

ITEM FOR FINANCE COMMITTEE

CAPITAL WORKS RESERVE FUND

HEAD 710 – COMPUTERISATION

Government Secretariat: Health Bureau

New Subhead “Transformation of the Electronic Health Record Sharing System (eHealth) into a comprehensive healthcare information infrastructure (eHealth+)”

Members are invited to approve the creation of a commitment of \$1,395,818,000 for building the eHealth+ healthcare information infrastructure.

PROBLEM

To tie in with and support the development of various healthcare policies, including public and private healthcare, primary healthcare, and cross-boundary healthcare services, it is necessary to upgrade the hardware and software configurations of the existing eHealth system, develop new functions, and expand its scope of services to transform the eHealth system into an effective and comprehensive healthcare information infrastructure (i.e. eHealth+ system).

PROPOSAL

2. The Secretary for Health, with the support of the Government Chief Information Officer, proposes to create a new commitment of \$1,395,818,000 for building the eHealth+ system over the next five years (from 2024-25 to 2028-29). The proposal involves upgrading the existing eHealth system, through developing new functions on it, into a comprehensive healthcare information infrastructure that integrates multiple functions of healthcare data sharing, service delivery and care journey management, so as to support the overall healthcare development and policy priorities in Hong Kong. It will also support the entire healthcare process of citizens to better serve them in obtaining optimal healthcare services.

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JUSTIFICATION

Stage One and Stage Two Development

3. Launched by the Government in March 2016, eHealth is a territory-wide and patient-centric electronic platform that enables healthcare providers (HCPs) in the public and private sectors to view and share patients' electronic health records (eHRs) upon their authorisation. The objectives of eHealth are to improve efficiency and quality of care, improve continuity and coordination of care services, facilitate disease surveillance, and redress the public-private imbalance in healthcare services. The Hospital Authority (HA) is the technical agency for supporting the development and operation of eHealth.

4. eHealth has undergone two stages of development. Stage One Development (2009 to 2016) focused on building the infrastructure for connecting private and public HCPs and sharing eHRs, as well as establishing the legal framework for the system for data privacy protection and security. Stage Two Development (2017 to 2022) further upgraded the system security and privacy protection, enhanced the system's functions, expanded the scope of data sharing (e.g. inclusion of radiology images and Chinese medicine information), and facilitated patients' access to the system.

5. The information technology (IT) infrastructure of eHealth mainly comprises (i) the eHR sharing platform core infrastructure; (ii) the Clinical Management System (CMS) Adaptation Modules¹ and On-ramp Applications (e.g. CMS On-ramp² and EC Connect³) to support different HCPs' data sharing and system integration with eHealth; and (iii) the eHealth mobile application (eHealth App) launched in 2021 for members of the public to access and manage their eHRs as well as access other useful health information.

6. The operation of eHealth is underpinned by the Electronic Health Record Sharing System Ordinance (eHR Ordinance) (Cap. 625), which came into effect in 2015. The eHR Ordinance serves as the legal basis governing the data collection, sharing, use and safekeeping of the system. eHRs are considered personal data and are therefore subject to the Personal Data (Privacy) Ordinance (Cap. 486), which safeguards personal data privacy. Besides, a set of code of practice was issued by the Commissioner for the Electronic Health Record to help the participants (e.g. HCPs' executive, administrative, technical staff and healthcare professionals (HCPs)) understand the operation and use of eHealth.

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¹ These are modules developed to help private hospitals connect to and interface with eHealth.

² CMS On-ramp is a clinical management software with data sharing capability. It is a turn-key system readily usable by private clinics.

³ EC Connect is a turn-key CMS similar to CMS On-ramp, developed for free adoption by Chinese medicine clinics.

7. The design and operation of the eHealth system has incorporated the following core concepts and principles –

- (i) **Patient-centric care:** eHealth aims to build a life-long, comprehensive and individualised eHR profile for each and every participating patient, capturing essential health data that is readily available and easily accessible by the patient in need and his/her HCPs to support the delivery of patient-centric care.
- (ii) **Voluntary participation:** a patient can freely choose to participate in eHealth by giving express and informed consent to have his/her eHRs shared with private HCPs of his/her choice⁴; and can revoke the consent at any time. Similarly, only HCPs who participate in and comply with the requirements for eHR sharing can deposit and access eHR data.
- (iii) **Pre-defined sharable scope:** only data falling within the pre-defined eHR scope can be shared through the eHealth platform; individual HCPs also may view patients' eHRs only with their authorisation for the provision of healthcare services.
- (iv) **“Patient-under-care” and “need-to-know”:** only HCPs providing healthcare services to a patient and with the need to know his/her health data for such purpose may access the patient's health data with his/her consent and knowledge; and the patient may choose to give a one-year or indefinite access right to individual HCPs.
- (v) **Data privacy and system security:** ensuring data privacy and system security is of paramount importance. Therefore, we have put in place a number of protection measures, including predefined access rights of different levels set in accordance with individual HCPs' clinical needs or roles, issuance of access notification to patients, etc. Privacy Impact Assessments and Security Risk Assessments and Audits are also conducted by the Government routinely.

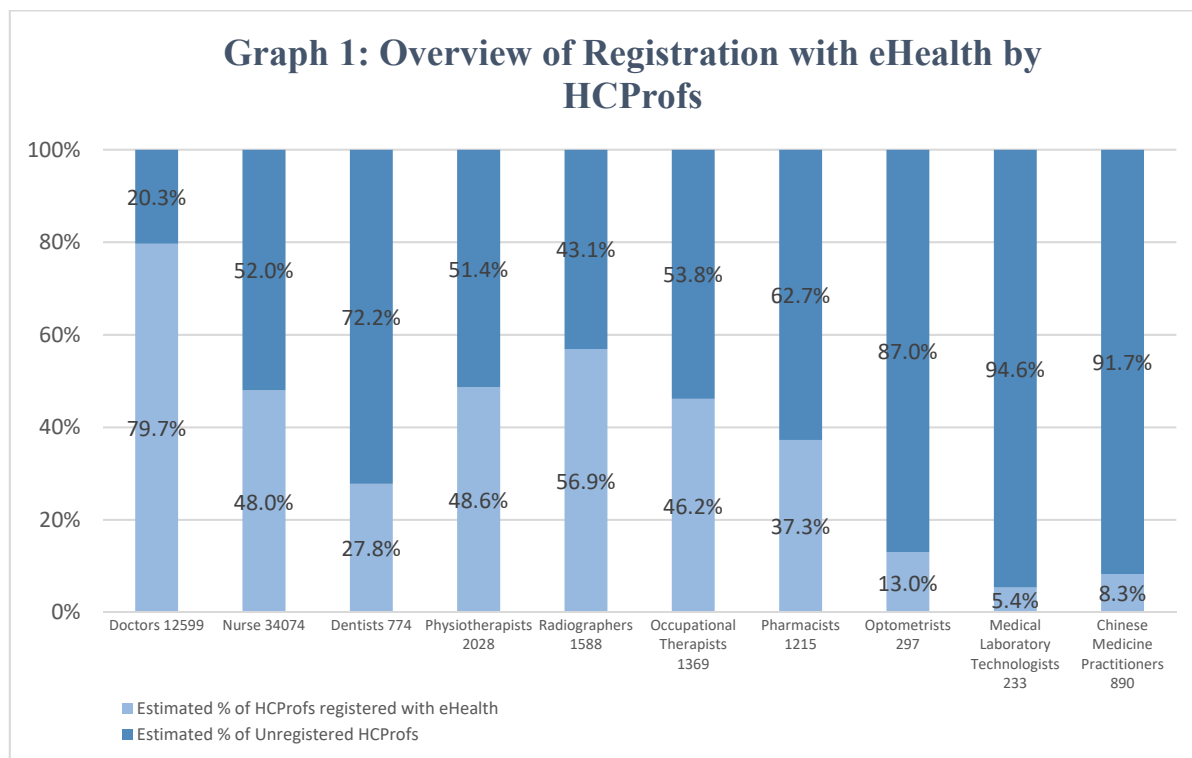
Latest Progress: Coverage and Use of eHealth

8. Over the years, eHealth has played an increasingly important role as the nexus linking the healthcare systems and for fuelling the vision of patient empowerment. As at the end of May 2024, all 43 local public hospitals, 330 public clinics, 13 local private hospitals, and about 3 060 private healthcare organisations (including clinics, elderly homes, and social welfare organisations providing

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⁴ The HA and the Department of Health (DH) can provide and obtain a person's eHRs once he/she registers on eHealth and gives “joining consent”. A patient needs to give “sharing consent” to a private HCP (on top of the “joining consent”) before the latter can provide and obtain his/her eHRs through eHealth.

healthcare services) have registered as HCPs, covering more than 5 550 service locations. In addition, about 12 600 doctors (accounting for about 80% of all registered doctors), about 775 dentists (28%), 890 Chinese medicine practitioners (8%) and about 40 805 other HCProfs, adding up to a total of around 55 070 HCProfs, have registered and can access eHRs on eHealth (see Graph 1 below).



9. Regarding registration by members of the public, the number of eHealth registrants soared fivefold from 1.2 million in 2019 to nearly 6 million (viz. about 80 percent of the total population in Hong Kong) as at the end of May 2024. This increase was largely attributed to the use of the eHealth platform by the Government during the COVID-19 epidemic in relation to inoculation and record-keeping under the population-wide COVID-19 Vaccination Programme, with eHealth registration incorporated into the booking and inoculation workflow. Among all age groups, the registration of young persons aged below 16 is still lagging behind, accounting for only about 44 percent of the total population of the age group.

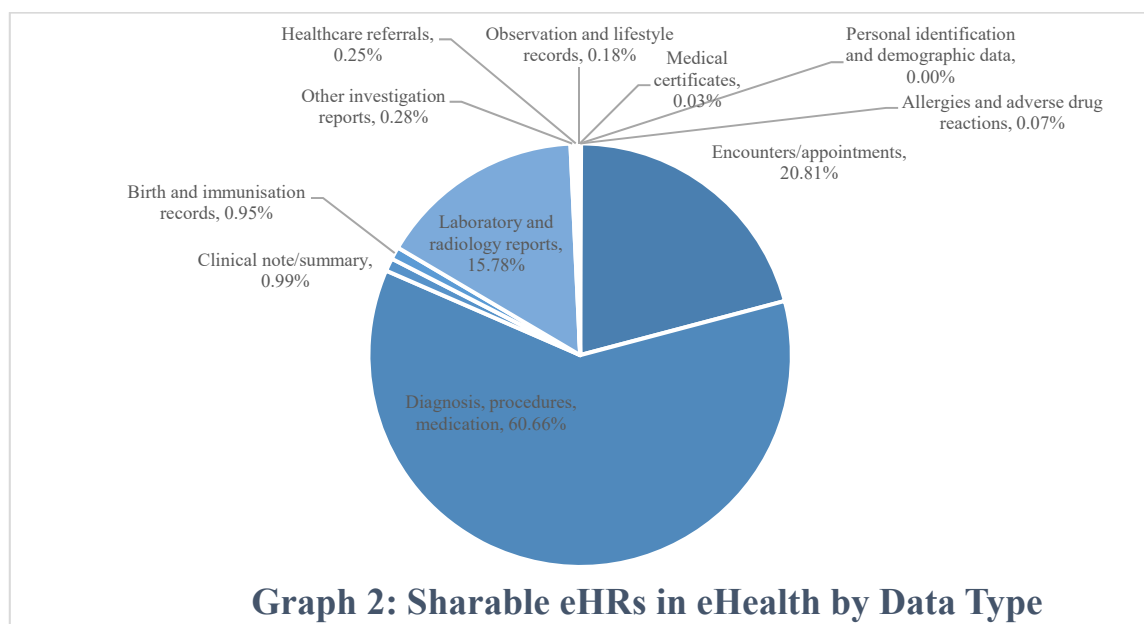
10. In terms of usage, eHealth currently allows the sharing of 11 data types of eHRs –

- (1) personal identification and demographic data;
- (2) allergies and adverse drug reactions;

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- (3) encounters/appointments;
- (4) diagnosis, procedures and medication;
- (5) clinical note/summary;
- (6) birth and immunisation records;
- (7) laboratory and radiology reports;
- (8) other investigation reports;
- (9) healthcare referrals;
- (10) observation and lifestyle records; and
- (11) medical certificates.

