

**For discussion
on 6 May 2002**

Legislative Council Panel on Financial Affairs

**Replacement of the
Government Financial Management Information System**

PURPOSE

This paper seeks Members' views on the Treasury's proposal to replace the Government Financial Management Information System (GFMIS).

BACKGROUND

2. The GFMIS is a group of computerised financial systems that support various accounting and financial management processes in the Government. It comprises systems which together cover all income and expenditure under the General Revenue Account and for projects funded under the Capital Works Reserve Fund and other Funds, in total handling consolidated revenue of \$225,060 million and consolidated expenditure of \$232,894 million for the year 2000-01. It is built around the Ledger Accounting and Financial Information System (LAFIS) which is a computer-based financial information system running on a central mainframe in the Treasury. LAFIS was first introduced into the Government in 1983. As all the accounting transactions are updated to LAFIS, LAFIS can be regarded as the general ledger of the Government and is the platform for all financial management information used by managers and Controlling Officers. Its purpose is to keep the Government's accounts for which the Director of Accounting Services (DAS) is responsible, and to assist Controlling Officers and departmental managers in over 80 bureaux and departments to monitor and analyse their financial position by providing financial reports and on-line enquiry facilities for access to the information held in a central database.

3. Over the years, the Treasury has from time to time endeavoured to incorporate enhancements and add-on sub-systems to LAFIS to meet the increasing demand for the provision of quality and timely financial management information. The LAFIS software, however, is outdated and the proprietary

platform of the existing mainframe computer system makes it difficult to efficiently interface with other systems and be further enhanced to cope with evolving user requirements. Operational efficiency is being compromised as a result of these system limitations.

4. In 2000, the Treasury undertook a review of the medium and long-term strategy of the GFMIS. Upon completion of the review, the Treasury was of the view that the existing GFMIS should be replaced and a new system rolled out by phases to all departments and bureaux before 2007. As concluded in the review, system replacement is essential because the continued use of the existing GFMIS places two key risks or constraints on the Government –

(a) LAFIS is a very old product first designed in the early 1970s. Over the years, the number of LAFIS users worldwide has been reducing and the trend is likely to accelerate. Likewise, the system expertise and vendor support have been diminishing. The vendor has indicated to us that it cannot guarantee support for our system beyond 2007. As a result, the Treasury will find it increasingly difficult to obtain support from a source that has in-depth knowledge of the relevant technology. Staff of the Treasury do not have the expertise to take over the maintenance responsibility and on-going enhancements for the system modules and underlying computer programmes.

(b) LAFIS is considered inadequate and inflexible by departmental users in a number of aspects, including –

(i) **Inflexibility in supporting departmental reporting needs**

The system is unable to accommodate changes to code structures and analysis requirements efficiently. Substantial effort is usually required to cope with changes such as cost centre reorganisation, restructuring of budget holders, transfer or merger of Heads and Subheads. Some departments need to revert to their own local systems to supplement LAFIS as a result of such inflexibility. This often results in duplication of data input, manual intervention and cumbersome reconciliation at departmental level.

(ii) **Inflexibility in meeting future changes in financial management framework**

LAFIS has limited capability and flexibility to support future changes in the financial management framework such as the introduction of accrual accounting. There is no accrual

functionality in LAFIS. The present limited requirements for accrual accounting, which are mainly for preparing cost analyses for charging and for Operating Accounts, are now dealt with by extracting data from LAFIS and other sources together with manual inputs and manipulation in spreadsheets. However, with the growing demand for accrual-based reporting for the Government as a whole as well as for departmental management, the provision of system functionality and automated processes for accrual accounting will become increasingly important.

(iii) **Difficulty in leveraging widely adopted open system standards to facilitate integration**

The system operates in a proprietary environment. This makes it very difficult for the Treasury to take full advantage of the widely-adopted architectural standards adopted by other systems at central and departmental levels to facilitate efficient system integration, such as data exchange between systems for commitment updating and fund checking.

5. In summary, the existing GFMIS, which is built around LAFIS, has been used by all bureaux and departments for almost 20 years. The vendor has indicated that it cannot guarantee support for LAFIS beyond 2007. In addition, the outdated software and limited functions of LAFIS cannot cope with the evolving financial and management information requirements of central and departmental users. Some further information on the previous reviews of the GFMIS leading to our current proposal is set out at **Annex A**.

