Information Note for
Legislative Council Panel on Financial Affairs

Enhancement of Automated Communication, Technical Information and Operations Network System for Architectural Services Department

INTRODUCTION

Members are invited to note that we will seek the funding approval of Finance Committee for a new commitment of $31,599,000 for the enhancement of the Automated Communication, Technical Information and Operations Network (ACTION) System of the Architectural Services Department (Arch SD) at its meeting on 20 June 2003.

2. The existing ACTION System, which maintains the database for facilities upkeep of government property and processes works orders, is inadequate to meet the department's operational needs. The ACTION System also requires upgrading in order to perform the accounting and payment functions now provided by the Maintenance Accounting and Information (MAIN) System which will cease operation in 2006. The Director of Architectural Services, on the advice of the Director of Information Technology Services, therefore proposes to enhance the ACTION System so as to improve efficiency in the management and administration of the Government's facilities upkeep programme.

JUSTIFICATION

Current Situation and Problems

3. The programme management and accounting functions of the Arch SD's facilities upkeep activities are currently supported by two separate computer systems operated at different locations. On the one hand, the management information on government property maintenance and related works contracts are kept in the ACTION System which runs on the Information Technology Services Department's (ITSD) mainframe computer at the Central Computer Centre. The ACTION System also supports the placement of work orders and subsequent processing of works order-related tasks. The system typically deals with some 300 000 works orders costing over $3 billion every year and covering about 7 000 buildings. On the other hand, the financial control and accounting functions, including the reconciliation and settlement of payments for works, are performed by the MAIN System which runs on a separate computer in the Treasury.

4. Since the ACTION System was introduced in 1997, it has become outdated and is inadequate in the following ways -

(a) Ineffective information flow

Because of the limited capability of the existing ACTION System, a lot of the authorisation documents, inspection and audit reports and other project records arising from the processing of works orders are still collated on paper. Apart from requiring substantial efforts in manually processing the data, this also obstructs efficient access to and updating of essential management information on property maintenance.

(b) Insufficient statistical and reporting tools

The existing ACTION System performs only limited and crude statistical and reporting functions. As a result, users regularly have to download the raw data from the host computer for further

manipulation and analysis at their workstations. This is cumbersome and severely restricts management effectiveness because the workstation computers themselves are not fully equipped for the tasks.

(c) Insufficient workstations

There are only 220 workstations connected to the ACTION System, which are shared among some 800 users. This hampers efficient deployment of staff and impairs departmental operational efficiency. Because of the volume of maintenance works which require processing, Arch SD staff regularly have to work overtime in order to clear the backlog of works orders.

(d) Lack of efficient interface with the MAIN System

There is no direct electronic interface between the ACTION System and the MAIN System. Hence, the data between the two Systems are transferred offline by magnetic tapes. As a result, transactions can only be completed after several working days. This has caused delays in payment to contractors and the system also fails to provide real-time updated information for effective management and control of contracts and expenditure.

5. Related to (d) above, the MAIN System was designed over 20 years ago. The International Computer Limited mainframe computer on which it operates has also become outdated, hence difficult and expensive to maintain, and will cease operation in 2006. In order to ensure continued operation of Arch SD's facilities upkeep programme, it is necessary for the existing functions of the MAIN System to be transferred and integrated into a new enhanced ACTION System.

The Proposed System

6. Based on the recommendations of a consultancy study commissioned by Arch SD, we propose to -

(a) modify the ACTION System so as to enhance its capacity and functionalities;

(b) incorporate the accounting and payment functions now performed by the MAIN System into the proposed enhanced ACTION System;

(c) re-engineer existing processes and improve business workflow through computerization of the manual processes and better integration with other information systems of the department;

(d) set up a comprehensive electronic data repository and provide user-friendly interface and query tool to facilitate more efficient data retrieval and management reporting; and

(e) acquire additional workstations to improve access and provide mobile computing facilities for site staff to process dimension books[Note] when working in the field.

7. Specifically, the proposed system enhancements will incorporate the following features -

(a) computerised updating of works information and automation in processing of works orders;

(b) automatic sampling of works orders and monitoring of work progress;

(c) simplified procedures for processing of works orders;

(d) automatic updating and monitoring of project expenditure;

(e) computerised reconciliation and settlement of accounts;

Note A dimension book contains the items of work done for a works order and their respective quantities/measurements.

