

# **GOVERNMENT'S EFFORTS IN IMPLEMENTING ELECTRONIC RECORDKEEPING SYSTEM**

## **Executive Summary**

1. Records are valuable resources of the Government to support evidence-based decision-making and meet operational and regulatory requirements, and are essential for an open and accountable government. Development of information technology (IT) and the widespread use of network computers to conduct government business have resulted in an exponential growth of electronic records (an increase of 224% from 2015 to 2018), which have a vulnerable nature (e.g. fragility of storing media and ease of manipulation) and present unique challenges for bureaux/departments (B/Ds) in managing them. The implementation of electronic recordkeeping system (ERKS) is a Government initiative to pursue electronic records management. ERKS is an information/computer system to electronically collect, organise, classify and control the creation, storage, retrieval, distribution, maintenance and use, disposal and preservation of records throughout the life cycle of records.

2. In 2009, an Electronic Information Management (EIM) Steering Group comprising senior officials from the Office of the Government Chief Information Officer (OGCIO), the Administration Wing of the Chief Secretary for Administration's Office, and the Efficiency Office (EffO) was established to steer the government-wide EIM strategy and implementation. According to the EIM Strategy and Framework promulgated by OGCIO in 2011, all B/Ds should adopt an ERKS which complies with the functional requirements developed by the Government Records Service (GRS) under the Administration Wing. Up to March 2019, 11 B/Ds (with about 5,500 users) had fully or partially implemented ERKS under an ERKS pilot programme. In early 2019, GRS, EffO and OGCIO jointly completed a review which confirmed that the adoption of ERKS could bring about intangible benefits (e.g. reduce risk of inadvertent loss of records) and financial benefits (e.g. reduced need for storage space for paper files). In October 2019, the Policy Address Supplement announced the Government's decision to roll out ERKS to all government B/Ds by end-2025 to enhance efficiency in preserving and managing government records. The

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Audit Commission (Audit) has recently conducted a review to examine the Government's efforts in implementing ERKS.

### **Planning for the service-wide implementation of electronic recordkeeping system**

3. The service-wide implementation of ERKS from mid-2021 to end-2025 will cover 75 B/Ds. They were required to submit to OGCIO their implementation plans by end-December 2019, including a timetable for adoption of ERKS. In planning the service-wide implementation of ERKS, a number of planning issues need to be taken into consideration (paras. 2.2, 2.4 and 2.13).

4. *Submission of implementation plans by B/Ds.* To ensure that adequate and timely support is provided to all B/Ds, OGCIO will review individual plans with the concerned B/Ds and adjust the timetable as necessary so that an average of around 15 B/Ds will implement ERKS each year (para. 2.4). Audit examination on the submission of implementation plans has revealed the following areas for improvement:

- (a) *Delay in submission of implementation plans.* In August 2019, the EIM Programme Management Office (which comprised members from OGCIO, GRS and EffO) under the EIM Steering Group invited all bureaux to coordinate the ERKS implementation plans for submission by end-December 2019. However, up to 6 February 2020, 17 (23%) of 75 B/Ds had not submitted their implementation plans (paras. 1.9, 2.6 and 2.7);
- (b) *Need to review implementation plans with B/Ds.* For the implementation plans submitted by the 58 B/Ds, Audit found that: (i) one B/D reported that full rollout by 2025 would not be achievable; and (ii) the implementation work for the B/Ds would not be spread out evenly over the period from mid-2021 to end-2025. There would be a large number of B/Ds (i.e. some 80% of the B/Ds) commencing ERKS implementation from 2022 to 2024 (around 16 B/Ds each year) and a small number of B/Ds commencing ERKS implementation in mid-2021 (2 B/Ds) or in 2025 (10 B/Ds) (para. 2.8); and

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- (c) ***Need to enhance management oversight by B/Ds to support ERKS implementation.*** ERKS implementation requires strong commitment from the top management of B/Ds. According to the EIM Strategy and Framework, an EIM coordinator at directorate level should be appointed in each B/D to liaise with the EIM Steering Group via the EIM Programme Management Office on policy issues and matters of EIM. Audit found that: (i) 10 (13%) of 75 B/Ds involved in the service-wide implementation of ERKS had appointed non-directorate level staff as their sole EIM coordinators; and (ii) 59 (70%) of 84 EIM coordinators for the 75 B/Ds had not attended in person the briefing sessions on ERKS implementation for directorate staff in July and August 2019 (paras. 2.9 and 2.10).

