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Food and Health Bureau, Government Secretariat
The Government of the Hong Kong Special Administrative Region
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16 May 2018

Ms Maisie LAM
Clerk to Panel
Panel on Health Services
Legislative Council Complex
1 Legislative Council Road
Central

Dear Ms LAM,

**Panel on Health Services
Follow-up to the Meeting on 24 April 2018 –
Information Technology Enhancement Project
of the Department of Health**

During the meeting of the Panel on Health Services held on 24 April 2018, Members requested supplementary information on the Information Technology (“IT”) Enhancement Project of the Department of Health (“DH”). The requested supplementary information is provided in the ensuing paragraphs.

(a) How DH’s IT enhancement project can facilitate the interface among respective clinical management systems of DH, Hospital Authority (“HA”) and private healthcare providers (“HCPs”) for data analytics and sharing in the longer term

2. Under Stage 1 of DH’s “Strategic Plan to Re-engineer and Transform Public Services” (“SPRINT-1”), to facilitate the interface among the clinical management systems of DH, HA and private HCPs, DH’s Clinical Information Management System (“CIMS”) will be fully connected with the territory-wide Electronic Health Record Sharing System (“eHRSS”). As mentioned in the

panel paper, the eHRSS is an information infrastructure which allows HCPs from both the public and private sectors¹ to view and share participating patients' electronic health records ("eHRs") within the sharable scope² on a "need-to-know" basis and with proper authorisation. As the Clinical Management System ("CMS") of HA is already fully connected with the eHRSS and capable of sharing and viewing of eHRs, the full-fledged connection of DH's CIMS to the eHRSS will allow DH, HA and participating HCPs from the private sector to access and share patients' eHRs via the eHRSS. Upon completion of SPRINT-1, the number of DH clinics capable of sharing and viewing of eHRs on the eHRSS will be increased from some 70 to over 170, and the number of eHRs to be shared by DH is expected to increase from the current 30 000 entries per month to 200 000 entries per month in 2024, and further to 400 000 entries per month in 2026.

3. With the enhanced use of eHRs and development of interoperable electronic platforms, together with the insights to be provided by the Data Architecture Study, DH's data analytics capabilities will be strengthened and it will be in a better position to contribute eHRs to the eHRSS for the future research and statistics functions.

(b) Further details of the projects under the four key initiatives of SPRINT-1 (i.e. clinical services improvement, business support and enablement, IT operations enablement, and studies for future developments)

4. Additional details of the 35 projects of these four initiatives under SPRINT-1 are set out at **Annex**.

(c) HA's establishment for developing and supporting the CMS and serving as the technical agency for the eHRSS, as well as the additional manpower required for Initiative 1 - Clinical Services Improvement under SPRINT-1

5. Under HA's current establishment, there are around 480 technical positions engaged for the development and support of the CMS and eHRSS. For Initiative 1 – Clinical Services Improvement under SPRINT-1, HA is expected to engage around 20 new time-limited technical positions.

¹ As of early May 2018, in addition to DH and HA, all 12 private hospitals and over 1 500 other private HCPs had joined the eHRSS on an organisational basis.

² The sharable scope includes: (a) personal identification and demographic data; (b) allergies and adverse drug reactions; (c) diagnosis, procedures and medication; (d) encounters/appointments; (e) clinical note/summary; (f) birth and immunisation records; (g) laboratory and radiology reports; (h) other investigation reports; and (i) healthcare referrals.

(d) A detailed breakdown of the work to be performed by HA for SPRINT-1 and the work to be outsourced to the private sector

6. As the technical agency for Initiative 1 – Clinical Services Improvement, HA will work with DH in the coordination, monitoring and management of project implementation. It will also play a key role in change management, clinical workflow design and optimisation, system migration and user training, etc. At the same time, HA will outsource to the private sector, including small and medium enterprises, a substantial portion of the development work. Such tasks do not only include purchase of products and commissioning of studies but also engagement of contractors and technical staff and procurement of services such as development and management of self-contained sub-systems³. The outsourcing will allow DH and HA to tap the know-how and experience of the private sector; more importantly, it also allows the private sector contractors to acquire knowledge relating to clinical systems and the intellectual property (“IP”) rights associated with the systems. In line with established government policy, the ownership of the IP rights created in such IT systems can be vested in the contractors who develop them, except where the IP rights need to be retained by the Government for public interest, legal or regulatory reasons, as appropriate.⁴ It is expected that over 60% of the budget to be spent by HA on DH’s behalf, amounting to over \$460 million, will be outsourced to the private sector. A breakdown of the total sum to be spent through HA is provided below –

