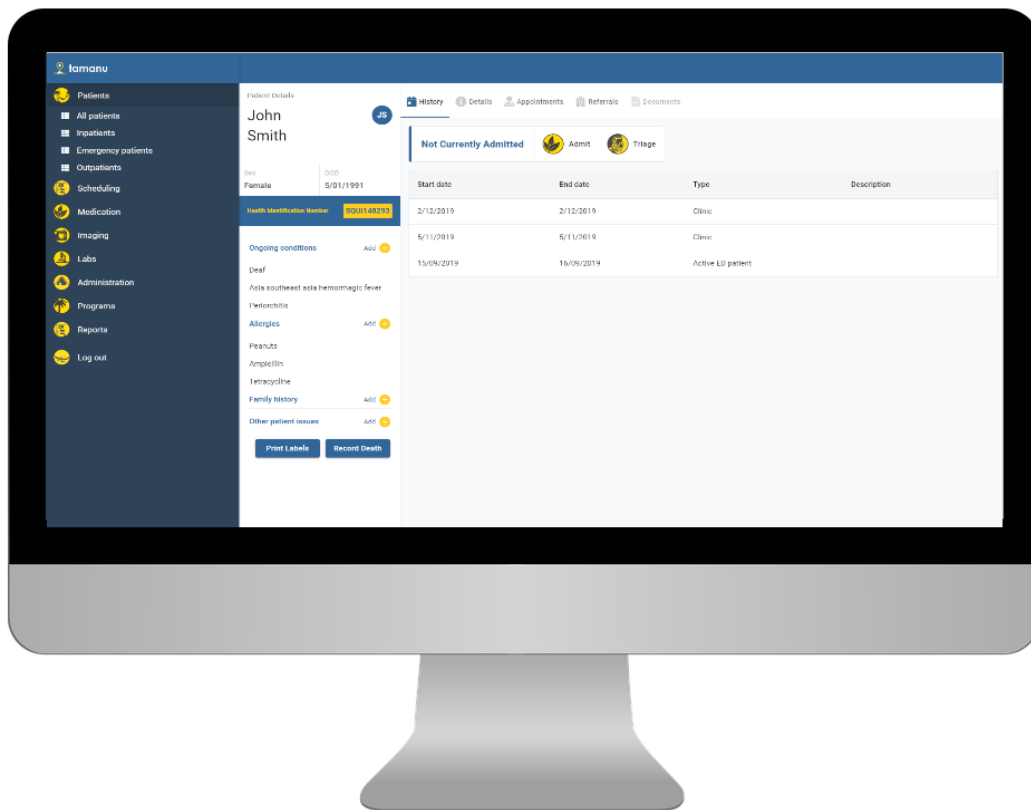# Tamanu EMR

Free and open source

Fully sync-enabled for seamless offline functionality

Desktop and mobile functionality, out-of-the-box

Data encryption on the disc and in transit

Integrated with existing systems in low and middle-income settings
(DHIS2, mSupply, Tupaia)

What is Tamanu?

Tamanu is a patient-level electronic medical record system for desktop and mobile, fully featured but designed specifically for use in low resource and remote settings. It allows health workers to track individual patients, providing clinical support and supporting consistent, long-term management of patient conditions.

Feature summary

Tamanu Desktop

- Patient Master Index
- Inpatients, including bed management
- Patient management (Demographics, Diagnoses, Notes, Ongoing Problems, Issues, Warnings, Procedures, Orders, Allergies)
- Outpatient management
- Emergency Department module (including triage, waiting times, transition to inpatient)
- Births and Deaths Registration
- Immunisation
- Specialist clinics
- Referrals
- Procedures
- Vitals
- Scheduling
- Medication
- Laboratory (placing orders, viewing results)
- Radiology (placing orders, viewing results)
- Pregnancy, antenatal care, birth
- Customizable programs
- Reporting, dashboards
- Document and photo attachments
- Configurable terminology services (currently supporting ICD-10, CPT, mSupply Universal Medicines)
- Supports integration via HL-7 and REST APIs

Tamanu Mobile

- Patient master index
- Sick/Injuries/Check up
- Vitals
- Immunisation
- Specialist clinics
- Referrals
- Pregnancy, antenatal care, birth
- Births and Deaths registration
- Family planning
- Customizable programs

Currently supported integrations

Senaite LIMS

mSupply

DHIS2

Tupaia

Note: Tamanu is open-source and supports integration with any third-party software compatible with HL7 or REST APIs.

Technical functionality

Developed by the same software team that developed **Tupaia**, working in collaboration with Sustainable Solutions (mSupply and mSupply Mobile) and designed specifically for the Pacific Islands context, Tamanu allows health workers to monitor patients in hospitals, health centres, clinics and even out in the field. The system is offline-first, with syncing capabilities allowing users to work seamlessly in offline and online modes. Suitable for deployment at a single health centre or across an entire country.

Our system uses powerful sync. When the internet is available, the connection to the central server from any computer or LAN network is live. When the internet drops out or is too slow, the system seamlessly switches to the local version of the database, with no latency or loss of data. When the internet comes back online, the data syncs back-and-forth automatically. We are able to do this with no data loss or corruption.

Each hospital using Tamanu Desktop is able to have a network of computers communicating with a LAN server running a local database. That network can operate in offline or online mode, with no user input required as the internet comes on and off. This LAN server then communicates with a national server (can be cloud-based or physically located in the country), live or using sync. If the internet is slow or offline, the LAN server will continue to run seamlessly and indefinitely (able to go weeks or even months without internet), with no data loss or corruption and no loss of user functionality. Data syncs automatically when the internet comes back online.