5. ***Issues involved in planning service-wide implementation of ERKS.*** In the course of examining the implementation work of ERKS, Audit has identified the following issues which should be taken into consideration in planning the service-wide implementation of ERKS (para. 2.13):

- (a) ***Electronic management of personnel records.*** A number of B/Ds do not have dedicated IT systems to manage their human resources processes and need to keep personnel records on papers. According to GRS, personnel records should best be handled by the Government Human Resources Management Services (GovHRMS), which is a central IT system developed by OGCIO to handle human resources management operations. In view of a number of practical issues, GRS advised B/Ds with ERKS to continue to manage their personnel records in paper files pending the full implementation of GovHRMS. However, Audit has noted that GovHRMS is only for adoption by B/Ds on a voluntary basis (i.e. no plan of full implementation in all B/Ds). There is a need to consider the way forward for the electronic management of personnel records by B/Ds (paras. 2.15 and 2.16);
- (b) ***Remote access to confidential records.*** While ERKS supports the capturing of confidential records, it does not support remote access to confidential records in light of the requirements stipulated in the Government Security Regulations (i.e. a user can only retrieve confidential records in ERKS when connected to government network in government offices). In Audit's view, supporting remote access to ERKS records at confidential level will facilitate easy retrieval of confidential records by staff when working at

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locations other than in government offices with connection to government network (e.g. working from home when warranted by special circumstances). There is a need to critically evaluate the feasibility of providing remote access to confidential records for the service-wide implementation of ERKS (paras. 2.17 and 2.18);

- (c) ***Replacement of government e-mail system.*** According to GRS guidelines, it is a mandatory requirement that ERKS must enable integration with an e-mail system to facilitate record capturing. In this connection, a new e-mail system for 24 B/Ds in the Central Government Offices and their sub-offices has been scheduled for implementation by December 2020. As the service-wide implementation of ERKS will commence in mid-2021, ERKS will be integrated with the new e-mail system for the 24 B/Ds. For the remaining departments, the implementation plan for the new e-mail system is being planned and ERKS will be integrated with the existing e-mail systems first. To avoid duplication of efforts, it is more desirable if the implementation of ERKS and the new e-mail system can be synchronised as far as practicable (paras. 2.19 and 2.21); and
- (d) ***Manual data input efforts in using ERKS.*** As the e-mail system is integrated with ERKS, most metadata of records (e.g. time and date, title, sender and recipients of an e-mail) can be automatically captured. For records other than e-mails, users are required to input most metadata of records into ERKS manually. Such manual data input efforts are prone to omissions and errors. There is a need to take measures to reduce the extent of manual efforts required to input data into ERKS, including: (i) promoting the wider use of workflow functions in ERKS, which are optional requirements of an ERKS to facilitate the automation of records management activities; and (ii) keeping in view the latest technological development in electronic records management (para. 2.22).

## Implementation of electronic recordkeeping system pilot programme

### *System development*

6. ***ERKS pilot programme.*** The ERKS pilot programme included 11 B/Ds (see para. 2), comprising five early adopters (EffO, GRS, the Communications and Creative Industries Branch (CCIB) of the Commerce and Economic Development

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Bureau (CEDB), the Drainage Services Department, and the Rating and Valuation Department (RVD)) and six next-stage adopters (the Administration Wing, the Civil Engineering and Development Department (CEDD), the Intellectual Property Department, the Architectural Services Department (ArchSD), the Marine Department (MD), and OGCIO). The five early adopters procured commercial off-the-shelf software packages with certain customisation work for ERKS implementation while the six next-stage adopters implemented ERKS by way of a common/shared service platform managed by OGCIO. Audit noted that there were delays in 8 out of the 11 projects under the ERKS pilot programme. Among the five early adopters, with implementation completed, CCIB of CEDB had the longest delay (18 months), mainly due to longer time taken for resolving technical problems. For the six next-stage adopters, as of December 2019, implementation had been completed except the one for MD, which was anticipated to be completed in June 2021. Audit selected the MD's ERKS implementation for review (paras. 3.2, 3.4 and 3.10).

7. ***Delay in implementation of ERKS common base system and system deployment for MD.*** In November 2015, OGCIO awarded a contract at a total cost of \$36.3 million for implementing the ERKS base system and system deployment for MD (and also ArchSD) to a contractor (the Contractor). The common base system was planned to be ready for deployment to MD in May 2016. In order to speed up progress, in June 2017, OGCIO approved the Contractor's proposal of dividing the common base system functions into core functions and remaining functions. In September 2017, the common base system was deployed to MD for testing when the core functions of the system were ready. In August 2019, the whole common base system was completed when all the core and remaining functions were ready for use. For MD's system deployment, it comprised 4 batches involving different user sections/units. As of February 2020, only Batch 1 had been implemented. As compared with the target completion date of January 2018, Batch 1 system deployment was only completed in August 2019 with a delay of 19 months. As of December 2019, the completion of the whole system deployment was planned to be completed in June 2021 (paras. 3.6 and 3.10 to 3.12).