CURRENT SITUATION

6. In 2001, the Treasury engaged a consultant to conduct a feasibility study on the replacement of the existing LAFIS-based GFMIS, assess the system strategy and scope, and carry out an up-to-date and detailed assessment of the resource implications. The feasibility study was completed in March 2002. With the support of the Secretary for the Treasury and in consultation with the Director of Information Technology Services, DAS proposes to replace the existing LAFIS-based GFMIS with an up-to-date system to mitigate the risk of the withdrawal of vendor support for the existing system and to ensure the delivery of continued and enhanced support and services to bureaux and departments to meet the evolving financial and management information requirements.

The Proposed System

7. Based on the recommendations made by the consultant, we propose to implement a new GFMIS with the following major functions –

Core functions

- (a) recording and reporting of approved provisions;
- (b) recording and reporting of commitments;
- (c) processing of payments with fund checking;
- (d) recording and reporting of cash receipts and payments;
- (e) generating reports for budgetary control;
- (f) preparation of the annual accounts for individual Funds and the Consolidated Account on a cash basis;

Additional functions

- (g) automatic fund checking for all transactions;
- (h) integrated costing and management reporting;
- (i) recording and reporting of fixed assets; and
- (j) accrual accounting.

The core functions are basic functions being performed by the existing general ledger and payment systems. The new GFMIS will provide an environment for these core functions to be performed more efficiently. The additional functions are introduced to improve the accounting and financial management processes in the Government.

8. The proposed new GFMIS is a centralised system operated by one computer bureau serving some 5,400 users in departments and bureaux. Users will access the system using personal computers with browser software and utilising the existing government networks. The system will consist of a General Ledger and a number of modules such as Accounts Payable, Fixed Assets, Costing and Management Reporting, and Bank Reconciliation, all of which will be closely integrated, thereby ensuring that information in the system is updated from a single input. For instance, fixed assets records will be updated as a result of an approval for payment for an asset.

9. With the adoption of open system architecture and standards, the new GFMS will have the capability to interface efficiently with other systems of the Government, and to facilitate e-business across government systems. This is particularly important with respect to procurement systems under the auspices of Government Supplies Department (GSD), including an Electronic Marketplace System (EMS) for low value government purchases which GSD is contemplating. We will give very close attention to the interface of the GFMS and the EMS.

ANTICIPATED BENEFITS

10. The successful implementation of the new GFMS will enable the Treasury and user departments and bureaux to achieve the following benefits –

(a) **Improving accounting and financial management processes**

The proposed system will bring about improved processes and enhanced functions, such as automated commitment creation and fund checking as well as automated and streamlined workflow to process financial transactions. We are aware of various software designs which will enhance efficiency and prompt process re-engineering in bureaux and departments. However, it is not possible now to identify precise savings or efficiency gains as the detailed processes can only be mapped out after the software has been selected. Once this has been done, we will assess the actual impact of these re-engineered processes on departmental workload and the extent of benefits that may be obtained in consultation with bureaux and departments.

(b) **Enhancing management information reporting**

Costing and management reporting will constitute an integral part of the proposed system which offers user-friendly functions for reporting, cost allocation and managing statistical data. The system will provide efficiently more comprehensive and more readily available financial management information to bureaux and departments to support informed decision making, evaluation and planning and to enhance cost-control and cost-effectiveness.

(c) **Providing accrual accounting with fixed assets functionality**

The proposed system will include the provision of accrual accounting functionality to meet the current and future demand for accrual-based reporting requirements mentioned in paragraph 4(b)(ii)

above. In addition, the fixed assets functionality will support better tracking, utilisation and management of government assets.

(d) **Supporting e-Government initiatives**

The proposed system, which will be a web-based system operating in an open information technology (IT) environment, will enable the business sector to interact with the Government via the web thereby increasing the efficiency of the interaction between Government and the business sector (e.g. electronic transmission of remittance advices and vendor enquiries about outstanding invoices) and reducing the cost to the business sector.

11. We estimate that the annual savings after the implementation of the new GFMIS will amount to \$18.0 million in 2006-07 and \$40.3 million starting from 2007-08, made up as follows –

		(\$ million)	
		2006-07	2007-08 onwards
Realisable savings			
(a)	Staff savings in Treasury (a reduction of 21 posts in 2006-07 and a further reduction of 11 posts in 2007-08)	7.3	14.2
(b)	Hardware and software maintenance of the existing general ledger and payment systems and mainframe computer	0.8	9.2
(c)	Reduced departmental expenses for computer terminals, printing and consumables	2.7	3.6
(d)	Reduction in office space	0.4	0.5
(e)	Operating cost of the Disaster Recovery Centre (DRC) of the Information Technology Services Department (ITSD)	-	3.0
Sub-total		11.2	30.5