Each mobile user has a local database on their device that also communicates with the national server via sync.

Complete patient records are automatically stored on the LAN server for any facility that patient has visited and synced to the national server when internet is available. Patient records can be 'pulled down' from the national server when a patient arrives at a new facility (or they can be 'referred' in advance, so that the patient record is waiting when they arrive).

Basic patient details (Name, DOB, UID and biometric identifier – if in use) are stored on every LAN server to enable patient identification and data migration. Access is password-restricted, with user-based and facility-based permissions. All data is encrypted at rest and in transit.

Pacific-focused

Tamanu has been built with a Pacific focus, from the name (the Tamanu plant is widely recognised throughout the Pacific for its therapeutic properties) to the iconography (all our icons have been designed by a Pacific Islander – Robert Taupongi – to represent the Pacific in a meaningful way). Most importantly, the feature-set of Tamanu has been designed for the Pacific context. The system is offline-first, allowing for inconsistent or slow internet, giving a seamless user experience in even the most remote setting. The functionality and interface is also not over-complicated by unnecessary features; our clean UX focuses on intuitive use with no bloating and no 20 year old legacy software to be maintained underneath the hood. Importantly, the system has been designed to interface with existing systems in the Pacific, including mSupply, DHIS2 and Tupaia.

Finally, our lead staff each have over 10 years' experience working across the Pacific and understand the cultures, the requirements and the needs of the Blue Continent.

Working in these settings is not a 'part' of what we do. It's the only thing we do.

Advantages

Powerful syncing, works in online and offline modes across both desktop and mobile for a seamless user experience and zero click latency. Also allows full portability of health data across platforms and facilities – patients can move easily between facilities with their medical record with no data corruption and complete confidence in data security
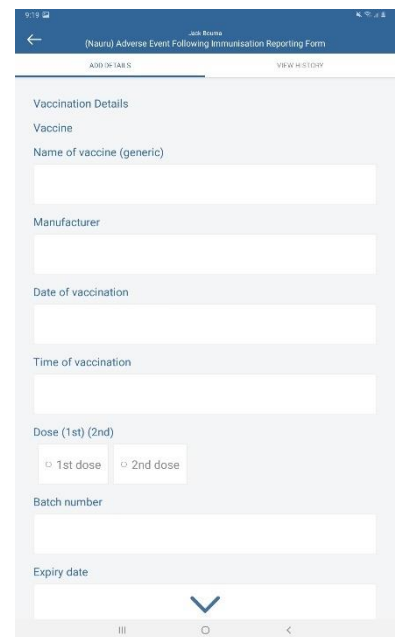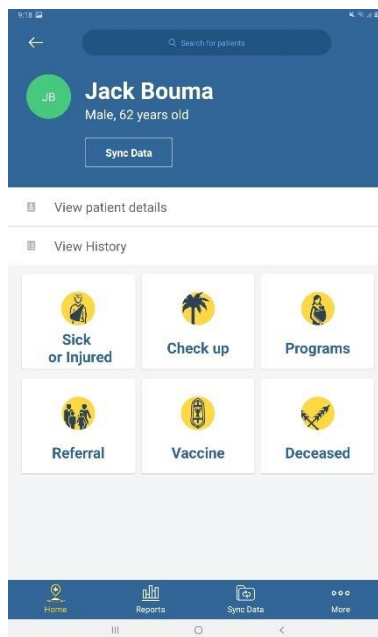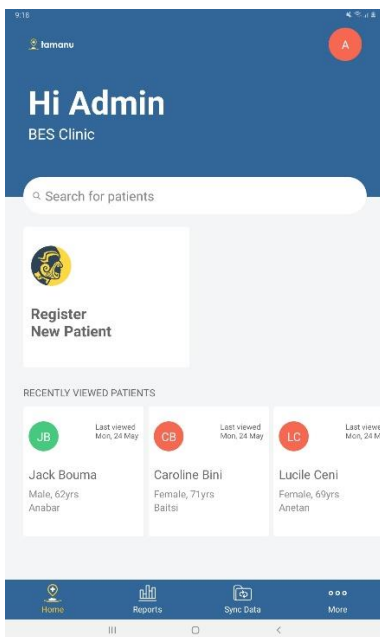
Backed by experience, supported by the same software teams (BES and Sustainable Solutions) that have implemented mSupply and Tupaia across the Pacific – so you have the assurance of large eHealth projects delivered on time, ethically and at scale. We provide skills and knowledge in the region, proven project management delivery in difficult settings and an ethos that fits the context.

Integrates with existing systems used widely in the Pacific, including mSupply, DHIS2 and Tupaia. This means it fits into a complete open-source ecosystem that we hope will allow the development of a Pacific-based network of support.