(f) customised analysis of financial and management information on property maintenance;

(g) electronic interface with contractors for update of work orders and accounts;

(h) enhanced data processing and retrieval functions integrated with other computer systems in the Department; and

(i) 177 additional workstations.

Anticipated Benefits

8. The proposed enhanced system is expected to bring the following benefits -

(a) Tightening the monitoring of financial status

The proposed system will allow Arch SD to monitor in real time the progress of tasks related to allocation of funds, issuing of works orders and processing of payment claims. It will provide up-to-date status and information to enable Arch SD to keep track of financial status.

(b) Improving efficiency of work processes

The proposed system will automate a number of internal work processes (including change of vote, monitoring of works, processing of dimension book, batching and sampling and handling of outsize claims) and external processes with the Treasury's Government Financial Management Information System. As a result, the efficiency and productivity of the work processes can be improved and the turnaround time on payments will be shortened.

(c) Saving manpower and reducing paper consumption

The data warehouse component of the proposed system will contain data derived from the production system and enable the staff to obtain data more efficiently and generate ad hoc-reports with minimal impact to the production system. Standard reports will be generated over the night for authorized parties, who can download reports from the server for further references. These will have the advantages of improving response time to clients' request for information, strengthening management control, reducing reliance on paper report, and relieving staff resources for other activities.

(d) Supporting e-Government development

The proposed system will provide an information technology (IT) infrastructure that facilitates e-Government development through new and advanced information technologies. IT has been adopted in the conduct of more internal businesses so as to enhance operational efficiency and contribute towards a paperless office.

Cost and Benefit Analysis

Annex A

9. A cost and benefit analysis of the project is at Annex A. The analysis shows that the proposed system will break even in 2014-15, i.e. nine years after system production. Thereafter, the annual savings of $6,194,000 will exceed the annual cost of $2,977,000 by $3,217,000.

Cost Savings

10. The estimated savings to be achieved after implementation of the project in 2005-06 are summarised as follows -

Realisable savings	**2005-2006 $'000**	**2006-2007 onwards $'000**
(a) Staff cost savings	4,208	5,610
(b) Overtime savings	338	451
(c) Paper cost savings	6	8
Sub-total	**4,552**	**6,069**
Notional savings		
(d) Fragmented savings in accommodation	94	125
Sub-total	**94**	**125**
Total	**4,646**	**6,194**

11. The realisable savings of $6,069,000 in 2006-07 and onwards will come from the expected reduction of 17 posts (including four Clerical Assistant, three Assistant Clerical Officer, one Clerical Officer, four Typist, three Assistant Clerk of Works, one Works Supervisor I and one Works Supervisor II posts) in the Arch SD by 2006-07, which is made possible by automated processing of dimension books and the full-year saving in overtime allowance and reduction in paper consumption. Through natural wastage, retraining and redeployment, no staff redundancy would arise. A breakdown of the staff savings is at Annex B.

Annex B

12. The notional savings of $125,000 in 2006-07 and onwards represent the apportioned accommodation cost.

FINANCIAL IMPLICATIONS

Non-recurrent Costs

13. The estimated total non-recurrent costs of the proposed system are $31,599,000, made up as follows -

	2003-04 $'000	2004-05 $'000	2005-06 $'000	Total $'000
(a) Hardware and software	1,257	2,024	4,813	8,094
(b) Site preparation	185	124	-	309
(c) Implementation services	374	8,121	8,495	16,990
(d) Data conversion	-	462	694	1,156
(e) Training	-	-	453	453
(f) Consumables	-	-	18	18
(g) ITSD Central Computer Centre cost	167	55	1,484	1,706
(h) Contingency	198	1,079	1,596	2,873
Total	**2,181**	**11,865**	**17,553**	**31,599**

14. As regards paragraph 13(a), the estimated cost of $8,094,000 is for the acquisition of hardware (at $3,090,000) including computer workstations and server, peripherals and hand-held computers, and software (at $5,004,000) including system software and e-mail application and data warehousing software.

15. As regards paragraph 13(b), the estimated cost of $309,000 is for the installation of telecommunication lines, power points and network cables.

16. As regards paragraph 13(c), the estimated cost of $16,990,000 is for the acquisition of information technology services in system analysis and design, system development, user acceptance test, system nursing and software configuration management.

17. As regards paragraph 13(d), the estimated cost of $1,156,000 is for the acquisition of data conversion service.

18. As regards paragraph 13(e), the estimated cost of $453,000 is for the orientation and training of the some 800 staff who will be using the new applications.