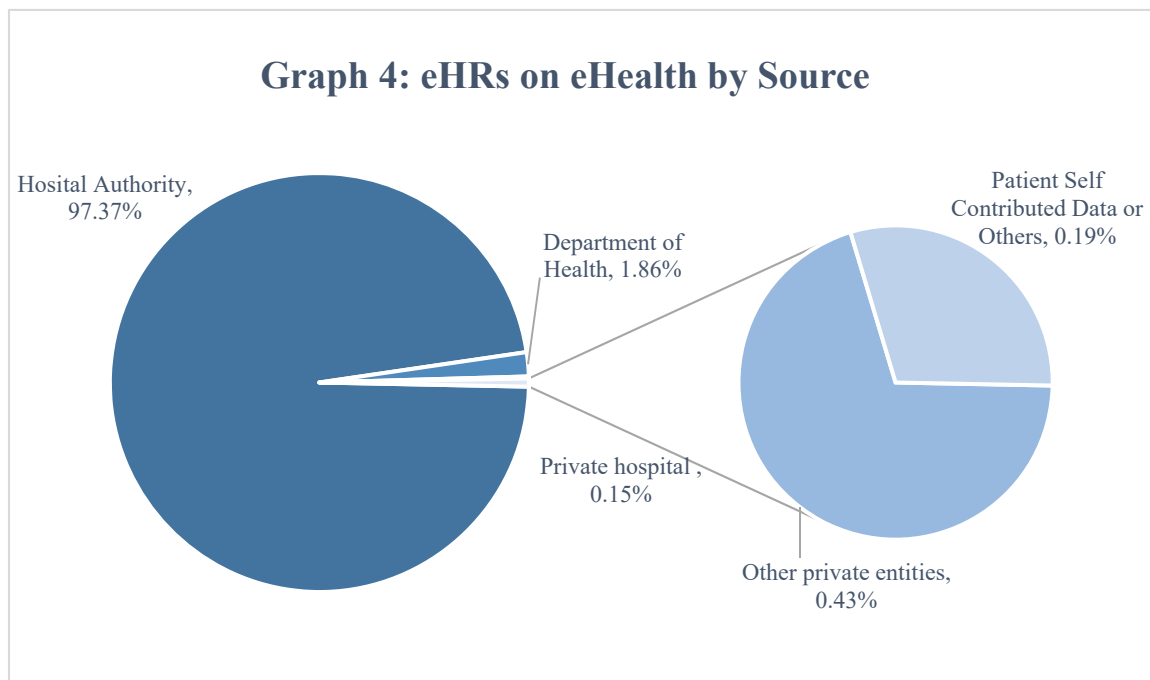
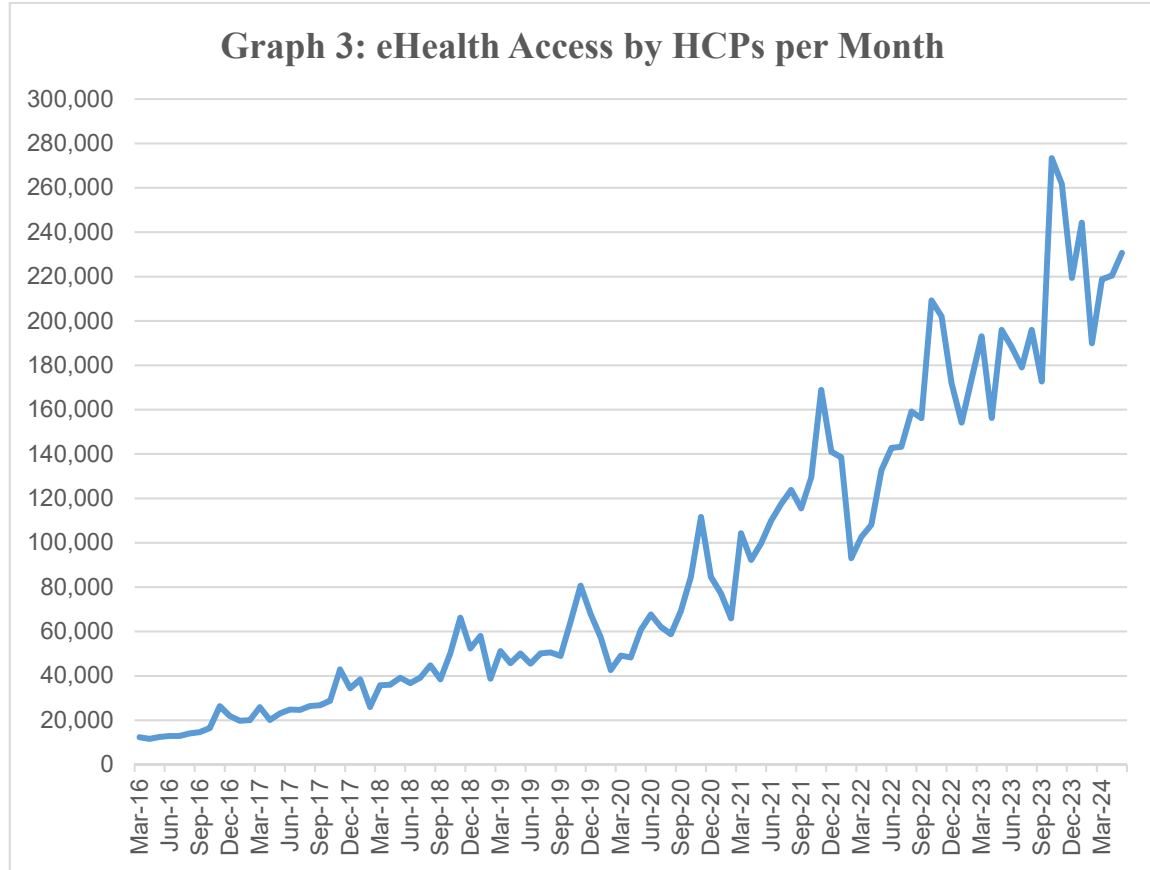
As at the end of May 2024, there are over 4.02 billion sharable eHRs on eHealth. Among them, “diagnosis, procedures and medication” and “encounters/appointments” constitute 60.7% and 20.8% respectively (see Graph 2).



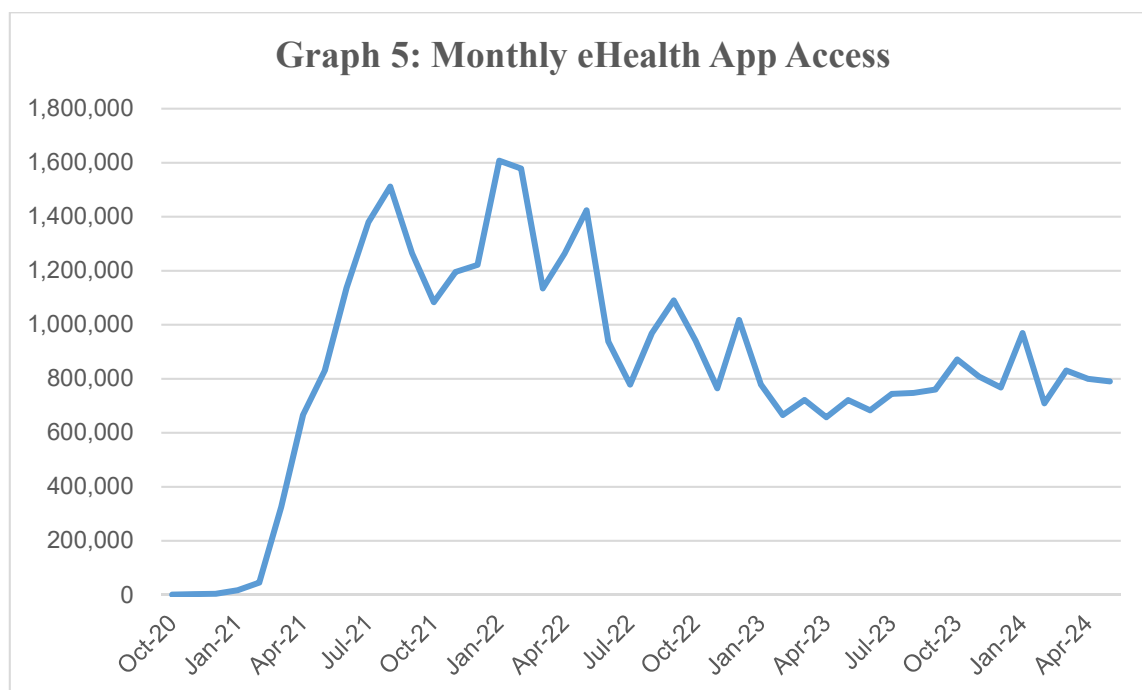
11. The monthly average views of eHRs by HCPs have continued to rise, reaching a monthly average of 220 000 views in the past three months (see Graph 3). In 2023, over 60% of the viewers were private hospitals and private HCPs, indicating that the private sector is active in using eHealth. However, despite the high level of participation by the private sector and the readiness of IT systems in most of the private HCPs, in particular private hospitals and imaging diagnosis

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centres, almost all the eHRs shared (over 99%) in eHealth came from public HCPs (i.e. the DH and the HA) (see Graph 4). The limited contribution of the private sector to eHRs has become a major obstacle to facilitating continuity of care for patients.



12. The mobile application, eHealth App, is positioned to be a patient-centric one-stop comprehensive health portal and is available on all major smartphone platforms (including those of Apple, Google and Huawei). Through eHealth App, users are able to access nine data types of eHRs⁵ on eHealth, and self-input health data (such as blood pressure, blood sugar and body mass index), which will facilitate the monitoring of the users' health conditions by themselves and their HCPs. eHealth App also provides features such as vaccination record management, Elderly Health Care Voucher (EHCV) balance enquiry, etc. Since its launch in 2021, eHealth App has recorded over 3.4 million downloads, ranking third among the most downloaded government mobile apps after My Observatory and iAM Smart. The monthly login frequency reached up to 1.6 million during the COVID-19 epidemic in 2022 and stabilised at around 860 000 post-pandemic (see Graph 5). As of the end of May 2024, over 220 000 patients have self-input health data on eHealth. eHealth App presents significant potential in facilitating personalised healthcare services (especially primary healthcare).



