Vodafone Digital Healthcare – Universal Health Insurance

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Universal Health Insurance Project Architecture

1 Introduction

The purpose of this document is to provide an overview of the Universal Health Insurance - UHI Project Architecture Descriptions and Integration Protocols

2 UHI Solution Architecture

The following diagram shows Universal Health Insurance - UHI Solution Architecture V19.

UHI Solution Architecture V19
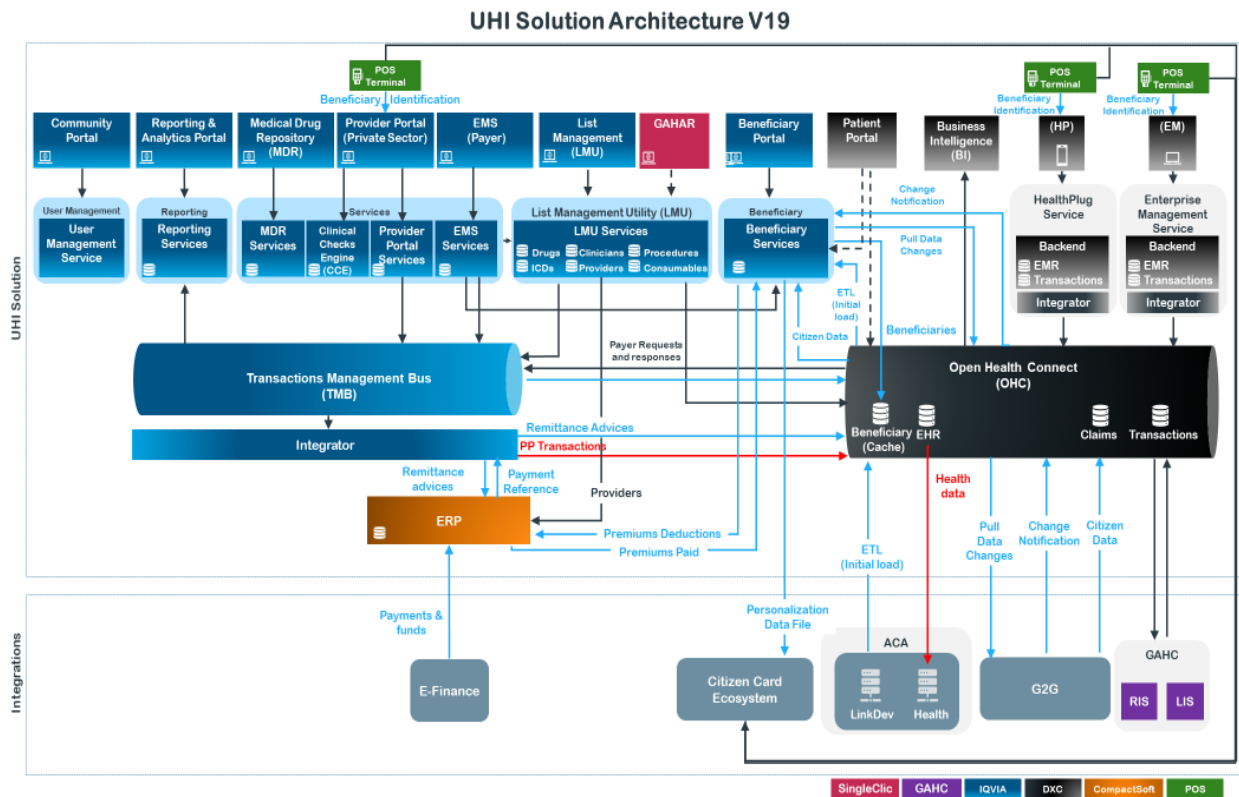
3 UHI Solution Architectures Descriptions

1- DXC Components

1. **Open Health Connect - OHC:**

   The purpose of HIE is to promote the appropriate and secure access and retrieval of a patient's health information to improve the cost, quality, safety and speed of patient care.

   OHC It is a vendor neutral interoperability platform that provides the engine for building a digital ecosystem around core products.

   It provides hybrid connectivity with a built-in FHIR (Fast Healthcare Interoperability Resources) exchange server to help customers exploit this new open standard, Integrated Care Record: Repository to store patient full medical record including claims and clinical record in standard FHIR Format.

   It also used as (API Gateway, repository, Dashboard).