		(\$ million)	
		2006-07	2007-08 onwards
Notional savings			
(f)	Apportioned overhead costs of the computer bureau and support service and ITSD's DRC service	2.6	4.4
(g)	Reduced requirement for office space in various places	0.8	2.0
Sub-total		3.4	6.4
Cost avoidance			
(h)	Apportioned cost of the upgrade of the existing mainframe computer	3.4	3.4
Total		18.0	40.3

12. As regards paragraph 11(a) above, the estimated realisable savings will come from the anticipated reduction of 21 posts in the Treasury currently managing LAFIS and the existing payment system in 2006-07 after the implementation of the new GFMIS, followed by a further reduction of 11 posts in 2007-08 when the existing International Computers Limited (ICL) mainframe computer operating in a proprietary operating system will totally cease operation¹. The reduction in posts is possible as the system and technical support for the new system will be outsourced. These amount to realisable savings of \$7.3 million in 2006-07 and \$14.2 million in 2007-08 and onwards. A breakdown of the staff savings is at **Annex B**.

13. As regards paragraphs 11(b) to (d) above, the estimated realisable savings of \$3.9 million in 2006-07 and \$13.3 million in 2007-08 and onwards will arise from the deletion of the hardware and software maintenance costs of the ICL mainframe computer, and existing systems running on it, as well as a reduction in the associated departmental expenses. The amounts also include savings in accommodation cost arising from the deletion of the existing LAFIS Operations Section.

¹ Apart from the LAFIS and the payment system, there are also other systems (e.g. Treasury Payroll System) running on the existing ICL mainframe computer. The savings will be realised when all those systems now operating on ICL operating system have been migrated to another platform, which is targeted to be completed by 2007.

14. As regards paragraph 11(e) above, the estimated realisable savings of \$3.0 million in 2007-08 and onwards will arise from the deletion of the operating cost of the DRC of the ITSD².

15. As regards paragraphs 11(f) to (g) above, the estimated notional savings of \$3.4 million in 2006-07 and \$6.4 million in 2007-08 and onwards represent the exclusion of the apportioned overhead costs of the computer bureau and support service and ITSD's DRC service, and the apportioned accommodation cost.

16. As regards paragraph 11(h) above, the estimated annual savings of \$3.4 million represent cost avoidance due to the elimination of the need for system upgrades which would otherwise be required to cope with the enhancement of the existing mainframe computer.

COSTS

Non-recurrent Costs

17. The estimated total non-recurrent costs of the proposed system are \$370.9 million (of which \$68.5 million will be met from existing resources), made up as follows –

	(\$ million)					
	2002-03	2003-04	2004-05	2005-06	2006-07	Total
(a) Hardware, software and network equipment	0.0	10.2	27.4	19.2	34.3	91.1
(b) System development and implementation services (including site preparation)	6.7	74.3	51.7	32.5	3.0	168.2

² The Treasury and the Hong Kong Police Force (HKPF) are the two departments that subscribe to the ICL DRC service offered by ITSD. There will be realisable savings in ITSD when the two departments' systems now operating on ICL operating system have been migrated to another platform, which is targeted to be completed by 2006.

	(\$ million)					
	2002-03	2003-04	2004-05	2005-06	2006-07	Total
(c) Contract staff service	0.9	4.6	7.2	4.3	0.1	17.1
(d) Contingency	0.7	8.5	7.9	5.2	3.7	26.0
Total non-recurrent funding requirement	8.3	97.6	94.2	61.2	41.1	302.4
* (e) Project team staff cost	13.2	13.2	13.2	13.2	3.1	55.9
* (f) Accommodation cost	0.0	3.6	3.6	3.6	1.8	12.6
Total non-recurrent in-house costs	13.2	16.8	16.8	16.8	4.9	68.5
Total non-recurrent costs	21.5	114.4	111.0	78.0	46.0	370.9

* Items (e) and (f) will be met by the Treasury through redeployment of existing resources.

18. As regards paragraph 17(a) above, the estimated cost of \$91.1 million is for the acquisition of development, production and disaster recovery hardware and system software, software licences and application development tools, personal computers, operating systems and printers as well as the installation and set-up cost for upgrades of network connection and departmental network switches.

19. As regards paragraph 17(b) above, the estimated cost of \$168.2 million is for engaging external service providers to support the tendering exercise and to design, build, test and roll out the proposed system. The services will cover project management, system design and set-up, application development, system testing, training, system implementation and site preparation work in respect of the spaces for the development teams, application maintenance support team, data centre and helpdesk team.