New Positioning of eHealth+

13. Building on the current strengths of eHealth, the 2023 Policy Address announced the Government's initiative to roll out a five-year plan of eHealth+ to transform eHealth from a health record sharing system into a comprehensive healthcare information infrastructure that integrates multiple functions of

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⁵ They include personal identification and demographic data, allergies and adverse drug reactions, encounters/appointments, immunisation records, medication, laboratory reports, healthcare referrals, observation and lifestyle records and medical certificates.

healthcare data sharing, service delivery and care journey management. eHealth+ aims to better serve citizens in obtaining optimal healthcare services and support the Government's overall healthcare agenda and policy priorities, including the following four development trends –

- (i) **Smart healthcare:** With the rapid progress in technological advancement and digital transformation, the service model of healthcare is evolving from the traditional in-person, episode-based, institution-centered one to a smart, dynamic, multi-disciplinary and patient-centric one. eHealth+ can offer timely health information and useful digital tools to support the provision of holistic (whole-person) care. Aside from supporting clinical decisions and care journey management through the sharing of medical data, it can also facilitate shared care across different HCPs, referral or transfer between healthcare processes, and promote social-medical collaborations and patient empowerment.
- (ii) **Primary healthcare:** the Government released the Primary Healthcare (PHC) Blueprint in December 2022 to shift the focus of the healthcare system from its current treatment-oriented, hospital-based system to a prevention-oriented, community-based, family-centric PHC system that emphasises early detection and intervention, in order to improve the overall health condition of the population for the development of a sustainable healthcare system. eHealth+ can serve as an integrated digital platform supporting the PHC initiatives, in particular in areas of data sharing, process management, service delivery, and monitoring of health outcomes.
- (iii) **Cross-boundary healthcare:** with the ever-tighter economic and social integration of Hong Kong with the Mainland, Hong Kong citizens making use of medical services in the Mainland, especially in the Greater Bay Area (GBA), is becoming more common. There are also occasions where people may need to carry their medical records for seeking medical care outside Hong Kong. eHealth+ will enhance the eHR portability to facilitate cross-boundary uses in a controlled, secured and orderly manner with due regard to policies, laws and regulations in Hong Kong and related jurisdictions.
- (iv) **Health innovation:** data-driven health and medical innovation is emerging as a game-changer that can transform the medical and healthcare sector and have a significant impact on the sustainability of the healthcare system as a whole. By leveraging innovation and technology through health data mining and analytics, eHealth+ has the potential to support clinical research and trials, contributing to the development of Hong Kong as a leading medical innovation hub.

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Through surveillance of health data under eHealth+, the Government could also gain deeper insights to support the formulation of health policies in a more comprehensive, precise and evidence-based manner and enhance the effectiveness of resource allocation.

eHealth+ Five-year Plan – Four Strategic Directions and Nine Core Functions

14. We will take forward eHealth+ development in accordance with the patient-centric principle and **four strategic directions, namely, One Health Record, One Care Journey, One Digital Front Door to Empowering Tool and One Health Data Repository**. Based on the strategic goals, we plan to progressively carry out a series of enhancement measures over the next five years (i.e. 2024-25 to 2028-29), ranging from the aspects of data and standards to process and hardware.

15. To provide better healthcare services for our citizens, an integrated service platform will be set up under eHealth+ to facilitate care coordination, cross-sector collaboration, health management and health surveillance, bringing about a **seamless and personalised care journey** for each individual. We will launch the following **nine core functions** to support every key stage or touchpoint of the care journey, from building health awareness and scheduling appointments to receiving follow-up care as well as continued monitoring –

- (1) **eBooking/eReferral;**
- (2) **eIdentification/eAuthentication;**
- (3) **eImaging/eLaboratory Report;**
- (4) **eMedication;**
- (5) **eMedical Certificate;**
- (6) **Portable eHealth Record;**
- (7) **eHealth Manager;**
- (8) **eHealth Tracker; and**
- (9) **eHealth Life.**

Encl. 1 An overview of the eHealth+ five-year plan is at Enclosure 1. A graphic illustration of the nine core functions throughout the care journey of an individual is at Enclosure 2. Details are set out in the ensuing paragraphs.

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One Health Record

16. Our goal is to consolidate the longitudinal eHRs of a patient spread across a multitude of healthcare processes into his/her personalised eHealth account. A comprehensive eHR profile enables patients and HCPs to make informed decisions and respond to the health needs of patients more effectively, thus improving clinical outcomes and saving care costs. However, as shown in paragraphs 8 to 12 above, the scope, breadth and depth of eHRs captured by the existing eHealth system, in particular in the following areas, still has significant room for improvement –

- (i) **Comprehensiveness of health records:** currently, public HCPs have been more proactive in contributing data to eHRs on eHealth and these took up the lion's share of existing eHRs being shared and viewed. There is a significant gap in data contribution from eHRs held by private HCPs and some HCProfs, such as specialists, dentists, Chinese medicine practitioners and allied health professionals. eHealth+ will continue to extend the scope of eHR sharing, facilitating the connection of private HCPs and enabling them to deposit eHRs into eHealth, so as to consolidate individuals' eHRs from these HCPs into their eHealth account.
- (ii) **Health status/behaviour data:** advances in innovative technologies and data analytics can effectively assess health risks arising from citizens' living habits, provide timely alert to individuals for early preventive measures and facilitating them to foster a healthy lifestyle. In addition to self-monitoring health data (such as body weight, blood pressure, blood sugar, etc.), eHealth+ will also be extended to cover health status and behaviour data (e.g. diet, smoking and drinking habits, mental state questionnaires, sleeping patterns, and physical activities) through self-input and wearable devices used by citizens.
- (iii) **Health service/programme data:** eHealth now serves as an administrative and record-keeping system for various government-subsidised or Public-Private Partnership (PPP) programmes. The eHealth+ platform will further integrate process and transaction records of all subsidised health programmes (e.g. vaccination, chronic disease co-care) and all public or subsidised healthcare services (e.g. maternal and child health, EHCV), so as to enable patients and their carers to gain a better overview and control of their care journey.

17. To fully unleash the potential of eHRs, we will take forward the following initiatives to (i) further **expand and deepen the existing pool of 11 data domains** by enhancing the level of participation of citizens and private HCPs as

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well as their respective data contribution to eHealth; and (ii) **expand the data sharing scope** to cover more types of eHRs to provide a broader view of the health and wellness of an individual.

(a) Promoting eHealth Participation by Citizens

18. As a first step, we will work to promote and facilitate eHealth participation to bring every citizen on board. Over the years, we have continuously expanded the channels/outlets for eHealth registration. We have integrated eHealth registration into some health services provided by the DH, e.g. Maternal and Child Health Centres, Vaccination Subsidy Scheme, and required mandatory eHealth registration for users of PPP programmes, e.g. Chronic Disease Co-Care Pilot Scheme (CDCC Pilot Scheme). We will progressively extend this registration requirement to all government-subsidised programmes and all public healthcare services provided by the DH and the HA. We will also continue to encourage citizens from different age groups to register with and use eHealth through various channels, including publicity and promotional activities and social media platforms.

19. We observe that of the 6 million citizens registered with eHealth (i.e. those provided “joining consent”), about 70% have not given any “sharing consent” to any private HCP, partly due to the complicated two-step consent model⁶ which some citizens may not fully understand. To facilitate citizens in unlocking the flow of eHRs from the private sector to their personalised eHR account, we will revise the eHR Ordinance to streamline the consent mechanism (see paragraphs 46 to 47 below).

(b) Reinforcing Data Contribution by the Private Sector

20. We endeavour to build a comprehensive eHR profile for patients to ensure the continuity of multi-disciplinary care, especially the two-way referrals between the primary and secondary care services. We must make every effort to facilitate the deposit of patients’ eHRs by the private sector into eHealth+. As most private HCPs are already using either commercial or in-house CMS solution that captures patients’ data electronically, eHealth+ will further enhance its connectivity with these CMS systems to facilitate their data deposit.

21. To enhance the technical connectivity between eHealth and common CMS solutions, we will adopt a three-pronged strategy which includes –

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⁶ A patient needs to give a “joining consent” and a “sharing consent” to an individual private HCP before the latter can deposit data into his/her eHealth account.

- (i) lowering the technical thresholds and providing technical assistance such as adaptor module and 24x7 test-site to establish eHealth connectivity⁷;
- (ii) partnering with CMS solution vendors and/or medical groups⁸ to co-fund enhancements of their local systems to achieve seamless eHR sharing onto eHealth; and
- (iii) streamlining the procedures for patients to provide sharing consent to individual HCPs.

22. In addition to technical improvement measures, there is a need to incentivise, or even set mandatory requirement for, the uploading of health records by private HCPs. Currently, private HCPs are required to deposit certain medical records into eHealth under PPP programmes. We will gradually expand the requirement of data contribution by private HCPs to all government-subsidised healthcare programmes. To enhance transparency, we will launch an eHealth+ certification scheme to enable patients to easily identify if a HCP has the capability to deposit medical records, and to what extent, into their personalised eHealth account. To cater for the scenario that the uptake of uploading health records by the private sector still falls short of patients' expectations, we plan to empower the Secretary for Health to require HCPs to deposit specified important health data into patients' personalised eHealth accounts (see paragraphs 46 to 47 below).

(c) *eImaging/eLaboratory Report*

23. A comprehensive and personalised eHR profile helps to minimise redundant tests and procedures, avoiding delays in treatment and bringing significant cost savings for patients. Through eHealth+, we will roll out electronic investigation reports, including eImaging and eLaboratory Reports, to allow citizens and their authorised HCPs to have life-long access to electronic investigation reports via the system. This will facilitate analysis and comparison, avoid the costs of redundant tests, and save the hassles of keeping paper and film records. We will also keep in view the relevant trend in healthcare development so as to expand the types of electronic investigation reports accessible under such function.

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⁷ For example, we will launch a platform enabling self-service data compliance testing in 2024-25 to simplify data compliance testing procedures and provide dedicated technical support.

⁸ In 2023, we rolled out the eHealth Adoption Sponsorship Pilot Scheme (EHAS Scheme) by partnering with CMS solution vendors/medical groups to co-fund system enhancements for seamless data provision to eHealth. Around 400 private medical practitioners have connected and shared eHRs with eHealth as at the end of May 2024. We will regularise, tailor-make and expand the EHAS Scheme to other sectors such as Chinese medicine, medical laboratories and dental care providers to boost data connectivity. To this end, we have set up an advisory group targeting different industry stakeholders, such as CMS solution vendors and medical groups, to take forward the EHAS Scheme.

(d) eMedical Certificate

24. An electronic medical certificate reduces the risk of losing its paper counterpart. It also gives patients a better overall service experience and supports online services. We will roll out the eMedical Certificate function for public and private doctors (including Chinese medicine practitioners) to issue electronic medical certificates on eHealth+, allowing individuals to keep and access their electronic medical certificates to serve an array of day-to-day purposes, including application for leave from work and school, school enrolment, job application and travel. To enhance the use and effectiveness of electronic medical certificates, we will examine the incorporation of an authentication function in eHealth+ for verifying the certificates by scanning their QR codes. This could prevent forgery and alteration of medical certificates, and enable users to confirm the authenticity and validity of the certificates at any time and any place.