19. As regards paragraph 13(f), the estimated cost of $18,000 is for the purchase of start-up consumables such as backup tapes.

20. As regards paragraph 13(g), the estimated cost of $1,706,000 is for the acquisition of additional central processing unit, system memory and disk storage in the ITSD Central Computer Centre.

21. As regards paragraph 13(h), the estimated cost of $2,873,000 represents a 10% contingency on the cost items set out in paragraphs 13(a) to (g) above.

22. We will require 11.5 man-months of non-recurrent staff resources of ITSD to perform procurement support and IT advisory roles. These required resources will be re-deployed from the existing maintenance team of the ACTION System.

23. We will also require 49 man-months of non-recurrent staff resources of Arch SD to participate in user requirements study, site preparation, procurement, user acceptance test, data conversion and project management. We will absorb this resource requirement with our existing staff establishment.

Recurrent Costs

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

	2004-05 $'000	**2005-06 $'000**	**2006-07 onwards $'000**
(a) Hardware and software maintenance	84	371	1,296
(b) On-going system maintenance and support	-	512	1,024
(c) ITSD Central Computer Centre cost	-	-	657
Total	**84**	**883**	**2,977**

25. As regards paragraph 24(a), the estimated annual expenditure of $1,296,000 is for the maintenance of the hardware and software acquired.

26. As regards paragraph 24(b), the estimated annual expenditure of $1,024,000 is for obtaining the contract services of one system analyst and one analyst programmer for ongoing system maintenance and support to the enhanced ACTION System.

27. As regards paragraph 24(c), the estimated annual expenditure of $657,000 is for the provision of additional central processing unit, system memory and disk storage in the ITSD Central Computer Centre.

IMPLEMENTATION PLAN

28. Subject to approval of funding, we plan to proceed with the tendering exercise immediately. We estimate that the project will be completed in July 2005. 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 service	January 2004
(b)	System design and development	January 2005
(c)	System implementation and roll-out	July 2005

Financial Services and the Treasury Bureau
June 2003

Annex A

Cost-Benefit Analysis of Enhancement of ACTION System for Architectural Services Department

(at 2003/04 price level)

COST	**2003-04 $'000**	**2004-05 $'000**	**2005-06 $'000**	**2006-07 $'000**	**2007-08 $'000**	**2008-09 $'000**	**2009-10 $'000**	**2010-11 $'000**	**2011-12 $'000**	**2012-13 $'000**	**2013-14 $'000**	**2014-15 $'000**
Non-recurrent Expenditure	2,181	11,865	17,553	0	0	0	0	0	0	0	0	0
Recurrent Expenditure	0	84	883	2,977	2,977	2,977	2,977	2,977	2,977	2,977	2,977	2,977
Total Cost	**2,181**	**11,949**	**18,436**	**2,977**	**2,977**	**2,977**	**2,977**	**2,977**	**2,977**	**2,977**	**2,977**	**2,977**
SAVINGS												
Realizable	0	0	4,552	6,069	6,069	6,069	6,069	6,069	6,069	6,069	6,069	6,069
Notional	0	0	94	125	125	125	125	125	125	125	125	125
Total Savings	**0**	**0**	**4,646**	**6,194**	**6,194**	**6,194**	**6,194**	**6,194**	**6,194**	**6,194**	**6,194**	**6,194**
Net Savings	**-2,181**	**-11,949**	**-13,790**	**3,217**	**3,217**	**3,217**	**3,217**	**3,217**	**3,217**	**3,217**	**3,217**	**3,217**
Net Cumulative Savings	**-2,181**	**-14,130**	**-27,920**	**-24,703**	**-21,486**	**-18,269**	**-15,052**	**-11,835**	**-8,618**	**-5,401**	**-2,184**	**1,033**

Annex B

Breakdown of Staff Cost Savings - Architectural Services Department

Post Title	Number of Man-year Saved	Annual Staff Cost (HK$) at 2003 prices	Saved Amount (HK$)
Clerical Assistant	4	247,764	991,056
Assistant Clerical Officer	3	344,460	1,033,380
Clerical Officer	1	470,952	470,952
Typist	4	260,640	1,042,560
Assistant Clerk of Works	3	480,600	1,441,800
Works Supervisor I	1	344,664	344,664
Works Supervisor II	1	285,924	285,924
Total	**17**		**5,610,336**