20. As regards paragraph 17(c) above, the estimated cost of \$17.1 million is for engaging non civil service contract staff with relevant system skills and experience to provide support to the project team (para. 22 below) in the tendering, design, build, test and roll out of the proposed system. It comprises 24 man-months of Senior Treasury Accountant, 58 man-months of Treasury Accountant, 123 man-months of Accounting Officer, 49 man-months of Senior Project Manager, 12 man-months of Project Manager and 19 man-months of System Analyst. In this connection, part of the budgeted resources for contract IT staff will be engaged in other assignments so as to release some in-house IT staff for the project.

21. As regards paragraph 17(d) above, the estimated cost of \$26.0 million represents a 10% contingency on the cost items set out in paragraphs 17(a) to (b) above.

22. As regards paragraph 17(e) above, the estimated cost of \$55.9 million represents 507 man-months of civil servants forming the project team involved in the tendering, design, build, test and roll out of the proposed system. The project team, to be headed by a Chief Treasury Accountant dedicated for the project, will comprise resources of 52 man-months of Chief Treasury Accountant, 152 man-months of Senior Treasury Accountant, 151 man-months of Treasury Accountant and 152 man-months of Accounting Officer. The Treasury will meet the staffing requirements by redeployment of existing resources currently engaged in the delivery of accounting and financial management services to departments and bureaux.

23. As regards paragraph 17(f) above, the estimated cost of \$12.6 million represents the cost of accommodation for the project team. The project team will be accommodated in government-owned premises identified for the project through internal re-allocation.

Recurrent Costs

24. The estimated annual recurrent costs for maintaining and supporting the proposed system are as follows –

	(\$ million)				2007-08
	2003-04	2004-05	2005-06	2006-07	onwards
(a) Maintenance of hardware, software and network equipment	1.3	3.0	10.5	17.3	17.3
(b) System and technical support services	8.7	17.4	26.5	26.5	24.8
Total recurrent funding requirement	10.0	20.4	37.0	43.8	42.1
* (c) Staff cost	2.0	2.0	2.0	2.0	2.0
* (d) Accommodation cost	0.5	0.5	0.5	0.5	0.5
Total recurrent in-house costs	2.5	2.5	2.5	2.5	2.5
Total recurrent costs	12.5	22.9	39.5	46.3	44.6

* Items (c) and (d) will be met by the Treasury through redeployment of existing resources.

25. As regards paragraph 24(a) above, the annual expenditure of \$17.3 million is for the maintenance of hardware, software and network equipment, and the rental for departmental networks.

26. As regards paragraph 24(b) above, the annual expenditure of \$24.8 million is for outsourcing the on-going system and technical support services for application maintenance, helpdesk, data centre operations and system disaster recovery.

27. As regards paragraph 24(c) above, the estimated cost of \$2.0 million represents the staff cost of one Senior Treasury Accountant and one Project Manager who will be engaged on non-civil service contract terms to monitor and manage the contract with the contractor and in particular to monitor adherence to the service level agreements established with the contractor. The manpower requirements for this contract management team will be absorbed by the Treasury within existing resources.

28. As regards paragraph 24(d) above, the estimated cost of \$0.5 million represents the accommodation cost to accommodate the data centre and the contract management team mentioned in paragraph 27 above, which will be accommodated in government-owned premises.

29. The periodic costs set out in **Annex C** (para. 30 below) include an amount of \$2.9 million for the provision of technology update of the personal computers and printers for bureaux and departments over the 11-year period. Other than this, the project will not give rise to additional financial implications for other Government bureaux and departments.

COST-BENEFIT ANALYSIS

30. A detailed cost-benefit analysis for the project is at **Annex C**. For the purpose of the cost-benefit analysis, we have included periodic costs at **Annex C** for software upgrades and technology update anticipated in the period under comparison. We will request funding for the periodic costs separately in the context of future funding submissions to justify the upgrading and/or technology update required.

IMPLEMENTATION PLAN

31. Subject to approval of funding, we plan to proceed with the tendering exercise immediately. We estimate that the project will be completed by mid-2006. The proposed implementation plan is as follows –

	Activity	Expected completion date
(a)	Tendering for the supply of hardware and software and the provision of implementation services	mid 2003
(b)	System design and development	late 2004
(c)	System implementation and first phase roll-out to departments and bureaux	April 2005
(d)	Second phase roll-out to departments and bureaux	April 2006

Way Forward

32. Subject to any comments which Members may have, we will submit the proposal to replace the GFMIS to the Finance Committee on 24 May 2002 for approval of funding.

