consistent understanding of PFM policies and procedures essential to successful IFMIS operations. It is worthwhile to consider from a technical and organizational perspective that a portal uses the same network technology infrastructure as a FMIS/IFMIS, but it can be established much faster and administered much more easily than a FMIS/IFMIS.</td>
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<td>Stakeholder Affairs</td>
<td>– In many cases, It is important to involve</td>
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\(^3\) Any country with the infrastructure to deploy an IFMIS can deploy an information portal. The technology stack is the same as for an IFMIS, so there is relatively little additional cost involved. For example, the Microsoft portal, called SharePoint, is free in some cases to Microsoft license holders, and is easily installed on Microsoft server platforms. Once installed, IT staff are not needed, as portals are managed by PFM professionals with a few days training or less. A logical progression would be to use the information portal to manage the IFMIS project team, extend it to operational IFMIS PFM administrators, then to the greater professional PFM community.
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| IFMIS systems have been developed and become operational without systematic regard for associated stakeholder communities. On their own, stakeholder communities may not always recognize their place as stakeholders.  
| **International PFM Standards and Best Practices** – Although maintaining at least modified consistency with international finance standards and best practices is not easy, non-compliance may be even more difficult and expensive over time. | Practical consistency with PFM standards, including cash based ones, enables access to grants and favorable loans, aids in recruitment and enables global and regional IFMIS coordination, and facilitates IFMIS implementation and sustainability. Countries that do not observe practical international standards, tend to become financially more isolated than is necessary. |
| **Legislation Reform** – Before attempting IFMIS implementation or enhancement, it is important to conduct a legal and regulatory review to avoid conflict and confusion. | Legislative and regulatory modernization reform is typically a long drawn out process. Therefore, it is recommended that this process begin as early as possible. A transition strategy may be needed to adapt financial procedures to changing requirements. |

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4 Examples of communities that may sometimes not recognize themselves as IFMIS stakeholders include audit, inland tax, customs, budget, cash management, debt management, planning, and economic development.
I. BACKGROUND

Countries all around the world are being strongly encouraged to modernize and enhance their PFM systems. This is happening for many reasons, including a desire on the part of international donor and financial organizations to institutionalize financial transparency and auditability as part of an overall goal of fostering responsible governance. As transparent and auditable PFM systems become more consistent and standardized the use of country systems will increase and global financial aid and loan programs can be more confident of the success of aid programs.

In that context, the Pacific Financial Technical Assistance Center (PFTAC) sponsors a range of professional events for PFM representatives from Pacific Island Countries (PICs). One such event in October, 2008, held in conjunction with the Pacific Island Finance Managers Association (PIFMA) generated substantial interest in Integrated Financial Management Information Systems (IFMISs). Since then PFTAC has conducted reviews of IFMISs in six PICs. These were Cooks, Kiribati, Tonga, RMI, Tuvalu and Vanuatu. As a result, it has become apparent that while each country has its own set of unique issues, there are a number of common themes identified in all of these countries. The present report is an attempt to consolidate the lessons learned and to provide some guidance to future work in this area.

In the Pacific, as elsewhere, small island countries have been grappling for many years with issues associated with implementing computerized IFMISs. However, the size and lack of human resources in the Pacific makes their situation even more complex. These PFM systems significantly challenge the willingness of local government workers and institutions to accept change. Enticing cadres of entrenched civil servants to embrace change and step outside their traditional comfort zones is a significant challenge that calls for some finesse and planning.

Fortunately, a large number of new and relatively inexpensive network centric tools are now readily available to assist in the process of informing and harmonizing the thinking and attitudes of communities of people who share a common work domain or interest. These tools, sometimes called a portal, a wiki, or a document management or knowledge management system, as well as other terms, are specifically designed and configured to facilitate collaboration and information sharing. As such, these information sharing systems may sometimes be culturally at odds with traditional fragmented communities of information workers, such as government staff, who may not be comfortable with the idea of widely sharing information. In some organizations, there can also be traditional taboos regarding attributable information. In that case, people will be reluctant to write down information to be shared with others for fear of being held accountable.

Therefore, outreach and socialization efforts are needed to entice reluctant stakeholders to the table for information sharing activities. These activities are often overlooked in PFM system development or management plans. It is important to make the effort to work with reluctant stakeholders because their participation is ultimately important to the success of any IFMIS. Efforts to include stakeholders in the design, development, or enhancement of an IFMIS must be handled carefully. This is because no information system can operate successfully without a well trained and motivated support staff. People remain an essential part of any information system, including an IFMIS. This is true in the Pacific, just as it is in other parts of the world.
II. STRATEGIES FOR SUCCESSFUL IMPLEMENTATION OF IFMIS PROJECTS IN SMALL ISLAND COUNTRIES

A. KEY ROLES AND RESPONSIBILITIES

Guiding a complex, multi-year FMIS/IFMIS implementation project is a big challenge and responsibility. The project director for a strategic, government-wide information system like a FMIS/IFMIS must have broad understanding of the strategic concepts of PFM, ICT, project management, and organizational change management. The director must also be organizationally astute in sustaining the interest in the project and the continued support of executive sponsors and key stakeholders. In addition, all stakeholder communities must be engaged so as to foster broad consensus and willing acceptance of changing roles and responsibilities.

Project director responsibilities are normally assumed as a collateral duty by a senior PFM official such as the head of Treasury or the permanent finance secretary. This individual may also be the chair of an executive steering committee as discussed further below. In addition, the project director is typically the direct report supervisor for the FMIS project manager (see below).

It is the overall responsibility of the senior finance organization, usually the ministry of finance, to assume ownership responsibility for a government-wide FMIS/IFMIS, including responsibility for the security and integrity of the system and the data managed by the system. A steering committee\(^5\), led by a senior representative from the PFM component responsible for developing and operating the system (e.g., the treasury), may be formed to oversee the development of a new GFMIS or enhancement of an existing PFM system.

An important responsibility of the steering committee is to ensure the different views and interests of various stakeholder communities are represented as system characteristics are defined and the system is developed. The steering committee may also be responsible for making final decisions in cases where issues cannot be resolved at the working level. Very often, in an attempt to hasten implementation, the views of those who may be slow to appreciate the process tend to get ignored. This merely results in a delay in implementation as these issues, than arise later to an expensive resolution.

It is not generally appropriate for GFMIS ownership responsibilities to be delegated to an IT/ICT organization. IT/ICT support will be needed, to be sure, but should be provided in a support role and never in a controlling capacity. The same holds true for offshore experts. Ownership responsibility cannot be delegated to outside experts who will depart once their task is complete or when funding is depleted, whichever comes first. It must be driven by the users.

In this context, it is also very important that all key project sponsors clearly recognize that GFMIS projects are much more than just IT/ICT projects. Because of this, it is not wise,

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\(^5\) Refer to the "Project Governance" section for more on this.
nor is it appropriate, for an IFMIS project to be led by technical IT/ICT staff that may have little knowledge of PFM concepts.

To help ensure a successful GFMIS project outcome requires a representative core project team of astute PFM people with appropriate delegated leadership authority, capability, and experience. Of course, the project team will collectively require knowledge and skills other than PFM, including project management, change management, and contract management. While it is not generally wise for a GFMIS project to be led by IT/ICT personnel, it can sometimes be beneficial for a core team to be led by an experienced project manager who is also well versed and experienced in organizational change management, but who may not necessarily be a PFM expert.

Assembling a local team of talented, motivated individuals to form a core project team is the responsibility of the project director and executive sponsors. It is always difficult to assemble a local team of talented people because their talent is usually already recognized and being exploited for other purposes. In order to provide a good start to a project and to keep it moving along, senior sponsor(s) will need to identify the best people to make up the project team and persuade their supervisors to release them to work on the GFMIS project team. Since GFMIS projects can be expected to go on for a number of years, it is unlikely that many of these project staff will ever return to their original positions. Many supervisors know this and will understandably be reluctant to give up their best people. Therefore, an appropriate *quid pro quo* strategy may be needed to compensate managers who are willing to sacrifice for the greater good.

In addition to a small core project team of 3-6 individuals, there needs to be broad involvement and buy-in from a range of PFM stakeholder communities. Obtaining the active involvement and buy-in of stakeholder communities is a significant challenge for which project sponsors must be responsible. This challenge is made more difficult in some instances because some stakeholders may not intuitively recognize themselves as stakeholders. Instead, they may choose to take an approach akin to "just ignore it and it will go away." Alternatively, they may choose to actively oppose a GFMIS implementation because they do not recognize any benefit arising from it.

In these cases, it will be necessary to educate stakeholders as to why they need to recognize and proactively pursue their roles and responsibilities as stakeholders. They need to be aware that procedures and workflows may change with the implementation of a GFMIS, and this will impact traditional roles and responsibilities.5

It is the responsibility of the executive sponsor(s), senior PFM officials, and the core project team to help inform and enlighten the various stakeholder communities and ensure they understand the nature of the changes that will result from implementation of the GFMIS. Changes should be described in terms of the benefits to the country and the government, but also in terms of how various stakeholder communities will be impacted.

The key stakeholders that need to be actively involved in the planning and development of an IFMIS include senior officials and managers from core PFM functional areas, including: budget, accounting, cash management, debt management, and reporting. The

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ministry of finance (MoF), line ministry PFM functions, payroll and procurement, parliament, and audit, are communities that should be involved. The central bank, the tax administration, and macroeconomic forecasters need to in planning implementation be involved in areas such as planning for a treasury single account, or the interface between the tax system and the GFMIS.

**Line ministry PFM staff are an example of a community often overlooked and excluded from direct substantive participation in GFMIS projects.** One major result of such an oversight is that the resulting GFMIS is not as successful and well received as it might have been because it does not accommodate the more specific needs of LMs for financial data and reports. Therefore, LMs often feel compelled to maintain redundant local information that is invariably out of phase with the central GFMIS and results in much wasted effort spent reconciling differences, thus degrading the efficiency and effectiveness of the central GFMIS.

As a practical consideration, the local data requirements of line ministries can be readily and systematically accommodated fairly easily within a government-wide GFMIS. The concept of data extensibility can be effectively used in cases like this. This involves using a "core" CoA and associated data encoding scheme for the needs of the MoF and other central ministries. The core data identifiers can then be added to, or extended, to provide the additional detail required by LMs. Of course, this requires that LM staff assume some local data oversight responsibilities (e.g., data administration, data analysis, report design and development, etc.).

In the line ministry example above it is important to note that early line ministries involvement would result in requirements like this one being raised early and being easily factored into the design of the system. As is frequently the case, it is more difficult to go back and add extensibility to a fully formed system because the change ripples throughout the system, including data structures, reports, data models, databases, and many other elements. It is much better and easier to incorporate it into the design from the start, before the system becomes solidified.

**B. COMPREHENSIVE LEGAL AND REGULATORY REVIEW**

A legislative and regulatory review is needed, in coordination with a thorough financial business process review, to begin transforming manual processes into more efficient, effective, auditable, and transparent automated processes. Existing finance laws and regulations may be seen as requiring hand written documents, original "wet" signatures and, by inference, manual procedures. Innovations like digital signatures, secure electronic commerce, credit and debit card transactions, and Internet banking, including automated bank reconciliation, may not be supported, or may be specifically prohibited, based on terminology appearing in current law or regulations.

Thus, legislative and regulatory modernization reform may be critical to realizing full benefit from a GFMIS. Attention will also need to be given to statutory reporting requirements, such as publication of an annual budget, periodic financial status reports to parliament, and external audit reports, as well as any special reporting requirements to international organizations such as the IMF.

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The review should also consider how clearly the major PFM roles and responsibilities are spelled out in law and regulations. It is generally better for the roles and responsibilities to be spelled out in simple, clear terms in legislation. Regulations may then elaborate on more of the specific details. Among other things, this helps to keep the lines of authority clear and unambiguous. Clear lines of authority contribute to a smooth running organization where a GFMIS can be successfully deployed and sustained.

In the case of the budget process, budget system law (BSL) should specify authorities, timeframes, reporting requirements, and, in some cases, methodologies. These are usually spelled out in general terms in law, while details are often addressed more appropriately in regulations because it is normally easier to update regulations based on changing circumstances. Older BSL may not consider modern concepts like transparency, accountability, and performance, including a medium term budget framework. Adding some of these newer concepts in the annual budget process may require legislative modernization.

In any legislative modernization reform effort, care should be taken to ensure that new laws and/or regulations do not create an unrealistic or overly burdensome process. In some cases, the burden of implementing certain procedural options may simply be too great when compared with projected benefits and savings. More practical and less costly options may yield nearly as many benefits with much less risk.

A technique that some countries find helpful in ensuring practicality in legislative consideration is to include a brief, simple, basic business case analysis in the review process. A basic business case analysis can usually be performed quickly and cheaply. Yet it will provide legislators with quantitative information about the costs associated with mandating various options for financial activities such as reports, methodologies, and systems. This simple technique can help ensure that more cost effective options are selected for institutionalization into law. For example, a discussion of the technical differences between modified and full accrual accounting and budgeting may not be fully appreciated by legislators and policy officials. However, most officials and the public can readily understand the extra cost and workforce requirements of a full accrual methodology versus a modified accrual methodology that would be exposed as part of a business case benefit cost analysis.

In some cases where a legislative and regulatory review is not performed, or where reforms are not pursued, a situation can develop where law and regulations may be seen to be at odds with FMIS procedures. In a situation like this, where law and regulations are not harmonized with FMIS procedures, the result can be ambiguity and confusion. Uncertainty then leads to multiple redundant systems where officials and staff feel compelled to maintain redundant records in different formats to avoid criticism. A situation like this is very counter productive because not only is redundant effort spent in doing the same work twice, but a good deal of extra effort is spent in reconciling incompatible data from different systems. This is a very unfortunate and wasteful situation that should be avoided if at all possible.

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C. CONCEPTUAL DESIGN

It is the responsibility of the GFMIS project executive steering committee to ensure that an appropriate process is undertaken to develop a conceptual design (CD)\(^9\) document. This process needs to take place in such a way that it comprehensively acknowledges the business requirements and perspectives of the various PFM stakeholder communities. At the same time, these stakeholder views must be considered within the context of PFM reform and business process modernization.

As with most planning documents, the true value may not lie in the document itself, but in the growth and discovery that takes place as a team of people formulate solutions to business problems. Where the people developing a business plan are drawn from within the organization, the knowledge and insight gained in the planning process enriches the organization by enriching the human capital of the organization. On the other hand, when an outside consultant develops a business solution for an organization, much of the value of the solution is lost when the consultant departs. The planning document that is left behind may be of little value relative to the insight gained through the development process.

In this context, development of a Conceptual Design (CD) can be a valuable exercise for collecting functional requirements and, in the process, developing insight and consensus among stakeholder communities in support of a FMIS. This is possible because the CD is, as the name implies, conceptual rather than technical. Therefore, it is possible for a broad range of people to be engaged in a conceptual discussion without the need for specialized training, knowledge, or experience.

For this and other reasons, development of a CD is always a very valuable and worthwhile effort even in cases where a well proven COTS FMIS product is selected. Even the best and most proven COTS FMIS product can fail if the people who will be the users of the system do not have a good understanding of the concepts involved.

At the conceptual level of a CD, it is possible to engage a broad range of people in an open ended discussion about what a FMIS needs to be and how it should function. It can be very useful to have these discussions led by trained facilitators who may also subtly help people develop their thinking about how a FMIS can work for them. Again, this is a valuable and worthwhile discussion even in cases where a well proven COTS FMIS product is selected as the basis for a GFMIS implementation.

People with little or no computer experience who have not previously worked with a generalized automated information system will tend to think in terms of concepts familiar to them. Those concepts may include hand written accounting spreadsheets and transaction registers, as well as file cabinets filled with stylized documents bearing official looking "chops" and original "wet" pen and ink signatures. When viewed from this perspective, the shortcomings of an automated FMIS may seem obvious. For instance, how can a transaction be officially approved without a sheet of paper bearing official markings? How can a payment be made without cash or a check bearing an original ink signature? As questions and challenges like these are raised, it is possible for the people in a conceptual discussion group to develop more

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innovative concepts simply by thinking through the possibilities without being constrained by knowledge of what is technically feasible and what is not.

Other advantages of keeping the general discussion at a conceptual and functional level include:

- It is easier to keep the discussion focused on the particular budget management and accounting framework that will be the basis of a new or enhanced GFMIS;
- It is easier to maintain focus on the business processes the system needs to support;
- Operational-level PFM staff can more readily help identify functional inconsistencies, gaps, and redundancies;
- It is more practical to engage a wide range of people with varying levels of PFM sophistication in systematically discussing proposed reforms to help evaluate impacts on existing systems and processes; and
- It is easier to set people at ease with concepts and terms they are comfortable with.

The product of the information collection and discussions will be a document that describes in broad, strategic terms the major functionalities the GFMIS is expected to provide. Ideally, this will also be a comprehensive representation of a consensus view of what the GFMIS will do, as well as specific statements about what it will not do. It is best to include the specific statements about what the system will not do so that it will be clear to everyone just exactly what is not included. A balanced, objective presentation is always more valuable than an overly optimistic or an overly pessimistic presentation.

In addition, publication of a list of known project and system issues is a good technique to help ensure that CD participants and other stakeholders maintain a realistic view of the IFMIS and the overall development project. This should not be seen as "airing dirty laundry". Rather, it is a well proven technique for enabling a reality check on the system and keeping stakeholder expectations at realistic levels. Throughout the entire GFMIS development and implementation process, including CD development, it is always important that stakeholder expectations be monitored for signs of excess. Scarcie information can contribute to a loss of realism on the part of stakeholders. Project staff should always be careful not to over promise capabilities or gloss over issues.

The broad conceptual requirements laid out in the CD will provide a basis for many other documents that will be developed as part of the requirements gathering phase of system development. For example, it will provide a framework for more detailed functional requirements. It will provide useful background information and a basis for selection criteria for the tendering process to help identify the best FMIS solution to meet local needs.

The discussions leading to a CD may include proposed changes to the government's PFM framework. "A GFMIS project is often embarked upon as part of a broader PFM reform program. The development of a CD provides an opportunity to systematically discuss the proposed reforms and specify their impact on existing systems and processes. Once agreed, a CD can thus provide a permanent record of the intended systems and processes and help avoid unproductive and repetitive debates."10

10 ibid
D. PROJECT GOVERNANCE

A high visibility, mission critical, multi-year, capital investment, government-wide system project like a GFMIS project requires appropriate fiduciary governance to help ensure a successful outcome.