One Care Journey

25. The current healthcare processes are being managed across different systems of individual HCPs without adequate **interoperability, coordination and data exchange** among them, which significantly affects the quality and effectiveness of healthcare services. The “One Care Journey” strategy aims to reshape the way healthcare is now delivered by building an effective IT infrastructure that runs through the entire healthcare journey and links to different sectors and tiers of the healthcare system, facilitating citizens’ participation in different health programmes and allowing them to have complete control of their care journey.

26. “One Care Journey” is particularly important for developing the district-based family-centric community health system recommended in the PHC Blueprint. It involves multi-disciplinary HCProfs in both public and private sectors, and aims for, through **professional-driven and evidenced-based care protocols, horizontal integration of PPP and medical-social collaboration as well as vertical interfacing with two-way referrals between secondary and tertiary care services**. eHealth+ will better support the roles of PHC providers in helping patients navigate each tier of the healthcare system for suitable services and serving as a gate-keeper to the public secondary care services.

27. Technically, we will build a one-stop operating platform called the “Strategic Health Service Operation Platform” (SHSOP) under eHealth+ to support and standardise the workflow and documentation, both clinically and

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administratively⁹, of all subsidised healthcare programmes and related public and private healthcare services. The platform will integrate and support various new and existing schemes, such as the CDCC Pilot Scheme, the Women Health Service, the Elderly Health Service, EHCVs, vaccination programmes, the Student Health Service and specific disease-related schemes. It will also make available the following key functions –

(a) eBooking

28. eHealth+ will allow patients to schedule appointments electronically with private and public HCPs in a one-stop and round-the-clock manner. Patients can make or reschedule appointments, arrange their schedules, search for the right HCPs, locations, and appointment types and receive the relevant reminders. For HCPs, eBooking can help frontline staff to make triage scheduling based on factors such as the area of specialty involved and complexity of a case, geographical factors, and age, etc., thus optimising the deployment of resources, reducing the waiting time, and assisting patients in receiving proper healthcare services.

(b) Case Management and eReferral

29. Family doctors, as the case managers of patients, play a key role in the care planning and management process for patients, including the recording and sharing of clinical information and making decision of when to refer a patient to another HCProf for treatment. eHealth+ will build a family doctor-based online network connecting HCPs of nursing services, Chinese medicine practitioners, allied health services and community pharmacy services under the Primary Care Directory/Registry. The network will facilitate multidisciplinary care for a patient paired with three levels of professionals through information sharing, clinical documentation and referral to achieve optimal outcomes¹⁰.

30. eHealth+ will offer a real-time and secured eReferral system linking family doctors, Chinese medicine practitioners, allied health professionals, social service providers and specialists. All electronic referrals will be channelled for systematic review (based on clinical and non-clinical requirements) and the system

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⁹ The platform will cover multiple layers of functions, including enrolment, attendance registration, clinical documentation, medication supply, prescription and dispensing management, investigation and laboratory tests, results recording, referrals, reminders and alert functions, subsidy reimbursement and participants' co-payment management. It will also provide other value-added functions to support new services such as patients' self-access to health records, telehealth, medical certificates, and outcome monitoring and analytics, etc. This will be an open platform with the capability to interface with the operation systems of service providers in the market.

¹⁰ For example, for chronic disease management, a protocol-driven framework will be established. This framework shall allow for building data relationships for a standard journey from screening, consultation, laboratory data uploading and related treatments.

will create a mechanism for iterative communication by the care teams (e.g. in-application messaging, status tracking and point-to-point documentation sharing). To enable patients' timely and appropriate access to specialty care, the eReferral forms can also support the incorporation of evidence-based clinical guidelines to ensure the necessary investigation and provision of sufficient information at the primary healthcare level is complete. In addition, as Chinese medicine is further integrated into the healthcare system, relevant functions in the future will also help with the communication and collaboration between Chinese medicine practitioners, Western medicine practitioners and other HCProfs.

31. eHealth+ will also improve doctor-patient communication, helping patients access to their own case information and compliance with treatment directives from HCProfs. For instance, patients can retrieve and forward their eReferrals anytime. They can choose to receive electronic notifications on referral status to track the referral from start to completion. They can also receive appointment instructions/reminders in an electronic manner (e.g. fasting blood test or pre-surgical instructions).

(c) eMedication

32. Medication management is a critical part of the therapeutic process for patients, particularly for the elderly. eMedication aims to facilitate the integration of medication records and drug-related healthcare services from different HCPs, including ePrescription through data connectivity with the eHealth+ platform. For patients, ePrescription improves medication safety and brings convenience as all their prescription and dispensary records will be captured from HCPs and compared against system records automatically. In a broader sense, eMedication can facilitate an array of new services, such as medication reconciliation, pharmacy refills, medication vetting/management services, medication reminders, medication adherence monitoring, telehealth and drug delivery services, etc. Complete medication and relevant health records of patients (such as blood sugar and blood pressure readings for diabetic and hypertensive patients) can also be deposited into eHealth, facilitating convenient access and follow-up by HCProfs. In particular, to help residential care homes (RCHs) and their electronic medication management system suppliers connect to eHealth, we will launch the eMedication (RCH) project. With residents' consent, relevant electronic prescription information can be accessed through the system. This will facilitate RCHs' follow-up on drug dispensing and administration, thereby enhancing their operational efficiency and strengthening medication safety.

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(d) Portable eHealth Record

33. Enabling patients to securely access and share their health data for healthcare purposes outside Hong Kong is equally important in ensuring patient safety and continuity of care. During the COVID-19 epidemic, we have made special arrangements to enable Hong Kong citizens participating in the “Special Support Scheme for HA’s chronic disease patients living in the Guangdong Province to sustain their medical consultation under Coronavirus Disease 2019” (the SS Scheme)¹¹ to receive subsidised consultations at the University of Hong Kong-Shenzhen Hospital (HKU-SZH). For that purpose, they may also authorise the HKU-SZH to receive and use their eHRs in eHealth. Building on the experience, we will expand the eHealth arrangements to support Hong Kong citizens participating in other cross-boundary collaborations launched or recognised by the Government, such as the EHCV GBA Pilot Scheme. This year, we will also introduce a new function to allow users to retrieve their own eHRs on eHealth and contribute their health records obtained outside the local medical system through eHealth App. We will, as well, revise the eHR Ordinance to offer an appropriate legislative framework to promote eHR portability (see paragraphs 46 to 47 below).

One Digital Front-door to Empowering Tool

34. Under “One Digital Front-door to Empowering Tool”, our goal is to leverage eHealth App and its reach to the wider community service network to bolster the Government’s efforts in building a PHC-centric system. **eHealth App will become the integrated health tool for citizens to (i) gain access to medical services at different locations, (ii) manage their health service processes and take control of their health information, (iii) monitor their health condition; and (iv) take active steps to prevent diseases and build a healthier lifestyle.**

(a) eIdentification/eAuthentication

35. Patient identification is an important procedure to reduce medical errors and ensure patient safety. Outdated manual processes such as oral verification and transcription are common causes of misidentification. With the personal eHealth QR code underpinned by the secure and trusted Person Master

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¹¹ The SS Scheme ended on 9 May 2023. On 5 May 2023, the Finance Committee of the Legislative Council (LegCo) approved the alteration of the scope of Item 806 “Special Support Scheme for HA’s chronic disease patients living in the Guangdong Province to sustain their medical consultation under Coronavirus Disease 2019” under Head 140 – Government Secretariat: Health Bureau, Subhead 700 General non-recurrent, and renaming the Item as “Supporting Patients of HA in Guangdong-Hong Kong-Macao GBA” to launch the “Pilot Scheme for Supporting Patients of HA in Guangdong-Hong Kong-Macao GBA”.

Index (PMI)¹² on eHealth App, citizens would enjoy quick and contactless identity identification and authentication at every touchpoint of the care pathway, both online and offline, ranging from booking and referral, check-in, admission to a hospital, telehealth, prescription and dispensing, to seeking access to their own medical records, etc.

(b) eHealth Manager

36. eHealth App will be an individual's personal health assistant making available a number of major functionalities throughout the care journey, including eBooking, eReferral and eMedication (see paragraphs 28 to 32), for citizens to manage all aspects of their health service process. With further expansion of eHR access on eHealth App, citizens will be able to take control of their own eHRs, make more informed medical choices, and provide non-local HCPs with their health records to improve their care process. At the same time, we will strengthen the integration and seamless connection of eHealth App with "HA Go" and other public and private healthcare electronic platforms, to allow citizens to more conveniently manage their services, especially primary healthcare services, at different healthcare institutions through a central eHealth platform.

(c) eHealth Tracker

37. We note that a growing number of the population is using mobile health applications and self-monitoring technologies to record and track health metrics such as body movements, heart rate, sleep quality or even stress level. In this connection, we will formulate an eHealth+ inclusion scheme to certify and embrace health-related Internet of Things (IoT) into the eHealth+ ecosystem to support the eHealth Tracker function, allowing citizens to keep track of their health status, and to identify anomalies by monitoring specific health parameters. The data collected can also support the decision-making process of HCPs.

38. Meanwhile, we will continue to expand the scope of eHRs that can be inputted by individuals via eHealth App for storage and monitoring by themselves and HCPs. As a complementary measure, we will also amend the eHR Ordinance to lay out in clear terms individuals' rights and responsibilities to contribute data to the eHealth system (see paragraphs 46 to 47 below).

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¹² The PMI on eHealth is a set of identity and demographic data (i.e. identity document number, name, gender and date of birth) centrally maintained by the eHealth for identification of patients. Currently, as far as public healthcare services are concerned, the personal particulars of a Hong Kong Identity (HKID) Card holder is mainly obtained through retrieval of the card face data stored in the computer chip on the HKID Card by eHealth and at healthcare outlets under the DH. This arrangement will be expanded to outlets under the HA.

(d) eHealth Life

39. We will turn eHealth App into the single platform to encourage citizens to adopt a healthier lifestyle. Under the Government's public health promotion programme, we will launch a health challenge platform this year to encourage citizens to do more exercises and to actively participate in fun initiatives with their family and friends, fostering healthy living habits. Through the interface with fitness tracking applications, users will be able to log their exercise level to accumulate health points. Our first target group will be students, who are commonly facing a number of health challenges including obesity, and social and mental health issues. General and personalised health advice, generated according to the personal profile and risk factors of an individual (such as family history, age and gender), can also be made available via the platform.

One Health Data Repository

40. Under "One Health Data Repository", eHealth+ will establish a centralised, dynamic and secure databank with a population-wide health dataset of Hong Kong people, supported by data analytic tools. We will also establish under the prevailing legal framework a secure mechanism, with access control, which safeguards the privacy of personal data and information security. The databank will mainly serve to support (i) **medical research, clinical trials and innovations** by academia, research institutions as well as the pharmaceutical and biotechnology industries; and (ii) **healthcare policy formulation** by the Government.

41. On medical research and trials, the comprehensive health dataset on the eHealth+ platform serves as invaluable resources to enable the identification of significant medical patterns, the generation of new hypotheses, and the experimentation with novel approaches. The platform will become a research-specific interface that permits anonymous synchronisation of the research subjects' information, streamlining the research process and facilitating regulated access to data for researchers. It can also considerably improve the procedures for assessing study feasibility and recruiting patients, thereby boosting the efficiency and competitive edge of clinical research of Hong Kong.