2. **HIS Application Enterprise Manager – EM:**

   is a comprehensive, modular, web-based, integrated Hospital Information and Clinical Management System that can address the complex Information Management requirements of different types of healthcare facilities (primary, secondary and tertiary care) Such as (Clinician Access Management, Pharmacy Management, Patient File Tracking, Medical Record Management, Order Entry & Result Reporting, Appointment Scheduling Management)

3. **HIS Application Health Plug – HP:**

   HIS application used on Mobile/ Desktop used by healthcare staff to check doctor availability at clinics, schedule and manage appointments, access their consultation notes, prescription and medical history, check their policy information and validity from their smart phones

4. **Patient Portal:**

   Patient portals improve the way in which patients and health care providers interact. Specifically, patient portals give patients access to their health information to take a more active role.

5. **Business intelligence – BI:**

   Business intelligence (BI) is a technology-driven process for analyzing data and delivering actionable information.

2- IQVIA Components

1. **Beneficiary Management System - BMS:**

   System to manage registration the beneficiaries and their associated plan and policy, manage the collection of their premium.

2. **Provider Portal - PP:**

   Provider Portal is an application to serve healthcare providers to generate, analyze, manage, and exchange various transactions with other healthcare providers and payers. It includes transactions such as E-Authorizations, E-Claims by utilizing patient information, financial information, and health insurance coverage feedback in near real-time.

3. **Expert Monitoring System - Payer System - EMS:**

   Expert Monitoring System enables industry stakeholders to check and alert on potential mistakes and reviews in combination checks, insurance policy rules, benefit utilization, medical necessity, and care quality outcomes.

4. **List Management Utility - LMU:**

   A data Registry tool that manages the data of systems, providing a means for easy data storage, and integrating with other systems to allow efficient data exchange if needed
   It helps in synchronize the following lists with Payer system: (Providers, Clinician, Diagnosis, Consumables, Drugs, Procedures).

5. **Transaction Management Bus - TMB:**

   Transaction Management Bus (TMB) facilitates and manages all transactional messages related to eligibility, authorization, prescriptions, claims, laboratory/ radiology orders, dispense medications, test results between different healthcare organizations such as healthcare payer, healthcare provider, and regulator/ authority

6. **Medical Drug Registry - MDR:**

   Master Data Registry (MDR) is a registry system that enables industry stakeholders to manage their drug contents clinically and commercially in a comprehensive and scientific way.

7. **Community Portal - CP:**

   Community portal is a comprehensive portal that enables the healthcare companies such as Payer, Provider, Regulator to access the functionalities including (Single Sign-on and Launchpad for users to login and access integrated applications, Registration of users and facilities, provide system training, and training materials, Access user dashboards, notifications, raise support tickets).
   Its primary use is to centrally manage the users and map them with the required roles to access the integrated solutions.

8. **Integrator:**

The main purpose of integrator is to translator from FHIR (Fast Healthcare Interoperability Resources) standard format to IQVIA proprietary Protocol.

Also it used to communicate the approved Claims to ERP system and Communicate some system transactions to OHC.

9. **Beneficiary Portal:**

Beneficiary portals improve the way in which beneficiary and UHIA interact.

It gives patients access to their Insurance information to take a more active role, include the following information on the payment receipt: beneficiary demographics (i.e. name, address, phone number...) beneficiary plan details (i.e. policy number, beneficiary ID...) list of beneficiaries covered policy active start date and end date payment due date amount due date payment received amount paid payment method (i.e. check, bank transfer, credit card...) due date for next premium payment.

3- GAHAC Components

1. **Radiology Information System – RIS:**

A radiology information system (RIS) is a type of information system that is used to create, store and manage radiological data and images of patients.

It is a type of health or hospital information system (HIS), designed to automate and manage the processes in the radiological department.

2. **Laboratory information System – LIS:**

A laboratory information system (LIS) is a computer system that helps to manage many aspects of a medical laboratory, including inputting, processing, and storing the information and data of a lab. which gives the laboratory complete control over daily processing, Collection of results from automated analyzers.

4- SingleClic Components

1. **GAHAR System:**

GAHAR System used to registration & accreditations of Medical Facilities and members of the health professions.

It provides an online services of the Authority's employees.

It provides work cycle management system of the Authority's employees

It helps in reporting and performance monitoring system for registered and approved Medical Facilities.

5- CompactSoft Components

1. **Enterprise Resources Planning – ERP:**

   Enterprise resource planning (ERP) is defined as the ability to deliver an integrated suite of business applications.