Once a country decides to pursue a GFMIS project, whether a new system implementation or a major enhancement to an existing system, an Executive Steering Committee\(^\text{11}\) (ESC) will be needed to provide executive policy guidance and oversight. The ESC would typically be chaired by a senior PFM official such as the minister of finance or the permanent finance secretary, with representation from key PFM functional areas such as budget, accounting, cash management, debt management, payroll, reporting, line ministry PFM functions, parliament, audit, the central bank, and the tax administration.

The ESC needs to meet at least monthly, with published summary notes following each meeting as an official record of issues and decisions. "Donors and stakeholders should attend and observe, for proper surveillance and interest, obstacles and problems can be addressed and decisions taken to ensure the process of implementation is not derailed."\(^\text{12}\) It may be helpful for the ESC to have a charter, including voting rules, quorum determination, etc., to facilitate the use of voting for decision making.

Important functions of the executive steering committee should include:\(^\text{13}\)

- Serve as a visible demonstration of executive due diligence regarding project issues, decision points, milestones, and budget;
- Provide high level oversight of the tendering process and contract administration;
- Ensure that project related issues are being identified and resolved smoothly and promptly;
- Identify and mitigate cases of organizational friction;
- Serve as a vocal advocate for system characteristics like auditability, transparency, sustainability, recoverability, integrity, accessibility, security, flexibility, integration, and cost effectiveness;
- Ensure continued momentum in the right direction; and
- Ensure equitable attention and consideration for diverse stakeholder perspectives.

In addition to the ESC, there will need to be a number of working groups, or committees, to help develop requirements documents for the system and to work out the details of any associated PFM reform initiatives. A conceptual design (CD) document, as discussed in another section, is an example of the type of document that will be developed using a number of encounter group sessions with various stakeholder communities. As each encounter group is established to discuss PFM reform and/or GFMIS development, the facilitator should begin by establishing consensus within the group regarding the "ground rules"\(^\text{14}\) that will govern the behavior of the group and the people within the group. Essentially, the ground rules should


\(^{12}\) Ibid.

\(^{13}\) Not a comprehensive list.

\(^{14}\) More on ground rules at: http://treegroup.info/topics/handout-groundrules.pdf.
ensure that participants are respectful of one another and all participants will have an opportunity to express their views and ask questions. Ground rule examples include:

- Meetings to start/finish on time,
- Everyone participates, no non-participatory "surveillance",
- Confidential information not to be shared outside the discussion,
- No jargon - use simple, standard terms,
- Stay focused on topic, and
- If unable to attend a meeting, send an empowered delegate who is able to fully participate.

The lead staff person for the core project management team should be designated the project manager for the GFMIS project. The number two position within the core group should be understood to be the deputy project manager. Having a designated deputy makes it easier to cover situations such as illness, vacation, and travel, as well as providing more flexibility in meeting coverage. The project manager should report directly to the project director, or, in the absence of an explicit project director, a senior official within the organization that is assuming ownership responsibility for the GFMIS project, such as the head of treasury or the Finance Secretary.

Where practical, each member of the core project management team should have a detailed position description. The position descriptions should be specific as to the duties, authorities, and responsibilities of each position. In most cases, it will not be practical to include all the authorities being delegated to each staff position within the position descriptions themselves. Therefore, separate delegation letters should be used to explicitly document each official authority.

The project manager will need to make frequent project status reports to his/her direct report supervisor, who is typically the project director, on a regular basis. These status reports will form the basis of high level status updates to the ESC and, more broadly, to the stakeholder communities.

Project Management Team

The core project management team should consist of three to six government staff with solid PFM backgrounds, especially in areas such as budget and accounting. The head of the project management team would normally be the project manager (PM) for the GFMIS project. There should also be a deputy PM to help ensure continuity. Core staff may be augmented with offshore experts, IT/ICT staff, secondees, and others as needed, but the core project management team should be long term government staff with solid PFM backgrounds, especially in areas such as budget and accounting. It should be clear to all that the operational responsibility for the GFMIS project rests with the core PM team and cannot be delegated to any offshore experts, ICT staff, secondees, or any others.

The PM team should have a written charter explicitly stating the team's roles and responsibilities. The charter should also state explicitly what the team is not responsible for in order to minimize the likelihood of any confusion. The charter should be approved by the ESC and signed by the chair of the ESC, as well as the team's direct report supervisor and the head of the core project team. Specific signatories may vary with individual circumstances. The GFMIS
PM team may be charged with a range of essential functions that should be explicitly stated in the charter, including:\(^{15}\)

- Project management;
- Project change control;
- Organizational change management;\(^{16}\)
- PFM reform, including business process analysis and re-engineering;
- Professional PFM community outreach and education;
- Quality assurance;
- Document development and management, including documents about the project and system, including project status reports, system user guides, PFM procedures manuals, as well as documents produced by the GFMIS, including budget and financial reports;\(^{17}\)
- Requirements definition;
- Tender development and management, including development of contract deliverable acceptance criteria and acceptance test plans;
- Contract management, including inspection, acceptance testing, and final acceptance of validated contract deliverables;
- Stakeholder relations, including GFMIS user support; and
- Team building.

Due to the nature of a GFMIS project, the project management team will need adequate equipment to acquire, develop, manage, and distribute a wide variety of project related documents and materials. Because of this, PM teams are often able to justify the acquisition of newer, more capable ICT equipment to enable them to be more productive. However, it is not always prudent for the PM team to have better ICT equipment and faster data communications capabilities than are generally available to target GFMIS users. Experience shows that systems are more likely to perform reasonably for the majority of end users when the development team faces the same ICT limitations on a daily basis as the majority of end users. Sufficient is good enough.

A project team "portal", such as Windows SharePoint Services,\(^{18}\) is a powerful capability that can enable a PM team to leverage scarce staff time by facilitating information sharing among team members without the need for more meetings. Windows SharePoint Services, available as a no cost add-on to Microsoft Windows Server, is an example of a powerful online information portal that provides team support services to help keep project groups synchronized. Capabilities include group calendars and contact lists, collaboration tools, document

\(^{15}\) Not a comprehensive list.

\(^{16}\) See: http://changingminds.org/disciplines/change_management/change_management.htm

\(^{17}\) Some documents and financial reports will be highly stylized and complex, such as government financial procedures manuals and national budgets.

\(^{18}\) Windows SharePoint Services (see: http://en.wikipedia.org/wiki/Windows_SharePoint_Services.) is available as a no cost add-on to Microsoft Windows Server. Microsoft SharePoint (see: http://office.microsoft.com/en-us/sharepointtechnology) is representative of a genre of products that support online team collaboration, as well as document management and retrieval. Other products in this genre include eXo Platform, an open source, enterprise-scale portal and content management system (information at http://www.exoplatform.org), and Atlassian Confluence, an enterprise Wiki portal (information at http://atlassian.com/confluence).
management, and help desk issue tracking, in addition to other useful features. SharePoint is cited here only as an example. Similar capabilities are widely available from many other sources.

Once a project team gains experience and sophistication in the use of a team portal such as SharePoint, they are likely to see the benefits of extending similar capabilities to stakeholder communities once adequate training is provided. The portal can serve as a ready way to make system user guides, financial procedures manuals, PFM reference materials, periodic financial reports, contact information, help desk status information, event calendars, and other materials available to system users and other stakeholders. In addition, because access to portal material is controlled, only those with a legitimate need will be able to view the documentation.

High performance team techniques are frequently used in combination with a team portal and other collaboration enabling technologies. A high performance team is usually thought of as a small group of talented people assembled and trained to take on a high priority project. A group of people normally requires some time to learn to work together, and may never achieve a high level of effectiveness. In contrast, a high performance team is trained to quickly work effectively as a team and sustain that high level of effectiveness over an extended period of months or even years.

The shared team experience of being oriented and trained in the use of high performance team techniques is a team building exercise in and of itself. High performance team techniques should be introduced at the beginning of the project as the GFMIS project team is being assembled. All members of a new project team should receive training at the same time in order to develop a common understanding among team members. If the team likes the concept and has a positive experience, word will spread that the techniques are valuable in helping to ensure the success of other projects and programs. As the overall government gains experience with high performance teams, the capability will help ensure higher probabilities of success across a range of national programs.

E. BUSINESS CASE

Sustainment related activities, mentioned above, are too often given inadequate attention, ignored, or, at best, rushed through. It is important for everyone involved to understand that capital assets, including government financial management computer information systems, must be maintained over the life of the asset in order for it to remain viable. When assessing the cost of a new IFMIS, there should be explicit recognition of the entire life cycle cost of the investment, including sustainment costs, not just the initial startup costs. With adequate maintenance, a GFMIS may routinely be expected to have a useful life of at least five years, and in some cases as much as 25 years or more.

From a budget perspective, significant costs associated with acquiring an information system do not end with the completion of initial system deployment. When initial implementation is complete, regular and recurring operations and maintenance (O&M) costs start to accrue and these can be quite significant. These O&M costs need to be factored into the

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next year's budget and future years as regular and recurring costs for all years in which the system is to be operated and maintained. Some examples of regular and recurring O&M costs include annual software license fees, annual post-implementation technical support, adaptive system modifications, regular staff training, data storage and archival, off-site backup and other continuity costs, hardware upgrades, and many other significant miscellaneous O&M costs.

Considered from a life cycle point of view, the initial cost of implementing an IFMIS may turn out to be relatively small when compared with the total cost of ownership over the entire useful life of the system. From a budget perspective, the annual portion of the total lifetime cost of the system needs to be included in the annual budget each year for the life of the system in order for the system to be properly maintained so that it can remain useful.

Because acquisition costs are usually a small fraction of the total lifetime cost of a system, decisions about which system to buy should consider the estimated lifetime cost of each option. For example, when considering the purchase of a GFMIS, two categories of products to consider are commercial off the shelf (COTS) and open source. The commercial product may cost $20,000 while a comparable open source product may only cost $2,000. In cases like this, decision makers may be tempted to immediately conclude that the $2,000 open source product is a better value. However, when total lifetime costs are compared, the COTS product may have an estimated lifetime cost of $250,000 while the "cheaper" open source product may have an estimated lifetime cost of $350,000. The COTS product may actually turn out to be cheaper because it needs less IT support staff time to operate and maintain. In addition, the COTS product may have more bundled features that represent extra cost items for the open source product. The point being that the low cost item is not always the least cost item over time. This paper however is merely giving an example and neither recommending COTS or other open source software. Decisions would need to be based on the merits of each case.

When making a transparent determination about which product to purchase, a useful format to lay out all considerations and justify a purchase decision in business terms, including cost, is a business case, also called a business case analysis report. There are many business case formats available online, any one of which can be used. The important point is that investments in capital equipment, including computer information systems, should follow a deliberate and transparent business decision making process. Purchase decisions should be based on business considerations which determine the actual cost and the relative advantages and disadvantages of one solution over another.

F. TECHNOLOGY SELECTION

A fundamental choice in acquiring computer software is whether to "buy" or "build". Buying application software is a reference to Commercial Off-The-Shelf (COTS), or packaged, software. Another type of packaged software that is gaining popularity is "open source" (OS) software. Building a computer application, on the other hand, refers to the development of

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custom, one of a kind software. Custom software is also referred to as “bespoke” or “tailored” software, as well as a variety of other terms.

The term "packaged" software is a reference to retail versions of COTS software which, in the past, were sold in brightly colored packages that usually included documentation and media. Relatively little software is sold this way any longer, but the analogy and the term persists. Both COTS and OS software are generally considered to be packaged software.

Custom financial software, on the other hand, tends to require considerable time and effort to develop, so it is usually more costly and has fewer features than COTS software. The USAID\textsuperscript{22,23} Fiscal Reform and Economic Governance Best Practice Notes states that "custom systems generally take much longer to complete than expected. The work involved in developing . . . then testing . . . and maintaining . . . is colossal and prone to costly errors and delays." In addition, documentation, training, and support are less readily available for custom software and, therefore, also tend to be more expensive. A World Bank study finds that IFMIS systems take an average of about seven years to implement and have normally tended to exceed the cost and time parameters originally envisaged. Such implementation issues indicate a need to minimize application and customization issues that may arise from the use of custom software when implementing an IFMIS, especially in small countries with limited resources.

Customization is sometimes chosen as an approach for the wrong reasons. Custom software can be more readily tailored to perpetuate inefficient manual processes, maintain non-standard financial principles, and avoid the transparency of a well designed COTS FMIS. Because COTS FMIS software packages facilitate compliance with international financial standards, as well as transparency and auditability, custom software may sometimes be selected to avoid the discipline and rigorous methodology typically associated with a COTS solution.

The issue of COTS software not meeting country specific requirements is sometimes cited by users. Payroll software is an example where Australian or other country-specific systems may very well be inappropriate for other countries with very different tax and labor rules. However, third party products and vendors are usually available to address such issues. In general, where a country-specific requirement is not met in COTS software, it is good practice to review the justification for the requirement.

Since COTS and OS products are typically engineered for optimal compliance with international financial standards, a legal issue that arises locally with COTS software may indicate a country's laws are at odds with generally accepted international financial standards and best practices. However, in a case where a non-compliant financial system can be reasonably justified, there may in fact be a valid case for a partial or complete custom system.

Packaged software, which may be COTS or Open Source (OS), usually represents better value, as well as a more practical and sustainable solution, especially for smaller countries. This assessment of the advantages of packaged software is perhaps even more valid in the case of an IFMIS than for other types of IT systems because of the greater architectural complexity of an integrated financial system. Using a packaged software approach helps keep system design


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issues to a minimum, thereby contributing to a more manageable implementation. This is especially important in resource constrained situations as are common among small Pacific Island Countries.

**The type of FMIS software found to be operating in the six countries covered by earlier PFTAC studies is COTS software.** Because of this, the host nations find it easier and cheaper to obtain training and technical support for their systems than would be the case if they had chosen custom FMIS software. For these and other reasons, the COTS FMIS software found in the Pacific countries reviewed by PFTAC have been operating successfully for a number of years.

**Another fundamental choice in acquiring computer software is whether to select commercial or "open source" software.**

OS software is typically supported by non-profit entities including universities or industry user groups. Because the software is not marketed by a profit driven enterprise, licensing may be much less than for comparable commercial software. However, since OS software is not actively marketed like COTS software there are no product representatives to respond to tenders, although commercial system integrators may perform this function in some cases. The tradeoff between COTS and open source software is often the greater need for local, ongoing technical expertise to manage, operate, and support open source software.

**In order to realistically compare the cost of commercial vs. open source software it is important to evaluate the total life-cycle cost of open source software compared with the total life-cycle cost of commercial software.** For instance, if an open source product is cheaper to license but requires more staff resources to support it, then the cost of the extra staff should be considered in estimating total cost of ownership for the product. Some of the better commercial software products have built-in, automatic, self-administering capabilities that reduce the need for expensive system administration resources, thus making them cheaper and easier to operate. Built-in self-administering features tend to be less common with open source software.

**When making a decision about which type of software to buy, a business case approach is important to evaluate and justify the choices.** The business case approach is discussed in section II.(E.) of this report. In the present context, it is sufficient to say that choosing which type of software to buy should be a business decision. Cost should be a part of the information considered, but other factors including risk, strategic relevance, appropriateness for regional or individual country circumstances, and ready availability of trained, talented technical support staff should also be considered. This is especially relevant in the Pacific.

Some useful considerations for making a FMIS software selection and a quick reference list of key features appears in Annex 2.

Although discussed in other sections of this document, e.g., section II.(E.), it is worth noting again that a business process review is an important aspect of any FMIS project regardless of which software type is selected. Also, in addition to a business case analysis, a review of financial procedures in the form of business process analysis is always important no matter which type of software is selected. A comprehensive business process review should result in efficient financial procedures that are compliant with law and regulations. This is an essential outcome in all cases.

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G. SYSTEM LIFE-CYCLE MANAGEMENT

A systems development life cycle (SDLC)\textsuperscript{26} program management approach is essential for successful implementation. SDLC management stresses that capital assets, including high value IT systems such as a GFMIS, which represent high value public investments, require appropriate management, security, and maintenance throughout the useful life of the asset. Security and maintenance are important for the preservation of the value and usefulness of the capital asset for the good of the country. In that sense, a FMIS is similar to capital assets such as office buildings or vehicles. In all cases, it is an essential responsibility of government to preserve the value and usefulness of public capital assets. It is important to consider that costs associated with maintenance are separate from and in addition to the cost of operations.

PFM information systems require regular maintenance in the form of software and hardware updates, as well as adaptations needed to preserve the usefulness of the system. Adaptive and perfective maintenance is needed to adapt to changing requirements and fix minor problems that manifest themselves in routine operations. In addition, regular backups, database reorganizations, security checks, quality assurance analysis, and other routine technical and administrative activities are required to sustain system performance and integrity. Periodic audits and assessments are always a good idea.

Of course, maintenance activities have direct or indirect associated costs. These may include the cost of performing maintenance as well as follow-on costs for implementing recommendations arising from assessments. As with any system enhancement or upgrade, business case analysis may be used to determine which maintenance activities represent the best value. For example, it is not always necessary to install new versions of software simply because the vendor has issued a new release. Some new releases offer valuable new functionality, and others may not.

From a life cycle perspective, risk factors, recoverability, and continuity of operations need be considered. Fires, floods, rising ocean levels, cyclones, earthquakes, and even civil disturbances need to be factored into sustainability plans, as well as more mundane risks such as equipment and electrical supply failure. Sustainability plans should include elements like a timeline for recovery that considers variables such as the time that may be needed to obtain replacement components.

H. TECHNOLOGY TRANSFER TECHNIQUES

A PFTAC report\textsuperscript{27} on Internal Audit in the region points to a lack of integration in computer systems around the Pacific. The report states that "While several Pacific countries have installed computer systems, in most cases these systems are neither integrated nor user friendly. The systems were bought on piecemeal basis from relatively small vendors. While this saved the cost on initial acquisition, apart from a lack of integration it entailed additional manual

\textsuperscript{26} For more information regarding SDLC, see: \url{http://en.wikipedia.org/wiki/Systems_Development_Life_Cycle}.

efforts, including uploading of data in the related systems. In some cases, the users were not adequately involved in the implementation of the systems while the internal auditors were not involved at all. As a result, the systems are not very user-friendly nor did they provide adequate audit trail. The non involvement of internal auditors in the system development is not in line with the IT Auditing Standards."