42. In view of the constant threats of novel infectious diseases and chronic non-communicable diseases, the eHealth+ repository will provide multi-dimensional and real-time data to detect the emergence of novel diseases or prevent major public health risks. It will also facilitate evidence-based service planning and evaluation, thereby supporting more forward-looking and effective healthcare policy formulation and resource allocation by the Government.

43. To create an enabling environment for the aforesaid goals, **at the technical level**, we will work to establish an analytics platform with appropriate tools (e.g. artificial intelligence and machine learning). We will also develop an **appropriate governance framework** to ensure the safe and appropriate use of data with patients' consent and sufficient safeguards for data security and personal data privacy¹³.

eHealth+ Digital Platform Infrastructure

44. The current core infrastructure of eHealth was designed over a decade ago mainly to facilitate the exchange of eHRs among HCPs and for read-only access. The infrastructure will be transformed into an integrated data platform that streamlines, standardises, and integrates diverse functionalities across multiple sectors to improve operational efficacy and reliability. The platform will support the development of the eHealth ecosystem and facilitate cross-boundary health record sharing.

45. In view of the sensitive nature of patients' health records, we attach great importance to system security and data privacy protection. In accordance with the IT Security Guidelines promulgated by the Office of the Government Chief Information Officer, we have formulated security policies and control procedures and employed appropriate technologies and measures (for example, authentication of patient's identity, validation of HCProfs' registration, firewall, anti-virus software, data encryption, access control, access record and review, regular security risk assessment and audit, cyber security drill, etc.) A more sophisticated multi-layered security protection will be adopted for the eHealth+ platform, including establishing a digital health platform with the latest artificial intelligence, big data, biometrics technology and cloud services that meet safety and compliance standards, strengthening the sources of cyber security threat intelligence to track potential network threats, and developing attack surface risk management proposals and adopting automated attack simulation technology to reduce attack surfaces in a proactive manner. In parallel, we will stringently conduct authentication as well as security risk assessment and audit when supporting the connection of private HCPs' systems to eHealth to ensure compliance with high-standard technical and safety requirements with rigorous safety policies and control procedures in place. eHealth+ will drive the industry to upgrade the overall security specifications of their systems, enhance security awareness and improve capabilities in tackling cybersecurity incidents, thereby building a secured healthcare information network with joint efforts.

/Proposed

¹³ While it is specified in the eHR Ordinance (Cap. 625) that eHRs can be used for research and statistical purposes, the relevant provisions are yet to come into operation. We will establish a governing mechanism for the use of eHRs for research and statistical purposes.

Proposed Amendments to eHR Ordinance (Cap. 625)

46. The eHR Ordinance (Cap. 625) was enacted mainly to support the operation of the eHealth platform back in 2015. eHealth+ development entails a paradigm shift in the roles and functions of the system as a record sharing platform. It aims to capture a much wider scope of data type and volume of health records (e.g. healthcare service/programme data) and involves higher complexity of functions (e.g. programme management, PHC support and cross-boundary uses), as well as more proactive participation of citizens, HCPs and the Government. The comprehensiveness, completeness, accessibility and portability of eHRs in eHealth are of paramount importance. To support the development, we need to refine the data collection, sharing and use mechanism and legal framework for protection of data privacy and system security prescribed under the eHR Ordinance.

47. The proposals being considered include (i) streamlining the consent process for private HCPs to facilitate the depositing of patients' eHRs; (ii) requiring HCPs to deposit essential health data into the patients' eHealth accounts; (iii) codifying patients' contribution and use of eHRs; and (iv) facilitating greater portability and use of eHRs. We plan to introduce the amendments to the LegCo in end-2024/early 2025.

IMPLEMENTATION PLAN

48. We have set initial goals based on the direction of development, with a view to rolling out various key measures for system improvement and the nine core functions gradually. The development of eHealth+ involves different stages and touchpoints of the citizens' care journey. As the projects are interrelated, their synchronised and parallel planning and development could ensure consistency and continuity of the overall development of eHealth+ and enhance its operational efficiency and cost-effectiveness. Similar to the previous two stages of development, we will continue to adopt a building block and flexible approach¹⁴ to allow agile delivery of quality projects. The proposed major development projects are set out as follows. Details of the other project components and implementation timeframe are at Enclosure 3.

Encl. 3

/Project

¹⁴ We break down the overall system development into smaller components and develop modules under each of them, where pilots will be conducted as necessary. User feedback is collected during module development to ensure smooth operation. The scope of modules will then be expanded and functions will be added as needed. Finally, we will bring together different modules to form components to support the entire system.

Project	Estimated Commencement Time	Estimated Completion Time
One Health Record		
Enhance the technical connectivity between eHealth and private CMS solutions		
(a) Equip major CMS solution vendors in Hong Kong with the capability to connect to eHealth and deposit eHRs	2024/25	2025/26
(b) Support major medical groups and individual practitioners in connecting to eHealth and deposit eHRs	2025/26	2027/28
Expand the scope of data sharing (e.g. records from Hong Kong's first Chinese Medicine Hospital, dentists and other specialists, and health status and behaviour data)	2024/25	2028/29
eLaboratory Report	2024/25	2025/26
eImaging	2025/26	2027/28
eMedical Certificate	2024/25	2026/27
One Care Journey		
Core functions of PHC (such as family doctors profile management and carer matching)	2024/25	2028/29
SHSOP	2024/25	2028/29
eBooking	2024/25	2026/27
eReferral	2025/26	2027/28
eMedication	2024/25	2028/29
Portable eHealth Record	2024/25	2027/28
One Digital Front Door to Empowering Tool		
eIdentification/eAuthentication	2024/25	2025/26
eHealth Manager	2024/25	2028/29
eHealth Tracker	2024/25	2027/28
eHealth Life	2024/25	2028/29
One Health Data Repository		
eHealth database and analytics platform	2024/25	2028/29
eHealth+ digital platform infrastructure		
Improve operational efficacy, security and data privacy protection	2024/25	2028/29

49. As a highly specialised IT system, eHealth+ requires a substantial amount of clinical professional knowledge for development. The HA is the largest healthcare provider in Hong Kong and has extensive experience and professional knowledge in the development and operation of the CMS, including the rollout of Stage One and Stage Two development of eHealth and the support for subsequent system operation. Given the complexity of eHealth+ development and the considerable patient data involved, we will continue to engage the HA to perform critical development tasks. Meanwhile, industry collaborations and smart-sourcing will allow us to leverage the professional knowledge of industry partners, create synergies, diversify risks and promote efficiency. We plan to pilot collaboration projects in areas that involve access to less sensitive data, such as medication data and eHealth App's connectivity with IoT.

EXPECTED BENEFITS

50. eHealth+ aims to enhance the collection and application of health data in the eHealth system, thereby improving the transparency and effective usage of eHRs by citizens, supporting the **digital transformation** of various healthcare services, and enhancing the overall efficiency of the healthcare system. eHealth+ is anticipated to bring various direct benefits to its main users as follows –

- (a) **HCPs/HCProfs** are able to acquire more comprehensive health data of patients with the assistive tools of eHealth+ to enhance their operational efficiency and clinical decisions. Cross-sectoral and multi-disciplinary healthcare collaborations could also be promoted to open up more diversified forms of medical-social partnerships and doctor-patient co-care service models.
- (b) The health management tools provided by eHealth App will facilitate **citizens** to understand their health conditions, foster closer cooperation with HCPs, and enhance personal and family health management. Members of the public can also enjoy healthcare services of higher quality and achieve better results with lower costs, such as early detection and treatment of health issues, reducing medical errors (e.g. medication and prescription errors), and avoiding redundant tests, etc.
- (c) **The Government** can formulate more efficient and effective healthcare policies by conducting more proper planning and distribution of resources, such as more accurate estimation of public funds for health programmes, and collecting essential and precise health surveillance data to step up health monitoring of the population.

51. Specifically speaking, eHealth+ will play a vital role in the implementation of various healthcare policies. As mentioned in paragraphs 25 to 32 above, the eHealth+ platform will support the development of prevention-oriented PHC services by, inter alia, facilitating District Health Centre (DHC) services, the family doctor system as well as the multi-disciplinary, cross-sectoral and inter-organisational coordination in PHC. Through eHealth+, we will integrate PHC services provided by the DH, the HA and DHCs and launch government-subsidised or PPP health programmes to tap into the resources of the private healthcare sector in meeting the demand for public PHC services, providing a more effective approach to managing chronic diseases, medical and rehabilitation as well as preventive services to address the challenges of an ageing population and rising medical costs. For instance, under the CDCC Pilot Scheme launched in 2023, eligible members of the public can use the eHealth+ platform to manage their family doctor pairing at DHCs, allied health and laboratory services arranged, etc. In the future, we will incorporate more relevant programmes, such as the Vaccination Subsidy Scheme, the EHCV Scheme, the General Out-Patient Clinic PPP Programme and the Colorectal Cancer Screening Programme, into the one-stop SHSOP of eHealth+. In fact, local and international studies have well established that strengthening PHC services can improve the efficiency and financial sustainability of the healthcare system as a whole because effective and early treatment provided to patients would reduce the avoidable use of much more costly secondary and tertiary healthcare services. While these intangible merits are non-quantifiable, a healthier population will bring financial benefits to society¹⁵.

52. Besides, eHealth+ will help facilitate cross-boundary healthcare collaborations, including the EHCV GBA Pilot Scheme, the Pilot Scheme for Supporting Patients of the HA in the GBA, the Pilot Scheme for Direct Cross-Boundary Ambulance Transfer in the GBA, and the strategic procurement of healthcare services from GBA healthcare institutions for Hong Kong people. Apart from serving as a technical platform for managing the procedures and records of these schemes, eHealth+ provides functions like the Portable eHealth Record to enable the sharing of health records between the two places. As a result, citizens could enjoy safe and continuing healthcare services.

/FINANCIAL

¹⁵ For example, according to a local study, the healthcare system will save about 28% or \$12.5 billion on direct healthcare expenses over 30 years and prevent a total of 47 138 mortalities through the provision of subsidised diabetes mellitus (DM) screening and management services in the private sector for individuals with DM and prediabetes between 45 to 54 years of age. Another local study demonstrates that multi-disciplinary intervention programmes for DM and hypertension would save healthcare costs up to 38% and 33% per patient per year respectively.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

53. eHealth+ development will entail groundbreaking changes to the existing infrastructure to strengthen the technical capacity and capability to meet the many new and revolutionary business needs. For example, eHealth App will develop into an integrated platform for personal health management, government-subsidised programmes, and cross-sectoral healthcare services. The eHealth+ platform will support all PHC programmes and other integrated care services. We expect a significant increase in the data volume and utilisation or access frequency by HCPs and patients, with an annual growth rate of 25% in the data volume. The system development will be more complicated in terms of functionality, security protection and reliability. These will result in higher development costs compared to the previous two stages of development. The estimated non-recurrent cost for eHealth+ development over the coming five years is **\$1,395.8 million**. We have made references to the experience gained in Stage One and Stage Two development and taken into account technology advancement and market changes when estimating the relevant costs. The key estimated cost and expenditure are as follows, with the detailed breakdown at

Encl. 4 Enclosure 4 –

- (a) Computer hardware (\$44,495,000): procurement of computer hardware and equipment, including computer servers for the eHealth cloud platform, storage and backup equipment, security equipment, mobile and end-user tools and other information processing equipment.
- (b) Computer software (\$80,194,000): procurement of computer software, including operating system software, database license, integration software, application development software, software testing, security scanning tools and end-user software.
- (c) Communication network (\$19,291,000): procurement of network equipment and installation of communication lines.
- (d) Development team (\$460,943,000): staff cost of the dedicated development teams in the HA to support the development and launching of eHealth+ products, including eHealth App and Doctor's portal, PHC services, and the eHealth backbone for connectivity, security and record sharing. The development team includes health informatics staff, product designers and architects, IT development and operation staff, security and integration experts, and staff of the programme management office.