Tamanu is free and open source. Countries will own their source code and all data. Support will be provided via annual service agreements but in the future, these can be contracted out to other companies. There are no licensing fees, no lock-in contracts, no software permissions or barriers to 3rd party integration.
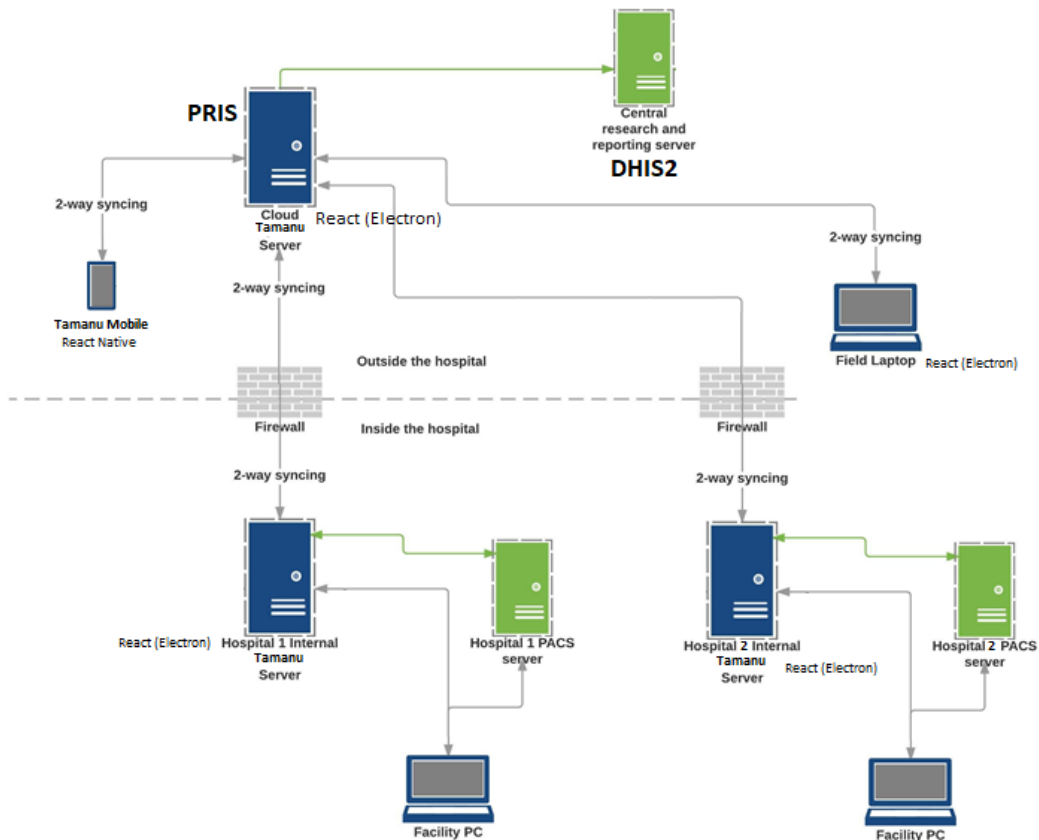
Tamanu Mobile

Hardware

Tamanu has entirely flexible hardware requirements that vary widely depending on the scale of data and the number of integrations required. We have outlined some general principles below which would guarantee the success of projects, but we offer bespoke recommendations for each deployment.

Hardware / Infrastructure Component	Specifications or Description	Number Recommended	Notes
Servers	• Xeon E-2146G or higher • 16GB RAM or greater • Minimum 1TB HDD • Operating System (recommended): RHEL 6.10 or newer	2	One to be used as live server, another as redundant server. Tamanu also supports cloud architecture and we recommend the redundant server be cloud based (e.g. AWS or Azure).
Desktop (or Laptop)	• Core i3 3.6GHz or higher • 4GB RAM or greater • Minimum 80GB HDD • Operating System: Windows 7 or newer (also available in Mac OS)	n/a	
Mobile	• Android 7+ or iOS • Minimum recommended 1.4 GHz, dual-core • 16Gb hard drive	n/a	

Our ecosystem

Tamanu does not exist in isolation, it forms part of an eHealth ecosystem we envision for low and middle-income countries in Asia-Pacific. Supported by a Logistics Management Information System (mSupply), health information database (DHIS2), health data aggregation and visualisation platform (Tupaia), Tamanu fills the need for a free and open-source patient-level medical record.

A sample ecosystem is provided below. Beyond Essential Systems has expertise in the deployment and training for all systems below but deployment can also be managed by other organisations and third parties.

Complete feature set

Topic	#	Business Requirement	Compliance
GENERAL			
Environmental	01	Record environmental assessments of a patient's home	Custom
Reminders	02	Identify and generate a list of patients who are due for vaccinations or other preventative procedures (e.g. based on demographic information, immunisation record etc)	Custom
	03	Generate reminder letters for patients who are due for vaccinations or other preventative procedures. Letters should be based on user-defined templates, and provide instruction to the patient on how to make an appointment for the required procedure	Custom
	04	Send electronic copies of the reminder letters to patients	Custom
	05	Ability to record who has accepted the reminder and therefore send a follow up to those who have not responded	Custom
IMMUNISATION			
Immunisation	01	Ability to add immunisation event against a patient using their national identifier, including: • Immunising agent • Date of administration • Administering provider • Site • Route • Form • Dose • Dose unit of measure • Manufacturer • Vaccine lot # • Reaction	Yes
	02	Ability to correct or update an immunisation event, supplying a reason for modification	Yes
	03	Ability to print immunisation record for a patient	Yes
	04	Ability for authorized clinicians to view a patient's complete immunisation history	Yes
SYNDROMIC SURVEILLANCE			
Surveillance data collection	01	Support the collection of information relevant to disease surveillance which could potentially include: • School attendance rates/absenteeism • Work attendance rates/absenteeism • Emergency services calls (i.e. permit emergency services personnel to note symptoms of concern)	Yes
	02	Ability to create user-defined forms for data collection	Custom
Surveillance reporting tools	03	Ability to draw on data collected elsewhere in the HIS (e.g. drug dispenses, diagnosis codes, chief complaints for visits/encounters, etc.) to identify potential concerns for follow up by public health personnel	Custom