Systems implemented primarily by off-shore "expert" consultants are not likely to be sustainable. To help ensure that an IFMIS can be successfully operated and administered once it has been implemented, it is essential that key host nation staff\footnote{This should include, at the very minimum, accounting and budgeting staff in the Ministry of Finance and some important user line ministries.} be directly involved throughout any IFMIS implementation. Host nation staff must develop a sense of ownership towards the system if it is to be sustainable. This seems not to have been the case with many GFMIS implementations in the Pacific, where the transition from implementation to operations and maintenance has not always been handled smoothly and seamlessly.

A technique that can help ensure a smoother transition from development, often under the technical leadership of offshore experts, to operations and maintenance (O&M), often under the technical leadership of local country staff, is to assemble the local team early in the requirements definition phase and make sure they understand the responsibilities they will be assuming in the future. Often, local staff do not realize they will be assuming operational responsibility for the system in the future. Or, if they do know, they may not have the background and experience to fully understand what is being required of them.

Therefore, it can be very helpful to assemble the team early in the design and development phase of system implementation to review their future job responsibilities with them in detail. It should also be impressed upon them that they need to be intimately involved with the design and development of the system in order to have an in depth understanding of the system configuration and capabilities. This understanding will serve them well later.

In addition to technical knowledge of the system, it is important that O&M staff be involved in outreach efforts to stakeholders during the design and development phases of GFMIS implementation. It is important that the O&M staff be aware of and sensitive to stakeholder issues and concerns. The best way to gain this awareness is to participate in requirements gathering sessions with stakeholder groups as part of requirements gathering.

IFMIS development efforts are sometimes hampered by inadequate initial involvement by host nation personnel. Host nation personnel may sometimes lack assertiveness in asking difficult questions and actively seeking information. This is an issue because they need to be actively involved in working out the various decisions, assumptions, choices, and defaults associated with configuring a complex information system. Unless these people have been through the systems development process before, there may be insufficient appreciation on their part of how important it is they stay intimately involved on a daily, detailed level while the system design and implementation work is underway.

Crucial technical knowledge about the system may be lost if it is not transferred to host nation staff. Where host nation staff are not adequately engaged in system planning and implementation, essential knowledge regarding a system's inner configuration will be lost,
perhaps permanently, as the experts leave. "Leave behind\textsuperscript{29} documentation is inadequate to compensate for the lack of technology transfer and the loss its absence represents.

**Outside experts always run the risk of inadequately understanding and appreciating some of the situational nuances which experienced host nation staff can bring to the design process.** This is yet another reason why host nation staff need to be fully involved at all stages of system design and implementation.

**There is a risk that tight time lines may discourage offshore experts from addressing some crucial issues when host nation staff involvement is inadequate.** Offshore experts are usually working on a tight schedule and in unfamiliar surroundings. As a result, they will tend to be focused on the technical task at hand, meeting contractual deadlines, and preparing to depart. In a situation like that, the offshore experts have little incentive to be inquisitive for fear of inadvertently discovering the need for changes in approach and/or design. Changes in systems approach or design can disrupt project schedules, which costs time and money, and are therefore not a priority for offshore experts.

**As a result, important details may be neglected.** The combination of these two factors, relative lack of assertiveness on the part of host nation staff and the focused attitude of the offshore technical experts, may almost be viewed as a sort of conspiracy of silence. In this case, it amounts to a conspiracy to keep the project moving by glossing over inconvenient, but possibly important, details.

**Human resource development requirements remain inadequately defined as contract deliverables.** The lack of incentive on all sides to be inquisitive is compounded by the fact that project terms of reference (TOR) usually do not adequately provide for the human resource development aspects of a successful system implementation. That is, insufficient time is usually budgeted for less technical activities such as outreach to users and stakeholders, as well as socialization of key conceptual details of system design. Training, on the other hand, will usually be included in the TOR. However, even in cases where training is required in the TOR, acceptance criteria and quality assurance criteria frequently do not include metrics standards for assessing the effectiveness of the training. It is more common to see training requirements stated in terms of the number of hours of training to be provided without regard for whether anyone learns anything or not.

**Differences in perception are normal but need to be addressed firmly.** Differences in perception separating local host nation staff and offshore technical experts are to be expected, as well as TOR shortcomings with respect to human resource development. However, these issues can be successfully mitigated using a number of techniques as follows:

- **Social integrators.** The host nation and/or the vendor may assign social integrators whose function is to work in parallel with the systems integrators to achieve a more holistic project implementation. Social integrators work on integrating the human resource components of a system, while system integrators are focused on integrating hardware, software, data, and information. Their purpose includes change management, team-building, stakeholder community management, socialization, interpretation (e.g., culture and language), and motivation.

- **Social integrator role.** Social integrator staff will help arrange meetings, training sessions, and social functions to ensure communications among project and stakeholder

\textsuperscript{29} "Leave behind" documentation is a common term for user and technical documentation provided by system developers as a deliverable item when the system is delivered to, and accepted by, the customer.
groups. They are the ones to follow-up and ensure that required attendees appear for scheduled training sessions and meetings and ensure change management. They help develop and socialize ground rules for meetings and other forms of interaction. They will be the ones to help ensure that host nation counterparts are constantly accompanying the offshore technical experts, actively engaged in the technical details of installation and configuration. The social integrators need to be familiar with the contractual terms of reference (TOR) to help ensure all terms and conditions are fully met to the mutual satisfaction and benefit of all parties.

- **Post-implementation support.** Many systems integration projects are defined as being of relatively short duration, e.g., four weeks, six weeks, or some similar timeframe. A project may be considered successful if the system works as designed and host nation staff are able to sustain it in static mode absent any updates, fixes, or minor enhancements. However, the best information systems are not static but dynamic. An effective information system must remain relevant as stakeholders become more sophisticated, as needs change, as COTS software vendors introduce new product versions, and as other inevitable changes occur. Therefore, ongoing post-implementation support will generally be needed for most information systems.

- **Evolutionary enhancement** is an important part of the life cycle of a system. An enlightened system support relationship will reflect this fact. For example, in Vanuatu the government established a long term, on site relationship with part of the original FMIS development team. As a result, the financial management system has remained viable and relevant by continuing to expand, adapt and evolve beyond the capabilities of the originally implemented system. Also, knowledge and technology transfers are ongoing. In this example, the FMIS continues to be highly successful in supporting the evolving needs of an increasingly sophisticated stakeholder community.

- **Outreach.** An important element of successful system rollout is identifying the system stakeholders. This is made more difficult in many instances because some stakeholders may not recognize themselves as stakeholders. One of the important functions of a social integrator, as mentioned above, is to help host nation staff recognize themselves as stakeholders. For example, auditors, internal and external, have a stake in any FMIS/IFMIS as users and in their responsible role of ensuring the validity and viability of essential public resources. Auditors need to insert themselves into the processes that define specifications for any new information system, in part to ensure that technical specifications include features to facilitate the auditing of any new system. Some new systems may even include automated "self-auditing" capabilities that can be extremely useful to the audit community. Likewise, the budget, planning, legal, human resource, economic, and end-user stakeholder communities, among others, should be included in the outreach process.

- **Responsibility vs. authority.** Those with responsibility must have adequate authority to fulfill their responsibility. Authority may be delegated, but responsibility cannot. Inexperienced managers may sometimes try to delegate responsibility without authority. This frequently causes problems as people assigned to lead a project have no authority to get things done. Those assigned to lead a project must have appropriate delegated authority or it may negatively impact the project.

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30 System maintenance consisting of evolutionary enhancements and routine software release level updates is sometimes referred to as "adaptive and perfective maintenance". Where this type of more sophisticated maintenance is present, it represents positive evidence of system sustainability.
Acceptance of system deliverables. Acceptance criteria for system deliverables need to be clearly specified. Those responsible for accepting deliverables for the government need to fully understand and accept that responsibility. Evaluating project deliverables against specified criteria is a good activity for the auditors on the project team to be involved with. System acceptance testing is best accomplished with a test plan. Examples of acceptance criteria that may be used as part of a test plan for an IFMIS may include:

- The number, type, and correctness \(^{31}\) of delivered and custom reports should be validated, particularly reports required by law or precedent, including formats to be matched;
- Acceptable GFMIS response time values require some thought because developers can only be held responsible for components they control (e.g., developers cannot be held responsible for a slow network performance if they were not involved with developing the network);
- Auditors need to be involved in establishing requirements for audit information and evaluating the quality of system produced audit reports and data sets,
- Stress testing may be used to ensure that a specified number of users can work on the system at the same time, it generally requires a number of users and administrators performing scripted activities concurrently, however, like response times, developers cannot be held responsible for system components they do not control; and
- Testing administrator access control capabilities to ensure that requirements are met involves establishing userIDs and attempting to access test data.

Formal transfer of responsibility. As major system milestones are met, especially where there is to be a turnover of responsibility from offshore expert staff to host nation staff, it is beneficial to have an official ceremony to clearly show that responsibility has been transferred. At the same time, it is also good to document the transfer so it is clearly recorded for audit and public record purposes that a transfer has officially taken place.

I. OUTREACH

Because of its mission critical role in government, the MoF typically has unique responsibilities, including a responsibility to communicate regularly with all components of the government. Because MoF financial systems usually have an established point of presence in nearly every line ministry and department, and although the people who interact with the MoF systems may be employees of the local ministry or department, the functions they perform are financial.

Therefore, it falls to the MoF to extend outreach efforts to the community of people who use MoF systems in the performance of their job functions to ensure that these people have the information and tools needed to accomplish their duties. It also falls to the MoF to manage changes brought about through MoF systems and procedures.  \(^{32}\)

\(^{31}\) A standard set of validated test data is needed to test report logic. Reports that are functioning correctly will produce report totals and subtotals that match known values.

\(^{32}\) For more about facilitating and leading organizational change management, see: http://changingminds.org/disciplines/change_management/change_management.htm.
Policies and procedures need to be documented in order to be shared. Undocumented procedures have a number of issues as follows:

- Procedures that are not written cannot be readily shared with others;
- Unwritten procedures cannot be easily referenced;
- Consistent results are more difficult to achieve and sustain across a large organization;
- Training new staff is more difficult without documentation;
- Undocumented procedures tend to change over time with no way to validate or reset; and
- Undocumented procedures are difficult to audit and to automate.

So, there are a number of reasons why procedures need to be well documented in support of good governance and transparency.

Online electronic documentation has a number of advantages over paper as follows:

- **Immediate Update** – A soon as updated online documentation is posted, all users have immediate access to the latest version. No lag time for printing and distribution.
- **Reduced paper usage** – Online documentation saves paper because users print only the pages needed, or none at all, and no extra copies need to be printed to ensure everyone has access to paper documentation.
- **Electronic word search** – Online documentation is electronically searchable, so information can be located quickly and easily.

In maximizing outreach to users, online virtual meeting capabilities, including voice and document viewing, can be very useful, subject to ICT infrastructure constraints. Virtual meetings can be a particularly efficient means of ensuring participation by outer islands based staff while not requiring them to spend many hours or days travelling. With careful pre-planning and testing, bandwidth requirements can be kept to very modest levels. It should be emphasized again that careful coordination and pre-planning is required in some cases to enable government staff on outer islands to participate virtually in meetings without the need to travel. Most permanent government offices on outer islands will have some form of communication in order to handle communications with central offices for administrative matters such as payroll, budget, status reporting, and other routine matters. These communication links may be used, or expanded in some cases if needed, to enable virtual participation in meetings.

A community information sharing capability, or portal, should include the following features:

- Current information highlights;
- Online document storage and ready retrieval (e.g., user guides, historic and current reference documents, policies and procedures, training materials);
- Keyword search capability;
- Community calendar of events;
- Community list management;
- Appropriate security features; and
- Administrator access controls (i.e., administrators control what information can be seen by what users).
Making system information routinely available to new users without interference from gatekeepers is helpful to new staff and enhances the transparency of government procedures.

A less technical outreach technique involves the use of "social integrators", whose overall function is to help stakeholders be stakeholders by recognizing and adopting the appropriate roles and responsibilities of stakeholders. For example, auditors need to be thinking ahead to how they plan to audit the system. Some systems include automated "self-auditing" capabilities that can be extremely useful to the audit community, but may require some configuration at the beginning in order to be useful. Budget formulation and execution are other areas where advance planning can make the system much more useful that it will be without. For example, it is best that requirements be developed at the start rather than attempting to adapt general system capabilities to specific requirements after the system becomes operational.

The key to good community outreach is open communication and consistent use of enlightened leadership techniques. Successful community leaders contribute to the welfare of the user community using techniques such as the following:

- Outreach - Regular communications with users through meetings, e-mail, newsletters, and/or telephone calls,
- Documentation - Ready access to user guides and other system documentation,
- Surveys - Periodic user surveys and published summarized results,
- Change List - Published lists of community issues and "wish lists" of most wanted system changes and enhancements, and
- Empathy - Demonstrated concern and empathy for the quality of the user experience.

**J. THE DIFFICULT TRANSITION FROM DEVELOPMENT TO OPERATIONS AND MAINTENANCE**

One of the more difficult transitions in the life cycle of a FMIS/IFMIS project is the transition from development to O&M (operations and maintenance). This transition needs to be carefully planned and well communicated to the stakeholder communities. All operational aspects need to be tested in advance to identify and resolve as many obvious issues as possible. As usual, issues and issue resolutions should be documented in the project issues database for future reference.

As the system is being prepared for O&M deployment, help desks should be staffed to facilitate collecting information about any and all apparent system anomalies. As issues are discovered, they need to be carefully documented and resolved. When users see issues being documented and resolved, it tends to build their confidence in the system. Documenting issues for ready access by help desk staff, IT support staff, system administrators, and others, will help to minimize the need to re-learn over and over how to resolve issues.

At the same time, while individual issues are being addressed, it is also important for someone to be looking at the issues and anomalies from a more global perspective to look for patterns and root causes. That is because issues and anomalies are frequently symptoms of more fundamental issues. It requires a knowledgeable individual with a global systems perspective to recognize patterns and discern root causes from cryptic trouble reports. This is another example of why it is a good idea for operational staff to be involved from the beginning in the design and implementation of the system so they will be familiar with the overall design concepts underlying the system.
Part of a system rollout includes administrator functions of granting access to data and system features. Security schemes and access control schemes are important parts of system O&M that require specific evaluation. The FMIS/IFMIS may be working perfectly, but there may be access control problems that are completely separate and independent of any equipment or software malfunction. From this example it can be seen that a comprehensive test plan can be very involved with many, many system features and functions that need to be evaluated.

Finally, as the testing checklists are completed and the more obvious issues are resolved, a date and time will be set for elements of the system to go into production operations. In the early stages, it is important for the help desk(s) to be staffed and issues to be resolved or explained promptly. It is possible that some issues will not be fixed immediately due to technical complexity of other factors. In those cases, it may be necessary to develop "work around" techniques and procedures. Clear and rapid communication with all active users will be important at this stage. At this point, it becomes apparent why having a messaging capability built into the FMIS/IFMIS user interface is a useful capability to have.

When a system is first operationalized, there will tend to be a flurry of issues. Some will be actual problems, and some will be misunderstandings and misperceptions of how the system is supposed to operate. It normally takes awhile to work through the initial flurry of activity. During this time, it is important for everyone involved in developing and administering the system to demonstrate competence and swift, competent responses to issues both real and perceived. The experience of the first few weeks will play a big part in setting user expectations for the years ahead.

Finally, after a few days, the support staff will develop an operational rhythm and production support activities will begin to become more routine. Following a reasonable period of adjustment, the next phase of deployment accompanied by an additional flurry of issue resolution will take place. This will be handled a bit more smoothly than the first stage, and then another stage will be operationalized and handled in turn until all initial functions are implemented and all initial users have service.

K. FACTORS, NEED, AND METHODS FOR DEVELOPMENT OF GOVERNMENT WIDE PERSPECTIVE FOR THE IMPLEMENTATION OF AN IFMIS SYSTEM

In order for a government-wide "integrated" FMIS (IFMIS) to be workable, it is important that all PFM activities use a consistent chart of accounts, consistent financial data structures, and consistent financial procedures. Consistency must permeate all aspects of PFM activity, including budget, accounting, revenue, cash management, payroll, and purchasing, as well as less mainstream PFM activities such as audit, debt management, and economic planning. To achieve and maintain PFM consistency on a government-wide basis requires well documented procedures and systems, as well as a uniformly well trained and up to date cadre of PFM staff in all PFM functions across the government.

In the absence of a consistent, uniform government-wide PFM perspective within the overall PFM community, the substantial challenges associated with implementing and sustaining an IFMIS are amplified. However, establishing and sustaining a well trained, up to date cadre of PFM professionals with a consistent PFM perspective may itself seem like a daunting challenge. Fortunately, there are some relatively inexpensive, proven, readily available,
easy to use solutions available to help resolve the issue of government-wide PFM community synchronization.

In cases where the ICT infrastructure needed for an IFMIS is in place, that same ICT infrastructure may also be used to train, inform, and motivate the users and stakeholders of the government-wide IFMIS. An online PFM information "portal" can be readily added to government-wide ICT infrastructure as an inexpensive incremental add-on capability.

A portal is an online information repository where useful information is organized for ready access by people who work in the same professional domain, such as PFM. In the case of a government-wide PFM community of practice (CoP), an online information portal can make useful, up to date information, such as the following, readily available to the entire community:

- GFMIS user guides;
- Government financial procedures manuals;
- Bulletins, circulars, regulations;
- PFM professional reference materials;
- Periodic financial reports, ranging from the national budget to daily status updates;
- Contact information to facilitate professional networking and users assisting other users;
- Help desk status information; and
- Event calendars listing training opportunities, government-wide meetings, budget deadlines, etc.

Portals provide a cost effective means to securely promulgate a consistent base of information to help synchronize the knowledge and awareness of distributed professional communities. In the context of government-wide integrated financial management information systems (IFMISs), this is an essential capability for establishing and sustaining consistent IFMIS data structures, policies, and procedures by ensuring a uniformly informed PFM CoP. Online information portals facilitate PFM CoP consistency in a number of ways, including the following:

- Rapid information dissemination – Newly posted information is instantly available to the entire CoP;
- Consistency – Everyone sees the same community-wide information at the same time;
- Rumor control – Timely dissemination of credible official information reduces the appeal of unsupported rumors;

33 A Community of Practice is a term that describes a group of people who work in the same professional domain, such as PFM. More information at: http://en.wikipedia.org/wiki/Community_of_practice. The Swiss Agency for Development and Cooperation is promoting an online approach to learning for development. More information at: http://www.communityofpractice.ch/.