/(e)

- (e) IT operation services (\$632,323,000): procurement of the agency contract staff service, professional and consultancy services to complement the development team for system development, solution and product design, implementation and quality assurance, cybersecurity and privacy design, engagement and collaboration with the third party HCPs and solution vendors as well as incentive programmes.
- (f) Training (\$1,784,000): providing training to doctors, nurses and other HCProfes, IT vendors/staff from the private healthcare sector and HA staff. The training covers standards, information security, and privacy, as well as other technical areas.
- (g) Others (\$29,895,000): other administrative expenses in support of project development, e.g. general expenses for providing office accommodation to the development team and setting up dedicated training and testing sites.
- (h) Contingencies (\$126,893,000): the amount is equivalent to 10% of the expenditure items set out in (a) to (g) above.

Recurrent Expenditure

54. As a comprehensive and integrated healthcare information infrastructure with more features and complexity, the operation of the eHealth+ system will incur additional recurrent expenditures. Preliminary estimates suggest that upon the full implementation of eHealth+, i.e. starting from 2029-30, the annual recurrent expenditure will be \$110,690,400, covering hardware and software maintenance (\$25,590,000), system maintenance and professional support services (\$76,340,400), communication network (\$3,780,000), training (\$270,000) and others (e.g. administrative, office and miscellaneous) (\$4,710,000) expenses. The actual expenditure required will depend on the nature and quantity of new features developed, the pace of project development, prevailing technology advancement, market changes and the progress and effectiveness of service transformation and system process integration. When the development of eHealth+ is more mature, we will adhere to the value for money principle and review in detail the recurrent expenditure required for the project.

Cost Savings and Avoidance

55. eHealth+ will use the next-generation development technology to migrate relevant services and programmes to the cloud and provide more economically cost-effective digital solutions to meet the new operational need. It is anticipated that significant savings could be achieved in the development cost and maintenance expenditure of the existing information system –

/(a)

- (a) By utilising a sharable cloud platform to replace independent hardware, integrating various electronic health initiatives¹⁶ to consolidate the use of standardised and open-source software as well as streamlining procedures, we anticipate avoidance of certain non-recurrent expenditure between 2025-26 and 2028-29, including technology refreshes for outdated hardware (\$29,100,000), system testing expenses and patent software licensing fees (\$60,000,000), and software development and other technical support expenses (\$165,700,000), totalling \$254,800,000; and
- (b) Through the utilisation of cloud technology, open-source software, and advanced monitoring and automation procedures, we anticipate that from 2029-30 onwards, avoidance of annual expenditure can be achieved on the maintenance expenses for hardware and network equipment (\$13,798,000), software licensing fees (\$5,643,000), and system maintenance and support service expenses (\$24,659,000), totalling \$44,100,000.

Encl. 5 56. The cost and benefit analysis for the proposed eHealth+ five-year plan is at Enclosure 5.

PUBLIC CONSULTATION

57. In mapping out the proposal on eHealth+ development, we have taken into account relevant local and overseas experiences as well as the views of relevant stakeholders. We also consulted the Steering Committee on Electronic Health Record Sharing and its working groups¹⁷ in November and December 2023. Members generally supported the direction and plan for eHealth+ development. In addition, we consulted the LegCo Panel on Health Services regarding the proposal on 20 February 2024. Members supported the proposal and its submission to the Finance Committee for funding approval. We will continue to engage stakeholders throughout the implementation of eHealth+. We will also commission a series of publicity measures to promote the leveraging of eHealth+ to members of the public for more effective management of their own health.

BACKGROUND

58. The Government put forward the development of eHealth as one of the healthcare reform proposals for public consultation in 2008 and received general support from the community. In July 2009, the LegCo approved \$702 million for
/implementing

¹⁶ Such as DHC, Primary Care Directory, CDCC Pilot Scheme as well as other PPP Programmes and government-subsidised health programmes

¹⁷ Members comprising doctors, other HCProfs, health informatics experts, IT industry representatives, data scientists, patient group representatives and the Office of the Privacy Commissioner for Personal Data.

implementing Stage One Development of eHealth, which was completed in 2016. The LegCo approved a capital funding of approximately \$422 million in March 2017 for Stage Two Development over a span of five years, which was completed in 2022.

59. The Chief Executive announced in the 2023 Policy Address the rollout of eHealth+ to build a comprehensive healthcare information infrastructure over the next five years. The goal is to develop a personalised eHealth account for every citizen to deposit their digital health records in both public and private sectors, and to integrate the healthcare service processes. eHealth+ will allow users to check and carry eHRs as well as scheduled appointments through mobile phones. The new system will also support various healthcare policies and reforms, especially on cross-boundary medical collaboration within the GBA.

Health Bureau
July 2024

Overview of eHealth + Development

Driver

Smart healthcare

Primary healthcare

Cross boundary healthcare

Health innovation

Vision

To build a comprehensive healthcare information infrastructure that supports the provision of safe, efficient and quality healthcare services with better health outcomes for Hong Kong citizens.

Mission

To be an enabler of care coordination, cross-sector collaboration, active health management and health surveillance, bringing about a seamless and personalised care journey for each individual.

Strategic Goals

Goal 1: One Health Record: Strengthening electronic health record sharing across public and private sectors to create a life-long personalised electronic health record for every citizen.

Goal 2: One Care Journey: Enabling an integrated and seamless care journey across settings and sectors within Hong Kong and beyond.

Goal 3: One Digital Front-door to Empowering Tool: Empowering individuals in active health management and monitoring.

Goal 4: One Health Data Repository: Enabling healthcare research and innovation and assisting in public health surveillance to develop a comprehensive healthcare ecosystem.

Core Functions

eBooking/ eReferral

eIdentification/ eAuthentication

eMedication

eImaging/ eLaboratory Report

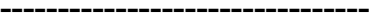
eMedical Certificate

Portable eHealth Record

eHealth Manager

eHealth Tracker

eHealth Life



Core Functions of eHealth+ to Support a Care Journey

Identification and Service Matching



Receiving Care



After Care

1

Enrollment/
Referral
eBooking
eReferral

2

Attendance
eIdentification
eAuthentication

3

Diagnosis
eImaging
eLaboratory Report

4

Treatment
eMedication

5

Documentation
eMedical Certificate

6

Follow-up with non-local
healthcare providers
(if applicable)
Portable eHealth Record

7

Health process
management
eHealth Manager

8

Analytics &
Monitoring
eHealth Tracker

9

Health activities
eHealth Life



**“eHealth+” Five-year Work Plan
Major Project Components and Implementation Timeframe**

Key Components	Details of Components	Start	End
Strategic Goal 1: One Health Record			
1. Encouraging data deposit by private healthcare providers (HCPs)			
(a) Partner with Clinical Management System (CMS) solution vendors and/or medical groups to enhance systems for seamless data sharing and implementation of a connectivity partnership scheme	<ul style="list-style-type: none"> • Implement a connectivity partnership scheme with CMS solution vendors to equip them with the capability to connect to eHealth and deposit electronic health records (eHRs) • Establish a working group to build a sharing framework and provide technical support • Standardise data transmission interface between Public-Private Partnership (PPP) programmes and eHealth 	2024-25	2025-26
(b) Support major medical groups and individual practitioners in connecting to eHealth and depositing eHRs	<ul style="list-style-type: none"> • Establish a working group to provide technical support 	2025-26	2027-28
(c) Lower technical thresholds and provide technical support			
(i) Simplify the data deposit process, enhance the adaptors for eHRs, improve the sharing interface, and upgrade the core technology infrastructure	<ul style="list-style-type: none"> • Optimise and upgrade the core technology infrastructure and sharing framework of eHR sharing system to support secure and real-time deposit of large volume of data • Provide exclusive digital certificates for eHealth to facilitate connection between private healthcare institutions and eHealth systems 	2024-25	2027-28
(ii) Enable self-service data compliance testing, and assist system developers in data connection	<ul style="list-style-type: none"> • Establish a self-service data testing framework and a developer website to assist HCPs and vendors in connecting to eHealth 	2024-25	2027-28

Key Components	Details of Components	Start	End
(iii) Support private laboratories and private radiology images centres to deposit data into eHealth	<ul style="list-style-type: none"> • Simplify and provide adaptors to support more private laboratories and private radiology images centres in depositing data into eHealth 	2024-25	2026-27
(d) Streamline procedures to give sharing consent	<ul style="list-style-type: none"> • Provide convenient system functions to facilitate citizens in giving sharing consent to HCPs 	2024-25	2024-25
2. Establishing comprehensive and complete eHRs			
(a) Expand the existing scope of sharable data			
(i) Support the viewing of cross-professional eHRs by Hong Kong's first Chinese Medicine Hospital (CMH) and Chinese Medicine Clinics cum Training and Research Centres	<ul style="list-style-type: none"> • Develop data standards and provide sharing interfaces to support data deposit • Explore and provide relevant system functions to support the viewing of cross-professional eHRs by CMH and Chinese Medicine Clinics cum Training and Research Centres • Support two-way referral between public and private HCPs and CMH 	2024-25	2028-29
(ii) Migrate the data of PPP programmes and other government-funded healthcare programmes to eHealth for integration	<ul style="list-style-type: none"> • Develop data standards and provide sharing interfaces to broaden health data collection from various PPP programmes (e.g. District Health Centres (DHCs), General Out-patient Clinics, Colorectal Cancer Screening, Breast Cancer Screening, Dental services, etc.) and other government-funded healthcare programmes for integration 	2024-25	2028-29
(b) Develop new scopes and sources of sharable data			
(i) Personal health profiles	<ul style="list-style-type: none"> • Develop data standards and access standards for electronic personal health profiles (e.g. blood pressure, blood sugar, exercise records) and provide interfaces for sharing with HCPs 	2024-25	2026-27

Key Components	Details of Components	Start	End
(ii) DHC eHealth Stations	<ul style="list-style-type: none"> Expand the project of collecting eHRs from DHCs and extract vital sign data from eHealth Stations through cloud technology for sharing on eHealth 	2024-25	2026-27
(iii) Provide an interface for HCPs to share health data deposited from mobile devices	<ul style="list-style-type: none"> Provide an interface for HCPs to share health data deposited from mobile devices 	2024-25	2026-27
(iv) Other types of health records and other specialist records	<ul style="list-style-type: none"> Develop other data standards and provide a sharing interface for the deposit of more types of health records, such as dental records, medication profiles, health surveys, community health records, etc., for sharing with HCPs and individuals 	2024-25	2028-29
3. Others			
(a) eMedical Certificate: Establish a standardised mechanism for issue, recognition and verification of medical documents and certificates	<ul style="list-style-type: none"> Establish standards for verification of electronic medical documents and certificates to enhance the acceptance and usability of electronic medical documents Develop a universal verification platform and leverage the eHealth App to develop verification function 	2024-25	2026-27
(b) eImaging and eLaboratory Report, and explore the applications of artificial intelligence (AI) image analysis technology	<ul style="list-style-type: none"> Upgrade the system to support the uploading and viewing of high quality images and a wider variety of radiology/laboratory reports Develop function for viewing radiology images on mobile devices Explore the applications of AI image analysis technology 	2024-25	2027-28