Finance Bureau
April 2002

**Further Information on the Previous Reviews of the
Government Financial Management Information System (GFMIS)**

Since 1994, the Treasury has conducted a number of reviews on the medium and long-term strategy of the GFMIS. The main conclusions of the reviews are –

- (a) Given the technical and functional constraints of the current GFMIS, system replacement is essential. An appropriate long-term GFMIS strategy should be formulated to implement a replacement system which is capable of supporting the current and future requirements of the Government's accounting and financial management processes.
- (b) It will be costly and risky to migrate from the existing centralised GFMIS environment to a completely decentralised environment whereby departments have freedom to choose their financial systems based on individual departmental requirements and to implement them according to their unique specification. There is minimal leverage of whole of government economies of scale with regard to acquisition of hardware and software, system implementation and maintenance. In addition, consolidation will be very complex since it will involve a large number of system interfaces.
- (c) The recommended option is to implement a GFMIS strategy based on one product provided by one computer bureau/shared services centre supported by an appropriate financial software package with required functions and ability to be expanded. As compared with other options, this proposed strategy will involve the lowest cost of replacement and the least risky migration. In addition, it can ensure greater control of data and management of data integrity while at the same time providing departments with a large degree of flexibility in system design around a core Government base requirement.

2. As a follow up to the reviews mentioned in paragraph 1 above, the Treasury engaged a consultant in 2001 to take the matter forward. In the feasibility study completed in March 2002, the consultant reaffirmed the proposed GFMIS strategy stated in paragraph 1(c) above and recommended that a replacement system should be developed, implemented and rolled out by phases to all departments and bureaux by 2006 to replace the existing GFMIS.

Annex B

**Staff Savings in Treasury
(Breakdown by rank and by year)**

Grade/Rank	No. of officer	Annual staff cost (HK\$)	2006-07 (HK\$)	2007-08 onwards (HK\$)
LAFIS Operation Services (Note 1)				
Senior Accounting Officer	1	1,274,916	956,187	1,274,916
Accounting Officer I	1	819,804	614,853	819,804
Clerical Officer	2	956,664	717,498	956,664
Assistant Clerical Officer	3	1,037,520	778,140	1,037,520
Clerical Assistant	2	488,328	366,246	488,328
Sub-total	9		3,432,924	4,577,232
System Development and Maintenance (Note 1)				
Analyst/Programmer I	3	2,334,888	1,751,166	2,334,888
Ancillary Machines Unit (Note 1)				
Office Assistant	1	202,968	152,226	202,968
Workman II	1	164,220	123,165	164,220
Sub-total	2		275,391	367,188
Data Control (Note 1)				
Computer Operator I	1	431,952	323,964	431,952
Assistant Clerical Officer	2	691,680	518,760	691,680
Assistant Computer Operation Manager	1	857,112	642,834	857,112
Senior Computer Operator	-1	-633,924	-475,443	-633,924
Sub-total	3		1,010,115	1,346,820
Data Preparation (Note 1)				
Data Processor	4	1,120,416	840,312	1,120,416
Computer Operations (Note 2)				
Analyst/Programmer I	1	778,296	0	778,296
Computer Operator I	5	2,159,760	0	2,159,760
Computer Operator II	4	1,195,920	0	1,195,920
Assistant Clerical Officer	1	345,840	0	345,840
Sub-total	11		0	4,479,816
Total Staff Savings	32		7,309,908	14,226,360

Note 1: The estimated effective date for staff savings is 1 July 2006.

Note 2: The estimated effective date for staff savings is 1 April 2007.

Cost-Benefit Analysis for Replacement of the Government Financial Management Information System

	(\$ million) – at 2001 prices										
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
COST											
Non-recurrent (a)	21.5	114.4	111.0	78.0	46.0	0	0	0	0	0	0
Recurrent (b)	0	12.5	22.9	39.5	46.3	44.6	44.6	44.6	44.6	44.6	44.6
Periodic (c)	0	0	0	0	0	7.4	4.2	27.2	0	7.4	0.4
Total Cost (d = a + b + c)	21.5	126.9	133.9	117.5	92.3	52.0	48.8	71.8	44.6	52.0	45.0
SAVINGS											
Realisable (e)	0	0	0	0	11.2	30.5	30.5	30.5	30.5	30.5	30.5
Cost Avoidance (f)	0	0	0	0	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Notional (g)	0	0	0	0	3.4	6.4	6.4	6.4	6.4	6.4	6.4
Total Savings (h = e + f + g)	0	0	0	0	18.0	40.3	40.3	40.3	40.3	40.3	40.3
Net Cost (d – h)	21.5	126.9	133.9	117.5	74.3	11.7	8.5	31.5	4.3	11.7	4.7
Net Cumulative Cost	21.5	148.4	282.3	399.8	474.1	485.8	494.3	525.8	530.1	541.8	546.5