34 Rapid, uniform information dissemination not only helps sustain government-wide PFM consistency, but also makes for a more agile organization due to the speed at which the entire PFM community can be notified of changes. Enhanced agility means a more responsive IFMIS, which enables rapid redirection of financial resources in response to crisis situations, including economic, civil, and natural disaster emergencies.
Counter tribal knowledge – Making official information readily available to the entire CoP minimizes the sometimes disruptive effects of unofficial "tribal" knowledge;

Targeted distribution – Information access controls permit specific groups to be targeted with information specific to defined CoP interest groups; and

Active change notification – Portal software can automatically notify CoP members when important information updates are available, eliminating the need to periodically check the site for updates.

As noted in a previous section, the same portal concepts and technology that can be used to support high performance teams at the project level can also be applied to on a wider scale to supporting government-wide communities. The same concepts and technology can also be applied at a country-wide level where the interest group community is comprised of all citizens of the country, as well as interested parties from around the globe.

L. INVOLVEMENT OF STRATEGIC PARTNERS - NEED AND METHODOLOGY

There are a number of entities that may be viewed from within the PFM community as potential strategic partners for one or more aspects of government financial operations. Candidate strategic partners include:

- Banks and other financial institutions
- Credit card companies
- Software vendors
- ICT service providers
- Professional organizations
- Regional interest groups
- International aid organizations
- International trade and financial organizations
- International standards setting bodies
- Universities
- Travel and shipping companies, and
- Many more

For a government willing to implement something new and innovative, there can be benefits to working with partner organizations on something like a demonstration project. Many organizations are sometimes willing to offer support and resources to help launch a demonstration project that may generate wider interest and publicity, or simply to demonstrate the feasibility of a particular technology. For the host country, a partnership provides an opportunity to spread the risk, reduce cost, and potentially end up with a useful system or facility.

Examples of potential partnership projects include:
• Bank partnering – Governments wishing to phase out payment receipts in the form of cash and checks due to the associated risk and overhead may consider partnering with banks to develop innovative cashless receipts procedures;\textsuperscript{35}
• Tax and customs data sharing – Taxing and customs authorities may wish to partner with other regional countries to establish a regional registry of unique tax IDs for taxpayers and traders;\textsuperscript{36}
• NGO partnering – Partnering with specialty NGOs such as the Rural Internet Connectivity System (RICS) which supports Internet connectivity from remote islands;\textsuperscript{37} and
• Document management – All countries have a need to publish financial documents like the annual budget, procedures manuals, and periodic financial reports, but few have a systematic document publication capability, and fewer still have a means of maintaining a long term, searchable archive. Countries in this situation may wish to identify partners willing and able to assist with developing a document management facility for PFM documents, or perhaps a generalized government facility capable of also handling eGovernment requirements, possibly with donor partners in regional organizations.

M. REGIONAL COORDINATION AND EXPERIENCE SHARING - METHODOLOGY AND RESOURCE SHARING

Experience from around the world suggests that important benefits can be potentially realized from regional coordination among governments in areas such as PFM. In particular, the Caribbean is a region consisting mostly of small island countries that have much in common with many of the Pacific nations. However, regional coordination seems much more routine and institutionalized in the Caribbean, proving that it can be done. If it can be done in the Caribbean, it can also be done in the Pacific. Perhaps it will be possible to do it better in the Pacific. An obvious difference, however, is the greater scale of distances separating Pacific island countries which makes for more of a logistical challenge.

In the Pacific, most countries seem to already have some type of FMIS in place and operational, so there are no known immediate opportunities for regional coordination in initial FMIS development projects. Based on PFTAC review of the FMISs in six PICs, each country seems to have developed a unique, one of a kind FMIS. This is similar to the Caribbean, where each country has a unique FMIS. However, nearly half of the Caribbean countries are

\textsuperscript{35} Partnering at the national level with selected banks: The terms, conditions, and cost for providing e-services may be very reasonable as this is likely to be a competitive opportunity among financial institutions. Experience has shown that careful negotiation may result in banks paying for the privilege of assuming electronic workload formerly handled through manual procedures performed by government staff.

\textsuperscript{36} Regional cooperation for enforcement of taxation of income earned in another country and for harmonizing rules of double taxation. Example: Establish comprehensive e-service facilities including e-filing, e-payment and electronic exchange of taxpayer data; may also facilitate an Advanced Cargo Information System (ACIS) and Advanced Passenger Information system (API) to streamline customs operations.

\textsuperscript{37} RICS states they have worked with a number of Pacific countries, including Cook Islands, Federated States of Micronesia, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. The RICS solution is intended for remote islands for schools, medical facilities, and agriculture. It could also support remote customs, tax, finance, and bank functions. More at: http://pacifics.net/index.php?option=com_content&task=view&id=44&Itemid=1
using the same COTS FMIS product, SmartStream. In addition, the ASYCUDA customs system is widely used throughout the Caribbean. This degree of commonality has been very encouraging to PFM officials in the Caribbean, and a number of small regionally coordinated projects have emerged.

For example, one of the Caribbean countries developed a cashiering module that works with SmartStream. A second Caribbean country that also uses SmartStream then requested a copy of the module for their use. The second country is now successfully using the regionally developed module with their SmartStream implementation. Since the module is not a commercial product, it was given to the second country at no cost. This is but one example of the type of benefit that can potentially be realized when common technology is used regionally. Other potential benefits to be realized from regional coordination may include:

1. Financial reports – Countries frequently cite issues in developing and adapting new financial reports. A potential regional approach would involve pooling resources from two or more countries to develop a PFM "business intelligence" solution, including relatively easy to use report writing and analytical tools. This approach is being tried with some apparent success in the Caribbean, with Barbados as the lead country and COGNOS as the business intelligence solution.

2. Tax systems – Many countries have similar tax schemes. A regional tax systems approach could save as much as 25-60% for each implementation by using similar analysis, data structures, software, documentation, reports, and training. Other opportunities for cost avoidance exist with common plans for disaster recovery, security, system and data administration, audit, system sustainability, as well as other areas. Information sharing is also an option via a system such as a VAT Information Exchange System (V.I.E.S.) or a regional tax and customs risk and intelligence database.

3. ASYCUDA – Widely installed in countries around the world, ASYCUDA is a highly regarded system for customs administration and revenue collection. A regional approach to customs software may involve activities such as sharing technical expertise, peer support for system upgrades, backup and recoverability, report development, data exchange, and many other areas. There may also be opportunities for cost savings through group licensing.

4. Common FMIS data – An ambitious opportunity for regional coordination exists with development of a regional FMIS data model and generalized transition plan. Of course, to be practical the model would consist of a standard core CoA and data encoding. The standard core would be adaptable to unique local requirements by using local extensibility. Such a model would enable countries to share FMIS software, reports, and business intelligence tools, as well as documentation and technical support. A common core data model and common FMIS software could result in significant cost savings, while at the same time improving the reliability, capability, and adaptability of the FMIS.

5. Document management – Most countries produce a number of PFM related documents as part of the annual financial cycle, as noted elsewhere in this document. However, few countries are satisfied with their current options for document publication and document management. A regional approach could potentially use shared resources to develop a

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38 Popular "business intelligence" products include IBM COGNOS, Infor "Vision" (a.k.a., FMS Query and Analysis), and the Microsoft Business Intelligence option for Microsoft's SQL-Server relational database. All of these products, and many others, offer financial analysis, management information, and end user reporting.
generalized solution. The regional solution could then be implemented relatively quickly and cheaply in each participating country.

6. **Centers of Excellence** - Regional centers of excellence can provide a means of leveraging scarce resources. A regional center can provide specialized FMIS IT support and training for IT and business staff. IT support may be provided in a number of ways, including by telephone and e-mail. In addition, IT support staff can make regularly scheduled on-site visits, such as four one-week visits per year to each participating country. Of course, this approach is most efficient when the FMIS IT components are the same or similar in each host country.

7. **eGovernment** – The scope, cost, and complexity of eGovernment projects makes them excellent candidates for regional economies of scale. eGovernment projects often have significant associated technical challenges, including the need for secure portals and certificate authority, which are more efficiently handled on a regional basis. Countries should give serious consideration to participation in eGovernment consortia because an eGovernment implementation may be impractical for one country alone.

From the above discussion it seems clear that there can be real and tangible benefits to be realized from regional coordination. Many countries around the world have found this to be true and have saved considerable time and money and/or developed better systems as a result. However, in order to obtain the maximum possible benefit from regional coordination, reasonably good broadband Internet service is needed. A reasonable level of broadband service makes it possible to participate successfully in regional consortia without the need for staff to travel. For example, online meeting tools such as "WebEx", "Go To Meeting" and Microsoft "Office Live Meeting" enable participants to have a complete and satisfying meeting experience while saving enormous amounts of time and money by avoiding the need to travel.

For countries with chronic Internet performance and reliability issues, regional collaboration to establish a coordinated regional solution may hold some appeal. Rather than having each country struggle individually to seek a workable solution, a consortium of countries with combined resources may be a more workable approach. A consortium can define the issue in general terms and then invite donors and commercial interests to participate and partner in developing a robust portfolio of solutions that will work well for all. With multiple participants, the cost for each individual county will be less than it otherwise would have been. In addition, with high quality problem definition and research, international donors will have a higher level of confidence in a successful outcome, and so will be more inclined to participate with tangible donations.

**N. MAINTENANCE AND TECHNICAL SUPPORT**

A maintenance plan is essential for a successful, smoothly operating IFMIS system. Routine, periodic maintenance, including daily, weekly, monthly and annual maintenance, as

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39 Certificate authority refers to online technology used for secure positive online identification. Positive identification is essential for secure online financial transactions, such as payment of taxes, and for access to private information, such as tax and customs records.

40 For the purposes of this paper, a "reasonable level" of broadband service may be thought of as 1 megabit per second (mbps) for downloads. However, a more robust standard is needed throughout the Pacific to help minimize the tyranny of great distance that separates many of the Pacific island countries.
well as major, as-needed maintenance such as emergency and major scheduled events (release level upgrades, etc.) should be included in the plan. 41 A maintenance plan will typically schedule daily, weekly, and monthly after hours blocks of time for activities such as backups, database reorganizations, hardware re-boots, archival, and other essential backup and routine maintenance activities. Major maintenance and enhancement activities may require scheduled service outages during business hours, but service outages during business hours should be kept to a minimum.

Vendor support – When selecting a COTS FMIS product, vendor support should be an important consideration, and should be part of the evaluation criteria. When purchasing a COTS FMIS product, it is important to understand exactly what support will be provided. It is best to have this defined in a Service Level Agreement to document expectations on both sides. For example, the question of whether technical support will be provided virtually or through on-site visits, and at what periodicity, should be addressed in a Service Level Agreement. Also, if Technical Support is to be provided virtually, it is important to understand what type of data connectivity will be required and ensure that it is available.

Vendor relations – In the Pacific, unresponsive IT vendors, including FMIS vendors, in far away locations can be a problem. This may be due to the fact that some vendor organizations are not very skilled at managing relationships with clients. In a case where a relationship has broken down to such a point that the vendor has become non-responsive, it may prove to be necessary to reset, or renegotiate, the relationship.

When considering resetting a business relationship with an IT support vendor, it is important to consider the financial viability of the vendor company. In some cases, vendors may become non-responsive due to their imminent financial failure. If it appears that an IT support company is in immediate danger of becoming a failed enterprise, it is important to develop an overall transition plan for dealing with the situation. Under these circumstances, resetting the relationship may not be a practical option.

In cases where it appears to be possible to reset the relationship with a financially viable IT support vendor, techniques for resetting IT vendor relationships may include:

- Physical travel to the vendor site by an appropriately empowered government representative to meet concurrently with vendor representatives from marketing, business, and technical support to work out a new support agreement that defines, in writing, what and how future FMIS product support will be provided. The outcome of a meeting of this type needs to be carefully documented and agreed to by all parties.
- In the case of a value added reseller (VAR), if all else fails, it may be necessary to consider changing to a different VAR while retaining the government's investment in the COTS FMIS product. In this case, product license and maintenance agreements may need to be adjusted. Vendor management techniques as outlined below should be followed from the beginning of the new relationship with the replacement VAR.
- In a case where a COTS FMIS product has been obtained directly from an original manufacturer that has become non-responsive, it may be necessary to consider the likely future of the COTS FMIS product. A business case analysis should be prepared to evaluate the risk associated with keeping the current COTS FMIS product versus the risk and expense of transitioning to a different product.

Therefore, maintaining good vendor relations is very important – It is preferable to make the initial effort to maintain good vendor relations rather than having to undergo a painful and potentially expensive transition. In order to help maintain good vendor relations, it is essential to have a single point of contact within the host government for issues that need to be raised with the vendor, such as software problems, software enhancements, bug fixes, version level upgrades, etc. The point of contact can be one person with an alternate, or a small group of people who are authorized to contact the vendor about any issues. When the single point of contact raises an issue with the vendor, it is important that the vendor assign an issue tracking ID to the point of contact. The contact should ask for an estimated timeframe as to when to expect an answer to the problem, and should follow-up with the vendor as needed to ensure timeliness of responses. Some countries have faced a situation when, in the absence of some of these precautions, the vendor has not responded. In such cases, countries have successfully used the good offices of certain regional organizations to exert pressure on vendors.

Vendors as strategic business partners – It is important for host countries to manage vendors as strategic business partners, and understand that these business relationships need to be long term in nature. Both sides should strive to maintain mutual cordiality, as with any strategic business partnership.

Vendor management – Countries should implement a systematic protocol for communicating with vendor support organizations. Issues should be documented in a local knowledge base, including information about how issues were resolved, as follows:

1. Name someone to act as primary point of contact (PPOC), and an alternate, for communicating with FMIS vendors and/or resellers. Notify government staff that all communication with the FMIS vendor should flow through the PPOC.
2. No communication should occur between the government and the FMIS vendor without the involvement of the PPOC.
3. The PPOC should maintain a list of all issues raised with the vendor using an FMIS knowledge base or at least a simple list. The list should include details such as the date an issue is initiated with the FMIS vendor, the tracking ID assigned by the vendor and the names of all FMIS vendor representatives contacted.
4. The PPOC should always ask vendor representatives to assign a tracking ID number for each separate issue. This issue tracking ID should be referenced in all communication with the vendor regarding a particular issue.
5. The vendor should be asked to provide regular (e.g., weekly) status reports via e-mail to the PPOC covering all outstanding issues.
6. In the case of unresolved issues that are outstanding for more than 4-weeks, the government should ask that the issue be expedited. In the case of urgent issues, the threshold for escalation should be shorter (e.g., 1-week, or even 1-day).
7. In the case of issues that have been escalated to a higher support level, the vendor should be asked to provide status updates more frequently (e.g., daily) until the issue is resolved.
8. The vendor should not be permitted to unilaterally declare an issue resolved. In order for the vendor to declare an issue resolved, they should be required to seek concurrence from the involved government agency, through the PPOC, that the issue is considered resolved by the host government as well as by the vendor.
9. To initiate an issue tracking protocol between the PPOC and the vendor, it is recommended there be a phone conference or face to face meeting between key government technical support staff and key vendor representatives involved with customer support. This meeting should be
carefully coordinated so that key personnel on both sides are able to participate.

10. In cases where there are a large number of unresolved issues outstanding, regular meetings should continue until both sides agree it is no longer necessary to have regular meetings.

Levels of support:

- Level 1 – Basic help desk support.
- Level 2 – More complex, non-emergency technical support, such as a version level upgrade.
- Level 3 – Service outage, immediate assistance required.

Virtual support – The people providing virtual support may be anywhere in the world. This is particularly important in the Pacific where distances can be vast. A requirement is that vendor technical support staff must be able to log into the system as a Systems Administrator in order to diagnose issues or monitor system activity. Virtual Support can be used for routine maintenance or emergency response, and can support activities as complex as version level upgrades with back out and restore to previous level. Virtual online support enables distant vendors to be responsive in providing timely and sophisticated support at reasonable prices.

Service Level Agreements (SLAs) – SLAs are agreements between vendors and the client where a client specifies exactly what types and levels of service they want. Levels of support that should be included in a service level agreement include levels 1 through 3 as listed above. Each level should be specifically defined. Documenting the agreement between the vendor and the customer helps make it clear exactly what services are being provided. Of course, the client government single point of contact needs to be very familiar with the terms and conditions of the SLA.

Version level upgrade support may be included in a Service Level Agreement, but these support activities are typically included and paid for in annual software license and support agreements and are thus already paid for. License and support agreements should be checked before including the cost of version level upgrade support in a Service Level Agreement in order to avoid cost duplication.

As more customer requirements are added to a Service Level Agreement, the cost will usually increase. However, techniques such as long distance, online, virtual support, as described above, can help keep costs under control. Online virtual support is a powerful means of service delivery for a broad range of support services that would be prohibitively expensive if on-site support were required.

However, in addition to some form of basic data connectivity is it also necessary to have technical support staff on site to help coordinate virtual technical support activities. For example, local network administrators may need to temporarily open a port at the firewall to permit secure access by vendor technical support representatives, or it may be necessary to restart the system in order to apply a software patch. These are activities best performed by on site personnel. It may also be necessary to have someone on site to answer questions, observe and report the results of remote stimulus-response commands, and generally act as an on-site assistant and observer. In other words, some on site expertise, usually in the form of a government ICT support person or team, will be needed to facilitate long distance virtual technical support.

In summary, long distance, online, virtual support has significant potential to keep costs to a minimum, particularly on far flung Pacific islands. When purchasing COTS software and
subsequent annual license and support, it is beneficial to specify that all possible support services should be provided virtually using secure data communications. Communications technology has tremendous transformative potential to bring all that the world has to offer even the most remote Pacific island community, including education, economic opportunities, health care services, and much more.
III. DISCUSSION AND SOLUTIONS ON WHAT TO AVOID OR ENSURE IN IFMIS DEVELOPMENT PROJECTS IN SMALL ISLAND COUNTRIES

A. CONSISTENCY BETWEEN LEGAL AND REGULATORY FRAMEWORK AND IFMIS CONCEPTUAL DESIGN

In general, it is important to maintain consistency between a GFMIS, including associated financial procedures, and the current financial legal and regulatory framework. When current laws and regulations are out of date and do not match the modern procedures used to support a GFMIS, the result is a number of issues as follows:

- Confusion about which guidelines to follow can adversely impact GFMIS data integrity;
- Concern about being held accountable sometimes leads to wasteful redundant record keeping; and
- Outdated laws and regulations tend to perpetuate expensive, inefficient, paper oriented record keeping procedures such as hardcopy documents with original "wet" signatures and/or official rubber stamps.