/(c)

Key Components	Details of Components	Start	End
(c) Enhance data sharing	<ul style="list-style-type: none"> • Develop a universal interface for private HCPs and eHealth to share information from various PPP programmes and other government-funded healthcare programmes, achieving a seamless care process and avoiding duplicate data entry 	2024-25	2027-28
(d) eMedication: Support electronic medication management and dispensing	<ul style="list-style-type: none"> • Implement the eMedication project to facilitate the sharing of medication data between the electronic medication systems of residential care homes and community pharmacies in support of community medication safety and convenient prescription services – <ul style="list-style-type: none"> ▪ Support downloads of dispensing records of residential care homes for the elderly (RCHEs) and community pharmacies ▪ Support the sharing of comprehensive patient medication data between RCHEs and community pharmacies ▪ Develop medication dispensing, replenishment, and management functions for community pharmacies 	2024-25	2028-29
(e) Support other health data-based community patient care programmes	<ul style="list-style-type: none"> • Facilitate the development of diversified community service projects, including district health services, chronic disease co-care, dental services, woman health and elderly care services. 	2024-25	2028-29
(f) Enhance the system to support legislative changes	<ul style="list-style-type: none"> • Develop and enhance system functions and upgrade the infrastructure and security functions to comply with legislative amendments 	2025-26	2028-29

Key Components	Details of Components	Start	End
Strategic Goal 2: One Care Journey			
1. Primary healthcare core functions			
(a) Develop relevant functions for family doctors			
(i) Consolidate and update the information in the Primary Care Directory	<ul style="list-style-type: none"> • Establish a comprehensive Primary Care Register to support professional qualification verification and cover more healthcare professionals (HCProfs) • Launch a single enrolment portal to streamline the registration process and establish a dedicated platform for professional records • Align with the government-funded healthcare programmes to improve the workflow and qualification compliance confirmation process 	2024-25	2026-27
(ii) Family doctors' profile	<ul style="list-style-type: none"> • Align with primary healthcare reform to develop system functions for family doctors so as to support primary healthcare services centered around family doctors and community HCProfs teams – <ul style="list-style-type: none"> ■ Validate qualifications through the Primary Care Register ■ Confirm the eligibility of community HCProfs for participation in the government-funded healthcare programmes ■ Record administrative data related to programme participation, such as registered programmes, payment methods and matched patients, etc. 	2024-25	2027-28

Key Components	Details of Components	Start	End
	<ul style="list-style-type: none"> ■ Support family doctors in building professional networks to achieve more comprehensive community healthcare team management ■ Record the professional training and qualifications of community doctors and other professionals 		
(iii) Carer matching/client care management	<ul style="list-style-type: none"> ● Streamline care coordination and support through service matching to facilitate diverse and comprehensive healthcare services for patients in the community (such as service matching with family doctors or HCProf teams, provision of an interface for DHCs or programme offices to assist patients with registration or allow patients to self-register for service matching with designated carers under the government-funded healthcare programmes) ● Integrate care programme data with clinical data to support service operation workflows, facilitate group service coordination, and enhance service efficiency and effectiveness 	2024-25	2028-29

/(b)

Key Components	Details of Components	Start	End
(b) Establish communication channels for family doctors and other HCProfs, and develop a care team-based communication platform	<u>Service notifications</u> <ul style="list-style-type: none"> • Create to-do lists for HCProfs to support them in managing routine tasks • Send notifications to carers, such as important information on hospital discharge and admission, to help them manage their work schedules • Provide non-medical smart notifications to support administrative and service coordination <u>Secure communication channels</u> <ul style="list-style-type: none"> • Develop a secure clinical communication platform to facilitate communication among HCProfs 	2024-25	2028-29
(c) eBooking	<ul style="list-style-type: none"> • Support services appointments of the Hospital Authority (HA) • Support services appointments of the Department of Health (DH) • Support appointments for other government healthcare service programmes • Support services appointments of private HCPs • Develop appointment-related functions (such as changing appointment times, scheduling) 	2024-25	2025-26
(d) eReferral: Establish connections with various healthcare services	<u>eReferral</u> <ul style="list-style-type: none"> • Develop an eReferral function to support family doctors in referring cases to DHCs or other community healthcare services 	2024-25	2028-29

/Provide

Key Components	Details of Components	Start	End
	<ul style="list-style-type: none"> • Provide the eReferral function based on clinical guidelines and protocols to facilitate comprehensive patient care coordination across medical service levels, professions and institutions <p><u>Bi-directional referral with HA</u></p> <ul style="list-style-type: none"> • Pilot a bi-directional referral mechanism with the HA through the Chronic Disease Co-Care Pilot Scheme (CDCC Pilot Scheme) to strengthen public-private collaboration and patient management 		
2. Supporting Government programmes			
(a) Establish the Strategic Health Service Operation Platform	<ul style="list-style-type: none"> • Develop a platform to integrate and support the development and operation of PPP programmes and other government-funded healthcare programmes – <ul style="list-style-type: none"> ▪ Stage one (developing core functions): Support basic service operations, such as service provider and participant registration, keeping primary healthcare team records, attendance registration, standardised service payment and reimbursement, integrated health records and team care programmes, laboratory test records and basic to-do lists, etc. 	2024-25	2028-29

/Stage

Key Components	Details of Components	Start	End
	<ul style="list-style-type: none"> ■ Stage two (developing advanced functions): Enhance service coordination and efficiency, optimise system versatility and enhance integration with “eHealth+” functions, such as advanced form engine, eReferral, structured care plan and data-driven smart notification, etc. ■ Stage three (integrating various partnership programmes and subsidised healthcare programmes): Migrate the data of existing programmes to a single operation platform, support service transformation of these programmes and enhance data sharing and management 		
(b) Establish express registration mechanisms for patients participating in PPP programmes	<ul style="list-style-type: none"> ● Provide seamless integration with eHealth registration to streamline registration procedures for citizens to join health programmes ● Provide a convenient registration function on the eHealth App, allowing citizens to self-register for health programmes, and improving user experience 	2024-25	2026-27
(c) Upgrade the system for the Elderly Healthcare Voucher (EHCV) Scheme and the Vaccination Programme	<ul style="list-style-type: none"> ● Support the EHCV Greater Bay Area Pilot Scheme ● Develop registration and subsidy collection functions for private clinics, and support outreach workflow of the Vaccination Programme 	2024-25	2026-27

/Migrate

Key Components	Details of Components	Start	End
	<ul style="list-style-type: none"> Migrate the system to the standardised “eHealth+” platform 		
(d) Enhance the support system for the CDCC Pilot Scheme	<ul style="list-style-type: none"> Support collaborative workflow among key partners including family doctors, DHCs, private laboratories and the HA 	2024-25	2026-27
(e) Support the system for operating and managing government health programmes	<ul style="list-style-type: none"> Streamline vetting and transaction tracking of payment/reimbursement submissions Support performance and outcome analysis Standardise service designs and management functions Strengthen the supply of project-specific drugs, capable of vetting and adjusting the subsidised drug formulary, and enhance treatment options under the projects 	2024-25	2026-27
(f) Streamline the process for HCPs to participate in health programmes	<ul style="list-style-type: none"> Streamline registration functions and support self-submission or update of required information for the programmes 	2024-25	2026-27
3. Supporting cross-boundary healthcare services			
(a) Develop “My Cross-Boundary Health Record” on the eHealth App	<ul style="list-style-type: none"> Develop secure and reliable two-way clinical data sharing to support cross-boundary healthcare collaboration programmes Establish a secure channel for data exchange, identity authentication and authorisation 	2024-25	2024-25

Key Components	Details of Components	Start	End
(b) Develop “Personal Folder” for self-deposit of records by citizens	<ul style="list-style-type: none"> • Deposit, manage and access clinical data of citizens <ul style="list-style-type: none"> ▪ Security measures to prevent malwares and cyberattacks ▪ Manage clinical records deposited by citizens for viewing and deletion through the eHealth App ▪ Import data uploaded by citizens into the clinical data repository and provide a clear interface for access of HCProfs 	2024-25	2024-25
(c) Provide other sharing measures	<ul style="list-style-type: none"> • Study mainland clinical terminologies to support two-way data sharing 	2025-26	2027-28
4. Others			
(a) Provide self-service functions for HCProfs	<ul style="list-style-type: none"> • Provide user-friendly self-service functions on the “eHealth Pro” App (such as user account management, service profile management and registration for PPP programmes and other government-funded healthcare programmes) 	2024-25	2028-29
(b) Other convenient functions of the “eHealth Pro” App	<ul style="list-style-type: none"> • Provide convenient functions on the “eHealth Pro” App to support the daily work of eHealth users, such as quick login to eHealth, reminders by the eHealth Manager, patient related to-do lists, etc. 	2024-25	2028-29
(c) Establish a shared service interface or platform for HCPs to provide telehealth and telemedicine services to patients	<ul style="list-style-type: none"> • Enable telehealth consultations between HCProfs and patients 	2025-26	2026-27

/Strategic

Key Components	Details of Components	Start	End
Strategic Goal 3: One Front-door to Empowering Tools			
1. “eHealth+” ecosystem development (eHealth Tracker)			
(a) Establish common interface and integrate with healthcare mobile apps of public HCPs	<ul style="list-style-type: none"> • Link up with HA Go and integrate related functions • Link up with Chinese medicine clinics in 18 districts • Link up with CMH mobile app • Link up with DH services 	2024-25	2026-27
(b) Enable interface or integration with healthcare mobile apps of private HCPs	<ul style="list-style-type: none"> • Link up with mobile apps of private clinics, CMH and private hospitals for e-booking or disc-queueing 	2024-25	2025-26
(c) Connect to the Internet of Things (IoT) devices and support relevant care programmes	<ul style="list-style-type: none"> • Retrieve health data from IoT equipment <ul style="list-style-type: none"> ▪ Apple Health ▪ Google health record tools ▪ Huawei health record tools ▪ Other health databases ▪ Develop relevant care programmes with the Primary Healthcare Office 	2024-25	2027-28
2. Healthcare process management (eHealth Manager)			
(a) Develop “My Care” functions	<ul style="list-style-type: none"> • View personal data of different health programmes, such as the CDCC Pilot Scheme, vaccination programmes, etc. • Provide functions including search for family doctors, booking, booking management, attendance/authentication 	2024-25	2026-27

/(b)