Communicable disease case management	04	Record confirmed occurrences of notifiable (infectious) diseases (i.e. cases). Case records should include, at minimum: • Reference to the patient involved • Disease • Informant (i.e. who reported the case) • Investigator • Relevant laboratory results (e.g. lab result used to confirm diagnosis) • Symptoms • Travel history • Disposition (i.e. how was the case concluded – did the patient recover, are they deceased, were they transferred out of country for treatment, etc.) • Additional notes (free text)	Custom
	05	Record additional case management information, such as: • Actions or treatments (e.g. if the patient was quarantined) • Exposure information (i.e. how might the patient have been exposed to the disease?) • Risk factors (i.e. relevant attributes, comorbidities or behaviors of the patient)	Custom
INVESTIGATION			
Investigation	01	Ability to define criteria (e.g. *x* cases of disease *y* recorded within *z* days) which, if met, will generate an alert to public health staff regarding a potential outbreak	Custom
	02	Ability to generate reports based on case management and syndromic surveillance data.	Yes
	03	Provide features to allow public health staff to generate reports or queries as required, without writing code or database queries	Yes
	04	Support the plotting of case or surveillance data on a map	Custom
OUTBREAK			
Outbreak Response	01	Ability to create a record of a disease outbreak. Records should include: • Dates (start/end) • Disease • List of related cases (preferably references to case records) • Setting (e.g. restaurant, workplace, school, etc.) • Counts of reported symptoms & interventions • Status	Custom
	02	Ability to record contacts between individuals for the purpose of tracking disease exposure & transmission	Custom
COMMON/SHARED			
Event Encounter	01	Able to record an event / encounter (e.g. admission, visit), typically sourced from hospitals and primary health care centres, but also from private health care facilities	Yes
	02	Able to record for each event/encounter the following information, at minimum: • Patient • Date & Location • Event Type (see requirements below) • Attending provider • Reason for event / encounter • Event / encounter notes	Yes
Event Encounter (cont.)	03	Record the following events from other components of the HIS (at a minimum): • Patient Visit / Admission	Yes

		• Patient Discharge • Patient Transfer • Lab result created • Diagnostic image created • Prescription created • Medication dispensed • Allergy created / updated • Appointment Made • Clinical Document Created (with link to record) • Referral created • Consult created • Discharge summary created • Dental procedure provided • Vision procedure provided • Community service provided (e.g. mental health counselling, outreach)	
	04	Ability to discharge a patient (i.e. record the end of an inpatient visit), preferably including a prompt for chart review	Yes
	05	Ability to record discharge disposition as either: • Referral to Clinic • Ward Review (come back to ward at a specified time) • Home (no follow up required)	Yes
CLINICAL DOCS			
Recording a Document	01	Ability to store a clinical document (e.g. discharge summary), with meta data, into a clinical document repository	Custom
	02	Capture the following meta data for each document, at a minimum: • Author • Creation date • Keywords • Document type (e.g. discharge summary, eReferral, eConsult etc) • Document status (e.g. incomplete, final, amended, archived) • Document version (e.g. v0.2) • Clinical setting (e.g. internal medicine, pharmacy, etc.) • Patient id, patient name, patient date of birth, patient gender	Custom
	03	Ability to record discharge summaries and other clinical documents, and attach to a patient's record (displayable / searchable in the HIS)	Custom
	04	Support the recording of clinical or progress notes on a patient's record	Yes
	05	Support the recording, receipt from external sources, storage and display of the results of other investigative procedures or specialist consultation notes	Custom
	06	Able to provide to users a confirmation of successfully storing document in repository	Custom
	07	Support the scanning and electronic storage of paper-based documents	Custom
	08	Ability for patients to upload images and files (e.g. photos, videos taken of their condition such as a wound, behavior, etc.) – this may cover some aspect of overseas care and record against their patient record	Custom
	09	Ability to define custom forms to meet the needs of particular departments or functional areas (e.g. disease-specific forms for chronic disease management; screening forms for maternal health)	Custom

MEDICATION

Medication list	01	Support the creation and maintenance of a medication list & history for each patient	Yes
	02	Support the creation of prescriptions and the recording of those prescriptions against the patient's record	Yes
	03	Support ePrescribing	Yes
	04	Validate (check) new prescriptions against patient medication list using drug knowledge base capability (e.g. drug-drug interactions, drug-allergy interactions, etc.)	Custom
	05	Record a dispense of a medication, forcing drug interaction checking during the dispense process	Custom
	06	Identify and flag drug interactions (e.g. drug-drug, drug-allergy, etc.) upon dispense for review / management (e.g. reviewed with physician, substitution, etc.)	Custom
	07	Support the recording of medication errors or adverse events	Yes
	08	Support the storage / printing of drug leaflets / monographs for distribution to patients during dispense process	Custom
	09	Ability to record medications administered to the patient while in inpatient care	Custom
	10	Ability to record medications the patient reports they are taking (e.g. over-the-counter medications, out of country medications), noted as "patient-reported"	Yes