On the other hand, GFMIS implementation should not be postponed while waiting for financial legal and regulatory modernization reform to be completed, as this may take several years. In this case, it is important to take current law and regulations into account when designing the GFMIS so that it can support current legal and regulatory requirements, but this needs to be done in such a way that it anticipates new future requirements expected from legal and regulatory modernization reform. Having a transition plan for moving from the current set of PFM laws and regulations to the new future set of PFM laws and regulations makes it easier to implement anticipated changes when the time comes.

A well designed GFMIS, including the associated CoA and data encoding scheme, should always be implemented with sufficient flexibility to support data and procedural expansion and/or change. This is because most PFM systems will be required to adapt to new requirements sometime during the many years long life of the system. A well designed, flexible PFM system anticipates the need for change by including the capability to readily adapt to future changes, although the nature and timing of those future changes are unknown. This degree of flexibility is considered by many PFM professionals to be highly desirable. There are others who have the view, perhaps not very realistic, that PFM laws, regulations, and compliant PFM information systems should not change and, therefore, there is no need for a flexible, adaptable PFM information system.

B. LACK OF POLICY AND ORGANIZATIONAL SUPPORT

Experience has shown it is difficult, if not impossible, for a GFMIS project to be successful without vigorous top down policy and organizational support. This is the case whether the
project is being pursued unilaterally or as a coordinated effort through a multi-national consortium. Policy-level executive sponsors need to be aware of just how essential their roles are, including direct involvement with an executive steering committee (ESC) as described in previous sections. Weak or tentative top level policy and organizational support is a clear indicator that the scope of a GFMIS project should probably be reduced, the project schedule should be slowed, or that the project should be put on hold.

C. LACK OF ONGOING TECHNICAL SUPPORT- PROBLEMS AND SOLUTIONS

A number of Pacific countries have reported issues obtaining effective technical support for the COTS FMIS products they have purchased. In some cases the manufacturers provide technical support directly, and in other cases technical support is provided through a re-seller who may have provided system integration support for the original GFMIS implementation. In either case, it is important to establish and maintain good vendor relations with the supporting organization.

In order to avoid the situation of receiving sub-optimal service, there are some techniques that can be used to maintain good vendor relations as follows:

- Appoint a FMIS primary point of contact (PPOC) for communicating with the vendor organization;
- The FMIS PPOC should maintain good interpersonal relations with the vendor representative overseeing the country's account;
- Each country should stay current and up to date on payment of license and maintenance fees to vendors;
- Establish a Service Level Agreement document with inputs from both sides;
- FMIS PPOCs should always ask for a tracking ID number for each technical issue being tracked;
- Manage expectations on both sides, e.g., always ask how long an expected action will take and follow up immediately when it is not done on time;
- Encourage virtual, distance support for licensed products so that support can be easily and routinely available;
- The country's FMIS PPOC can offer to serve as a customer reference to speak with potential new customers for the vendor's product; and
- Use Regional fora like PIFMA to highlight and discuss problems, share best practices, and possibly find solutions.

D. EVOLUTIONARY (PHASED, MODULAR, INCREMENTAL) APPROACH VS.
REVOLUTIONARY APPROACH

The temptation to rapidly implement a revolutionary, transformational FMIS project should be avoided in favor of a series of gradual, incremental, evolutionary, lower risk projects. An incremental, phased, modular approach is always preferable to a grand, overly ambitious, large scale, high stakes project. Whether or not a grand scheme revolutionary project is characterized as "high risk", it is in fact a high risk project by its very nature.

Grand scale, revolutionary, high risk projects tend to be complex. As discussed in the following sub-section, complexity should be avoided. Simpler is always better, cheaper, and more likely to be successful.

An incremental approach follows a simple pattern as follows:

1. Implement and deploy a manageable system component such as a phase or module;
2. Stabilize the new component, evaluate operational integrity, collect lessons learned, adjust as needed, solidify gains;
3. Factor lessons learned into plans for the next system increment; and
4. Repeat steps 1-3 while exercising due caution not to introduce any unintended issues.

The order in which functional phases or modules should be implemented is subject to a degree of situational discretion based on specific circumstances including country specific legal and regulatory requirements, policy considerations, risk management factors, stakeholder consensus, and many other considerations. Scheduling will also depend on country specific circumstances. However, a suggested standard pattern for incremental, phased, modular GFMIS implementation would, at a high level, resemble the following:

- Begin by implementing basic infrastructure, including system software, server(s), network connectivity, and backup and recovery equipment;
- Implement database and FMIS software, also information portal software if a portal will be used for project team and/or stakeholder community management;
- Configure FMIS software, including loading and validation of test data to be used for system testing, including acceptance testing ahead of accepting system deliverables;
- Phase I FMIS deployment - Core FMIS functions, including general ledger, financial reporting, accounts receivable, accounts payable, and budgetary funds control:
- Gradual, incremental rollout of core functions to line ministries, one LM at a time, limited number of users at first, continue testing and monitoring;
- Stabilize Phase I core system, document LLs, prepare for Phase II;
- Phase II FMIS deployment – Select and incrementally deploy one or more non-core FMIS functions, with sequencing and scheduling subject to country specific considerations, including: Procurement, payroll, bank reconciliation, cashiering, revenue, analytical tools (including end-user-reporting, online report publication, business intelligence, data warehouse), budget formulation, fixed assets and property management, and other;
- Stabilize Phase II, document LLs, prepare for Phase III and subsequent phases;
- Phase III FMIS deployment – Select next set of non-core functions to be deployed and follow the same basic pattern as Phase II;
- Continue as needed, including system life cycle management; and
• Enhance the FMIS with features such as enhanced integration among all government PFM sub-systems in order to create an integrated FMIS (IFMIS).

E. AVOID COMPLEXITY - SIMPLE IS BETTER

As a general rule, complexity should be avoided in favor of simplicity. A simpler project plan will always have a higher probability of being successful, and is therefore preferable to a more ambitious and complex plan that is at higher risk of failure. This is sometimes expressed as the KISS principle, where KISS stands for "keep it simple, stupid". A similar principle is known as Occam's razor, which is summarized as, "All other things being equal, the simplest solution is the best". These principles and truisms have stood the test of time, so there is not much need to say more.

For the purposes of this paper, the important point to note is that the temptation to make big changes very quickly by implementing a revolutionarily transformational FMIS should be avoided. The risks inherent in a revolutionary project are relatively high, and most projects of that type tend to fail, either in part or in total, and often at great expense. Recent research suggests that the risk of project under-performance increases as the size of the effort, the duration of the project schedule, and the size of the project team increase. A project of less than 500 person months of effort, with a duration of less than 18 months, and a project team size of less than 20 people is the most likely to be successful. As these parameters are exceeded, the risks increase. In general, larger and more complex projects are at higher risk than smaller, more manageable projects.

F. MANAGING EXPECTATIONS

With all IT/ICT projects, including GFMIS projects, it is essential that stakeholder expectations be managed to minimize instances of fear, surprise, and disappointment. This is not a difficult concept to grasp, but in practice it does present a number of challenges as outlined below.

The lack of accurate, factual information, sometimes called an information "vacuum", tends to encourage and empower rumors and false information. A simple technique for diminishing the power and influence of rumors is to make complete and accurate information readily available to anyone who wants it. Diminishing the influence of rumors is an important first step in actively managing stakeholder expectations. Once rumors have been brought under control, a good next step is to tell people what they can expect. For example, if a new system capability is going to be deployed on a government-wide basis in June, then stakeholders should be informed about the upcoming change. If the planned change takes place in June as previously

43 For more on Occam's razor, see: http://en.wikipedia.org/wiki/Occam's_razor.


announced, then the credibility of future announcements will be enhanced, and stakeholders will be more inclined to set their expectations based on credible information.

**There are a number of techniques for ensuring everyone who needs it has access to accurate, timely, and complete information.** Information portals, which can be powerful tools for disseminating information across geographically distributed communities, are described in section III. In addition, more conventional techniques such as newsletters, meetings, e-mail distribution, and briefings are all perfectly valid.

**However, it is not always sufficient merely to make information available.** Information often needs to be explained in terms that people will find useful and interesting. Stakeholder groups usually appreciate having information about how they will likely be impacted by changes. For example, people are generally curious to know if the number of staff positions is likely to increase or decrease. People want to know what will change as a result of a GFMIS implementation, whether that is a new FMIS or a major update to an existing system.

**People need to feel they have not been forgotten or taken for granted.** It is important to use group meetings and/or one-on-one sessions to give people opportunities to ask questions and voice their concerns. Depending on the circumstances, a series of regular meetings may be needed to provide everyone an opportunity to participate. People appreciate being acknowledged, and will generally set their expectations in part based on how they feel they are being treated. If they feel well treated, they will adjust their expectations accordingly.

**Taken together, these types of outreach efforts will have a number of benefits as follows:**

- Minimize the disruptive effects that can result from unanswered rumors;
- Provide a forum to acknowledge and discuss stakeholder concerns;
- Reflect back positive changes resulting from stakeholder inputs;
- Promote a common sense of purpose and direction; and
- Foster a sense of community with shared professional knowledge and mission.

**G. INADEQUATE SUSTAINABILITY EFFORTS – CLEARLY STATED NEED FOR ONGOING ASSET MANAGEMENT**

Sustainment related activities are too often given inadequate attention or ignored all together. It is important for everyone involved, from senior managers on down, to understand that capital assets, including computer information systems, must be maintained in order to remain useful. Of course, maintenance costs money. When planning for the cost of a new IFMIS, there should be explicit recognition of the entire lifetime cost of the investment, including sustainment costs, not just initial startup costs. Senior managers are sometimes surprised when, after a GFMIS implementation has been completed, they are asked to approve significant annual maintenance costs, as well as regular ongoing staff technical training requirements, hardware upgrades, and user support and training.

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46 Annual maintenance costs include vendor license and maintenance fees, which are normally about 10%-15% of the original purchase cost, and the cost of additional licenses and maintenance fees for extra copies of the software to be used for testing, ongoing development, and training, as well as backup and recovery. The lifetime cost of the system should include these extra software licenses.
requirements. In a situation like this, surprises are not good.

**From a budget perspective, the costs associated with acquiring an information system do not end with the completion of initial system development.** When initial implementation is complete, regular and recurring operations and maintenance (O&M) costs start to accrue. These O&M costs need to be factored into the next year's budget and all future years as regular and recurring costs for all years in which the system is to be operated and maintained. Some examples of regular and recurring O&M cost items include annual software license fees, annual post-implementation technical support, adaptive changes, regular staff training, data storage and archival, off-site backup and other business continuity costs, hardware upgrades, and many other miscellaneous O&M costs.

**A systems development life cycle (SDLC) program management approach is important for successful implementation.** Financial information systems require regular maintenance in the form of software and hardware updates. Adaptive and perfective maintenance is needed to adapt to changing requirements and fix minor problems that manifest themselves in routine operations. In addition, regular backups, database reorganizations, security checks, quality assurance analysis, and other routine technical and administrative activities are required to sustain system performance and integrity. Periodic audits and assessments are always a good idea, and may include various associated costs. These may include the cost of performing the assessment as well as the follow-on cost of implementing recommendations arising from the assessment.

**From a life cycle perspective, risk factors, recoverability, and continuity of operations need be considered.** Fires, floods, rising ocean levels, cyclones, earthquakes, and even civil disturbances need to be factored into sustainability plans, as well as more mundane risks such as equipment and electrical supply failure. Sustainability plans should include elements like a timeline for recovery that considers variables such as the time needed to fly in replacement parts.

**Considered from a life cycle point of view, the initial cost of implementing an IFMIS may turn out to be relatively small when compared with the total cost of ownership over the entire useful life of the system.** From a budget perspective, the annual portion of the total lifetime cost of the system needs to be included in the annual budget each year for the life of the system in order for the system to be properly maintained so that it can remain useful. It is best that policy officials have an understanding of the importance and the cost of maintaining an information system from the very start of a FMIS project.

**H. MAINTAINING SYSTEM RELEVANCE**

**As discussed above, systems require maintenance to remain viable and relevant.** For example, COTS FMIS software is designed to enable and facilitate compliance with international financial standards and best practices, including the security of sensitive financial data. As standards evolve and knowledge increases, software must be adapted to stay current. This is especially true in the case of financial data integrity and overall FMIS security.

**For this and many other reasons, software vendors are constantly making engineering and functional changes and enhancements to their products.** As complex FMIS products evolve, it is important for these new versions of the software to be installed on a regular basis. Maintenance plans and service level agreements should routinely include this type of activity every year or every other year as a matter of course, as described in more detail in other sections of this document.
Not all software upgrades are worth the investment. Software upgrades should be evaluated individually to determine whether the benefits outweigh the risks and disruption. Using simple business cases analysis techniques, it should be determined whether each individual upgrade should be implemented based on the merits of the upgrade's features. Some should be skipped in favor of the next one. However, skipping an upgrade or two is not without risk. Some vendors operate under the assumption that each upgrade will be installed. Special upgrade software is provided to change data formats and other important system characteristics. The upgrade software is programmed to upgrade from one version to the next, but is not capable of jumping more than one or two versions. That is why skipping an upgrade, or two, may not be a good practice in some circumstances.

One possible result of skipping software upgrades, especially when multiple upgrades are deferred, is that the vendor will discontinue support for the older version that remains in service. Managing the finances of a country with outdated, unsupported FMIS software is not a good management practice because it entails a high level of risk. It is a management responsibility to ensure that situations like this are not allowed to develop. The financial data of a country needs to be administered with care and responsibility at all times.

Experience has shown that when routine updates are deferred, such as when a number of software version releases are skipped over a period of years, vendors will eventually reach a point where they withdraw support for old, out of date versions of the software. Countries then find themselves in high risk emergency situations where simply maintaining the status quo is not an appropriate option. Now they are forced to undertake drastic, high risk efforts on an emergency basis to restore system relevance by jumping several interim versions to reach a viable current state.

Emergency version level maintenance is an unfortunate situation that happens too often when maintenance is deferred. What could have been a series of easily managed, low risk, gradual transitions spread over a period of years is instead allowed to become a high risk emergency situation that everyone dreads. This is an especially bad situation for the vendor and local country technical support staff alike, because they will be expected to "clean up the mess" which was not of their making and will likely receive little or no gratitude for their trouble.

Everyone should recognize that situations like these represent failures of management, not the vendors or IT support staff. It is an important management responsibility to ensure that national assets, such as essential financial information systems, maintain relevance and integrity commensurate with the essential nature of the information managed within the system. It is a management responsibility to find the resources necessary, through whatever means necessary, to appropriately maintain critical information systems. If a system cannot be sustained properly due to lack of resources, it is important to determine the type of system that can be properly sustained and consider a change to the more sustainable system.

I. PRACTICAL ADHERENCE TO INTERNATIONAL STANDARDS, RECOGNIZING LOCAL CONSTRAINTS

Experience has well demonstrated the advantages of achieving consistency with international standards, including:

- More transparent and auditable systems and procedures;
• Enhanced FMIS security and integrity because compliant systems facilitate use of industry best practices in areas such as security, fraud surveillance, system activity monitoring, and access control;
• Increased willingness on the part of donors and commercial interests to donate, lend, and invest funds;
• Easier compliance with reporting requirements for international financial bodies such as the IMF and the World Bank;
• Easier recruitment and retention of PFM and IFMIS IT professionals because local systems and procedures closely match candidates' academic training and career aspirations;
• Facilitated analysis and report development because standard off-the-shelf analysis and reporting tools can be used with little modification because these tools are designed with international PFM standards compliance in mind;
• Easier participation in regional PFM coordination efforts because systems and procedures closely match those of other compliant participants;
• Reduced PFM implementation and support costs because standard software can be used with little bespoke modification;
• Wider availability and enhanced effectiveness of training opportunities, international job swapping opportunities, capacity building opportunities, and many other opportunities because systems and procedures are well recognized and interchangeable across international boundaries, etc.

However, total compliance with evolving international standards may be an impractical objective for many small countries to achieve. For example, cash based or modified or partial accrual standards are more practical than full accrual standards because they are easier to implement and explain.

However, international PFM standards must be considered as more donor organizations press to have donor project funds managed through local FMISs. Donors and lenders are understandably insistent that funds be managed in ways that are consistent, transparent, and auditable. In addition, in the context of regional coordination, adherence to common PFM standards facilitates sharing PFM expertise and resources throughout a region in categories like FMIS software, financial reporting, audit, PFM training, and others.

Standards-based regional coordination can result in improved PFM performance and, at the same time, reduced costs of IFMIS implementation and operations for countries following "standard" best practices. It can be an expensive effort on several levels to sustain local proprietary standards. Even worse, having no financial standards at all can lead to an expensive, high risk, unmanageable, un-auditable, and chaotic situation.

J. USER INVOLVEMENT

Practices that experience shows should be avoided in developing and sustaining PFM systems include limited user involvement as a system and associated PFM procedures is being defined, designed, and built. Once a system is implemented, it is much more difficult and expensive to make adjustments than it is as the system is being developed. In addition, participation from the beginning by a broad range of stakeholder communities will invariably lead to a better system that more successfully meets a broad range of requirements, and with
more willing participation and consensus than would otherwise be the case.

**Organizational friction is a term used to describe the resistance sometimes encountered when change is involved.** Many organizations embrace change reluctantly. This is normal and to be expected. Therefore, when planning for organizational change, it is good practice to anticipate friction and incorporate measures to deal with it. Ultimately, the most effective ways to deal with user resistance to change is to co-opt the users to the extent they become advocates for change. Although this is not a trivial thing to do, it is possible.

**As a successful technique for change management, co-opting user/stakeholders is preferable to forcing a mandated solution upon them.** It is possible to force a solution, but the legacy of mandated change can be passive aggression towards the system. User resistance can eventually lead to system failure if it is allowed to go on unchecked. Therefore, co-opting users to bring them solidly into the fold is a vastly superior strategy when compared to a mandated approach.47,48


IV. BROAD GUIDELINES FOR COUNTRIES WHICH ALREADY HAVE FMIS/IFMIS SYSTEMS AND SUGGESTIONS ON HOW TO TAKE THINGS FORWARD

For countries that already have a working FMIS and wish to take things forward to the next level, there are many ways to do this. As discussed elsewhere in this document, simple is better. In that regard, there is one basic formula that should be considered in all cases, including cases where legacy systems may be involved, as follows:

- Begin by establishing a baseline, which is the current, or "AS-IS" state, the situation as it is presently;
- The “AS-IS” state should be defined and assessed in some detail, with strengths, weaknesses, and issues noted;
- Conduct a business process review to assess the quality and efficiency of current financial systems and procedures;\(^{49}\)
- Ensure full consideration of line ministry business process requirements as part of the business process review;
- Perform a current legal and regulatory review to identify instances where modernization reform may be needed to allow more effective use of the IFMIS;
- Define the future "TO-BE" state with input from the process and legal reviews;
- The “TO-BE” plan should clearly state what needs to be added or changed, again, in some detail, including extensibility capabilities needed to address line ministry requirements;
- Perform a “TO-BE” business case analysis to evaluate alternatives and assess whether there will be sufficient return on investment (ROI) to justify expenditures on "TO-BE" enhancements;
- Develop a transition plan to move from the current AS-IS state to the desired future "TO-BE" state;\(^{50}\) and
- Develop and closely follow change management guidelines to ensure the transition plan proceeds systematically and with minimal disruption.