Expenditure Item	Estimated Cost (\$ Million)
(i) Wages for HA’s technical, health informatics and project administration staff	266
(ii) Procurement of hardware and software (E.g. computer servers, computer workstations, network equipment, data centre equipment, system software tools and engines, system monitoring software, and healthcare-related software tools)	151

³ Examples of self-contained sub-systems include (i) Centralised Interactive Voice Response Sub-System, (ii) Digital X-ray/Imaging sub-system, (iii) Clinical Measuring Device sub-system to CIMS, (iv) Interface sub-system to Cervical Screening Information System, (v) Interface sub-system of Communicable Disease Information System to CIMS, and (vi) Interface sub-system of System of Management Assessment of Student Health to CIMS.

⁴ Conditions of vesting the IP rights in the contractors include giving the Government a perpetual and royalty-free licence to use, modify and duplicate the IT systems; offering IP licences to users on reasonable terms and conditions; and compliance with the criteria of Open Source Definition under reasonable terms and conditions (so as to benefit a wider community).

Expenditure Item	Estimated Cost (\$ Million)
(iii) Network communication and site preparation facilities	59
(iv) System development service by private technical agencies and hiring contract staff (including self-contained sub-systems)	218
(v) Contingency	34
Total	728


7. In addition to the above, system development for Initiatives 2 and 3 (Business Support and Enablement and IT Operations Enablement) and for the studies under Initiative 4 (Studies for Future Developments) to be overlooked by DH will be fully outsourced to private contractors at an estimated cost of close to \$330 million. For Initiatives 2 and 3, private contractors will be engaged in the development of an Incident Reporting System and a Departmental Enquiry/Complaint Management System through customising market products or building new systems or subsystems, as appropriate. A breakdown of the total sum to be spent through DH is provided below –

Expenditure Item	Estimated Cost (\$ Million)
(i) Procurement of hardware and software	75
(ii) Implementation services (including hiring contract staff and implementation outsourcing)	211
(iii) Site preparation, training and data centre hosting services	4
(iv) Contingency	39
Total	329

8. Hence, looking at SPRINT-1 holistically, it is estimated that around \$790 million, or about three-quarters of the total capital project cost of about \$1,057 million, will be outsourced to the private sector, providing it with business opportunities and IP rights for exploitation and facilitating know-how exchange between the public and private sectors, wherever feasible. Notwithstanding the

above, DH and HA will continue to uphold clinical safety, patient privacy and data and system security in the process in accordance with the applicable privacy and IT legislation and regulations. We consider that this will strike a proper balance between gainful use of HA's clinical and health informatics expertise and productive engagement of the private sector under the proposed project.

Yours sincerely,



(Lilian TSE)

for Secretary for Food and Health

c.c. Director of Health
(Attn: Senior Medical & Health Officer (Electronic Health Record))

Chief Executive, Hospital Authority
(Attn: Senior Systems Manager, Information Technology & Health Informatics Division)

List of Projects under SPRINT-1

Initiative 1 – Clinical Services Improvement

Project No.	Name of Project & Description	Target Start Date	Target End Date
1.	<p>Clinical Information Management System (“CIMS”) Extension</p> <p>Development of CIMS Common Modules To upgrade system infrastructure, deploy new development platform, develop modules for common functions including appointment, attendance, payment, clinical documentation, medication order entry, assessment, clinical notes, imaging, investigation order entry, results notification, online appointment, referral, partner notification, reporting and user management and authentication, and incorporate basic mobile functionalities</p>	Q4 2018	Q4 2025
2.	<p>Centralised Interactive Voice Response System (“IVRS”) & IVRS to CIMS To install a centralised IVRS for all DH clinics, and establish an interface between the IVRS and CIMS</p>	Q4 2018	Q4 2025
3.	<p>Digital X-ray/Imaging To enable DH to share digital images internally and externally, such as through the Electronic Health Record Sharing System (“eHRSS”)</p>	Q4 2018	Q4 2024
4.	<p>Measuring Device to CIMS To establish an interface between various measuring devices and the CIMS</p>	Q4 2018	Q4 2024