8. ***Lessons to be learnt to improve future service-wide ERKS implementation.*** Audit examination revealed that the main reason for delay in implementing the common base system and the subsequent system deployment to MD was the unsatisfactory performance of the Contractor. According to MD, a premature base system was deployed for testing by MD, as evidenced by the substantial number of errors identified in the user acceptance test and the large number of errors which took a long time to fix. According to OGCIO, it had closely monitored the Contractor's

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progress in developing the system and rectifying identified issues. From September 2016 to June 2017, OGCIO issued seven warning letters to the Contractor on its unsatisfactory performance including severe schedule slippage, loose management and inadequate staff resources (para. 3.13). Audit examination has revealed the following areas for improvement:

- (a) ***Need to seek legal advice about imposing liquidated damages.*** According to the contract provision, liquidated damages can only be imposed if the Contractor fails to supply and deliver the System in Ready for Use condition (i.e. put into live-run) by the completion date. Audit noted that when OGCIO endorsed the extension of the target completion date of the whole system to June 2021, OGCIO had not imposed liquidated damages on the Contractor. While having sought the Department of Justice's advice on the termination of contract and the consequence of accepting a revised implementation plan, OGCIO (as the contract administrator) did not seek specific legal advice about imposing liquidated damages (\$2 million) before approving the extension of completion date, despite the unsatisfactory performance of the Contractor (para. 3.15);
  
- (b) ***Inadequacies in monitoring project progress.*** There were inadequacies in project monitoring by OGCIO and MD: (i) OGCIO has set up a two-tier project governance structure comprising a Project Steering Committee (PSC) and a Project Team to oversee the common base system development of ArchSD and MD. However, only two OGCIO PSC meetings (in December 2015 and June 2016) had been held. From July 2016 to August 2019, no PSC meetings had been conducted to provide timely strategic guidance on project implementation issues including the termination of contract or imposition of liquidated damages; and (ii) MD adopted a three-tier project governance structure, comprising a PSC, a Project Assurance Team (PAT) and a Project Team, to oversee the implementation of system deployment of the ERKS Project. Since January 2017, PSC and PAT had only held one meeting in August 2019 for endorsing the revised rollout date of Batch 1 system deployment (paras. 3.16 and 3.17); and
  
- (c) ***Long time taken in fixing errors identified in critical test incidents reports (TIRs).*** When errors were found in the testing of the common base system and system deployment, they were recorded in TIRs for subsequent rectification by the Contractor as a quality assurance. For the user acceptance test and training stage of Batch 1 of system deployment from

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September 2017 to October 2019, there were a total of 765 TIRs identified by MD. To expedite the rectification of TIRs, MD and the Contractor agreed to tackle critical TIRs (i.e. urgent and high-priority cases) first. Audit analysis revealed that among the 479 TIRs (111 (urgent) + 368 (high priority)) having been classified as urgent/high priority, the Contractor took 92.4 days (ranging from 0.6 to 518.5 days), on average, to fix the errors identified in the TIRs. Furthermore, out of the 765 TIRs, 246 (32%) failed the required testing one or more times, ranging from 1 to 14 times. As of February 2020:

- (i) the total number of outstanding TIRs for the common base system was 191, including 7 urgent/high-priority cases and 184 normal/low-priority cases; and
- (ii) the total number of outstanding TIRs for MD's system deployment was 78, including 2 urgent/high-priority cases and 76 normal/low-priority cases (para. 3.13(b)).

9. ***Inadequacies in preparing and submitting Post Implementation Departmental Returns (PIDRs).*** B/Ds are required to submit PIDRs to OGCI0 six months after the projects are in operation. As of January 2020, PIDRs of 10 completed projects were due for submission. Of the 10 PIDRs, despite the issue of monthly reminders by OGCI0, 8 were submitted late or still outstanding. The delay ranged from 1 to 23 months. Moreover, Audit found that all B/Ds reported in PIDRs that savings in paper/printing costs had been or would be realised. However, as the time needed to dispense with the print-and-file practice (see para. 10) varied, some B/Ds had not yet dispensed with the print-and-file practice at the time of submitting PIDRs (paras. 3.9, 3.18 and 3.19).