As discussed in section III.(D.), planned, manageable, incremental changes are best. For example, using a consistent program of adaptive and perfective maintenance of the FMIS/IFMIS system over time in coordination with PFM business process re-engineering, gradually move all PFM systems to increased levels of integration by increasing the levels of standardization and generalization throughout all aspects of PFM processing, including revenue, expenditure, budget, accounting, cash management, bank reconciliation, planning, analysis, and audit.

In a case where multiple legacy FMISs may exist, it is important to understand the current baseline and have a clear vision of the hoped for "TO-BE" outcome. In a case with multiple legacy FMISs, one of the fundamental considerations will be whether one of the existing legacy systems represents the "TO-BE" FMIS. Or, will all legacy systems be replaced by a new FMIS. A clearly stated vision for the "TO-BE" state will make it more reasonable to achieve that state.


\(^{50}\) Proceeding with development of a transition plan assumes a favorable ROI from the business case analysis.
Although the desired changes from the “AS-IS” state to the “TO-BE” state may seem simple in concept and easily accomplished, it is strongly recommended that countries avoid the temptation to attempt rapid, revolutionary change. A FMIS/IFMIS is a complex system with many functional components. In addition, an IFMIS that has been deployed government-wide will normally have hundreds of users. Introducing changes into a complex financial system that has hundreds of users processing thousands of transactions each day must be managed and coordinated with care in order to avoid disruption, as follows:

1. **Test.** Any change that is made, no matter how minor it may seem, should always be carefully and thoroughly tested to ensure there are no unintended results.

2. **Coordinate.** Always inform users and IT support staff when changes are scheduled and ask them to immediately report any issues. Help desk staff should also be alerted so they are better prepared to handle reports of unexpected system behavior.

3. **Document.** As part of a change management process, system and user documentation should always be appropriately updated to reflect changes. A document management capability, as discussed elsewhere in this report, will facilitate maintenance of system related documentation.

4. **Restore as needed.** Have a recovery plan. Do not implement changes that cannot be withdrawn. Change management best practices dictate that all changes be applied in such a way that the system can quickly be restored to a previous, correctly functioning condition.

Experience has also shown that, for the process of integration of IFMIS legacy systems to be successful:

1. There is a need, by executing agencies, donors, consultants and other stakeholders, for careful examination and assessment of the full range of impact from a change in the scope of the project that such integration would bring.

2. Project supervision and guidance should match the projects complexity and challenges, especially in the complex PFM area where it is important for supervisors to have a strong technical background.

3. Realism in expectations, especially of the time and effort required in is important. The need to integrate legacy systems may sometimes require far greater effort than to start new projects.

In addition to the technical aspects of change management, experience has demonstrated that keeping stakeholder communities involved in planning for change is very important. Some, perhaps most, of the items on a list of planned system changes and enhancements will have been suggested by the users or other stakeholders. Including stakeholders in the IFMIS decision making process helps them to assume more ownership responsibility for a system. Techniques for developing and sustaining stakeholder involvement are discussed in more detail in other sections of this document.
Just as IFMIS systems are challenging to implement and deploy, continuing to manage, smoothly operate, and sustain an operational IFMIS is also a substantial challenge. There are many, many opportunities for things to go wrong. However, there are a number of opportunities and techniques available to make this a more manageable endeavor, as follows:

1. **eGovernment** – Most governments are in various stages of investigating or implementing eGovernment systems to facilitate delivery of government services to citizens. eGovernment has other aspects, as well, including government to government (G2G) information exchange among government ministries and departments. A robust eGovernment implementation will, by its nature, improve the data communications infrastructure of a country to the benefit of all government information systems, including IFMIS. The MoF and other stakeholders should do as much as possible to encourage eGovernment implementation.

2. **Secure government-wide networks** – Where eGovernment projects are not planned, and there is no government entity to assume responsibility for deployment of government-wide data networks, it sometimes falls to the MoF to assume responsibility for network development and deployment. This is necessary in order to ensure data connectivity among line ministries and the MoF to support an IFMIS. Vanuatu and Tonga are two examples where the MoF has successfully assumed a lead role in network development. Of course, once it is in place, ministries and departments will come up with many ways to use the network other than as a means of accessing the central IFMIS.

3. **Professional certification** – An IFMIS is more sustainable with a cadre of uniformly well trained professional PFM staff supporting it. An excellent way to develop and maintain a uniformly well trained cadre of professional PFM staff is through professional certification programs. As the lead agency for PFM, the MoF is a logical choice to sponsor a professional PFM certification program. In the Pacific, where resources are scarce, a regional consortium approach may work better. This would work especially well if countries had similar IFMISs. Generally, programs like this can be developed in coordination with local colleges and international professional organizations.51

4. **Succession planning for continuity** – IFMIS sustainability requires a continuous succession of capable and talented managers. Because the IFMIS is essential to government operations, it is important that PFM executives and senior managers ensure continuity of management through succession planning. Each key PFM executive and manager should understand their responsibility to ensure someone will be there to replace them when they move on to pursue other opportunities. The absence of a planned succession can destabilize and thereby adversely impact a sensitive and complex information system like a IFMIS.

5. **System documentation** – Well maintained, detailed information about the technical configuration and workings of a IFMIS is a valuable asset that can help ensure continuity of IFMIS operations. However, maintaining system documentation is not a popular activity, so documentation is often allowed to become outdated, thus putting the system at increased risk of unrecoverable failure. Clearly, this constitutes a failure of management if this were allowed to happen. A simple document management capability,

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51 An example is the U.S. Department of Agriculture graduate school. More at: [http://graduateschool.edu/](http://graduateschool.edu/)
perhaps included in an information portal as described elsewhere in this document, is an excellent tool to facilitate system documentation maintenance.

6. **Maintain system relevance** – A consistent program of adaptive and perfective maintenance of an IFMIS system can facilitate evolution of the system over time. In coordination with PFM modernization reform, a system can be gradually enhanced with new functions and procedures that benefit from changing circumstances or technology. For example:

- Local banks begin to offer new secure Internet banking services that can be leveraged using the IFMIS to improve the accuracy and timeliness of government cash management activities.
- Although this may not be common in the Pacific, increased availability of Internet bandwidth or expansion of a high performance government-wide data network being developed through another ministry or department, as is being discussed in Kiribati, can be exploited to facilitate line ministry access to the IFMIS and associated PFM information portal;
- Although this may not be common in the Pacific, a new tax and customs system could be implemented that is more capable of integration with banks and the IFMIS, as appears to be the case in Tonga, thereby increasing the timeliness and accuracy of revenue data within the IFMIS.
- Although not yet common in the Pacific, future opportunities may occur in which a high level policy decision is made to begin transitioning from cash and check transactions to more electronic payment transactions, thus transforming the IFMIS from a transaction tracking system to a transaction management system. A transformation of this type will greatly increasing the efficiency and precision of government PFM operations. This is another example of an initiative that may be more practical as a regional initiative, perhaps as part of a regional eGovernment project initiative.

7. **Generalize the system** – Through a consistent program of routine adaptive and perfective maintenance of the system and associated PFM procedures, be alert for no cost and low cost opportunities to move all IFMIS sub-systems to increased levels of integration and standardization. In this way, the system should be evolved over time to become more generalized and aligned with regional and international FMIS related standards. A system that follows generally accepted principles and best practices is easier to support because there is a larger pool of potential new staff hires, contractors and consultants, and vendors. As the system becomes more aligned with regional and international standards, it will become easier to hire and train new staff because IFMIS functions will be more directly aligned with the academic training of potential new hires, as well as qualified contractors and consultants, and obtain excellent support from COTS software vendors. System managers and stakeholders should continually seek simple, low cost opportunities to gradually increase levels of integration and standardization throughout all aspects of PFM processing, including revenue, expenditure, budget, accounting, cash management, bank reconciliation, planning, and analysis. Simple, gradual changes are best.
VI. LESSONS LEARNED

Lessons learned from six PFTAC IFMIS reviews conducted in the Pacific include those listed in tabular format in the sections below. PFTAC initiated the IFMIS reviews between November 2008 and December 2009. These studies covered the Cook Islands, Kiribati, Tonga, Tuvalu, Vanuatu and the Republic of Marshall Islands.
## A. COOK ISLANDS

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue / Accomplishment</th>
<th>Lessons Learned</th>
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<tr>
<td>Functional</td>
<td>Financial Reform Legislation – Reform legislation was enacted a few years ago, but mostly in reaction to an immediate fiscal crisis. Therefore, a legal and regulatory technical review is needed in the context of government-wide IFMIS deployment. Documented Financial Procedures – Publication of a comprehensive Cook Islands Government Financial Policies and Procedures Manual (CIGFPPM) with annual revisions. In addition, a CoA document is regularly published and distributed. Electronic Payments – Government employee salaries are paid via direct bank credit, while traders mostly receive hand written checks. Electronic payments to traders are handled on an exception basis for remote domestic and foreign traders, so the capability has been proven. Budget Tracking – Budget expenditures are not yet tracked against specific budget line items. Financial Analysis – Detailed financial status data is not centrally collected. Therefore it is not available to be used for purposes such as government-wide financial analysis and economic planning.</td>
<td>Prepare for a long and deliberate financial legislative reform process, but be ready to respond quickly should an unexpected opportunity for rapid movement presents itself due to dramatic change of political administration, economic crisis, or other watershed event. Regular publication and update of documented financial policies &amp; procedures and a CoA listing is a powerful means of helping to ensure uniform processing of financial transactions and financial data encoding. Electronic payment benefits are well demonstrated. Only legal and organizational questions are standing in the way of making electronic payments via direct bank credit the default for all government payments. These questions will need to be resolved gradually. Difficulty in matching financial data at various stages in the financial cycle indicates that a GFMIS is not yet fully integrated as an IFMIS. Timely financial analysis requires a central repository of up-to-date financial data from all stages and levels of the GFMIS. A central data repository is often called a &quot;Data Warehouse&quot;, or &quot;Data Mart&quot;. A set of easy to use analytical tools is also needed. A TSA is useful for central cash management, as well as automated payments and receipts. Multiple line ministry accounts may continue to be used, as well as line ministry control over payments, by using some relatively simple techniques for dynamically allocating funds between the TSA and line ministry accounts.</td>
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<tr>
<td>Technical</td>
<td>System Scalability – Acquisition and maintenance of a scalable enterprise level FMIS at the MoF (Ministry of Finance and Economic Management).</td>
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Tiered Architecture – Modern COTS FMIS software like that used by the Cook Islands Government (CIG) typically has a flexible, tiered architecture that facilitates scalability across a broad range of prices and capabilities. The architecture tiers are sometimes referred to as a "technology stack". Microsoft's enterprise relational DBMS, MS SQL-Server, is a popular choice as the data management engine in a FMIS technology stack.

COTS FMIS Software – The CIG originally selected the "Solomon" COTS FMIS product designed for small to medium sized enterprises. However, as the FMIS market became saturated over the past 10-20 years, many mature FMIS companies were bought by larger companies or went out of business. Fortunately, Solomon was acquired by Microsoft, and the Solomon FMIS product became Microsoft Dynamics-SL (MSD-SL). This was a stroke of good luck because it gave the product new life and prospects for a much brighter future.

Secure Government-wide Network – The CIG data network is an immature capability at present. However, the future looks reasonably bright as the government tests the eGovernment waters.

The CIG has made a good strategic choice in Microsoft SQL-Server as the DBMS in a tiered FMIS architecture because it represents many hundreds of millions of U.S. dollars in research and development and engineering. The fact that this impressive pedigree and range of capabilities can be purchased for a few thousand dollars due to a mass market business model makes it an excellent value.

When shopping for a FMIS product, it is important to consider the vendor's potential viability. The CIG was fortunate that their original choice of a COTS FMIS turned out to be a good strategic choice because the original company was taken over by a much larger company that may be expected to endure for some time to come.

In a situation like this, the MOF should do as much as possible to encourage development of a secure government-wide data network while limiting its direct involvement. Ideally, the government network will grow and mature without the MoF needing to assume any direct responsibility.
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<tr>
<td>Functional</td>
<td>FMIS Documentation – The FMIS lacks readily available official user guides and documented PFM procedures.</td>
<td>Without good PFM procedural documentation, including clear guidelines for encoding PFM transaction data, data quality will suffer, which adversely impacts overall FMIS integrity.</td>
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<td>Redundant PFM Data – Continued pervasive use of redundant manual financial records and procedures, in part because of poor harmonization between laws, regulations, and procedures.</td>
<td>Lack of harmonization between law, regulations, and procedures leads to confusion about which represents the &quot;official&quot; PFM data. This results in redundant data being recorded in multiple incompatible formats with predictably chaotic results.</td>
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<td>FMIS Data Quality – No systematic quality assurance (QA) program. Without a systematic QA monitoring program, there is no quantitative means of measuring the quality of FMIS data.</td>
<td>Even a simple QA program using existing FMIS capabilities could be helpful in measurably improving data quality. First, quantify a current data quality baseline. Then, implement changes. Finally, compare new results to the original baseline to measure success.</td>
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<td>Capacity Building – Inadequate PFM staff professional development and outreach.</td>
<td>Staff that are not well trained, well informed, and well motivated cannot contribute significantly to building a world class IFMIS.</td>
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<td>Technical</td>
<td>ICT Infrastructure – ICT infrastructure issues, including incompatible hardware, computer viruses, lack of e-mail access, and inconsistent versions of software, are ongoing problems. Network – A long history of network connectivity issues.</td>
<td>Government-wide ICT policies and procedures, including Internet security procedures, are important in facilitating information sharing and inter-agency collaboration. A secure, high speed government-wide data network is essential to the successful operation of government-wide information systems like a FMIS.</td>
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<td>FMIS Report Development – No local FMIS report development capability. However, there is a data mart and a limited capability for financial analysis using MS Excel.</td>
<td>Not having a report development capability makes it difficult to implement new capabilities, such as QA monitoring. It also makes it difficult to continue improving PFM processes because new processes frequently require new reports.</td>
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## C. KINGDOM OF TONGA

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<td>Functional</td>
<td>PFM Procedure Documentation – PFM procedures should be well documented and consistent across the government.</td>
<td>This is a common issue. PFM procedures need to be well documented. The Cook Islands are perhaps an example to be emulated with the publication and regular update of their financial procedures manual.</td>
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<td>Professional CoP – Community management, team building, and consensus building. The MoF of the Government of the Kingdom of Tonga tends to organize government staff by teams, which apparently works very effectively. However, currently it only works within the MoF. Similar techniques can be employed on a government-wide scale to achieve similar results.</td>
<td>Team building and community management techniques can be used effectively as an element of a government-wide outreach effort to build consensus and support for the government-wide FMIS. For example, an information portal capability can be used to pull together PFM staff dispersed throughout line ministries and departments across the government.</td>
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<td>Bank Relationships – Leverage bank partnerships to benefit government PFM operations.</td>
<td>Cultivating expanded business relationships with local banks can produce increased government PFM operational efficiencies. For example, a local bank operation is willing to assist with credit/debit card terminals and favorable transaction rates. Benefits to government include reduced workload, reduced risks, and increased speed of transaction processing.</td>
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<td>Technical</td>
<td>Vendor Relations – The COTS FMIS reseller/integrator has been struggling to provide adequate technical support for Tonga, and the relationship with the vendor has suffered as a result. Having a reseller/integrator as strategic business partner can be helpful as these people are experts regarding a COTS FMIS product. However, vendor relationships must be carefully managed. Tonga has complicated the relationship by introducing third party elements into the technology stack, such as a &quot;Virtual Machine&quot; (VM) component. In addition, Tonga has permitted the lines of communication to become fragmented by allowing several different representatives to contact the vendor directly.</td>
<td>Vendor relationships must be carefully managed. Communications with vendors should be coordinated through a single point of contact. Also, the &quot;technology stack&quot; must be considered in vendor relations. If the vendor does not agree to the introduction of a third party element into the stack, such as a VM component, then the client should look for another way to accomplish their objective, or risk the integrity of the vendor relationship. Third party add-ons are notorious spoilers in situations like this.</td>
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ICT infrastructure issues – The Tongan MoF has been...
implementing a government-wide secure data network because no other agency was stepping up to do it. While this is not an ideal situation, it needs to be done in some cases because a FMIS cannot be deployed effectively on a government-wide basis without a secure government network.

Obsolete Systems – Even old, obsolete software/hardware can perform well in the hands of motivated staff. This is illustrated in Tonga by the payroll system. It is an old PC-DOS based system that is literally an antique. However, the staff supporting the system is well organized and determined. As a result, they have demonstrated that a motivated staff can keep old technology operational for many years beyond what many would consider to be the useful life of the system.

Project Teams – Obtain maximum benefit from a motivated project team. The Tongan MoF has a formula that seems to work very well. Most of the MoF staff are organized into small teams, or work groups.

IT Policies and Procedures – The relatively new Tongan Ministry of Communications and Information (MoCI) should be encouraged to act proactively in publishing government-wide ICT policies addressing issues like viruses, e-mail, etc. This is a highly desirable pre-requisite for the deployment of government-wide systems of any type, including accounting and payroll.