Project No.	Name of Project & Description	Target Start Date	Target End Date
5.	<p>CIMS Migration to CIMS Stage 2 To enhance Stage One CIMS based on the upcoming architecture standards utilising the new platform for Stage Two CIMS, so that the existing and new modules can have a similar look and feel and the user experience can be improved. New functionalities for Stage Two CIMS can also be incorporated to Stage One during the enhancement</p>	Q4 2018	Q4 2025
6.	<p>CIMS for Cervical Screening Programme To develop a module within CIMS for all DH service units performing cervical screening to record and manage details about the encounter</p>	Q4 2018	Q4 2025
7.	<p>CIMS for Child Assessment Service To develop a module within CIMS for Child Assessment Service of DH to capture data related to the clients of Child Assessment Centres and their treatments</p>	Q4 2018	Q4 2025
8.	<p>CIMS Family Health Service – Child Health Service To develop a module within CIMS for Child Health Service of DH to capture data related to the clients of Child Health Service</p>	Q4 2018	Q4 2025
9.	<p>CIMS Family Health Service – Family Planning Service To develop a module within CIMS for Family Planning Service of DH to capture data related to the clients of Family Planning Service</p>	Q4 2018	Q4 2025
10.	<p>CIMS Family Health Service – Postnatal Service To develop a module within CIMS for Postnatal Service of DH to capture data related to the clients of Postnatal Service</p>	Q4 2018	Q4 2025

Project No.	Name of Project & Description	Target Start Date	Target End Date
11.	<p>CIMS Family Health Service – Woman Health Service To develop a module within CIMS for Woman Health Service of DH to capture data related to the clients of Woman Health Service</p>	Q4 2018	Q4 2025
12.	<p>CIMS Tuberculosis and Chest Services To develop a module within CIMS for Tuberculosis and Chest Services of DH to capture data related to the clients of Chest Clinics</p>	Q4 2018	Q4 2025
13.	<p>CIMS Port Health Office's Travel Health Centres To develop a module within CIMS for Port Health Office of DH to capture data related to the clients of Travel Health Centres</p>	Q4 2018	Q4 2025
14.	<p>CIMS Integration CIMS to Laboratory Information System (“LIS”) To develop an interface between CIMS and LIS to enable laboratory request information and patient data to be transferred automatically for investigation order entry and eliminate the need for manual effort in preparing laboratory request forms</p>	Q4 2018	Q4 2024
15.	<p>School Dental Care Service Management and Information in Linked Environment (“SMILE”) to CIMS To establish an interface between SMILE and CIMS such that CIMS will become the central repository for all DH patient data, and enable records to be shared with the eHRSS with patient consent</p>	Q4 2018	Q4 2024

Project No.	Name of Project & Description	Target Start Date	Target End Date
16.	<p>System for Managing the Assessment of Student Health (“SMASH”) to CIMS</p> <p>To establish an interface between SMASH and CIMS such that CIMS will become the central repository for all DH patient data, and enable records to be shared with the eHRSS with patient consent</p>	Q4 2018	Q4 2024
17.	<p>CIMS Cervical Screening Programme (“CIMS-CSP”) to Cervical Screening Information System (“CSIS”)</p> <p>To establish an interface between the CIMS-CSP module and the existing CSIS to facilitate information exchange for the Cervical Screening Programme</p>	Q4 2018	Q4 2024
18.	<p>CIMS to Communicable Disease Information System (“CDIS”)</p> <p>To establish an interface between CIMS and CDIS to enable all notifiable disease cases to be reported to Communicable Disease Division of DH immediately after being flagged in CIMS</p>	Q4 2018	Q4 2024
19.	<p>Dental Information Technology (“IT”) Systems Implementation</p> <p>Dental Software Replacement</p> <p>To purchase a new software to replace Computer-Assisted Simulation System for Orthognathic Surgery / Viewbox as both software are out of support</p>	Q3 2019	Q2 2021
20.	<p>Dental Laboratory Software</p> <p>To purchase a new software to replace existing databases for the Dental Laboratory Service of DH and to enable a more organised and reliable way to manage and track dental laboratory cases</p>	Q4 2018	Q4 2020