Key Components	Details of Components	Start	End
(b) Personal health record (My Record)	<ul style="list-style-type: none"> • Develop personal health data accounts and relevant interfaces, allowing citizens to deposit, upload, store and retrieve personal health data, such as clinical laboratory reports, radiographic examination reports, medication overviews, health survey data and usage status of PPP programmes, etc., to help citizens monitor and improve their own health status more effectively 	2024-25	2028-29
(c) Develop “My Digital Assistant”	<ul style="list-style-type: none"> • Develop convenient functions such as – <ul style="list-style-type: none"> ■ Smart reminder (for drugs, booking, programmes, etc.) ■ One-stop online data access request ■ Electronic payment, including credit cards, Faster Payment System (FPS) and Mainland e-wallets • Enable self-services such as – <ul style="list-style-type: none"> ■ Set up “My Carer” ■ Apply for DHC e-membership cards ■ Register for various government-funded healthcare programmes 	2024-25	2026--27
(d) Develop “My Carer” and support communication with family doctors	<ul style="list-style-type: none"> • Communicate with my carer <ul style="list-style-type: none"> ■ Set up and manage my carer, pair with family doctors, etc. ■ Receive telehealth services from family doctors or HCProfs ■ Report health status to carer 	2024-25	2028-29

Key Components	Details of Components	Start	End
3. Health programmes and information (eHealth Life)			
(a) Support health programmes/management	<ul style="list-style-type: none"> • Provide various functions such as promotion, programme registration, health activity record, etc. 	2024-25	2028-29
(b) Provide general and personalised health information or tips	<ul style="list-style-type: none"> • Disease management <ul style="list-style-type: none"> ■ Provide disease management information ■ Provide Life Course Preventive Care Plan/ self-assessment function ■ Enrol in disease management activities • Health record updates and security alerts 	2024-25	2027-28
(c) Support health surveys	<ul style="list-style-type: none"> • Support electronic population health surveys • Support online surveys on disease management for DHCs/CDCC Pilot Scheme • Self-assessments/questionnaire surveys on health status 	2024-25	2026-27
(d) Develop a health challenge platform for promoting healthy lifestyle and habits	<ul style="list-style-type: none"> • Develop a health challenge platform to record healthy activities such as park-walking challenge and steps challenge, etc. 	2024-25	2028-29
4. Others			
(a) Help care recipients to manage their health	<ul style="list-style-type: none"> • Communicate health conditions with care recipients • Help care recipients to make appointment, access personal eHRs, make attendance registration, take part in health programmes, etc. 	2024-25	2028-29

/(b)

Key Components	Details of Components	Start	End
(b) Support eIdentification/eAuthentication	<ul style="list-style-type: none"> • Use the eHealth QR codes for user identity verification, which can be used for – <ul style="list-style-type: none"> ▪ Streamline HCProfs’ login to eHealth ▪ Identify and give sharing consent ▪ Attendance registration for government-funded healthcare programmes 	2024-25	2025-26
Strategic Goal 4: One Health Data Repository			
1. Build a standardised medical and health data analysis database	<ul style="list-style-type: none"> • By collecting and integrating data from public and private healthcare institutions, community health services, and various government-funded healthcare programmes, build a medical and health big data repository for analysing and facilitating health policies, planning, and programme formulation • Establish infrastructure facilities for a big data platform <ul style="list-style-type: none"> ▪ Build a big data framework and infrastructure facilities ▪ Establish a data collection and conversion engine ▪ Install basic data analysis tools • Set up a management portal framework 	2024-25	2028-29
2. Establish data management, reporting and analysis tools	<ul style="list-style-type: none"> • Establish data analysis and reporting functions to support data analysis and reporting for all parties – <ul style="list-style-type: none"> ▪ Provide the function of direct access to analytical data ▪ Develop standardised reporting tools ▪ Develop a reporting portal ▪ Establish a data dashboard 	2024-25	2028-29

Key Components	Details of Components	Start	End
3. Enable research, big data and AI analysis to support formulation of healthcare policies and improve the efficiency of clinical research in Hong Kong	<ul style="list-style-type: none"> • Develop a business intelligence/AI analytical platform to support medical analysis and research – <ul style="list-style-type: none"> ▪ Establish a business intelligence framework and platform ▪ Provide tools for full-text search ▪ Support AI analysis ▪ Develop advanced analytics and predictive models ▪ Support analysis of health behaviours 	2024-25	2028-29
4. Develop a governance framework to support other data usage	<ul style="list-style-type: none"> • Work out data access strategies for the big data analytical platform • Implement data access policies, including the workflow and procedures of downloading • Establish usage policies for long-term data and open data • Develop interface for open data and applications • Support the function of downloading open data 	2024-25	2028-29
“eHealth+” Digital Platform			
1. Migrate existing applications to the cloud infrastructure	<ul style="list-style-type: none"> • Migrate and upgrade the existing government-funded programmes and related systems to the digital cloud platform, including – <ul style="list-style-type: none"> ▪ DHCs ▪ eHealth System (Subsidies) Portal ▪ Primary Care Directory ▪ CMS On-ramp ▪ Chinese Medicine Information System 	2024-25	2027-28

Key Components	Details of Components	Start	End
2. Establish a digital health platform on the cloud infrastructure to support strategic goals, including frameworks for application, integration, security and operation	<ul style="list-style-type: none"> • Build the eHealth Cloud infrastructure • Expand the operational capabilities of automated cloud infrastructure, such as enhance error detection and system monitoring, automatic integration testing, etc. • Leverage cloud technologies to enhance the operational efficiency, security and reliability of eHealth system platform, such as continuous integration and continuous delivery/adoption as well as multi-cloud deployment, support for multi-cluster architecture, sequential cluster version upgrades, security updates and patch management, enhance central support and service operation dashboards, etc. 	2024-25	2028-29
3. Upgrade existing PPP programmes to the “eHealth+” digital cloud platform	<ul style="list-style-type: none"> • Upgrade relevant system of existing PPP programmes (including core modules, data sharing, technical services, other existing systems and information frameworks) to “eHealth+” digital cloud platform 	2024-25	2028-29
4. Enhance cyber security and data protection	<ul style="list-style-type: none"> • Strengthen cyber security, data protection, monitoring and auditing frameworks of eHealth, including – <ul style="list-style-type: none"> ■ Cloud authentication services ■ Cloud encryption framework and key management ■ Enhance user access management 	2024-25	2027-28

/Operation

Key Components	Details of Components	Start	End
	<ul style="list-style-type: none">■ Operation of a 7x24 eHealth cloud security operation center■ Integration with the new features of “iAM Smart”● Perform regular security risk assessment and audit		

Enclosure 4 to FCR(2024-25)26

**Estimated Budget of eHealth+ Development
FY 2024-25 to 2028-29**

	2024-25	2025-26	2026-27	2027-28	2028-29	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
(a) Computer Hardware	14,647	14,036	8,453	3,562	3,797	44,495
(i) Computer servers for eHealth cloud platform	10,945	7,334	8,128	3,287	3,522	33,216
(ii) Storage and backup equipment	2,452	6,452	0	0	0	8,904
(iii) Mobile and end-user tools	1,250	250	325	275	275	2,375
(b) Computer Software	13,519	14,037	17,962	17,293	17,383	80,194
(i) Operating system software	2,019	5,075	7,458	6,713	6,440	27,705
(ii) Database licence	3,483	3,667	4,283	4,668	4,710	20,811
(iii) Integration software	6,474	3,748	4,658	4,283	4,735	23,898
(iv) Application development software	496	497	503	526	478	2,500
(v) Software testing, security scanning tools and end-user software	1,047	1,050	1,060	1,103	1,020	5,280
(c) Communication Network	6,193	4,726	2,560	3,030	2,782	19,291
(i) Network equipment	4,728	3,698	1,758	2,078	1,778	14,040
(ii) Installation of communication lines	1,465	1,028	802	952	1,004	5,251
(d) Development Team	82,844	86,247	93,169	97,211	101,472	460,943
(i) Programme office, programme management and external engagement ¹	16,569	17,249	18,634	19,442	20,294	92,188
(ii) Product, clinical service design & architect ²	20,712	21,562	23,292	24,303	25,368	115,237

/(iii)

¹ Coordination of programme management and office operation, and effective alignment of stakeholders to ensure timely and quality delivery of projects.

² Design and devise products and services satisfying clinical needs to ensure their functionality and practicability, with a view to enhancing service outcomes.

	2024-25	2025-26	2026-27	2027-28	2028-29	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
(iii) Product development and implementation ³	20,710	21,562	23,292	24,303	25,368	115,235
(iv) Security and quality assurance ⁴	24,853	25,874	27,951	29,163	30,442	138,283
(e) Information Technology Operation Services	120,600	131,304	121,090	130,470	128,859	632,323
(i) Technical consultancy and services ⁵	12,060	13,130	12,109	13,047	12,886	63,232
(ii) Software development services ⁶	48,240	52,522	48,436	52,188	51,544	252,930
(iii) Cybersecurity and quality assurance ⁷ services	24,120	26,261	24,218	26,094	25,772	126,465
(iv) Rollout, engagement and implementation ⁸	36,180	39,391	36,327	39,141	38,657	189,696
(f) Training	335	341	363	371	374	1,784
(g) Others	5,261	5,467	6,273	6,383	6,511	29,895
Sub-Total	243,399	256,158	249,870	258,320	261,178	1,268,925
(h) Contingency						126,893
Total						1,395,818

³ The complete process of medical product development from conceptual design to system implementation, including testing, adjustment and eventual implementation, with a view to enhancing the overall effectiveness of clinical services and ensuring the attainment of expected medical benefits via the systems.

⁴ Implementation of stringent safety and quality control mechanism for continuous monitoring and assessment of medical system performance to ensure user security and enhance service quality.

⁵ Provision of professional technical guidance and optimised solutions to ensure that the projects meet the latest technical standards and future medical development needs.

⁶ Customised software development to fulfil specific functional needs, improve work efficiency and enhance service quality.

⁷ Reinforced data protection against cyber attacks to ensure system stability and user information security.

⁸ Enhanced communication with all relevant parties to ensure information transparency and smooth implementation of the projects.

**Cost and Benefit Analysis for the Transformation of the Electronic Health Record Sharing System (eHealth)
into a comprehensive healthcare information infrastructure (eHealth+)**

Item	Cash flow (\$'000)							
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
Cost								
1 Non-recurrent								
Expenditure	267,738	281,774	274,857	284,152	287,297	-	-	1,395,818
Staff cost	3,427	3,427	3,427	3,427	3,427	-	-	17,135
Total Non-Recurrent Cost	271,165	285,201	278,284	287,579	290,724	-	-	1,412,953
2 Recurrent								-
Expenditure	-	-	-	-	-	110,690	110,690	221,380
Total Recurrent Cost	-	-	-	-	-	110,690	110,690	221,380
Total Non-Recurrent and Recurrent Cost (A)	271,165	285,201	278,284	287,579	290,724	110,690	110,690	1,634,333
Savings								
3 Non-recurrent								
Cost avoidance	-	63,700	63,700	63,700	63,700	-	-	254,800
4 Recurrent								
Cost avoidance	19,972	20,854	39,600	40,825	42,049	44,100	44,100	251,500
Total Savings (B)	19,972	84,554	103,300	104,525	105,749	44,100	44,100	506,300
Net Savings (C)=(B)-(A)	(251,193)	(200,647)	(174,984)	(183,054)	(184,975)	(66,590)	(66,590)	(1,128,033)
Net Cumulative Savings	(251,193)	(451,840)	(626,824)	(809,878)	(994,853)	(1,061,443)	(1,128,033)	