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<td>implementing a government-wide secure data network because no other agency was stepping up to do it. While this is not an ideal situation, it needs to be done in some cases because a FMIS cannot be deployed effectively on a government-wide basis without a secure government network.</td>
<td>compelled to lead the implementation of critical ICT infrastructure, such as a government-wide data network needed for deployment of a government-wide FMIS.</td>
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<td>Obsolete Systems – Even old, obsolete software/hardware can perform well in the hands of motivated staff. This is illustrated in Tonga by the payroll system. It is an old PC-DOS based system that is literally an antique. However, the staff supporting the system is well organized and determined. As a result, they have demonstrated that a motivated staff can keep old technology operational for many years beyond what many would consider to be the useful life of the system.</td>
<td>A classic example that demonstrates how a well trained and motivated staff can coax the maximum benefit from even a marginal system.</td>
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<td>Project Teams – Obtain maximum benefit from a motivated project team. The Tongan MoF has a formula that seems to work very well. Most of the MoF staff are organized into small teams, or work groups.</td>
<td>Project teams are a good way to organize people to accomplish specific tasks. Methodologies that can be used to increase team performance include High performance team techniques, which are frequently used in combination with a team portal and other collaboration enabling technologies.</td>
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<td>IT Policies and Procedures – The relatively new Tongan Ministry of Communications and Information (MoCI) should be encouraged to act proactively in publishing government-wide ICT policies addressing issues like viruses, e-mail, etc. This is a highly desirable pre-requisite for the deployment of government-wide systems of any type, including accounting and payroll.</td>
<td>The MoF should establish a strategic relationship with the new ICT ministry to ensure ICT policies, government-wide network infrastructure, and other critical enablers will be appropriate to the needs of a government-wide IFMIS.</td>
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## D. TUVALU

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<td>Functional</td>
<td>IFMIS Characteristics – Consistency and transparency, which are among the key hallmarks of an IFMIS, are reasonably good in Tuvalu because most of the Government financial transaction information flows through the Treasury Department where it is systematically recorded in the ACCPAC FMIS. All ministries and departments except the SOEs are using the standard Tuvalu Government chart of accounts. All payments are made through the Treasury Department using hand written checks, ensuring common processes and good funds control oversight. Controls over data entry, transaction processing, and financial reporting are applied consistently.</td>
<td>It is easier for a small group of people collocated in a common office space to work as a team and readily share information to achieve a high degree of procedural consistency. Of course, it is more difficult and requires more effort to achieve this same result with a larger, distributed workforce.</td>
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<td>FMIS Capabilities – All system capabilities are not yet being exploited.</td>
<td>Most COTS FMIS products have more capabilities than most clients want or need. The full range of capabilities cannot be exploited by all clients.  A common issue. Redundant data means extra workload in multiple ways. First is the duplication of effort associated with recording the same data in two different ways. Then there is the extra effort to reconcile differences that inevitably occur when the same data is managed separately. Another common issue. Countries are limited in their ability to adapt their PFM systems to changing circumstances without the capability to modify existing financial reports or develop new reports. Enacted budgets are not static. An IFMIS needs a flexible budget status tracking capability in order to meet changing needs that tend to be different each year.</td>
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<td>Redundant Data – Duplication of financial transaction data recording is occurring in part because line ministries lack direct access to ACCPAC. In addition to the redundant work effort, considerable time and effort is then spent in non-productive reconciliation.</td>
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<td>Report Development – ACCPAC Reporting. Tuvalu and many other countries have limited capability to modify, enhance, or develop new financial reports.</td>
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<td>Budget Tracking – Budget expenditure tracking is an essential GFMIS/IFMIS capability. It is essential that an IFMIS be able to track budget execution against multiple budget data sets for a given fiscal year. Budget data sets should include the original enacted budget, budget amendments, and/or supplemental budgets.</td>
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ICT Policies and Procedures – Information and Communications Technology (ICT) faces a number of challenges in Tuvalu, from rampant computer viruses to non-air conditioned office space, that place government ICT services at relatively high risk of disruption. Further, in the event of a critical component failure, such as the ACCPAC server, recovery may be inadequate. This is an important general issue for the government as it relies even more on ICT for critical government functions.

Physical Custody – Consideration should be given to locating sensitive equipment in the air conditioned ICT data center in the Government Building to mitigate the relatively harsh operating conditions of the Treasury office space.

A common issue. The MoF is a key stakeholder when it comes to government-wide ICT infrastructure. Consistent ICT policies and procedures are needed across the government.

The desire to maintain custody of sensitive equipment and data is understandable, but sensitive IT equipment is best kept in a secure, climate controlled environment.

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<td>A common issue. The MoF is a key stakeholder when it comes to government-wide ICT infrastructure. Consistent ICT policies and procedures are needed across the government. The desire to maintain custody of sensitive equipment and data is understandable, but sensitive IT equipment is best kept in a secure, climate controlled environment.</td>
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E. VANUATU

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<td>Functional</td>
<td>IFMIS Characteristics – Vanuatu's financial management systems conform to the four general IFMIS characteristics advocated by the World Bank(^{53}) and the U.S. Joint Financial Management Improvement Program as follows: 1. Consistent data classification, 2. Consistent processing, 3. Consistent internal controls over data entry, transaction processing, and reporting, and 4. Consistent design with minimal duplication of effort and data.</td>
<td>Vanuatu's IFMIS is one of the best PFM systems in the region, perhaps the best overall. The COTS FMIS software used in Vanuatu, Infor SmartStream, is widely and successfully installed in the Caribbean, where nearly half of all countries use SmartStream FMIS software.</td>
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<td>MoF FMIS Ownership – Much of the system's success is owed to the active management of the system by MFEM.</td>
<td>The Vanuatu MoF is the IFMIS system owner. It is important to note that the MoF, not an IT organization, is actively engaged in maintaining and continually enhancing the system. Actively linking the PAA to the budget system will facilitate performance budgeting and allow analysts and policy makers to systematically measure progress towards achievement of national goals and objectives.</td>
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<td>Performance Budgeting – The Government of Vanuatu (GoV) has developed a Prioritized Action Agenda (PAA) that essentially serves as a set of guidelines for determining government priorities. The Vanuatu Budget Management System (VBMS) is not yet systematically linked to the PAA, although the Parliament uses the PAA as a reference in formulating budget policy.</td>
<td>As discussed in other sections of this document, eGovernment initiatives hold attractive opportunities for the MoF and other PFM organizations to shape government IT/ICT policies, procedures, and infrastructure to support government-wide deployment, integration, and support of PFM systems.</td>
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<td>eGovernment – eGovernment projects, particularly the government-to-government (G2G) components of eGovernment projects, should be viewed by Finance Ministries as opportunities to help guide and shape a Government's ICT infrastructure policies to better support government-wide</td>
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Integrated FMIS – An integrated FMIS does not necessarily mean a single, monolithic system. Vanuatu actually has a portfolio of financial management systems with varying degrees of integration. Taken together, these form an IFMIS in the sense of an integrated system of systems. A primary, centralized FMIS based on SmartStream COTS software is complemented by a number of ancillary systems and modules, including HR/payroll, the relatively new Vanuatu Budget Management System (VBMS), a Microsoft FRx report facility for SmartStream data, a Vision report and query facility for SmartStream and VBMS, and several other related systems used to address specialized requirements.

PFM Data Exchange – Feeder systems are used to facilitate transaction processing. Examples of specialized feeder systems include two that are used by Vanuatu Customs: 1.) The Automated System for Customs Data (ASYCUDA) developed by the United Nations Conference on Trade and Development (UNCTAD), used to administer import duties, and 2.) The Customs and Taxes System (CTS) used primarily to administer VAT and other taxes. Neither ASYCUDA nor CTS are directly integrated with SmartStream, nor are they integrated with one another at this time. Both may be thought of as "feeder" systems in the sense that summarized transaction data collected by these systems feeds into SmartStream. Other such systems include a cashier receipts system, land title billing system, and a firearms license billing system.

Metrics – The scope of the GoV SmartStream implementation is indicated by some representative sample metrics. The system has about 320 users scattered over 70 sites linked by a wide area network (WAN).
Maintaining System Relevance – Vanuatu's financial information systems are well maintained, with regular, ongoing adaptive and perfective maintenance taking place, as well as new development. Sensitive server equipment is maintained in a well equipped, designated data center administered by dedicated IT/ICT staff. IT security policies are in place and enforced. A disaster recovery plan based on a reasonably comprehensive risk assessment is in place, and new recovery capabilities are being added. For example, a backup data center is planned as part of an eGovernment project that is just starting.

System Evolution – One reason for the highly successful and sustainable GoV IFMIS is the continued on-site long term business relationship with elements of the original development team. This has provided a significant sustainment capability to continue to enhance and evolve the system so that it remains relevant. This is a unique circumstance that other countries may not always be able to replicate.

Lessons Learned

- a system query? Average customer response time for trouble calls to the help desk? Average wait time for a new UserID? Date and time of next scheduled service outage? And so on.
- The lesson here is that information systems are dynamic. Static systems tend to be much less relevant than systems that are continually being updated and enhanced. Systems that have no local report development capability usually also have no capability to evolve and continually be improved. Over time, these static systems tend to lose relevance and credibility.

- Long term strategic relationships can be important to the successful evolution of mission critical information systems. Vanuatu was fortunate in being able to sustain a relationship with elements of the original system development team.
## F. REPUBLIC OF THE MARSHALL ISLANDS

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<td>Functional</td>
<td>FMIS Capabilities – Underutilization of system capabilities has impeded the efficiency gains expected from the use of technology.</td>
<td>A business process re-engineering review is typically needed to help optimize procedures to more fully exploit the capabilities of a FMIS.</td>
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<td>PFM Integration – The other packages – EZ Tax and Supply data - used for tax and procurement are stand alone software and are not integrated with the 4gov system. The lack of integration leads to duplication of data entry effort and avoidable reconciliation of data between the systems, besides affecting the data consistency in the system due to repetitive recording of the same data elements at different places and different points in time.</td>
<td>Revenue systems and other ancillary PFM systems are typically stove piped, stand alone systems. However, these systems can be adapted as feeder systems to exchange data with the central FMIS.</td>
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<td>Limited Perspective – Compartmentalized view of the software.</td>
<td>A common issue. A proprietary stovepipe perspective is common among the stakeholders of ancillary PFM systems. It takes time and effort to help develop a government-wide perspective among the stakeholders of peripheral PFM systems.</td>
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<td>FMIS Data Quality – Inadequate data validation.</td>
<td>A common issue. Quality assurance and data validation are not often important elements of initial FMIS implementations. Therefore, they must be added later as a retrofit.</td>
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<td>System Ownership – The ownership of the system is with the IT department which has limited knowledge of financial procedures.</td>
<td>An important lesson learned. While IT/ICT support is essential to a FMIS, the ownership of the system must remain with the organization responsible for the quality and integrity of the PFM data. An IT organization should never have ownership of, or responsibility for, PFM data.</td>
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<td>Capacity Building – A systematic capacity building effort is required for developing in-house expertise which would help in using the higher capabilities of the system and sustaining the system in the longer run.</td>
<td>Capacity building in the form of staff training is important to long term system sustainability. However, sending staff for classroom training in a foreign country can be expensive. Therefore, bringing in trainers to train staff locally, and participation in distance learning programs, may provide effective, low cost alternatives to sending staff abroad for training.</td>
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<tr>
<td>Technical</td>
<td>Practical Financial Standards – Modified accrual basis (cash management, forecasting, debt management, etc.). Compliance with international financial standards has many advantages. However, standards developed for larger, more mature economies may be impractical for many smaller countries.</td>
<td>A modified accrual basis may be more practical for small countries, particularly as a starting point while gaining experience and institutional maturity. For countries that feel compelled to adopt full accrual standards, that change can be planned as a future enhancement. In any case, before attempting a transition to full accrual standards, a business case analysis should be conducted to consider the advantages, risks, and estimated costs associated with adoption of full accrual standards.</td>
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<td>Budget Tracking – Budget envelopes issued by the BCC contain complete details of proposed budgets at the lowest level of the budget classification, i.e. Fund - Cost Center - Line item.</td>
<td>It is important that budget expenditure status be tracked at the same level of detail as the enacted and apportioned budget.</td>
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<td>Evolutionary Implementation – Phased implementation of more sophisticated methodologies (e.g., medium term budget).</td>
<td>Gradual, evolutionary change is easier to manage and is generally more acceptable to reluctant stakeholder communities.</td>
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<td>Technical Secure Government-wide Data Network – Extend connectivity to line ministries to facilitate remote access to them for on-line submission of data and generation of reports or, in the absence of viable remote access set up systems to enable this to be on a batch-mode basis, regularly.</td>
<td>Robust data connectivity with line ministries is essential for FMIS deployment.</td>
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<td>FMIS System Administration – Establish procedures for system administration, prepare operation manuals for guiding user in correctly using the system, and document financial procedures. No established and laid down procedures for systems administration, including registration of new users, allocation of access rights, backups, disaster recovery,</td>
<td>A well administered FMIS is more effective, with overall greater accuracy and reliability.</td>
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<td>Financial Reports – Optimize its reporting mechanism.</td>
<td>A common issue. Development of financial reports is not the strong suit of many FMIS products. When selecting a FMIS product, this characteristic should be evaluated in some detail.</td>
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54 When estimating costs associated with adoption of full accrual accounting standards, analysis should consider both the initial transition costs as well as ongoing additional operating costs that will continue indefinitely into the future. As usual, stakeholder communities (e.g., budget, audit) should be involved in the planning and decision making, including development of the business case analysis.
The lessons learned information compiled from the six PICs that have been assessed by PFTAC represents a valuable body of experience that should be useful to any Pacific island country considering an IFMIS project. This information is offered to Pacific island countries that may wish to take advantage of the experience of others to save time and money by avoiding some of the issues encountered by other Pacific countries. Of course, it is also possible to learn from and leverage the successful aspects of the experiences of other countries.

As a practical matter, the techniques and approaches appearing throughout this document will not provide complete resolution of all issues in all cases. That should not be seen as a problem or a failure to address all possible circumstances. Rather, it is suggested the recommended techniques and actions appearing in this document also be considered examples to be adjusted to specific situations as needed to create more workable solutions. Also, in some instances it may be helpful to reduce the negative impact of an issue without necessarily achieving immediate, complete resolution.

The remainder of this section will first review some of the more positive lessons learned from the FMIS experience of the six PICs reviewed by PFTAC, and then turn to some of the less positive aspects. Some of the more positive lessons learned findings and suggestions for leveraging and applying them include:

1. **Common Technology offers good potential for Common Solutions** – The "technology stack"\(^55\) (i.e., the database, operating system, and computer hardware) used with the COTS FMIS software found in the six PICs reviewed by PFTAC is essentially the same. This is a fortunate and remarkable finding considering there was no coordination among the six countries\(^56\). The one significant exception is the top layer of the technology stack, the application layer, where each of the six countries selected a different COTS FMIS application product, those being Microsoft Dynamics SL, SmartStream, SunSystems, ACCPAC, Attaché, and 4gov.

The fact that each country independently selected nearly identical GFMIS technology platforms speaks to the wisdom, scalability, and economy of the chosen technology stack. The common operating system, Microsoft Windows Server, and the common database, Microsoft SQL-Server, are used together in 5 of the 6 countries, while the computer hardware is the same type in all 6 countries. The FMIS technology stacks are so similar from one country to another that each of the six GFMISs reviewed could operate on identical computers. Also, with the high degree of flexibility that is a feature of this technology stack, it can be readily sized to easily support the full range of Pacific island countries across the entire spectrum of need from the smallest to the largest countries. Therefore, it represents an example of a highly flexible common solution that could be implemented in every Pacific island country with no need for compromise.

\(^{55}\) Modern computer systems are engineered and managed in layers, which may be thought of as being stacked, one on top of the other, forming a "stack". The top, or application, layer includes the user interface, the part that is seen and touched by users. Between the top application layer and the bottom physical hardware layer are a number of intermediate layers. Of these the data management and operating system layers are the most critical. More information available at: http://en.wikipedia.org/wiki/Technology_stack.

\(^{56}\) Or more than 5, to factor in countries not studied so far, but using similar systems, for instance Palau uses the same basic systems as RMI.
The high degree of commonality among technology platforms potentially lends itself to the development of near universal FMIS related capabilities that could then be shared across multiple Pacific island countries at relatively low cost. Multi-country, common use capabilities could be developed regionally in a coordinated effort using pooled resources from multiple countries, or it could be done by one country acting as a center of excellence and then shared with other interested countries as needed, or some combination of regional and single country approaches. Some possible examples include:

- **Financial Analysis and Reporting** – Many countries report some degree of frustration in obtaining financial reports and analytical data from their GFMIS. A general solution to this issue can be developed on a single country or regional basis that should then work well in countries using the common FMIS technology stack, with Attaché being a possible exception because of stack differences. An example of a commercial product with the potential flexibility to work with the common technology stack found in at least 5 of the 6 countries reviewed for this report is Infor Q&A, sometimes referred to as Infor Vision. Analysts generally find Q&A easy to understand and learn because of its Excel user interface. Other similar capabilities can be developed regionally or at an individual country level using MS Access, MS Excel, or other technologies. Having a general solution that can be readily tailored to country specific circumstances can save significant time and money for countries using the 5-country common technology stack and wishing to implement a more user-friendly financial analysis and reporting capability.

- **Data Network** – Many countries report issues associated with deploying IFMIS functions to line ministries due to network connectivity issues like poor stability, performance, and security. Network technology solutions for common use by many countries can be developed for implementing secure, ministry-to-ministry Intranet data networks for GFMIS deployment to line ministries and departments. For example, a standard suite of ICT network devices capable of ready adaptation to specific country circumstances could be developed through a regionally coordinated research and development (R&D) effort with the resulting specifications, training, and even turnkey solutions being made available at low cost to interested countries.

- **Database Administration** – Common approaches can be developed for MS-SQL database administration to ensure peak performance and reliability in all cases.

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57 As seen in the Caribbean where Barbados has developed add-ons for SmartStream and then shared these with other SmartStream countries in the region.

58 If a commercial product like Q&A were used, there would be associated costs for licensing and maintenance. Performance Note: System administrators are sometimes reluctant to allow analytical products like Q&A, Access, and Excel to query live production transactional databases because of the potential adverse impact on system performance. Therefore, system administrators often recommend that production data be periodically copied to a non-transactional database (e.g., a data mart or data warehouse) where it can be more safely used for analysis and reporting purposes without impacting the performance of the transactional system.

59 A private Intranet is different and separate from the public Internet. It is a secure computer network that uses Internet technologies to communicate and work collaboratively within an organization. An Intranet may be thought of as a secure computer network used to conduct official government business among ministries and departments, including PFM related government functions. More information at: http://en.wikipedia.org/wiki/Intranet.