DIAGNOSTIC IMAGING

Imaging	01	Enable users to create requisitions for diagnostic imaging procedures, which shall include: • Requisition ID • Patient identifying information Person Registry • Ordering physician • Order date • Approval needed flag • Approving physician • Date approved • Supervising physician • Receiving location • Requisition type (e.g. x-ray, etc.) • Name & code of procedure(s) ordered • Requisition description & notes • Procedure completed by • Attachments • Requisition status • Urgency	Yes
	02	Ability to view the status of an existing DI requisition	Yes
	03	Ability to cancel a previously created DI requisition	Yes
	04	Ability to view lists of DI requisitions grouped by status, date, patient, provider or location / facility / lab	Yes
	05	Permit selected types of high-priority DI requisitions to be "pre-approved" by a supervising physician	Custom
	06	Support the recording, receipt from external sources, storage and display of diagnostic imaging procedure results. Results to include: • Requisition number • Name & code of test(s) performed • Result of each test • Abnormal indicator (i.e. a flag that denotes an abnormal result) • Notes	Custom
	07	Ability to include file attachments on DI results	Custom
	08	Support approval of DI results by a supervising physician	Custom
	09	Support integration with the existing RIS/PACS solution so as to	Custom

		accept and display textual diagnostic imaging reports in the HIS	
	10	Ability to link DI results to the relevant encounter or visit	Yes
Eye clinic	11	Support the capture and display of retinal images	Custom

LAB ORDER/RESULTS

Labs	01	Support the creation of requisitions for laboratory tests, data elements to include: • Requisition ID • Patient identifying information (i.e. reference to patient in Person Registry) • Ordering physician • Order date • Approval needed flag • Approving physician • Date approved • Supervising physician • Receiving lab • Requisition type (e.g. general lab, microbiology etc) • Name & code of test(s) ordered • Specimen information (e.g. type, site, collection date) • Requisition description & notes • Tests completed by • Attachments • Requisition status • Urgency	Yes
	02	Permit authorized users to view the status of an existing lab requisition	Yes
	03	Permit authorized users to cancel a previously created lab requisition	Yes
	04	Permit authorized users to view lists of lab requisitions grouped by status	Yes
	05	Permit authorized users to view lists of lab requisitions grouped by assigned location or laboratory	Custom
	06	Permit selected types of high-priority lab requisitions to be "pre-approved" by a supervising physician	Custom
	07	Allow the laboratory to reject lab orders and return them to the ordering physician with a reason for rejection	Yes
	08	Allow existing laboratory orders to be revised	Yes
	09	Allow orders to be printed so that a hard copy may be kept with the specimen	Yes
	10	Support the recording, receipt from external sources, storage and display of laboratory test results to include the following data elements: • Requisition number • Name and code of tests performed • Result of each test • Abnormal indicator (a flag that denotes an abnormal result) • Reference range • Notes	Custom
	11	Support file attachments on lab results	Custom
	12	Support approval of lab results by supervising physician	Custom
	13	Allow existing laboratory results to be revised	Custom
	14	Support referring lab tests out of country, and once reported, include with lab results	Custom
	15	Ability to link lab results to the relevant encounter or visit	Yes
	16	Support barcoding of specimens	Custom
	17	Support the printing of specimen labels (to include basic patient information, date/time of specimen collection, specimen type)	Custom

CANCER

Cancer registry	01	Record basic information for all patients who have been diagnosed with some form of cancer, such as: • Patient demographics • Tumor characteristics • Diagnosis • Treatment plan This functionality is covered by CANREG5	Custom (our preference would be to integrate with CANREG5)
	02	Support integration with the existing cancer registry application (CANREG5), if no cancer registry functionality is included	Yes

CHRONIC DISEASE

Chronic Disease Management	01	Specialized chronic disease management functions, including comprehensive treatment plans that capture goals, measurements and appointments	Custom

VITAL STATISTICS

Recording of births and deaths	01	Capture records of births and deaths	Yes
	02	Record the following data elements for all live births: • Name • Gender • Date of birth • Time of birth • Legal status (i.e. legitimate, illegitimate, other) • Born in hospital? (Y/N) • Name of hospital • Village/district • Mother's information (maiden name, place of birth, date of birth, usual residence, nationality • Father's information (name, place of birth, date of birth, usual residence, nationality) • Type of birth attendant (i.e. midwife, medical officer, staff nurse, public health nurse, health officer, medical student, nursing student, traditional birth attendant, other) • Name of birth attendant	Yes
	03	Record the following data elements for all deaths: • Information regarding the deceased (family name, first name, middle name, date of birth, age, place and country of birth, gender, marital status, name of surviving spouse, did the deceased have children? (Y/N), nationality, next of kin, father's name, mother's name, address, place of death, date and time of death date/time of death confirmed or estimated?) • Information on the informant (name, relationship to the deceased, address, telephone number) • Information pertaining to stillbirths (date of birth, time of birth, gender, estimated gestational age, multiple pregnancy (i.e. twins, triplets), relevant medical history regarding the pregnancy) • Relevant medical history (pre- existing conditions reported by family, recent illnesses or conditions known to the Public Health nurse, recent or current treatments as reported by family, town officer's reported cause of death) • Cause of death (disease or condition leading to death using ICD-10 code, antecedent causes, other significant contributing conditions) • Town officer's information (name, village, date)	Yes
	04	Record where in hospital patient died (e.g. emergency, paediatrics, etc.)	Custom

	05	Support notifying clinics or departments when one of their patients dies	Custom
Ministry of Justice Integration	06	Integration with Ministry of Justice systems to provide automated notification of births and deaths (integration method to be determined)	Custom