Project No.	Name of Project & Description	Target Start Date	Target End Date
21.	<p>Dental CIMS and Imaging</p> <p>To migrate the existing Dental CIMS module to the new platform and infrastructure under Stage Two CIMS , incorporate new functionalities developed for common modules of Stage Two CIMS, establish interfaces to other systems as necessary, redesign user interfaces to better suit users’ workflow, and enable Dental Service to digitise dental X-rays and share images with DH service units and the eHRSS in the future</p>	Q4 2018	Q4 2024
22.	<p>Replacement of SMASH and the Internet Services for SMASH (“wSMASH”)</p> <p>To consolidate and replace both SMASH and wSMASH with a new system with prevailing technologies so as to strengthen system security and improve public services and efficiency of work</p>	Q4 2018	Q4 2025

Initiative 2 – Business Support and Enablement

Project No.	Name of Project & Description	Target Start Date	Target End Date
23.	Incident Reporting System To implement an Incident Reporting System to allow corresponding parties to report adverse events or incidents within DH, as well as facilitate the tracking and analysis of these events/incidents	Q1 2019	Q1 2021
24.	Departmental Enquiry/Complaint Management System To develop a Departmental Enquiry/Complaint Management System to facilitate the management of the entire lifecycle of the enquiry/complaint management process	Q1 2020	Q4 2021

Initiative 3 – IT Operations Enablement

Project No.	Name of Project & Description	Target Start Date	Target End Date
25.	<p>Centralised Helpdesk Establishment</p> <p>To establish a centralised helpdesk for DH that will enable all DH users to seek help on IT issues from a single point of contact and enable routing of calls to the appropriate handler</p>	Q1 2019	Q1 2021
26.	<p>IT Infrastructure Consolidation and Enhancement</p> <p>Infrastructure System Analysis & Design</p> <p>To gather overarching requirements for the overall IT infrastructure design to define the architectural design of IT infrastructure as well as to assess the estimated scope, cost and timeline of the proposed solution to facilitate a more detailed definition of the project scope</p>	Q1 2019	Q4 2020
27.	<p>New Data Centres</p> <p>To prepare two new data centres with implementation of the required software and hardware at both data centres to provide common computing platforms for future applications systems</p>	Q1 2021	Q3 2024
28.	<p>Infrastructure Upgrade</p> <p>To provide high speed communication network and related services for connecting the IT components and equipment within data centres and between each data centre and clinics/centres/offices</p>	Q1 2021	Q3 2024
29.	<p>IT Monitoring Tools</p> <p>To implement IT monitoring tools for the applications/systems, servers, network infrastructure, and end-user devices of DH to ensure reliability, service availability, and security</p>	Q3 2021	Q3 2023

Project No.	Name of Project & Description	Target Start Date	Target End Date
30.	IT Operations Enhancement Mobile Device Management To ensure the usage of mobile devices (such as laptops and handheld equipment) will comply with security policies to pave the way for greater use of mobile devices in DH to facilitate daily operations	Q2 2021	Q2 2023
31.	Access Management To set up a centralised user repository, to enable single sign-on and to allow for integration with existing systems	Q3 2021	Q1 2025
32.	Secured Internal Cloud Storage To implement a secured internal cloud storage for each DH staff as an option for the storage and sharing of files	Q3 2022	Q1 2024
33.	Email Add-on Tool To implement a secure messaging solution to support DH service units to send sensitive data to external parties through emails	Q4 2022	Q2 2024

Initiative 4 – Studies for Future Developments

Project No.	Name of Project & Description	Target Start Date	Target End Date
34.	Feasibility Study on the Shared Licensing and Monitoring System (“SLMS”) To conduct a study to assess the possibility, requirements and costs needed for implementation of SLMS as a holistic IT solution/support to Law Enforcement and Licensing Services in DH as well as a few other DH service units in relation to registration and licensing and case investigation work	Q2 2019	Q4 2020
35.	Data Architecture Study To carry out a holistic study on the health data being kept across systems of DH, with a view to defining a detailed and central data architecture for potential data sharing with Strategic Business Partners and ensuring the data architecture can cope with DH's future business and operational needs and align with the open data policy promulgated in the Hong Kong Smart City Blueprint	Q1 2019	Q4 2020