10. ***Long time taken in dispensing with print-and-file practice.*** B/Ds which have fully implemented a proper ERKS should seek the prior approval of GRS before dispensing with the practice of print-and-file of e-mail records as required by General Circular No. 2/2009. As of December 2019, 4 of the 11 B/Ds under the ERKS pilot programme had not yet dispensed with the print-and-file practice. While ArchSD and MD only launched ERKS recently, CCIB of CEDB and RVD rolled out ERKS in 2014 and have been adopting a parallel run of ERKS and print-and-file practice for over five years. The prolonged parallel run created additional workload to users in managing records and resulted in omission in filing. Audit found that the prolonged

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parallel run was mainly attributable to technical problems encountered after the system rollout. The two B/Ds should work closely with GRS to dispense with the print-and-file practice (paras. 1.7, 3.20, 3.22 and 3.25).

### ***System operation and migration to central electronic recordkeeping system***

11. Audit selected four B/Ds under the ERKS pilot programme (GRS, CCIB of CEDB, OGCIO and CEDD) for examining the records management functionalities and practices in ERKS environment and found the following areas for improvement (para. 3.37):

- (a) ***Failure to provide Audit with access rights to ERKS.*** Audit was able to obtain read-only access rights to ERKS in all selected B/Ds except OGCIO because such requirement (i.e. creating accounts with read-only access rights for non-OGCIO users) had not been taken into account when designing the user profiles of OGCIO's ERKS. In Audit's view, the design of user profiles of OGCIO's ERKS does not meet audit requirements regarding obtaining reliable audit evidence efficiently through the system (para. 3.38(a));
- (b) ***Users with low usage.*** Low usage of some users was generally observed in all four B/Ds. For example, as of January 2020, 306 (30%) of 1,025 ERKS users in OGCIO were found not using ERKS for over one year (para. 3.38(b));
- (c) ***No guidelines on time limit for capturing records into ERKS.*** All four B/Ds did not specify in their departmental guidelines the time limit to capture a record into ERKS. Audit analysis of the filing dates of e-mails in ERKS revealed that some e-mails were only captured into ERKS over three months after the sent/received date. For example, in 2019, 7,747 (22%) of 35,567 e-mail records in OGCIO and 3,792 (17%) of 22,700 e-mail records in CCIB of CEDB were captured over three months after the sent/received date (para. 3.38(c)); and
- (d) ***Need to consider migration to central ERKS in due course.*** In the service-wide implementation, to achieve economies of scale on software licences, and implementation and support costs, a single ERKS software solution will be adopted to develop the central ERKS for deployment. The



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annual recurrent cost for each ERKS user is estimated to be about \$1,500. In contrast, the annual operating expenditure per ERKS user for the pilot projects in 2018-19 ranged from \$1,667 to \$35,714. B/Ds under the ERKS pilot programme should keep in view the merits of migrating to the central ERKS when their ERKSs are due for replacement in future (para. 3.45).

### Archiving of electronic records

12. According to GRS, long-term preservation of electronic records is necessary to ensure that electronic records are authentic, complete, accessible, identifiable, understandable and usable for as long as they are required to serve legal, regulatory, business and archival requirements. To achieve that, it is necessary to formulate government-wide policy and strategies for preserving electronic records over time (para. 4.3). Audit found the following areas for improvement:

- (a) ***Slow progress in conducting comprehensive study.*** In January 2013, GRS and OGCIO completed a preliminary study to, among others, define the scope of a comprehensive study on long-term preservation of electronic records. According to the original plan submitted to the EIM Steering Group in 2011, the comprehensive study was scheduled for completion in December 2014. However, as of October 2019, the revised target completion date was May 2021, representing a delay of about 6 years. Given that 11 B/Ds have implemented ERKS since 2010, the need for transfer of electronic records with archival value from B/Ds to GRS for permanent retention will arise in the near future. There is a need to step up efforts to avoid further delay (paras. 4.4 and 4.5);
- (b) ***Need to ascertain progress made by B/Ds in improving preservation of electronic records.*** In 2012, GRS and OGCIO jointly conducted a survey (covering 74 B/Ds and offices) to gauge the need for preservation of electronic records in B/Ds and assess the effectiveness of current preservation measures adopted by B/Ds. The survey found that: (i) only 27 (36%) B/Ds and offices had conducted file format migration for their electronic records in the past seven years; and (ii) of 49 B/Ds and offices that had managed and/or stored electronic records in offline storage media, only 15 (31%) of them had conducted media renewal and/or media migration. While GRS promulgated a guideline in July 2013 setting out good practices and measures to preserve electronic records for reference by B/Ds, it did not regularly ascertain the progress made by B/Ds in improving