SHARED HEALTH

Risk factors	01	Support the recording of risk factors on a patient's record	Yes
Allergies, reactions and intolerances	02	Support the recording of allergies, reactions and intolerances on a patient's record	Yes
Problem list	03	Support the recording of a problem list on the patient's record	Yes
Medical history	04	Support the recording of medical history on the patient's record	Yes
Family history	05	Support the recording of family history on the patient's record	Yes
Vitals/Measurements	06	Support the recording of basic measurements such as height, weight, respiratory rate, oxygen saturation levels, blood pressure, heart rate and temperature on specific dates or at specific points in time	Yes
Follow-up reminders	07	Support follow-up reminders for clinicians (i.e. reminders to follow up with a particular patient who was referred to another facility)	Custom

CASE MANAGEMENT

Case management	01	Provision of tools that permit interdisciplinary collaboration and communication for the planning and management of treatment for patients with complex health conditions	Custom
	02	Ability to add and remove team members to a case	Custom
	03	Ability to define a case manager (lead) for a case	Custom
	04	Define a workspace to share clinical findings, notes, etc. to aid in managing a patient's case	Yes
	05	Establish appointments for case management review sessions	Custom

BLOOD BANK

Blood bank management	01	Support cold chain management for blood products	Custom
	02	Support the recording of blood product screening information	Custom
	03	Support the ordering of blood products	Custom
	04	Support the recording of blood bank questionnaires	Custom

ALERTS

Alerts/Issues/Warnings	01	Support the ability to record an alert for a patient (e.g. danger to self, danger to medical staff) as a code + text + severity	Yes
	02	Provide the ability to remove / archive an alert	Yes
	03	Ability to list all alerts for a patient and present high severity alerts upon first viewing a patient's record in the HIS	Yes
	04	Ability to define alert criteria such that alerts will be automatically generated and assigned to any patient meeting those criteria. Examples might include: • Patient has been admitted or registered very frequently in a short period of time • Patient has been on a wait list for longer than a defined threshold value	Custom
Care pathways	05	Implement care pathways (protocols) and alert when the care pathway is not being followed (e.g. too long to get to next step)	Custom

APPOINTMENTS

Appointment booking & scheduling	01	Support the scheduling of appointments for a resource (e.g. patient, room, shift equipment)	Custom
	02	Support optional appointment reminders for users (staff, clinicians)	Custom
	03	Include references to the relevant provider(s) and/or service delivery location (i.e. references to entries in location and	Custom

		provider indexes) in the appointment record	
	04	Support the creation of recurring appointments	Custom
	05	Support the recording of patient attendance at appointments & the identification of "no-shows"	Custom
	06	Ability to generate and maintain a list of appointments for a given resource (e.g. shift) or a calendar of appointments for a given range of dates for a specified service delivery location (i.e. a "to do" list), based on the following parameters: • Date range • Time range (i.e. shift) on a specified date	Custom
	07	Allow sharing of resources; that is, support the booking of multiple appointments for a particular resource in a particular block of time – e.g. book several diabetes patients in the clinic for a time slot of 9AM to 12PM	Custom
	08	Support capacity limits for resources – e.g. how many patients may be booking into a clinic simultaneously	Custom
	09	Support reserving a resource for specified time ranges (e.g. reserve the Physiotherapy clinic for patients from within the correctional system every Tuesday morning)	Custom
	10	Support booking follow up outpatient or clinic appointments from other departments, clinics or sites – e.g. emergency can book a follow-up appointment in a clinic for a patient	Custom
	11	Support appointment reminders and change notifications via text message to a patient	Custom
	12	Support appointment reminders to clinicians	Custom
	13	Permit users to see all of a patient's appointments (to help avoid scheduling conflicts)	Custom
TELEHEALTH			
Telehealth	01	Support telehealth capabilities from health centres to the main hospital	Custom
	02	Support telehealth capabilities between locations	Custom
WAITLIST			
Waitlist	01	Support management of wait lists (e.g. add patient, remove patient, etc.) for a specified resource (e.g. service, procedure, device, etc.), including setting thresholds for maximum waiting period (see alerting below)	Custom
	02	Support recording the following information for a waitlist: • Date added to waitlist • Patient ID (i.e. reference to patient in Person Registry) • Resource (e.g. service, procedure, device, etc.) Notification method (e.g. email, SMS once off waitlist)	Custom
	03	Ability to remind patients once patient is to be removed from wait list (and presumably provided service / procedure / device)	Custom
	04	Support reporting for wait list, including # days on waitlist, with automatic reporting / alerting if # days over threshold	Custom
eREFERRAL			
Referrals	01	Support the electronic referral of patients to other departments, providers or facilities in country, with the following data elements: • Referral ID • Patient ID (i.e. reference to patient in Person Registry) • Referring physician • Referral date • Approval needed flag • Approving physician • Date approved	Yes