60 It should be noted that a reasonably fast (e.g., 1 megabits per second) government-wide network need not be difficult or expensive to implement, depending on specifics. However, where Internet access via the network is required, this can often add significant expense and complexity, and can greatly reduce network security and performance. Internet access must be carefully integrated with a government network to minimize risk. Internet access capability should be included in the design of a Government-wide Intranet so it can be added with minimal disruption.
possible solution may be as simple as establishing a virtual MS-SQL user group using e-mail and a team portal. Technical staff such as MS-SQL administrators would generally be expected to have e-mail and Internet access, thus making a virtual user group feasible.

- **Business Continuity** – Basic business continuity plans can be developed once, on a single country or regional basis, and then adjusted to specific situations as needed for local circumstances across a broad range of PICs. For most countries, adapting an existing, proven business continuity plan will be faster, cheaper, and easier, and of better quality, than developing an original plan.

- **Information Portal, Document Management and Publication** – A single country or regional information portal solution may be developed and adapted as needed for local circumstances in countries where the 5-country common technology stack is being used. Microsoft SharePoint is an example of a widely used, relatively low cost add-on product that can be implemented quickly and cheaply, using the same technology platform as the FMIS, to serve as an information portal, and/or a document management system, and/or, when integrated with MS Word and Excel, can readily provide a sophisticated collaborative document publication capability. In cases where government staff are already familiar with Word and Excel, there is a very small, easily managed learning curve in implementing collaborative authoring and publication of government documents, such as the annual budget. In most cases where PICs already have MS Word and Excel licenses, as well as already having the 5-country common FMIS technology stack platform, adding specific software capabilities, like that of SharePoint\(^61\), to an existing ICT environment may be done quickly and inexpensively.\(^62\) Many other COTS and open source options are available with varying degrees of functionality and integration.

2. **Demonstrated Sustainability** – The six countries reviewed by PFTAC all demonstrated significant FMIS sustainability over a period of five years or more, with most PFM systems operating successfully for over ten years. This is an excellent track record given the relatively harsh environmental factors, and shortages of staff, budget, and equipment facing FMIS administrators in the Pacific. The fact that all countries examined were able to sustain sophisticated software over a period of years indicates that sustainability is not a major issue in most cases.

3. **Well documented financial procedures** – Financial procedures are not well documented in all countries reviewed. However, the Cook Islands and Vanuatu stand out as examples where financial procedures are reasonably well documented. One advantage of having good procedural documentation is that procedures tend to be implemented more consistently throughout all line ministries and departments resulting in a high degree of consistency of financial data within the central financial database. With respect to procedural documentation, these countries are centers of excellence for others to emulate.

Some less positive lessons learned findings from the six countries reviewed and suggestions for leveraging and applying the lessons learned include:

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\(^{61}\) Microsoft SharePoint is used here as an example and not as a recommendation.

\(^{62}\) In PICs not using the common technology stack and where MS Word and Excel are not available, similar functionality may alternatively be obtained from a variety of popular COTS and Open Source software packages.
4. A 2008 PFTAC report\textsuperscript{63}, discussed previously in section II.(H.), and the six country-specific PFTAC IFMIS reviews that form the basis of this document all find that the piecemeal approach used in the Pacific for PFM information system development and management has not generally been very successful at delivering integrated PFM systems. The present report does not belittle efforts made so far and recognizes that some good work has been done, some excellent progress has been achieved, and some valuable lessons have been learned, as described throughout this document. However, progress to date has, in most cases, been limited to implementation of stand alone GFMISs having little or no integration with revenue, budget, planning, debt management, banking, and other PFM functions. In addition, most countries continue to struggle with network infrastructure issues associated with deployment of FMIS functionality to line ministries and departments. Overall, the piecemeal results achieved thus far have not been as good as originally hoped.

Issues associated with integrating PFM information systems and functions have proven to be intractable. However, this is not an indication that the issues can not be resolved. All of the issues discussed in this document are resolvable, either partially or wholly, and all of them should be mitigated or fully resolved as time and resources permit. Techniques for dealing with individual issues appear throughout this document. However, in light of the fact that the piecemeal approach has not worked very well and has brought to light a number of associated IFMIS issues, consideration needs to be given to identifying practical alternatives to the piecemeal, fragmented approaches commonly used thus far. A bolder approach may be called for in some cases.

The following table lists top IFMIS related issue categories across a continuum of response options ranging from status quo, through incremental, to innovative, as follows:

- **Status quo** – Maintain current status.
- **Incremental** – Selectively and incrementally apply the suggestions from this document on a unilateral, single country basis.
- **Innovative** – Different approaches, including active participation in formally recognized regional cooperative organizations (e.g., PIFMA), new strategic partnerships, regional standards, and other bold new options.

Examples of issue categories and mitigation techniques at the various levels of effort, commitment, and innovation are listed in the table that follows.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>STATUS QUO</th>
<th>INCREMENTAL</th>
<th>INNOVATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Network</td>
<td>Continued use of inconsistent government networks that are often incomplete, insecure, and/or not working well.</td>
<td>Seek opportunities to leverage government-wide network infrastructure projects and/or eGovernment initiatives for IFMIS purposes. Incrementally assess and remediate existing data network(s).</td>
<td>Regional coordination to devise a strategy for Pacific-wide availability of high speed Internet and secure high speed government Intranet, including near term deployment of interim solutions for linking</td>
</tr>
</tbody>
</table>

### FMIS Development and Management Approach

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>STATUS QUO</th>
<th>INCREMENTAL</th>
<th>INNOVATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Stack</td>
<td>Near identical FMIS technology stacks, excluding the application layer, were found in 5 of 6 sample countries despite lack of local and regional standards. This is a lesson for countries to emulate. Other PFM systems, such as revenue, have different IT stacks in most cases.</td>
<td>Seek opportunities like a flexible technology stack to make incremental improvements to the GFMIS on a single country basis. Seek opportunities to bring other PFM system IT stacks more in line with the FMIS stack.</td>
<td>IFMIS enhancement solutions that leverage common infrastructure may be developed through a regional consortium and made available at low cost to interested countries. Where leveraging is not practical, costs will tend to be higher. Some countries may consider acting as a regional center of excellence to advise or assist other countries.</td>
</tr>
<tr>
<td>IFMIS</td>
<td>Fragmented, stand alone PFM systems lacking transparent analysis and reporting have resulted from a piecemeal approach to system implementation and management over time.</td>
<td>Gradual, incremental integration among PFM systems where opportunities permit. An incremental integration plan may be developed to lay out a sequence of steps that will gradually increase integration. Enforcement of a government standard CoA and data coding scheme for all PFM systems.</td>
<td>In the case of an IFMIS, adoption of regional standards can make it easier to implement and sustain an IFMIS through regional coordination of IFMIS support resources. Regional coordination of standard IFMIS capabilities can lead to time and money saved, while improving the consistency and validity of IFMIS products.</td>
</tr>
<tr>
<td>CoP</td>
<td>Irregular, reactive meetings and training. No ongoing series of regularly scheduled professional meetings or program of refresher and new staff training. Irregular communication between MoF PFM managers and line ministry PFM staff.</td>
<td>Incrementally increase the frequency and expand the content of regular government-wide PFM meetings and training. The MoF to sponsor an annual series of professional development activities, such as seminars and workshops. Informally assign key staff to develop a business case analysis of</td>
<td>Support and participate in a regionally coordinated effort to develop a framework for professional CoP management. Many countries will find it easier and more practical to develop a framework for CoP management as part of a regional effort than to struggle with it alone. A</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>STATUS QUO</td>
<td>INCREMENTAL</td>
<td>INNOVATIVE</td>
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<tr>
<td>eGovernment</td>
<td>None of the 6 example Pacific countries have yet fielded a comprehensive eGovernment implementation, nor have they worked out a comprehensive plan for doing so. Some have begun with relatively simple web sites providing inconsistent government content, but no significant capability for the public to interact with government offices.</td>
<td>Assemble a team of key people to coordinate development of a vision and a comprehensive strategy for eGovernment. At the same time, begin working on a single country business case analysis to assess the benefits and costs of the top three eGovernment implementation options. The business case should address how government services to citizens will improve, and how government PFM operations will become more efficient as a result of eGovernment implementation.</td>
<td>Rather than struggling unilaterally with the significant challenges and complexities of eGovernment, help work out a faster, cheaper, better regional solution. A common regional approach, including a common technology stack, will be cheaper and easier to implement and to maintain in the future due to economies of scale and the engineer once, use many benefits of a multi-country solution. In addition, a common strategy is needed for negotiations with Banks regarding electronic transaction costs, levels of security, and other considerations.</td>
</tr>
</tbody>
</table>
ANNEXE

1. FMIS Quick Reference Guide
2. FMIS Software Products Comparison Table
Key software evaluation criteria to be considered as part of a FMIS software selection process include:

**Functions and Characteristics** – Product functions and characteristics are the most significant criteria for evaluating software options. As FMIS software products are compared and evaluated, it is important to focus on what are considered to be the most important functions and characteristics. A typical criteria list may be about 1-4 pages in length. A reference list of basic evaluation factors appears in the table further below. When evaluating software, select the functions and characteristics that are most important for the intended purpose. Then, assign numerical weighting factors to each function or characteristic to be used in scoring and ranking.

**Technology Fit** – It is important that the technology components used for a FMIS product be a good match for existing ICT hardware and software already in place and the expertise of the in-house IT staff. It is also important to consider how the product technology matches other in-house systems in order to minimize integration issues. However, it is also important to consider strategic technology trends that have momentum for the future. Examples of strategic technology trends include the Internet and service oriented architecture (SOA).

**Software Companies** - Software vendor considerations are a critical part of the software selection process. A COTS FMIS software product is not a static, one-time software solution; a COTS software product purchase involves a long term, strategic relationship with the software vendor. The market position of the product, the likelihood that the company will be in business in 5-10 years' time, and the vendor's future strategic product plans are all valid considerations.

**Implementation Vendor/Reseller** – Selecting a good implementation vendor/Value Added Reseller (VAR)/system integrator is at least as critical as selecting an appropriate FMIS software solution. The VAR is the company that will be providing the technical implementation experts who will be involved in the challenging work of implementing and deploying the FMIS software. A VAR that has successfully implemented PFM FMIS systems before and that has experience with the software product being implemented is highly desirable. There are many VAR/Implementation Partner options available, so it is important to select one that can demonstrate previous successful implementation projects in similar circumstances.

**FMIS Maintenance and Support** - Clients can usually expect to pay between 15-25% of the annual license cost for maintenance. In a typical license and maintenance agreement, this entitles the client to receive software upgrades and some level of support. It is important to determine that the investment being made on an annual basis is suitable. In some cases, countries may want to document their expectations for technical support in a service level agreement (SLA) document, in addition to the license and technical support agreement document, to help make clear to all sides exactly what is expected.

**Total Cost of Ownership** – As mentioned in other sections of this document, business case analysis that includes estimates of the total lifetime costs of system ownership should be performed when selecting a COTS FMIS software solution. Total costs should include the costs for ICT hardware, systems software, and all software components needed to deploy the FMIS. For example, if CITRIX is needed to compensate for low bandwidth capacity, then the
additional cost of CITRIX licenses and associated hardware must be included. The cost for the next 5-10 years should be considered in order to develop a realistic view of the long term costs.

**Return on Investment (ROI)** – Optionally, more sophisticated business case analysis of the total cost of ownership will include staff and facilities costs. These total cost estimates can then be compared against staff and facilities costs for other options, including continuing to use a manual, paper based PFM system. ROI may also be a determining factor for considering the advantages of low cost open source software vs. commercial software products. The relatively low cost of open source software may be offset by the higher cost for additional staff needed to support open source software. In general, a project should show a 3-5 year return on investment in order to receive favorable consideration.

**A reference list of suggested evaluation factors appears in the table below.** This list is provided as an example to be used for discussion purposes and should not be considered to be all inclusive. The reference list may be used to quantitatively rank different FMIS software product options as follows:

- Countries may assign WEIGHT values ranging from a high of 10 to a low of 0.
- Functions that are not needed may simply be assigned a WEIGHT value of 0 (i.e., zero).
- Individual products may be assigned SCORE values from a high of 10 to a low of 0.
- WEIGHT values may then be multiplied by SCORE values to yield TOTAL values.
- Adding all the individual TOTAL values yields an overall TOTAL score for a product option.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>FUNCTION</th>
<th>WEIGHT</th>
<th>SCORE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting &amp; Financial Management (Essential)</td>
<td>General Ledger</td>
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<td></td>
<td>Accounts Payable</td>
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<td>Accounts Receivable</td>
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<td>Budget Execution</td>
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<td>Budgetary Funds Control</td>
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<td>Fund Management</td>
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<td></td>
<td>Basic Financial Reporting</td>
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<tr>
<td>Accounting &amp; Financial Management (Additional)</td>
<td>Budget Formulation</td>
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<td>Document Management System</td>
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<td>Bank Reconciliation</td>
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<td>Payroll Management</td>
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<td>Human Resources</td>
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<td>Purchasing</td>
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<td>Vendor Management</td>
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<td>Easy to learn report creation</td>
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<td>Advanced Reporting and Dashboards</td>
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<td>Business Intelligence</td>
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<td>CRM &amp; SRM</td>
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<td></td>
<td>Credit Card Processing</td>
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<td></td>
<td>Inventory Management</td>
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<td>Property Management</td>
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<tr>
<td>General System Capabilities</td>
<td>Cash, Modified Accrual, or Full Accrual Accounting</td>
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<td></td>
<td>Multi-currency management</td>
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<tr>
<td>CATEGORY</td>
<td>FUNCTION</td>
<td>WEIGHT</td>
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<td>Number of included reports</td>
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<td></td>
<td>Maximum number of concurrent users</td>
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<td></td>
<td>Facilitates support for international standards</td>
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<td></td>
<td>Integrates with MS Office</td>
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<td>Web services support</td>
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<td>Team/Group collaboration</td>
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<td></td>
<td>Facilitates continuity of operations</td>
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<tr>
<td></td>
<td>Support for Bank Integration and all electronic payment and receipt transactions</td>
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<td></td>
<td>Check printing capability, including MICR characters</td>
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<tr>
<td>System Administration</td>
<td>System Administration Tools</td>
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<td>System activity metrics &amp; analysis</td>
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<td>Automated trouble sensing alerts</td>
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<td>Configurable dashboard view</td>
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<tr>
<td>Product</td>
<td>Market Position</td>
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<td>Success Stories</td>
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<td></td>
<td>After-Sale Services</td>
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<td></td>
<td>Customer Portal</td>
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<td>Available 3rd Party Add-ons</td>
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<td></td>
<td>Publicly stated future strategic direction</td>
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<tr>
<td>Ergonomics</td>
<td>Web Interface for all functions</td>
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<tr>
<td></td>
<td>CITRIX compatible</td>
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<tr>
<td></td>
<td>Data Filtering and Searching features</td>
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<tr>
<td>Productivity</td>
<td>Productivity Tools</td>
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<td></td>
<td>Work Flow</td>
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<tr>
<td>Ease of Use</td>
<td>Fast Learning Curve</td>
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<td></td>
<td>Documentation accessibility</td>
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<tr>
<td></td>
<td>Context Sensitive online help capability</td>
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<tr>
<td></td>
<td>Integration of analysis and document functions with MS Office Suite</td>
<td></td>
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</tr>
</tbody>
</table>
## FMIS Software Comparison Table

<table>
<thead>
<tr>
<th>Core FMIS Functions *</th>
<th>Attaché</th>
<th>SunSystems</th>
<th>SmartStream</th>
<th>MSD-SL</th>
<th>ACCPAC</th>
<th>FreeBalance</th>
<th>4gov</th>
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<tbody>
<tr>
<td>General Ledger</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
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<td>Yes</td>
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<td>Financial Reporting</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fund Management</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost Management</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Budgetary Funds Control</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Additional FMIS Functions *

| Payroll              | Yes     | No         | Yes        | Yes ** | Yes ** | Yes         | Yes  |
| Budget Formulation   | Limited | Limited    | Available  | Yes    | Yes    | Yes         | Yes  |
| Revenue (incl. donor grants and loans) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cashiering (volume receipt transactions) | ?? | ?? | No | ?? | ?? | ?? | Yes |
| Procurement, Vendors | Yes     | Yes        | Yes         | Yes    | Yes    | Yes         | Yes  |
| Fixed Assets Stock/Inventory | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Property Management  | Yes     | Yes        | Yes         | Yes    | Yes    | Yes         | Yes  |
| Personnel            | No      | Yes        | Yes         | Yes    | Yes    | Yes         | Yes  |
| Management Information | Limited | Yes | Yes | Yes | Yes | Yes | Yes |
| Bank Reconciliation  | Yes     | Configurable | Available  | ??     | ??     | Yes         | Yes  |
| Work Flow            | ??      | ??         | Yes         | Yes    | Yes    | ??          | Yes  |

### Other Characteristics

<table>
<thead>
<tr>
<th>No. of Concurrent Users (licenses found)</th>
<th>Up to 100</th>
<th>24</th>
<th>100+</th>
<th>6</th>
<th>8</th>
<th>Not Observed</th>
<th>Not Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Concurrent Users (from vendor literature)</td>
<td>Up to 100</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>15 per processor</td>
<td>50+</td>
<td>Unavailable</td>
<td>Unavailable</td>
</tr>
<tr>
<td>Standards compliant</td>
<td>Undetermined</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Analytics</td>
<td>Option</td>
<td>Yes</td>
<td>Add-on</td>
<td>Yes, OLAP</td>
<td>Yes</td>
<td>Yes, OLAP</td>
<td>??</td>
</tr>
<tr>
<td>Works with MS Office</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Excel</td>
<td>??</td>
<td>??</td>
</tr>
<tr>
<td>Import Data</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Export Data</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Technology

| Web based application support | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Web services support | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Operating System | Windows | Windows | Windows | Windows | Windows | Windows | Windows |
| Operating System | Windows | Windows | Windows | Windows | Windows | Windows | Windows |
| Hardware | x86 | x86 | x86 | x86 | x86 | x86 | x86 |
| Database(s) | Proprietary | MS-SQL | MS-SQL | MS-SQL | Pervasive SQL, MS-SQL, DB2, Oracle | MS-SQL, Oracle | MS-SQL, MySQL |

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* Per the Joint Financial Management Improvement Program JFMIP-SP-02-01. ** A payroll module is included for U.S. and Canadian payroll. 
* Numbers represent ideal conditions. Actual experience will vary. 
* Developed specifically for government use, Public Financial Management (PFM) 

Note: Product information is based in part on 3rd party descriptions and reviews and represents a good faith effort to be as accurate as possible. This information should not be solely relied upon for informing product selection initiatives.