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their measures and practices in preserving electronic records (paras. 4.13 to 4.15); and

- (c) *Need to formulate long-term strategy for web archiving and promulgate relevant guidelines.* All B/Ds have set up their own websites for dissemination of information. Senior government officials and B/Ds are also using social media to disseminate information and interact with members of the public. However, Audit noted that there was a lack of guidelines on management and archiving of records in government websites or social media platforms. Audit research has revealed that: (i) web archiving initiatives have been implemented in some overseas jurisdictions for quite some time (e.g. the United Kingdom in 2003 and Singapore in 2006); and (ii) the related archived government websites and/or social media accounts are usually accessible by the public through dedicated websites. Up to February 2020, the Government had yet to formulate a long-term strategy for web archiving and did not have a centralised web archive of all government websites and/or official social media accounts, similar to the ones in overseas jurisdictions (paras. 4.16 to 4.19).

### Audit recommendations

13. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Government Chief Information Officer, the Director of Administration and the Commissioner for Efficiency should:**

- (a) **take further actions to follow up with B/Ds on outstanding ERKS implementation plans (para. 2.11(a));**
- (b) **review B/Ds' ERKS implementation plans to ensure that the workload over the period from mid-2021 to end-2025 is evenly spread out as far as practicable, and liaise with and provide necessary support to those which have indicated difficulties in meeting the target of service-wide implementation of ERKS by end-2025 (para. 2.11(b));**
- (c) **remind B/Ds to provide stronger management oversight on the service-wide implementation of ERKS (para. 2.11(c));**

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- (d) consider the way forward for the electronic management of personnel records by B/Ds (para. 2.23(a));
  - (e) in consultation with the Security Bureau, critically evaluate the feasibility of providing remote access to confidential records in ERKS (para. 2.23(b));
  - (f) in implementing ERKS in the remaining B/Ds in future, take into account the implementation plan of the new e-mail system as far as practicable (para. 2.23(c));
  - (g) take measures to reduce the extent of manual data input efforts required to capture records into ERKS (para. 2.23(d));
  - (h) set up a mechanism to measure B/Ds' savings in paper/printing costs upon the cessation of the print-and-file practice (para. 3.28(a)); and
  - (i) remind the 11 B/Ds under the ERKS pilot programme to keep in view the merits of migrating to the central ERKS when their ERKSs are due for replacement in future (para. 3.46).
14. Regarding the system development of ERKS, Audit has *recommended* that the Government Chief Information Officer should:
- (a) draw lessons from the implementation of common base system to improve the monitoring of contractors in the service-wide implementation of ERKS, including:
    - (i) holding regular PSC meetings to provide strategic direction on project implementation (para. 3.26(a)(i)); and
    - (ii) in granting extension of time of target completion dates in ERKS projects for the remaining B/Ds in future, seeking the Department of Justice's advice on whether liquidated damages should be imposed, having regard to the contractor's performance and the loss to the Government arising from the project delay (para. 3.26(a)(ii));

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- (b) **closely monitor the Contractor's progress to ensure that ERKS for MD can be completed by the revised completion date of June 2021 and the errors identified are rectified as soon as possible (para. 3.26(b));**
  - (c) **take effective measures to ensure PIDRs of ERKS projects are submitted in a timely manner (para. 3.26(c)); and**
  - (d) **remind B/Ds to fully take into account audit requirements in designing their ERKSs in the service-wide implementation of ERKS (para. 3.39(a)).**
15. **Regarding the system operation of ERKS and archiving of electronic records, Audit has *recommended* that the Director of Administration should:**
- (a) **remind B/Ds with ERKS to identify users with low usage and investigate the reasons for taking appropriate action, and formulate guidelines on the time limit for filing records into ERKS (para. 3.40);**
  - (b) **step up efforts to complete the comprehensive study on long-term preservation of electronic records (para. 4.20(a));**
  - (c) **consider setting up a mechanism to regularly monitor B/Ds' practices in preserving electronic records (para. 4.20(b)); and**
  - (d) **formulate a long-term strategy for web archiving in the Government and promulgate guidelines on management of electronic records in web environment (para. 4.20(c)).**
16. **Audit has also *recommended* that:**
- (a) **the Director of Marine should strengthen the monitoring of ERKS project progress and hold regular PSC and PAT meetings to oversee the Contractor's performance (para. 3.27(a)); and**

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- (b) **the Secretary for Commerce and Economic Development and the Commissioner of Rating and Valuation should work closely with GRS to dispense with the print-and-file practice (paras. 3.29 and 3.30).**

### **Response from the Government**

17. The Government generally agrees with the audit recommendations.