		• Supervising physician • Referral recipient • Referral type (e.g. physiotherapy, etc.) • Referral description & notes • Procedure completed by • Attachments • Referral status • Urgency	
	02	Support the creation of paper-based referrals to facilities outside of country, and the recording of details of paper-based referrals coming from outside	Yes
	03	Support file attachments on electronic referrals	Custom
Referral management	04	Permit authorized users to cancel a previously created referral	Yes
	05	Permit authorized users to review existing referrals, searching by: • Status • Patient • Referring physician or organizational unit • Physician or organizational unit referred to • Urgency	Yes
	06	Permit selected types of high-priority referrals to be "pre-approved" by a supervising physician	Custom
	07	Support approval of referrals by a supervising physician	Custom
	08	Permit recipients of an eReferral to either accept the referral, waitlist the referral (and later accept / refuse), refuse the referral or respond with a request for more information	Yes
eConsult	09	Support the recording of consult letters on a patient's record, and tie to an existing referral (where one exists electronically)	Yes
HOSPITAL INFORMATION			
Patient Identification	01	Support the identification of all patients by a single, national identifier	Yes
	02	Ability to attach all events / encounters for patients to the national identifier	Yes
	03	Ability to record and store basic demographic information about a patient, including (but not limited to): • Name (given name[s], family name), multiple • Date of birth • Gender • Address • Telephone number(s) • Email • Preferred method of contact	Yes
	04	Record births and deaths (see Vital Statistics)	Yes
	05	Support the capture of biometric (e.g. fingerprints) data for patient identification	Custom
Medical Records	06	Ability to record privacy restrictions (e.g. "VIP flag") on either the patient's record as a whole or this specific visit	Custom
	07	Support discharge checklists through the completion of a discharge checklist (or similar), recorded in solution – e.g. discharge summary completed, ICD coding completed, patient follow ups communicated to patient, etc.	Custom
	08	Ability to track the location of the patient's paper (i.e. hard-copy) chart	Custom
	09	Ability to see patient diagnosis for the current visit as part of the patient summary (i.e. with patient demographics)	Yes
	10	Ability to display a summary view of the patient's record with key information, including: • Allergies • Immunisation history	Yes

		• Recent referrals/consults (with attending provider indicated) • Recent emergency visits • Recent lab and DI results	
	11	Enable clinicians to record how complex an encounter is (i.e. how much work was involved) to assist in workload management	Custom
	12	Ensure the following process (or a demonstrably similar process) is used to change notes (notes may not be deleted): • Submit reason for change • Review by authorized body / person • Approved change • Change applied All changes must be logged with who approved, when and reason for change.	Custom
	13	Ability to generate a notification to the Communicable Disease team if specified infectious diseases are detected on a ward (e.g. if a disease of interest is recorded as the primary reason for an encounter)	Custom
Patient location	14	Support the registration of new patient visits/encounters by any authorized user at any location (i.e. visits may be recorded outside admitting/triage)	Yes
	15	Support the recording & tracking of patient location (i.e. facility, unit bed etc)	Yes
	16	Support the conversion of emergency registration to inpatient visits	Yes
	17	Ability to define clinics or programs for various departments or functional areas to enable longitudinal tracking of patients with chronic illnesses or other conditions requiring ongoing care and monitoring. Such clinics or programs should have defined capacity limits	Custom
	18	Ability to record follow-up communications and record information about the follow-up (e.g. patient contacted via text/email on x date)	Custom
	19	Ability to record follow up information in a structured way – e.g. questionnaires as opposed to a free- text progress note	Yes
	20	Ability to book rooms (not beds) for patients	Yes
Triage / admission	21	Provide bed management functionality	Yes
	22	Ability to record reason for admission (e.g. primary complaint, high-level condition)	Yes
Transfer	23	Ability to transfer a patient from one ward to another	Yes
Emergency department / ambulance services	24	Ability to support an Emergency Department whiteboard (i.e. large screen) to provide an overview of the patients currently being treated at ED, their status, alerts and actions.	Yes

PRIMARY HEALTHCARE, OUTPATIENT & SPECIAL CLINICS

Registration	01	Ability to record whether a visit is the result of a referral and, if so, from what provider and/or facility	Yes

POINT OF SERVICE

Access from private practices	01	Permit read-only access to providers working in private medical practices or pharmacies who use external software to access HIS functionality / data	Custom
	02	Enable provider in private pharmacies or medical practices to add data to a patient record	Custom
	03	Provide customizable access controls such that point of service access from private pharmacies or medical practices may be restricted to a subset of features or patient data available from publicly funded facilities	Custom

COMMUNITY

Mental health	01	Ability to keep mental health data and screens separate from non-mental health patients / users for patients with mental health diagnosis / conditions	Custom
	02	Provide access controls such that access to the Mental Health module/screen may be restricted only to Mental Health providers and staff with appropriate permissions	Yes
	03	Permit Mental Health providers and staff with appropriate permissions to mark specific elements of a patient's mental health chart (i.e. a subset) such that they will be viewable by other providers as part of the patient's overall record	Custom

MENTAL HEALTH AND ADDICTIONS

Mental Health	01	Ability to download a suite of patients who will be cared for in their homes (i.e. before leaving the institution, download all data for the patients to be visited)	Custom
	02	Record clinical notes and observations when visiting / caring for patients at home or when away from the hospital / primary health care centre	Custom
	03	Ability to connect to the HIS from outside of a healthcare facility when connectivity is available (e.g. via VPN)	Yes
	04	Support some form of "offline" operation when network access is unavailable, such as during a home visit in a remote area. Such "offline" operation could take many forms; examples might include: • The ability to cache a patient record locally in a "read-only" form • The ability to generate summaries of key sections of a patient's record and export them in PDF form	Yes
	05	Support syncing changes made during offline operation once network access is restored	Yes

HEALTH CLAIMS MANAGEMENT

Invoices	01	Ability to create invoices for expats / non-locals	Custom
	02	Support the recording of payments against invoices previously issued and the creation of receipts for these payments	Custom
	03	Ability to integrate billing information (e.g. invoices) with back office Accounts Receivable	Custom