   ERP tools share a common process and data model, covering broad and deep operational end-to-end processes, such as (General Ledger – GL, Account Receivable - ACR, Account Payable -ACP, Banking, Financial Reporting, Integration, Human Resource - HR, Payroll, Budget).

6- PaySky Components

1. **Point of Sale – POS:**

   Integration with POS device on BMS system, when insured beneficiary will use the card to proof his/her identity and to retrieve beneficiary/family information as what will be mentioned in this document.

   Integration with POS device on provider portal system or with HIS system, when beneficiaries visit providers to benefit from medical activities, provider would require collecting patient share calculated by system for those activities to continue the process.

4 UHI Solution Architectures Integration Protocols:

- The below table lists all touch points between system modules and shows the protocol and data format used for integration of the two involved modules on each point.
- The table also describes the function of each touch point and provide understanding of its role in the solution.

	Vendor 1	System 1	Vendor 2	System 2	Protocol	Business Impact
IQVIA Internal Modules	IQVIA	EMS	IQVIA	TMB	JSON/REST	Payer Transaction Exchange with Provider Systems
	IQVIA	PP	IQVIA	TMB	JSON/REST	Provider Portal Transaction Exchange with Payer Systems
	IQVIA	LMU/HDR	IQVIA	TMB	JSON/REST	Exchange of Master Lists data from Central Repository with Transaction Management Bus (TMB)

Vendor 1	System 1	Vendor 2	System 2	Protocol	Business Impact
IQVIA	LMU/HDR	IQVIA	PP	JSON/REST	Exchange of Master Lists from Central Repository to Provider Portal (PP)
IQVIA	LMU/HDR	IQVIA	EMS	JSON/REST	Exchange of Providers, Practitioners, ICDs, Drugs, Consumables and Services from Central Repository to Expert Management System (EMS)
IQVIA	MDR	IQVIA	LMU →HDR	JSON/REST → FHIR/REST	Exchange of Master Drug Data from Central Repository to MDR

	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
Dedalus Internal Modules	Dedalus	EM	Dedalus	OHC	FHIR/REST	Saving Patient Medical Record in Centralized Electronic Health Record (EHR)
	Dedalus	HP	Dedalus	OHC	FHIR/REST	Saving Patient Medical Record in Centralized Electronic Health Record (EHR)

	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
LIS and RIS	Dedalus	OHC	National Technology (GAHC)	LIS	FHIR/REST	Integration of HIS Work-flows to the Lab. systems
	Dedalus	OHC	Millensys (GAHC)	RIS	FHIR/REST	Integration of HIS Work-flows to the Rad. systems

	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
ACA Health Data	Dedalus	OHC	TeraData (ACA)	ACA	Microsoft SQL Server Table	Export Electronic Health Record (EHR) Data to ACA
Beneficiaries	Dedalus	OHC	IQVIA	EMS	Microsoft SQL Server Table	Export Beneficiary Data Dump from OHC to be loaded on EMS or BMS

	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
G2G and BMS Modules	Dedalus	OHC	Microsoft (MCIT)	G2G	JSON/REST	Consuming G2G Data Retrieval APIs getFamilyTree, scoBasicInfo(), MOSS() and Providing End-points to any System inside UHI Solution
	Microsoft (MCIT)	G2G	Dedalus	OHC	JSON/REST	Implementing End-point for G2G updateNotificationsAPI()
	Dedalus	OHC	IQVIA	BMS	JSON/REST	Propagating Notification Events received from G2G to Corresponding BMS WebService
	IQVIA	BMS	Dedalus	OHC	JSON/REST	Querying Beneficiary Information from G2G through OHC for the webservices getFamilyTree(), csoBasicInfo(), MOSS()

	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**

	Vendor 1	System 1	Vendor 2	System 2	Protocol	Business Impact
BMS	IQVIA	BMS	Dedalus	OHC	FHIR/REST	Exchange of Beneficiaries Registration and Enrollment data
eClaims	Dedalus	OHC	IQVIA	TMB → Integrator	JSON/REST → FHIR/REST	Submit claims details from HIS to insurance system and processing and remittance
	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
Full Claim Cycle	Dedalus	OHC	IQVIA	HDR	FHIR/REST	Synchronize Providers, Practitioners, ICDs, Drugs, Consumables and Services from Central Repository Across the Solution using FHIR Format
	Dedalus	OHC	IQVIA	EMS (Integrator)	FHIR/REST	Full Cycle Claiming using FHIR Format covering eligibilityCheck(), Authorization(), eOrders(), eLab(), eRad(), dispense(), eClaim()
	Dedalus	OHC	IQVIA	Integrator	FHIR/REST	Push Provider Portal Transactions to OHC to complement Patient EHR
	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
Citizen Card & POS	IQVIA	BMS	Dedalus	OHC	FHIR/REST	Export Beneficiaries Data (National-ID and Insurance-ID) Dump File from BMS to be Transferred to ACA through OHC using sFTP
	Dedalus	OHC	TeraData (ACA)	ACA	Comma-Separated ASCII File	Send Beneficiaries Data (National-ID and Insurance-ID) Dump File Received from BMS to ACA using sFTP through OHC
	Dedalus	HIS	PaySky (MCIT)	POS	JSON/Java Script	Beneficiary Identification on HIS (EM, HP) using Insurance Card on POS
	IQVIA	PP	PaySky (MCIT)	POS	JSON/Java Script	Beneficiary Identification on Provider Portal using Insurance Card on POS
	IQVIA	BMS	PaySky (MCIT)	POS	JSON/Java Script	Beneficiary Identification on BMS
	Dedalus	HIS	PaySky (MCIT)	POS	JSON/Java Script	Beneficiary Payment on HIS (EM, HP) using POS
	IQVIA	PP	PaySky (MCIT)	POS	JSON/Java Script	Beneficiary Payment on Provider Portal using POS
	Dedalus	OHC	Microsoft (MCIT)	G2G	JSON/Java Script	Consuming G2G Insurance Card APIs
	Microsoft (MCIT)	G2G	Dedalus	OHC	FHIR/REST	Implementing End-point for G2G Card APIs
	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
ERP	CompactSoft	ERP	IQVIA	LMU/HDR	Comma-Separated ASCII File	Vendor Recording (Bulk Files)

	Vendor 1	System 1	Vendor 2	System 2	Protocol	Business Impact
	CompactSoft	ERP	IQVIA	Integrator	Comma-Separated ASCII File	Vendor Invoice Recording (Bulk Files) Transfer remittance advice amount that should be released to providers to the ERP system
	CompactSoft	ERP	IQVIA	BMS	Comma-Separated ASCII File	Collection Entity Invoices Recording (Bulk Files) Transfer due premium amounts for individuals/groups and receive payment advices back to settle due premiums
	CompactSoft	ERP	IQVIA	LMU/HDR	JSON/REST	Automatic Vendor Recording (API)
	CompactSoft	ERP	IQVIA	Integrator	JSON/REST	Automatic Vendor Invoice Recording (API)
	CompactSoft	ERP	IQVIA	BMS	JSON/REST	Automatic Collection Entity Invoices Recording (API)
	Vendor 1	**System 1**	**Vendor 2**	**System 2**	**Protocol**	**Business Impact**
GAHAR	IQVIA	HDR	SingleClic	GAHAR BPM	FHIR/REST	Update GAHAR lookups Medical services list
	SingleClic	GAHAR BPM	IQVIA	HDR	FHIR/REST	Publish Registration and Accreditation information (Create/Update/Suspend/Resume/Remove Facilities, Services and Professionals)
	SingleClic	GAHAR BPM	IQVIA	HDR	FHIR/REST	Retrieve UHIA contractual status of Facilities, Services and Professionals

5 Definitions & Abbreviations:

OHC	Open Health Connect
HP	Health Plug
EM	Enterprise Manager
UHI	Universal Health Insurance
FHIR	Fast Healthcare Interoperability Resources
POS	Point of Sale
BMS	Beneficiary Management System
BI	Business intelligence
PP	Provider Portal
EMS	Expert Monitoring System – Payer System
LMU	List Management Utility
TMB	Transaction Management Bus
MDR	Medical Drug Registry
CP	Community Portal
RIS	Radiology Information System
LIS	Laboratory information System
ERP	Enterprise Resources Planning
GL	General Ledger
ACR	Account Receivable
ACP	Account Payable
HR	Human Resource
REST	(REpresentational State Transfer) is an architectural style for developing web services.
HDR	Health Data Record
UHIA	Universal Health Insurance Authority
EHR	Electronic Health Registry
BPM	Business Process Management
JSON	JavaScript Object Notation
G2G	Government to government (G2G) is the electronic sharing of data and/or information systems between government