ANALYTICS / BI

Canned reporting	01	Provide reports of high and medium complexity, to be defined during HIS design. Reports might include: • Length of stay • Bed occupancy • On call use • Case fatalities • Outcomes • Workload	Yes
Ad-hoc reporting	02	Support the creation of custom reports, including at the departmental level	Custom
	03	Support ad-hoc reporting by authorized users	Yes
Integration	04	Integrate with DHIS2 – aggregate and transfer information to DHIS2 for reporting	Yes
Use of third-party reporting tools	05	Accommodate the use of external, third-party reporting tools (e.g. Crystal Reports)	Yes

INVENTORY

Rx inventory	01	Order, fulfill and maintain drug inventory for all hospitals & pharmacies in the country	Covered by mSupply
	02	Support barcoding for medications	Covered by mSupply

	03	Support integration with the existing pharmacy inventory management system	Yes
Lab inventory	04	Support inventory management for consumables, including ordering	Covered by mSupply
Device inventory	05	Support inventory tracking for mobility devices	Covered by mSupply
Blood Bank Inventory	06	Support inventory tracking for blood products	Covered by mSupply
FOUNDATIONAL REGISTRIES			
Identifiers	01	Include a central Master Person Index to maintain a single identity record for each person who uses the health care system in country	Yes
	02	Assign to each person a single unique identifier (National Health Identifier) which may be used to identify the person across the health care system. This identifier must remain and not be reassigned or reused over time.	Yes
	03	Support the use of identity cards which record a patient's unique health identifier. Such support could include integration with barcode scanners or magnetic card readers	Custom
	04	Support the recording of additional identifiers for a person	Yes
	05	Include facilities to detect duplicate records such as record matching using established algorithms	Custom
Duplicate records	06	Ability to merge 2 person records and declare one as the correct record; the archived record should point to the correct record	Custom
	07	Ability to unmerge a previously merged record (when the merge was conducted in error)	Custom
Death	08	Ability to mark a person as deceased, including the date of death	Yes
	09	Ability to record the information which will appear on the death certificate, including: • Unique identifier • Date of death • Age at death • Place of birth • Marital status • Number of children • Nationality • Father's name • Mother's name • Informant • Was seen by informant after death (Y/N) • Hour of death • Cause of death • Interval between onset and death • Attendant name, address, date	Yes
Search	10	Support searching for identity records based on partial information	Yes
	11	Ignore symbols and numbers when searching	Custom
	12	Include soundex (phonetic) searching as an option	Custom
	13	Support the creation of new person records separate from registration at or admission to a health care facility	Yes
	14	Support the recording of the following items: • Unique identification number • Surname or family name • Given name(s) • Gender • Date of birth • Health insurance data, including: • Payment exemption	Yes

		• Safety Net • Public health insurance policy number & effective dates • Supplemental health insurance insurer name, policy number & effective dates • Address • Phone number(s) • Email address(es) • Aliases or other names • Place of birth • Father's name • Mother's name • Religion • Nationality • Temporary address • Contact person, including: • Name • Relation to person in question • Address • Phone number(s) • Family doctor	
	15	Support the recording of familial relationships between patients (e.g. parent/child, spouse)	Yes
	16	Support the recording of information about a patient's home or living arrangements	Yes
Provider registry	17	Include a provider registry – a centralized directory of healthcare providers	Custom
	18	Record the following data elements for each provider: • First name • Last name • Provider type (physician, nurse, dentist, pharmacist, etc.) • License number (if applicable) • License status (if applicable; i.e. active, suspended, terminated, etc.) • Address or facility • Phone number	Custom
	19	Integration for the provider registry (HL7 messaging preferred) to receive updates from source of truth systems (e.g. professional regulatory bodies)	Custom
Location registry	20	Provide a location registry – a standardized index of locations such as facilities, units/departments and wards, which may be referenced from other components of the solutions	Custom
Organization registry	21	Provide an organization registry – a representation of organizational structures, to which users may be associated	Custom
	22	Permit the scoping of data access permissions by organization	Custom
Services registry	23	Ability to record all services provided by the health sector, tied to specific locations (e.g. certain procedures are only performed at certain locations)	Custom
PRIVACY AND CONSENT			
Consent management	01	Support the recording of consent for treatment and/or consent for capture & sharing of data within the health care system and/or other types of consent, including the following data: • Patient • Consent type • Date consent provided (range, includes start / end) • Limitations	Yes
	02	Support the recording of consent for individual procedures (as opposed to a blanket consent for treatment upon registration or admission)	Yes

	03	Solution SHALL support the recording of consent for the collection and use of information	Yes
Masking	04	Include robust privacy controls, including masking of sensitive patient data	Yes

AUDIT AND LOGGING

Logging	01	Provide a "break the glass" option, enabling providers to bypass masking or view otherwise protected portions of a patient's record if required. Use of the "break the glass" feature must be clearly noted in audit logs and a reason provided (e.g. medical necessity)	Custom

TERMINOLOGY

Coding systems	01	Ability to define standardized terminology systems (e.g. ICD-10 for recording diagnoses, LOINC for laboratory results, etc.)	Yes
	02	Ability to record terminology mappings to support translation of coded data elements from one coding system to another (e.g. ICD to SNOMED or vice versa) when integrating data from external HIS components	Custom
	03	Support validation of coded data elements in the HIS using data in the terminology service	Custom
	04	Publish standardized codes from the terminology service	Custom

BUSINESS RULES

Business Rules	01	Ability to record / revise / remove business rules that can be actioned by the solution (e.g. care pathways, define forms required for completion for specific types of admissions)	Custom
Views	02	Provide views of the solution for different types of caregivers / departments (e.g. dental view, pharmacy view, ward view, etc.)	Custom